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## **ALCOHOL CONTROL IN ALASKA ESKIMO COMMUNITIES:**

a case study of antagonistic policies  
communal vs. 'official' law

by

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Alcohol Control in Alaska Eskimo Communities:  
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The state of Alaska is one of paradoxes and polarity. It is the largest state in the union. When the state is superimposed on the United States, it reaches from coast to coast, spanning four time zones. Yet, the population of the state is one of the smallest with 400,000 residents. 200,000 residents live in Anchorage, an urban city, with tall building, street lights, running water and conveniences of any city in the United States. Yet, a few air miles out of Anchorage, the simplest conveniences like running water are unavailable and residents live in the harshest of conditions, with the minimum of services from the state or federal government. Many residents of Anchorage have never ventured into the rural areas nor understand the conditions of poverty, isolation, and hardship endured by the Natives residing in these rural areas. The lifestyle, values and beliefs of the 20 percent of the state's population is as foreign to urban Alaskans as someone living in another country.

Alaskan residents, however, share one common thread. Across the state, throughout every social strata, Alaskans engage in high levels of alcohol consumption. Understandably the problems of alcohol underlies most contact with the criminal justice system. The fundamental difference however, is that alcohol is seen as the basic cause of Native problems whereas with non-Natives, alcohol use is viewed as the result of other social, environmental problems.

STUDY PURPOSE: The purpose of this paper is to present a perspective of Native alcohol problems in Alaska which will demonstrate that the problems of alcohol management and control are the result of governmental actions, laws and structures being unresponsive to community needs.

There is a historical bias in the treatment of Eskimos and their relationship to alcohol, which underlies the decisions of the 'official' laws. The strong intent to unify the villages into a state system, resulted in the breakdown of rural law and order.

This paper will demonstrate that the official structures introduced for management are incomplete systems and lack the necessary components

to function successfully. Furthermore, these introduced structures failed to respect the communal law and order existing within the communities.

REVIEW OF LITERATURE. Throughout the fieldwork the paradoxes of the problems of alcohol use and abuse kept surfacing. Extensive search of the literature highlighted a number of concerns about the approach and categories of the research findings which help put this study in its proper perspective.

Social Problems. One of the difficulties of alcohol research is its basis in a highly emotional and value-ridden belief systems. It is seldom possible to perceive alcohol in a customary or value free context. One of the outstanding contrasts of Western social scientists studying non-Western cultures is the preoccupation with alcoholism (the negative consequences of alcohol use) vs. alcohol use (the ritualistic or random use of alcohol) and the failure to understand the roles and meaning of its use. In Western culture there is an immense emphasis on the "social problems" created by alcohol abuse--generally with the people being identified as the problem (Bacon, 1962). Examining research on populations as large and diverse as the Europeans, there are the customary precautions of trying not to generalize drinking habits and patterns for such a diverse population. Basically, however, the cross-cultural approach constitutes "an anthropological perspective" for non-Western societies (Heath, 1974), with little consideration for the diversity within and among any ethnic groups. The need to describe Native Alaskan cultures as one culture has grave implications for the research on Alaska Native peoples. One of the problems is that the "objective" social scientists, operating from a Western methodological perspective may color the reporting of Native people who have very different values and philosophies without recognizing the differences (Bacon, 1973). There is a vast difference in examining the "problems of alcohol" vs. alcoholism.

Furthermore, the literature of Indian or Native American drinking has a wide range of approaches, but Heath's (1977) analysis points out that in terms of social problems, the social scientists tend to examine CAUSES for non-Western cultures and CONSEQUENCES for Western cultures. This is substantiated in the review of literature (Graves, 1967; duTuiot, 1964; Horton, 1943; Honigman, 1979).

Aggression and Criminality. Studies viewing non-Western cultures emphasize the negative consequences of alcohol use. It is highly



probable that colonial administrators concerned with adjudication, generally dealt with Native drinking as a result of its negative consequences. The most abundant literature on American Indians and especially that of the eighteenth century focuses on the "firewater myth."

This, of course, is the belief that calm, peaceful Indians become crazed when they have alcohol or "firewater." From this, two major generalizations may be drawn. First, that aggression expressed by inebriated individuals in whatever society, is neither random nor diffuse. Rather it is patterned in the sense of being directed in a limited number of ways against a limited range of persons. Second, that drinking and drunkenness are common place in a society for several years before the pattern of aggression became unusual (Heath, 1975).

Research, however, suggests that no clear relationship between the use of alcohol and expressions of aggression or other criminal acts exists (Heath, 1974; Honigsmann, 1945). Furthermore, in the analysis of alcohol use and criminal acts, the focus of current research is on the individual within the criminal justice system. Though statistics of Natives arrested, jailed, and paroled have been limited it has been available. However, how Native people interact and relate to the "system" has not been examined. In Alaska, where many of the Native people are speakers of another language, no effort is made to provide an interpreter or to be sensitive to cultural values. Furthermore, there is limited research on how Native communities and the state and federal governments relate to one another in the area of alcohol management and control (Conn, 1982). For example, the American Indian Court Judges Association has found that though fifty percent of all federal cases arising from violations committed on Indian reservations involve alcoholic intoxication, there has been a failure to prosecute in the majority of these cases. This has resulted in communal anger at the lack of enforcement for the anti-social behavior

"The fact remains that the Indian community looks to the Federal Government for the prosecution of serious offenses, and when its not happening, you have, again, this negative impact...that's where the whole problem starts. The mistrust begins at that level, and when you begin to mistrust the police and the criminal justice system, all the other little sections of the wall begin to crumble"  
(U.S. Civil Rights, 1981).

Thus, the examination of aggression and criminality becomes a complex issue. Although it is acknowledged that aggression does exist

and is regarded to be anti-social behavior to most people in the Native American community, the lack of enforcement and control over individuals undermine the stability of the community. Research in this area is sadly lacking.

There is another complicating factor in the Alaska Native population. When alcohol-related violence occurs, members of the community consider drunken offenders less responsible than sober individuals, thus requiring that the enforcement be more consistent and stringent. Where the Western system puts a lot of emphasis on the individual for his deviant behavior, the Eskimos in the two communities studied, have quite a different view. One of the more significant studies is that of MacAndrew and Edgerton (1969), who postulate that drunkenness is a partial "time out" and serves as an excuse for behavior which is normally not sanctioned. The two communities reinforced these concepts and blamed alcohol and inconsistent laws rather than blaming the individual.

Anxiety, Anomie, and Tension. Throughout the available published literature, there are vast differences in emphasis in the approaches to ethnographic studies. Studies of Western societies tend to focus on outcomes, effects or results of drinking and drunkenness. In viewing other cultures, however, social scientists tend to emphasize external causes. The significant bearing of drunkenness is a common and a popular belief that acculturation, culture change, and stress are causes for drunkenness (Berreman, 1955; Graves, 1967; James, 1961). Villagers interviewed as to why they drink all felt that rapid culture change had significant effect on their drinking. Merton (1964) hypothesized that in the cross-cultural person, the tension created by the goal differences and means of achieving these goals were significant factors in Native drinking.

Hugh Brody (1975) points out the classic double-bind the Eskimos of Canada face--paralleling the tension facing the Alaska Natives.

"There is...a striking contradiction between white attitudes toward Eskimo-ness in general and toward Eskimos in particular; all Eskimos are touched with the magic of real Eskimo-ness, although any given Eskimo is likely to be criticized for stupidity, incompetence or delinquency. The source of the contradiction is obvious: the modern individual Eskimo faces to achieve the standard of excellence implicit in the White's ideas of the 'real' Eskimo. A majority of Eskimos, perhaps the vast majority



of them, are therefore from the white point of view deviant in some degree--they deviate from the cannon of perfect Eskimo-ness and fail to live up to part of, perhaps a great part of, the whites accepted stereotype. The paradox is brutal. Whites criticize those who respond to pressures the white's institution are dedicated to exerting."

The literature in this area encompasses many trends. Some research focuses on cultural systems, viewing alcohol abuse as a type of pathology within the culture, while other research view individuals as forms of neurotic responses to stress (Horton, 1943). A danger in viewing other cultures from a psychoanalytic approach which offers solutions for individual drinking habits and problems touches on many diverse qualities and beliefs within a culture which may not be understandable to persons of another culture. The classical psychoanalytic approach, without an understanding of the Alaska Native's cultural expectations of such issues as status, for example, may be inadequate as well as damaging.

Psychiatric studies have claimed that Natives are unable to resolve their "oedipal constellation." Their drinking is reported to be obsessive, compulsive and that the individuals have insufficient ego development. Rather than being perceived as expressions of painful and conflicting experiences, their drinking and alcohol abuse are reduced to character defects indicating inferiority in these races of people (Clarke, 1975; Devereus, 1948; Hippler, 1973).

The most popular hypothesis is that people drink primarily to lessen anxiety, whatever the cause (Lemert, 1962; Kunitz, 1971). From his research on Navaho drunkenness, Graves (1971) summarizes that the wider society within which Indians are trying to survive. His contention is that rather than assisting communities in confronting the issues, the social service agencies are concerned with helping the Natives adjust to their status of inequality and inferiority.

A cry for solutions. Alcohol is such a recurrent problem in Native American history that it has been researched by anthropologists, sociologists, psychologists, historians, medical and public health professionals, social workers, biologists and physiologists. Religionists such as the Jesuits have cited alcohol as the principal reason for their inability to convert the Indian tribes to Catholicism. Destruction of the culture as a result of alcohol abuse is a common belief, yet very little has been said about the impact of other cultural changes which have concurrently affected the Indians.



"Initially, alcohol was introduced to the Indian through the fur trade. However, it quickly came to have far reaching social, economic and political implications for Indians and whites alike. In evaluating its place in history, the popular view has been to stress the role of liquor as the villain and accept the fur trade as an absolute necessity. This is not unexpected since despite the threat of both secular and ecclesiastical punishment ranging from stocks to excommunication, nonetheless efforts to abolish the liquor traffic were unrealistic.

For one thing, without a successful fur trade the solvency of the colony could not be assured. For another, even if the French had ceased to use alcohol in their relations with Indians, there was no agreement with the Dutch or the English that there would not also struggle for the control of North America. The regular distribution of alcohol was a means of maintaining Indian loyalties as well as gaining new friends" (Dailey, 1979).

Mandelbaum points out that "alcohol is a cultural artifact" that form and meaning of drinking alcoholic beverages are culturally defined, as are the uses of any other artifact" (Marshall, 1977). Like other cultural artifacts, the form of use is quite explicit, including roles and role behavior.

While most researchers look within a cultural context for historical uses of alcohol, Lurie (1979) contends that liquor as a cultural artifact has always been closely related in the interaction between whites and Native Americans. Nancy Lurie identifies more clearly the relationship alcohol has played in American history.

"Liquor was more than a borrowed item like steel traps...Generous distribution of liquor was soon discovered to be a good way to do business with Indians. It augured a satisfactory contract for both parties...but, as trade declined, as international boundaries in North America were firmed up to prevent Indians from playing different white nations one against the other, and as severe competition for land set in, the nature of Indian-white relationship changes. Indians still kept their own cultural, social and political counsel, but Whites deemed them a nuisance with nothing to offer in exchange to justify their separate existence" (Lurie, 1979)

Solutions to the problem are complex.\* When the Natives pleaded for restrictions of the liquor trade, they are essentially asking for the restriction of any contact with the whites and white culture. Liquor has come to symbolize the contact with whites and its demoralizing

effects. As with the people in the seventeenth century, the problem persists in its perspective. It seldom occurs to the white man that their way of life and the business practices would have a negative effect on the Native people. For them, liquor becomes the scapegoat (Dailey, 1979).

Yet, the problem is complicated by the values and morality of the issues,

"The question of moral blame here is a very interesting one as it helps us to understand how the Indian could ask the white man to stop supplying him with liquor at the same time as he was drinking it. How can one blame the white man if the Indian sought him out and demanded liquor at any price? Or on the other hand, how can one blame the Indian if the white man continued to supply it even after the former had pleaded with him to stop?" (Dailey, 1979).

Thus, the solutions are piecemeal and have many conflicting issues. The concept of alcohol being the symptom as well as the problem makes it complex and difficult to analyze and rationally prescribe solutions. The discussions of whether the basic objective of governmental policies about alcohol should be to look at minimizing of the alcohol trade and consumption or to focus on the harmful effects of drinking and choices of individual <sup>by one still being debased</sup> (Klaus, 1972).

#### THE ALASKAN CASE STUDY

Historically, alcohol has played an integral part in the development of Alaska since the earliest involvements of the United States. At the time of purchase, the United States was ill-prepared to govern the vast new territory. There was only one U.S. Federal agent in Alaska, a customs agent, who was delegated to enforce the U.S. Federal government's legislation. The Customs Act of 1868 forbade the importation of intoxicating liquor and firearms. Yet, whiskey was sold openly. "Hootch," a local homebrew, was introduced by an American soldier; the soldiers were well known for their abuse of alcohol. Whiskey peddling and fur poaching continued at a rampant rate.

Throughout this time, the United States government remained disinterested and distant about its new territory and did little to assist it. In reality, Alaska was little understood or cared about; it was merely a piece of real estate which had transferred hands. Furthermore, a federal government neither recognized the Indians of the area as members of sovereign nations nor as citizens of the United States.



In fact, the Indians were referred to as "uncivilized Native tribes." They were excluded from citizenship, but subjected to the laws and regulations of the United States. (Arnold, 1978) Another important law passed was the Criminal Code of 1899. Consistent with the problems of today, the issues of law enforcement were intimately related to the need for revenue. Since alcohol was prohibited, there were no opportunities for the sale of liquor licenses. However, Governor Bradley pointed out that revenue from liquor licenses would pay for government administrating costs and give towns a source of income. Congress accepted this recommendation, legalized alcohol, and immediately set up a system of licensing for alcohol as well as other resources. The revenue derived from alcohol was to be used for enforcement of the new criminal code.

Thus, from its early relationship with the United States, Alaska's position has been one of basic dependency on alcohol. As it has been one of the economic necessities in running and maintaining civil and judicial order in the land, the protection of alcohol rights has been a continuing paradox. Though the human and social problems resulting from alcohol abuse have been and overriding concern for the territory, from an economic standpoint, the sale of alcohol has been necessary for its management and control.

Alaska has the fourth highest alcohol consumption rate in the United States as reported in a 1972 study. (Keller, 1972) A comprehensive study conducted by the State Office of Alcoholism, Department of Health and Social Services indicated that the per capita consumption of absolute alcohol in Alaska is very high by both national and international standards. (Kelso, 1975) Given the fact that alcohol consumption is excessive, there is need to call attention to the RATE in order to reduce the prevalence of problems related to alcohol use.

State policies have been more supportive of the expanded economics of alcohol than of its management and control. There are, for example, a large number and variety of outlets per 1000 persons in Alaska than in most other states; there are only about half as many people for each license in Alaska compared to the national average. Furthermore, there are fewer hours of prohibited sales than in most states.

The state has also been supportive of liquor usage by creating the advantage of favorable taxation for the liquor industry. State and federal taxes account for 50-75 percent of the price of alcohol. In Alaska the state excise tax on alcohol has not changed since 1961.



The relative price of beverage alcohol rose by .3 percent during 1970-75, while consumer relative price for all other commodities increased 41.2 percent.

Within this context, is the negative consequences of alcohol use. Village Alaska has the highest rates of alcohol-related problems in the state of Alaska. While the total adult population of rural districts in Alaska represents only ten percent of the state adult population, 35 percent of the accumulated impact incidents occurred in the rural districts. Crime rates are extraordinarily high. In a comparison of Alaska Villages, Alaska statewide and the United States crime rates, the Alaskan villages suffer from their experiences with alcohol.

Table 1

COMPARISON OF ALASKA VILLAGES, ALASKA STATEWIDE AND  
UNITED STATES CRIME RATES

| CRIME              | Alaska Villages | Alaska Statewide | United States |
|--------------------|-----------------|------------------|---------------|
| Homicide           | 28.4            | 10.8             | 8.8           |
| Rape               | 99.2            | 51.6             | 26.4          |
| Robbery            | 127.6           | 96.8             | 195.8         |
| Aggravated Assault | 326.0           | 284.0            | 228.6         |
| Burglary           | 936.8           | 1331.7           | 1439.4        |
| Vehicle Theft      | 446.5           | 3369.8           | 2921.3        |
|                    |                 |                  | (Conn, 1980)  |

The communities from which information for this study is gathered are both Eskimo villages along the Yukon-Kuskokwim Rivers. The villages are isolated in a sense that there are no roads and that all travel is by aircraft, riverboat or snowmachines during the winter.

The everyday, well accepted conveniences of most Americans such as sewer systems, running water, centralized heating systems do not exist in these villages. Communications with the other villages is generally with a CB radio although both villages now have telephones, the rate of malfunction because of environmental issues makes it unreliable as a means of communication.

Only within the past few years have there been high schools in these communities. Previously the residents were required to board in neighboring communities where there were regional high schools available, or

were sent to schools in the "lower forty-eight". In both of these communities, English is the second language, and Yu'pik Eskimo is the primary language.

This paper examines three institutions--the village council, the magistrate system and the police force which have the responsibility for the management and control of alcohol use and abuse.

Village Councils. The village councils were the major institutional governing bodies (Hippler and Conn, 1973, 1975). During that time, other institutions like the police, judges, and mayors were non-existent. The village council played major roles in not only enacting ordinances, but were responsible for meting out justice in order to maintain social control.

The councils were concerned about the increasing incidences of crime, abuse, and deaths resulting from alcohol abuse. Thus in 1962, the Association of Village Councils (AVCP), an entity made up of 57 villages of the Yukon-Kuskokwim Delta, gathered "to discuss the interplay between state law and traditional social control meted out by village councils as they dealt with alcohol-related problems."

The official law through the state was in its very primitive stages. The only representation of the legal system was a single state trooper stationed in Bethel, with jurisdiction over a region of 90,000 square miles. A magistrate was appointed for the same region, and otherwise official judges and lawyers flew into the region periodically to deal with felonies.

The 1962 meeting brought about testimony for the need of a more uniform legal system within this region. It was the first attempt for village leaders to discuss common problems. The purpose was to standardize the village council rules, but more importantly the concern was in the problem of making and drinking homebrew in the villages.

Ironically, the greatest concern for the villagers--homebrew, was not a concern for the state. The state trooper reported that from the state's perspective on homebrew, he would be unable to assist the village, unless homebrew was made for resale. One who brews for one's own consumption is within the bounds of the state law, thus the state could not assist the village ordinances.

The conflict was obvious, yet the state was unsympathetic to the needs of the village. Though the villages legally could not have ordinances which conflicted with the state law, the magistrate recommended that the villagers make their own rules and make their

own punishment. (Transcript, Conn, 1982). However, should their ordinances be violated there was no recourse for more severe penalty from the state.

Further, it was clear that the state's interest was merely the criminal aspect of drinking behavior, they were not available to assist villages in service or in preventative measures. It was emphasized also at that meeting that if the village laws were not unified with the official law, and if they, the leaders, chose to enforce their own laws, they were vulnerable to lawsuits! Thus, on one hand they were encouraged to make their own laws, but were also told that they could be punished if they did so.

The implication of these actions were evidenced in the records of the village of Seaside, a coastal village of the Delta. The governmental powers were further diluted in this village. The governance of the village is divided between the traditional council (IRA) and the city council. The traditional council often set policy and sought funds from the federal government through the Bureau of Indian Affairs. The city council functioned to translate village consensus into statutes and ordinances for self governing. The city council is governed by the state's second class structure. State revenue sharing and grants from state and federal agencies are used to hire staff and run programs.

For purposes of this research, the council minutes were analyzed primarily to determine how policies and practices about alcohol were developed. In 1976, members from the Regional Health corporation approached Seaside and suggested that there might be funds to support an alcoholism program. The council would have two trained employees to work within the community. The program stressed problems with youth and their apparent lack of constructive activities.

During the same period of time, the council wrestled with the problems of disruptive alcohol behavior. Although village ordinance reinforced regulations to maintain a dry community, there were many people continually bringing alcohol into the village. The council was concerned about intoxicated people driving snowmachines in the village and the dangers of such action. The village had adopted an ordinance about operating a vehicle or boat under the influence of alcohol, however, there was no clear-cut penalty or redress for such behavior nor were there the institutional supports to enforce the ordinances.



The set of rules proposed for the village was more in keeping with the state laws. They dealt with the consequences of alcohol abuse, and alcohol usage, but there was little done for preventative measures. Two ordinances addressed the issue of alcohol and minors, and four rules dealt with alcohol-related conduct, but there were none associated with drinking. There were no rules provided to help keep alcohol out of the village, to prevent sharing of alcohol with those known to be violent, to prevent making home brew. Preventative measures were non-existent in the ordinances. (Appendix 1)

In its dual role as a judicial and an executive body, the council listened to problems brought before it about stealing, drinking, and gambling. The conflict between the role of the council and the expectations of the people about the council created a number of problems. It was recorded in the council minutes, "People have their eyes on the council and are ready to criticize them." The double-bind created by the state was eroding the trust and respect of the village leaders.

In 1977, the subject of alcohol and its problems were still priority issues at the council meetings. A village sleep-off center was proposed. There was increased concern about bootlegging of alcohol. The major concern about alcohol was that the airlines continued to bring alcohol in, despite the village ordinance supporting a dry village. Since alcohol was considered low priority freight, it would remain in Bethel until there was enough freight to merit a trip, and then alcohol shipments would come into the village in large quantities. The individuals' rights to order alcohol was protected by state and federal laws, disregarding the village laws and ordinances. The village councils attempted to stop alcohol from entering the village, but these attempts were met with disapproval from the state laws. They were again not supported.

The conflict of laws created atmosphere of ambivalence and distrust. The council was unable to remain united in its efforts to control alcohol. The council minutes of November 8, 1977 read, "Council members fighting among themselves wanting to keep booze in the village." Also a community member epitomized the distrust and confusion in this statement:

"I don't like people or councilmen  
who do nothing about drinking here. Some  
drink who are supposed to be helping.  
Ordering should be stopped by people or the  
company should quit accepting the orders.

Who can help? The people who are councilmen, alcohol program people, or the people themselves?" (interview of villager)

Unable to limit the obvious source of alcohol, the council found themselves in a peculiar position. When interviewed about the solutions to problems of alcohol, the mayor in great frustration responded,

"What solutions??? We vote ourselves dry, we tell the airlines people to make sure no one brings booze in the village. Troopers tell us we cannot do that. What solutions!!! How can we come with solutions when the airlines keep bringing in the booze."

The council then decided to provide money to purchase "booze" in order to find the bootleggers. Ordinance was strong on out-of-town violators, who would be kicked out if they didn't leave voluntarily.

Yet, the problem was not under control. By the end of 1977 the council recognized that the alcohol issues was one with which all villages needed to deal, but one in which they felt every avenue was blocked by the legalities of the "official" laws.

"All bad things come to all villages. If people work together, this can be solved. The future of the village lies with the councils, if the council just sits back and enjoys the trouble, the village will head for trouble. If we want a trouble-free village, we have to work together." (Council minutes 12/12/77).

This was not an easy task, as every step of the way seemed to be met with roadblocks and problems. Every solution they tried to meet their village needs, seemed in conflict with either a state or federal law or policy.

The conflicts of the roles of the council was evidenced in the issue that was brought before them at the same meeting. An uncooperative young man was brought before the council by his parents. In keeping with the preventative nature of the council's interest in the community members, they listened to the parents and admonished the young man about his role and place in the community. However, the council was essentially powerless. In the past, if the young man had failed to comply with the wishes of the council, he could have been banished, a severe consequence. However, at this time, the admonishment did not have any legal redress nor any strong informal consequence.

There was no official law to support the council, and the village authority was sufficiently eroded to be ineffective.

While the council continued to wrestle with enacting community wishes into laws, they were well aware of its limitations and the continual erosion of their respect. Many persons questioned the enforcement of council rules and the repeatedly broken laws. State troopers and law agents did not assist the councils and the authority of the council was under question. Unable to deal with the inherent conflict, citizens in the community suspected the competency of their elected officials, and criticism of the council was common.

Riverside, a village seven miles by river from Bethel, had a longer history of contact with alcohol. However, their governmental structure gave them a much different approach to the enforcement and control of the use of alcohol.

The village council early on recognized the problems with the many new and changing rules entering the villages. They were being bombarded with governmental systems and advisory organizations being demanded by the state and federal agencies. Methodically, the council met and agreed that the burdens were being spread out, thus they viewed the council like a yoke to be able to carry many demands and burdens imposed on them. The council was representative of all the major organizations and families. Thus, they were able to maintain consensus and support for the village rules.

Where Seaside demonstrated ambivalence, confusion and hostility toward the council members, Riverside exhibited support for the ordinances and the leadership. The rules were clear and were well supported, even by the offenders.

Though the village ordinances essentially were the same, the council responded in a more unified manner. When someone within the village brought alcohol in or was known to drink, members of the council who were family members, would talk with the person. The concept of "respect" and "care" was continually emphasized. Offenders of the liquor ordinance was forced to face the city council as well as to the alcohol counselor.

The villagers respected the ordinances, and though they had no support from the state, they maintained strict control over the local ordinances.



They were close to Bethel, and thus they were able to appeal to the flight services not to deliver people who had been drinking or to help bring alcohol to the villages. The council's unilateral agreement on these ordinances and their proximity to Bethel, made this more feasible. The unified actions of the council made for success in carrying out the enforcement of their ordinances.

MAGISTRATE. "The role of the council began to disintegrate when the state introduced the magistrate court to rural Alaska" (Case, 1977). Awareness of the formal processes by community members through education and litigation resulting in the Land Claims Settlement Act heightened knowledge that the village council ordinances had little authority to enforce local laws.

As the council saw their powers eroding, realizing that they had many ordinances which were essentially unenforceable, many villages looked to the magistrate as a solution to their problems. In fact, the magistrate system added to the problems.

Traditionally, the village council was empowered with the executive, judicial and legislative powers. With statehood, a number of changes came about. The councils no longer were able to carry out it's judicial functions.

Heightened awareness of the formal judicial processes caused villagers to doubt the legitimacy of the village council to enforce the village ordinances. Without the respect or acceptance of the council's powers, it left the villages without a formal court process and essentially left villages devoid of any judicial process.

Further, Alaska is unique in that it does not have any legal process or means to allow local governments to establish local courts. The legislature, however, created District courts with district judges who were law trained and magistrates, most of whom were not law trained. The magistrate's authority was to "hear, try and enter judgment in all cases involving violations of ordinances of political subdivisions" (AS 22.15.120 (7)).

It became apparent that the role of the council began to disintegrate when the state introduced the magistrate court to rural Alaska (Case, 1977). With the judicial powers divided, the governing of the villages became more and more difficult. "Of the 215 villages in Alaska, only approximately 50 have the services of a part-time or full time magistrate. The remaining 165 villages have no means to judicially enforce their ordinances (Case, 1977).

Riverside is one of the villages without a magistrate. The council therefore found themselves forced to exercise administrative and judicial powers. Though they applied and continually sought to have the magistrate in their village, in fact, the council maintained better control of the village without that institution.

Seaside, however, works in two systems. Neither, however, are complete nor are they integrated. There are no clear-cut guidelines for the communities as to their respective functions or how they relate to each other. The undefined lines of authority have kept both the magistrate and the council from fully exercising their roles.

The council in its traditional role had brought before it issues for intervention. Misconduct, poor citizenship, disrespect for family are some issues brought to the attention of the police and the courts and council. This capacity to discover and treat problems before they become deviant or violent has been the essence of the Eskimo village justice system. Restitution could also be dealt out with the individual in mind, within their system.

However, the Western system worked separately from the Eskimo village council system and, in fact, gave little heed to it or attempts to integrate the two. The magistrate in the village is a resident who is appointed as a lay judge of limited jurisdiction by the presiding judge of the Superior Court in each judicial district. That person's appointment is not subject to any kind of formal approval by any of the other village governing bodies.

The jurisdiction of the magistrate is to preside over cases arising from violation of local ordinances passed by the village council. He or she can also sentence defendants who plead guilty to state misdemeanors or hear state misdemeanor cases when the defendant consents. Finally, he or she has jurisdiction to hold preliminary hearings to see if an arrested person should be bound over to Superior court on a felony charge and to see if the state can show probable cause from admissible evidence.

The civil jurisdiction of the magistrate is limited to small claims of \$1000 in damages or in property loss. The magistrate also performs various administrative duties as coroner, record keeper of vital statistics, notary public, performer of marriages, and custodian of the property of deceased persons (Hippler & Conn, 1973).

There is little training for the magistrate, and what training had been available has focused on bureaucratizing the position, rather than in seeking ways to fit into a comprehensive governmental system within a community. Though there is a magistrate, the other supporting functions and positions such as the attorney, public defenders, and paralegals are not available for Seaside.

Magistrate and former magistrates interviewed revealed that much of their information and direction was sought from Bethel, Anchorage or Juneau. Council minutes reflect the magistrate's attempts at integrating the council and the judiciary but with little success. The magistrate on a number of occasions approached the Council and asked that there be a closer working relationship between the two institutions. Though there was agreement that it would be more effective to work together, the inherent weakness in both institutions seemed to prevent any comprehensive changes.

Community members further indicated that there was no place to get legal advice, and that there were no lawyers traveling to the villages. The closest contact for legal assistance was in Bethel.

Further, even with the youthful population of Seaside, there has been little attempt on the part of the State to assist the council in viewing corrections and juvenile law. In the case of drinking offenses, people are generally sentenced and released on their own. Magistrates comment that the same people appear before them repeatedly with very little being done to assist them in terms of long-term treatment or cure. This inoperative correction system compounds the problems created by alcohol. Past magistrates interviewed felt they were subjected to unusual pressures and often found themselves feeling blamed for the fact that the system was not workable.

"In recent years, the improved application of American due process rights and criminal justice procedures have made it increasingly difficult for the Troopers to comply with the expectations of residents of Native Villages. Even when Troopers remove the accused, he is frequently released without bond and freed to return to the village. This practice is usually neither understood nor approved by the people in the communities. They attribute it to lenient judges. It has led to the creation of demands for heavier sentences for people who have been turned over to Troopers (Conn, unpublished).



Furthermore, the courts fail to inform the community as to the sentence of the defendants. When trials are held outside the communities, it is not clear that "something" has in fact taken place. Someone who may have been violent during a drinking episode is feared and those who referred them to the police officer fear the retaliation for their action. Thus the erosion of trust in a system repeatedly demonstrated. As stated in the case of U.S. vs. Mazarie, when distrust begins in those areas where safety and trust is paramount, the whole system begins to fall apart.

POLICE. In the enforcement of the ordinances, the police had the power to enact and enforce laws and relations requiring each person to conduct himself and use his property in such a way that he is not a danger to himself or others. Thus of the municipal powers which were classified governmental, the police power was the broadest. It was the essence of the ability to govern locally (Case, 1977).

On the local level, however, the police was not highly organized or supported. Funding was always tenuous, generally short term, and the pay rate was less than the average jobs pay in the community. In spite of the broad powers available to them, the local police officer was not held in high esteem.

In the enforcement of the ordinances, the police had the power to enact and enforce laws and regulations requiring each person to conduct himself and use his property in such a way that he is not a danger to himself or others. Thus of the municipal powers which were classified governmental, the police power was the broadest. It was the essence of the ability to govern locally (Case, 1977).

On the local level, however, the police was not highly organized or supported. Funding was always tenuous-the positions were generally paid by CETA or funds from revenue sharing. The positions were generally short term, and the pay rate was less than for average jobs in the community. In spite of the broad powers available to them, the local police officer was not held in high esteem. Though the police was considered paramount in the stability of the community, the state gave little assistance in making that arm of government functional.

The position of the police officer in Seaside was faced with many conflicts. There was little contact with the state trooper or other enforcement people. There were high incidences of violence reported in the village. A police trainee reported that "he received very

little help from the Council and he was afraid to do much on many occasions due to inadequate equipment and size sufficient to defend himself in violent situations (Conn, 1973).

The police officers were placed in a no-win situation. They were given little training to be a police officer, and they lacked institutional support in the form of lawyers, paralegals, judges or other police officers or enforcement personnel. They felt strong in their desire to serve, however they had little or no means to do more than imitate the profession they emulated, given the lack of training, support and even hostility which they encountered in their village.

Drinking among the police officers was not uncommon. Men on the police force faced tremendous social and cultural pressures in their role as a police officer. The pressures on the young police officers to drink and join their peers were immense, especially given their low status. The choice between their temporary employment and long time friends, relatives and hunting partners was not an easy choice. Further, in a community where alcohol rules were confused and ambivalent, the police officer was under a lot of criticism. They were left to individual decisions in enforcing the ordinances totally unsupported. Their lives and the lives of their family were often threatened by intoxicated community members.

The police powers, with its nature being incomplete, has further considerations as well as reviewed at the Bush Justice Conference:--

"More seriously, however, is the state's responsibility to provide legal assistance to support the local ordinances. For example, A.S. 28-35-040 and 28-35-045 which relates to reckless and negligent driving respectively may be important in enforcing the drinking and driving both automobiles and snowmachines. The communities, however, may lack the necessary scientific equipment (breath analyzers) to have sufficient proof to change. Furthermore these ordinances at the local level have little power as the ordinances being "consistent" with state statutes (Title 28) requires imprisonment as possible punishment. Such action requires the municipalities to provide for an attorney and small rural communities would be financially unable to do so. Basic legal services such as lawyers, are unavailable to the residents of rural communities. (Case: Bush Justice Conference)

Furthermore, in terms of providing protection, the state police has not been of great support to the villages. It is clearly understood by anyone living in rural Alaska that it does not take many

people to keep the community in flux. Conn survey estimates the police response is inordinately unrealistic. As seen in the table below-- what urban Alaskan expects and receives in terms of police protection is enjoyed only by 7% of the rural Alaskan population.

Table II

| Time require                 | Estimated calls completed | Estimated police response |
|------------------------------|---------------------------|---------------------------|
| Less than $\frac{1}{2}$ hour | 67%                       | 7%                        |
| $\frac{1}{2}$ to 1 hour      | 20%                       | 10%                       |
| 1 to $5\frac{1}{2}$ hour     | 7%                        | 19%                       |
| 1 to 3 days                  | 0%                        | 47%                       |
| over 1 week                  | 5%                        | 10%                       |

(Conn: 1980)

In most urban areas, it is estimated that a police officer responds to calls within the half hour. In the rural areas, the responses took much longer.

Local officials estimate fourteen percent of the requests for police services from outside the community require more than an hour to complete. Many calls are made by telephone or radio, but often requests are sent by mail planes. Villages such as Seaside face additional problems of inclement weather.

In my field work, I was in a village where a drunken spouse was being violent. The woman and her five children fled from house to house looking for a place to stay. Many residents were reluctant to help as their own lives would be in danger as well. They finally came to the home where I was the guest. The children were put to bed and we sat in a darkened house, frightened by every sound of a snow-machine going by. Two women went to the phone house to place a call. The first response was that the state trooper's office was closed in the evening so they would have to call on the following day.

The night was filled with anxiety of danger as the drunken spouse pounded on the door of the house and threatened to shoot the door down. There was no safety nor any way to gain public safety. The terror of the evening was unbelievable.

Early the next morning the two women stole out of the house to place their calls. This time the trooper took the information and stated they would fly out to apprehend the drunken spouse. The terror continued.



By noon, the trooper called to say that the weather was bad and he would be unable to arrive that day. The trooper arrived three days later. The drinking had stopped, the wife and children, no longer able to impose on friends and relatives returned to the home with the spouse. There were no arrests, no charges pressed by anyone.

The description of this experience is one repeated many times in the rural villages. There is, in many villages, no public safety. Entire villages have been terrorized by drunken residents. Yet, the state--its legislators, the bureaucrats, the executives, faced with high costs to provide this service to communities continually turned a deaf ear or worse, blamed the communities for the lack of law and order.

The State of Alaska has given "Alaskan municipalities regulatory powers over 'dangerous and disorderly conduct' and other powers and functions affecting the general health, safety, well-being and welfare of their inhabitants." (Case, 1977) It is obvious from minutes of councils that the state has turned over that responsibility to the municipalities and has done little to ensure that the rural communities are, in fact, safe.

In order for "local control" to be meaningful, the second class citizen must be able to punish violators of local ordinances. Without the needed institutional support, the government of the local communities has been greatly undermined.

The research of the governmental structures of the villages has shown that the communities are always held in a double bind. If they through their council enacted laws to govern their communities in a responsible way, they were in conflict with the state or federal laws. If they tried to institute new and changing laws dictated by the state and federal governments, the communities found that they were lacking elements of the supporting institutions which made them ineffective again.

Throughout this situation, the state unable to comprehend the plight it is causing, continues to ignore the basis of the problem and provides piecemeal solutions, further exacerbating the problem of alcohol management in rural communities.

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# Suicide In Northwest Alaska

Robert Travis

## Abstract

*Self-destructive behavior is an acute social problem in Northwest Alaska. In particular, the Alaskan Native suicide rate in the NANA region is more than seven times the national average. Alienation, loss of family, low income, alcohol abuse, high unemployment, and more education are shown to be factors related to suicidal behavior.*

Previous work on socio-cultural change indicates that not all Inupiat in Northwest Alaska have benefited from oil and gas development (Kruse, Kleinfeld, and Travis, 1982). In comparison to the North Slope region (which has greatly benefited), median family income in the NANA region is \$17,750, only 55% of North Slope Inupiat families (U.S. Bureau of the Census, 1980b). Suicide in the poorer NANA region is more than three times the rate in the North Slope.

Alaska Native suicide is a contemporary problem that has emerged since 1965 (Kraus & Buffler, 1979). Suicide in the older Native age groups now appears to be declining in Alaska, while the increase in suicide is accounted for by the young, with the age cohort 20-24 at highest risk. Moreover, Kraus and Buffler observe that the Alaskan Native suicide rate is at variance with the Alaskan Non-Native and U.S. population patterns, where the incidences of suicide increase steadily with age. They also found that increasing numbers of young women are committing suicide.

In Fairbanks, Alaska, Parkin (1974) observes that while Eskimos make up only 2.6% of the urban population, Eskimo females account for 21% of the suicidal females for the period from 1960 to 1971. Although drinking was involved in only 13% of white female suicidal acts, 43% of Alaskan Native women's attempts involved

alcohol. Regarding acculturation stress, Parkin argues:

In coming to Fairbanks or any other city, many (Alaskan Natives) are faced with the problems of acculturation, prejudice, limited skills and job opportunities, and a general inability to cope in a cash-based economic system. This is not to deny the success which many natives do achieve but is intended to point out that a great many natives are disadvantaged when they move into an urban environment (1974, p. 64).

In work done elsewhere on other Native Americans, Resnik & Dizmang (1971) maintain that social disorganization, geographic isolation, parental loss and high incidence of alcoholism, all characterize Indian reservations showing the highest rates of suicide. Apparently "the ultimate culprit is the school system" because Indians are most often educated by non-Indians "in schools where the skills and values of the majority culture are taught" (Resnik & Dizmang 1971, p. 61). In the end, the Indian adolescent has a double identity crisis - the expected adolescent

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turmoil, plus a cultural crisis. Indian youth frequently cope with it all through alcoholism, violence, accidents, and suicide.

Among the Navajo, those who attempt or commit suicide tend to be the more acculturated (Miller & Schoenfeld, 1971). Only 17% of these Navajo came from a traditional background. In 56% of the cases the suicidal act was precipitated by a quarrel with a spouse, relative, or boy/girl friend. Alcohol abuse was striking: 74% of the suicidal acts by men were alcohol-related, while only 16% of the suicidal acts by women were. The authors conclude that Native American culture does not play a significant role in suicidal behavior: "If culture plays a part, we suspect it is the culture of a socio-economically depressed group, rather than anything specifically Indian or Navajo" (Miller & Schoenfeld, 1971, p. 193).

Navajo suicide, moreover, predominates in the 25-39 year age group, with suicide decreasing rapidly with advancing age (Levy, 1965). The most frequent motives for suicide are marital stress and extended family discord. Only 47% of Navajo suicides for the period 1954-1963 were alcohol-related. Further, the more traditional Navajo communities have suicide rates far below the national average, while the more acculturated have rates considerably above that of the nation. Levy concludes that Navajo suicide is a symptom of anomie, stemming from lack of social integration of males in the matrilineages of their wives and the competing demands of the cash economy.

In another Southwest American Indian reservation, Miller (1979) observed that "lack of meaningful work may have been a significant source of disappointment and frustration for many of these young suicides" (p. 16). Among the Pacific Northwest Indians, Shore (1975) found that 75% of the completed suicides were alcohol-related. For the attempted suicides, 49% involved drug overdose. Moreover, suicide attempts occurred in clusters among extended family or high risk groups. This suggests that completed suicides and suicide attempts are a learned pattern of self-destructive behavior within extended peer or family groups (Shore, 1975).

## Method

This exploratory study focuses on suicide in a remote Alaskan village. Kotzebue is a village of about 2100 located some 30 miles north of the Arctic Circle on the Northwest coast of Alaska. It is the largest village in the NANA region, one of 12 Alaskan Native regions.<sup>1</sup> The village itself is fragmented into two halves - old town and new town. Old town, with its many jerrybuilt homes, reminds one of shanty towns in the Third World. New town, with its government financed new homes, symbolizes the growing spirit among the Inupiat themselves.

The population under study includes those who committed suicide in this village and those who attempted suicide for the period 1977-1980. Four categories of suicidal behavior are represented: suicides, unsuccessful suicides, suicide attempts, and suicide gestures. Suicides reflect those who fully wished to die and who committed suicide. Unsuccessful suicides represent those who fully wished to die, but who were prevented from committing suicide through community intervention. Suicide attempters reflect those who attempted suicide but who did not wish to die. Lastly, suicide gesturers represent those who only ideationalized about suicide.

Data were collected from a variety of resources. U.S. Public Health Service Hospital records in Kotzebue were the primary source of information. These were supplemented by Kotzebue Police records and personal interviews. Because the community is small it is reasonable to assume the coverage is nearly complete. For one thing, Alaska Natives are more apt to trust U.S. Public Health Service Hospitals than any other institution in Alaska (U.S. Department of the Interior, 1973). Thus, Alaskan Natives are not reluctant to seek medical attention for their attempted suicides.

In all, 119 cases of suicidal behavior are reported on, three of which are Non-Natives and 16 of which are repeated incidences. Eight

<sup>1</sup> NANA, or the Northwest Arctic Native Association, is one of 12 Alaskan Native regional corporations created by the Alaska Native Claims Settlement Act in 1971. This Act of Congress provided for regional corporations to manage, protect, and convey Alaskan Native lands.



percent of the cases are suicides, 15% are unsuccessful suicides, 58% are attempted suicides, and 19% are suicide gestures. Ages span the range from 9 to 61, with an average age of 22.5. Females make up 57% of the study population.

## Results

Native suicide in NANA stands at 90.9 per 100,000 for the period 1975-1979 (Table 1), a rate which is seven times the U.S. national average. Furthermore, this rate is between 1.7 and 5.8 times higher than the rates of Native suicide in other Alaskan Native regional corporations. Even more important is the fact that the suicide rate in this region increased substantially over the course of the decade.

In contrast, no Native suicides occurred in this region during the period 1960-1964, while the Native suicide rate registered only 11.9 per 100,000 for the period 1965-1969. As such, suicide is a contemporary problem in Northwest Alaska. For the period 1965-1979 fully 90% of all Alaskan Native suicides in this region occurred among those 15-34, with no suicides occurring among those 45 years or older. Thus, suicide, once a rare phenomenon in the life of Alaskan Natives, now appears to be almost an everyday occurrence, particularly for youth and young adults.

The average age for suicidal behavior in Northwest Alaska is 22.5, with only a slight difference between males and females (Table 2). Fully 78% were unemployed at the time they engaged in self-destructive behavior: this is in contrast to an unemployment rate of only 22% throughout the region in 1980 (U.S. Bureau of the

Table I  
Suicide Death Rates of Alaska Natives  
by Regional Corporation and Five Year Intervals: 1970-1979  
(per 100,000 population)

| Regional Corporation | SUICIDE RATE |           |             |
|----------------------|--------------|-----------|-------------|
|                      | 1970-1974    | 1975-1979 | Rate Change |
| Aleut                | -            | -         | -           |
| Arctic Slope         | 6.8          | 26.3      | +287%       |
| Athna                | 44.7         | 41.4      | -7%         |
| Bering Straits       | 82.8         | 52.6      | -36%        |
| Bristol Bay          | 17.5         | 15.8      | -10%        |
| Calista              | 15.4         | 24.9      | +62%        |
| Chugach              | 93.9         | 37.4      | -60%        |
| Cook Inlet           | 23.5         | 50.0      | +113%       |
| Doyon                | 47.8         | 40.8      | -15%        |
| Koniag               | 22.8         | 21.5      | -6%         |
| Nana                 | 59.6         | 90.9      | +53%        |
| Sealaska             | 26.0         | 39.1      | +50%        |

SOURCE: Alaska Department of Health and Social Services, Office of Information Systems; U.S. Bureau of the Census, 1980 Census of Population and Housing (Advance Report) (a).



Census 1980b).<sup>2</sup> There are no differences in unemployment between the sexes, even though males tend to be significantly better educated than females. Moreover, the median level of educational attainment is 11.5 years for those 25 or older and this contrasts with an educational attainment level in 1980 of 11.0 years for those 25 or older throughout the region (U.S. Bureau of the Census, 1980b).

<sup>2</sup> The unemployment rates for Alaskan towns and villages in 1980 are based on a "floating" reference week rather than a fixed reference period. Therefore, the U.S. Census rates are only crude indicators of unemployment. In the case of Kotzebue the U.S. Census rate covers the months February to June.

Males are significantly more likely than females to have never married. Both rates are high though, suggesting a lack of integration into the traditional family-oriented Inupiat culture. As regards to the job market, a lack of integration likewise exists there: the greater majority of both sexes do not have an occupation. This apparently explains why over three-quarters of suicidal males and females live on annual household incomes of less than \$10,000. Lack of high school education, lack of an occupation, and alcohol abuse are three factors apt to work against achieving a viable economic existence, especially in a region where employment is seasonal and difficult to obtain.

**Table 2**  
**Selected Characteristics of Suicides and Suicide**  
**Attempters in Northwest Alaska by Sex**

| Characteristics                     | SEX  |        | Significance                             |
|-------------------------------------|------|--------|------------------------------------------|
|                                     | Male | Female |                                          |
| Age                                 | 23.2 | 22.0   | N. S.                                    |
| Education                           | 10.5 | 9.5    | $F_{96}^1 = 5.74, p = .02, \eta^2 = .24$ |
| Unemployed                          | 75%  | 82%    | N. S.                                    |
| Never Married                       | 92%  | 77%    | $X_1^2 = 3.86, p = .05, T_b = .21$       |
| No Occupation                       | 61%  | 79%    | $X_1^2 = 3.54, p = .06, T_b = .19$       |
| Acculturation (Median Months)       | 6.8  | 4.6    | N. S.                                    |
| Annual HH Income Less than \$10,000 | 77%  | 88%    | N. S.                                    |
| Alcoholic or Alcohol Abuser         | 77%  | 65%    | N. S.                                    |
| Residence: Kotzebue                 | 62%  | 66%    | N. S.                                    |
| <b>Lethality</b>                    |      |        |                                          |
| Drug Overdose                       | 39%  | 77%    |                                          |
| Gunshot                             | 20%  | 3%     | $X_9^2 = 26.07, p = .002$                |
| Cut Wrists, Stabbing                | 22%  | 11%    | $T_c = -.43$                             |
| Number of Cases                     | (51) | (68)   |                                          |

SOURCE: U.S. Public Health Service Medical and Counseling Records, 1977-1980; Kotzebue Police Records, 1977-1980.

There are no great differences in time of year when suicide behavior occurs. This suggests that the suicidal act is not affected by economic trends and is probably so because most suicides and suicide attempters are outside the job market. Moreover, few are acculturated to life outside the region and this suggests that equally few are

equipped to deal with life in the dominant, secular culture - a culture which more and more engulfs Inupiat life in Northwest Alaska.<sup>3</sup>

<sup>3</sup> Acculturation is measured by counting the number of months the subjects lived outside the region prior to committing suicidal acts.

Table 3

**Selected Characteristics of Northwest Alaska Suicides and Suicide Attempters by Type of Suicidal Behavior**

| SUICIDAL BEHAVIOR                             |                                         |                           |                                        |
|-----------------------------------------------|-----------------------------------------|---------------------------|----------------------------------------|
| Characteristics                               | Suicides -<br>Unsuccessful <sup>a</sup> | Attempters -<br>Gesturers | Significance                           |
| Male                                          | 58%                                     | 36%                       | $X^2_1 = 3.86, p = .05, T_b = .19$     |
| Age                                           | 22.3                                    | 21.7                      | N. S.                                  |
| Education                                     | 10.8                                    | 9.6                       | $F^1_{91} = 7.16, p = .008, eta = .27$ |
| Unemployed                                    | 73%                                     | 84%                       | N. S.                                  |
| Never Married                                 | 81%                                     | 86%                       | N. S.                                  |
| No Occupation                                 | 62%                                     | 75%                       | N. S.                                  |
| Acculturation <sup>b</sup><br>(Median Months) | 10.5                                    | 3.4                       | $X^2_1 = 3.61, p = .06$                |
| Annual HH Income<br>Less than \$10,000        | 88%                                     | 84%                       | N. S.                                  |
| Place: At Home                                | 56%                                     | 51%                       | N. S.                                  |
| Residence: Kotzebue                           | 44%                                     | 68%                       | $X^2_1 = 4.80, p = .03, T_b = -.21$    |
| Alcohol-Related                               | 76%                                     | 89%                       | N. S.                                  |
| <b>Lethality</b>                              |                                         |                           |                                        |
| Drug Overdose                                 | 46%                                     | 67%                       |                                        |
| Gunshot                                       | 31%                                     | 5%                        | $X^2_1 = 25.98, p = .002, T_c = .21$   |
| Cut Wrists, Stabbing                          | 8%                                      | 18%                       |                                        |
| Number of Cases                               | (26)                                    | (86)                      |                                        |

a. Includes Suicides and Unsuccessful suicides.

b. Median Test for significance.

SOURCE: U.S. Public Health Service Medical and Counseling Records, 1977-1980; Kotzebue Police Records, 1977-1980.

## SUICIDE

A fair number of those who engage in self-destructive behavior (36%) come from the smaller villages in the region. Many come to relieve stress in their lives and to "run free". However, anomie seems to run generally throughout the study population, since 71% of suicides and suicide attempters are alcoholics or alcohol-abusers.<sup>4</sup> No doubt social ties are difficult to maintain when alcohol assumes such a large part of one's life.

Evidence exists to show that drug abuse is the primary method that females use to commit suicide, while drug abuse, gunshot, and cutting one's wrists or stabbing one's self are the major means males use to harm themselves. Among all

suicide individuals though, gunshot is more likely to be used to harm one's self if one is serious about committing suicide, while drug abuse is a significant factor if one is not as serious in committing suicide (Table 3).

Males tend to be concentrated in the suicides - unsuccessful suicides group, while females are concentrated in the suicide attempters - gesturers group. The overall suicide attempt to completed

<sup>4</sup> An alcoholic is defined as being intoxicated with problems more than 6 times a year (problems may be legal, medical or family). An alcohol-abuser is defined as being intoxicated with loss of control between two and six times a year (loss of control may refer to blackouts, drinking to get drunk, going on binges, or fighting while drunk).

Table 4

Partial Correlations between Suicidal Behavior in Northwest Alaska and Degree of Acculturation, Sex, Residence, and Education, Controlling for Selected Characteristics

|                                     | Partial Correlations<br>(Listwise Deletion) |        |           |              | Number<br>of<br>Cases |
|-------------------------------------|---------------------------------------------|--------|-----------|--------------|-----------------------|
|                                     | Txy                                         | Txy .1 | Txy. 1, 2 | Txy. 1, 2, 3 |                       |
| <u>Suicidal Factor <sup>a</sup></u> |                                             |        |           |              |                       |
| Suicide with Accult                 | .007                                        | -.013  | -.131     | -.129        | (87)                  |
| Suicide with Sex                    | .096                                        | .096   | .008      | -.024        | (86)                  |
| Suicide with Reside                 | .216*                                       | .215*  | .163      | .163         | (86)                  |
| Suicide with Educ                   | .283**                                      | .300** | .267**    | .249**       | (86)                  |

a. Suicide with Degree of Acculturation, controls are:

(1) age, (2) education, (3) sex.

Suicide with Sex, controls are:

(1) acculturation, (2) education, (3) drug overdose.

Suicide with Place of Residence, controls are:

(1) acculturation, (2) education, (3) sex.

Suicide with Education, controls are:

(1) acculturation, (2) residence, (3) sex.

\*Significance,  $p = .05$

\*Significance,  $p = .01$

SOURCE: U.S. Public Health Service Medical and Counseling Records, 1977-1980; Kotzebue Police Records, 1977-1980.



suicide ratio is 11.4:1. Moreover, individuals in both groups are about 22 years old, while suicides - unsuccessful suicides tend to be somewhat better educated than their counterparts. Unemployment is again a socio-economic problem shared by one and all, as is no occupation. An annual household income of less than \$10,000 is a way of life for 83% of suicides and attempters. This compares to a regional proportion of 32% with household incomes of less than \$10,000 (U.S. Bureau of the Census, 1980b).

An important situational factor in suicide behavior in this region is loss of family and friends. Family problems, relationship problems with a significant other, death of a close individual, and a sense of loss or failure all contribute to the suicidal episode. Fully 70% of all suicidal behavior in this region is attributed to these four situational factors. It may be the case that loss of family and close ones is difficult to manage in small communities, especially in settings which are bi-cultural and where youth are unsure which norms to follow. Under such conditions of cultural crisis, the traditional family-oriented culture competes with the white peer-oriented culture and there may be only a disarray of guidelines to help young suicides and attempters when life becomes too hard to handle.

The correlation, however, between acculturation and suicide is insignificant when controlling for age, education, and sex (Table 4). Either this means that the relationship is truly insignificant or that the measurement of acculturation stress is difficult to obtain. The relationship between suicide and sex is also insignificant, as is the relationship between suicide and residence (in these cases measurement is not a problem). There is, however, significant evidence which shows that suicide and education, when controlling for acculturation, residence, and sex, are modestly and positively related ( $r = .249$ ). As level of education rises so do the chances of completed and unsuccessful suicides. Nevertheless, the average level of education for this suicidal cohort is only 10.8 years. This may mean that social pressure may still be on young dropouts to perform in the job market. When favorable results are lacking, these young dropouts could feel even more alienated than before.

Finally, multiple regression was employed to

predict what corresponds with the more serious forms of self-destructive behavior. A multiple correlation of .397 was obtained. Three factors stand out: education, residence, and lethality. Level of education, as noted before, may indicate a high level of frustration and alienation, since the median level of education is somewhat below a 12th grade education, making some young adults ill-prepared in the job market. Residence indicates the more serious forms of suicide occur among youth who live outside Kotzebue but who visit this large village to "run free." Lethality, however, indicates that drug abuse does not often play a part in the more serious forms of self-destruction behavior.

## Discussion

Many of the youth and young adults that attempted or committed suicide in Northwest Alaska explicitly referred to the suicide act beforehand. Some were vague in their last remarks as "I'm going now." Some bargained with their peers not to intervene. And some threw down an empty bottle of pills at the feet of a significant other, broadcasting their actions. In many cases, moreover, family and friends appeared willing and able to intervene in the self-destructive act.

Situational factors that precipitate the suicide act are fourfold: (1) recent failure, (2) recent loss, (3) lack of control over things in one's life, and (4) failure of open communication. Recent failure covers the gamut of life experience, from marital stress to failure at work and from fights with one's family to letting someone down. Recent loss involves death of a close friend or relative to rejection in a primary relationship. Lack of control over things in one's life, or powerlessness, arises from the low socio-economic status of most young adults who engage in self-destructive behavior in Northwest Alaska. Lastly, failure of open communication refers to situations where the young suicide or suicide attempter is, for instance, confronted by someone else and is not able to respond verbally, or to express his or her feelings. These findings are similar to previous work on Native American reservations which experience high rates of suicides (Resnik & Dizmang, 1971).

Alcohol abuse is, of course, a factor in self-destructive behavior in Northwest Alaska, but it appears to be more a facilitator rather than an underlying cause. Nonetheless, fully 86% of the suicides and suicide attempts in Northwest Alaska are alcohol-related and this finding is higher than in other Native American societies (Levy, 1965; Miller & Schoenfeld, 1971; Shore, 1975).

A finding that was not confirmed in this study was the notion that the more acculturated individuals are the more suicidal in Native American cultures (Levy, 1965; Miller & Schoenfeld, 1971). As pointed out earlier though, acculturation stress may have been inappropriately measured.

## CONCLUSION

What are the implications of this research? What are some of the questions it raises? First, this research implies that treatment programs cannot do the job alone by concentrating on the psychological aspects of suicide behavior. What is needed is social adjustments in the lives of suicidal individuals.

Second, it seems a paradox that the more Inupiat Eskimo are educated, the more likely they are to commit suicide. Does this imply that primary and secondary education in Northwest Alaska fosters a sense of rootlessness? Is more suicidal behavior the result of a 77% increase in the median level of education in this region between 1970-1980? Or is self-destructive behavior more an interaction between rootlessness and poverty?

Third, how does one learn self-destructive behavior? Who is learning this behavior and how is it being taught? Is it learned through games or is the learning non-verbal? The answers to such questions elude us now, but the questions remain important if social intervention is to succeed.

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ALASKA NATIVE VILLAGE ALCOHOL PROGRAMS: AN  
EXAMPLE OF DIRECTED CULTURE CHANGE - IMPLICATIONS FOR TRAINING

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## Introduction

Although State-funded village alcoholism programs, staffed by trained local alcohol counselors, have been expanded to a number of villages in Alaska today, little research has examined their substance or the role they play in village culture. One project (Shinkwin and Book 1982) reports the experiences of three Alaska Natives (two Athapaskans and one Aleut) who participated in a program funded and managed by the Rural Alaska Community Action Program (RurAL CAP). They received formal training and subsequent state certification as alcohol counselors. Each conducted a three-year program in their home regions. The study concluded that much of the training they received was not useful and required considerable adaptation to the local setting by each counselor. It also raised questions about realistic and effective ways of approaching alcohol abuse through village programs.

The research reported here explores some of the issues raised in the earlier study, employing a similar methodology applied to a larger program, managed by the Yukon-Kuskokwim Health Corporation (YKHC) which trains locally hired counselors in nine Yupik Eskimo villages. Like the RurAL CAP programs, one counselor is responsible for service delivery to his/her home community as well as nearby communities. The counselors, interviewed here, were assigned up to six communities with most (56%) working in three or four expanding, at least theoretically, services to a total of 21 villages. However, most like the RurAL CAP counselors, spend most time working in their home community. Although some of the YKHC counselors have been involved in village alcohol work for a little more than three years, employment time for the majority is about three years.

The conclusions of this study echo many of the previous one, but some interesting, and important, differences were also discovered. These research findings and their implications for training and alcohol program development on Alaska Native villages are discussed in this paper.

### Methodology

This methodology employed in the study replicated that of the Rural CAP project (Shinkwin and Book 1982) for the sake of comparability. However, local residents in each serviced village were not interviewed since the setting for the study was a region-wide training session conducted in Bethel. Individual interviews, using open-ended questions, were conducted in the language of choice (English or Yupik Eskimo) of each counselor. Nine counselors<sup>1</sup> contributed data on what they do, their approach, the relationship between these activities and their training, and their perceptions of community and client response to their position as an alcohol counselor. These interviews were followed up by an afternoon group discussion in English and Yupik, led by the investigators who presented their major preliminary findings for comments. Those comments are included in the paper. The group discussion, like that in the Rural CAP study, was extremely important in highlighting approaches that seem to work as well as problem areas in service delivery, from the perspective of the counselors.

<sup>1</sup>Data gathered from two other counselors who were attending the training are not included since they are participants in another regional program that differs from the Y.K.H.C. program in some important details.

## Research Findings

Introduction. All counselors perform a variety of tasks, including (1) development of alternative activities, such as movies on alcohol and drug abuse, games, or storytelling; (2) the delivery of alcohol education presentations to local groups, and (3) counseling.

Alternative Activities and Presentations. Movies are used by counselors in the school setting. Outside this setting, movies about alcohol and other drugs do not have much appeal. However, a few counselors have built up a "movie going" clientele, especially among youth. One uses games prior to showing a movie to relax the audience and another administers pre- and post- tests to the audiences, techniques both counselors related to their training. With the few exceptions noted here, movies of this type as alternative activities are not widely used. Native games played at holidays (a time of heavy drinking) in one village, with prizes donated by local businesses, and a "mini-workshop" series in another village have been successful in attracting widespread participation. The workshops replaced village alcohol meetings to which no one came and they are sponsored by the local alcohol advisory board. They are regularly scheduled and often include participation of village elders. They address "Yupik things", such as winter survival or hunting and fishing techniques.

All counselors give presentations on alcohol and drug abuse, especially at schools. All cited their training as critical in giving them the skills and self-confidence to deliver public talks on these subjects. They uniformly expressed general satisfaction with their mastery of technical information on alcohol use and abuse, data which they use in presentations. All identified a need for more training on other drugs. Previous training taught them to identify marijuana (by sight and smell) and drug-related behavior. However, they emphasized a need for more information of a practical nature, such as that on marijuana, on all drugs they might encounter in



the village.

One counselor reported that, after several years of delivering educational presentations on the facts of alcohol and drug abuse, he has completely abandoned this activity since it was leading nowhere, in his opinion. Today, his presentations focus on who he is and how he is going to come and talk to people about their drinking problems. This change in approach has been coupled with the definition of a "target group", discussed later, whose members are invited to the presentation, which is then followed up with visits in private with each member of the group.

Counseling. All counselors reported reluctance on the part of village residents to use their counseling services due to embarrassment or fear of gossip if the person is seen entering the counselor's office. According to the counselors, a major factor in this avoidance pattern is the lack of understanding or acceptance of the concept of "confidentiality", which is a radically new idea in village culture, and one learned by the counselors in training. Counselors respond to these local concerns by agreeing to meet clients in places other than their office. One regularly counsels in her home and invites problem drinkers to dinner as a prelude to a counselling session. Another insists that counselors must "go to people with problems", that, because of the nature of drinking and the drinker's fear of asking for help, the counselor must actively seek those in trouble and offer assistance. Most counselors will approach problem drinkers, while they are sober, and ask them if they would like some help.

Counselors also take a relaxed approach to scheduling, although they all expect client referrals to make regular contact. A majority of the counselors have had difficulty with referred clients who will not come for counseling. To report a delinquent client, which might mean return to jail, is a difficult decision and counselors were very emphatic about not serving a police function in their community. Although training apparently covered the procedures involved in dealing with miscreant

clients, considerable confusion was expressed by the counselors. Of more importance, in our opinion, was the hesitation to use those procedures. Counselors felt that the monitoring role is in direct conflict with the counselor-client relationship built on trust. However, two have reported chronic abusers of probationary regulations and a third expressed his intention to pursue this course in the future.

Most counseling by all counselors is with referred clients. Only two have been successful in recent years in attracting a fair number of "walk-ins". These two, over some time, have made their offices a place of varied activity involving problem drinkers, non-problem drinkers, and non-drinkers alike. In their opinions, this has erased the stigma attached to going to an alcohol counselor's office and produced an atmosphere congenial to the person who wants help but was formerly embarrassed to seek it. A third counselor, mentioned above, who has defined a "target group" of youth from homes with drinking problems reports that since he has begun to privately talk with these individuals away from his office, people are beginning to come and see him. Prior to this, no one came to see him.

Counseling is perceived by all counselors as a major function, illustrated by the comment of one that "counseling is the only medicine for drinkers." In our opinion, the strong support for this role, in part at least, must be the result of training. Most of these counselors receive little reinforcement for this activity in the way of clients or community support and it cannot be related to personal experience of the efficacy of counseling since, of the former drinkers, only one achieved sobriety with the assistance of treatment programs.

None of the counselors currently conduct group therapy; rather, each delivers individual counseling. One-half reported trying AA groups. The approach did not work. If people did come, and often they did not come, they would not talk. The majority of counselors did not think this approach, at this time, would work in their villages. They related its failure to the fact that no one is anonymous and to the "non-Yupik" notion that people should discuss problems in a group. In spite of the

reported failure of these AA groups, several of the newer counselors are planning on trying this technique. One of the long-time counselors reported he has been talking individually to each of his clients for some time about an AA group and will form one when they are ready.

Since counselors all thought counseling was a critical function, considerable discussion was directed at the substance of this role, as they fulfill it today. All use an approach, which some related to training, that structures communication in a question-answer format. Talking always begins with neutral topics ("What did you do today?" or, "Did you get anything hunting?") and, depending on the responses, the questions may become more personal but they are always non-confrontational, do not mention alcohol, and communicate a support function on the part of the counselor. Examples given were, "Hey, how is your life?" or "How can I help you with your problems?" Counselors emphasized in many different ways the importance of communicating a non-judgmental, non-threatening, caring attitude.

Observations of group therapy sessions at a treatment center in Bethel uniformly produced a negative reaction to the communication style (confrontation) used by the counselors. Although YKHC counselors all expressed respect for the work at this center, and many found their observations useful, it was generally held that any direct transfer of these techniques to a village setting would be inappropriate.

Interestingly, a large number of counselors volunteered that they do not tell clients what happens when alcohol enters the body. This statement always ended with the phrase, "or how it gets to the liver and the brain." These comments suggest a frustration with training which has focussed on technical information, which is not viewed as relevant in a counseling context by these counselors.

The approach to counseling, described to us, is highly personal, with former drinkers sharing their experiences with their clients. Some use a religious approach, appealing to religious beliefs and sources of church-related support in counseling sessions. Counselors noted that there are some subjects, such as sex, which are not



talked about in Yupik conversational style, without occasioning a patterned avoidance response, such as laughter, reflecting embarrassment. Talking about very personal things in Yupik outside the family setting is a new pattern and difficult even for those educated in a different use of language, such as the counselors. In this respect, counselors mentioned how helpful "role playing" had been to them in training for counseling and how painful they found the technique in the beginning.

At this point, counselors suggest the best approach is to talk to clients about how difficult it is to talk about certain things as a possible way to begin to expand communication. This theme dominates the public group presentations now given by the counselor, mentioned above, who has despaired with the presentations on the facts about alcohol.

Some counselors have clients write down what they did while they were drinking and bring this to the counseling session. This method, learned in training, has been helpful in assisting communication.

Counselors do not use the disease model of alcoholism, although they have learned it. A typical comment was, "I forget about it". Several counselors with Moravian or Covenant clients noted the conflict between the concept of excess drinking as a disease and drinking as a sin, and avoid the subject. In one village, it is much more relevant to talk about alcohol use as a sin and the counselor takes this approach, supported by much prayer.

All counselors emphasized a need to develop counseling skills in training. Although nearly all said their training had been helpful in counseling, other than role-playing and the use of questions in communication, the relationship between what they have learned and what they do is far from obvious. Rather, counselors draw on what they know about their own villages to adjust strategies they have seen or heard about in training, through a trial-and-error process.

Community support, measured by support from city council, church, school, police, advisory board, relatives and friends, ranges from non-existent in one case to lukewarm in five, and very strong in three.<sup>2</sup> Although all counselors have a local alcohol advisory board, as encouraged by YKHC staff, appointed by city council, there are considerable differences in the functioning of these groups. In one village, where the counselor has strong support, the board acts as a lobby with the city council. Members of the board act in a counseling capacity if called on by the counselor. The strongest boards are those that were formed with the direct involvement of the counselor. With one exception, counselors reported difficulty ranging from disinterest or lack of organization to hostility in communities other than their own. Travel is also seen as detracting from the strength of a program in a person's home community and periodically leaves clients without the support they might need.

The service model definitely creates problems for nearly all the counselors. In spite of dedicated persistence on the part of the counselors in meeting obligations outside their home community, there are little data to suggest program development outside the home communities for nearly all counselors, with the exception of one.

In addition to the specific comments on training, mentioned above, counselors emphasized the benefit of discussion and observation during training sessions. The first year of this training program, conducted without the benefit of a translator, was nearly a total loss for some of the participants, and all future training should include a Yupik translator. More recent sessions, deemphasizing a lecture approach, taught by a person perceived by the counselors as knowledgeable about villages, have been well received.

<sup>2</sup>The sociopolitical position of a counselor in his/her home village may, of course, be a critical factor in marshalling program support. Given the circumstances of this study, we were unable to thoroughly explore the relation of this variable to degree of community support.

## Discussion

A comparison of the findings, reported here, with those based on work with the RurAL CAP counselors (Shinkwin and Book 1982) document a similarity in experience by Alaska Native counselors who are trying to develop alcohol programs in their villages, irregardless of the cultural-linguistic background of the village. With very few exceptions, alternative activities directly associated with alcohol or drug abuse, have no appeal. Some viable alternatives have been reported here. Counseling, as a new concept in village culture, does not receive much local support. Counselors have to seek clients and most are referrals. Counseling in a formal setting (office) is rare. Counseling style is always non-confrontational. The disease model of alcoholism is not viewed as significant in treatment approaches and group therapy is not a relevant approach. The effects of alcohol education presentations are not obvious and one counselor in this study has emphatically rejected this activity since he cannot identify any positive responses.

Some differences in the results of the two studies are also apparent and the reasons for these differences are important. While the RurAL CAP counselors all reported crisis intervention as a major activity, no counselor in this study mentioned it. It is impossible to relate its absence to a lack of crises in these villages, since we know they occur. Rather, these counselors view this activity as inappropriate. In this region, this may reflect a more rigid differentiation between the police, which handle crises in these villages, and the alcohol counselor. In one village, crisis intervention is a function of the chairman of the alcohol advisory board who manages a safe homes program.

The counselors in both studies relate difficulties in the acceptance of a counselor-client relationship in their villages to a communication style that traditionally did not encourage people to discuss serious, personal problems, especially



in a non-family context. However, these counselors, unlike those in the Rural CAP program, do not describe the counseling role in negative terms and they do not suggest that talking about things makes them worse. In large part, this must be related to a cultural difference in language use between Yupik Eskimos and Athabascans, where this attitude was most obvious.

Although all counselors in both studies have difficulty in attracting clients, two in the YKHC region have walk-in clients and a third reports voluntary visits by people with problems, for this development took time--about two years in two cases and three in the third. While the walk-in clients are limited in number, their existence can be viewed as an indication of an attitude change at least on the part of a few people. How this has been accomplished in three village programs deserves close attention.

A comparison of the approaches of the three counselors with each other and with those described by other counselors suggests that they share an approach that distinguishes them from the rest of the counselors, and is in contrast with their training. Each spends considerable time educating people about their role as a counselor rather than focusing on basic facts about alcohol abuse when talking with people. Two directly discuss with local people some of the aspects of their traditional culture that operate against acceptance of counseling. In these discussions, they emphasize how difficult it is to learn to talk about problems or feelings. One is also educating clients about treatment approaches in individual client meetings, preparing clients to try group therapy. There is obviously a large difference between organizing group therapy by establishing a group and placing clients in it and spending months talking to clients individually about the possibilities and meaning of group therapy before using the technique. The experiences of these counselors suggest that they are changing people's perceptions about their role by directly addressing the topic and increasing understanding of the whole concept of counseling in the same fashion.

Comparison of the context withi which these three counselors operate illustrates the potential significance of a network of support in one's village. In two villages, the counselors have extraordinary support from local groups, such as city council, police, church, and alcohol advisory board. These alcohol advisory boards were selected by the city councils with input from the counselors. Although this factor alone does not seem to be sufficient for changing individual perceptions, it has certainly made these village programs among the strongest in the region.

The implications of program analysis for training are several. First of all, analysis demonstrated that individuals employed as counselors in this program perform many functions in addition to counseling. Although there have been some obvious changes in several villages recently, it is unlikely that counseling will occupy large amounts of time for most counselors in the near future. The fact that these practitioners are called "counselors" reflects the significance attached to this activity in dealing with alcohol abuse by health providers in the majority culture rather than their major functions which are diverse. It has serious practical results in that a training program with curriculum content reflecting specific competency requirements is dictated by state requirements for certification of counselors. This curriculum, which contains massive amounts of technical information, much of which is presented in words hardly understandable to many of the counselors, does not address the reality of village alcohol programs. Whether or not village alcohol programs have any future is an open question but they certainly will not be successful if initially modelled on an approach developed for another culture. Perhaps these "counselors" should be called alcohol program co-ordinators. In fact, they are "developers", but the term can have a negative connotation.

Second, the analysis suggests that the creation of local support groups is very important. Since this is basically a political process, training about its significance alone cannot overcome local objections. However, counselors can be

alerted to possible strategies they might use to strengthen their support base. The process of developing a support network itself will increase understanding of the role of an alcohol counselor in the village.

Third, since the development of counseling skills is a need, identified by the participants, in the study a major task of training will be to identify relevant approaches. Since it is not known yet what those approaches might be, a period of trial and error must be anticipated. Training should provide counselors with models they can test. The use of movies showing various techniques, as well as further observation at the treatment center in Bethel, could create an excellent base from which to discuss what might or might not work. These discussions combined with follow-up reports on the results of local experimentation is a process that might prove fruitful.

Lastly, and perhaps most importantly, the analysis implies that an explicit recognition in training that alcohol programs represent an example of introduced, directed culture change in these communities is essential. Counselors should not be cast into a system that is not in focus. From an anthropological perspective, program participants should be taught to recognize that they are agents of change. As such, counselors themselves must play a major role in curriculum design for training. This can be accomplished, in part, by structured group discussions of the sort mentioned above, led by the trainer. At this point in time, a continuing conscious evaluation of what works and what fails in village alcohol programs is critical. Some counselors in this training program already recognize this process.



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ALASKA MISDEMEANOR SENTENCES: 1981

December, 1983

## EXECUTIVE SUMMARY

This report presents an analysis of sentences imposed by Alaskan judges and magistrates in misdemeanor cases during 1981. The purposes of the study were to determine whether sentencings varied by court or defendant, and to explain why such variations did (or did not) occur. The study was funded by the state's legislature as part of its continued monitoring of state sentencing patterns.

The study looked at two types of relationships:

- 1) between defendant characteristics and sentence length; and
- 2) between community characteristics and sentence length.

Although we found that physical characteristics of the defendant such as age, race and sex did not affect sentences, the defendant's prior criminal history and past failure to complete treatment for alcohol problems had very significant effects. Financial status was also tied to sentence length, with less wealthy offenders receiving slightly longer sentences for vehicular and disorderly conduct offenses.

A second set of important findings related sentence length to community characteristics. The study found that sentences for certain types of offenses committed by similarly-situated defendants varied somewhat from urban (Anchorage, Fairbanks, and Juneau) to rural areas (Barrow, Bethel, Kodiak, Nome and Sitka). However, this factor did not play as large a role in sentence length as did the defendants' past histories of criminal behavior and alcohol treatment.

Specific findings include:

- 1) There is a direct relationship between alcohol abuse and a pattern of continuing criminal conduct. 86.6% of misdemeanor defendants with prior alcohol problems also had a record of prior convictions.



2) In general, defendants with alcohol problems who had either not been referred to, or who had not completed alcohol treatment programs in the past, received substantially longer sentences for most types of offenses than defendants who had no alcohol problems or who had completed a treatment program. On the other hand, the data suggests that among defendants with prior alcohol problems, those who had successfully completed prior alcohol treatment were least likely to be recidivists.

3) Nearly two-thirds of misdemeanor offenders (65.2%) were sentenced to at least one day in jail. All persons convicted of driving while intoxicated spent at least 3 days in jail.

4) The effect of community characteristics was most noticeable for violent and vehicular offenses. Defendants convicted of violent misdemeanors in rural areas were more likely to go to jail and had longer sentences than those in urban areas. On the other hand, Anchorage and Fairbanks defendants convicted of vehicular misdemeanors tended to receive slightly longer jail sentences than those in smaller communities.

Fines appeared to follow a different pattern. For all types of offenses except vehicular, defendants in Bethel, Nome, and Barrow were considerably less likely to have a fine imposed than in the other communities studied. The fines required of defendants in these areas tended to be lesser amounts than those imposed on defendants in other communities, for all types of offenses.

(Interviews with judges, attorneys, and other criminal justice system personnel suggest that our findings of variation in sentencing by community are at least partially due to both consideration of community values and to the amount and type of justice system resources which were available in these areas during the period studied. Significant changes which have occurred during the intervening two years in both the level of resources available and community values could mean that the reasons for some 1981 variations may no longer exist.)

## CONCLUSIONS AND RECOMMENDATIONS

Our conclusions from these findings are, first, that despite justice system changes, some patterns appear to be extremely stable, notably the relationship among alcohol problems, treatment, and criminal offenses. Second, the combination of factors which do affect sentences considered in light of those which do not (such as race and sex) suggest that both the judiciary and other criminal justice system personnel are attempting to enforce the law in a manner which is both responsive to society's need for protection as well as to the differing cultural and administrative resources and needs among different areas of the state.

Based on our findings, we recommend that:

1) The judiciary, Department of Corrections, and other criminal justice agencies work together to assure uniform and quick access to alcohol treatment programs for convicted defendants, as a means of reducing recidivism. At the same time, the justice system must recognize that reduction of legal and administrative barriers to admission to alcohol treatment programs should be accompanied by the kinds of incentives which will motivate offenders to complete treatment.

2) The effects of "local option" laws, increased legislative sanctions for DWI, and other relevant attempts to reduce the incidence of alcohol-related crime which do not involve the treatment of offenders should be monitored and evaluated during the next two years in terms of their cost-effectiveness, ability to motivate offenders, and effectiveness in reducing recidivism. The legislature, executive branch agencies administering these programs, and municipal governments need such evaluations as the basis of future policy decisions. In the long run, resources should be focussed on programs and practices which motivate offenders to change patterns of behavior.

3) Guidelines for misdemeanor sentences which recognize the value of incentives such as expungement of criminal records following the successful completion of alcohol treatment should be developed by the judiciary. Such guidelines should be flexible enough to permit judges to take legislative intent, community and defendant characteristics, jail capacity, and treatment program alternatives into consideration when imposing sentence. Development and publication of these guidelines would benefit both the judiciary and the public by providing a clear statement of factors relevant to sentencing and consequences of conviction.



ALASKA MISDEMEANOR SENTENCES: 1981

PART I

Narrative Summary

## I. INTRODUCTION

Evidence of possible racial disparity in the sentencing of misdemeanants was found in a study of state judicial sentencing patterns published by the Council in 1979. The legislature responded by directing the Council to continue monitoring misdemeanor sentencing patterns to determine the extent to which such disparities were persisting. (Council studies of felony sentencing patterns had found evidence of racial and other disparities, although these patterns gradually decreased from 1974 through 1979, until a study of 1980 felonies showed no evidence of them.) However, even the 1980 felony study--as well as the present misdemeanor study--show continuing variation in sentencing patterns from community to community\*, with the variations tending to emphasize a distinction between urban and rural areas of the state.

Based on the findings of the earlier studies, 1981 misdemeanor sentences were analyzed to determine to what extent variations which occurred were attributable to some combination of the following factors:

- 1) Characteristics of the defendants, such as age, sex, race, income, alcohol use history, etc.;
- 2) Characteristics of the offense, such as harm to the victim, property damage, and type of offense; or
- 3) Characteristics of the judicial process, such as type of bail, type of attorney and judge, and whether state or municipal law was the basis for the charge.

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\* Variations also continue to occur by offense types as they have in past studies, with some factors being statistically significant for one set of offenses but unimportant in determining sentence length for other types of crime. These differences are discussed in more detail throughout the report.

The report which follows provides a narrative summary and discussion of findings and preliminary recommendations. Detailed discussion of the data collection procedures, statistical methodologies, and results obtained from analysis can be found in Part II of this report. Part II also contains lists of variables, copies of coding forms and other documents, and additional descriptive and analytical tables.

## II. METHODOLOGY

### A. Data Collection

During the second half of 1981, some state court judges and magistrates participated in a court-sponsored program to obtain more information about misdemeanor offenders. The program involved preparation of a "misdemeanor sentencing information sheet" containing brief questions about the defendant's race, alcohol use and treatment, and prior criminal history. In 1983, Council staff used the court case files and police reports for defendants sentenced during this period as the sources for data on 1,366 offenders convicted in eight selected communities. The communities studied were Anchorage, Barrow, Bethel, Fairbanks, Juneau, Kodiak, Nome and Sitka. From 21% (Anchorage and Fairbanks) to 95% (Barrow) of all the misdemeanor convictions in each community were analyzed to obtain suitable sample sizes.

The data collection form was similar to those employed in other Council studies. It included questions about the defendant, the offense, and the case processing characteristics. Research assistants under the supervision of senior Council staff spent between one and two hours with each case, using a series of double-coding and checking procedures designed to insure accuracy and objectivity. Finally, the data were key-punched, verified, and transferred to magnetic tape for analysis using the statistical programs on the University of Alaska's computer.



### B. Analysis

Standard procedures for verifying the raw data were performed as the first step in analysis. Missing or apparently incorrect information was checked and corrected. Data which could not be used in its raw form was re-calculated.

Next, several analytical decisions were made. Data were analyzed by defendant, rather than by charge (as had been the case in earlier studies). About 85% of all defendants were convicted of only one offense. For the remaining 15%, details about the most serious charge were combined with an "aggregate" sentence for all of the charges to form a composite description of the offender's charge and sentencing. Then, specific offenses of all defendants were grouped into six general categories: violent; property; vehicular; disorderly conduct; alcohol or drug law offenses; and miscellaneous.\* Finally, the dependent variables, or "outcomes", were defined as net sentence length (or active jail time) and net fine. Other aspects of sentences, such as conditions imposed by the judge, were treated as independent variables which could have influenced the severity of outcome penalty.

Multiple regression was used to examine the effect of "explanatory" variables on active jail sentences. Variation in jail sentence or fines may be due to differences in case processing, in defendant characteristics or past problems or in specifics of the offense. Multiple regression is able to account for all "explanatory" variables simultaneously, and estimate the independent (relative to other variables in the model) contribution of each of these factors to the outcome variable.

---

\* The last category included only 38 defendants who were convicted of gambling, prostitution-related, public indecency, and several other types of misdemeanors. None could be analyzed separately because of the small number of cases.

The analysis of the data required two major steps. The first set of multiple regression "runs" used the full set of independent variables. Some of the most significant factors affecting length of sentence (such as community and bail status) appeared, after further analysis, to be very strongly intercorrelated with other variables. As a result, two indices (described below, page 17) were constructed to summarize the interrelated variables, and a second set of multiple regression analyses were performed for each type of offense. Where they assist in explaining the study's findings, data from the first stage of analysis may be used. Otherwise, the results which follow are based on the second set of multiple regression analyses.

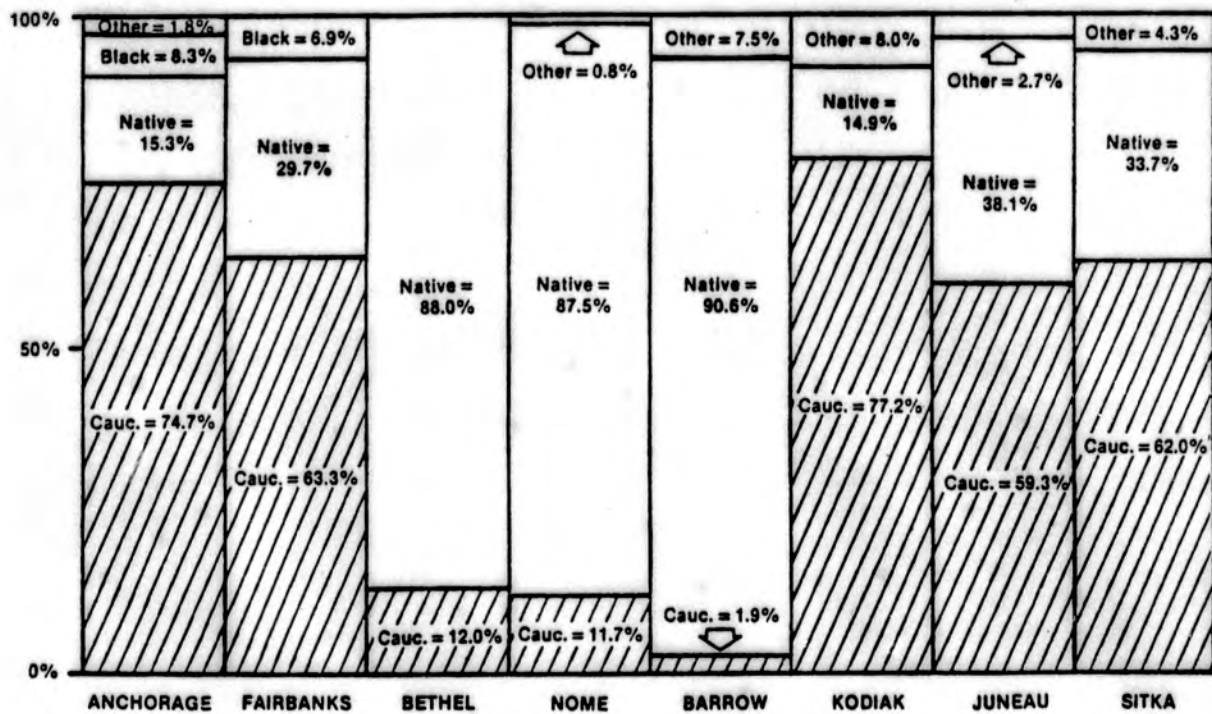
### III. DISCUSSION

#### A. Defendants & Offenses

The typical misdemeanor defendant in 1981 could be described as a caucasian (56.8%) or native (36.7%) male. He was likely to be under the age of 31 (66.0%), and to have used alcohol at the time of his offense (73.2% used alcohol, drugs, or both, but the great majority used only alcohol). Over half (56.7%) of the defendants had a record of prior convictions, mostly misdemeanors. The percentage rose to 86.6% for defendants with a history of alcohol problems.

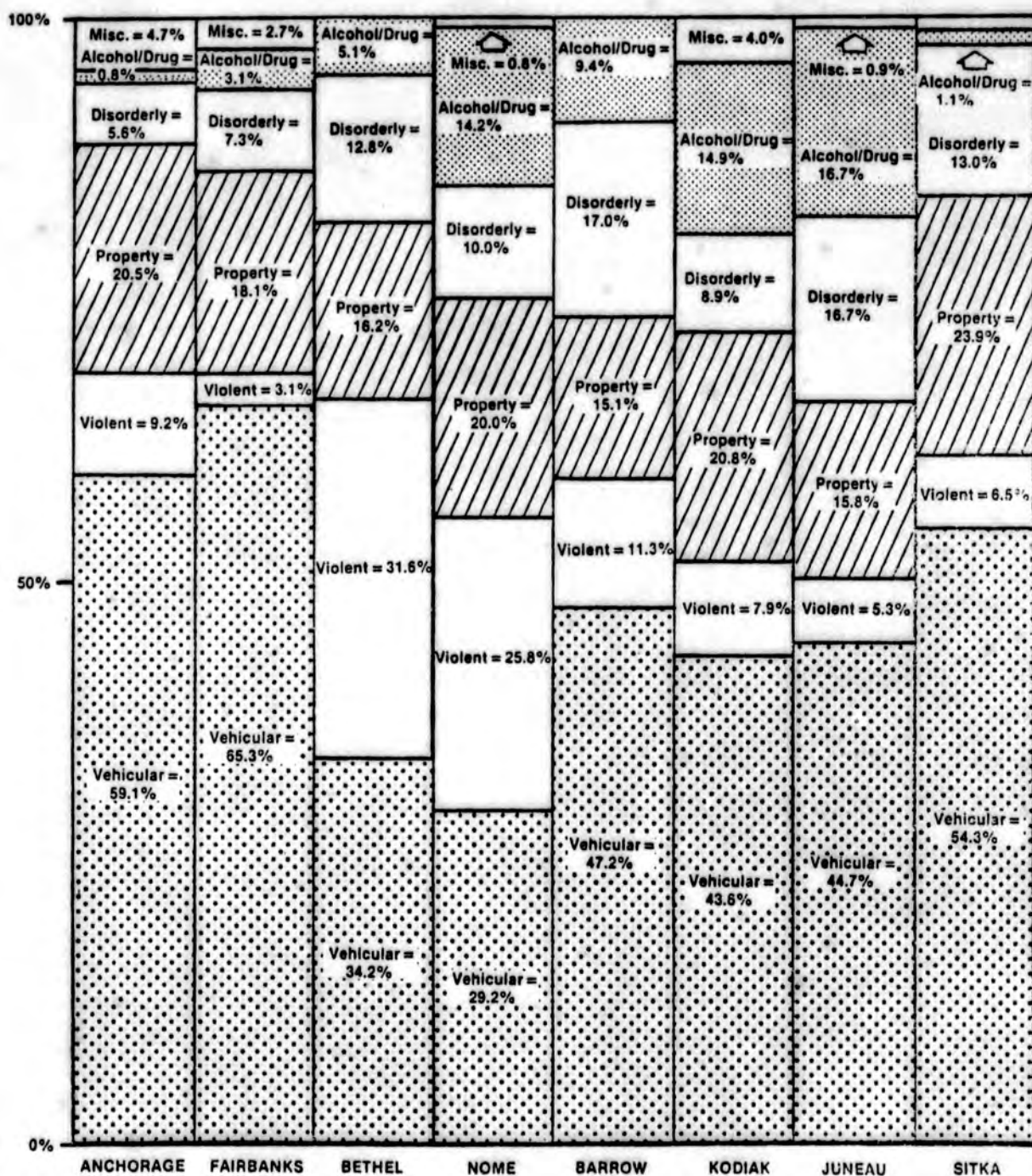
Individual communities showed some variations among defendants. Kodiak, for example, had the highest proportion of female defendants (17.8%), while Bethel, Barrow and Nome defendants tended to be native (over 85%). See Graph 1. Juneau had the most youthful defendants (40.2% under 22); Fairbanks had the oldest (45.5% over 30).

**GRAPH 1**  
**(1981 Misdemeanor Sentences)**  
**DEFENDANT'S RACE BY COMMUNITY**





**GRAPH 2**  
**(1981 Misdemeanor Sentences)**  
**DISTRIBUTION OF OFFENSES**



Type of offense also differed by community\*, although vehicular offenses were the most common offense in all communities, ranging from 65% of the Fairbanks and 59% of the Anchorage convictions to about 29% in Nome (see Graph 2). Property offenses were the next most frequent offense in Anchorage, Fairbanks, Kodiak and Sitka; however, violent convictions were the next most frequent group in Bethel (31.6%) and Nome (25.8%). In Barrow and Juneau, where vehicular offenses constituted nearly half of the convictions (47.3% and 44.7%, respectively), the remaining convictions were fairly evenly divided among the other four major offense types (disorderly conduct, alcohol-drug violations, property, and violent).

B. Interactions Among Defendants, Offenses, and Case-Processing

Communities differed noticeably in the ways in which the criminal justice process interacted with defendants and their offenses (see Graph 3). In Anchorage and Fairbanks, most cases were heard by district court judges, while most defendants were represented by an attorney and pled "not guilty" at arraignment. About 11% of convictions in these cities followed a trial; most, however, occurred when the defendant changed his plea some time between arraignment and trial. Most defendants (87%) were not in jail at the time of sentencing.

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\* Whether the offense was charged under state law or municipal ordinance varied by community as well. For example, in Fairbanks, property offenses were generally charged under municipal ordinances, but vehicular offenses were almost always charged under state law. In Sitka and Anchorage, most vehicular offenses were municipal charges; in other areas, all types of offenses tended to be state charges. (Police and prosecutorial charging decisions thus appear in some communities to reflect the ability of the community to afford the costs of prosecuting offenses charged under municipal ordinances. In other areas, prosecutors may be charging one type of offense under municipal codes because of a local attempt to "crack-down" on specific types of crime.)

Bethel and Nome were similar to each other but different from Anchorage and Fairbanks. Cases in those communities were heard by either magistrates (33% & 23%) or superior court judges, rather than by district court judges. About one-third of the defendants represented themselves without an attorney; about one-third (not necessarily the same group) pled guilty at the time of their arraignment. About one-quarter of these defendants were in jail at the time of sentencing.

The four remaining communities, Juneau, Kodiak, Sitka, and Barrow--could not be as easily patterned. All four towns were different from either the urban areas or the western Alaska communities of Bethel and Nome. For example, while Juneau cases were primarily heard by a district court judge (85.1%), cases in the other three areas were handled by magistrates over 90% of the time. In all of these courts, there was a much higher incidence of defendants representing themselves without an attorney, and all had a high rate of guilty pleas entered at arraignment. Juneau and Sitka had fairly low rates (around 20%) of defendants jailed at the time of sentencing, while Barrow and Kodiak had the highest (31% and 37%, respectively) rates among the communities studied.

Nearly half of the convictions (49.3%) occurring before magistrates were of defendants not represented by counsel who entered a plea of guilty or no contest at the time of arraignment. Only 14.8% of convictions before all district court judges but one,\* and 23.5% of those before superior court judges fell into this category. These strong relationships among type of plea, type of judge, and representation by an

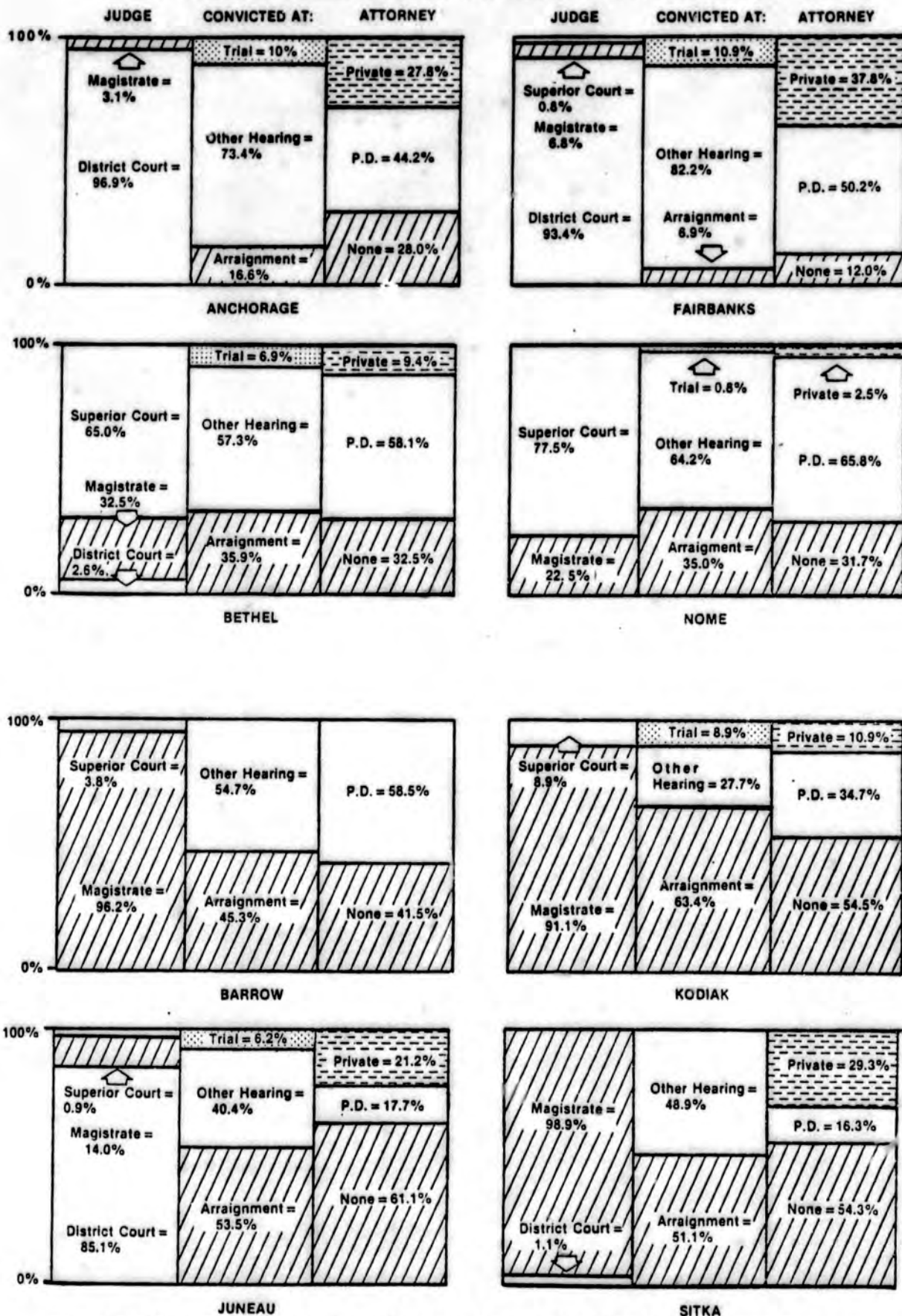
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\*The exception is Juneau. There, about 85% of convictions were handled by district court judges, but 53.5% of defendants pled guilty at arraignment. The great majority of these (93%) were not represented by counsel.



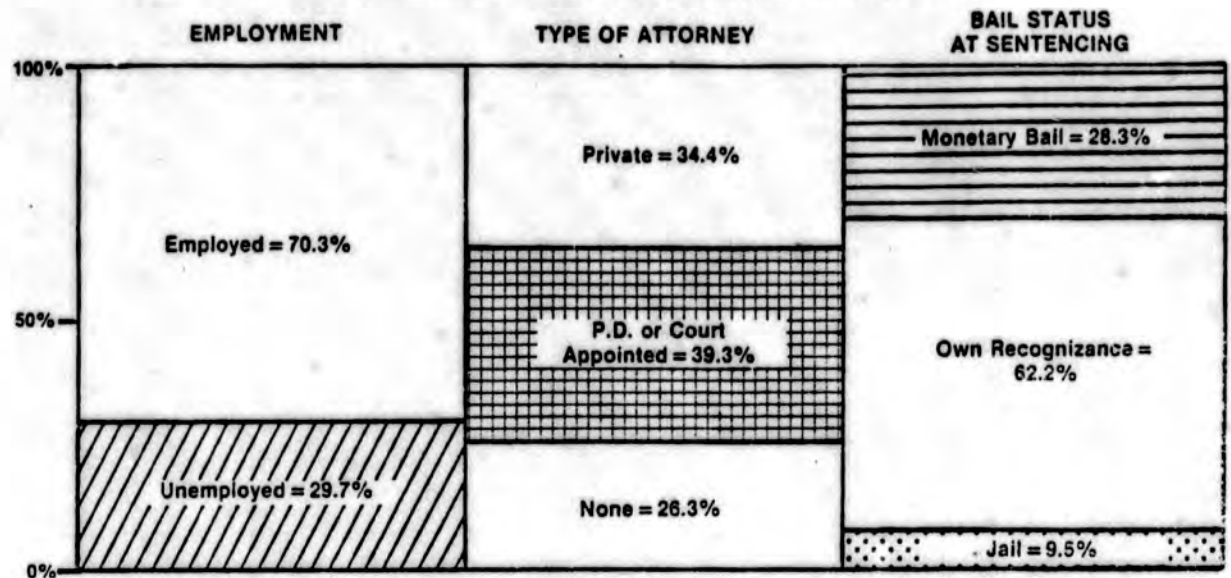
### GRAPH 3 (1981 Misdemeanor Sentences)

#### RELATIONSHIPS AMONG CASE-PROCESSING CHARACTERISTICS

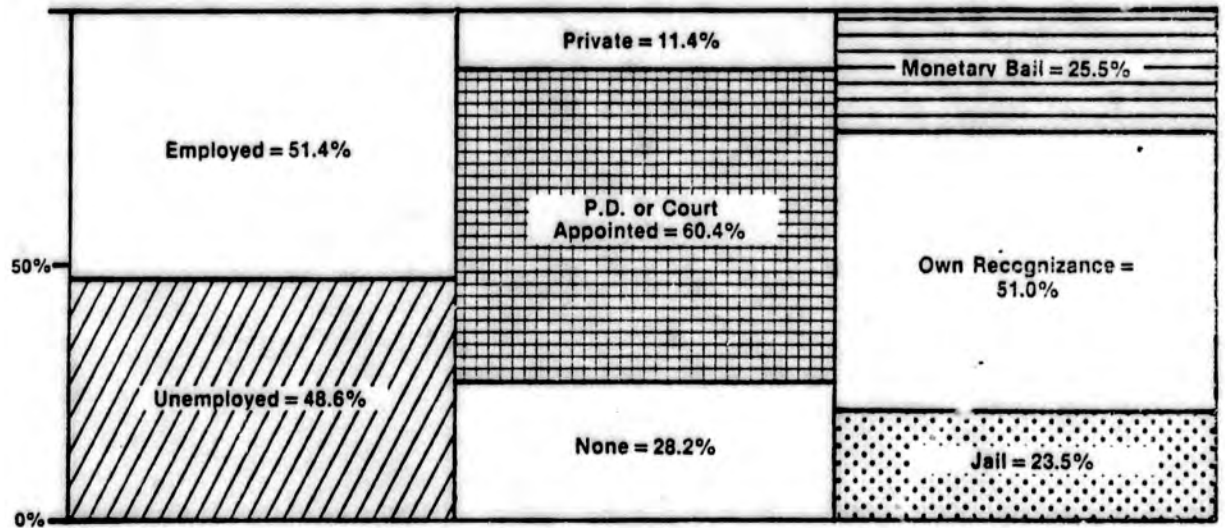


NOTE: "P.D." on this graph refers to both defendants represented by a Public Defender and to those represented by a court-appointed private attorney.

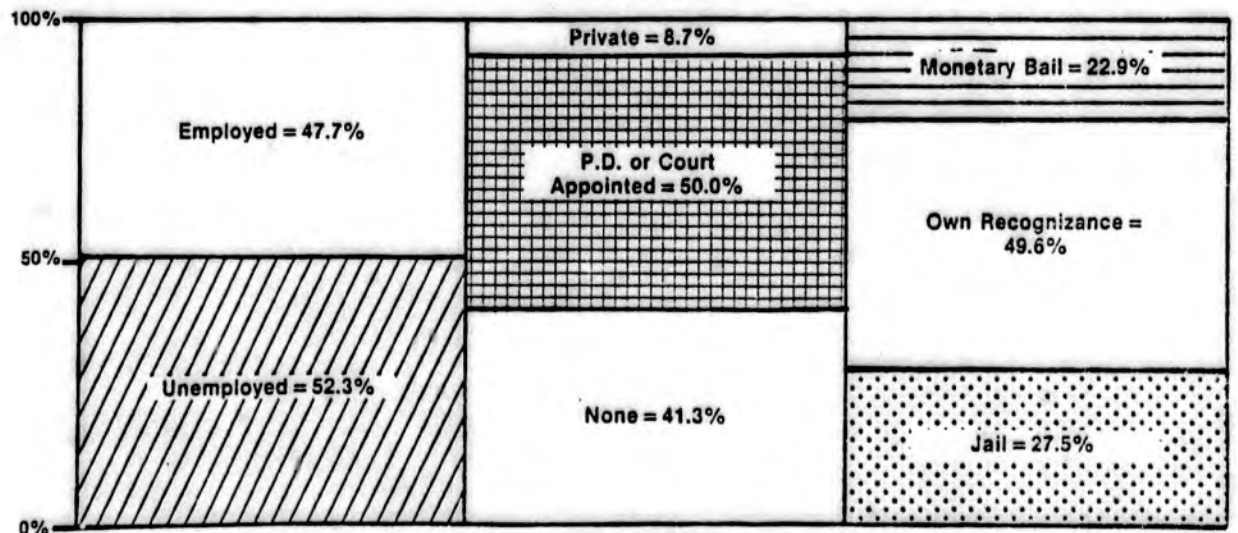
**GRAPH 4**  
**(1981 Misdemeanor Sentences)**  
**DEFENDANT AND CASE-PROCESSING INTERACTIONS**



**VEHICULAR**



**VIOLENT**



**PROPERTY**

attorney (or lack thereof) did not appear to have direct effects on sentencing (except violent offenses--see page 17). However, they are worthy of note because they so clearly demonstrate the differences in the ways misdemeanors are handled in different communities.

One possible explanation for the distinctions would be that magistrates and judges heard different types of cases. However, an examination of offense types showed no significant differences in the types of misdemeanor cases assigned to the different levels of court. In several areas, notably Sitka, Kodiak, and Barrow, over 90% of all misdemeanor convictions, covering the same range of offense types as was found in the other areas, occurred before a magistrate. In Bethel (1/3) and Nome (1/4) magistrates played a much smaller role, with superior court judges handling the majority of the cases. But, again, no differences were found in the types of offenses handled by each level of court.

However, type of offense\* was related to a defendant's general willingness to plead guilty at arraignment, as well as to a defendant's characteristics. Property offenders were by far the most likely to enter a guilty plea at this point; vehicular offenders were least likely to do so. The latter group tended to plead not guilty, to obtain counsel (from 92.7% in Fairbanks to 46% in Juneau and Sitka) even if they had to pay (nearly half of the Fairbanks offenders were represented by private attorneys, and about one-third of Anchorage, Juneau, and Sitka defendants), and to go to trial (10%) more frequently than for other types of offenses (violent 8.1%, property 4.6%).

---

\* For purposes of comparing defendants, we looked at the three largest groups of offenders: violent (assaults and weapon offenses); property (theft, fraud, trespass and mischief); and vehicular (driving while intoxicated, license violations, reckless or negligent driving, and failure to report accident).



Other characteristics of the defendant also appeared to be correlated with the type of offense. On a "financial" continuum, (Graph 4), defendants convicted of vehicular offenses had a greater likelihood of being employed and of being represented by a private attorney than defendants convicted of other offenses. They were less likely to be in jail at the time of sentencing and slightly more likely to be released on their own recognizance (indicating sufficient community ties to assure the judge they would appear for trial). Property defendants were at the lower end of this continuum. Fewer than average were employed; many could not post bail, and remained in custody until their sentencing. About half of the violent offenders were employed, and their rates of own-recognizance release at the time of sentencing were about average when compared to the overall custody status rates for each area.

#### C. Sentencing Factors

Factors reflecting the defendant's economic status and personal problems, and those reflecting case processing differences from urban to rural communities directly affected sentence lengths for certain types of offenses. In general, however, variables related to defendant characteristics such as age\*, race, and sex were not significantly correlated with sentences imposed for the misdemeanors studied. This finding, of lack of relationship between age, race, sex and sentence length, contrasts with two prior Council studies of

---

\* The one exception is a slight increase in sentence length for older defendants convicted of alcohol/drug offenses. See Graph 7.

misdemeanors, both of which found such disparities.\* Another set of variables, those related to harm caused by the offense, also appeared to be unrelated to sentence length. While sentences did vary from one offense category to another, within those categories, variables such as property damage and harm to a victim did not have a statistically significant effect on sentences.

1) Court and Community Characteristics

The importance of relationships among the defendant, the community and the case-processing characteristics which were discussed above in sections A and B is emphasized by the findings shown on Graphs 5, 6 and 7.

Graph 5 outlines the variations in net fines imposed by community for each of the five offense groups. Except for vehicular offenses, fines were required far less frequently of defendants in Bethel, Nome, and Barrow than in other areas. The actual fines paid also tended to be lower, even for vehicular offenses. However, Graph 6 indicates that defendants in Bethel and Nome were more likely to serve time in jail than defendants in the other communities.

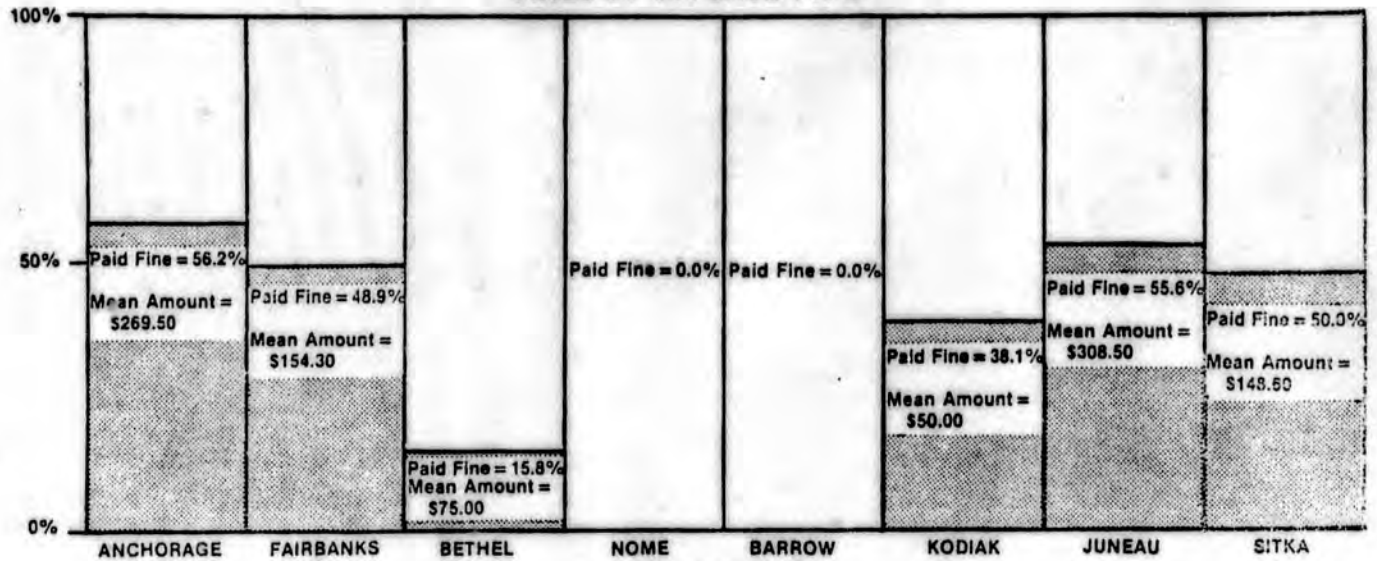
Besides reviewing the likelihood that a defendant would pay a fine or go to jail, the analysis considered factors affecting the length of a jail sentence. The relationships between length of sentence and statistically significant factors are shown on Graph 7. These factors were especially noticeable in vehicular offenses. Defendants convicted after a jury trial of a vehicular offense served about 13.2 days extra

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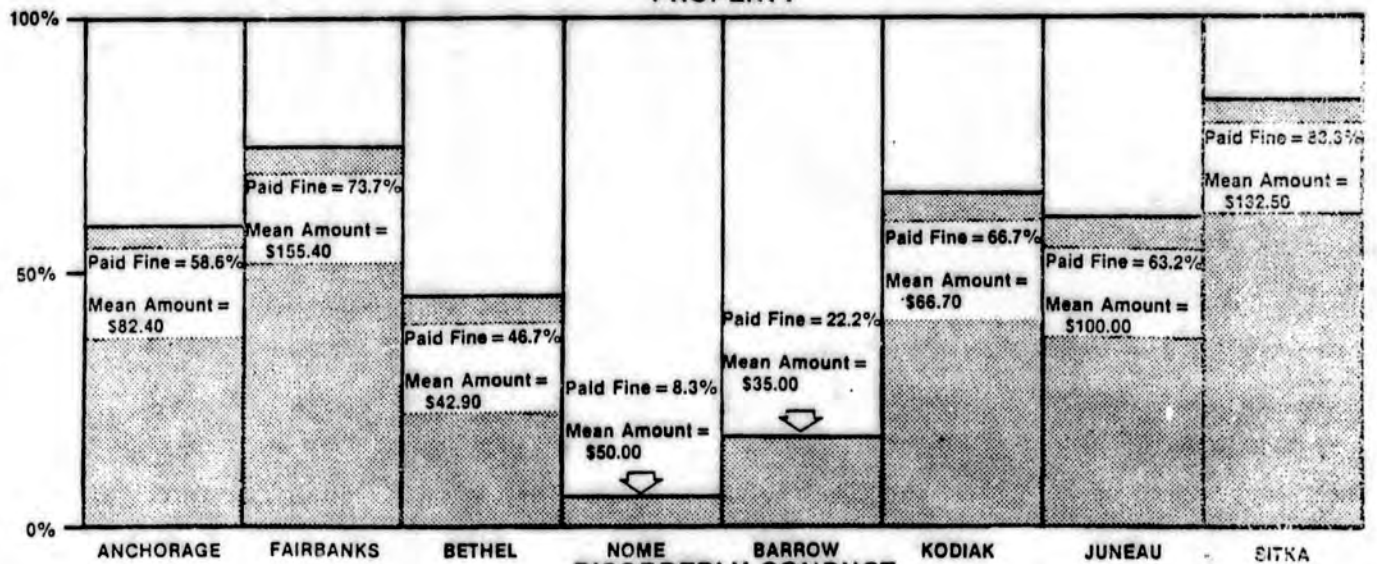
\* The studies were Statistical Analysis of Misdemeanor Sentences in Anchorage and Fairbanks (Aug. 15, 1974 - Aug. 14, 1976), published in 1979 which found large sentence increases for Native and Black defendants, and Alaska Fish and Game Sentences: 1980-1981, which found that women and defendants under the age of 21 received smaller fines for commercial fishing misdemeanors than those imposed on other similarly-situated defendants.

**GRAPH 5**  
**(1981 Misdemeanor Sentences)**

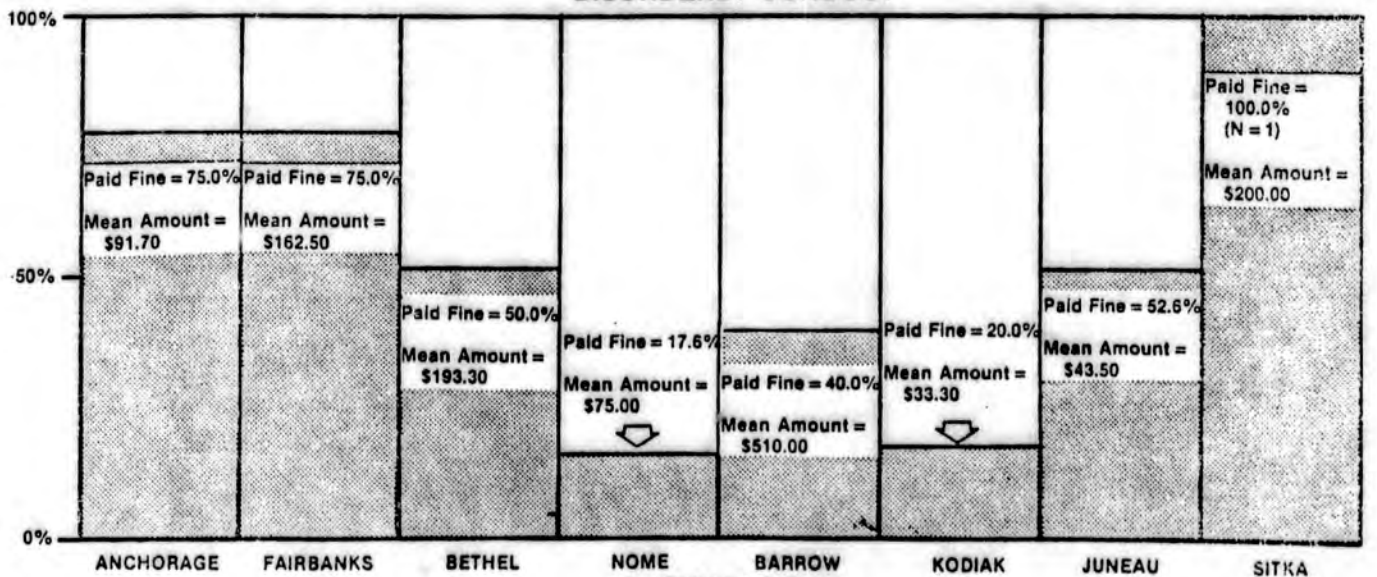
**FINES BY OFFENSE TYPE**



**PROPERTY**

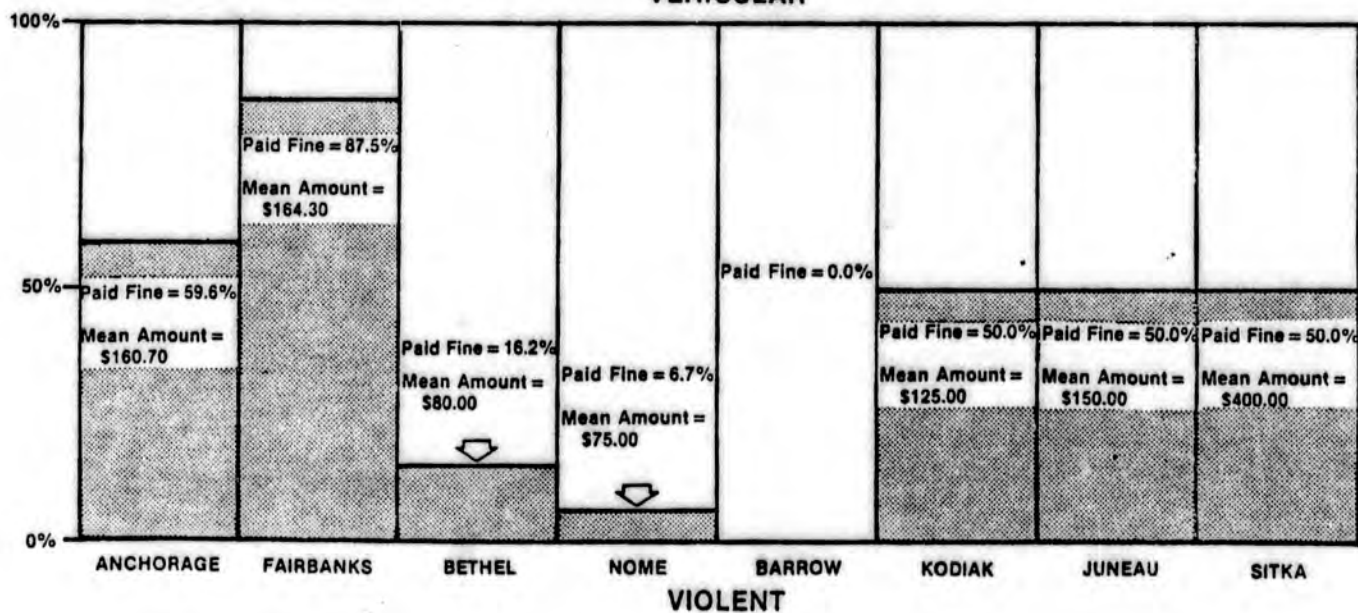
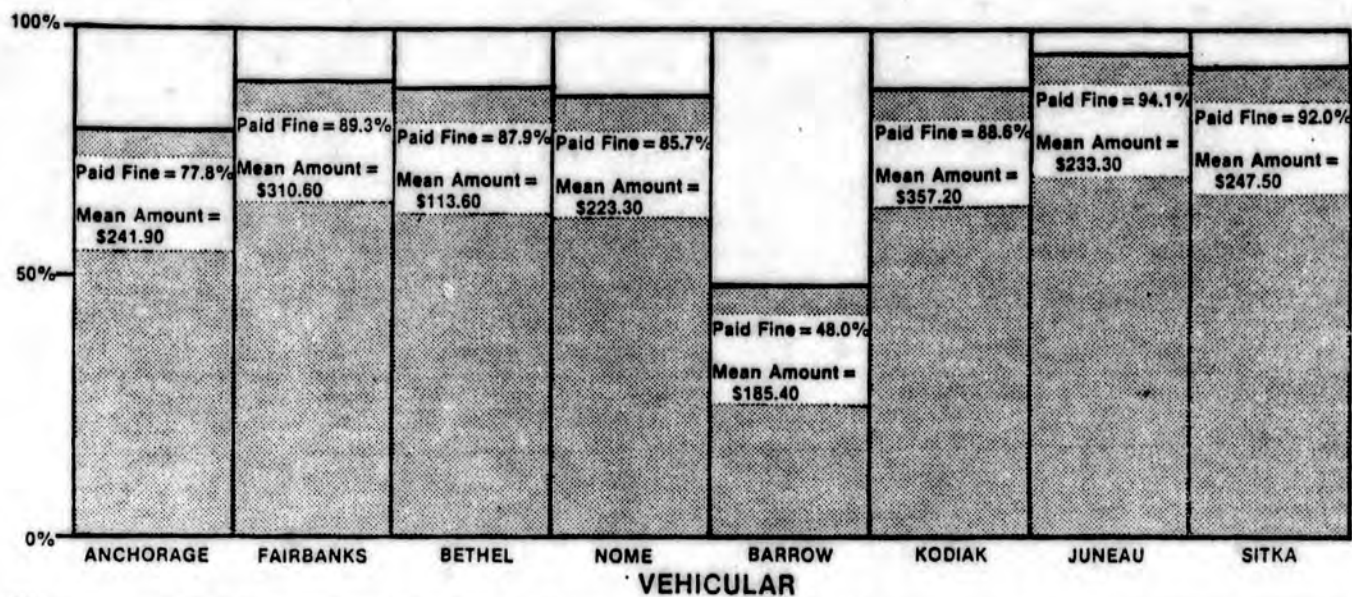


**DISORDERLY CONDUCT**

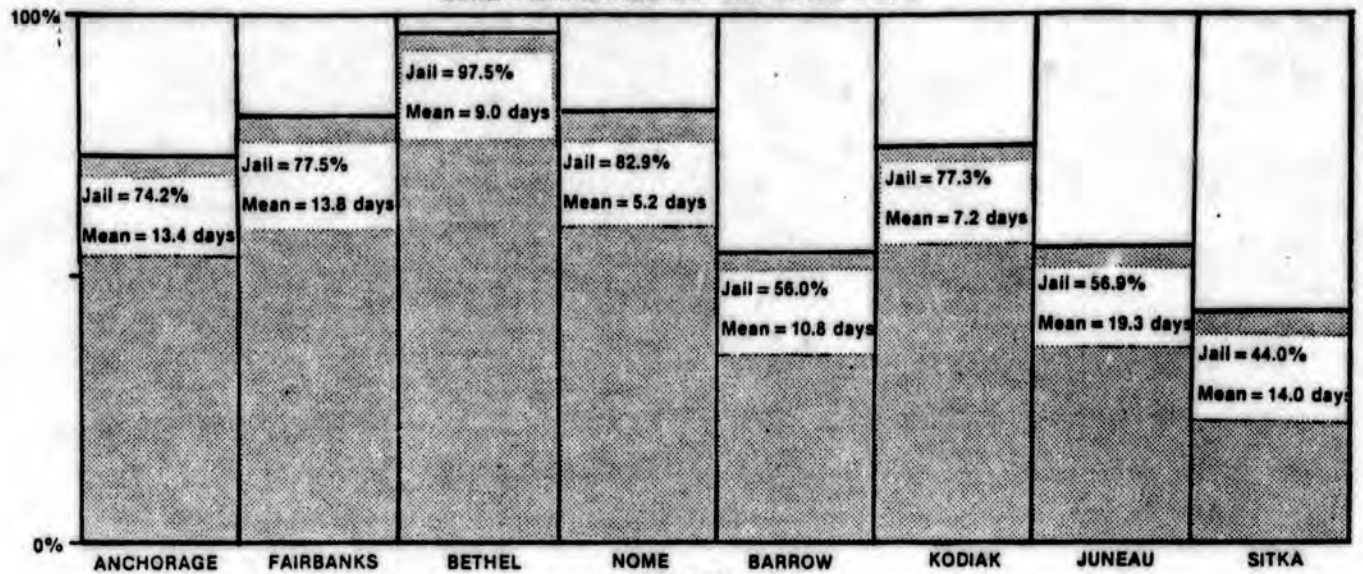


**ALCOHOL/DRUG**

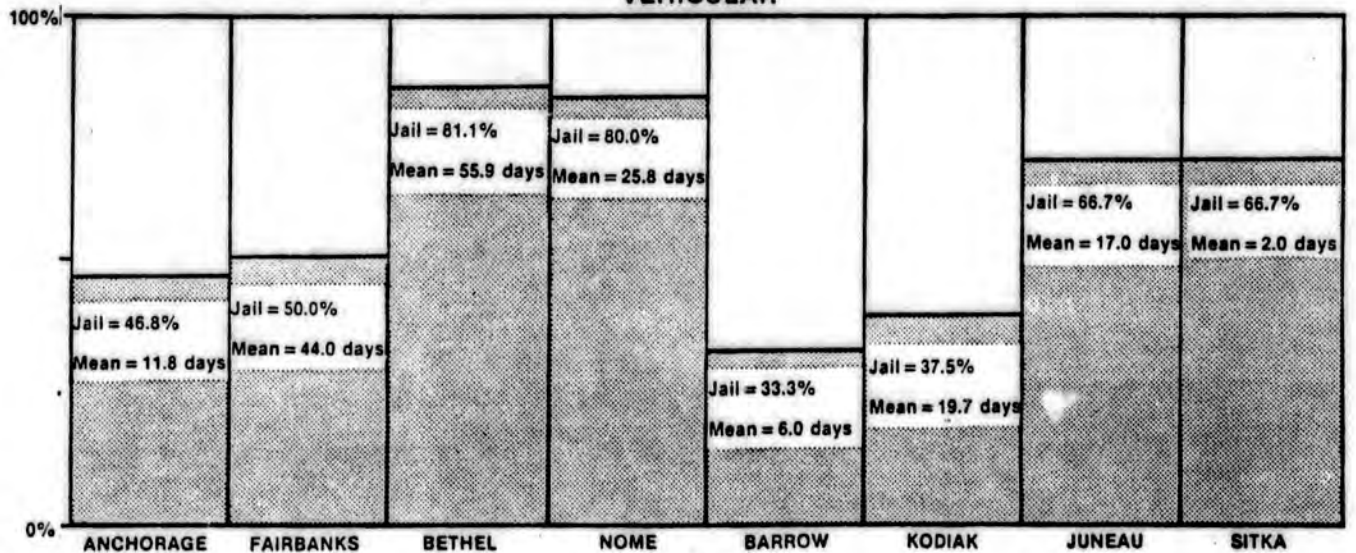




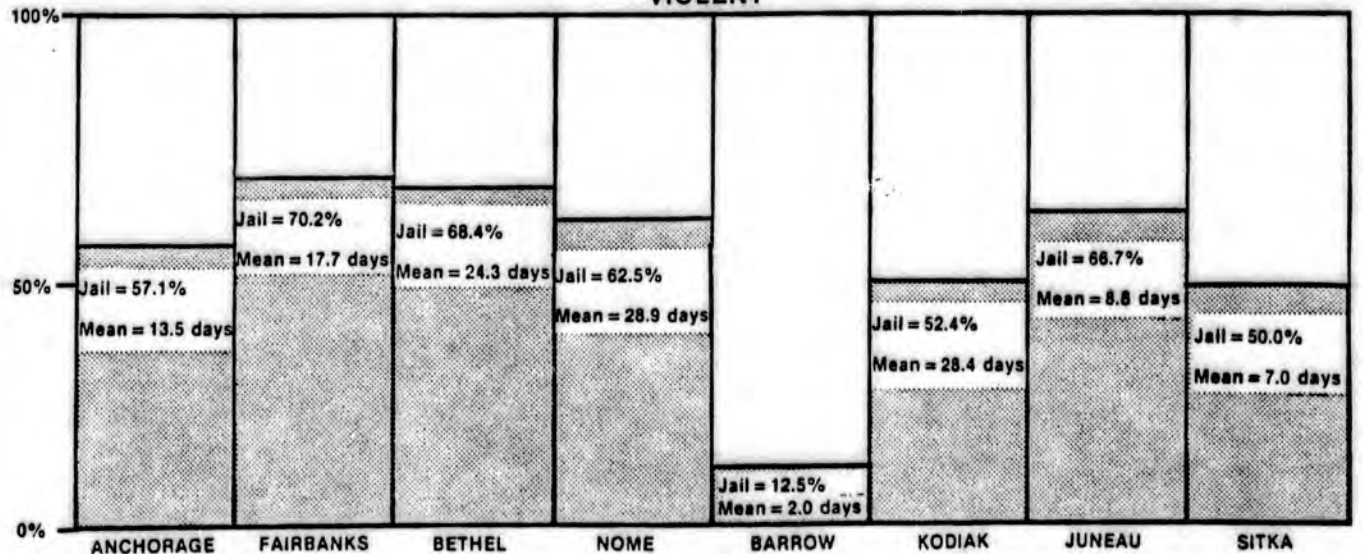
**GRAPH 6**  
**(1981 Misdemeanor Sentences)**  
**JAIL PENALTIES BY OFFENSE TYPE**



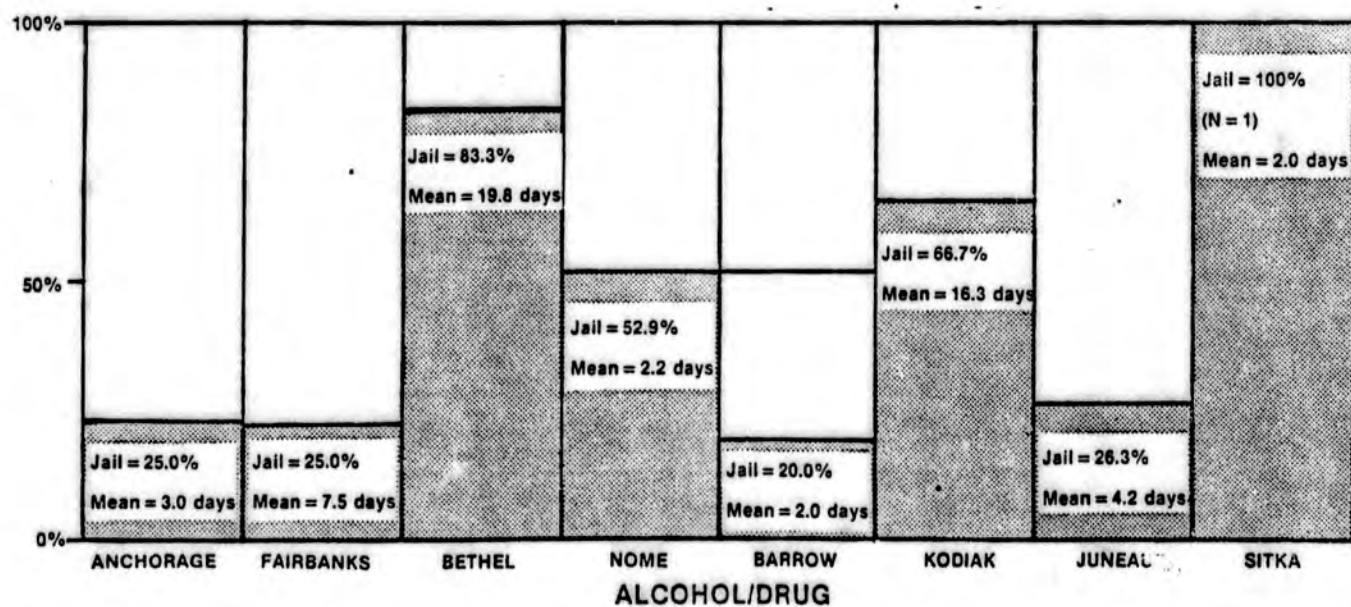
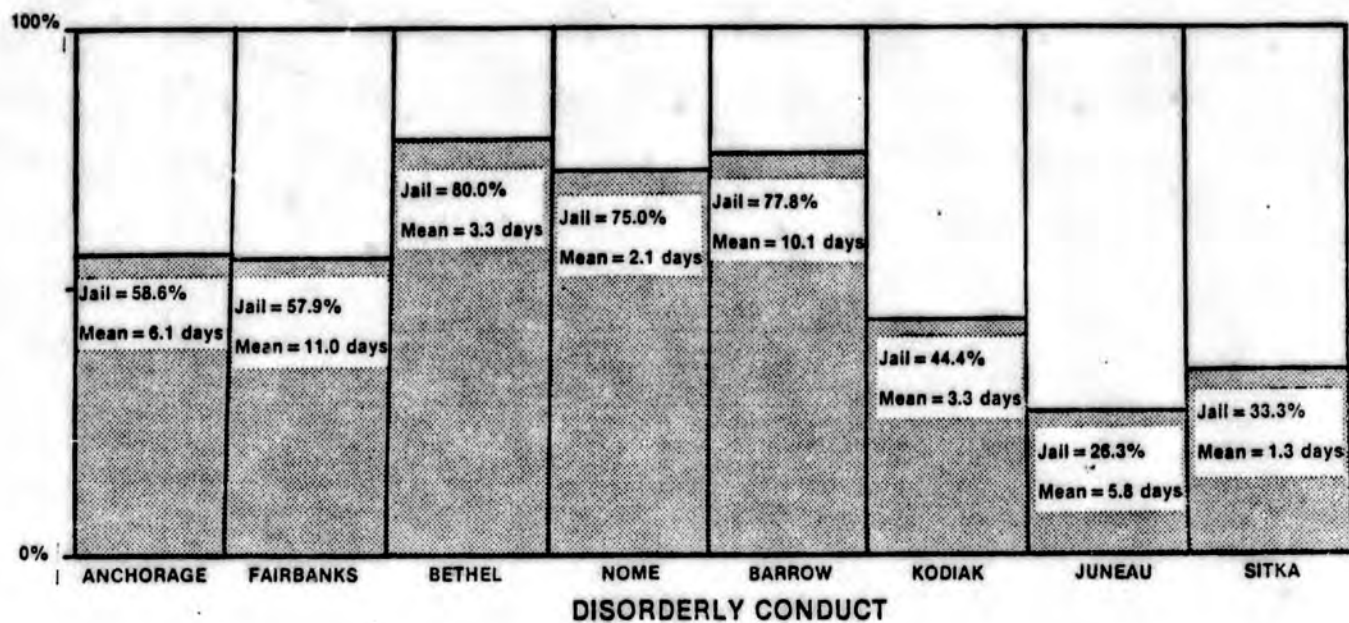
**VEHICULAR**



**VIOLENT**



**PROPERTY**





**GRAPH 7**  
**(1981 Misdemeanor Sentences)**  
**FACTORS AFFECTING LENGTH OF SENTENCE**

|                                                                                  | VEHICULAR      | VIOLENT        | PROPERTY       | DISORDERLY<br>CONDUCT | ALCOHOL/DRUG             |
|----------------------------------------------------------------------------------|----------------|----------------|----------------|-----------------------|--------------------------|
| <b>COURT AND<br/>COMMUNITY<br/>CHARACTERISTICS</b>                               |                |                |                |                       |                          |
| Case Description<br>Index                                                        | + 0.9 days**   | - 2.3 days***  |                |                       | - 0.5 days*              |
| Proceeding at<br>which Convicted                                                 |                |                |                |                       |                          |
| 1) Other than<br>Arraignment                                                     |                | + 12.1 days**  |                |                       |                          |
| 2) Jury Trial                                                                    | + 13.2 days*** |                |                |                       |                          |
| Concurrent Counts                                                                | + 15.5 days*** |                |                |                       |                          |
| Specific Offense<br>(if DWI)                                                     | + 10.8 days*** |                |                |                       |                          |
| Additional Cond.<br>on Sentence                                                  |                | - 11.1 days**  |                |                       |                          |
| Net Fine<br>(Increase or decrease<br>in days served, per<br>dollar of fine paid) | - 0.01 days*   |                |                | + 0.04 days***        | + 0.03 days***           |
| <b>DEFENDANT<br/>CHARACTERISTICS</b>                                             |                |                |                |                       |                          |
| Age                                                                              |                |                |                |                       | + 0.1 days* <sup>+</sup> |
| Financial Index                                                                  | + 1.3 days**   |                |                | + 1.6 days***         |                          |
| Prior Felonies                                                                   |                | + 22.4 days*** | + 58.7 days*** |                       |                          |
| Prior Misdemeanors                                                               |                |                |                | + 3.2 days**          |                          |
| Alcohol Treatment                                                                |                |                |                |                       |                          |
| 1) Never Referred                                                                |                |                | + 21.3 days**  |                       |                          |
| 2) Referred, no<br>Attendance                                                    | + 10.0 days*** |                |                |                       | + 7.0 days***            |
| 3) Attended, no<br>Completion                                                    | + 49.0 days*** | + 24.6 days*** |                |                       |                          |
| 4) Currently in<br>Treatment                                                     | + 20.4 days*** |                |                |                       |                          |

<sup>+</sup> Asterisks represent the degree of significance of each coefficient.  
The smaller the P, the less likelihood that this effect is due to  
chance or random variation.

\* = 0.10 > P ≥ 0.05  
\*\* = 0.05 > P ≥ 0.01  
\*\*\* = P < 0.01

as a result. If the defendant was convicted of more than one offense, sentence length was increased (by 15.5 days for each additional charge). If convicted of DWI rather than "operator action" or another vehicular offense, sentence length increased by 10.8 days. However, there was a trade-off: for every dollar of fine the defendant was required to pay for this type of offense, the jail sentence decreased by 0.01 days.

Case-processing characteristics remained important for offenses other than vehicular, although they appeared less frequently. Fines were correlated with the length of sentences imposed on disorderly conduct and alcohol/drug offenses. For every additional dollar of fine paid, the defendant also served another 0.04 days (disorderly conduct) or 0.03 days (alcohol/drug) in jail. Violent offenders were sentenced to an average of 12.1 days more if they pled guilty at a proceeding other than arraignment. However, if additional conditions (besides jail and/or fine) were imposed, they spent 11.1 days less in jail.

Specific reference needs to be made at this point to the "Case Descriptor Index\*" noted on Graph 7, which essentially assigned "points" to more rural (0 to -6 points) or more urban (0 to +6 points) defendants. An urban defendant convicted of a vehicular offense received a sentence of 0.9 days more per index point (up to 5.4 days); a rural defendant, by comparison, received .9 days less per index point. Thus, a defendant at the most "urban" end of the index scale received 10.8 days more for a vehicular offense than a defendant at the most "rural" end of the scale.

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\* The case-descriptor index summarizes information about several inter-related variables, including the defendant's race, the community in which the case was processed, the type of judge hearing the case, and whether the offense was charged under state or municipal laws. For a detailed description of the construction of the index, see part II, pp. 38-46.

## 2) Defendant Characteristics

Three types of defendant characteristics played important roles in determining the length of sentence: financial status,\* prior criminal history, and prior or current treatment for alcohol or drug problems. (See Graph 7) Less wealthy defendants tended to receive longer sentences for vehicular (1.3 days additional for each point increase on the financial index) and disorderly conduct (1.6 days per index point) offenses. The defendant's financial status did not affect sentences imposed for violent, property or alcohol/drug offenses.

Prior criminal history and treatment for alcohol or drug problems, however, contributed more to sentence length than did financial status. Over half of the defendants studied had been convicted at least once before. Defendants charged with violent crimes were least likely to have had a prior record (only 44.3%); those convicted of vehicular offenses were most likely (62.8%) to be repeat offenders. Most defendants with prior offenses had committed misdemeanors in the past; about 5% of all defendants had been convicted of prior felonies. Those few, however, received considerably longer sentences if convicted of a violent or property offense. The presence of prior felonies added 22.4 days to a violent offense sentence and 58.7 days to a property sentence.

The other defendant characteristic closely associated with sentence length was a history of referral to, or treatment

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\* Financial status was also measured by an index, which included information about the type of attorney representing the defendant, his employment status, and his bail or custody status at the time of sentencing. The index assigned "points" to more (0 to -3) or less (0 to +3) financially able defendants. For more detailed information, see Part II, page 46.



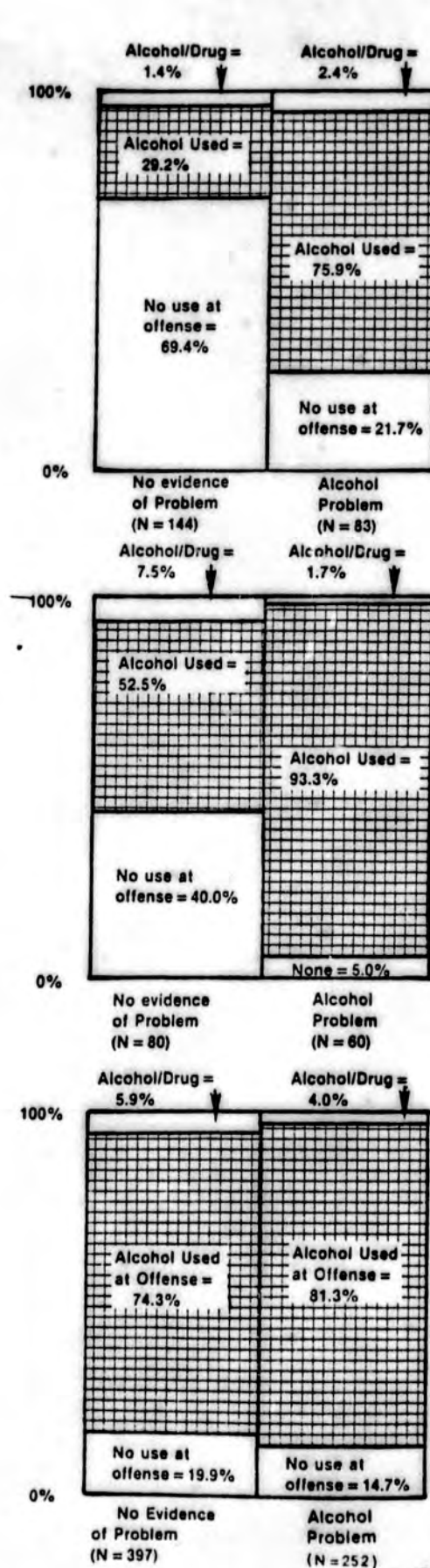
in, alcohol programs.\* Alcohol use at the time of the offense or a history of alcohol problems were not associated with sentence lengths, although these variables were correlated with additional conditions of sentence such as the requirement of alcohol treatment. Rather, judges appeared to be taking into account what the defendant had done (or not done) in the past to solve his problems.

Because of the very high correlation between a history of alcohol problems and a history of prior convictions, especially for misdemeanors (see Graph 8), we hypothesize that much of the prior treatment may have been a condition of an earlier sentence. Thus, when a judge saw that a defendant had been referred for alcohol treatment, but had not attended the program (or attended, but did not complete it), he may have concluded that the defendant had not complied with previous court orders. Whatever the reason, these defendants received significantly longer jail sentences for violent (24.6 days), vehicular (49.0 days), and alcohol/drug (7.0 days) offenses.

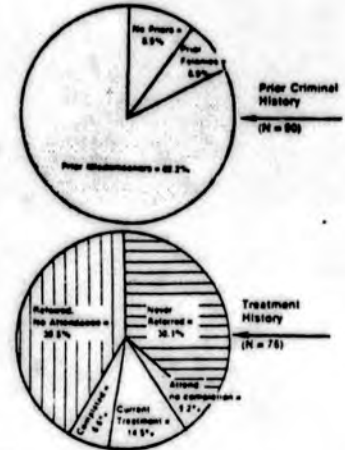
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\* Two caveats about this variable are in order. The first is that data regarding a defendant's referrals or treatments was usually available only if the judge had been participating in the special court program for misdemeanor sentencings in the second half of 1981. The information sheets used in this program were present less frequently in Anchorage case files than in other areas. Thus, our data may underestimate the effects of this variable. Second, even when information was available, the judge's or clerk's notes tended to be quite brief. We know only that defendants had a history of alcohol problems, and that they were referred to, attended or completed alcohol treatment programs. Data about the types of programs, reasons for non-attendance, or past sanctions by the court for failure to comply with treatment requirements were not available consistently enough to record for our study. Although such data is routinely collected by the Alcohol Safety Action Program (ASAP) that data was not integrated into the formal court files, and thus was not available for use in this study.

**GRAPH 8**  
**(1981 Misdemeanor Sentences)**  
**DEFENDANTS WITH PRIOR ALCOHOL PROBLEMS**

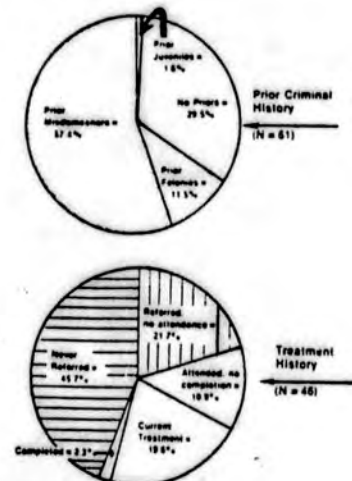


**PROPERTY**



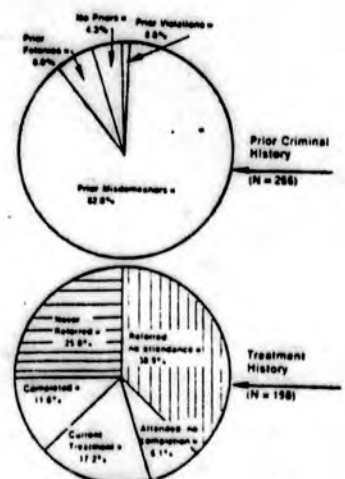
**Property Defendants with Prior Alcohol Problem**

**VIOLENT**



**Violent Defendants with Prior Alcohol Problem**

**VEHICULAR**



**Vehicular Defendants with Prior Alcohol Problem**

Defendants with alcohol problems who had never been referred to a treatment program (at least as far as the court records showed) received longer sentences (21.3 days) for property offenses, and those who were in a treatment program at the time of sentencing were required to spend more time in jail for vehicular offenses (20.4 days).

Graph 8 shows how many defendants with alcohol problems in each of the three major offense groups (vehicular, violent, and property) actually had completed alcohol treatment in the past. The largest group (11.6%) is found in vehicular offenses; smaller proportions of violent (2.2%) and property (6.6%) offenders with alcohol problems had finished an alcohol treatment program. Overall, only 31 defendants (2.2%) of the 1,366 studied had completed alcohol treatment. When compared with the numbers reported to have an alcohol problem (370, or 27.0% of 1,366), the data suggest\* that completion of treatment may have resulted in a dramatically lower rate of recidivism. Thus, insistence by the courts that a defendant complete treatment for alcohol problems may be more effective in reducing recidivism than increasing lengths of sentences or imposition of other sanctions for repeat offenders. The findings point to a need for further analysis on which policy decisions by courts, state agencies and the legislature could be firmly based.

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\* We cannot compare convicted defendants who have been referred to, or who have completed, alcohol treatment with all persons referred to (or completing) treatment programs, so our finding is suggestive rather than conclusory.



#### D. Sanctions Imposed

The preceding discussion of the factors which affect sentence length provides the basis for a brief review of the sentences actually imposed. To summarize: the defendant's prior convictions or history of unsuccessful treatment for alcohol problems had the largest effect on sentence length. His community and case-processing factors played significant roles as well, but characteristics such as age (except the small effect for alcohol/drug offenses), sex, and race did not lengthen or decrease his sentence.

##### 1) Jail and Fines

Both length of sentence and likelihood of receiving a jail or fine sentence varied by the type of crime as well as by community. Graphs 5 and 6 showed the differences by area; Graphs 9 and 10 show them by type of crime.

The mean (average) sentences for those who served at least one day in jail ranged from 31.0 days for violent offenses to 16.9 days for property convictions, 12.6 days for vehicular offenses and 9.6 (alcohol/drug) or 5.8 days (disorderly conduct) for less serious offenses. The likelihood that a misdemeanor would go to jail rather than receive probation or a wholly-suspended sentence also varied by the type of offense. All offenders convicted of drunk driving spent at least three days in jail. Over half of most other offense types received jail sentences, ranging from 62.8% for violent offenses to 55.6% for disorderly conduct convictions. Only alcohol/drug offenders had a better-than-even chance of probation (45.3% went to jail for at least one day).

Fines were imposed in addition to, and occasionally in lieu of jail time, for all offense types. Fines were imposed for over half of the defendants committing vehicular and disorderly conduct misdemeanors. The highest rate (83.2%) and amount (\$259.90), not surprisingly, was for vehicular offenses. Next highest in amount were fines for property

A stacked bar chart illustrating the percentage of cases resulting in jail for five different offense categories. The vertical axis represents the percentage, ranging from 0% to 100% in increments of 50%. The horizontal axis lists the offense categories. Each bar is divided into two sections: a bottom section with a cross-hatch pattern representing the percentage of cases resulting in jail, and a top white section representing the percentage of cases not resulting in jail. The exact percentage for each category is labeled within its respective bar.

| Offense Category   | Percentage Resulting in Jail |
|--------------------|------------------------------|
| VEHICULAR          | 72.9%                        |
| VIOLENT            | 62.8%                        |
| PROPERTY           | 59.1%                        |
| DISORDERLY CONDUCT | 55.6%                        |
| ALCOHOL/DRUG       | 45.3%                        |

(Alcohol/Drug, 9.6 Days)

(Disorderly Conduct, 5.8 Days)

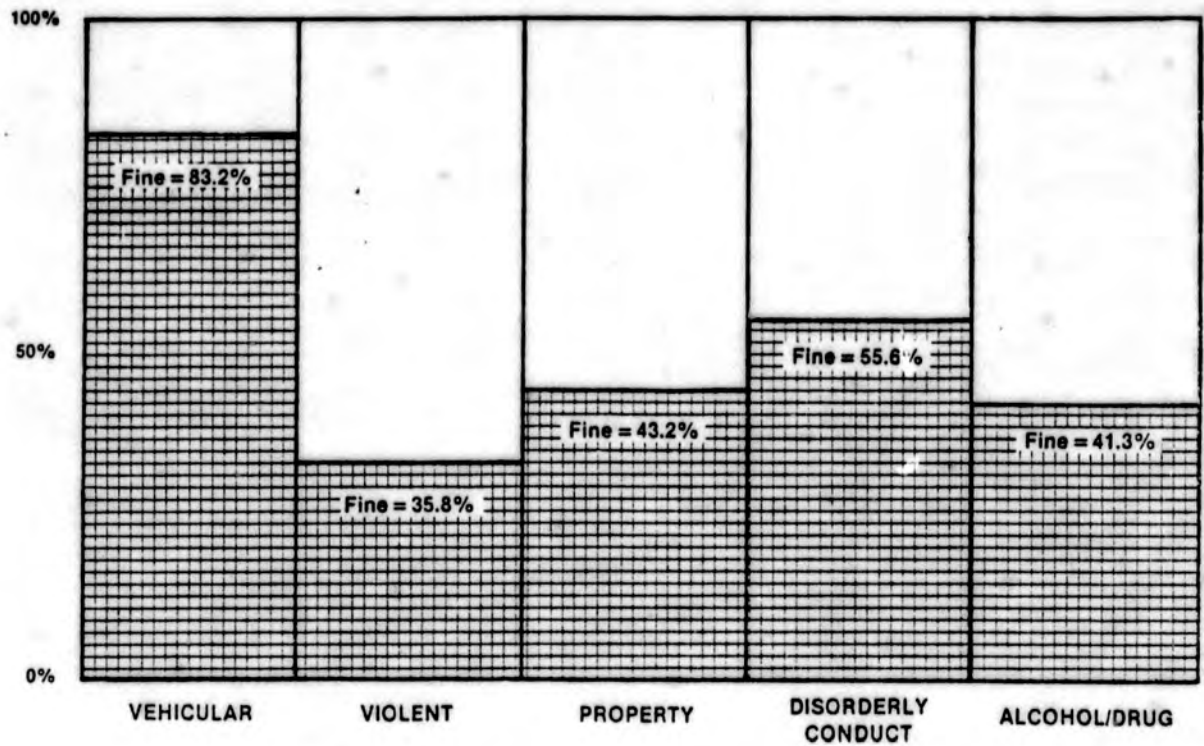
(Property, 16.9 Days)

(Violent, 31.0 Days)

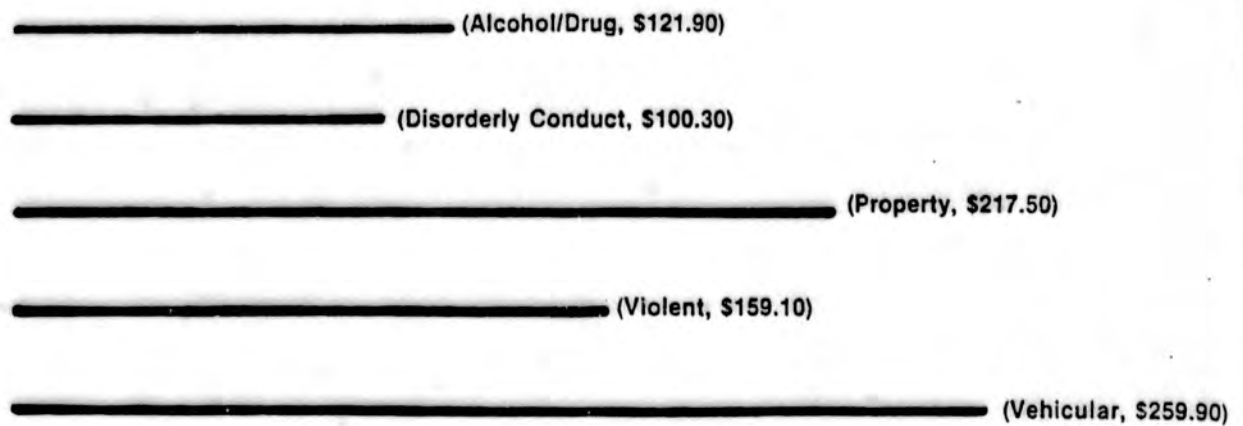
(Vehicular, 12.6 Days)

**Mean Sentences, in DAYS, for Defendants Serving at Least One Day in Jail**

**GRAPH 10**  
**(1981 Misdemeanor Sentences)**  
**LIKELIHOOD OF FINES BY OFFENSE TYPE**



Percentage of Defendants Paying at Least \$1.00 Fine



\$0                      \$100.00                      \$200.00                      \$300.00

Mean Fines, in DOLLARS, for Defendants Fined at Least \$1.00



(\$217.50) and violent (\$159.10) offenses. However, only 43.2% of property offenses and 35.8% of violent defendants received a fine.

## 2) Other Conditions

Besides imposing fines and jail terms,\* judges required defendants to meet additional conditions. These included receiving treatment or counseling for problems, getting and holding a job, and forfeiture of a weapon. Nearly two-thirds (66.4%) of all violent offenders had such conditions imposed. Through multiple regression analysis, the use of such conditions was associated with a decrease of 11.1 days in the sentence length for violent offenses. Most Nome (93.5%) and Bethel (75.7%) defendants in this category were required to meet conditions such as forfeiture of a weapon, no use of alcohol, and alcohol treatment. Fewer Anchorage defendants (only 44.7%) were required to comply with imposed conditions as part of their sentence.

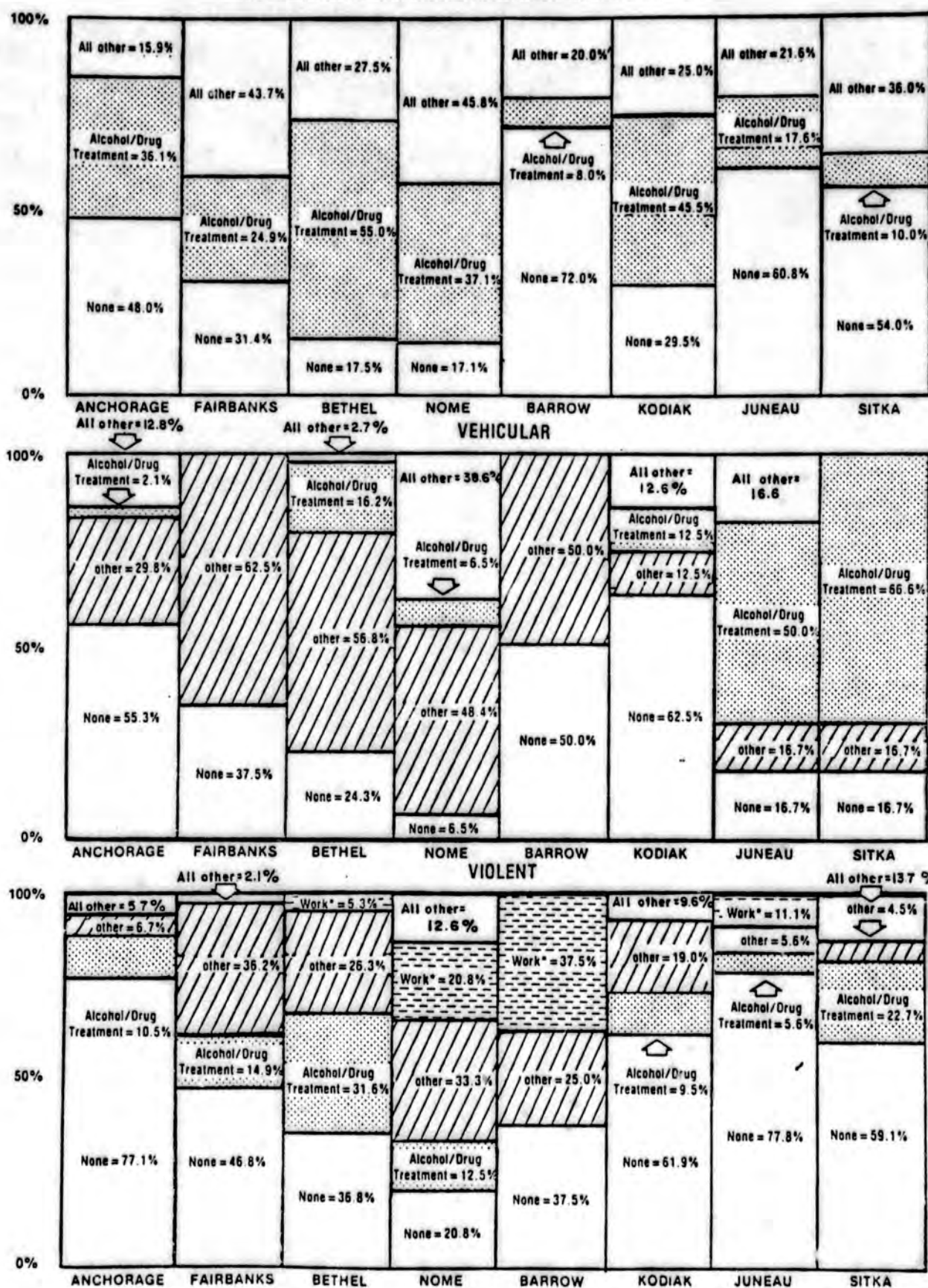
Vehicular offenders--who were the most likely to spend time in jail and the most likely to be fined-- also had a high rate of imposition of additional conditions. 58.1% of them were required to receive drug or alcohol treatment, education, or some combination of various conditions. Such conditions were least likely to be used in Barrow, Juneau and Sitka, and were most frequently employed by judges in Nome and Bethel.

While use of alcohol at the time of offense did not appear to affect either the length of a sentence or the likelihood of going to jail, it correlated closely with additional conditions imposed. Two-thirds (66.9%) of defendants using alcohol were assigned some condition or combination of

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\* Restitution was required in less than 14% of all cases, and was not significantly related to any offense type or community.

**GRAPH 11**  
**(1981 Misdemeanor Sentences)**  
**CONDITIONS ON SENTENCE BY OFFENSE TYPE**



\* "Work" is defined as a requirement that the defendant acquire and/or maintain a job.

requirements. These included alcohol treatment, education (a requirement to obtain a G.E.D. or attend classes other than alcohol information), and "other" conditions such as no use of alcohol or restrictions on contact with certain persons or places. By contrast, over three-quarters (76.9%) of defendants who did not use alcohol at the time of their offenses were not required to comply with additional conditions of a sentence.

E. Final Notes: Follow-up Interviews

The findings reported in this study are indicators of reasons for variations in sentencing patterns. Statistical analysis is useful for reporting specific facts such as sentence lengths, and for determining factors--such as alcohol treatment--which are significantly associated with sentencing decisions. However, it cannot account for all of the variation in sentences. In this study, the data collected from court case files and police reports explained about 25-30% of the differences among sentences.

These percentages are fairly typical for multiple regression analyses of this type of data. The remaining variation may be due to chance or to information that was not included in case files or not recorded for the study. In an effort to account for some of the remaining variation, and to explain the findings related to community and type of judge, we interviewed several judges and attorneys.

Both a consideration of community values and the availability of justice system resources were stressed during the discussions of the study's findings. Judges said that violent offenses in rural areas, even relatively minor offenses, were considered to be serious by members of the communities in which they occurred. Thus, following the Supreme Court guidelines set out in Chaney\*, the judges in these areas tended

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\* State v. Chaney, 477 P.2d 441 (1970) and other Alaska Supreme court cases cite "community condemnation" of the offender or of certain types of crime as one of the criteria to be used by judges in imposing sentence.



to impose fairly lengthy sentences. Their decisions were also affected by the availability of treatment programs. For example, the Nome alcohol treatment program made its own decisions about who could enter the program. If a defendant was not acceptable, the judge was forced to consider other sentencing alternatives.

Such factors pervaded every decision made about case-processing and sentences imposed in the urban and rural areas of the state. A lack of public defender attorneys in areas such as Barrow, Kodiak, and Sitka in 1981 was one explanation given for the high rates of guilty pleas entered at arraignments in those areas\*. In Fairbanks and Anchorage, a public defender attorney is typically present at most misdemeanor arraignments, perhaps making it simpler for judges to encourage the defendant to consult with an attorney before entering a guilty plea.

Those interviewed also emphasized the changes which have occurred in community resources since 1981 which may have affected misdemeanor sentencing patterns. Rapid technological advances--such as the widespread presence of telephones in villages which may have had only one village phone in 1981--allow better communication for judges in small communities. This may allow more frequent contact with defendants, opening up more options for alternatives to jail sentences. A new community service program is being tested in Anchorage for sentenced misdemeanants. Superior court judgeships have been created in Barrow, Palmer, Wrangell, and

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\* However, this fact cannot adequately explain the situation, since Graph 3 indicates that the Public Defender represented 58.5% of the Barrow defendants, and 34.7% of Kodiak defendants. By contrast, Juneau defendants were represented by the Public Defender or a court-appointed attorney only 17.7% of the time, despite the fact that the community had a full-time assistant public defender.

Valdez which may alter sentencing patterns. Public defenders are available in Barrow and Kodiak in 1983, but were not easily accessible in 1981. The very rapid rate of change in laws, court resources, and general technological and economic factors suggest that caution should be used in generalizing from 1981 misdemeanor sentences to future years.

ALASKA MISDEMEANOR SENTENCES: 1981

PART II

Detailed Methodology, Findings, & Tables



## I. STATISTICAL METHODOLOGY

### A. Data Collection

#### 1) Sample

The Judicial Council's data base consisted of a sample of misdemeanor offenses committed by defendants who were sentenced during the last 6 months of 1981 in Anchorage, Barrow, Bethel, Fairbanks, Juneau, Kodiak, Nome and Sitka. The Alaska Court system provided Council with computer lists of misdemeanor cases which came within the time criteria for each community. From the various lists, a sequential sample by court file number was drawn. Cases were excluded if they came under the following categories:

- no statutory jail penalty for offense
- involved a juvenile
- deferred prosecution cases
- dismissed offenses
- diverted offenses
- defendants convicted but not yet sentenced
- original court charge was known to be a felony
- Fish and Game offenses
- failure to satisfy, pay fine, or answer bench warrant
- probation or parole violation

For Anchorage (500 cases) and Fairbanks (250 cases), sample sizes were predetermined. In other communities, all misdemeanor cases were coded except those which were excluded by the restrictions listed above.

The selected cases represented 21% to 95% of the total number (Table 1) of convicted defendants from the eight study areas during that time frame.

## 2) Data Coding Instrument

Development of the data coding instrument began in October 1982. Many variables used in the Council's 1974/76 Anchorage and Fairbanks Misdemeanor Study were also used in the present study. However, to ensure that the maximum amount of information was collected, 1981 Anchorage misdemeanor case files and police department reports were thoroughly reviewed to identify additional variables.

Based upon the review of misdemeanor case files and police department reports, a defendant and charge questionnaire was constructed by the end of November, 1982, and was ready for pre-test. In conjunction with development of the defendant and charge questionnaire, a coding manual was constructed.

During November and December, 1982, Council research staff submitted the questionnaire and manual to a rigorous pre-test. This test involved the actual coding of 100 Anchorage misdemeanor cases, and resulted in changes to both questionnaire and manuals. Finally, by the end of December, 1982, the operational questionnaire (Appendix A) was ready for use.

## 3) Data Sources

The data for the misdemeanor study was collected from three sources, misdemeanor case files, police reports, and Department of Public Safety reports. If a case could not be coded completely using the misdemeanor case file, the corresponding police report was then used. If, after using these two sources, the questionnaires still contained missing information, such as race or prior criminal record, Department of Public Safety finger print files were used to complete the coding.

The three data sources were used to ensure accuracy of information gathered. The misdemeanor case file was useful in obtaining approximately 85% of the information coded on both

defendant and charge questionnaires, the remaining 15% was obtained using secondary sources. The following were some basic problems which occurred with use of misdemeanor case files:

- files lacked log notes
- log notes (original copies) illegible
- judgment forms missing
- sentence inconsistencies between log notes and judgment forms
- statute violation number did not correspond with actual charge
- variations in a single case file as to a defendant's birthdate, race, prior criminal history

One source of information which was not consistently available in the misdemeanor case file was the Misdemeanor Sentencing Information Sheet\* (MSIS). Use of the MSIS varied from community to community. Most communities failed to use the form or information present on the form conflicted with misdemeanor case file log notes. Of the eight areas, one location did use the form correctly and consistently.

#### 4) Coding

Four coders were utilized for data collection in this study. Three of the coders had been involved in previous Judicial Council research projects, and were familiar with data collection procedures.

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\* During the last six months of 1981 many of the state's judges and magistrates participated in a special court program designed to obtain more information about misdemeanants at the time of sentencing. A Misdemeanor Sentencing Information Sheet was developed by Council personnel in order to collect data which previously has been difficult to gather (e.g., information on the defendant's race, alcohol use at offense, history of alcohol treatment and previous criminal history). The MSIS, as it was called, was designed to measure the judge's perceptions of the defendant at the time of sentencing. Following a two-week period of pretesting in March and April 1981, the operational MSIS (Appendix B) was to be completed by judges and included in the misdemeanor case file for cases sentenced during the last six months of 1981 to facilitate coding for the present study.



To insure uniform and accurate coding of misdemeanor case files, the Council research staff underwent four weeks of intensive training in the use of the defendant and charge questionnaire. Time was also spent with court personnel, who explained the various forms and language used in misdemeanor case files. Similar attention was given to the Anchorage Police Department report material.

Coding for the study was conducted between December, 1982, and April, 1983. The average time involved in coding was approximately twenty minutes per case. This did not include double coding, the checking process, or gathering police department information, which added another 40 minutes per case.

The actual process of coding a misdemeanor case centered around establishing a minimal error rate. In order to accomplish this, the following procedure was used for each case. If the case met the established criteria for selection, the case was coded. Once the case was initially coded, it was then independently coded by another coder. Finally, a third coder would check both sets of coded questionnaires for discrepancies. If any discrepancies were found, the person checking would review the misdemeanor case file to determine the correct code. In addition, the coding supervisor would randomly select coded cases and check for accuracy of the coding and checking process.

Because of the nature of the data source, coders were often required to use discretionary judgement in coding, which led to coding differences in a single case. When this occurred, the on-site supervisor would resolve the question. If a disagreement in coding surfaced, which in the view of the on-site coding supervisor would have had a significant impact upon the study, a senior Council analyst in Anchorage would be immediately contacted.

The final phase of data collection was to assign each coded case an identification number. The numbers were used to insure maximum confidentiality of the defendants in the cases coded.

#### 5) Keypunching and Verification

Data was keypunched, verified and transferred to magnetic tape for analysis by statistical programs available on the University of Alaska's Computer Network. Missing or apparently incorrect information was checked against the original forms and corrected.

#### B. Definitions

. The 1,366 selected defendants were convicted on a total of 1,655 counts. Unlike previous Judicial Council studies, the unit of analysis in this study is the defendant and the aggregate penalty received. This approach eliminated some potential statistical problems (e.g., lack of independence of sample units) which could arise when a "count" is used as the unit of analysis. However, in order to capture some of the effects of being sentenced on more than one charge, penalties were aggregated. This aggregate penalty is defined as the total penalty assigned for all counts against one defendant. For consecutive sentences, the aggregate penalty is the sum of sentences imposed on all pertinent counts. When sentences were required to be served concurrently, which is the far more typical situation, the most serious charge (defined as the one with the most severe sentence) was used to characterize all of the charges against the defendant.

Data was divided into six broad misdemeanor categories (i.e., violent misdemeanors, property offenses, vehicular offenses, drunk and disorderly convictions, alcohol/drug law

**TABLE 1**  
**(1981 Misdemeanors)**

Sample Composition  
of Misdemeanor Data

| Community | Total Number<br>of Cases | Cases<br>in Study | Percent<br>of Total | Counts<br>in Study |
|-----------|--------------------------|-------------------|---------------------|--------------------|
| Anchorage | 2402                     | 511               | 21.3                | 658                |
| Barrow    | 56                       | 53                | 94.6                | 56                 |
| Bethel    | 148                      | 117               | 79.1                | 134                |
| Fairbanks | 1222                     | 258               | 21.1                | 294                |
| Juneau    | 491                      | 114               | 23.2                | 147                |
| Kodiak    | 270                      | 101               | 37.4                | 120                |
| Nome      | 138                      | 120               | 87.0                | 146                |
| Sitka     | 174                      | 92                | 52.9                | 103                |
| Total     | 4901                     | 1366              | 27.8                | 1655               |



TABLE 2  
(1981 Misdemeanors)

Description of  
Misdemeanor Offense  
Categories and Sub-Categories

Violent

Assault:

Assault and battery; assault and battery upon police officer; assault; assault 4<sup>0</sup>; assault 3<sup>0</sup>; child abuse

Weapons:

Discharge of firearm in public; carrying concealed weapon; misconduct with weapons 2<sup>0</sup>; misconduct with weapons 3<sup>0</sup>; possessing firearm while under the influence.

Property

Trespass:

Criminal trespass; criminal trespass 1<sup>0</sup>; criminal trespass 2<sup>0</sup>; trespass; unauthorized entry.

Mischief:

Criminal mischief; criminal mischief 3<sup>0</sup>; criminal mischief 4<sup>0</sup>; malicious mischief; malicious destruction of property; damaging property of other; tampering with vehicle.

Theft:

Larceny; shoplifting; theft 2<sup>0</sup>; theft 3<sup>0</sup>; theft 4<sup>0</sup>; theft of vehicle; joyriding.

Fraud:

Theft by receiving; false statement for unemployment; issuing bad checks; forgery 3<sup>0</sup>; defrauding an innkeeper.

Vehicular

DWI:

DWI; OMVI; operating watercraft while intoxicated; operating vehicle while in possession of marijuana; DWI and another substance; operating vehicle and possession of hallucinogenic.

Reckless:

Reckless driving; negligent driving.

License:

Driving while license suspended; operation of vehicle, no license; permitting unlicensed operator to operate; unlawful use of operator's license.

TABLE 2  
(1981 Misdemeanors)

Description of  
Misdemeanor Offense  
Categories and Sub-Categories  
(Continued)

Vehicular (cont.)

Operator Action: Immediate notification of accident; action of operator after accident; failure to remain at scene; duty upon striking fixture; leaving scene of property damage; failure to notify-unattended motor vehicle accident; leaving scene involving unattended vehicle; failure to stop at non-injury accident; duty to stop; failure to yield; leaving scene; operating motor vehicle in closed area; fleeing or attempt to elude; false info; false reports.

Alcohol/Drug Law Violations

Intoxicating liquor to minor; possession/consumption under age; consumption restrictions; access of intoxicated person to licensed establishment; access of person under 19; license or permit required; sale of alcohol without license; contributing to delinquency of minor; prohibited contraband in 2<sup>nd</sup>; possession of hallucinogenic; possession of amphetamines.

Disorderly Conduct

Disorderly conduct; resisting arrest; drunk on roadway; consuming liquor in public place.

Miscellaneous

Obtain false ID; indecent exposure; public indecency; urinating in public; soliciting for prostitution; remaining in place of prostitution; loitering for prostitution; assignation; advancing gambling activities; harassment; official misconduct; interfering with police officer; hindering prosecution 20; failure to provide info; contempt of court; minor curfew; unauthorized animals; discharge of sewage on land.

violations and miscellaneous offenses\*). As noted above, it was necessary to select one charge to characterize each defendant. Since approximately 85% of all defendants were convicted of only one offense, the selection process was used for only a small proportion of misdemeanants. For those defendants convicted of more than one misdemeanor, the most serious charge against the defendant was chosen. In a separate process, the total sentence imposed on the defendant was determined, as described above. Thus, the combination of charge and sentence for a defendant convicted of more than one offense represents a composite of the information available.

Examples as to offenses in each misdemeanor category are presented in Table 2. For the purposes of regression analysis, violent, property and vehicular offenses were further divided into subcategories in order to analyze the effect of charge subcategories on sentence length.

The primary dependent or outcome variables analyzed in this study are sentences, defined as active\*\* jail sentence and net fine. Suspended monies were subtracted from gross fines to determine "net" fine. If the entire sentence was suspended or if no fine or jail time was imposed, the net fine amount or active jail length were treated as zero.

#### C. Geographic Relationships

For this data set, many variables were highly related. For example, if the data is divided on a urban (Anchorage, Fairbanks, Juneau) and rural basis (Barrow, Bethel, Kodiak, Nome, Sitka) there is a strong relationship between the

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\* The category "miscellaneous" included only 38 defendants who were convicted of gambling, prostitution-related, public indecency, and several other types of misdemeanors. None could be analyzed separately because of the small number of cases.

\*\* "Active" jail time is that amount that the defendant must served as of the time of sentencing. The number of days suspended is subtracted from the total sentence imposed, giving the net or active jail time.



geographic distinction and type of judge presiding over the case, race of the defendant, type of offense (state or municipal) and presence or absence of a negotiated plea. The majority of urban defendants were caucasian (70%), tried by District Court judges (94%) and charged with municipal offenses (58%); rural defendants were typically native (Indian or Eskimo) (64%), tried by magistrates (62%) or Superior Court judges (37%) and charged with state offenses (84%). In addition, 89% of the negotiated pleas occurred in urban areas. With the high multicollinearity among these variables, it is possible that, for example, the presence of a "District Court judge" could be significantly related to the outcome penalty in a regression model for one class of misdemeanor offenses, and "urban defendant" in a regression model for another class of offenses. In actuality, it is impossible to distinguish the "causal" factor among those variables that are so highly correlated.

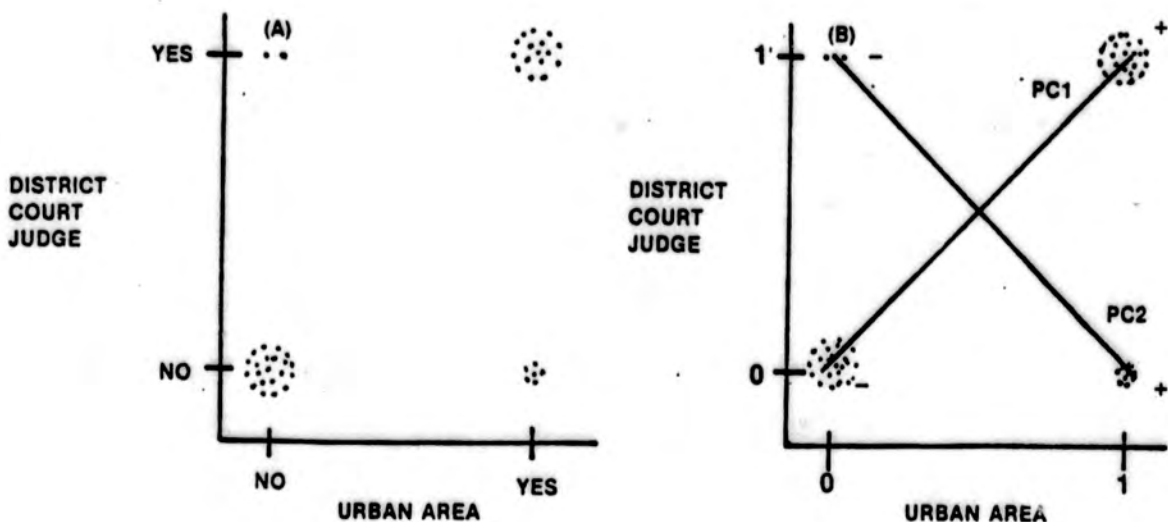
To overcome this problem, a "case descriptor" index (CDI) was created to account for the underlying relationships among these factors. The CDI is the first "principal component" (a statistical measure) for all these variables. Factors that entered into computation of the index included urban (Anchorage, Fairbanks, and Juneau) or rural (Barrow, Bethel, Kodiak, Nome, Sitka) community, judge type (magistrate, District or Superior Court judge), offense type (state or municipal), presence or absence of negotiated plea and race (caucasian, native-indian, black).

For any set of variables, there are the same number of principal components. Each component is a linear combination of the original variables, such that decreasing amounts of variation (measured in "n-dimensional" space, where "n" is the number of variables) are explained by each component, and the information (or variation) contained in each component is unrelated to any other.

For example, Graph 12A represents a cross-categorization of cases by judge type (district court judge or not a district court judge (i.e., a magistrate or superior court judge)) and community (urban or not urban (i.e.,

GRAPH 12

EXAMPLE OF CROSS-CATEGORIZATION (A) AND  
PRINCIPLE COMPONENT ANALYSIS (B) OF MISDEMEANOR DATA



rural)).\* Each dot represents a case with the attributes of the cross-categorization. As noted above, the majority of "urban" cases were tried before a district court judge; the majority of "rural" cases were tried by a magistrate or superior court judge. However, a few urban cases were tried by a magistrate or superior court judge, and a few rural cases were tried by a district court judge.

The method of principal components calculates components (i.e., new reference axes) that encompass decreasing amounts of variation, and each component is unrelated to any other. For this example (Graph 12B), the first principal component (PC1) "measures" differences between defendants from urban areas tried before district court judges and defendants from rural areas not tried before district court judges. (Note that a "yes" answer for an attribute received a "score" of 1 (one), and a "no" answer received a score of 0 (zero) on each variable.) A second, minor component (PC2) measures differences between defendants not measured on PC1.

Additional variables may be analyzed, but the alignment of the principal component axes is more difficult to perceptualize. However, the computational aspects remain the same. First, each case's score on a variable must be "standardized" (i.e., the mean value for that variable is subtracted from the "raw score," and the resulting difference is divided by the standard deviation of the variable). This

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\* Nominal variables must be separated into a series of dichotomous factors (i.e., the case does or does not have the attributes of the factor). For variables with three "named" levels (e.g., "A," "B," "C"), two dichotomous factors are created. The first factor indicates whether a case has the attributes of level A. The second factor indicates whether a case has the attributes of level B. If a case has the attributes of level C, it is noted by having null scores on the first and second factors. The procedure is similar for variables with four or more "levels."



standardized score is multiplied by a "factor loading," which is analagous to transforming a score from one of the original axes to a score on the principal component. The procedure is repeated for each variable of the index, and the sum of the "transformed" scores for each variable equals the index score.

Means, standard deviations and factor loadings for each variable that constituted the CDI are presented in Table 3. For a rural defendant who was native, who did not plea bargain, who was convicted of a state offense and who was tried before a superior court judge, the CDI was -5.6023. The computation is as follows:

$$\text{INDEX} = \text{SUM} ([(\text{LOADING}) * (\text{SCORE} - \text{MEAN}) / (\text{SD}))]$$

$$\begin{aligned} \text{CDI} &= [(-0.88605) * (1 - 0.3536) / (0.4783)] (\text{"RURAL"}) \\ &+ [(-0.58060) * (1 - 0.3661) / (0.4819)] (\text{"NATIVE"}) \\ &+ [(0.24302) * (0 - 0.0470) / (0.2116)] (\text{not "BLACK"}) \\ &+ [(0.42247) * (0 - 0.1614) / (0.3680)] (\text{no "PLEA BARGAIN"}) \\ &+ [(0.63181) * (0 - 0.4307) / (0.4954)] (\text{not "MUNICIPAL OFFENSE"}) \\ &+ [(-0.69142) * (1 - 0.1343) / (0.3411)] (\text{"SUPERIOR COURT JUDGE"}) \\ &+ [(0.87336) * (0 - 0.6126) / (0.4873)] (\text{not "DISTRICT COURT JUDGE"}) \\ &= -5.6023 \end{aligned}$$

In effect, the use of principal components is an attempt to summarize information contained in many variables into a few components, which then may be used as indices. The chosen principal component measured the maximum amount of information contained in the set of variables that had been used to form the index.

TABLE 3  
(1981 Misdemeanors)

Means, Standard Deviations (SD)  
and Factor Loadings for Variables  
Used in Computing the Case  
Descriptor Index

CASE DESCRIPTOR INDEX  
(N=1363)

|                                  | MEAN   | SD     | LOADING  |
|----------------------------------|--------|--------|----------|
| Community (REF=URBAN)            |        |        |          |
| Rural                            | 0.3536 | 0.4783 | -0.88605 |
| Race (REF=CAUCASIAN)             |        |        |          |
| Native                           | 0.3661 | 0.4819 | -0.58060 |
| Black                            | 0.0470 | 0.2116 | 0.24302  |
| Plea Bargain (REF=NO)            |        |        |          |
| Yes                              | 0.1614 | 0.3680 | 0.42247  |
| Offense Type (REF=STATE OFFENSE) |        |        |          |
| Municipal                        | 0.4307 | 0.4954 | 0.63181  |
| Judge Type (REF=MAGISTRATE)      |        |        |          |
| Superior C.                      | 0.1343 | 0.3411 | -0.69142 |
| District C.                      | 0.6126 | 0.4873 | 0.87336  |

TABLE 4  
(1981 Misdemeanors)

Means, Standard Deviations (SD)  
and Factor Loadings for  
Variables Used in Computing  
the Financial Index

FINANCIAL INDEX  
(N=1363)

|                                   | MEAN   | SD     | LOADING  |
|-----------------------------------|--------|--------|----------|
| Lawyer type (REF=NONE)            |        |        |          |
| PD                                | 0.4531 | 0.4980 | 0.75133  |
| PA                                | 0.2374 | 0.4256 | -0.81446 |
| Custody Status (REF=OR-3RD PARTY) |        |        |          |
| Bail                              | 0.2574 | 0.4374 | -0.19967 |
| Jail                              | 0.1732 | 0.3786 | 0.36841  |
| Employment Status (REF=EMPLOYED)  |        |        |          |
| Unemployed                        | 0.3913 | 0.4882 | 0.59678  |



TABLE 5  
(1981 Misdemeanors)

Interpretation of Scores on Case  
Descriptor & Financial Indices

| A. Case Descriptor Index              |                |                    |                |
|---------------------------------------|----------------|--------------------|----------------|
| (-6) Lower Scores                     |                | Higher Scores (+6) |                |
| Community: Rural (Ba, Be, Ko, No, Si) |                | Urban (An, Fa, Ju) |                |
| Race:                                 | Native         | Caucasian, Black   |                |
| Offense:                              | State          | Municipal          |                |
| Plea Bargain:                         | No             | Yes                |                |
| Judge Type:                           | Superior Court | Magistrate         | District Court |

| B. Financial Index               |                  |                    |                                        |
|----------------------------------|------------------|--------------------|----------------------------------------|
| (-3) Lower Scores                |                  | Higher Scores (+3) |                                        |
| Attorney Type:                   | Private Attorney | None               | PD, Crt-Appointed,<br>Private Attorney |
| Custody Status<br>at Sentencing: | Monetary Bail    | OR/3rd Party       | Jail                                   |
| Employment<br>Status:            | Employed         | Unemployed         |                                        |

The first principal component of the above factors accounted for 42.9% of the variation contained in all the variables (Table 5A). Cases tried in a rural community, with a native defendant, without a negotiated plea, charged as a state offense and tried by a Superior Court judge or magistrate would have a lower score on the index; cases tried in an urban community, with a white or black defendant, with a negotiated plea, charged as a municipal offense and tried by a District Court judge would have a higher score on the index. Index scores ranged from -6 to +6.

#### D. Financial Relationships

Similarly, a financial index was created (Table 5B). This index attempts to measure the financial well-being of the defendant. Factors that are included in the index are the defendant's employment status (employed, unemployed), type of legal representation (no counsel, public defender or court appointed private attorney, private attorney) and custody status at sentencing (own recognizance or released to a third party (OR/3rd party), monetary bail, jail). Means, standard deviations and factor loadings for these variables are shown in Table 4.

The index captures 35.2% of the variation contained in the set of variables. Defendants who were employed, represented by a private attorney and released on monetary bail received low scores on the index; defendants who were unemployed, represented by the public defender or a court appointed private attorney and in jail custody status (at the time of sentencing) received high scores on the index. Defendants not represented by counsel or who were released OR/3rd party at time of sentencing would have intermediate scores on the index. Index scores ranged from -3 to +3.

#### E. Analytical Methods

Multiple regression was used to examine the effect of "explanatory" variables on active jail sentences. Variation in jail sentence or fines may be due to differences in case processing, in defendant characteristics or past problems or in specifics of the offense. Multiple regression is able to account for all "explanatory" variables simultaneously, and estimate the independent (relative to other variables in the model) contribution of each of these factors to the outcome variable.

In order to carry out this task, categorical explanatory variables were transformed into a series of "dummy" or "indicator" variables. Under this procedure, each category of a nominal variable (that is, one made up of "named" information, rather than numerical or ordinal information) is treated as a separate factor by assigning the value of one (1) or zero (0) for each case, depending on whether or not it belongs in that category. Thus, prior record is effectively divided into five separate prior record variables. The categories are prior felonies, prior misdemeanors, prior juvenile offenses and prior violations, all of which can be compared to a "reference" category, no prior record. The advantage of this approach is that it allows the regression coefficients or "effect" of the explanatory variables to be interpreted in units of the dependent variable, such as days of jail imposed.

Regression models were created in three steps. First, only those levels (e.g., male, female) of nominal variables (e.g., sex) for which there were suitable sample sizes were selected for a "preliminary" regression model. Second, the preliminary regression model was created and the independent significance of each of the explanatory variables was tested relative to all variables under consideration. Those variables

that contained at least one level significant at the 0.20 level were selected for entry into a "reduced" model. Finally, a "reduced" model was created and analyzed to detect factors which were related to active jail sentence at the 0.05 level of significance.

Cautions that should be made about regression analysis include:

(1) Regression models only used cases for which a full complement of explanatory and dependent variables were present. Therefore, each multiple regression was based on a subset of the original data. As the regression model changed from a preliminary to a reduced model, the number of cases analyzed could increase because the smaller number of variables being considered meant that more cases had all the necessary information.

(2) Estimation of regression coefficients is dependent on other variables in the model. Therefore, the numerical value of the coefficient may change from the preliminary to reduced model. Coefficients that do not change may indicate that the "information" contained in the pertinent variable is unrelated to the information contained in any other variables.

(3) Regression coefficients are estimates and not precise values. Coefficients that were statistically different from zero (i.e., a "significant" effect) were noted. Emphasis should be placed on this significance and not the numeric value of the coefficient.

(4) Coefficients of determination ( $R^2$ ) define the amount of variation in the dependent variable that can



be explained by the model. The amount of variation that was explained was often less than the portion that was not explained. Explanations for this "lack of fit" include errors of measurement in the variables used, failure (or inability) to identify and include other important variables and purely random variation that must be expected.

Distributional characteristics of variables and associations between variables were analyzed with contingency tables. When test assumptions concerning expected cell values could not be met (e.g., no more than 20% of the expected cell frequencies have a value less than 5.0), a constant was added to each cell in order to meet the minimum requirement. This procedure tends to make the significance test slightly conservative (i.e., the null hypothesis, "no difference," will be unduly supported).

Statistical significance for contingency tables and other analyses was set at the 0.05 level. That is, an inference was made with at least 95% certainty that observed differences were not due to chance variation.

## II. OVERALL FINDINGS FROM THE DATA

### A. Offense Types

Table 6 displays the distribution of the 1,366 defendants by most serious offense and community. Vehicular is the most frequent offense category from each community. The proportion of defendants with vehicular offenses range from about 30% (in Nome) to 65% (in Fairbanks).

The next most frequent misdemeanor category varies by community. In Bethel (32%) and Nome (26%), violent misdemeanors were the next most common. In other areas, fewer than 11% of the defendants had a violent misdemeanor as their most serious offense. Property, disorderly conduct or alcohol/drug law violations were more common in these areas.

TABLE 6  
(1981 Misdemeanors)

Distribution of Defendants  
by Most Serious Offense  
Category and Community

|           | Total | Violent |        | Property |        | Vehicular |        | Disorderly<br>Conduct |        | Alc/Drug<br>Violations |        | Miscellaneous |       |
|-----------|-------|---------|--------|----------|--------|-----------|--------|-----------------------|--------|------------------------|--------|---------------|-------|
|           | N     | n       | (%)    | n        | (%)    | n         | (%)    | n                     | (%)    | n                      | (%)    | n             | (%)   |
| Anchorage | 511   | 47      | (9.2)  | 105      | (20.5) | 302       | (59.1) | 29                    | (5.6)  | 4                      | (0.8)  | 24            | (4.7) |
| Barrow    | 53    | 6       | (11.3) | 8        | (15.1) | 25        | (47.2) | 9                     | (17.0) | 5                      | (9.4)  | 0             |       |
| Bethel    | 117   | 37      | (31.6) | 19       | (16.2) | 40        | (34.2) | 15                    | (12.8) | 6                      | (5.1)  | 0             |       |
| Fairbanks | 258   | 8       | (3.1)  | 47       | (18.1) | 169       | (65.3) | 19                    | (7.3)  | 8                      | (3.1)  | 7             | (2.7) |
| Juneau    | 114   | 6       | (5.3)  | 18       | (15.8) | 51        | (44.7) | 19                    | (16.7) | 19                     | (16.7) | 1             | (0.9) |
| Kodiak    | 101   | 8       | (7.9)  | 21       | (20.8) | 44        | (43.6) | 9                     | (8.9)  | 15                     | (14.9) | 4             | (4.0) |
| Nome      | 120   | 31      | (25.8) | 24       | (20.0) | 35        | (29.2) | 12                    | (10.0) | 17                     | (14.2) | 1             | (0.8) |
| Sitka     | 92    | 6       | (6.5)  | 22       | (23.9) | 50        | (54.3) | 12                    | (13.0) | 1                      | (1.1)  | 1             | (1.1) |
| Total     | 1366  | 149     | (10.9) | 264      | (19.3) | 716       | (52.4) | 124                   | (9.1)  | 75                     | (5.5)  | 38            | (2.9) |

TABLE 7  
(1981 Misdemeanors)

Demographic Characteristics  
of Defendants by Community

|                        | Anchorage<br>n (%) | Barrow<br>n (%) | Bethel<br>n (%) | Fairbanks<br>n (%) | Juneau<br>n (%) | Kodiak<br>n (%) | Nome<br>n (%) | Sitka<br>n (%) | Total<br>n (%) |
|------------------------|--------------------|-----------------|-----------------|--------------------|-----------------|-----------------|---------------|----------------|----------------|
| <b>RACE</b>            |                    |                 |                 |                    |                 |                 |               |                |                |
| Caucasian              | 380 (74.7)         | 1 (1.9)         | 14 (12.0)       | 164 (63.6)         | 67 (59.3)       | 78 (77.2)       | 14 (11.7)     | 57 (62.0)      | 775 (56.8)     |
| Native-Indian          | 78 (15.3)          | 48 (90.6)       | 103 (88.0)      | 76 (29.5)          | 43 (38.1)       | 15 (14.9)       | 105 (87.5)    | 31 (33.7)      | 499 (36.6)     |
| Black                  | 42 (8.3)           | 0               | 0               | 18 (7.0)           | 0               | 3 (3.0)         | 1 (0.8)       | 0              | 64 (4.7)       |
| Other                  | 9 (1.8)            | 4 (7.5)         | 0               | 0                  | 3 (2.7)         | 5 (5.0)         | 0             | 4 (4.3)        | 25 (1.8)       |
| <b>SEX</b>             |                    |                 |                 |                    |                 |                 |               |                |                |
| Male                   | 447 (87.5)         | 48 (90.6)       | 113 (97.4)      | 219 (84.6)         | 98 (86.7)       | 83 (82.2)       | 104 (86.7)    | 80 (87.0)      | 1192 (87.3)    |
| Female                 | 64 (12.5)          | 5 (9.4)         | 3 (2.6)         | 40 (15.4)          | 15 (13.3)       | 18 (17.8)       | 16 (13.3)     | 12 (13.0)      | 173 (12.7)     |
| <b>AGE (YRS)</b>       |                    |                 |                 |                    |                 |                 |               |                |                |
| 18-21                  | 155 (30.3)         | 17 (32.1)       | 31 (26.5)       | 42 (16.3)          | 45 (40.2)       | 22 (21.8)       | 36 (30.0)     | 30 (32.6)      | 378 (27.8)     |
| 22-25                  | 98 (19.2)          | 9 (17.0)        | 23 (19.7)       | 54 (20.9)          | 20 (17.9)       | 24 (23.8)       | 27 (22.5)     | 21 (22.8)      | 276 (20.2)     |
| 26-30                  | 89 (17.4)          | 11 (20.8)       | 26 (22.2)       | 44 (17.1)          | 16 (14.3)       | 24 (23.8)       | 26 (21.7)     | 10 (10.9)      | 246 (18.0)     |
| 31-45                  | 126 (24.7)         | 11 (20.8)       | 29 (24.8)       | 77 (29.8)          | 21 (18.8)       | 20 (19.8)       | 16 (13.3)     | 25 (27.2)      | 325 (23.8)     |
| 45                     | 43 (8.4)           | 5 (9.4)         | 8 (6.8)         | 41 (15.9)          | 10 (8.9)        | 11 (10.9)       | 15 (12.5)     | 6 (6.5)        | 139 (10.2)     |
| <b>EMPLOYER STATUS</b> |                    |                 |                 |                    |                 |                 |               |                |                |
| Employed               | 381 (61.9)         | 23 (74.2)       | 65 (59.1)       | 142 (56.6)         | 66 (60.6)       | 72 (72.0)       | 62 (54.4)     | 51 (63.0)      | 761 (60.9)     |
| Unemployed             | 173 (38.1)         | 8 (25.8)        | 45 (40.9)       | 109 (43.4)         | 43 (39.4)       | 28 (28.0)       | 52 (45.6)     | 30 (37.0)      | 488 (39.1)     |

### B. Demographic Characteristics of the Defendants

Several of the demographic characteristics of the defendants differed significantly between communities (Table 7). The majority of defendants in Anchorage (74.7%), Fairbanks (63.6%), Juneau (59.3%), Kodiak (77.2%) and Sitka (62.0%) were caucasian; the majority of defendants in Barrow (90.6%), Bethel (88.0%), and Nome (87.5%) were native. A significant number of black defendants was found only in Anchorage (42 defendants) and Fairbanks (18 defendants).

The majority of defendants in each community were male (87.3% of the total number of cases). Bethel (97.4%) had the highest proportion of defendants who were male; Kodiak (17.8%) had the highest proportion of female defendants.

The most likely age-class was 18-21 years (27.8%). 20.2% of the defendants were between 22 and 25 years old, 18.0% between 26 and 30, 23.8% between 31 and 45 and 10.2% over 45 years of age. 45.7% of Fairbanks defendants were older than 31 years of age. In other communities less than 34% of the defendants were older than 31 years. 40.2% of Juneau defendants were between 18 and 21 years old; the proportions of defendants in this age group from other areas was 30% or less.

Employment status of defendants did not significantly ( $P=0.09$ ) differ between communities; 60.9% of the total number of defendants were employed at the time the offense was committed.

Thus, the typical defendant in most communities was an employed, caucasian male under 26 years old. In Juneau, he was likely to be somewhat younger than average; in Fairbanks, he was more likely to be over 30 years old. In the three western-Alaska communities of Bethel, Barrow and Nome, he was probably native rather than caucasian.



TABLE 7  
(1981 Misdemeanors)

Demographic Characteristics  
of Defendants by Community

|                        | Anchorage<br>n (%) | Barrow<br>n (%) | Bethel<br>n (%) | Fairbanks<br>n (%) | Juneau<br>n (%) | Kodiak<br>n (%) | Nome<br>n (%) | Sitka<br>n (%) | Total<br>n (%) |
|------------------------|--------------------|-----------------|-----------------|--------------------|-----------------|-----------------|---------------|----------------|----------------|
| <b>RACE</b>            |                    |                 |                 |                    |                 |                 |               |                |                |
| Caucasian              | 380 (74.7)         | 1 (1.9)         | 14 (12.0)       | 164 (63.6)         | 67 (59.3)       | 78 (77.2)       | 14 (11.7)     | 57 (62.0)      | 775 (56.8)     |
| Native-Indian          | 78 (15.3)          | 48 (90.6)       | 103 (88.0)      | 76 (29.5)          | 43 (38.1)       | 15 (14.9)       | 105 (87.5)    | 31 (33.7)      | 499 (36.6)     |
| Black                  | 42 (8.3)           | 0               | 0               | 18 (7.0)           | 0               | 3 (3.0)         | 1 (0.8)       | 0              | 64 (4.7)       |
| Other                  | 9 (1.8)            | 4 (7.5)         | 0               | 0                  | 3 (2.7)         | 5 (5.0)         | 0             | 4 (4.3)        | 25 (1.8)       |
| <b>SEX</b>             |                    |                 |                 |                    |                 |                 |               |                |                |
| Male                   | 447 (87.5)         | 48 (90.6)       | 113 (97.4)      | 219 (84.6)         | 98 (86.7)       | 83 (82.2)       | 04 (86.7)     | 80 (87.0)      | 1192 (87.3)    |
| Female                 | 64 (12.5)          | 5 (9.4)         | 3 (2.6)         | 40 (15.4)          | 15 (13.3)       | 18 (17.8)       | 16 (13.3)     | 12 (13.0)      | 173 (12.7)     |
| <b>AGE (YRS)</b>       |                    |                 |                 |                    |                 |                 |               |                |                |
| 18-21                  | 155 (30.3)         | 17 (32.1)       | 31 (26.5)       | 42 (16.3)          | 45 (40.2)       | 22 (21.8)       | 36 (30.0)     | 30 (32.6)      | 378 (27.8)     |
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| 26-30                  | 89 (17.4)          | 11 (20.8)       | 26 (22.2)       | 44 (17.1)          | 16 (14.3)       | 24 (23.8)       | 26 (21.7)     | 10 (10.9)      | 246 (18.0)     |
| 31-45                  | 126 (24.7)         | 11 (20.8)       | 29 (24.8)       | 77 (29.8)          | 21 (18.8)       | 20 (19.8)       | 16 (13.3)     | 25 (27.2)      | 325 (23.8)     |
| 45                     | 43 (8.4)           | 5 (9.4)         | 8 (6.8)         | 41 (15.9)          | 10 (8.9)        | 11 (10.9)       | 15 (12.5)     | 6 (6.5)        | 139 (10.2)     |
| <b>EMPLOYER STATUS</b> |                    |                 |                 |                    |                 |                 |               |                |                |
| Employed               | 381 (61.9)         | 23 (74.2)       | 65 (59.1)       | 142 (56.6)         | 66 (60.6)       | 72 (72.0)       | 62 (54.4)     | 51 (63.0)      | 761 (60.9)     |
| Unemployed             | 173 (38.1)         | 8 (25.8)        | 45 (40.9)       | 109 (43.4)         | 43 (39.4)       | 28 (28.0)       | 52 (45.6)     | 30 (37.0)      | 488 (39.1)     |

#### B. Demographic Characteristics of the Defendants

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The majority of defendants in each community were male (87.3% of the total number of cases). Bethel (97.4%) had the highest proportion of defendants who were male; Kodiak (17.8%) had the highest proportion of female defendants.

The most likely age-class was 18-21 years (27.8%). 20.2% of the defendants were between 22 and 25 years old, 18.0% between 26 and 30, 23.8% between 31 and 45 and 10.2% over 45 years of age. 45.7% of Fairbanks defendants were older than 31 years of age. In other communities less than 34% of the defendants were older than 31 years. 40.2% of Juneau defendants were between 18 and 21 years old; the proportions of defendants in this age group from other areas was 30% or less.

Employment status of defendants did not significantly ( $P=0.09$ ) differ between communities; 60.9% of the total number of defendants were employed at the time the offense was committed.

Thus, the typical defendant in most communities was an employed, caucasian male under 26 years old. In Juneau, he was likely to be somewhat younger than average; in Fairbanks, he was more likely to be over 30 years old. In the three western-Alaska communities of Bethel, Barrow and Nome, he was probably native rather than caucasian.

### C. Alcohol Use and Prior Criminal History

Nearly three-fourths (73.2%) of the convicted defendants in this study had used alcohol, drugs, or a combination of both at the time of their offense. Statewide, 68.2% of the convicted defendants used alcohol at offense, 26.8% did not use alcohol or drugs and the remaining 5.0% used drugs, drugs and alcohol or drugs/alcohol, not specified. A breakdown by community of alcohol and/or drug use at offense is presented in Table 8. The proportion of defendants who used alcohol at offense differed significantly ( $P=0.05$ ) between communities. Anchorage defendants used alcohol (52.5%) less frequently than the other communities (77.0% combined), which were not significantly different from each other. The highest rates of alcohol use at offense occurred in Barrow (86.0%), Bethel (88.5%) and Nome (87.2%).

These figures indicate that alcohol and drug use are as frequent among persons committing misdemeanors as those convicted of felonies. For example, the Council's study of felony convictions from mid-1976 through mid-1979 found that nearly half of the "urban" (Anchorage, Fairbanks, and Juneau) offenses had occurred while the defendant was under the influence of alcohol or drugs. As in our present study of misdemeanors, the proportion of felonies committed in rural areas while under the influence of intoxicants was even higher. The Council's study of 1980 felonies made the same findings.

Defendants who used alcohol at offense were more likely to have prior alcohol problems (45.5% of them did) than defendants who did not use alcohol at offense (20.0%). However, the alcohol treatment backgrounds (i.e., contact with treatment programs) of defendants with prior alcohol problems did not significantly ( $P=0.14$ ) differ between defendants who used alcohol at offense and those that did not (Table 9). Nearly one third (30.0%) of the defendants with prior alcohol problems ( $N=320$ ) had no previous contact with alcohol treatment programs, 7.8% had completed treatment and 17.3% were currently

**TABLE 8**  
**(1981 Misdemeanors)**

Breakdown by Community of  
Alcohol and/or Drug Use  
at Offense

|        | No Evidence |        | Alcohol |        | Drugs |       | Alcohol & Drugs |       | Alc/Drugs (Not Spec.) |       |
|--------|-------------|--------|---------|--------|-------|-------|-----------------|-------|-----------------------|-------|
|        | n           | (%)    | n       | (%)    | n     | (%)   | n               | (%)   | n                     | (%)   |
| Anch.  | 193         | (42.2) | 240     | (52.5) | 2     | (0.4) | 13              | (2.8) | 9                     | (2.0) |
| Barrow | 5           | (10.0) | 43      | (86.0) | 0     |       | 2               | (4.0) | 0                     |       |
| Bethel | 12          | (10.6) | 100     | (88.5) | 1     | (0.9) | 0               |       | 0                     |       |
| Fair.  | 55          | (21.7) | 177     | (70.0) | 3     | (1.2) | 12              | (4.7) | 6                     | (2.4) |
| Juneau | 22          | (21.6) | 74      | (72.5) | 0     |       | 6               | (5.9) | 0                     |       |
| Kodiak | 21          | (21.6) | 72      | (74.2) | 1     | (1.0) | 3               | (3.1) | 0                     |       |
| Nome   | 13          | (11.1) | 102     | (87.2) | 0     |       | 2               | (1.7) | 0                     |       |
| Sitka  | 21          | (23.6) | 64      | (71.9) | 1     | (1.1) | 2               | (2.2) | 1                     | (1.1) |
| Total  | 342         | (26.8) | 872     | (68.2) | 8     | (0.6) | 40              | (3.1) | 16                    | (1.3) |



TABLE 9  
(1981 Misdemeanors)

Breakdown of Alcohol Use at Offense  
by Prior Alcohol Treatment History

| Alcohol<br>Treatment History               | Alcohol Use at Offense |        |              |        | Sub<br>Total | Total* |     |        |
|--------------------------------------------|------------------------|--------|--------------|--------|--------------|--------|-----|--------|
|                                            | Alcohol<br>Not Used    |        | Alcohol Used |        |              |        |     |        |
|                                            | N                      | (%)    | n            | (%)    | n            | (%)    |     |        |
| Never Referred                             | 12                     | (22.2) | 102          | (33.4) | 114          | (31.8) | 120 | (30.0) |
| Referred, No Attend<br>Attend, No Complete | 29                     | (53.7) | 131          | (43.0) | 160          | (44.6) | 150 | (45.0) |
| Current                                    | 7                      | (13.0) | 54           | (17.7) | 61           | (17.0) | 69  | (17.3) |
| Completed                                  | 6                      | (11.1) | 18           | (5.9)  | 24           | (6.7)  | 31  | (7.8)  |

\* Information about alcohol use at offense missing; information about alcohol treatment available.

undergoing treatment. The largest portion (45.0%) of defendants with alcohol problems had been previously referred to, but did not attend (or attended, but did not complete) an alcohol treatment program.

A low number (31) of defendants with prior alcohol problems who had completed a treatment program were subsequently convicted of a misdemeanor. This may suggest that completion of a program significantly reduces the likelihood that a person with an alcohol problem will commit an offense. We do not have sufficient data to compare the treatment histories of convicted and non-convicted persons who have completed alcohol treatment programs. Thus, we cannot say for sure that treatment alone reduces recidivism, or results in a lower likelihood of criminal behavior. However, the comparison of actual numbers of defendants with alcohol problems who have completed programs (31) with all those who have a prior problem (370) suggests that this may be the case. In addition, although we lack data on all people referred to alcohol programs (which would include those not convicted of any crimes), it appears that a very high proportion (45%) are not actually complying with requirement of the treatment programs.

A third set of relationships of interest are those between prior alcohol problems and prior criminal convictions. The Council's earlier felony studies also found a close relationship between these two factors. The same extremely strong relationship is found in the present study.

Table 10 provides a breakdown of cases by prior criminal history and alcohol use at offense. Statewide, 56.7% of the defendants had prior criminal convictions, primarily misdemeanors (45.0% of all defendants). There was no significant ( $P=0.39$ ) relationship between prior criminal history and alcohol use at offense. However, there is a significant ( $P=0.000$ ) relationship between prior criminal history and a prior alcohol problem (Table 11). Defendants without an alcohol problem were more likely (62.5%) to have no

TABLE 10  
(1981 Misdemeanors)

Breakdown of Prior Criminal  
Record by Alcohol Use at Offense

| Prior Criminal<br>Record | Alcohol Use at Offense |        |     |        | TOTAL |        |
|--------------------------|------------------------|--------|-----|--------|-------|--------|
|                          | NO                     |        | YES |        |       |        |
|                          | n                      | (%)    | n   | (%)    | N     | (%)    |
| None                     | 148                    | (44.4) | 370 | (43.0) | 518   | (43.3) |
| Violations               | 27                     | (8.1)  | 47  | (5.5)  | 74    | (6.2)  |
| Juvenile Offenses        | 2                      | (0.6)  | 5   | (0.6)  | 7     | (0.6)  |
| Misdemeanors             | 143                    | (42.9) | 394 | (45.8) | 537   | (45.0) |
| Felonies                 | 13                     | (3.9)  | 45  | (5.2)  | 58    | (4.9)  |

TABLE 11  
(1981 Misdemeanors)

Breakdown of Prior Criminal Record  
By Prior Alcohol Problem

| Prior Criminal<br>Record | Prior Alcohol Problem |        |     |        | TOTAL |        |
|--------------------------|-----------------------|--------|-----|--------|-------|--------|
|                          | NO                    |        | YES |        |       |        |
|                          | n                     | (%)    | n   | (%)    | N     | (%)    |
| None                     | 504                   | (62.5) | 67  | (13.4) | 571   | (43.7) |
| Violations               | 79                    | (9.8)  | 3   | (0.6)  | 82    | (6.3)  |
| Juvenile Offenses        | 5                     | (0.6)  | 3   | (0.6)  | 8     | (0.6)  |
| Misdemeanors             | 191                   | (23.7) | 392 | (78.2) | 583   | (44.6) |
| Felonies                 | 27                    | (3.3)  | 36  | (7.2)  | 63    | (4.8)  |

prior criminal record than defendants with a problem (13.4%). When they did have a record, it tended to include minor violations, rather than more serious misdemeanors or felonies. Defendants with an alcohol problem were more likely to have committed misdemeanors (78.2%) and felonies (7.2%) than defendants with no problem (23.7% and 3.3%, respectively). The combination of these three findings about alcohol and criminal behavior suggests that successful treatment of alcohol problems could significantly reduce recidivism.

#### D. Sentencing for "Time Served"

Table 12 presents a breakdown by community of the proportion of defendants that were assigned a jail term of at least one day and sentenced to "time served". Typically, this situation occurs when a defendant has spent time in jail prior to entering a guilty plea or being convicted after trial. The defendant receives credit for the number of days he has already spent against any jail sentence imposed. If the sentence imposed equalled the days already served, it was considered a sentence to "time served."

Overall, 13.4% of the defendants were sentenced to time served. However, there were significant ( $P=0.0002$ ) differences between communities in the rates at which defendants were sentenced to time served. 40.0% of the defendants in Barrow were sentenced to time served. This was significantly ( $P=0.05$ ) higher than the proportion of defendants sentenced to time served in Anchorage (10.1%) or Juneau (3.6%). The proportion of defendants in Bethel (13.1%), Fairbanks (13.6%), Kodiak (19.0%), Nome (20.9%) and Sitka (11.9%) that were sentenced to time served did not differ significantly from either extreme.



TABLE 12  
(1981 Misdemeanors)

Breakdown by Community of Defendants  
Who Served at Least 1 Day in Jail  
and Were Sentenced to "Time Served"

| Sentenced to<br>Time Served | Community  |           |           |            |           |           |           |           | Total      |
|-----------------------------|------------|-----------|-----------|------------|-----------|-----------|-----------|-----------|------------|
|                             | Anchorage  | Barrow    | Bethel    | Fairbanks  | Juneau    | Kodiak    | Nome      | Sitka     |            |
|                             | n (%)      | n (%)     | n (%)     | n (%)      | n (%)     | n (%)     | n (%)     | n (%)     | n (%)      |
| No                          | 301 (89.9) | 15 (60.0) | 86 (86.9) | 159 (86.4) | 51 (96.4) | 51 (81.0) | 68 (79.1) | 37 (88.1) | 770 (86.6) |
| Yes                         | 34 (10.1)  | 10 (40.0) | 13 (13.1) | 25 (13.6)  | 2 (3.6)   | 12 (19.0) | 18 (20.9) | 5 (11.9)  | 119 (13.4) |

#### E. Use of Additional Sentencing Conditions

Table 13 presents a breakdown of additional sentencing conditions by alcohol use at offense and community. There is a strong relationship between alcohol-related offenses and presence of additional conditions. 76.3% of the defendants who did not use alcohol at offense also did not receive additional conditions; 66.9% of the defendants who used alcohol also received additional conditions as a part of sentencing.

For misdemeanants who did not use alcohol and received additional conditions, the most likely condition was "other," which included forfeiture of weapons, movement restrictions or some other requirement tailored to the defendant or the offense. Each of the remaining types of additional conditions was used in less than 3% of the cases.

Defendants who did use alcohol were referred to alcohol treatment programs in 31.3% of the cases and to "educational" programs in another 10.8% of the cases. 16.3% of these cases were assigned "other" conditions, and an additional 5.3% to a combination of several conditions.

Among communities, Anchorage defendants who used alcohol were most likely to be assigned to an alcohol treatment (49.6%) or educational (13.3%) program. In Bethel (39.0%), Fairbanks (37.9%), Juneau (32.4%), Kodiak (48.6%), and Sitka (35.9%) over one third of the defendants who used alcohol at offense were assigned to an alcohol treatment or educational program. Nome defendants who used alcohol were most likely to be assigned some other condition (24.5%) or a combination of two conditions (22.5%). The majority (62.8%) of Barrow defendants who used alcohol were not assigned any additional sentencing conditions.

TABLE 12  
(1981 Misdemeanors,

Breakdown by Community of Defendants  
Who Served at Least 1 Day in Jail  
and Were Sentenced to "Time Served"

| Sentenced to<br>Time Served | Community  |           |           |            |           |           |           |           | Total      |
|-----------------------------|------------|-----------|-----------|------------|-----------|-----------|-----------|-----------|------------|
|                             | Anchorage  | Barrow    | Bethel    | Fairbanks  | Juneau    | Kodiak    | Nome      | Sitka     |            |
|                             | n (%)      | n (%)     | n (%)     | n (%)      | n (%)     | n (%)     | n (%)     | n (%)     | n (%)      |
| No                          | 301 (89.9) | 15 (60.0) | 86 (86.9) | 159 (86.4) | 51 (96.4) | 51 (81.0) | 68 (79.1) | 37 (88.1) | 770 (86.6) |
| Yes                         | 34 (10.1)  | 10 (40.0) | 13 (13.1) | 25 (13.6)  | 2 (3.6)   | 12 (19.0) | 18 (20.9) | 5 (11.9)  | 119 (13.4) |

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Defendants who did use alcohol were referred to alcohol treatment programs in 31.3% of the cases and to "educational" programs in another 10.8% of the cases. 16.3% of these cases were assigned "other" conditions, and an additional 5.3% to a combination of several conditions.

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TABLE 13  
(1981 Misdemeanors)

Breakdown of Additional Sentencing Conditions  
by Alcohol Use at Offense and Community

| Location  | Additional Conditions |                    |                 |          |           |                   |            |             | N   |
|-----------|-----------------------|--------------------|-----------------|----------|-----------|-------------------|------------|-------------|-----|
|           | None                  | Alc/Drug Treatment | Psych Treatment | Work     | Education | Community Service | Other      | Combination |     |
|           | n (%)                 | n (%)              | n (%)           | n (%)    | n (%)     | n (%)             | n (%)      | n (%)       |     |
| Anchorage |                       |                    |                 |          |           |                   |            |             |     |
| No Alc.   | 157 (81.3)            | 2 (1.0)            | 5 (2.6)         | 0        | 3 (1.6)   | 1 (0.5)           | 24 (12.4)  | 1 (0.5)     | 193 |
| Alc used  | 71 (29.6)             | 119 (49.6)         | 3 (1.3)         | 0        | 32 (13.3) | 1 (0.4)           | 8 (3.3)    | 6 (2.5)     | 240 |
| Barrow    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc.   | 3 (60.0)              | 0                  | 2 (40.0)        | 0        | 0         | 0                 | 0          | 0           | 5   |
| Alc used  | 27 (62.8)             | 2 (4.7)            | 2 (4.7)         | 0        | 1 (2.3)   | 0                 | 9 (20.9)   | 2 (4.7)     | 43  |
| Bethel    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc.   | 7 (58.3)              | 1 (8.3)            | 0               | 0        | 0         | 0                 | 4 (33.3)   | 0           | 12  |
| Alc used  | 22 (22.0)             | 36 (36.0)          | 0               | 2 (2.0)  | 3 (3.0)   | 0                 | 37 (37.0)  | 0           | 100 |
| Fairbanks |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 32 (58.2)             | 3 (5.5)            | 0               | 0        | 1 (1.3)   | 0                 | 19 (34.5)  | 0           | 55  |
| Alc used  | 58 (32.8)             | 44 (24.9)          | 0               | 0        | 23 (13.0) | 1 (0.6)           | 49 (27.7)  | 2 (1.1)     | 177 |
| Juneau    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 20 (90.9)             | 0                  | 0               | 2 (9.1)  | 0         | 0                 | 0          | 0           | 22  |
| Alc used  | 40 (54.1)             | 14 (18.9)          | 0               | 4 (5.4)  | 10 (13.5) | 1 (1.4)           | 3 (4.1)    | 2 (2.7)     | 74  |
| Kodiak    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 19 (90.5)             | 0                  | 1 (4.8)         | 0        | 0         | 0                 | 1 (4.8)    | 0           | 21  |
| Alc used  | 23 (31.9)             | 25 (34.7)          | 1 (1.4)         | 2 (2.8)  | 10 (13.9) | 0                 | 10 (13.9)  | 1 (1.4)     | 72  |
| Nome      |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 6 (46.2)              | 0                  | 0               | 1 (7.7)  | 1 (7.7)   | 0                 | 3 (23.1)   | 2 (15.4)    | 13  |
| Alc used  | 19 (18.6)             | 20 (19.6)          | 0               | 10 (9.8) | 5 (4.9)   | 0                 | 25 (24.5)  | 23 (22.5)   | 102 |
| Sitka     |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 17 (81.0)             | 2 (9.5)            | 0               | 0        |           | 0                 | 2 (9.5)    | 0           | 21  |
| Alc used  | 29 (45.3)             | 13 (20.3)          | 0               | 1 (1.6)  | 10 (15.6) | 0                 | 1 (1.6)    | 10 (15.6)   | 64  |
| Totals    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 261 (76.3)            | 8 (2.3)            | 8 (2.3)         | 3 (0.9)  | 5 (1.5)   | 1 (0.3)           | 53 (15.5)  | 3 (0.9)     | 342 |
| Alc used  | 289 (33.1)            | 273 (31.3)         | 6 (0.7)         | 19 (2.2) | 94 (10.8) | 3 (0.3)           | 142 (16.3) | 46 (5.3)    | 872 |

TABLE 13  
(1981 Misdemeanors)

Breakdown of Additional Sentencing Conditions  
by Alcohol Use at Offense and Community

| Location  | Additional Conditions |                    |                 |          |           |                   |            |             | N   |
|-----------|-----------------------|--------------------|-----------------|----------|-----------|-------------------|------------|-------------|-----|
|           | None                  | Alc/Drug Treatment | Psych Treatment | Work     | Education | Community Service | Other      | Combination |     |
|           | n (%)                 | n (%)              | n (%)           | n (%)    | n (%)     | n (%)             | n (%)      | n (%)       |     |
| Anchorage |                       |                    |                 |          |           |                   |            |             |     |
| No Alc.   | 157 (81.3)            | 2 (1.0)            | 5 (2.6)         | 0        | 3 (1.6)   | 1 (0.5)           | 24 (12.4)  | 1 (0.5)     | 193 |
| Alc used  | 71 (29.6)             | 119 (49.6)         | 3 (1.3)         | 0        | 32 (13.3) | 1 (0.4)           | 8 (3.3)    | 6 (2.5)     | 240 |
| Barrow    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc.   | 3 (60.0)              | 0                  | 2 (40.0)        | 0        | 0         | 0                 | 0          | 0           | 5   |
| Alc used  | 27 (62.8)             | 2 (4.7)            | 2 (4.7)         | 0        | 1 (2.3)   | 0                 | 9 (20.9)   | 2 (4.7)     | 43  |
| Bethel    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc.   | 7 (58.3)              | 1 (8.3)            | 0               | 0        | 0         | 0                 | 4 (33.3)   | 0           | 12  |
| Alc used  | 22 (22.0)             | 36 (36.0)          | 0               | 2 (2.0)  | 3 (3.0)   | 0                 | 37 (37.0)  | 0           | 100 |
| Fairbanks |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 32 (58.2)             | 3 (5.5)            | 0               | 0        | 1 (1.8)   | 0                 | 19 (34.5)  | 0           | 55  |
| Alc used  | 58 (32.8)             | 44 (24.9)          | 0               | 0        | 23 (13.0) | 1 (0.6)           | 49 (27.7)  | 2 (1.1)     | 177 |
| Juneau    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 20 (90.9)             | 0                  | 0               | 2 (9.1)  | 0         | 0                 | 0          | 0           | 22  |
| Alc used  | 40 (54.1)             | 14 (18.9)          | 0               | 4 (5.4)  | 10 (13.5) | 1 (1.4)           | 3 (4.1)    | 2 (2.7)     | 74  |
| Kodiak    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 19 (90.5)             | 0                  | 1 (4.8)         | 0        | 0         | 0                 | 1 (4.8)    | 0           | 21  |
| Alc used  | 23 (31.9)             | 25 (34.7)          | 1 (1.4)         | 2 (2.8)  | 10 (13.9) | 0                 | 10 (13.9)  | 1 (1.4)     | 72  |
| Nome      |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 6 (46.2)              | 0                  | 0               | 1 (7.7)  | 1 (7.7)   | 0                 | 3 (23.1)   | 2 (15.4)    | 13  |
| Alc used  | 19 (18.6)             | 20 (19.6)          | 0               | 10 (9.8) | 5 (4.9)   | 0                 | 25 (24.5)  | 23 (22.5)   | 102 |
| Sitka     |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 17 (81.0)             | 2 (9.5)            | 0               | 0        |           | 0                 | 2 (9.5)    | 0           | 21  |
| Alc used  | 29 (45.3)             | 13 (20.3)          | 0               | 1 (1.6)  | 10 (15.6) | 0                 | 1 (1.6)    | 10 (15.6)   | 64  |
| Totals    |                       |                    |                 |          |           |                   |            |             |     |
| No Alc    | 261 (76.3)            | 8 (2.3)            | 8 (2.3)         | 3 (0.9)  | 5 (1.5)   | 1 (0.3)           | 53 (15.5)  | 3 (0.9)     | 342 |
| Alc used  | 289 (33.1)            | 273 (31.3)         | 6 (0.7)         | 19 (2.2) | 94 (10.8) | 3 (0.3)           | 142 (16.3) | 46 (5.3)    | 872 |

### III. ANALYSIS of DIFFERENT OFFENSE TYPES

#### A. Violent Offenses

##### 1) Community Sentencing Patterns

Only three communities (Anchorage (47 defendants), Bethel (37) and Nome (31)) have sufficiently large sample sizes to make direct comparisons. A violent misdemeanor was the most serious charge against 9% of the defendants from Anchorage, 32% of those from Bethel and 26% of those from Nome.

Anchorage defendants (77%, 36 of 47) were convicted of assault-type offenses more often than were Bethel (51%, 19 of 37) or Nome (57%, 17 of 30) defendants. Defendants from the latter two areas had nearly equal numbers of assault- and weapon-type offenses. The mean number of counts at sentencing was 1.3 for Anchorage defendants, 1.2 for defendants from Bethel and 1.5 for those from Nome. The proportion of defendants with two or more concurrent counts was significantly greater ( $P=0.001$ ) in Nome (48%) than Anchorage (11%) or Bethel (19%).

The varying sentencing patterns in the three areas are shown in Tables 14 and 15. In Bethel (81.1%) and Nome (80.0%) the most likely penalty was an active jail sentence. This was especially true for "weapon" offenses, where approximately 90% of the defendants in these areas spent at least one day in jail. The mean active jail sentence for defendants who were sentenced to at least one day in jail was 55.9 days in Bethel and 25.8 days in Nome. There was a low likelihood of receiving a net fine in either Bethel (16.2%) or Nome (6.7%).

In contrast, Anchorage defendants had a lower likelihood of going to jail (46.8%) and a greater chance of receiving a net fine (59.6%). The mean active jail sentence (11.8 days) for defendants sentenced to at least one day in jail was one-quarter to one-half that of a Bethel or Nome

TABLE 14  
(1981 Misdemeanors)

Means and Standard Deviations (SD) of Active Jail Sentences (Days) for Defendants Who Spent at Least 1 Day in Jail for Violent Offenses. Given are the Total Number of Defendants (N) Within Each Misdemeanor Sub-Category and the Number (n) and Proportion (% N) of Defendants who Spent at Least 1 Day in Jail.

|        | ASSAULT |    |        |      |      |  | VIOLENT<br>(DAYS) |    |         |      |      | TOTAL |    |        |      |      |
|--------|---------|----|--------|------|------|--|-------------------|----|---------|------|------|-------|----|--------|------|------|
|        | N       | n  | (% N)  | Mean | SD   |  | N                 | n  | (% N)   | Mean | SD   | N     | n  | (% N)  | Mean | SD   |
| Anch.  | 36      | 16 | (44.4) | 14.3 | 28.1 |  | 11                | 6  | (54.5)  | 5.3  | 5.9  | 47    | 22 | (46.8) | 11.8 | 24.3 |
| Barrow | 3       | 1  | (33.3) | 2.0  | 0.0  |  | 3                 | 1  | (33.3)  | 10.0 | 0.0  | 6     | 2  | (33.3) | 6.0  | 5.7  |
| Bethel | 19      | 14 | (73.7) | 42.6 | 69.2 |  | 18                | 16 | (88.9)  | 67.4 | 97.8 | 37    | 30 | (81.1) | 55.9 | 85.2 |
| Fair.  | 4       | 3  | (75.0) | 53.7 | 48.0 |  | 4                 | 1  | (25.0)  | 15.0 | 0.0  | 8     | 4  | (50.0) | 44.0 | 43.7 |
| Juneau | 6       | 4  | (66.7) | 17.0 | 21.3 |  | 0                 |    |         |      |      | 6     | 4  | (66.7) | 17.0 | 21.3 |
| Kodiak | 4       | 2  | (50.0) | 18.5 | 12.0 |  | 4                 | 1  | (25.0)  | 22.0 | 0.0  | 8     | 3  | (37.5) | 19.7 | 8.7  |
| Nome   | 17      | 12 | (70.6) | 32.8 | 50.7 |  | 13                | 12 | (92.3)  | 18.8 | 25.0 | 30    | 24 | (80.0) | 25.8 | 39.7 |
| Sitka  | 5       | 3  | (60.0) | 2.3  | 0.6  |  | 1                 | 1  | (100.0) | 1.0  | 0.0  | 6     | 4  | (66.7) | 2.0  | 0.8  |
| Total  | 94      | 55 | (58.5) | 27.2 | 47.1 |  | 54                | 38 | (70.4)  | 36.4 | 69.4 | 148   | 93 | (62.8) | 31.0 | 57.1 |



TABLE 15  
(1981 Misdemeanors)

Means and Standard Deviations (SD) of Net Fines (\$) for Defendants Who Paid at Least \$1 for Violent Offenses. Given are the Total Number of Defendants (N) within Each Misdemeanor Sub-category and the Number (n) and proportion (% N) of Defendants Who Paid at Least \$1 in Fines

|        | VIOLENT (\$) |    |         |       |       |         |    |         |       |       |       |    |        |       |       |
|--------|--------------|----|---------|-------|-------|---------|----|---------|-------|-------|-------|----|--------|-------|-------|
|        | ASSAULT      |    |         |       |       | WEAPONS |    |         |       |       | Total |    |        |       |       |
|        | N            | n  | (% N)   | Mean  | SD    | N       | n  | (% N)   | Mean  | SD    | N     | n  | (% N)  | Mean  | SD    |
| Anch.  | 36           | 20 | (55.6)  | 165.0 | 101.4 | 11      | 8  | (72.7)  | 150.0 | 112.6 | 47    | 28 | (59.6) | 160.7 | 102.8 |
| Barrow | 3            | 0  | (0.0)   | 0.0   | 0.0   | 3       | 0  | (0.0)   | 0.0   | 0.0   | 6     | 0  | (0.0)  | 0.0   | 0.0   |
| Bethel | 19           | 3  | (15.8)  | 66.7  | 28.9  | 18      | 3  | (16.7)  | 93.3  | 60.3  | 37    | 6  | (16.2) | 80.0  | 44.7  |
| Fair.  | 4            | 4  | (100.0) | 167.5 | 154.8 | 4       | 3  | (75.0)  | 133.3 | 104.1 | 8     | 7  | (87.5) | 164.3 | 128.2 |
| Juneau | 6            | 3  | (50.0)  | 150.0 | 50.0  | 0       | -  | -       | -     | -     | 6     | 3  | (50.0) | 150.0 | 50.0  |
| Kodiak | 4            | 2  | (50.0)  | 150.0 | 141.4 | 4       | 2  | (50.0)  | 100.0 | 0.0   | 8     | 4  | (50.0) | 125.0 | 86.6  |
| Nome   | 17           | 2  | (11.8)  | 75.0  | 35.4  | 13      | 0  | (0.0)   | 0.0   | 0.0   | 30    | 2  | (6.7)  | 75.0  | 35.4  |
| Sitka  | 5            | 2  | (40.0)  | 400.0 | 141.4 | 1       | 1  | (100.0) | 400.0 | 0.0   | 6     | 3  | (50.0) | 400.0 | 100.0 |
| Total  | 94           | 36 | (38.3)  | 165.3 | 116.4 | 54      | 17 | (31.5)  | 145.9 | 110.5 | 148   | 53 | (35.8) | 159.1 | 113.8 |

TABLE 16  
(1981 Misdemeanors)

Distribution of Active Jail Sentences (Days)  
For Violent Offenses. Given are Means And  
Standard Deviations (SD) For All Penalties.

VIOLENT

| CITY      | N   | (DAYS)    |           |           |          |         |           | Mean | SD   |
|-----------|-----|-----------|-----------|-----------|----------|---------|-----------|------|------|
|           |     | 0         | 1-10      | 11-20     | 21-30    | 31-40   | 40        |      |      |
|           |     | n (%)     | n (%)     | n (%)     | n (%)    | n (%)   | n (%)     |      |      |
| Anchorage | 47  | 25 (53.2) | 17 (36.2) | 3 (6.4)   | 0        | 0       | 2 (4.3)   | 5.5  | 17.5 |
| Barrow    | 6   | 4 (66.7)  | 2 (33.3)  | 0         | 0        | 0       | 0         | 2.0  | 4.0  |
| Bethel    | 37  | 7 (18.9)  | 10 (27.0) | 7 (18.9)  | 4 (10.8) | 0       | 9 (24.3)  | 45.3 | 79.6 |
| Fairbanks | 8   | 4 (50.0)  | 1 (12.5)  | 1 (12.5)  | 0        | 0       | 2 (25.0)  | 22.0 | 37.0 |
| Juneau    | 6   | 2 (33.3)  | 2 (33.3)  | 1 (16.7)  | 0        | 0       | 1 (16.7)  | 11.3 | 18.7 |
| Kodiak    | 8   | 5 (62.5)  | 1 (12.5)  | 0         | 2 (25.0) | 0       | 0         | 7.4  | 11.2 |
| Nome      | 30  | 6 (20.0)  | 13 (43.3) | 3 (10.0)  | 3 (10.0) | 1 (3.3) | 4 (13.3)  | 20.7 | 36.9 |
| Sitka     | 6   | 2 (33.3)  | 4 (66.7)  | 0         | 0        | 0       | 0         | 1.3  | 1.2  |
| Total     | 148 | 55 (37.2) | 50 (33.8) | 15 (10.1) | 9 (6.1)  | 1 (0.7) | 18 (12.2) | 19.5 | 47.6 |

TABLE 17  
(1981 Misdemeanors)

Distribution of Net Fines (\$) For  
Violent Offenses. Given are Means  
And Standard Deviations (SD) For all Penalties.

VIOLENT

| CITY      | N   | (\$)      |           |           |          |          |          | Mean  | SD    |
|-----------|-----|-----------|-----------|-----------|----------|----------|----------|-------|-------|
|           |     | 0         | 1-100     | 101-200   | 201-300  | 301-400  | 400      |       |       |
|           |     | n (%)     | n (%)     | n (%)     | n (%)    | n (%)    | n (%)    |       |       |
| Anchorage | 47  | 19 (40.4) | 12 (25.5) | 10 (21.3) | 5 (10.6) | 0        | 1 (2.1)  | 95.7  | 112.1 |
| Barrow    | 6   | 6 (100.0) | 0         | 0         | 0        | 0        | 0        | 0.0   | 0.0   |
| Bethel    | 37  | 31 (83.8) | 5 (13.5)  | 1 (2.7)   | 0        | 0        | 0        | 13.0  | 34.2  |
| Fairbanks | 8   | 1 (12.5)  | 4 (50.0)  | 1 (12.5)  | 1 (12.5) | 1 (12.5) | 0        | 143.8 | 132.1 |
| Juneau    | 6   | 3 (50.0)  | 1 (16.7)  | 2 (33.3)  | 0        | 0        | 0        | 75.0  | 88.0  |
| Kodiak    | 8   | 4 (50.0)  | 3 (37.5)  | 0         | 1 (12.5) | 0        | 0        | 62.5  | 87.6  |
| Nome      | 30  | 28 (93.3) | 2 (6.7)   | 0         | 0        | 0        | 0        | 4.8   | 19.8  |
| Sitka     | 6   | 3 (50.0)  | 0         | 0         | 1 (16.7) | 1 (16.7) | 1 (16.7) | 200.0 | 228.0 |
| Total     | 148 | 95 (64.2) | 27 (18.2) | 14 (9.5)  | 8 (5.4)  | 2 (1.4)  | 2 (1.4)  | 56.6  | 101.9 |

**TABLE 18**  
**(1981 Misdemeanors)**

Regression Coefficients and Standard Errors (SE) for  
Equations Describing Variation in Active Jail Sentence  
Length (Days) for Violent Offenses. Also Given are  
Sample Sizes (N) and Coefficients of Determination (R<sup>2</sup>)

|                                  | Preliminary                                     |         | Reduced                                         |        |
|----------------------------------|-------------------------------------------------|---------|-------------------------------------------------|--------|
|                                  | N = 100<br>R <sup>2</sup> = 0.36<br>Coefficient | (SE)    | N = 109<br>R <sup>2</sup> = 0.33<br>Coefficient | (SE)   |
| <u>Case Descriptor Index</u>     | -2.3°                                           | (0.84)  | -2.3***                                         | (0.60) |
| <u>Process</u>                   |                                                 |         |                                                 |        |
| Guilty at:                       |                                                 |         |                                                 |        |
| Arraignment                      | ¶                                               |         | ¶                                               |        |
| Other hearing                    | 14.9°                                           | (5.55)  | 12.1**                                          | (4.72) |
| Jury Trial                       | -                                               |         | -                                               |        |
| Bench Trial                      | -                                               |         | -                                               |        |
| Concurrent Counts                | 8.8°                                            | (5.24)  | 7.1                                             | (4.38) |
| <u>Offense</u>                   |                                                 |         |                                                 |        |
| Charge Subcategory               |                                                 |         |                                                 |        |
| Weapons                          | ¶                                               |         | -                                               |        |
| Assault                          | 0.1                                             | (10.03) | -                                               |        |
| Victim Status                    |                                                 |         |                                                 |        |
| No Harm                          | ¶                                               |         | -                                               |        |
| Harm                             | 2.3                                             | (9.63)  | -                                               |        |
| Alcohol Use at Offense           |                                                 |         |                                                 |        |
| No                               | ¶                                               |         | -                                               |        |
| Yes                              | 4.1                                             | (6.36)  | -                                               |        |
| <u>Defendant Problems</u>        |                                                 |         |                                                 |        |
| Prior Record                     |                                                 |         |                                                 |        |
| None                             | ¶                                               |         | ¶                                               |        |
| Violation(s)                     | -                                               |         | -                                               |        |
| Misdemeanor(s)                   | -0.4                                            | (5.73)  | -0.5                                            | (4.85) |
| Felony(s)                        | 27.8°                                           | (9.74)  | 22.4***                                         | (8.51) |
| Drug/Alcohol Treatment           |                                                 |         |                                                 |        |
| No Problem                       | ¶                                               |         | ¶                                               |        |
| Never Referred                   | -3.3                                            | (6.25)  | -0.6                                            | (5.68) |
| Referred, No Attendance          | -                                               |         | -                                               |        |
| Attended, No Completion          | -                                               |         | -                                               |        |
| Current Treatment                | 23.0°                                           | (9.55)  | 24.6***                                         | (8.27) |
| Completed Treatment              | -                                               |         | -                                               |        |
| <u>Defendant Characteristics</u> |                                                 |         |                                                 |        |
| Sex                              |                                                 |         |                                                 |        |
| Male                             | ¶                                               |         | -                                               |        |
| Female                           | -7.3                                            | (9.46)  | -                                               |        |
| Age                              | 0.002                                           | (0.26)  | -                                               |        |
| Financial Index                  | -1.3                                            | (1.61)  | -                                               |        |
| <u>Other Factors</u>             |                                                 |         |                                                 |        |
| Net Fine                         | -0.01                                           | (0.024) | -                                               |        |
| Additional Conditions            | -10.8°                                          | (5.45)  | -11.1**                                         | (4.67) |
| Constant (Intercept)             | -12.1                                           | (12.06) | -5.8                                            | (7.27) |

|   |                    |     |                 |
|---|--------------------|-----|-----------------|
| - | Not analyzed       | *   | 0.10 > P ≥ 0.05 |
| ¶ | Reference category | **  | 0.05 > P ≥ 0.01 |
| ° | P ≤ 0.20           | *** | P < 0.01        |



defendant. The mean net fine for defendants paying at least \$1 was \$160.70.

The distributions of active jail sentences and net fines are displayed in Tables 16 and 17. In Anchorage and Nome, the majority of defendants who served time received a sentence between 1 and 10 days length. In Bethel, nearly equal numbers of defendants received sentences between 1 and 10 days and greater than 40 days. The majority of Anchorage defendants who were required to pay a fine paid between \$1 and \$100.

## 2) Factors Associated with Sentences of Violent Offenses

Results of the preliminary regression model for active jail sentences are shown in Table 18. For the 100 cases under consideration, 36% of the total variation in active sentence length could be "explained" by the full set of variables. Relatively significant ( $P \leq 0.20$ ) factors included the case descriptor index (CDI), presence of additional sentencing conditions, the court proceeding at which disposition occurred, the defendant's prior record and prior alcohol treatment history, and the number of concurrent counts. Thus, these factors were entered into a "reduced" model.

The reduced model explained 33% of the total variation in active sentence length for 109 defendants. Defendants who had prior felony records ( $P=0.01$ ), who were undergoing alcohol treatment ( $P=0.03$ ) or who plead guilty or nolo at a proceeding other than arraignment ( $P=0.01$ ) received significantly longer sentences than defendants with no prior record, no previous alcohol problem or who plead guilty or nolo at arraignment. Presence of additional sentencing conditions was related to significantly shorter ( $P=0.02$ ) sentences. Also, defendants who scored lower (i.e., had more of the characteristics associated with rural areas) on the CDI received longer sentences ( $P=0.0002$ ) than defendants who scored higher.

In terms of magnitude of the coefficients, or estimated effect, prior criminal record and drug/alcohol

treatment history were most significant. Defendants who had committed prior felonies received sentences an estimated 22.4 days longer than defendants with no prior record; defendants who were currently undergoing drug/alcohol treatment received sentences an estimated 24.6 days longer than defendants with no previous alcohol or drug problem noted in the court's record.

## B. Property Offenses

### 1) Community Sentencing Patterns

Seven of the eight areas (Anchorage (105 cases), Bethel (19), Fairbanks (47), Juneau (18), Kodiak (21), Nome (24) and Sitka (22)) have sufficient numbers of property offenses for direct comparison. Property offenses were 16%-24% of the data from these areas.

The categories of property offenses were trespass, mischief, theft and fraud. Theft was the most common property offense committed by defendants from Anchorage (45.7%), Fairbanks (70.2%), Juneau (44.4%), Kodiak (47.6%) and Nome (58.3%); mischief was the most common property offense type committed by Bethel (36.8%) and Sitka (31.8%) defendants.

Juneau (2.0), Anchorage (1.5) and Kodiak (1.4) defendants were convicted on a greater mean number of counts than defendants from the other areas (1.1 counts for each area), but the proportion of defendants with greater than one count (8% to 29%) did not differ significantly ( $P=0.53$ ) between areas. One Anchorage defendant convicted of 19 counts and one Juneau defendant convicted of 17 counts greatly affected the mean number of counts for these areas.

The use of different sentence alternatives is shown in Tables 19 and 20. In each of the communities under consideration, 50% or more of the defendants convicted of a property offense spent at least 1 day in jail. The likelihood of receiving a jail sentence was greatest for defendants convicted of a theft offense (69.5%). The mean active jail

TABLE 19  
(1981 Misdemeanors)

Means and Standard Deviations (SD) of Active Jail Sentences for Defendants Who Spent at Least 1 Day in Jail for Property Offenses. Given are the Total Number of Defendants (N) Within Each Misdemeanor Sub-Category and the Number (n) and Proportion (% N) of Defendants who Spent at Least 1 Day in Jail.

|       | TRESPASS |    |        |      |      | MISCHIEF |    |         |      |      | FRAUD |   |         |      |     | THEFT |    |        |      |       | TOTAL |     |        |      |      |
|-------|----------|----|--------|------|------|----------|----|---------|------|------|-------|---|---------|------|-----|-------|----|--------|------|-------|-------|-----|--------|------|------|
|       | N        | n  | (% N)  | MEAN | SD   | N        | n  | (% N)   | MEAN | SD   | N     | n | (% N)   | MEAN | SD  | N     | n  | (% N)  | MEAN | SD    | N     | n   | (% N)  | MEAN | SD   |
| Anch. | 27       | 8  | (29.6) | 11.6 | 15.0 | 22       | 12 | (54.5)  | 10.4 | 13.1 | 8     | 6 | (75.0)  | 3.3  | 1.9 | 48    | 34 | (70.8) | 16.8 | 35.3  | 105   | 60  | (57.1) | 13.5 | 27.8 |
| Bar.  | 1        | 0  | (0.0)  | 0.0  | 0.0  | 4        | 1  | (25.0)  | 2.0  | 0.0  | 0     | - | -       | -    | -   | 3     | 0  | (0.0)  | 0.0  | 0.0   | 8     | 1   | (12.5) | 2.0  | 0.0  |
| Bet.  | 5        | 3  | (60.0) | 30.0 | 39.1 | 7        | 7  | (100.0) | 30.9 | 53.4 | 1     | 1 | (100.0) | 5.0  | 0.0 | 6     | 2  | (33.3) | 2.5  | 0.7   | 19    | 13  | (68.4) | 24.3 | 42.7 |
| Fair. | 9        | 5  | (55.6) | 16.6 | 11.8 | 5        | 2  | (40.0)  | 3.0  | 2.8  | 0     | - | -       | -    | -   | 33    | 26 | (78.8) | 19.0 | 26.3  | 47    | 33  | (70.2) | 17.7 | 23.9 |
| Jun.  | 5        | 2  | (40.0) | 3.5  | 2.1  | 3        | 3  | (100.0) | 11.7 | 2.9  | 2     | 1 | (50.0)  | 15.0 | 0.0 | 8     | 6  | (75.0) | 8.2  | 11.7  | 18    | 12  | (66.7) | 8.8  | 8.7  |
| Kod.  | 6        | 3  | (50.0) | 37.3 | 39.5 | 5        | 2  | (40.0)  | 12.5 | 3.5  | 0     | - | -       | -    | -   | 10    | 6  | (60.0) | 29.2 | 37.0  | 21    | 11  | (52.4) | 28.4 | 32.8 |
| Nome  | 4        | 1  | (25.0) | 7.0  | 0.0  | 6        | 3  | (50.0)  | 3.0  | 1.7  | 0     | - | -       | -    | -   | 14    | 11 | (78.6) | 38.0 | 107.1 | 24    | 15  | (62.5) | 28.9 | 91.9 |
| Sit.  | 6        | 3  | (50.0) | 11.0 | 14.7 | 7        | 4  | (57.1)  | 2.5  | 1.7  | 3     | 0 | (0.0)   | 0.0  | 0.0 | 6     | 4  | (66.7) | 8.5  | 13.0  | 22    | 11  | (50.0) | 7.0  | 10.4 |
| Total | 63       | 25 | (39.7) | 17.0 | 21.7 | 59       | 34 | (57.6)  | 12.6 | 26.1 | 14    | 8 | (57.1)  | 5.0  | 4.4 | 128   | 89 | (69.5) | 19.6 | 46.2  | 264   | 156 | (59.1) | 16.9 | 38.0 |

TABLE 20  
(1981 Misdemeanors)

Means and Standard Deviations (SD) of Net Fines (\$) for Defendants Who Paid at Least \$1 for Property Offenses. Given are the Total Number of Defendants (N) within Each Misdemeanor Sub-category and the Number (n) and proportion (% N) of Defendants who Paid at Least \$1 in Fines

|        | TRESPASS |    |        |       |      | MISCHIEF |    |        |       |       | FRAUD |   |         |        |        | THEFT |    |        |       |       | TOTAL |     |        |       |        |
|--------|----------|----|--------|-------|------|----------|----|--------|-------|-------|-------|---|---------|--------|--------|-------|----|--------|-------|-------|-------|-----|--------|-------|--------|
|        | N        | n  | (% N)  | MEAN  | SD   | N        | n  | (% N)  | MEAN  | SD    | N     | n | (% N)   | MEAN   | SD     | N     | n  | (% N)  | MEAN  | SD    | N     | n   | (% N)  | MEAN  | SD     |
| Anch.  | 27       | 19 | (70.4) | 58.2  | 56.6 | 22       | 13 | (59.1) | 188.5 | 119.3 | 8     | 3 | (37.5)  | 3266.7 | 5398.5 | 48    | 24 | (50.0) | 105.2 | 56.6  | 105   | 59  | (56.2) | 269.5 | 1225.5 |
| Barrow | 1        | 0  | (0.0)  | 0.0   | 0.0  | 4        | 0  | (0.0)  | 0     | 0.0   | 0     | - | -       | -      | -      | 3     | 0  | (0.0)  | 0.0   | 0.0   | 8     | 0   | (0.0)  | 0.0   | 0.0    |
| Bethel | 5        | 1  | (20.0) | 75.0  | 0.0  | 7        | 2  | (28.6) | 75.0  | 35.4  | 1     | 0 | (0.0)   | 0.0    | 0.0    | 6     | 0  | (0.0)  | 0.0   | 0.0   | 19    | 3   | (15.8) | 75.0  | 25.0   |
| Fair.  | 9        | 5  | (55.6) | 95.0  | 75.8 | 5        | 2  | (40.0) | 75.0  | 35.4  | 0     | - | -       | -      | -      | 33    | 16 | (48.5) | 182.8 | 153.5 | 47    | 23  | (48.9) | 154.3 | 138.3  |
| Juneau | 5        | 1  | (20.0) | 100.0 | 0.0  | 3        | 0  | (0.0)  | 0.0   | 0.0   | 2     | 2 | (100.0) | 1270.0 | 1088.9 | 8     | 7  | (87.5) | 63.6  | 27.2  | 18    | 10  | (55.6) | 308.5 | 623.8  |
| Kodiak | 6        | 1  | (16.7) | 50.0  | 0.0  | 5        | 1  | (20.0) | 50.0  | 0.0   | 0     | - | -       | -      | -      | 10    | 6  | (60.0) | 50.0  | 15.8  | 21    | 8   | (38.1) | 50.0  | 13.4   |
| Nome   | 4        | 0  | (0.0)  | 0.0   | 0.0  | 6        | 0  | (0.0)  | 0.0   | 0.0   | 0     | - | -       | -      | -      | 14    | 0  | (0.0)  | 0.0   | 0.0   | 24    | 0   | (0.0)  | 0.0   | 0.0    |
| Sitka  | 6        | 2  | (33.3) | 75.0  | 35.4 | 7        | 2  | (28.6) | 225.0 | 106.1 | 3     | 2 | (66.7)  | 80.0   | 99.0   | 6     | 5  | (83.3) | 175.0 | 182.0 | 22    | 11  | (50.0) | 148.6 | 137.9  |
| Total  | 63       | 29 | (46.0) | 68.1  | 56.3 | 59       | 20 | (33.9) | 162.5 | 113.4 | 14    | 7 | (50.0)  | 1785.7 | 3474.0 | 128   | 58 | (45.3) | 121.9 | 110.8 | 264   | 114 | (43.2) | 217.5 | 901.8  |



TABLE 21  
(1981 Misdemeanors)

Distribution of Active Jail Sentences (Days)  
For Property Offenses. Given are Means and  
Standard Deviations (SD) For All Penalties.

PROPERTY

| CITY      | N   | (DAYS)     |            |          |          |         |          | Mean | SD   |
|-----------|-----|------------|------------|----------|----------|---------|----------|------|------|
|           |     | 0          | 1-10       | 11-20    | 21-30    | 31-40   | 40       |      |      |
|           |     | n (%)      | n (%)      | n (%)    | n (%)    | n (%)   | n (%)    |      |      |
| Anchorage | 105 | 45 (42.9)  | 46 (43.8)  | 4 (3.8)  | 4 (3.8)  | 2 (1.9) | 4 (3.8)  | 7.7  | 22.0 |
| Barrow    | 8   | 7 (87.5)   | 1 (12.5)   | 0        | 0        | 0       | 0        | 0.3  | 0.7  |
| Bethel    | 19  | 6 (31.6)   | 9 (47.4)   | 1 (5.3)  | 1 (5.3)  | 0       | 2 (10.5) | 16.6 | 36.8 |
| Fairbanks | 47  | 14 (29.8)  | 21 (44.7)  | 5 (10.6) | 1 (2.1)  | 1 (2.1) | 5 (10.6) | 12.4 | 21.6 |
| Juneau    | 18  | 6 (33.3)   | 8 (44.4)   | 3 (16.7) | 1 (5.6)  | 0       | 0        | 5.9  | 8.2  |
| Kodiak    | 21  | 10 (47.6)  | 5 (23.8)   | 2 (9.5)  | 1 (4.8)  | 0       | 3 (14.3) | 14.9 | 27.3 |
| Nome      | 24  | 9 (37.5)   | 13 (54.2)  | 0        | 1 (4.2)  | 0       | 1 (4.2)  | 18.1 | 73.0 |
| Sitka     | 22  | 11 (50.0)  | 9 (40.9)   | 2 (9.1)  | 0        | 0       | 0        | 3.5  | 8.0  |
| Total     | 264 | 108 (40.9) | 112 (42.4) | 15 (5.7) | 11 (4.2) | 3 (1.1) | 15 (5.7) | 10.0 | 30.3 |

TABLE 22  
(1981 Misdemeanors)

Distribution of Net Fines (\$) For  
Property Offenses. Given are Means  
And Standard Deviations (SD) For all Penalties.

PROPERTY  
(\$)

| CITY      | N   | 0   |         | 1-100 |        | 101-200 |        | 201-300 |       | 301-400 |     | 400 |        | Mean  | SD    |
|-----------|-----|-----|---------|-------|--------|---------|--------|---------|-------|---------|-----|-----|--------|-------|-------|
|           |     | n   | (%)     | n     | (%)    | n       | (%)    | n       | (%)   | n       | (%) | n   | (%)    |       |       |
| Anchorage | 105 | 46  | (43.8)  | 43    | (41.0) | 9       | (8.6)  | 5       | (4.8) | 0       |     | 2   | (1.9)  | 151.4 | 925.0 |
| Barrow    | 8   | 8   | (100.0) | 0     |        | 0       |        | 0       |       | 0       |     | 0   |        | 0.0   | 0.0   |
| Bethel    | 19  | 16  | (84.2)  | 3     | (15.8) | 0       |        | 0       |       | 0       |     | 0   |        | 11.8  | 29.3  |
| Fairbanks | 47  | 24  | (51.1)  | 12    | (25.5) | 9       | (19.1) | 0       |       | 0       |     | 2   | (4.3)  | 75.5  | 123.4 |
| Juneau    | 18  | 8   | (44.4)  | 8     | (44.4) | 0       |        | 0       |       | 0       |     | 2   | (11.1) | 171.4 | 480.5 |
| Kodiak    | 21  | 13  | (61.9)  | 8     | (38.1) | 0       |        | 0       |       | 0       |     | 0   |        | 19.0  | 26.1  |
| Nome      | 24  | 24  | (100.0) | 0     |        | 0       |        | 0       |       | 0       |     | 0   |        | 0.0   | 0.0   |
| Sitka     | 22  | 11  | (50.0)  | 7     | (31.8) | 2       | (9.1)  | 1       | (4.5) | 0       |     | 1   | (4.5)  | 74.3  | 121.8 |
| Total     | 264 | 150 | (56.8)  | 81    | (30.7) | 20      | (7.6)  | 6       | (2.3) | 0       |     | 7   | (2.7)  | 93.9  | 600.9 |

sentence for defendants who were in jail at least 1 day ranged from 7.0 (Sitka) to 28.9 (Nome) days; the overall mean was 16.9 days.

Approximately 50% of the convicted defendants were required to pay a fine in Anchorage (56.2%), Fairbanks (48.9%), Juneau (55.6%) and Sitka (50.0%) (Table 17). None of the 24 Nome defendants were required to pay a fine. For those communities where at least 10 defendants were required to pay a fine, the mean fines ranged between \$148.60 (Sitka) and \$308.50 (Juneau); the overall mean was \$217.50. The largest fines were associated with fraud offenses, which were committed by defendants who generally were convicted of more than one charge.

Tables 18 and 19 display distributions of active jail sentences and net fines for defendants convicted of property offenses. The majority of defendants who were required to spend at least 1 day in jail, were sentenced to terms of 1 to 10 days; the majority of defendants who were required to pay a fine, paid between \$1 and \$100.

## 2) Factors Associated with Sentences of Property Offenses

Results of the preliminary regression model for active jail sentences are shown in Table 23. For the 161 cases under consideration, only 23% of the total variation in active jail sentence length could be "explained" by the full set of variables. Relatively significant ( $P \leq 0.20$ ) factors included the CDI and financial indices, the defendant's prior record and prior alcohol treatment history, and the number of concurrent counts. Thus, these factors were entered into a "reduced" model.

The reduced model explained the same proportion (23%) of variability in active jail sentence for a larger data set ( $n=177$ ). Only prior criminal record and alcohol/drug treatment were relevant to the jail term imposed. Defendants who had committed prior felonies received significantly longer (58.7 days,  $P=0.000$ ) jail sentences than defendants with no prior record; defendants with an alcohol/drug problem who previously

**TABLE 23**  
**(1981 Misdemeanors)**

Regression Coefficients and Standard Errors (SE) for  
Equations Describing Variation in Active Jail Sentence  
Length (Days) for Property Offenses. Also Given are  
Sample Sizes (N) and Coefficients of Determination (R<sup>2</sup>)

|                                  | Preliminary                                     |          | Reduced                                         |         |
|----------------------------------|-------------------------------------------------|----------|-------------------------------------------------|---------|
|                                  | N = 161<br>R <sup>2</sup> = 0.23<br>Coefficient | (SE)     | N = 177<br>R <sup>2</sup> = 0.23<br>Coefficient | (SE)    |
| <u>Case Descriptor Index</u>     | 0.8°                                            | (0.56)   | -0.4                                            | (0.74)  |
| <u>Process</u>                   |                                                 |          |                                                 |         |
| Guilty at:                       |                                                 |          |                                                 |         |
| Arraignment                      | ¶                                               |          | -                                               |         |
| Other hearing                    | 2.4                                             | (3.56)   | -                                               |         |
| Jury Trial                       | -                                               |          | -                                               |         |
| Bench Trial                      | -                                               |          | -                                               |         |
| Concurrent Counts                | 2.4°                                            | (1.49)   | 0.7                                             | (1.18)  |
| <u>Offense</u>                   |                                                 |          |                                                 |         |
| Charge Subcategory               |                                                 |          |                                                 |         |
| Trespass                         | ¶                                               |          | -                                               |         |
| Mischief                         | -2.1                                            | (4.76)   | -                                               |         |
| Fraud                            | -2.1                                            | (8.13)   | -                                               |         |
| Theft                            | 5.2                                             | (4.32)   | -                                               |         |
| Victim Status                    |                                                 |          |                                                 |         |
| No Harm                          | -                                               |          | -                                               |         |
| Harm                             | -                                               |          | -                                               |         |
| Alcohol Use at Offense           |                                                 |          |                                                 |         |
| No                               | ¶                                               |          | -                                               |         |
| Yes                              | 2.8                                             | (4.00)   | -                                               |         |
| <u>Defendant Problems</u>        |                                                 |          |                                                 |         |
| Prior Record                     | -                                               |          | -                                               |         |
| None                             | ¶                                               |          | ¶                                               |         |
| Violation(s)                     | -                                               |          | -                                               |         |
| Misdemeanor(s)                   | 0.6                                             | (4.25)   | 1.7                                             | (6.15)  |
| Felony(s)                        | 18.2°                                           | (8.08)   | 58.7***                                         | (11.27) |
| Drug/Alcohol Treatment           |                                                 |          |                                                 |         |
| No Problem                       | ¶                                               |          | ¶                                               |         |
| Never Referred                   | 4.3                                             | (5.91)   | 21.3**                                          | (8.37)  |
| Referred, No Attendance          | 12.1°                                           | (5.87)   | 5.8                                             | (8.14)  |
| Attended, No Completion          | -                                               |          | -                                               |         |
| Current Treatment                | 6.0                                             | (7.50)   | 6.7                                             | (10.38) |
| Completed Treatment              | -                                               |          | -                                               |         |
| <u>Defendant Characteristics</u> |                                                 |          |                                                 |         |
| Sex                              |                                                 |          |                                                 |         |
| Male                             | ¶                                               |          | -                                               |         |
| Female                           | -4.9                                            | (4.33)   | -                                               |         |
| Age                              | -0.1                                            | (0.15)   | -                                               |         |
| Financial Index                  | 2.1°                                            | (1.18)   | -0.05                                           | (1.61)  |
| <u>Other Factors</u>             |                                                 |          |                                                 |         |
| Net Fine                         | -0.004                                          | (0.0036) | -                                               |         |
| Additional Conditions            | 0.4                                             | (3.43)   | -                                               |         |
| Constant (Intercept)             | -1.4                                            | (5.50)   | 1.00                                            | (3.59)  |

- Not analyzed  
¶ Reference category  
°  $P \leq 0.20$

\*  $0.10 > P \geq 0.05$   
\*\*  $0.05 > P \geq 0.01$   
\*\*\*  $P < 0.01$



were never referred or treated for the problem, received significantly longer (21.3 days,  $P=0.01$ ) sentences than defendants with no previous alcohol problem.

### C. Vehicular Offenses

#### 1) Community Sentencing Patterns

Vehicular is the most frequent offense category from each community. The proportion of defendants with vehicular offenses range from about 30% (Nome) to 65% (Fairbanks). Each of the communities (Anchorage (302 defendants), Barrow (25), Bethel (40), Fairbanks (169), Juneau (51), Kodiak (44), Nome (35) and Sitka (50)) have sufficiently large samples to make direct comparisons.

The mean number of counts per defendant was 1.2 in Anchorage, Bethel and Nome, 1.1 in Fairbanks, Juneau, Kodiak and Sitka, and 1.0 in Barrow. The proportion (15.1%) of defendants with two or more concurrent counts did not differ significantly ( $P=0.39$ ) between communities. Most defendants (84.9%) in this misdemeanor category had only one charge against them.

Except for Barrow, DWI was the most common offense subcategory in each of the areas (Tables 24 and 25). 55.4% of all vehicular misdemeanors were DWI offenses. There were nearly equal numbers of license (122 offenses, 17.0%) (e.g., driving with license suspended) and reckless driving (136 offenses, 19.0%) convictions.

Over 70% of the defendants who committed a vehicular offense served at least 1 day in jail (Table 21). Defendants who were convicted of DWI offenses had the highest likelihood (99.2%) of going to jail\*. However, the mean active sentence

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\* Note that the offense subcategory "DWI" contains other than DWI offenses (Table 2). If only DWI/OMVI offenses are considered, 100% of those defendants served at least 3 days in jail.

TABLE 25  
(1981 Misdemeanors)

Means and Standard Deviations (SD) of Net Fines (\$) for Defendants Who Paid at Least \$1 for Vehicular Offenses. Given are the Total Number of Defendants (N) within Each Misdemeanor Sub-category and the Number (n) and proportion (% N) of Defendants Who Paid at Least \$1 in Fines

VEHICULAR

|        | LICENSE |    |        |       |       | OPERATOR |    |         |       |       | (\$)<br>RECKLESS |     |         |       |       | DWI |     |         |       |       | TOTAL |     |        |       |       |
|--------|---------|----|--------|-------|-------|----------|----|---------|-------|-------|------------------|-----|---------|-------|-------|-----|-----|---------|-------|-------|-------|-----|--------|-------|-------|
|        | N       | n  | (% N)  | MEAN  | SD    | N        | n  | (% N)   | MEAN  | SD    | N                | n   | (% N)   | MEAN  | SD    | N   | n   | (% N)   | MEAN  | SD    | N     | n   | (% N)  | MEAN  | SD    |
| Anch.  | 84      | 46 | (54.8) | 149.0 | 97.0  | 44       | 33 | (75.0)  | 203.0 | 165.4 | 38               | 37  | (97.4)  | 253.4 | 137.5 | 136 | 119 | (87.5)  | 288.0 | 158.1 | 302   | 235 | (77.8) | 241.9 | 154.8 |
| Barrow | 0       |    |        |       |       | 1        | 0  | (0.0)   | 0.0   | 0.0   | 13               | 4   | (30.8)  | 43.8  | 37.5  | 11  | 8   | (72.7)  | 256.3 | 17.7  | 25    | 12  | (48.0) | 185.4 | 107.4 |
| Bethel | 3       | 1  | (33.3) | 50.0  | 0.0   | 0        |    |         |       |       | 2                | 2   | (100.0) | 62.5  | 53.0  | 35  | 32  | (91.4)  | 173.4 | 95.0  | 40    | 35  | (87.5) | 113.6 | 96.9  |
| Fair.  | 19      | 10 | (52.6) | 220.0 | 135.8 | 8        | 4  | (50.0)  | 212.5 | 131.5 | 29               | 28  | (96.6)  | 210.7 | 113.9 | 113 | 109 | (96.5)  | 348.2 | 198.7 | 169   | 151 | (89.3) | 310.6 | 189.5 |
| Juneau | 13      | 11 | (84.6) | 62.3  | 32.6  | 2        | 2  | (100.0) | 300.0 | 70.7  | 13               | 12  | (92.3)  | 180.0 | 94.4  | 23  | 23  | (100.0) | 337.2 | 122.9 | 51    | 48  | (94.1) | 233.3 | 150.1 |
| Kodiak | 3       | 1  | (33.3) | 30.0  | 0.0   | 3        | 2  | (66.7)  | 75.0  | 35.4  | 7                | 7   | (100.0) | 171.4 | 119.4 | 31  | 29  | (93.5)  | 432.8 | 180.9 | 44    | 39  | (88.6) | 357.2 | 210.1 |
| Nome   | 0       |    |        |       |       | 0        |    |         |       |       | 7                | 7   | (100.0) | 142.9 | 102.8 | 28  | 23  | (82.1)  | 247.8 | 120.8 | 35    | 30  | (85.7) | 223.3 | 123.7 |
| Sitka  | 0       |    |        |       |       | 3        | 3  | (100.0) | 258.3 | 166.5 | 27               | 26  | (96.3)  | 167.7 | 84.4  | 20  | 17  | (85.0)  | 367.6 | 82.8  | 50    | 46  | (92.0) | 247.5 | 129.5 |
| Total  | 122     | 69 | (56.6) | 143.3 | 105.3 | 61       | 44 | (72.1)  | 206.3 | 156.3 | 136              | 123 | (90.4)  | 197.5 | 120.3 | 397 | 360 | (90.7)  | 310.4 | 172.1 | 716   | 596 | (83.2) | 259.9 | 167.4 |

TABLE 26  
(1981 Misdemeanors)

Distribution of Active Jail Sentences (Days)  
for Vehicular Offenses. Given are Means and  
Standard Deviations (SD) for all Penalties.

VEHICULAR

| CITY      | N   | (DAYS)     |            |           |          |         |          | Mean | SD   |
|-----------|-----|------------|------------|-----------|----------|---------|----------|------|------|
|           |     | 0          | 1-10       | 11-20     | 21-30    | 31-40   | 40       |      |      |
|           |     | n (%)      | n (%)      | n (%)     | n (%)    | n (%)   | n (%)    |      |      |
| Anchorage | 302 | 78 (25.8)  | 171 (56.6) | 35 (11.6) | 8 (2.6)  | 2 (0.7) | 8 (2.6)  | 9.9  | 29.0 |
| Barrow    | 25  | 11 (44.0)  | 12 (48.0)  | 1 (4.0)   | 0        | 0       | 1 (4.0)  | 6.0  | 18.4 |
| Betnel    | 40  | 1 (2.5)    | 33 (82.5)  | 4 (10.0)  | 0        | 0       | 2 (5.0)  | 8.8  | 13.4 |
| Fairbanks | 169 | 38 (22.5)  | 100 (59.2) | 14 (8.3)  | 6 (3.6)  | 3 (1.8) | 8 (4.7)  | 10.7 | 22.8 |
| Juneau    | 51  | 22 (43.1)  | 23 (45.1)  | 5 (9.8)   | 0        | 0       | 1 (2.0)  | 11.0 | 50.1 |
| Kodiak    | 44  | 10 (22.7)  | 29 (65.9)  | 4 (9.1)   | 0        | 0       | 1 (2.3)  | 5.6  | 7.7  |
| Nome      | 35  | 6 (17.1)   | 28 (80.0)  | 0         | 1 (2.9)  | 0       | 0        | 4.3  | 4.6  |
| Sitka     | 50  | 28 (56.0)  | 18 (36.0)  | 1 (2.0)   | 1 (2.0)  | 0       | 2 (4.0)  | 6.1  | 19.7 |
| Total     | 716 | 194 (27.1) | 414 (57.8) | 64 (8.9)  | 16 (2.2) | 5 (0.7) | 23 (3.2) | 9.2  | 26.6 |

TABLE 27  
(1981 Misdemeanors)

Distribution of Net Fines (\$) For  
Vehicular Offenses. Given are Means And  
Standard Deviations (SD) For All Penalties.

VEHICULAR

| CITY      | N   | (\$)       |            |            |            |           |           | Mean  | SD    |
|-----------|-----|------------|------------|------------|------------|-----------|-----------|-------|-------|
|           |     | 0          | 1-100      | 101-200    | 201-300    | 301-400   | 400       |       |       |
|           |     | n (%)      | n (%)      | n (%)      | n (%)      | n (%)     | n (%)     |       |       |
| Anchorage | 302 | 67 (22.2)  | 52 (17.2)  | 62 (20.5)  | 91 (30.1)  | 7 (2.3)   | 23 (7.6)  | 188.3 | 169.6 |
| Barrow    | 25  | 13 (52.0)  | 4 (16.0)   | 0          | 8 (32.0)   | 0         | 0         | 89.0  | 119.3 |
| Bethel    | 40  | 5 (12.5)   | 12 (30.0)  | 18 (45.0)  | 3 (7.5)    | 0         | 2 (5.0)   | 143.1 | 105.8 |
| Fairbanks | 169 | 18 (10.7)  | 18 (10.7)  | 35 (20.7)  | 54 (32.0)  | 11 (6.5)  | 33 (19.5) | 277.5 | 203.2 |
| Juneau    | 51  | 3 (5.9)    | 16 (31.4)  | 3 (5.9)    | 18 (35.3)  | 7 (13.7)  | 4 (7.8)   | 219.6 | 155.7 |
| Kodiak    | 44  | 5 (11.4)   | 6 (13.6)   | 2 (4.5)    | 3 (6.8)    | 19 (43.2) | 9 (20.5)  | 316.6 | 228.3 |
| Nome      | 35  | 5 (14.3)   | 8 (22.9)   | 7 (20.0)   | 10 (28.6)  | 2 (5.7)   | 3 (8.6)   | 191.4 | 139.1 |
| Sitka     | 50  | 4 (8.0)    | 11 (22.0)  | 13 (26.0)  | 7 (14.0)   | 14 (28.0) | 1 (2.0)   | 227.7 | 141.4 |
| Total     | 716 | 120 (16.8) | 127 (17.7) | 140 (19.6) | 194 (27.1) | 60 (8.4)  | 75 (10.5) | 216.4 | 181.0 |



TABLE 28  
(1981 Misdemeanors)

Regression Coefficients and Standard Errors (SE) for Equations Describing Variation in Active Jail Sentence Length (Days) for Vehicular Offenses. Also Given are Sample Sizes (N) and Coefficients of Determination (R<sup>2</sup>)

|                                  | Preliminary                                     |          | Reduced                                         |          |
|----------------------------------|-------------------------------------------------|----------|-------------------------------------------------|----------|
|                                  | N = 537<br>R <sup>2</sup> = 0.32<br>Coefficient | (SE)     | N = 544<br>R <sup>2</sup> = 0.31<br>Coefficient | (SE)     |
| <u>Case Descriptor Index</u>     | 0.87°                                           | (0.398)  | 0.9**                                           | (0.39)   |
| <u>Process</u>                   |                                                 |          |                                                 |          |
| Guilty at:                       |                                                 |          |                                                 |          |
| Arraignment                      | ¶                                               |          | ¶                                               |          |
| Other hearing                    | -1.5                                            | (2.59)   | -1.7                                            | (2.50)   |
| Jury Trial                       | 12.6°                                           | (4.07)   | 13.2***                                         | (3.95)   |
| Bench Trial                      | 3.9                                             | (6.56)   | 4.2                                             | (6.44)   |
| Concurrent Counts                | 15.3°                                           | (2.09)   | 15.5***                                         | (2.04)   |
| <u>Offense</u>                   |                                                 |          |                                                 |          |
| Charge Subcategory               |                                                 |          |                                                 |          |
| Operator                         | ¶                                               |          | ¶                                               |          |
| License                          | 6.6°                                            | (4.19)   | 6.7                                             | (4.07)   |
| Reckless                         | 4.3                                             | (4.07)   | 4.5                                             | (3.96)   |
| DWI                              | 9.7°                                            | (4.30)   | 10.8***                                         | (3.66)   |
| Victim Status                    |                                                 |          |                                                 |          |
| No Harm                          | ¶                                               |          | -                                               |          |
| Harm                             | -0.7                                            | (3.82)   | -                                               |          |
| Alcohol Use at Offense           |                                                 |          |                                                 |          |
| No                               | -                                               |          | -                                               |          |
| Yes                              | -                                               |          | -                                               |          |
| <u>Defendant Problems</u>        |                                                 |          |                                                 |          |
| Prior Record                     |                                                 |          |                                                 |          |
| None                             | ¶                                               |          | -                                               |          |
| Violation(s)                     | 0.2                                             | (3.15)   | -                                               |          |
| Misdemeanor(s)                   | 2.3                                             | (2.49)   | -                                               |          |
| Felony(s)                        | 4.7                                             | (4.89)   | -                                               |          |
| Drug/Alcohol Treatment           |                                                 |          |                                                 |          |
| No Problem                       | -                                               |          | -                                               |          |
| Never Referred                   | -0.2                                            | (3.38)   | 0.6                                             | (3.18)   |
| Referred, No Attendance          | 8.6°                                            | (3.16)   | 10.0***                                         | (2.77)   |
| Attended, No Completion          | 46.9°                                           | (6.56)   | 49.0***                                         | (6.27)   |
| Current Treatment                | 19.6°                                           | (4.14)   | 20.4***                                         | (3.92)   |
| Completed Treatment              | 0.3                                             | (5.15)   | 2.1                                             | (4.88)   |
| <u>Defendant Characteristics</u> |                                                 |          |                                                 |          |
| Sex                              |                                                 |          |                                                 |          |
| Male                             | ¶                                               |          | -                                               |          |
| Female                           | -3.3                                            | (2.85)   | -                                               |          |
| Age                              | -0.01                                           | (0.086)  | -                                               |          |
| Financial Index                  | 1.2°                                            | (0.57)   | 1.3**                                           | (0.55)   |
| <u>Other Factors</u>             |                                                 |          |                                                 |          |
| Net Fine                         | -0.01°                                          | (0.0059) | -0.01*                                          | (0.0057) |
| Additional Conditions            | 1.9                                             | (2.79)   | -                                               |          |
| Constant (Intercept)             | -19.0°                                          | (5.14)   | -18.9***                                        | (4.49)   |

- Not analyzed

¶ Reference category

° P ≤ 0.20

\* 0.10 > P ≥ 0.05

\*\* 0.05 > P ≥ 0.01

\*\*\* P < 0.01

(11.9 days) for defendants convicted of a DWI offense and who served at least 1 day in jail was less than that for defendants convicted of license (14.7 days) or reckless driving (18.0 days) offenses.

For license and reckless driving offenses the likelihood of receiving an active jail sentence varied among communities. Comparing communities that had at least 10 convictions, Anchorage (65.5%) and Fairbanks (78.9%) defendants convicted of license offense were more likely to go to jail than Juneau defendants (38.5%); Anchorage (44.7%) defendants who committed reckless driving offenses were more likely to go to jail than either Barrow (23.1%), Fairbanks (10.3%), Juneau (7.7%) or Sitka (11.1%) defendants.

Over 83% of the defendants committing a vehicular offense paid a fine (Table 22). Fines were less likely in Barrow (48.0%) than the other communities (77.8% to 94.1%). The likelihood of receiving a fine was highest for reckless driving (90.4%) and DWI (90.7%) offenses. However, the mean fine for a DWI offense (\$310.40) was over \$100 greater than a reckless driving conviction (\$197.50).

The distributions of active jail sentences and net fines are displayed in Tables 26 and 27. The majority of defendants who served time received a sentence between 1 and 10 days; the majority of defendants who paid a fine, paid between \$201 and \$300.

## 2) Factors Associated with Sentences of Vehicular Offenses

Results of the preliminary regression model for active jail sentences are shown in Table 28. Alcohol use at offense was not included in the model as it was directly related to one of the offense subcategories (DWI). For the 537 cases under consideration, 32% of the total variation in active jail sentence length could be explained by the full set of variables. Relatively significant ( $P \leq 0.20$ ) factors included the

CDI and financial indices, the court proceeding at which disposition occurred, the specific charge subcategory, the defendant's drug/alcohol treatment history, the number of pending counts and the net fine paid by the defendant.

The reduced regression model was able to explain 31% of the variation in active sentence length for 544 defendants.

The most significant ( $P \leq 0.01$ ) factors included the specific offense subcategory, the number of concurrent counts, the court proceeding at which disposition occurred and the drug/alcohol treatment history of the defendant. Defendants charged with a DWI violation received longer (10.8 days) jail sentences than defendants with "operator action" (e.g., failure to report an accident) violations, once other factors had been accounted for. License offenders also received marginally longer (6.7 days,  $P=0.10$ ) sentences than operator action convictions. Defendants who were charged and convicted on multiple counts received an estimated 15.5 days for each additional count.

Defendants who were convicted after jury trials received significantly longer (13.2 days) sentences than defendants who plead guilty or nolo at arraignment. Defendants who received dispositions at a proceeding other than arraignment or who had a bench trial did not receive sentences significantly different from defendants who plead guilty or nolo at arraignment.

The drug/alcohol treatment history of the defendant was also significantly related to the jail term imposed. Defendants who were previously referred, but did not attend (10.0 days extra), who attended, but did not complete (49.0 days) or who were currently undergoing treatment (20.4 days) received significantly longer sentences than defendants with no prior problem. Defendants who had a prior alcohol problem, but were never referred to, or who completed an alcohol/drug program were not sentenced differently from defendants without an alcohol problem.

Other factors that were less significant statistically ( $0.05 > P \geq 0.01$ ) included the CDI and financial indices. Defendants who scored higher on these indices received longer (0.9 days per index point on the CDI index; 1.3 days per index point on the financial index) sentences than defendants who scored lower.

Of marginal significance ( $0.10 > P \geq 0.05$ ) in determining active jail sentence was the net fine. Larger net fines are associated with lower jail terms (-0.01 days per dollar net fine).

#### D. Disorderly Conduct Offenses

##### 1) Community Sentencing Patterns

Disorderly conduct was the most serious offense committed by 9.1% of the defendants in the study. The proportion of defendants committing these offenses in each of the communities were Anchorage 5.6%, Barrow 17.0%, Bethel 12.8%, Fairbanks 7.3%, Juneau 16.7%, Kodiak 8.9%, Nome 10.0% and Sitka 13.0%.

Distributions of active jail sentences and net fines are shown in Tables 29 - 32. Statewide, 55.6% of the defendants were sentenced to at least one day in jail. Over two thirds of the defendants in Barrow (77.8%), Bethel (80.0%) and Nome (75.0%) received an active jail sentence; under 50% of the defendants in Juneau (26.3%), Kodiak (44.4%) and Sitka (33.3%) were likewise sentenced. The average active jail sentence for defendants sentenced to at least one day was 5.8 days. The range of mean jail sentences was between 1.3 days (Sitka) and 11.0 days (Fairbanks). The majority of sentences were between 1 and 10 days duration.

The use of net fines in the various communities is the converse of the use of active jail sentences. Barrow (22.2%), Bethel (46.7%) and Nome (8.3%) defendants received net fines in less than 50% of the cases. Defendants in Fairbanks (73.7%),



TABLE 29  
(1981 Misdemeanors)

Means and Standard Deviations (SD)  
of Active Jail Sentences (Days) for Defendants  
Who Spent at Least 1 Day in Jail for "Disorderly  
Conduct" Offenses. Given are the Total Number  
of Defendants (N) and the Number (n) and Proportion  
(% N) of Defendants Who Spent at Least 1 Day in Jail.

DISORDERLY CONDUCT  
(DAYS)

| CITY      | N   | n  | (%N)   | Mean | SD   |
|-----------|-----|----|--------|------|------|
| Anchorage | 29  | 17 | (58.6) | 6.1  | 10.0 |
| Barrow    | 9   | 7  | (77.8) | 10.1 | 15.6 |
| Bethel    | 15  | 12 | (80.0) | 3.3  | 2.4  |
| Fairbanks | 19  | 11 | (57.9) | 11.0 | 17.0 |
| Juneau    | 19  | 5  | (26.3) | 5.8  | 3.8  |
| Kodiak    | 9   | 4  | (44.4) | 3.3  | 2.1  |
| Nome      | 12  | 9  | (75.0) | 2.1  | 1.3  |
| Sitka     | 12  | 4  | (33.3) | 1.3  | 0.5  |
| Total     | 124 | 69 | (55.6) | 5.8  | 10.0 |

TABLE 30  
(1981 Misdemeanors)

Means and Standard Deviations (SD)  
of Net Fines (\$) for Defendants Who Paid  
at Least \$1 for "Disorderly Conduct" Offenses.  
Given are the Total Number of Defendants (N)  
and the Number (n) and Proportion (% N) of  
Defendants Who Paid at Least \$1 in Fines

| DISORDERLY CONDUCT<br>(\$) |     |    |        |       |       |
|----------------------------|-----|----|--------|-------|-------|
| CITY                       | N   | n  | (%N)   | Mean  | SD    |
| Anchorage                  | 29  | 17 | (58.6) | 82.4  | 55.7  |
| Barrow                     | 9   | 2  | (22.2) | 35.0  | 21.2  |
| Bethel                     | 15  | 7  | (46.7) | 42.9  | 27.8  |
| Fairbanks                  | 19  | 14 | (73.7) | 155.4 | 153.2 |
| Juneau                     | 19  | 12 | (63.2) | 100.0 | 67.4  |
| Kodiak                     | 9   | 6  | (66.7) | 66.7  | 37.6  |
| Nome                       | 12  | 1  | (8.3)  | 50.0  | 0.0   |
| Sitka                      | 12  | 10 | (83.3) | 132.5 | 83.4  |
| Total                      | 124 | 69 | (55.6) | 100.3 | 92.3  |

TABLE 31  
(1981 Misdemeanors)

Distribution of Active Jail Sentences (Days)  
for "Disorderly Conduct" Offenses. Given are Means  
and Standard Deviations (SD) for all Penalties.

DISORDERLY CONDUCT

| CITY      | N   | (DAYS)    |           |       |       |       |          | Mean | SD   |
|-----------|-----|-----------|-----------|-------|-------|-------|----------|------|------|
|           |     | 0         | 1-10      | 11-20 | 21-30 | 31-40 | 40       |      |      |
|           |     | n (%)     | n (%)     | n (%) | n (%) | n (%) | n (%)    |      |      |
| Anchorage | 29  | 12 (41.4) | 16 (55.2) | 0     | 0     | 0     | 1 (3.4)  | 3.6  | 8.1  |
| Barrow    | 9   | 2 (22.2)  | 6 (66.7)  | 0     | 0     | 0     | 1 (11.1) | 7.9  | 14.3 |
| Bethel    | 15  | 3 (20.0)  | 12 (80.0) | 0     | 0     | 0     | 0        | 2.6  | 2.5  |
| Fairbanks | 19  | 8 (42.1)  | 9 (47.4)  | 0     | 0     | 0     | 2 (10.5) | 6.4  | 13.9 |
| Juneau    | 19  | 14 (73.7) | 5 (26.3)  | 0     | 0     | 0     | 0        | 1.5  | 3.2  |
| Kodiak    | 9   | 5 (55.6)  | 4 (44.4)  | 0     | 0     | 0     | 0        | 1.4  | 2.1  |
| None      | 12  | 3 (25.0)  | 9 (75.0)  | 0     | 0     | 0     | 0        | 1.6  | 1.4  |
| Sitka     | 12  | 8 (66.7)  | 4 (33.3)  | 0     | 0     | 0     | 0        | 0.4  | 0.7  |
| Total     | 124 | 55 (44.4) | 64 (51.6) | 0     | 0     | 0     | 4 (3.2)  | 3.2  | 8.0  |

TABLE 31  
(1981 Misdemeanors)

Distribution of Active Jail Sentences (Days)  
for "Disorderly Conduct" Offenses. Given are Means  
and Standard Deviations (SD) for all Penalties.

DISORDERLY CONDUCT

| CITY      | N   | (DAYS)    |           |       |       |       |          | Mean | SD   |
|-----------|-----|-----------|-----------|-------|-------|-------|----------|------|------|
|           |     | 0         | 1-10      | 11-20 | 21-30 | 31-40 | 40       |      |      |
|           |     | n (%)     | n (%)     | n (%) | n (%) | n (%) | n (%)    |      |      |
| Anchorage | 29  | 12 (41.4) | 16 (55.2) | 0     | 0     | 0     | 1 (3.4)  | 3.6  | 8.1  |
| Barrow    | 9   | 2 (22.2)  | 6 (66.7)  | 0     | 0     | 0     | 1 (11.1) | 7.9  | 14.3 |
| Bethel    | 15  | 3 (20.0)  | 12 (80.0) | 0     | 0     | 0     | 0        | 2.6  | 2.5  |
| Fairbanks | 19  | 8 (42.1)  | 9 (47.4)  | 0     | 0     | 0     | 2 (10.5) | 6.4  | 13.9 |
| Juneau    | 19  | 14 (73.7) | 5 (26.3)  | 0     | 0     | 0     | 0        | 1.5  | 3.2  |
| Kodiak    | 9   | 5 (55.6)  | 4 (44.4)  | 0     | 0     | 0     | 0        | 1.4  | 2.1  |
| Nome      | 12  | 3 (25.0)  | 9 (75.0)  | 0     | 0     | 0     | 0        | 1.6  | 1.4  |
| Sitka     | 12  | 8 (66.7)  | 4 (33.3)  | 0     | 0     | 0     | 0        | 0.4  | 0.7  |
| Total     | 124 | 55 (44.4) | 64 (51.6) | 0     | 0     | 0     | 4 (3.2)  | 3.2  | 8.0  |



TABLE 32  
(1981 Misdemeanors)

Distribution of Net Fines (\$) For  
"Disorderly Conduct" Offenses. Given are  
Means And Standard Deviations (SD) For all Penalties.

DISORDERLY CONDUCT

| CITY      | N   | (\$)      |           |          |          |         |         | Mean  | SD    |
|-----------|-----|-----------|-----------|----------|----------|---------|---------|-------|-------|
|           |     | 0         | 1-100     | 101-200  | 201-300  | 301-400 | 400     |       |       |
|           |     | n (%)     | n (%)     | n (%)    | n (%)    | n (%)   | n (%)   |       |       |
| Anchorage | 29  | 12 (41.4) | 15 (51.7) | 1 (3.4)  | 1 (3.4)  | 0       | 0       | 48.3  | 59.0  |
| Barrow    | 9   | 7 (77.8)  | 2 (22.2)  | 0        | 0        | 0       | 0       | 7.8   | 17.1  |
| Bethel    | 15  | 8 (53.3)  | 7 (46.7)  | 0        | 0        | 0       | 0       | 20.0  | 28.7  |
| Fairbanks | 19  | 5 (26.3)  | 10 (52.7) | 0        | 2 (10.5) | 1 (5.3) | 1 (5.3) | 114.5 | 148.0 |
| Juneau    | 19  | 7 (36.8)  | 11 (57.9) | 0        | 1 (5.3)  | 0       | 0       | 63.2  | 72.3  |
| Kodiak    | 9   | 3 (33.3)  | 6 (66.7)  | 0        | 0        | 0       | 0       | 44.4  | 44.7  |
| Nome      | 12  | 11 (91.7) | 1 (8.3)   | 0        | 0        | 0       | 0       | 4.2   | 14.4  |
| Sitka     | 12  | 2 (16.7)  | 6 (50.0)  | 2 (16.7) | 2 (16.7) | 0       | 0       | 110.4 | 91.4  |
| Total     | 124 | 55 (44.4) | 58 (46.8) | 3 (2.4)  | 6 (4.8)  | 1 (0.8) | 1 (0.8) | 55.8  | 84.9  |

TABLE 33  
(1981 Misdemeanors)

Regression Coefficients and Standard Errors (SE) for  
Equations Describing Variation in Active Jail Sentence  
Length (Days) for Disorderly Conduct Offenses. Also Given are  
Sample Sizes (N) and Coefficients of Determination (R<sup>2</sup>)

|                                  | Preliminary                                    |         | Reduced                                        |         |
|----------------------------------|------------------------------------------------|---------|------------------------------------------------|---------|
|                                  | N = 72<br>R <sup>2</sup> = 0.31<br>Coefficient | (SE)    | N = 81<br>R <sup>2</sup> = 0.25<br>Coefficient | (SE)    |
| <u>Case Descriptor Index</u>     | -0.05                                          | (0.37)  | -                                              |         |
| <u>Process</u>                   |                                                |         |                                                |         |
| Guilty at:                       |                                                |         |                                                |         |
| Arraignment                      | ¶                                              |         | -                                              |         |
| Other hearing                    | -1.54                                          | (2.17)  | -                                              |         |
| Jury Trial                       | -                                              |         | -                                              |         |
| Bench Trial                      | -                                              |         | -                                              |         |
| Concurrent Counts                | -5.7°                                          | (4.62)  | -5.1                                           | (4.11)  |
| <u>Offense</u>                   |                                                |         |                                                |         |
| Charge Subcategory               |                                                |         |                                                |         |
| Victim Status                    |                                                |         |                                                |         |
| No Harm                          | ¶                                              |         | -                                              |         |
| Harm                             | 0.6                                            | (2.1)   | -                                              |         |
| Alcohol Use at Offense           |                                                |         |                                                |         |
| No                               | ¶                                              |         | -                                              |         |
| Yes                              | -0.44                                          | (2.63)  | -                                              |         |
| <u>Defendant Problems</u>        |                                                |         |                                                |         |
| Prior Record                     |                                                |         |                                                |         |
| None                             | ¶                                              |         | -                                              |         |
| Violation(s)                     | -                                              |         | -                                              |         |
| Misdemeanor(s)                   | 4.0°                                           | (2.55)  | 3.2*                                           | (1.74)  |
| Felony(s)                        | -                                              |         | -                                              |         |
| Drug/Alcohol Treatment           |                                                |         |                                                |         |
| No Problem                       | -                                              |         | -                                              |         |
| Never Referred                   | -1.0                                           | (3.57)  | -                                              |         |
| Referred, No Attendance          | -2.14                                          | (3.09)  | -                                              |         |
| Attended, No Completion          | -                                              |         | -                                              |         |
| Current Treatment                | -                                              |         | -                                              |         |
| Completed Treatment              | -                                              |         | -                                              |         |
| <u>Defendant Characteristics</u> |                                                |         |                                                |         |
| Sex                              |                                                |         |                                                |         |
| Male                             | ¶                                              |         | -                                              |         |
| Female                           | 2.1                                            | (3.24)  | -                                              |         |
| Age                              | -0.09                                          | (0.14)  | -                                              |         |
| Financial Index                  | 1.84°                                          | (0.74)  | 1.6***                                         | (0.57)  |
| <u>Other Factors</u>             |                                                |         |                                                |         |
| Net Fine                         | 0.05°                                          | (0.013) | 0.04***                                        | (0.010) |
| Additional Conditions            | 0.1                                            | (2.29)  | -                                              |         |
| Constant (Intercept)             | 8.24°                                          | (6.15)  | 4.4                                            | (4.31)  |

- Not analyzed  
¶ Reference category  
° P ≤ 0.20

\* 0.10 > P ≥ 0.05  
\*\* 0.05 > P ≥ 0.01  
\*\*\* P < 0.01

Juneau (63.2%), Kodiak (66.7%) and Sitka (83.3%) were more likely to receive a fine. Highest mean fines (for defendants receiving a net fine) were levied in Fairbanks (\$155.40), Juneau (\$100.00) and Sitka (\$132.50); lowest mean fines were in Barrow (\$35.00), Bethel (\$42.90) and Nome (\$50.00). The majority of fines were between \$1 and \$100.

2) Factors Associated with Sentences of Disorderly Conduct Offenses

Results of the preliminary regression model are shown in Table 33. For the 72 cases under consideration, 31% of the variation in active jail sentence length could be explained by the full model. Relatively ( $P \geq 0.20$ ) significant factors included the financial index, the number of concurrent counts, the defendant's prior record and the net fine received.

The reduced model with 81 cases explains 25% of the variation of active sentence length. In this model only net fine and the financial index were related to active jail sentence at the 0.05 level of significance. For each additional dollar of net fine, there was an estimated 0.04 day increase in active jail sentence length. Defendants who scored higher on the index served longer sentences (1.6 days per index point) than defendants who scored lower. There is some indication ( $0.10 > P \geq 0.05$ ) that defendants with a prior misdemeanor record received longer (3.2 days) sentences than defendants with no prior record.

E. Alcohol/Drug Law Offenses

1) Community Sentencing Patterns

Alcohol/drug law violations (such as possession of drugs or consumption of alcohol by a minor) were the most serious offenses committed by 5.5% of the defendants in this study. The proportion of defendants committing these offenses in each of the communities were Anchorage 0.8%, Barrow 9.4%, Bethel 5.1%, Fairbanks 3.1%, Juneau 16.7%, Kodiak 14.9%, Nome 14.2% and Sitka 1.1%. Only three communities (Juneau (19

cases), Kodiak (15), Nome (17)) have a sufficient number of convictions to make direct comparisons.

The distributions of active jail sentences and net fines are shown in Tables 34 - 37. Kodiak (66.7%) and Nome (52.9%) defendants were more likely to receive a jail sentence of at least one day than their Juneau counterparts (26.3%). However, the mean active jail term for defendants who spent at least one day in jail was 16.3 days in Kodiak, compared to 4.2 days in Juneau and 2.2 days in Nome. The majority of defendants who went to jail were sentenced for terms of 1 to 10 days.

Conversely, Juneau defendants (52.6%) were more likely to receive a net fine than defendants from Kodiak (20.0%) or Nome (17.6%). The mean net fines for defendants did not differ significantly in Juneau (\$43.50), Kodiak (\$33.30) or Nome (\$75.00). The majority of fines were between \$1 and \$100.

## 2) Factors Associated with Sentences for Alcohol/Drug Offenses

Results of the multiple regression models are shown in Table 38. In the preliminary model, 53% of the variation in active jail sentence length could be explained by all variables under consideration for the 51 cases. Relatively significant factors included the CDI, alcohol/drug treatment history, net fine and age of the defendants.

The reduced model was able to explain 41% of the variation in sentences for 55 defendants. Highly significant ( $P < 0.01$ ) factors included the defendants's alcohol/drug treatment history and net fine received. Defendants who were previously referred for an alcohol treatment program, but did not attend, were assigned 7.0 days more than defendants with no previous alcohol problem. In addition, there was a positive relationship between the net fine levied and active jail sentence (i.e., for each additional \$1 net fine, there was an increase of 0.03 days in active jail sentence).



**TABLE 34**  
**(1981 Misdemeanors)**

Means and Standard Deviations (SD)  
of Active Jail Sentences (Days) for Defendants  
Who Spent at Least 1 Day in Jail for Alcohol/Drug  
Offenses. Given are the Total Number of Defendants  
(N) and the Number (n) and Proportion (% N) of  
Defendants who Spent at Least 1 Day in Jail.

**ALCOHOL/DRUG VIOLATION**  
**(DAYS)**

| CITY      | N  | n  | (%N)    | Mean | SD   |
|-----------|----|----|---------|------|------|
| Anchorage | 4  | 1  | (25.0)  | 3.0  | 0    |
| Barrow    | 5  | 1  | (20.0)  | 2.0  | 0    |
| Bethel    | 6  | 5  | (83.3)  | 19.8 | 18.5 |
| Fairbanks | 8  | 2  | (25.0)  | 7.5  | 3.5  |
| Juneau    | 19 | 5  | (26.3)  | 4.2  | 2.6  |
| Kodiak    | 15 | 10 | (66.7)  | 16.3 | 28.4 |
| Nome      | 17 | 9  | (52.9)  | 2.2  | 1.9  |
| Sitka     | 1  | 1  | (100.0) | 2.0  | 0    |
| Total     | 75 | 34 | (45.3)  | 9.6  | 17.8 |

TABLE 35  
(1981 Misdemeanors)

Means and Standard Deviations (SD) of Net Fines (\$) for Defendants who Paid at Least \$1 for Alcohol/Drug Offenses. Given are the Total Number of Defendants (N) and the Number (n) and Proportion (% N) of Defendants who Paid at Least \$1 in Fines

| ALCOHOL/DRUG<br>(\$) |    |    |         |       |       |
|----------------------|----|----|---------|-------|-------|
| CITY                 | N  | n  | (%N)    | Mean  | SD    |
| Anchorage            | 4  | 3  | (75.0)  | 91.7  | 62.9  |
| Barrow               | 5  | 2  | (40.0)  | 510.0 | 693.0 |
| Bethel               | 6  | 3  | (50.0)  | 193.3 | 115.5 |
| Fairbanks            | 8  | 6  | (75.0)  | 162.5 | 168.6 |
| Juneau               | 19 | 10 | (52.6)  | 43.5  | 25.9  |
| Kodiak               | 15 | 3  | (20.0)  | 33.3  | 14.4  |
| Nome                 | 17 | 3  | (17.6)  | 75.0  | 66.1  |
| Sitka                | 1  | 1  | (100.0) | 200.0 | 0.0   |
| Total                | 75 | 31 | (41.3)  | 121.9 | 191.1 |

TABLE 36  
(1981 Misdemeanors)

Distribution of Active Jail Sentences (Days)  
For Alcohol/Drug Offenses. Given are Means And  
Standard Deviations (SD) For All Penalties.

ALCOHOL/DRUG VIOLATIONS

| CITY      | N  | (DAYS)    |           |          |          |       |          | Mean | SD   |
|-----------|----|-----------|-----------|----------|----------|-------|----------|------|------|
|           |    | 0         | 1-10      | 11-20    | 21-30    | 31-40 | 40       |      |      |
|           |    | n (%)     | n (%)     | n (%)    | n (%)    | n (%) | n (%)    |      |      |
| Anchorage | 4  | 3 (75.0)  | 1 (25.0)  | 0        | 0        | 0     | 0        | 0.8  | 1.5  |
| Barrow    | 5  | 4 (80.0)  | 1 (20.0)  | 0        | 0        | 0     | 0        | 0.4  | 0.9  |
| Bethel    | 6  | 1 (16.7)  | 2 (33.3)  | 1 (16.7) | 1 (16.7) | 0     | 1 (16.7) | 16.5 | 18.4 |
| Fairbanks | 8  | 6 (75.0)  | 2 (25.0)  | 0        | 0        | 0     | 0        | 1.9  | 3.7  |
| Juneau    | 19 | 14 (73.7) | 5 (26.3)  | 0        | 0        | 0     | 0        | 1.1  | 2.3  |
| Kodiak    | 15 | 5 (33.3)  | 7 (46.7)  | 0        | 2 (13.3) | 0     | 1 (6.7)  | 10.9 | 24.1 |
| Nome      | 17 | 8 (47.1)  | 9 (52.9)  | 0        | 0        | 0     | 0        | 1.2  | 1.8  |
| Sitka     | 1  | 0         | 1 (100.0) | 0        | 0        | 0     | 0        | 2.0  | 0.0  |
| Total     | 75 | 41 (54.7) | 28 (37.3) | 1 (1.3)  | 3 (4.0)  | 0     | 2 (2.7)  | 4.3  | 12.8 |

TABLE 37  
(1981 Misdemeanors)

Distribution of Net Fines (\$) For  
Alcohol/Drug Offenses. Given are Means  
And Standard Deviations (SD) For all Penalties.

ALCOHOL/DRUG VIOLATIONS

| CITY      | N  | (\$)      |           |           |          |         |          | Mean  | SD    |
|-----------|----|-----------|-----------|-----------|----------|---------|----------|-------|-------|
|           |    | 0         | 1-100     | 101-200   | 201-300  | 301-400 | 400      |       |       |
|           |    | n (%)     | n (%)     | n (%)     | n (%)    | n (%)   | n (%)    |       |       |
| Anchorage | 4  | 1 (25.0)  | 2 (50.0)  | 1 (25.0)  | 0        | 0       | 0        | 68.8  | 68.8  |
| Barrow    | 5  | 3 (60.0)  | 1 (20.0)  | 0         | 0        | 0       | 1 (20.0) | 204.0 | 445.1 |
| Bethel    | 6  | 3 (50.0)  | 1 (16.7)  | 0         | 2 (33.3) | 0       | 0        | 91.7  | 124.2 |
| Fairbanks | 8  | 2 (25.0)  | 4 (50.0)  | 1 (12.5)  | 0        | 0       | 1 (12.5) | 121.9 | 161.2 |
| Juneau    | 19 | 9 (47.4)  | 10 (52.6) | 0         | 0        | 0       | 0        | 22.9  | 28.9  |
| Kodiak    | 15 | 12 (80.0) | 3 (20.0)  | 0         | 0        | 0       | 0        | 6.7   | 14.8  |
| Nome      | 17 | 14 (82.4) | 2 (11.8)  | 1 (5.9)   | 0        | 0       | 0        | 13.2  | 37.6  |
| Sitka     | 1  | 0         | 0         | 1 (100.0) | 0        | 0       | 0        | 200.0 | 0.0   |
| Total     | 75 | 44 (58.7) | 23 (30.7) | 4 (5.3)   | 2 (2.7)  | 0       | 2 (2.7)  | 50.4  | 135.8 |



**TABLE 38**  
**(1981 Misdemeanors)**

Regression Coefficients and Standard Errors (SE) for  
Equations Describing Variation in Active Jail Sentence  
Length (Days) for Alcohol/Drug Offenses. Also Given are  
Sample Sizes (N) and Coefficients of Determination (R<sup>2</sup>)

|                                  | Preliminary                     |         | Reduced                         |          |
|----------------------------------|---------------------------------|---------|---------------------------------|----------|
|                                  | N = 51<br>R <sup>2</sup> = 0.53 |         | N = 55<br>R <sup>2</sup> = 0.41 |          |
|                                  | Coefficient                     | (SE)    | Coefficient                     | (SE)     |
| <u>Case Descriptor Index</u>     | -0.5°                           | (0.35)  | -0.5*                           | (0.28)   |
| <u>Process</u>                   |                                 |         |                                 |          |
| Guilty at:                       |                                 |         |                                 |          |
| Arraignment                      | ¶                               |         | -                               |          |
| Other hearing                    | -1.0                            | (1.82)  | -                               |          |
| Jury Trial                       | -                               |         | -                               |          |
| Bench Trial                      | -                               |         | -                               |          |
| Concurrent Counts                | 2.7                             | (2.88)  | -                               |          |
| <u>Offense</u>                   |                                 |         |                                 |          |
| Charge Subcategory               |                                 |         |                                 |          |
| Victim Status                    |                                 |         |                                 |          |
| No Harm                          | -                               |         | -                               |          |
| Harm                             | -                               |         | -                               |          |
| Alcohol Use at Offense           |                                 |         |                                 |          |
| No                               | ¶                               |         | -                               |          |
| Yes                              | -3.2                            | (3.02)  | -                               |          |
| <u>Defendant Problems</u>        |                                 |         |                                 |          |
| Prior Record                     |                                 |         |                                 |          |
| None                             | ¶                               |         | -                               |          |
| Violation(s)                     | -                               |         | -                               |          |
| Misdemeanor(s)                   | 1.2                             | (2.80)  | -                               |          |
| Felony(s)                        | -                               |         | -                               |          |
| Drug/Alcohol Treatment           |                                 |         |                                 |          |
| No Problem                       | ¶                               |         | -                               |          |
| Never Referred                   | 1.3                             | (2.67)  | 1.7                             | (1.91)   |
| Referred, No Attendance          | 6.0°                            | (3.53)  | 7.0***                          | (1.88)   |
| Attended, No Completion          | -                               |         | -                               |          |
| Current                          | -                               |         | -                               |          |
| Completed                        | -                               |         | -                               |          |
| <u>Defendant Characteristics</u> |                                 |         |                                 |          |
| Sex                              |                                 |         |                                 |          |
| Male                             | ¶                               |         | -                               |          |
| Female                           | -0.6                            | (2.06)  | -                               |          |
| Age                              | 0.2°                            | (0.11)  | 0.1*                            | (0.07)   |
| Financial Index                  | -0.2                            | (0.89)  | -                               |          |
| <u>Other Factors</u>             |                                 |         |                                 |          |
| Net Fine                         | 0.02°                           | (0.012) | 0.03***                         | (0.0083) |
| Additional Conditions            | 1.6                             | (1.6)   | -                               |          |
| Constant (Intercept)             | -5.8                            | (5.49)  | -3.8*                           | (2.00)   |

- Not analyzed

¶ Reference category

° P ≤ 0.20

\* 0.10 > P ≥ 0.05

\*\* 0.05 > P ≥ 0.01

\*\*\* P < 0.01

There were marginally significant relationships ( $0.107 P \geq 0.05$ ) between active jail sentence and the CDI or the defendant's age. Defendants who scored higher on the index tended to get shorter sentences (0.5 days per index point); older defendants tended to get longer sentences (0.1 days per year difference) than younger defendants.

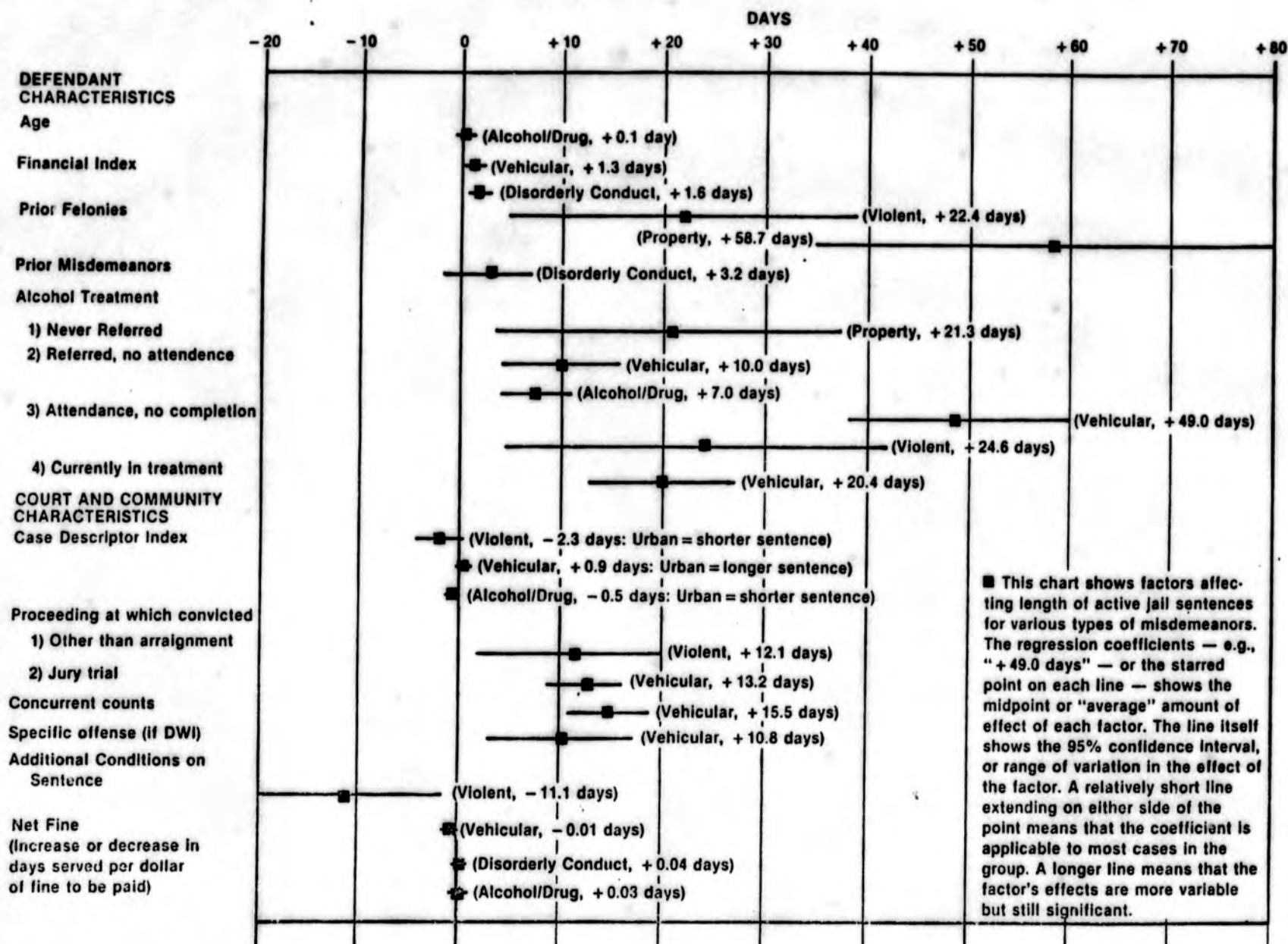
#### F. Miscellaneous Offenses

38 offenses were classified as "miscellaneous" (Tables 2 and 4). Major offense types within this category included prostitution-related offenses (15 cases), public indecency (6 cases) and gambling activities (6 cases). Due to the small number and varied nature of these offenses, no further meaningful statistical analysis was possible.

### IV. SUMMARY OF FACTORS ASSOCIATED WITH SENTENCES

Multiple regression was used to simultaneously account for various factors that may have affected active jail sentence length and to estimate the independent contribution of each factor. It should be noted, however, that even when all potential "causal" variables were entered into a regression model, generally only 30% to 40% of the variation of active jail sentence length could be explained. However, it may be useful to identify those factors which seem relevant to several types of misdemeanors and to analyze the consistency with which they appeared (Graph 13).

Case Descriptor Index. One of the study's main purposes was to find whether racial disparities existed in misdemeanor sentencings. When race of the defendant was used as a separate variable in the multiple regression models, no significant disparities appeared. However, the models showed that several other variables were very closely associated with race. When this phenomenon, known as multi-collinearity, occurs,



(1981 Misdemeanor Sentences)  
MULTIPLE REGRESSION FACTORS

GRAPH 13

other statistical techniques must be called into play. For this study, a "case descriptor index" (CDI) was constructed.

The CDI was an attempt to capture the underlying variability of a number of factors that distinguish urban and rural defendants. Recall that higher scores on the urban-rural index indicate a defendant classified as urban (Anchorage, Fairbanks and Juneau cases), who was caucasian or black, who entered a negotiated plea, who committed a municipal offense or who was tried by a district court judge. Lower index scores indicate a defendant classified as rural (Barrow, Bethel, Nome, Kodiak and Sitka cases), who was native, who did not enter a negotiated plea, who was charged with a state offense or who was tried by a magistrate or superior court judge.

The CDI "worked" well in the new multiple regression models; that is, it continued to be significantly associated with active jail sentence length. This indicated that the index accurately summarizes the varied information which has been incorporated into it.

For two of the regression models (violent and alcohol/drug offenses), there was a significant negative relationship (i.e., defendants with lower index scores received longer sentences) between a defendant's CDI score and active jail sentence. Both of these relationships can be explained on a community basis. For violent offenses, both the likelihood of receiving an active jail sentence and the mean sentence imposed (if an active term was indeed imposed) was significantly greater in Bethel and Nome cases (which make up the majority of "rural" defendants for violent offenses) than Anchorage cases (which are predominately "urban" defendants). For alcohol/drug offenses, the mean sentences did not differ significantly between areas. However, several of the areas classified as rural (Barrow, Bethel, Nome) had high likelihoods (greater than 67%) of sending defendants to jail for at least one day. The urban areas (Anchorage (55%), Fairbanks (47.4%) and Juneau (26.3%)) were less likely to sentence defendants to an active jail term.



For vehicular offenses, there was a significant positive relation (i.e., higher scores received longer sentences). This may also be explained by community differences in sentencing. Anchorage (13.4 days), Fairbanks (13.8 days) and Juneau (19.3 days) had three of the four highest mean active jail sentences for all communities.

The CDI was not significantly related to active jail sentence for property or disorderly conduct offenses.

The finding that sentences vary by geographic area for most type of offenses (except property and disorderly conduct offenses) is consistent with findings from earlier felony studies, which also show strikingly different sentencing patterns between urban and rural areas. All of the findings provide statistical support for the frequent observation by Bush leaders and others that Alaska's criminal justice system operates differently in its urban and rural areas.

To provide more background for these differences among areas, interviews with judges and attorneys were conducted in Bethel and Nome. Those interviewed believed that community condemnation, especially of violent offenses, may be either greater or more apparent than in urban areas. Furthermore, judges and other criminal justice personnel are much more likely to be acquainted with the defendant and victim, as well as the context in which the offense was committed. Yet another factor noted by the interviewees was the difference in criminal justice resources available in smaller communities. Fewer jail facilities, fewer treatment or community-service programs, and the difficulties of supervising a defendant living in a remote village all limit the choices for the judge or magistrate imposing sentence on a rural defendant.

These interactions among cultural values of communities and public resources available to deal with criminal behavior structure decisions made prior to sentencing as well. The judges and attorneys interviewed noted that

village police may characterize the charge against a defendant differently than would a state trooper. Bail decisions may result in a higher proportion of rural defendants faced with a monetary bond requirement because of the difficulty of assuring that a defendant from an outlying village will appear for trial. But, because of subsistence economies and higher unemployment, many of these defendants may be unable to post the bail, and may stay in jail prior to conviction. Or, there may be no satisfactory way to provide for own-recognizance release in a small village. Again, the combination of all of these factors results in a very different criminal justice "environment" than that found in more urban areas of the state.

Finally, the persons interviewed noted that a number of important changes have occurred in the two years between the convictions studied (1981) and this report (1983). Villages in western Alaska that had only one telephone at that time may now have 30 to 50 telephones, making communication much simpler. Increased court resources in areas such as Barrow, and attempts by communities to ban the sale or importation of alcohol may have significantly affected sentencing patterns. Changes have also occurred in urban areas, including a new community-service program for Anchorage misdemeanants, and stiffer penalties for drunk driving offenses statewide. However, it is likely that different patterns for urban and rural sentencings may continue, based on the differing values and resources in each community.

Financial Index. The financial index was an attempt to measure the financial well being of the defendant. Recall that lower scores on the index are related to defendants who were employed, who were represented by a private attorney and who were released on monetary bail at the time of sentencing; higher scores are related to defendants who were unemployed, represented by the public defender or who were in jail at the time of sentencing.

The index was positively related (i.e., a defendant who scored higher on the index received a longer sentence than a defendant who scored lower) to active jail sentence for vehicular and disorderly conduct offenses. No relationship was found between the index and sentence length for violent, property or alcohol/drug offenses.

Alcohol/Drug Treatment History. In four of the misdemeanor categories (violent, property, vehicular and alcohol/drug offenses) longer sentences were generally related to defendants who were either referred to, but did not attend, or who attended, but did not complete previously required alcohol/drug treatment.

Prior Record. For violent and property offenses, defendants with prior felony convictions received longer sentences than defendants with no prior criminal record. Defendants with misdemeanor records did not receive significantly different sentences. For vehicular, disorderly conduct and alcohol/drug offenses, prior record was not related to sentence severity. It should be noted, however, that drug/alcohol treatment history was related to length of jail sentence (above), and that prior reference or entrance into a treatment program may have been mandated by a previous offense. If this was the case, there is joint information within these two variables that may determine sentence severity.

Court Proceeding. The proceeding at which disposition took place was significantly related to active jail sentence length for violent and vehicular misdemeanors. For violent misdemeanors, defendants who had dispositions that occurred at a proceeding other than arraignment received longer (12.1 days) sentences than defendants who plead guilty or nolo at arraignment. For vehicular offenses, defendants who were found guilty by a jury received sentences an estimated 13.2 days longer than defendants who plead guilty or nolo at arraignment. A significant number of jury trials occurred only for defendants who had committed vehicular offenses.

Concurrent Counts. The number of concurrent counts was found related to active jail sentence length only for vehicular violations. For these offenses, each count in addition to the most serious offense accounted for an added 15.5 days in active jail sentence length. This may be due to the use of consecutive jail sentences for vehicular offenses and the use of concurrent penalties in other offense categories.

Other Factors. The use of additional sentencing conditions was related to less severe (-11.1 days) sentences for violent misdemeanors. Additional conditions were not significantly related to sentence length for any other offense category.

For disorderly conduct and alcohol/drug violations there was a positive relationship (i.e., defendants with longer jail terms also received higher fines) between the net fine imposed and active jail sentence. However, for vehicular offenses there is a trade-off between the two penalties: defendants who received larger fines served less time (-0.01 days per dollar fine).

Factors that were generally unrelated to active jail sentence included the status of the victim and the age or sex of the defendant.



ALASKA MISDEMEANOR SENTENCES: 1981

APPENDIX A

Misdemeanor Sentencing Information Sheet

. CASE NUMBER: \_\_\_\_\_

. DEFENDANT'S RACE:

☐ White ☐ Indian/Native ☐ Black ☐ Other Minority ☐ Unknown

. PRIOR CRIMINAL RECORD:

a) ☐ Felonies ☐ Misdemeanors ☐ Unknown

b) Severity: ☐ None ☐ Slight ☐ Moderate ☐ Severe ☐ Record of Similar Offenses

c) Prior Record

☐ Aggravates sentence ☐ Mitigates sentence ☐ N/A to sentence

. ALCOHOL OR DRUG USE AT THE TIME OF OFFENSE:

☐ Yes ☐ No ☐ N/A ☐ Unknown

If "YES": ☐ Aggravates sentence ☐ Mitigates sentence ☐ N/A to sentence

. DEFENDANT HAS HISTORY OF DRUG OR ALCOHOL PROBLEMS:

☐ Yes ☐ No ☐ N/A ☐ Unknown

If "YES": ☐ Light ☐ Moderate ☐ Severe

. DEFENDANT'S TREATMENT FOR DRUG/ALCOHOL PROBLEM:

☐ Yes, has been treated previously (or is presently in treatment)

☐ No problem or problem never treated

☐ N/A

☐ Unknown

NOTE ANY FACTORS STATED BY THE JUDGE AT THE TIME OF SENTENCING IN SUPPORT OF THE PARTICULAR SENTENCE:

a) Aggravating Mitigating Other

|       |       |       |
|-------|-------|-------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

b) This crime is similar to others of its type, and sentence imposed is similar (no aggravating or mitigating factors).

### INSTRUCTIONS FOR MISDEMEANOR INFORMATION

At the time of sentencing either the judge or the in-court clerk shall complete the misdemeanor sentencing information form as follows:

1. Case Number: Write in the case number.
2. Race: The in-court clerk will check the appropriate box after the sentencing is completed.
3. a) Number of Prior Offenses: Fill in the number of prior felonies and misdemeanors.  
b) Prior Criminal History Comments: Record all other comments about the defendant's criminal history, including the number of same or similar offenses, probation or parole status, and other factors which are mentioned by the judge or other parties.
4. Drug/Alcohol Use at time of Offense: Record the known or reported use of alcohol and/or drugs at the time of the offense.
5. Drug/Alcohol History: Record the known or reported history of drug or alcohol problems of the defendant.
6. Drug/Alcohol Treatment: Record the known or stated treatment the defendant has received for drug or alcohol use.
7. Factors Stated by Judge: Record any particular factors explicitly stated by the judge regarding the sentence imposed in the case. These may include: employment information, harm to victim, provocation by the victim, prior offenses, or any other aggravating and/or mitigating factor specifically articulated by the judge in support of the sentence.

ALASKA COURT SYSTEM

OFFICE OF THE ADMINISTRATIVE DIRECTOR

ADMINISTRATIVE BULLETIN

No. 81-3

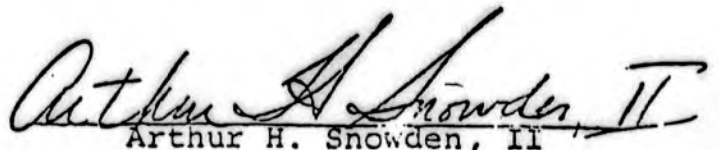
May 20, 1981

TO: All Presiding Judges  
All Area Court Administrators

SUBJECT: Misdemeanor Sentencing Information Sheet

All judges and magistrates imposing sentence for conviction of a misdemeanor offense in specified court locations shall complete a Misdemeanor Sentencing Information Sheet at the time of sentencing. The judge or magistrate may delegate this duty to the in-court clerk, but shall be responsible for making the required information available to the clerk. The sheet shall be completed according to the instructions attached to it, and is to be kept in the court case file until collected by a representative of the Alaska Judicial Council. The court locations included in this directive are Anchorage, Fairbanks, Bethel, Nome, Kodiak, Juneau, Sitka and Barrow. The directive does not apply to fish and game or vehicle license violations (including driving with a suspended, revoked or without a valid license). Forms will be sent under separate cover.

The directive will be effective from June 1, 1981 through December 31, 1981.

  
Arthur H. Snowden, II

:smh

cc: Chief Justice Jay A. Rabinowitz  
All Judges and Magistrates  
at designated locations



ALASKA MISDEMEANOR SENTENCES: 1981

APPENDIX B

Defendant and Charge Coding Forms

Coder's Initials: \_\_\_\_\_  
Checker's Initials: \_\_\_\_\_

DEFENDANT FORM

CASE NUMBER(S): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION: AN BA BE FA JU KO NO SI

NAME: \_\_\_\_\_  
                    LAST,                    FIRST,                    M.I.

1.    \_\_\_\_  \_\_\_\_  Location  
      1      2

2.    \_\_\_\_  \_\_\_\_  \_\_\_\_  \_\_\_\_  Defendant I.D. Number (Coders leave blank)  
      3      4      5      6

3.    \_\_\_\_  \_\_\_\_  -  \_\_\_\_  \_\_\_\_  -  \_\_\_\_  \_\_\_\_  Date of Birth (9s = unknown)  
      7      8          9      10          11      12  
      Month          Day          Year

4.    \_\_\_\_  Age:   1 = 18-21 years           4 = 31-45 years  
                  2 = 22-25 years           5 = Over 45 years  
                  3 = 26-30 years           9 = Unknown

\*5.    \_\_\_\_  Defendant's Race:  
      14          1 = Black                   4 = Other minority (\_\_\_\_\_)  
                  2 = Native/Indian          9 = Unknown  
                  3 = Caucasian

6.    \_\_\_\_  Sex of Offender:  
      15          1 = Male  
                  2 = Female  
                  9 = Unknown

\*7.    \_\_\_\_  Is defendant employed?  
      16          1 = No  
                  2 = Yes  
                  9 = Unknown

\*8.    \_\_\_\_  Does defendant have a prior record?  
      17          1 = No, known to have no priors  
                  2 = Yes  
                  9 = Unknown

\*9.    \_\_\_\_  Is anything further mentioned about the prior record?  
      18          1 = No, known to have no priors  
                  2 = Yes, felonies  
                  3 = Yes, misdemeanors  
                  4 = Yes, prior juvenile offenses  
                  5 = Yes, violations, traffic tickets, or failures to  
                      satisfy judgments or fines  
                  9 = Unknown

\* Check police report for information

10. 19 Defendant's custodial status at time of sentencing  
1 = Own recognizance (OR) or third party custody  
2 = Monetary bail release  
3 = Jailed (never made bail, violated bail conditions, jailed for another charge, etc.)  
9 = Unknown (check with supervisor before using)
11. 20 Type of attorney at sentencing  
1 = None (pro per or pro se)  
2 = Public Defender  
3 = Court-appointed private attorney  
4 = Private attorney
- \*12. 21 Drug and/or alcohol use at time of offense  
1 = No evidence of either  
2 = Alcohol used  
3 = Drugs used  
4 = Both used  
5 = Alcohol or drug use, not specified  
9 = Information not available
13. 22 Past drug and/or alcohol use  
1 = No evidence of either  
2 = Alcohol "problem" or addiction  
3 = Drug addiction or methadone treatment  
4 = "Heavy" drug use  
5 = Both used  
6 = Alcohol or drug use, not specified  
9 = Information not available
14. 23 Past or current alcohol and/or drug treatment  
1 = No evidence of drug or alcohol problem  
2 = Referred to alcohol or drug treatment, no record of attendance  
3 = Attended drug or alcohol treatment; did not complete programs  
4 = Completed alcohol or drug treatments in the past  
5 = Never referred to programs or received treatment  
6 = Currently receiving treatment  
9 = Information not available

\* Check police report for information

Coder's Initials: \_\_\_\_\_  
Checker's Initials: \_\_\_\_\_

CHARGE FORM

Name of \_\_\_\_\_  
Offense/Cite: \_\_\_\_\_  
\_\_\_\_\_

Count Number: \_\_\_\_\_

Location of Court: AN BA BE FA JU KO NO SI

Defendant's Name: \_\_\_\_\_  
Last, First, M.I.

1. \_\_\_\_\_ Defendant ID Number (coders leave blank)  
1 2 3 4

2. \_\_\_\_\_ Court Case File Number  
5 6 - 7 8 9 10

3. \_\_\_\_\_ Original Offense Code  
11 12 13 14 (coders leave blank)

4. \_\_\_\_\_ Offense of conviction  
15 16 17 18 (coders leave blank)

5. \_\_\_\_\_ Date of Offense  
19 20 - 21 22 - 23 24  
Month Day Year

6. \_\_\_\_\_ How did case come to court?  
25 1 = Citation  
2 = Complaint  
3 = Information

7. \_\_\_\_\_ Is offense state or municipal?  
26 1 = State  
2 = Municipal

8. \_\_\_\_\_ Type of disposition  
27 1 = Guilty or nolo at arraignment  
2 = Guilty or nolo at any other proceeding  
3 = Jury trial  
4 = Bench trial (non-jury trial)

9. \_\_\_\_\_ Is negotiated plea (plea bargain) noted on the record?  
28 1 = No  
2 = Yes, state  
3 = Yes, municipal

10. \_\_\_\_\_ Judge's or magistrate's initials (see list of  
29 30 31 abbreviations in coding manual)  
xxx = Unknown



11. 32 Type of sentence  
1 = Active imprisonment (even if part suspended)  
2 = Suspended imposition with active time  
3 = Suspended imprisonment (no active time; may include probation)  
4 = Suspended imposition with no active time  
5 = Fine (includes court costs, restitution or restitution and fine)
12. 33 34 35 36 Total length of jail sentence.  
Months Days 0000 = No jail sentence  
9999 = Unknown (see supervisor)
13. 37 38 39 40 Amount of total suspended  
Months Days
14. 41 42 43 44 Amount of time to serve.  
Months Days
15. 45 Was defendant sentenced to "time served"?  
1 = No  
2 = Yes
16. \$ 46 47 48 49 Total amount of fine  
\$0000 = No fine  
\$9997 = Maximum amount  
\$9999 = Unknown (see supervisor)
17. \$ 50 51 52 53 Amount of fine suspended
18. \$ 54 55 56 57 Amount of fine to be paid
19. 58 Was bail forfeited for part or all of the fine?  
1 = No  
2 = Yes, entire fine  
3 = Yes, partial fine  
8 = Not applicable, no bail or fine  
9 = Unknown (see supervisor)
20. \$ 59 60 61 62 Total amount of restitution (see coding for fines)
21. \$ 63 64 65 66 Amount suspended
22. \$ 67 68 69 70 Amount of restitution to be paid
23. 71 Was driver's license revoked or suspended?  
1 = No  
2 = Yes, revoked wholly  
3 = Yes, limited revocation  
4 = Yes, suspended wholly  
5 = Yes, limited suspension  
8 = Not applicable, non-vehicular  
9 = Unknown

24. 72 Were other warrants or court actions outstanding against defendant at time of sentencing?  
(Do not include prior convictions. See prior record variables on defendant form for recording these). Choose the most serious.
- 1 - Probation or parole violations
  - 2 = Felonies
  - 3 = Misdemeanors
  - 4 = "Failure to satisfy" warrants
  - 5 = Traffic violations
  - 6 = Other violations
  - 7 = Yes, charge unknown
  - 8 = None
  - 9 = Unknown

25. 73 As additional condition of sentence, judge required:
- 1 = No special conditions
  - 2 = Drug or alcohol treatment
  - 3 = Psychological Treatment
  - 4 = Work
  - 5 = Education
  - 6 = Community service
  - 7 = Other (specify: \_\_\_\_\_)
  - 8 = Combination of two or more above choices  
(specify combination: \_\_\_\_\_)

---

OTHER CHARGE INFORMATION FROM POLICE REPORTS:

Police Report Number: \_\_\_\_\_

26. 74 Did breathalyzer or blood test exceed legal limit?
- 1 = No test, offense is alcohol-related
  - 2 = Yes, breathalyzer
  - 3 = Yes, blood test
  - 4 = Breathalyzer done; below legal limit
  - 5 = Blood test done; below legal limit
  - 6 = Defendant refused testing
  - 8 = Not applicable, offense is not alcohol-related
  - 9 = Unknown
27. 75 Amount of property involved (stolen, damaged, etc.)
- 1 = \$0 - \$100
  - 2 = \$101 - \$500
  - 3 = \$501 - \$1,000
  - 4 = \$1,001 - \$10,000
  - 5 = Over \$10,000
  - 8 = Not applicable, no property involved
  - 9 = Property involved, value unknown
28. 76 Type of custodial arrangement at booking
- 1 = OR (own recognizance), summons, defendant not booked)
  - 2 = Release to third party, no monetary bail
  - 3 = Monetary bail required
  - 4 = Other (describe: \_\_\_\_\_)
  - 9 = Unknown. no information available

29.

77

Was any victim physically harmed?

- 1 = No victim physically harmed (includes property damage without personal injury)
- 2 = Victim(s) harmed physically
- 8 = Not applicable, no victim (e.g. assassination, CCW, etc.)
- 9 = Unknown

**Economic Costs to  
State of Alaska for Alcohol,  
Drug Abuse and Mental Illness  
1983 - 1984**

**Prepared By  
California Health Research Foundation**



**A CHRF Publication**



TABLE 1-1

COSTS TO THE STATE OF ALASKA  
FOR  
ALCOHOL ABUSE, DRUG ABUSE AND MENTAL ILLNESS 1984

|                        | <u>Alcohol<br/>Abuse</u> | <u>Drug<br/>Abuse</u> | <u>Mental<br/>Illness</u> | <u>Total</u>          |
|------------------------|--------------------------|-----------------------|---------------------------|-----------------------|
| CORE COSTS             | <u>169,600,000</u>       | <u>20,000,000</u>     | <u>146,800,000</u>        | <u>336,400,000</u>    |
| Direct                 | <u>25,400,000</u>        | <u>5,000,000</u>      | <u>67,500,000</u>         | <u>97,900,000</u>     |
| Treatment              | 22,300,000               | 4,200,000             | 58,700,000                | 85,200,000            |
| Support                | 3,100,000                | 800,000               | 8,800,000                 | 12,700,000            |
| Indirect               | <u>144,200,000</u>       | <u>15,000,000</u>     | <u>79,300,000</u>         | <u>238,500,000</u>    |
| Mortality              | 41,800,000               | 3,200,000             | 22,200,000                | 67,200,000            |
| Morbidity              | 102,400,000              | 11,800,000            | 57,100,000                | 171,300,000           |
| Reduced Productivity   | 92,100,000               | 11,000,000            | 6,300,000                 | 109,400,000           |
| Lost Employment        | 10,300,000               | 800,000               | 50,800,000                | 61,900,000            |
| OTHER RELATED COSTS    | <u>25,400,000</u>        | <u>42,400,000</u>     | <u>1,400,000</u>          | <u>69,200,000</u>     |
| Direct                 | <u>18,000,000</u>        | <u>18,200,000</u>     | <u>1,400,000</u>          | <u>37,600,000</u>     |
| Motor Vehicle Crashes  | 7,200,000                | *                     | *                         | 7,200,000             |
| Crime                  | 6,800,000                | 17,000,000            | *                         | 23,800,000            |
| Public                 | 6,100,000                | 12,700,000            | *                         | 18,800,000            |
| Private                | 600,000                  | 4,000,000             | *                         | 4,600,000             |
| Property Loss/Damage   | 100,000                  | 300,000               | *                         | 400,000               |
| Social Welfare Program | 500,000                  | 200,000               | 1,400,000                 | 2,100,000             |
| Other                  | 3,500,000                | 1,000,000             | *                         | 4,500,000             |
| Indirect               | <u>7,400,000</u>         | <u>24,200,000</u>     | <u>*</u>                  | <u>31,600,000</u>     |
| TOTAL                  | <u>195,500,000</u>       | <u>62,400,000</u>     | <u>148,200,000</u>        | <u>405,600,000***</u> |

\*Although costs are hypothesized to occur in this category, sufficient data are not available to develop reliable estimates.

\*\*\*This equals approximately 5.2% Alaska's gross state product of 7.8 billion dollars.

2/27 → Jim Gorman

FY  
1984

net cost \$170,425,628.00

public assistance \$5.8  
(AFDC, Aid to Disabled, <sup>Aid to Adult</sup> Medicaid, etc.)

Medicaid \$5.6

\$8.7

DPVS + Homemakers

Motor Vehicle \$31.9

Crim Jus. System \$78.6

Inf ~~AST~~ 400

A cost \$5.5

Correc. 32.1 \$15.1

SOADA

Health - Med. Care 19.5

Extra Costs

Lost Production Costs \$19.8

Assault on

Accidents at work

Selected computations  
\$ low estimate  
absolute minimum  
(API not included.  
e.g. and that  
probably ought  
to be at least \$5 mil)

185,294,061

- 14,868,433

- 170,425,628

income  
from alcohol  
taxes



**CALIFORNIA HEALTH RESEARCH FOUNDATION**

**ECONOMIC COSTS TO STATE OF ALASKA FOR  
ALCOHOL, DRUG ABUSE AND MENTAL ILLNESS**

**1983-84**

**by**

**CALIFORNIA HEALTH RESEARCH FOUNDATION**

## ECONOMIC IMPACT STUDY

### EXECUTIVE SUMMARY

Major social issues, by their nature, tend to become inextricably tied to the human, social, and political climate of their time. As an issue captures the attention and concern of the public, and as the public struggles to respond, the issue becomes a focal point against which every other human need is assessed. It is during such a period that objectives become most easily confused and the temptations of a readily available expedient are most compelling. These are truly the times which demand the very best from our social institutions.

Of our current social issues, few have as many different and competing perspectives as the issue of alcoholism, drug abuse and mental illness and how we deal with them.

We know the impairment of human potential due to alcohol and drug abuse and mental disorders constitutes a serious social problem in contemporary U.S. society. The scope of this problem can be measured in several dimensions--pain and suffering to the impaired individual and his or her family and social behavior; lower productivity and lost work time; and direct expenditure for prevention, treatment, and rehabilitation. Although it is difficult to express some of these dimensions in quantitative terms, others may be expressed in terms of measurable economic costs to society. While not totally precise, the current state of the art in this area is sufficiently well advanced that some fairly reliable estimates can be developed.

The resulting estimates of economic costs to society of these alcohol and drug abuse and mental illness (ADM) problems may be used to indicate the relative seriousness of each of these social phenomena and to provide a rough guide to policymakers to be used in conjunction with other information in allocating resources to address these problems and hence to reduce their costs.

The Research Triangle Institute (RTI) conducted an expensive national study to determine the economic costs to society resulting from alcoholism, drug abuse and mental illness. This excellent study has provided us with scientifically sound data documenting the enormous costs to the economy from these problems.

While this study provides national figures, there has been a desire to gain more specificity by determining actual costs to an individual state or county. In response to this and realizing the enormous costs involved in replicating this study at a state or county level, the California Health Research Foundation used an inexpensive extrapolative design strategy that approximates the national figures to a state or county.



Many persons have suggested that you can merely take the percentage the State population represents of the U.S. population and then calculate that percentage of the national economic costs findings and you'll get a rough approximation. However, because the RTI study was predicated on economic indicators (e.g. GNP), we knew it would be more accurate to aggregate local or state economic figures and then calculate approximations from the percentages RTI developed for each category.

This approach resulted in a finding of 195.5 million dollars loss annually to Alaska's economy resulting from alcoholism. If we used a simple population calculation, it would have been approximately 160 million. This difference occurs because Alaska's economy is far larger proportionately. Because the RTI study is predicated on economic indicators and actual costs to the economy, our use of state economic figures renders a more accurate approximation of actual costs to the economy from alcoholism, drug abuse and mental illness.

We were fortunate to have had assistance from the Alaska Department of Commerce in establishing accurate state economic figures. From this information, we established the Gross State Product for Alaska in 1984 at 7.8 billion dollars.

From this we calculated the percentage from the RTI national figures for each cost category and derived the figures represented in Table 1-1.

As summarized in the following chapters, the cost estimates presented in the RTI report were developed through a variety of procedures from a number of data sources. In many cases reliable knowledge and/or data were not available for making these estimates. In order to avoid over-stating the economic costs to society of ADM problems, RTI deliberately selected conservative data and/or assumptions where no data or assumptions were available and a choice could be made. In other cases where no data or assumptions were available, RTI omitted estimates for the specific cost elements entirely.

CHRF used the RTI study to develop cost estimates for the State of Alaska. Again, given the enormous (prohibitive) costs involved in replicating this type of study for a state analysis, CHRF used an extrapolative strategy that approximates the national figures to a state.

CHRF has calculated the percentage of each cost included in Chart 1-1 against the National GNP for 1981. CHRF then worked with Alaska's state economic figures to calculate a "State Gross Product in 1984" (most recent available). While time consuming, this is the only legitimate design to develop extrapolative approximations. The base

line percentages were then used with the "State Gross Product" to calculate the State impact costs.

This methodology was reviewed and considered an excellent low cost extrapolative cost approximation strategy. More important, this approach leverages the benefits of a major national study to counties and states that could not otherwise afford to replicate the national study. Finally, this study documents the enormous costs to Alaska resulting from alcoholism, drug abuse and mental illness.

## Chapter I

### Introduction and Summary

The impairment of human potential due to alcohol and drug abuse and mental disorders constitutes a serious social problem in contemporary U.S. society. The scope of this problem can be measured in several dimensions--pain and suffering to the impaired individual and his or her family and friends; family and community instability; crime and other forms of anti-social behavior; lower productivity and lost work time; and direct expenditure for prevention, treatment, and rehabilitation. Although it is difficult to express some of these dimensions in quantitative terms, others may be expressed in terms of measurable economic costs to society. While not totally precise, the current state of the art in this area is sufficiently well advanced that some fairly reliable estimates can be developed.

The resulting estimates of economic costs to society of these alcohol and drug abuse and mental illness (ADM) problems may be used to indicate the relative seriousness of each of these social phenomena and to provide a rough guide to policymakers to be used in conjunction with other information in allocating resources to address these problems and hence to reduce their costs.

#### I. SUMMARY RESULTS

In order to develop estimates of the economic costs to society of alcohol and drug abuse and mental illness, a framework or method of organizing these costs was developed using the Research Triangle Institute results in developing their national estimates. The rigorous scientific approach to this analysis has provided a conservative estimate of the economic cost nationally attributed to alcohol and drug abuse and mental illness. The California Health Research Foundation used this national study to develop state estimates of these costs. Because the enormous resources are not available to fund an expensive sophisticated type of project at a local level and usually not even a state level, CHRF used an extrapolative design aimed at achieving a local costs approximation. While the specific nuances of certain costs for a community may not be ferreted out in the "local costs estimates," our collection of "key economic indicators" from the local or state level do insure reasonable approximations and reliability for general accuracy within these parameters. We also feel that the development of some costs estimates at the local level is crucial to support advocacy for not only continued funding, but appropriate levels of financial support. In this economic atmosphere, hard data of this type is critical to publicly funded programs' efforts to document the need for not only maintaining existing services but justifying the need for continued acceptable levels of funding, thus enabling programs to treat clients humanely and effectively and to begin impacting on the terrible human and economic toll that alcoholism, drug abuse, and mental illness represent.

The framework used by RTI in their national study is consistent with that suggested in the PHS Guidelines document for cost of illness studies (Hodgson and Meiner 1979).<sup>\*</sup> This framework was also used for the critical review of the ADM literature conducted in the first phase of this study. This framework defines categories of costs and types of expenditures as well as elements within each category. The framework makes a principal distinction between core and other related costs. Core costs are those costs to society that are most directly related to the ADM problem in question and which are borne by some component of the nation's health system. Core costs are divided into direct and indirect costs. Direct costs include the cost of health care treatment for individuals with ADM problems as well as the support services required to maintain the treatment network. Indirect costs represent losses in productivity resulting from reduced productive time due to both morbidity and premature mortality.

Other related costs refer to the non-health consequences of ADM problems. This category also included direct and indirect costs. Other related direct costs represent expenditures on non-health goods and services used as a result of the ADM disorder. A major portion of these are the costs of the nation's criminal justice system that are incurred due to crime that is caused by an ADM problem. Other related indirect costs represent the costs of reduced productivity arising from the non-health consequences of ADM problems. For example, one experiences a loss of productivity time while incarcerated. Another source of this category of costs is time spent in criminal activities as a result of drug abuse.

Table 1-1 presents a summary of the economic costs to the State of Alaska for alcohol and drug abuse and mental illness for 1984. As shown in the table, these costs range from 62.4 million for drug abuse to 195.5 million for alcohol abuse. The economic costs of mental illness were estimated to be 148.2 million. As noted in the table, total estimated costs to society cannot be compared across the three ADM problems because of the differing levels of data availability for specific costs categories. In addition, Table 1-1 indicates that the nature of the specific ADM problem may have a significant effect on the composition of the resulting cost to society. For example, core costs constitute 99 percent of the total costs to society that could be calculated for drug abuse. In addition, indirect costs are a substantially higher portion of the total in the case of alcohol abuse than for the other two ADM problems.

It is worth noting here that the estimated costs to society of alcohol

<sup>\*</sup>Hereinafter the Hodgson and Meiners (1978) report will be referred to in the text as the Guidelines.



and drug abuse reflect only the abuse of those substances and are in no way an indictment of legitimately produced alcohol and drugs. Properly used, these substances provide economic benefits to society. However, to our knowledge these benefits have never been precisely measured in dollars.

In addition, it must be emphasized that these figures are, in the last analysis, only estimates. To the extent that the study has had to rely on correlation rather than causality, these estimates will be high. To the extent that complete data were unavailable, these estimates will be low. In general, whenever there was uncertainty, this study has tended to make assumptions that would yield conservative estimates.

TABLE 1-1  
COSTS TO THE STATE OF ALASKA  
FOR  
ALCOHOL ABUSE, DRUG ABUSE AND MENTAL ILLNESS 1984

|                        | <u>Alcohol<br/>Abuse</u> | <u>Drug<br/>Abuse</u> | <u>Mental<br/>Illness</u> | <u>Total</u>          |
|------------------------|--------------------------|-----------------------|---------------------------|-----------------------|
| CORE COSTS             | <u>169,600,000</u>       | <u>20,000,000</u>     | <u>146,800,000</u>        | <u>336,400,000</u>    |
| Direct                 | <u>25,400,000</u>        | <u>5,000,000</u>      | <u>67,500,000</u>         | <u>97,900,000</u>     |
| Treatment              | 22,300,000               | 4,200,000             | 58,700,000                | 85,200,000            |
| Support                | 3,100,000                | 800,000               | 8,800,000                 | 12,700,000            |
| Indirect               | <u>144,200,000</u>       | <u>15,000,000</u>     | <u>79,300,000</u>         | <u>238,500,000</u>    |
| Mortality              | 41,800,000               | 3,200,000             | 22,200,000                | 67,200,000            |
| Morbidity              | 102,400,000              | 11,800,000            | 57,100,000                | 171,300,000           |
| Reduced Productivity   | 92,100,000               | 11,000,000            | 6,300,000                 | 109,400,000           |
| Lost Employment        | 10,300,000               | 800,000               | 50,800,000                | 61,900,000            |
| OTHER RELATED COSTS    | <u>25,400,000</u>        | <u>42,400,000</u>     | <u>1,400,000</u>          | <u>69,200,000</u>     |
| Direct                 | <u>18,000,000</u>        | <u>18,200,000</u>     | <u>1,400,000</u>          | <u>37,600,000</u>     |
| Motor Vehicle Crashes  | 7,200,000                | *                     | *                         | 7,200,000             |
| Crime                  | 6,800,000                | 17,000,000            | *                         | 23,800,000            |
| Public                 | 6,100,000                | 12,700,000            | *                         | 18,880,000            |
| Private                | 600,000                  | 4,000,000             | *                         | 4,600,000             |
| Property Loss/Damage   | 100,000                  | 300,000               | *                         | 400,000               |
| Social Welfare Program | 500,000                  | 200,000               | 1,400,000                 | 2,100,000             |
| Other                  | 3,500,000                | 1,000,000             | *                         | 4,500,000             |
| Indirect               | <u>7,400,000</u>         | <u>24,200,000</u>     | <u>*</u>                  | <u>31,600,000</u>     |
| TOTAL                  | <u>195,500,000</u>       | <u>62,400,000</u>     | <u>148,200,000</u>        | <u>405,600,000***</u> |

\*Although costs are hypothesized to occur in this category, sufficient data are not available to develop reliable estimates.

\*\*\*This equals approximately 5.2% Alaska's gross state product of 7.8 billion dollars.

## CHAPTER 2

### Conceptual and Methodological Issues

#### I. INTRODUCTION

A number of conceptual and methodological issues must be addressed in developing estimates of the economic costs to society of alcohol and drug abuse and mental illness. Conceptual issues are those which must be addressed regardless of the specific procedures used to develop cost estimates. Methodological issues, on the other hand, refer to specific procedures that are implemented to develop estimates of the costs of society of ADM problems. This chapter addresses both sets of issues.

Because the California Health Research Foundation applied an extrapolative approximation design using the RTI national study, it is important to review how the original RTI data was secured. The methodology used by CHRF in developing local costs estimates is then summarized in Chapter 8. The California Health Research Foundation wishes to acknowledge the excellent work done by RTI in their national study.

Conceptual issues are discussed in two separate sections. The first outlines an overall conceptual framework for developing cost-of-illness estimates, moving from general principles of cost and cost-of-illness measurement of the application of these principles to ADM problems. The second section discusses five specific conceptual issues that must be addressed in estimating the economic costs to society of ADM problems.

Methodological issues are addressed in the final section of this chapter. Two separate and distinct methodologies may be used for estimating the costs to society of ADM problems. The outline provided of these two approaches serves as an appropriate framework for the review of previous literature on the costs to society of ADM problems summarized in Chapter 3.

#### II. CONCEPTUAL FRAMEWORK

##### A. General Principles

The first step in developing an overall framework for measuring the costs of ADM disorders is to select the basic theories and concepts for measuring these costs. In the RTI study, these underlying theories and concepts are provided by the discipline of economics. All economic costs result from the fact of scarcity and occur as basic choices are made to allocate results in more of certain goods and services and less of other goods and services being produced since the resources used for one good or service cannot also be used for another. Hence, the economic cost of any good or service is measured in terms of the foregone opportunity of using resources that could have been used to produce something else. These costs are referred to as opportunity costs.

Economic transfers, as the name implies, are shifts in control over the use of resources. They do not represent a consumption of resources per se but only the transfer of resources from one segment of society to



another. As such they are distinct from economic costs. Therefore, it is not appropriate to include transfers in an estimate of the economic cost to society of an illness.

An application of this conceptual issue occurs in estimating the costs of property crime due to drug abuse. Although reliable estimates of the value of property stolen due to drug abuse are difficult to obtain, previous estimates have ranged as high as 56.2 billion per year. Although these losses are legitimate costs to the individuals from whom the property is stolen, from society's perspective there is not cost of stolen property as this property is merely transferred from one individual to another. However, this does not imply that there are no social costs associated with property crime. Resources are used to administer property insurance programs, costs are incurred as drug abusers fence the stolen property, and resources are required to replace lost or damaged property. Procedures for estimating these real costs are detailed in appropriate chapters of this report.

Economic or opportunity costs may be measured from various perspectives. From an individual's perspective, costs are incurred in choosing to seek treatment for an ADM disorder. A businessman incurs costs as choices are made to provide treatment for employees with ADM or other health problems at company expense or as production is lost due to factors such as lowered productivity or absenteeism. Costs are borne by an entire society as current resources are used for prevention, treatment, and rehabilitation and as potential resources are lost due to lower productivity, absenteeism, or withdrawal from the workforce because of death or disability. Since the primary purpose of this study is to provide information for policymaking and resource allocation decisions within local and other government agencies, costs from the perspective of our entire society are the most relevant and will be explored in this study.

Costs may also be distinguished as being either direct or indirect. A direct or explicit cost is one in which resources are consumed and a formal payment is made in cash or in kind (i.e., through the direct provision of some commodity or service). When resources are used to treat an ill person, the labor is paid for in wages, the materials used are paid for as direct purchases, and the capital used is paid for in principal and interest payments. On the other hand, an indirect or implicit cost occurs whenever resources are used for which no formal payment is made. For example, when individuals are treated for an illness in a hospital, their time is being used without any formal payment for its use. In order to place a value on this implicit cost, one estimates the value of what the individuals gave up or the opportunity cost of their time. The implicit cost of their time is the value of the goods and services they would have produced during their treatment period. In addition, we must include among the indirect costs the value of foregone production of household goods and services by housewives who must be away from home for treatment of illness. This foregone production represents a cost since alternative resources (e.g., hiring outside help)



would have to be used if the individual was not available to supply the household services to family members.

In assessing the value of indirect costs, one frequently runs into the situation in which these costs are incurred over a period of time. The principal example of this situation is that in which a number of years of production are foregone due to an individual's premature death. In this situation it is essential that the lost stream of future earnings be counted as a cost in the year the death occurs. The appropriate technique for making this conversion is termed discounting. This technique reduces or discounts the value of a dollar in a future time period into an appropriate value for the current time period. Discounting is the mathematical inverse of compounding, a situation in which a dollar is worth more in the future because it can be invested now at a positive return. The technique and appropriate mathematical formulas for discounting are well known and have been applied to a variety of situations requiring a present value of a flow of income over time. The major decision in the use of this procedure is the choice of an appropriate interest or discount rate, a topic that is reviewed in greater detail in later sections of this report.

The costs summarized in the preceding sections may be measured in terms of a monetary measure (i.e., dollars) and are frequently referred to as economic costs. However, illness and disease are frequently responsible for a wide variety of psychosocial deteriorations. These deteriorations cannot be measured. Examples include loss of a body part or speech, disfigurement, impending death, pain and grief. In addition, the environment created by an illness induces anxiety, reduced self-esteem and feeling of well-being, resentment and emotional problems that often require psychotherapy. Problems of living may develop, leading to family conflict, antisocial behavior, or suicide. The quality of life, measured in terms of these social costs, may be reduced beyond the restorative capability of rehabilitation efforts. Although this is an important component of the total burden of an illness, efforts to develop appropriate measures of these social costs are not as well developed as those for estimating the economic costs of the illness. Therefore, the RTI study focused on estimating those costs which can be readily quantified in dollars. Since these economic costs will be measured from the perspective of our entire society, they will be referred to as economic costs to society throughout the remainder of this report.

RTI emphasizes how conservative an approach their study took. If the social costs referred to above could be measured in monetary terms, they would total many billions of dollars. For example, the White House Conference on Families cited the findings of a recent Gallup survey which asked people to name what they considered to be the three things most harmful to family life (1980). Sixty percent of the people surveyed named alcohol abuse, 59 percent cited drug abuse, and 23 percent mentioned overuse of prescription drugs. George Gallup (1979) also cited another of his surveys as finding that in 1978 24 percent of those interviewed said that liquor has been a cause of trouble in their families - double

the 12 percent found just four years earlier. Among those divorced or separated, as many as one-third of those surveyed indicated that an alcohol-related problem had adversely affected their family lives. As can be easily deduced from figures such as these, the adverse impact of alcoholism and drug abuse just on family cohesiveness alone must be very costly.

## **B. Principles of Cost-Of-Illness Studies**

In applying the above general principles to the estimation of the cost of an illness, it becomes apparent that a variety of costs are present that are associated with different sectors of our society. In particular, most of the costs are associated with the health sector of our society, while the remaining costs are associated with various other sectors. For this reason, the costs of an illness or disease may be divided into two major categories, each of which contains both direct and indirect costs. These categories are termed "core" costs, which represent primarily those costs occurring in the health sector, and "other related" costs, which represent the costs occurring in all other sectors of society.

As outlined in the PHS guidelines document on cost-of-illness studies (Hodgson and Meiners 1979), the direct core costs represent the costs of diagnosis, treatment, continuing care, rehabilitation, and terminal care for illness and trauma. These include expenditures for hospitalization; outpatient clinical care; nursing home care; home health care; services of primary physicians and specialists, dentists, and other professionals; drugs and drug sundries; rehabilitation counseling; and other rehabilitation costs to overcome illness-related impairments.

Indirect core costs result from losses in output as time is lost from paid work or provision of household services because of treatment, injuries, premature mortality, or other reasons. As indicated above, the measure of output loss is foregone earnings or the imputed market value of underformed housekeeping services. In addition to extended time lost from work, in direct core costs may also be incurred when an illness adversely affects productivity. These affects may occur from either a lessening of productivity by persons on the job or by excessive absenteeism.

Other related costs may also occur for a variety of reasons. Examples of the nonhealth sector direct costs borne by patients and other individuals include costs of transportation to health providers, additional household expenditures such as hiring household help for cleaning, laundering, cooking, and babysitting; special diets; items for rehabilitation and comfort; and vocational, social, and family counseling services. These direct costs may also include the value of damaged or destroyed property due to vehicular accidents or criminal activity caused by drug or alcohol abuse.

Examples of other related indirect costs include the opportunity cost of time spent in prison or pursuing a criminal career and of time spent by family members and friends in visiting hospitalized persons, their physicians, or other health professionals.

### C. Application of Cost Concepts to ADM Problems

The cost concepts summarized above may be readily incorporated into a conceptual framework to estimate the costs of ADM. Direct core costs include primarily the costs of treatment for the various ADM problems. In the case of mental illness, these costs are incurred as a direct consequence of the illness as individuals seek treatment in public and private mental health treatment facilities. Although difficult to measure precisely, mental illness can also lead to higher utilization of health care services due to associated medical disorders (e.g., psychosomatic symptoms) as well as to an inappropriate search for medical solutions to psychological problems. In the case of alcohol abuse and drug abuse, these costs are incurred as individuals seek treatment for the direct consequences of their substance abuse and the associated medical problems. In addition, the direct core costs include costs for such supportive activities as prevention and the variety of research, training, and administrative functions that are carried out by both public and private agencies to support ADM treatment activities.

Indirect core costs for ADM problems arise primarily from morbidity or premature mortality. As indicated above, these costs are measured in terms of both foregone earnings and the imputed market value of lost work or household production due to outpatient or inpatient treatment or from lowered productivity for those with ADM problems who continue to work or perform household activities.

Other related direct costs for ADM problems are quite diverse. The two largest categories of these costs stem from ADM-induced crimes and from property destruction (e.g., due to vehicular accidents or crime). In addition, other related direct costs include an appropriate share of the administrative costs of various social welfare programs providing services to individuals with ADM problems. Categories for other related indirect costs for ADM problems are the same as those listed above in section B.

A summary listing of the specific cost elements suggested for use in cost-of-illness studies is provided in exhibit 2-1.



## Exhibit 2-1

Cost Elements for Cost-Of-Illness Studies

## I. CORE COSTS

## A. Direct

1. Hospitalization
2. Outpatient clinical care
3. Nursing home care
4. Home health care
5. Services of primary physicians, specialists, and other professionals
6. Drugs and drug sundries
7. Rehabilitation counseling
8. Rehabilitation aids

## B. Direct

Lost productivity due to:

1. Mortality
2. Morbidity (lost productivity)
  - a. Reduced productivity
  - b. Lost productive time

## II. OTHER RELATED COSTS

## A. Direct

1. Transportation
2. Household expenditures and help for the household
3. Special equipment or alteration of property for rehabilitation or comfort
4. Counseling, retraining, and reeducation
5. Property losses (destruction, for instance, from vehicular accidents or criminal activity)
6. Criminal justice system
7. Welfare system administration (not the transfers themselves)

## B. Indirect

1. Loss productivity of family and friends
2. Lost productivity resulting from incarceration due to ADM problem
3. Lost productivity from full-time pursuit of a crime career in order to support a drug habit
4. Lost productivity of persons other than crash victims due to ADM-caused motor vehicle accidents

Source: Derived from Hodgson and Meiners (1979).



### III. SPECIFIC ITEMS

#### A. Definition

The first task that must be addressed in this effort is to develop a careful definition of each ADM problem for which societal costs are being estimated. In particular, the definitions selected must distinguish between chronic and acute alcohol and drug abuse and must provide a careful specification of the conditions associated with mental illness.

#### B. Incidence and Prevalence

In estimating these costs to society, the distinction between incidence and prevalence of the ADM conditions must be carefully made. Strictly speaking, incidence of an ADM problem is defined as the number of new cases of a problem that occur in a given period of time. Prevalence refers to the total number of cases that are present at a point in time or over a given period of time.

#### C. Association and Causality

Previous efforts have pointed out the necessity of distinguishing between the association of ADM problems with subsequent behavior states and the degree to which ADM problems cause these behavior states. In addition, the literature review conducted for the RTI study indicated the difficulty inherent in establishing valid measures of causality. Despite these problems, the RTI study attempted to estimate costs to society by using measures of causality rather than correlation or association. Wherever possible, the results of previous studies that have used appropriate designs and analytic techniques to develop estimates of the degree of causality were incorporated into the estimation procedure.

#### D. Foregone Earnings

As indicated earlier, a critical input to estimating the indirect costs of ADM is the value of foregone earnings of individuals with ADM problems who experience premature mortality or other reasons for lost productivity. In order to develop a consistent approach to estimating the value of this cost component across the three ADM problem areas, a single set of earnings profiles for members of the general population is required. These earnings profiles should be available for separate population subgroups (e.g., classified by age, sex, race, educational attainment, etc.). Given these demographic characteristics, the profiles can then be adjusted to reflect the separate demographic characteristics of the populations with each of the three ADM problems. Issues that must be addressed include adjustments for expected labor force participation and unemployment for populations with ADM problems, possible adjustments for less than full employment national economy, the choice of an appropriate rate with which to discount future earnings values, and an assumption about the expected rate of labor productivity growth in the future. Additional issues that must be addressed include the conceptual

bases for estimating the costs of lowered on-the-job-productivity due to ADM problems, the costs of foregone household production by individuals not in the officially defined labor force, and the value of foregone production that occurs when individuals volunteer for work in the ADM treatment/prevention system.

As explained in more detail in later chapters, recently developed unpublished data on the present values of age/sex-earnings profiles prepared by the staff of the National Center for Health Statistics provide an appropriate data source for estimating many of these indirect costs. The assumptions underlying the development of these profiles have been carefully reviewed, and the resulting profiles have been found to be appropriate for use in the RTI study.

#### E. Double Counting

The final conceptual issue that must be addressed is that of adjusting for potential double counting in estimates of specific ADM cost elements. Double counting is defined as a situation in which the costs of a given condition are included more than once in developing the total cost of ADM problems. An example of this situation is that of counting foregone earnings for traffic fatalities twice in developing estimates of the costs to society of alcohol abuse--once in the general estimate of premature mortality from alcohol abuse and again in specific estimates of mortality from traffic accidents.

Another example occurs in situations in which an individual with an ADM problem is treated in a specialty setting that is not organized primarily to treat the problem, e.g., an alcoholic being treated in a Community Mental Health Center. It is easy to count this person's costs twice in estimating the costs to society of ADM problems--once as an alcohol abuse cost and again as a mental illness cost. Such situations should be identified and the double counting eliminated in developing a composite estimate of the costs to society of ADM. One possible approach would be to specifically identify the various specialty settings in which treatment for multiple ADM problems occurs and the proportions of treatment resources used to treat the separate ADM problems in each of these specialty settings. This procedure would enable us to develop estimates of both the treatment costs for each ADM problem and estimates of the treatment costs for each type of specialized ADM facility.

A third example occurs in situations where it is difficult to specify to which of the three ADM problems a particular cost element should be assigned. This difficulty is present when an individual with more than one ADM problem is being treated or when one includes the expenditures for administrative staff concerned with more than one ADM problem. In these situations, these costs might be reported as an unallocated total not included in cost estimates of the separate ADM problems or they might be assigned to either a single or multiple problem according to an appropriate approximation procedure. For example, in situations where a person is being treated for more than one ADM problem, the costs could be assigned to the cost component with the primary diagnosis. Expenditures by

administrative staff could be allocated to the three separate ADM components in proportion to other direct costs.

#### IV. ALTERNATIVE ESTIMATION METHODOLOGIES

Two general approaches or methodologies have been applied to various ways in previous ADM cost-of-living studies. None of these studies used one or the other of these methodologies exclusively. Instead, the two approaches were mixed within the studies, with one methodology used to estimate some cost elements, the other to estimate others, and both to estimate yet others.

These two methodologies can be identified as being: ADM population-specific (methodology A) or ADM illness (or event)-specific (methodology B). The differences between the two approaches are primarily in terms of the unit of observation for which cost data are collected and analyzed and the types of data available with which to estimate the costs. A general outline of the steps included in each of the two approaches is presented in exhibit 2-2.

The ADM population-specific methodology uses the individuals in the prevalence population as the primary unit of observation. The objective is to collect data concerning such cost-related factors as health care utilizations, morbidity, average productivity, and mortality of individuals in the population at risk (the prevalence pool) and on similar individuals in the non-ADM population (a comparison group). The operational hypothesis is that the population at risk will be inferior on a per capita basis to the non-ADM population with respect to the above cost-related factors.

If the risk population has higher per capita costs for a given societal cost element, then the additional costs are attributed to the illness or problem which is being studied. This attribution is based on the expectation that the risk population's experience would be the same as that of the nonrisk comparison group except for the illness or problem in question.

Constructing valid comparison groups is the crucial step in this methodology. The comparison is based on the assumption that the two groups are the same in all respects which might affect the cost element except for the illness or disorder in question. However, sociodemographic and contextual or environmental factors may also affect the cost element and should be taken into account in developing comparison groups. For example, when an illness or problem is concentrated in a segment of the population which has generally poorer health, the development of comparison groups needs to take this factor into consideration, or else an overestimate of costs to society may result.

In cost-of-illness studies for ADM it is likely that this methodology will overestimate the costs of the ADM problems. This is because the ADM risk population is likely to be characterized by other factors which may



also be involved in poor health. In fact, some researchers have hypothesized that poor health may in some cases lead to ADM problems. As indicated above, the choice of an appropriate comparison group is the most important factor in avoiding this upward bias in cost estimates.

The second methodology uses ADM problems and related illnesses or events as the primary units of observation. Under this approach, the first step is to identify specific ADM illness or events (e.g., treatment, unemployment, premature death, criminal activity, traffic accidents) that are associated with each ADM problem. The next step is to estimate the proportions of these illnesses or events that are caused by the ADM problems. The third step is to estimate the direct and indirect costs to society of each of the illnesses or events that are caused by the ADM problems. The third step is to estimate the direct and indirect costs to society of each of the illnesses or events. These cost estimates are then multiplied by the proportions of the economic costs to society. It should be noted that a key operational assumption underlying this methodology is that the ADM illness occurred in addition to normally expected illnesses. It should also be noted that this methodology will only count the costs associated with specific episodes of ADM problems or other illnesses and events known to be caused by ADM problems.

The key steps in this methodology are to identify the specific ADM illnesses or events such as criminal behavior and the proportions of these ADM-related illnesses/events that are caused by the ADM problems. Various data sources can be used to estimate the number of episodes of each illness or event, the value of health care resources used to treat the illness, the amount of productive time lost due to the illness, the mortality associated with the illness, and the nonhealth care value of system resources used to address other events caused by ADM.

In practice this methodology may underestimate the costs to society of ADM and related problems. This is because it may be difficult both to identify all ADM episodes and to quantify the extent to which ADM problems can cause, contribute to, or exacerbate other illnesses or behaviors. In addition, insofar as ADM disorders can lead to generally lower health status, the costs of this lower health status will be missed by using this methodology.

The process of identifying ADM and related illnesses or events in the second methodology is equivalent to that of creating comparison groups in the first methodology. With sufficient data and analysis the two methods should yield estimates of the economic costs to society. However, available data and the state of the art of cost-of-living illness studies have not yet advanced to this stage. With currently available data, applying the two methodologies to the same ADM problem will lead to different estimates. The first methodology will likely overestimate ADM costs to society, while the second methodology will tend to underestimate these costs.



After developing this background framework, the next task of the RTI study was to conduct a thorough literature review of previous studies of the costs to society of ADM problems, the results of which are summarized in the following chapter of this report. This literature review was a useful means for reviewing the potential applicability of each of the two methodological approaches, for assessing the validity and reliability of the data available for implementing each, and for developing recommendations for which approach to use the RTI study.

Exhibit 2-2

Estimation Methodologies for ADM  
Cost-Of-Illness Studies

METHODOLOGY A: ADM Population-Specific

1. Identify the ADM population.
2. Estimate the utilization of health care resources of the ADM population on a per capita basis.
3. Estimate the same factors for the non-ADM population.
4. Subtract the per capita utilization values of the non-ADM population from those of the ADM population, attributing the additional utilization to ADM problems.
5. Project the per capita estimate of additional utilization to the entire ADM population by multiplying by the number of persons with ADM problems.
6. Assign cost values to the additional utilization estimates of step 5.
7. Estimate other appropriate conditions (e.g., mortality and morbidity).
8. Implement procedures similar to those in steps 4-6 to develop estimates of the remaining elements of the costs to society of ADM problems.

METHODOLOGY B: ADM Illness (or Event)-Specific

1. Define specific illnesses or events (e.g., treatment, unemployment, premature death, criminal activity, traffic accidents) associated with each ADM problem.
2. Estimate the proportions of these illnesses or events caused by the ADM problems.
3. Estimate the direct and indirect costs to society of each of the illnesses and events identified in step 1.
4. For each of the illnesses and events, multiply the cost estimates developed in step 3 by the causal factors specified in step 2 to develop estimates of the costs to society of ADM problems.

References - Chapter 2

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## CHAPTER 3

### Summary of Review and Comparison of Previous Studies

#### I. INTRODUCTION AND SCOPE

Over the past decade, a number of studies of the costs of ADM disorders have been completed. The methodologies used to develop these cost estimates differ in certain respects across the three major problem areas, but are relatively consistent in cases of multiple studies of the costs of individual problem areas. For this reason, it was decided to focus this review on a single primary study within each of the problem areas. These primary studies are as follows: alcohol abuse -- Berry, and Boland; drug abuse -- the RTI report; and mental illness -- Levine and Levine. Although this review focused on these three primary ADM cost studies, materials from other ADM studies were also reviewed and are included in this report as appropriate.

In addition to the ADM cost studies cited above, a recently completed study of the cost of all illnesses has also been included within the scope of this review. This study, authored by Paringer and Berk (1977)<sup>1</sup> provides useful insights into the development of an appropriate methodology for estimating costs of illness.

Finally, the recently issued Public Health Service (PHS) Guidelines for cost-of-illness studies has also been included within the scope of this review. These guidelines were reviewed in terms of the overall conceptual framework presented for cost-of-illness studies rather than from the perspective of specific techniques or data sources for estimating ADM costs. The inclusion of the Guidelines document in the scope of this review assures us that the ADM cost estimating methodology developed during this study is consistent with the overall PHS framework for cost-of-illness studies.

This chapter presents a summary of the review and comparison of previous studies that was conducted as an early task of the RTI STUDY. Results are presented in terms of the major cost categories for cost-of-illness studies. In addition a brief summary of the overall review is provided.

#### II. REVIEW CRITERIA

Three principal criteria were developed to guide the review of previous studies. These included the approach or methodology that was developed to generate the estimates, the sources of data that were used in the actual calculations, and the sensitivity of the cost estimates to various assumptions. A brief description of these criteria follows:

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<sup>1</sup> Hereinafter the Paringer and Berk (1977) report will be referred to in the text as Paringer and Berk



In reviewing the approach to developing the ADM cost estimates, three principal issues were examined. These include the definitions of the particular problem under consideration and the associated cost categories, details of the methodology used to develop the resulting cost estimates, and the scope of costs included, represented primarily in terms of the various settings in which treatment for the appropriate problem is provided.

In addition to reviewing the overall approach for developing ADM cost estimates, the specific data sources used were also reviewed. The criteria that were used in reviewing these data sources included representativeness, bias, and reliability.

The final criterion that was used during the literature review was the sensitivity of the resulting cost estimate to underlying assumptions and the sensitivity of the estimate of total costs to the cost of individual components. To the extent possible the sensitivity of an estimate for an individual component was assessed by recalculating the estimate under a range or alternative assumptions. Appropriate values for these alternative assumptions were determined from the review of each of the primary sources (e.g., in some cases, reasonable alternative assumptions for estimating the cost of drug abuse may be determined from the report on the cost of alcohol abuse) and from a review of selected secondary documents.

### III. DIRECT CORE COSTS

#### A. Guidelines

The Guidelines document clearly defines a framework for analysis of direct core health cost which are costs incurred explicitly by the victim of illness or trauma through the provision of goods or services or diagnosis, treatment, continuing care, rehabilitation, or terminal care. As a practical guide to calculating direct core costs, the Guidelines lists the primary types of expenditures which constitute these costs. These are:

- Hospitalization
- Outpatient clinic care
- Nursing home care
- Home health care
- Service of primary physicians and specialists
- Other professional services
- Drugs and drug sundries
- Rehabilitation counseling
- Rehabilitation aids, and
- Supportive activities

These goods and services are provided to the ill person directly and are not provided to another person or the household of the victim. As an example, prostheses, eyeglasses or hearing aids for an ill person are direct core costs, while alterations to a house or special rehabilitation equipment are considered other related direct costs.

The costs of the health services listed above are accompanied by a variety of overhead costs (e.g., administration, planning, prevention, and research activities in the health sector). The classification of these overhead costs is not addressed explicitly in the Guidelines document, but they clearly should be included in the direct core cost category, since they are incurred only to support the expenditures for medical care.

#### B. Alcohol Abuse

In 1975 alcohol abuse health care costs for an estimated 10 million U.S. problem drinkers constituted \$12.8 billion, or 30 percent of the total costs associated with alcohol abuse, as reported by Berry and Boland. These costs are the second largest component of the cost to society of alcohol abuse.

The Berry and Boland report estimated the excess use of health care services by alcohol abusers. This process involved comparing the level of utilization of health care services by alcohol abusers with those of the general public and assigning the cost of excess annual per capita utilization by alcohol abusers as an economic cost of alcohol abuse. This methodology is direct, straightforward, easily applied, but does not completely address the question of causality.

In addition, the Berry and Boland report does not appear to have used consistent definitions of problem drinker, alcohol abuser, or alcoholic. It used these classifications virtually interchangeably in discussing special reports and key parameters of the studies, an inconsistency that makes the estimates of direct core costs subject to wide variation.

A summary of the \$12.8 billion direct core costs of alcohol abuse is presented in table 3-1. As shown in the table, these costs may be divided into two major categories: costs of health services to treat alcoholism and related disorders, accounting for \$11.0 billion; and overhead and supporting costs, accounting for \$1.8 billion.

#### C. Drug Abuse

According to the RTI report, the direct core costs of drug abuse totaled \$1.5 billion in 1975 (see table 3-2). Treatment costs were estimated at \$1.08 billion in 1975. This total included \$585 million in drug treatment and rehabilitation facilities and \$494 million in medical services. Direct core costs for supporting services were \$410 million in 1975.

The RTI report defined drug abuse as the nonmedical use of drugs. In calculating the health care costs of drug abuse, the authors used a variety of statistics from the Drug Abuse Warning Network (DAWN), which defines drug abuse as follows:

The non-medical use of a substance for any of the following reasons: psychic effect, dependence, or self-destruction (attempt or gesture). For the purpose of this definition, non-medical use means the use of prescription drugs in a manner which is inconsistent with accepted medical practice; the use of over-the-counter drugs contrary to approved labeling; or the use of any other drug or substance (heroin), marijuana, peyote, glue, aerosols, etc.) for the reasons cited above (U.S. O.O.J., DEA 1974).

The primary approach to estimating the direct core costs of drug abuse was to identify types of providers of health care and drug abuse treatment services and estimate the proportion of these services that were utilized due to drug abuse. This approach incorporates a more direct measurement of the causal relationship between drug abuse and a subsequent health problem than the Berry and Boland approach. The RTI report also reported emergency room or inpatient episodes which were drug-abuse related. However, there was no measurement of excess health care costs incurred by persons who were drug abusers. It should be noted that the RTI report approach yields conservative estimates of direct costs in that it omits health care costs incurred as a result of drug abuse but not immediately perceived as such.

Federal, state, and local drug treatment and rehabilitation costs totaled \$686 million in 1975. Support costs for administration, planning, research, and education were estimated at \$410 million. In contrast to the Berry and Boland study, these estimates were largely obtained from NIDA budget documents.

There may be some limitations on the scope of the service providers included in these costs. Estimates of utilization of four types of health care services were made, including the largest two categories of health care--inpatient and physician care. However, costs in even these two categories may be downwardly biased, particularly since no estimates of the excess use of health care services by drug abusers for related illnesses were developed.

#### D. Mental Illness

According to the Levine and Levine study, direct mental health care valued at \$9.5 billion was provided to the mentally ill in 1971. During 1971 direct core costs were estimated for 13 separate categories of expenditures (see table 3-3), ranging from \$2.7 billion on nursing home care to a low of \$80 million on private practice psychologists.

Table 3-1

Direct Core Costs of Alcohol Abuse, 1975  
(\$ in millions)

| Category                                    | Costs           |
|---------------------------------------------|-----------------|
| Treatment                                   | <u>\$11,021</u> |
| Hospital care                               | 8,400           |
| Physician services                          | 1,300           |
| Nursing home care                           | 194             |
| Other professionals                         | 124             |
| Public health activity                      | 393             |
| Other health services                       | 328             |
| Drugs and drug sundries                     | 282             |
| Support                                     | <u>1,798</u>    |
| Administration, prepayment of health system | 776             |
| Research, construction                      | 779             |
| Training, education                         | 168             |
| Administration of alcohol programs          | 75              |
| Total                                       | <u>\$12,819</u> |

SOURCE: Berry et al. (1977)

Table 3-2

Direct Core Costs of Drug Abuse, 1975  
(\$ in millions)

| Category                                                            | Costs           |
|---------------------------------------------------------------------|-----------------|
| Treatment                                                           | <u>\$ 1,079</u> |
| Emergency room visits                                               | 12              |
| Inpatient care                                                      | 314             |
| Mental hospital inpatient care                                      | 35              |
| Physician care expenditures                                         | 133             |
| Treatment/rehabilitation                                            | 585             |
| Support                                                             | <u>410</u>      |
| Planning, direction, research education,<br>prevention and training | 410             |
| Total                                                               | <u>\$ 1,489</u> |

SOURCE: Rufener et al. (1977)



The approach to estimating the direct costs of mental illness was to identify all possible sources which provided goods and services to the mentally ill, and then to estimate the total expenditures on these goods and services. This approach was feasible due to the high degree of specialization of most of the mental health settings.

The estimates of direct cost do not seem to be strongly affected by the definition of mental illness which is used. For most of the providers of health the costs were drawn from secondary sources with standard definitions and data collection procedures for mental illness.

The primary exception to having accepted definitions of the category of care was in nursing homes. The authors have attributed care to clients with primary diagnoses of (1) mental illness or senile dementia (43 percent) or (2) a mental disorder plus an ambulatory mobility status (44.5 percent) to mental illness. Since there is little difference in these values, the authors chose the lower figure in order to be conservative.

A potential for double counting costs should be noted here. Since alcoholism and drug dependence are mental illness diagnoses, the cost of treating these disorders in mental health facilities was legitimately included in the Levine and Levine study. However, many of these same costs were also included in Berry and Boland and the RTI reports. Thus, there is a definite overlap of health care costs between mental illness and alcohol and drug abuse which should be identified and adjusted for in any study on the combined costs of alcohol, drug and mental disorders.

The Levine and Levine study did not estimate excess use of health care by the mentally ill. However, it did attribute 10 percent of visits to private nonpsychiatric physicians to mental illness. Health care costs for other illnesses, accidents, poisonings or violence associated with mental illness were not included in the direct costs of mental illnesses, an approach that is similar to that reported by the RTI report but which is in contrast with the Berry and Boland results.

Only \$1.6 billion of support costs were estimated for mental illness in 1971 (see table 3-3). These were for expenditures ancillary to the provision of direct health care to the mentally ill and included research (\$399 million), training (\$187 million), construction (\$253 million), management expenses (\$767 million) and NIMH unallocated expenses (\$15 million).

#### E. All Illness

Paringer and Berk estimated total direct costs of health care to be \$118.5 billion in 1975. Table 3-4 represents the breakdown of these expenditures across the different kinds of health goods and services. The four largest categories were hospital care (\$46.6 billion), physician services (\$22 billion), drugs and drug sundries (\$10.6 billion), and nursing home (\$9 billion). These categories have also been the largest cost categories for the direct core costs of ADM problems.

Table 3-3

Direct Core Costs of Mental Illness, 1971  
(\$ in millions)

| Category                                     | Costs           |
|----------------------------------------------|-----------------|
| <b>Treatment</b>                             | <b>\$ 9,526</b> |
| State and county mental hospitals            | 2,164           |
| Other public mental hospitals                | 412             |
| Private mental hospitals                     | 281             |
| General hospitals                            | 928             |
| Community mental health centers              | 285             |
| Freestanding outpatient centers              | 481             |
| General medical services                     | 358             |
| Nursing homes                                | 2,666           |
| Rehabilitation facilities and halfway houses | 195             |
| Children's programs                          | 304             |
| Private practice psychiatrists               | 833             |
| Private practice psychologists               | 79              |
| Psychoactive drugs                           | 538             |
| <b>Support</b>                               | <b>1,621</b>    |
| Research                                     | 399             |
| Training                                     | 137             |
| Construction                                 | 253             |
| Management                                   | 767             |
| NIMH unallocated                             | 15              |
| <b>Total</b>                                 | <b>\$11,147</b> |

SOURCE: Levine and Levine (1975)

The allocation of costs to illness categories by Paringer and Berk is based on association and not on causality. The data available on utilization of health care are based on a patient's primary diagnosis, and not on the cause of the illness. This allocation procedure may yield underestimates of the costs of problems such as alcoholism, which may lead to subsequent diagnoses of diseases such as diabetes and other digestive disorders. However, more detailed analyses of the extent to which a subsequent diagnosis is due to prior problems of alcohol or drug abuse require data in more rich detail than was available to Paringer and Berk.

Data used in this analysis were complete and detailed. It was possible to allocate virtually all health care services to some disease class

Table 3-4

Direct Core Costs of All Illnesses, 1975  
(\$ in millions)

| Category                                   | Costs            |
|--------------------------------------------|------------------|
| <b>Treatment</b>                           | <b>\$100,200</b> |
| Hospital care                              | 46,600           |
| Physician services                         | 22,100           |
| Dentist services                           | 7,500            |
| Other professional services                | 2,100            |
| Nurses                                     | 256              |
| Chiropractors                              | 503              |
| Optometrists                               | 500              |
| Visiting nurses                            | 194              |
| Other                                      | 644              |
| Drugs and drug sundries                    | 10,600           |
| Eyeglasses and appliances                  | 2,300            |
| Nursing home care                          | 9,000            |
| <b>Support</b>                             | <b>18,300</b>    |
| Expenses for prepayment and administration | 4,593            |
| Government public health activities        | 3,457            |
| Other health services                      | 3,000            |
| Research                                   | 2,750            |
| Construction                               | 4,500            |
| Public                                     | 1,266            |
| Private                                    | 3,234            |
| <b>Total</b>                               | <b>\$ 1,489</b>  |

SOURCE: Paringer and Berk (1977)

due to the detailed statistics maintained on health care utilization by the National Center for Health Statistics. Utilization is reported by the eighth revision of the International Classification of Diseases-Adapted (ICDA) (U.S. DHEW, NCHS 1968), except for expenditures on physician care, which still used the seventh revision. Reclassification of data from the seventh to the eighth revision was possible so that diagnostic categories were consistent. Data are presented in the final report by 7 major disease classifications, although cost information is available in greater detail.

## IV. INDIRECT CORE COSTS

A. Guidelines

The Guidelines document states that the human capital approach should be used to estimate indirect costs of illnesses. This approach is an established procedure with a clear conceptual basis by which the value of the output which is lost due to an illness or disease is estimated. In principle these indirect costs are capable of being measured with readily available data.

Lost output can be either in the market place or at home. Time which is lost in work should be valued at the worker's wage rate, which is assumed to reflect the worker's marginal productivity. Time lost keeping the home should be valued at the opportunity cost of the household services - that is, the cost of hiring someone to perform the work. In this way output losses in the market place and in the household are measured in consistent units.

Both current year morbidity losses and permanent future losses (mortality) should be included. Morbidity includes time away from a productive activity. Future morbidity losses can also result from a current year's illness or disease and should be estimated in analyzing life cycle costs of illnesses or diseases. However, in most studies only current year morbidity losses are estimated or included. Mortality losses involve the permanent loss to society of a person's productive abilities due to death. These losses should include the present discounted value of productive time for the expected balance of an individual's life, including allowances for withdrawal from the labor force, unemployment, growth in productivity, etc. The present discounted value may be calculated for several different discount rates in order to demonstrate the sensitivity of indirect costs to variations in this assumption. The recommended rates in the Guidelines document are 2, 5, 6, and 10 percent.

B. Alcohol Abuse

The Berry and Boland report attributed \$19.64 billion in indirect core costs to alcohol abuse and alcoholism for 1975 (see table 3-5). This was 46 percent of the total economic costs attributed to alcohol abuse.

The largest element of the indirect costs was reduced earnings of alcohol abusers, estimated at \$15.5 billion in 1975. This figure was based on a three-stage process. First, lower earnings of alcohol abusers compared to non-alcohol abusers were estimated, then a 23.9 percent adjustment was made for non-alcohol called differences, and finally estimates of the prevalence of alcohol abuse were used to calculate the total cost for the U.S. population.

One problem in using these income data is that the study may not have analyzed with sufficient precision the income difference between households with abusing and non-abusing adult males. The study did make an initial adjustment for age differences and then a further adjustment



for factors such as education and experience. The total adjustments for age, education, and other factors reduced the income gap between abusing and non-abusing males by 23.9 percent. However, this adjustment may not have been fully appropriate for this purpose since it was developed from

Table 3-5

Indirect Core Costs of Alcohol Abuse, 1975  
(\$ in millions)

| Cost Category                                                                      | Costs           |
|------------------------------------------------------------------------------------|-----------------|
| Lost production                                                                    | <u>\$19,637</u> |
| Market production, 1975                                                            | 15,458          |
| Military production                                                                | 411             |
| Present value in 1975 of lost future production<br>due to excess mortality in 1975 | 3,768           |
| Total                                                                              | <u>\$ 1,489</u> |

SOURCE: Berry et al. (1977)

an analysis of persons with severe health problems in general rather than with specific alcohol abuse problems. However, given the data that were available, this may have been the most precise adjustment that was possible in attempting to eliminate extraneous differences between the groups studied. In any case, the 23.9 percent downward adjustment does represent at least a partial attempt by Berry and Boland to go beyond the mere association between alcohol abuse and reduced income.

Although the Berry and Boland study failed to distinguish between reduced earnings caused by alcohol abuse and associated with alcohol abuse, the 23.9 percent downward adjustment discussed in the preceding paragraph was made to eliminate several noncausal factors. In addition their estimate was incomplete in that it did not include reduced productivity for females, either working or in the household, or for males under age 21 or over age 59.

The Berry and Boland report used two different sources of data to estimate the costs of mortality. One report was used to estimate the relative mortality rate of alcohol abusers and alcoholics and another was used to generate estimates of prevalence. This raises the potential for using data which are inconsistent with each other due to differences in the operational definitions of the populations at risk (alcohol abusers and alcoholics).

A second potential problem with the Berry and Boland estimates of excess mortality is that they appear to be based on association rather than causality. Frequent heavy drinkers do have higher relative mortality rates, but many of the reasons for excess death among this group are not necessarily causally related to alcohol abuse itself. Instead, they may be causally related to factors frequently associated with alcohol abuse such as smoking or poor personal hygiene and health habits. A more conservative approach would have been to have used the number of mortalities with diagnoses believed to have been caused by alcohol abuse.

### C. Drug Abuse

The indirect core costs of drug abuse were estimated at 54.2 billion for 1975 in the RTI report (see table 3-5). The largest components were unemployability (\$2.5 billion) and absenteeism (\$1.6 billion). Depending on the assumed number of heroin abusers, the costs of unemployability may have been as high as \$3.7 billion - over 30 percent of total estimated economic costs of drug abuse.

The central concept behind the RTI report's measurement of the indirect core costs of drug abuse was the value of goods and services that would have been produced if there were no abuse of drugs. This value was analyzed by estimating the foregone earnings of the drug abusers in their most likely primary occupation. The RTI report was explicit in adjusting its estimates of earnings and labor force participation for age, race, and sex.

The costs for unemployability and absenteeism are included in indirect core costs as estimates of drug abuse-caused disability or illness. It is hypothesized that the excess unemployment and absenteeism are experienced by persons whose drug abuse problem prevents their working during that lost time. These estimates appear to have been based more on association than on strict causality. However, costs for unemployability were hypothesized to result only from heroin abuse. The costs estimated were dependent on estimates of the prevalence of heroin abuse in the United States. The study found no single estimate of the prevalence of heroin abuse; estimates ranged from 250,000 to 750,000. Therefore, the authors of the RTI report used three separate estimates on which separate cost calculations were based. These prevalence estimates caused cost estimates for unemployability to range from \$1.2 to \$3.7 billion, a variation by a factor of three.

Mortality costs were underestimated in this study as these costs were only estimated for lost productivity in 1975, omitting lost future productivity. The RTI report did not adjust for expected mortality from other causes for the drug abusers who died in 1975. This is inconsistent with the alcohol abuse and mental illness studies as well as the Guidelines document, which included the present discounted value of future earnings for mortalities. The basic data for the 1975 estimate on mortality were from the Drug Abuse Warning Network (DAWN), which is a generally comprehensive source of this type of data (U.S. DHEW, NIDA 1976).

#### D. Mental Illness

Indirect core costs constituted the largest component of the economic cost of mental illness in 1971. Total indirect costs were \$14.2 billion (see table 3-7), of which disability cost \$7.4 billion, mortality \$3.5 billion and patient care morbidity \$3.2 billion. As is the case with alcohol and drug abuse, these indirect costs were at least 50 percent (\$4.2 billion) of total costs to society of mental illness (\$25.3 billion).

Table 3-6

Indirect Core Costs of Drug Abuse, 1975  
(\$ in millions)

| Cost Category            | Costs           |
|--------------------------|-----------------|
| Unemployability          | \$ 2,478        |
| Emergency room treatment | 0.4             |
| Inpatient treatment      | 20              |
| Mental hospitalization   | 8               |
| Drug-related deaths      | 12.5            |
| Absenteeism              | 1,594           |
| Treatment costs          | 88              |
| <b>Total</b>             | <b>\$ 4,201</b> |

SOURCE: Rufener et al (1977)

Table 3-7

Indirect Core Costs of Mental Illness, 1971  
(\$ in millions)

| Cost Category | Costs           |
|---------------|-----------------|
| Death         | \$ 3,537        |
| Disability    | 7,404           |
| Patient Care  | 3,238           |
| <b>Total</b>  | <b>\$14,179</b> |

SOURCE: Levine and Levine (1975).

The authors conducted a rigorous analysis of indirect costs, making the necessary adjustments in wage rates for labor force factors such as unemployment and labor force participation. This allowed data on incidence and prevalence to be directly multiplied with the adjusted wage rates to calculate costs. In addition to estimates of mortality, estimates of disability and time lost for treatment were made from the same adjusted wage data.

The Levine and Levine study is explicit in its calculations of wages to make as many adjustments for labor force phenomena as possible. These included adjustments for the age and sex characteristics of the mentally ill, their labor force participation, and the value of wage supplements (reflecting social security, vacation and other fringe benefits). An adjustment for the average value of housewives' services was added to this figure for women.

The study proceeded to estimate the incidence and prevalence of mortality, complete disability and time lost for inpatient and outpatient treatment. Estimates of excess mortality were based on age-sex specific mortality rates and an estimate of the population at risk. Excess mortality was defined as the difference between the mortality of the age-sex mentally ill cohort and that of a mentally healthy cohort.

A possible upward bias in this procedure was made by summing the number of admissions to treatment in each health care setting. The potential for multiple admissions to inpatient or outpatient care was ignored.

The prevalence of total disability was based on National Center for Health Statistics (NCHS) data, with corrections for underreporting of mental illness.



The last category of indirect core costs was for time used in receiving inpatient and outpatient care for those patients who were neither totally disabled nor institutionalized. These calculations also used the adjusted wage rates already discussed. Prevalence data for these calculations were based on utilization data discussed under direct costs. The data contained age- and sex-specific information on days of utilization of inpatient and day care and numbers of visits to providers of outpatient care.

This study did not explore all sources of indirect core costs. The exclusions noted by the study were: (1) crime committed by the mentally ill; (2) loss of leisure time by the totally disabled; (3) lost productivity by the partially disabled; and (4) the indirect costs of homicides due to mental illness.

#### E. All Illness

The indirect core costs of all illnesses were estimated at \$120 billion in 1975. This estimate was developed using a 10 percent rate of discount for mortality losses. Using a 2.5 percent discount rate results in a revised estimate of \$204 billion. Each of these totals includes morbidity costs of \$58 billion in addition to mortality losses. These costs are summarized in Table 3-8.

The Paringer and Berk study used the human capital approach to valuing morbidity and mortality and attempted to place a value on the productive time lost during 1975 due to morbidity and mortality. In addition, the authors estimated the value of lost future productivity due to mortality. The time lost was valued at age- and sex-specific wage rates which were hypothesized to reflect differentials in productivity.

Table 3-8

#### Direct Core Costs of All Illnesses, 1975 (\$ in millions)

| Category           | Costs      |
|--------------------|------------|
| Morbidity          | \$ 57,846  |
| Mortality          |            |
| 2.5% discount rate | 146,226    |
| 10 % discount rate | 62,409     |
| Total              |            |
| 2.5% discount rate | \$ 204,072 |
| 10 % discount rate | \$ 120,255 |
| Total              | \$ 1,489   |

SOURCE: Paringer and Berk (1977)

Morbidity costs totaled \$58 billion in 1975, as estimated by this study. Four classes of primary activities were used to estimate these costs: (1) employed (\$21 billion); (2) keeping house (\$4 billion); (3) unable to work (\$24 billion); and (4) institutionalized (\$8 billion). The study obtained estimates of persons of restricted primary activity for each of these categories, adjusted for labor force participation and unemployment, assigned appropriate values to the lost time and distributed the costs across the 17 primary illnesses and diseases.

Mortality costs for all illnesses were established to be \$62 billion with a 10 percent rate of discount. A 2.5 percent discount rate resulted in an estimate of \$146 billion. Data on mortality and cause of death were obtained from NCHS. In calculating these costs it was assumed that no deaths occurred in 1975, and that standard life expectancies were experienced by each age and sex cohort from 1976 on. Survivors of 1975 were assigned average age- and sex-specific mortality risks for 1976 until their cohort passes away. Survival was based on a Social Security Administration 1973 Life Table and projected survival factors (Foster n.d.).

The survival data for each age and sex cohort were adjusted with work experience and housekeeping figures to yield person years to productive time over each cohort's expected productive lifetime. This procedure adjusted for average labor force participation and unemployment rates. Person years of productive effort were multiplied by average annual earning with the wage supplement and/or imputed value of household services to develop cost estimates. This analysis of mortality costs was highly detailed and included all of the adjustments which have been identified in the other studies.

## V. OTHER RELATED COSTS

### A. Guidelines

All non-health sector costs, whether direct or indirect, are included in other related costs. These may be costs borne by the patient or other individuals. They may be real goods and services (direct costs) or lost productivity (indirect costs). The important distinction is that these are non-health factor goods and services or lost productivity by family or friends of the patient.

The Guidelines mentions a number of examples of other related direct costs. These costs included:

- Transportation;
- Household expenditures and help for the household;
- Special equipment or alteration of property for rehabilitation or comfort;
- Counseling, retraining, and re-education;

Property losses (destruction, for instance from vehicular accidents or criminal activity);  
 Criminal justice system; and  
 Welfare system administration (not the transfers themselves).

This is not a comprehensive list of other related direct costs, but was intended to be generally suggestive of these types of costs.

Other related indirect costs can include any lost productivity not directly related to ADM morbidity or mortality. For example, lost productivity due to criminal activity and incarceration (related to ADM) are examples of other related indirect costs. Costs to society from ADM related problems such as motor vehicle crashes and fires are also included as other related costs and broken out into their direct and indirect cost components.

#### B. Alcohol Abuse

Alcohol abuse entails substantial costs to society over and above direct and indirect core costs. According to the authors of the Berry and Boland report, these other related costs were conservatively estimated at \$10.3 billion in 1975, accounting for approximately one-quarter of the estimated total cost to society due to alcohol abuse.

The various components of these costs are presented in Table 3-9. The largest two items were motor vehicle crash losses (\$5.1 billion) and the cost of providing and administering social welfare programs (\$1.3 billion). No other item in this category was significantly greater than \$400 million (about one percent of the cost to society of alcohol abuse).

Both motor vehicle crash losses and fire losses have components of core costs related to treatment and lost productivity. Law enforcement, judicial, and corrections costs are other related direct costs. Lost productivity due to incarceration of persons for alcohol-related crimes was not estimated, but it is another related indirect cost if causality is established.

Motor vehicle crashes constituted the single largest component of the other related costs of alcohol abuse, with a total of \$5.2 billion in 1975.

Table 3-9

Other Related Costs of Alcohol Abuse, 1975  
(\$ in millions)

| Category                                   | Costs           |
|--------------------------------------------|-----------------|
| Social costs                               | <u>\$ 7,442</u> |
| Motor vehicle crash losses                 | 5,143           |
| Fire losses                                | 434             |
| Social welfare system                      | 1,274           |
| Highway safety                             | 29              |
| Fire protection                            | 392             |
| Criminal justice system (nonviolent crime) | 170             |
| Costs associated with violent crime        | <u>\$ 2,858</u> |
| Criminal justice system (violent crime)    | 760             |
| Homicide                                   | 106             |
| Forcible rape                              | 19              |
| Other sex offenses                         | 55              |
| Aggravated assault                         | 213             |
| Other assaults                             | 367             |
| Lost productivity and health care          | 2,098           |
| Homicide                                   | 2,072           |
| Forcible rape                              | 2               |
| Other sex offenses                         | -               |
| Aggravated assault                         | 24              |
| Other assaults                             | -               |
| Total                                      | <u>\$10,300</u> |

SOURCE: Berry et al. (1977).

These estimates were based on prior analyses of the cost to society of motor vehicle crashes and the relationship of alcohol abuse to motor vehicle crashes. Distribution of these costs was based on a detailed analysis of a number of small special surveys of vehicle crashes and alcohol abuse. A multivariate analysis of causal factors led the analysts to attribute \$5.2 billion out of the total cost of \$28.7 billion to alcohol abuse.



Fire losses due to alcohol abuse were estimated at \$434 million in 1975. These were due primarily to mortality losses (\$150 million), property losses (\$210 billion), and treatment costs (\$70 million). Causality for these costs was attributed to inebriated smokers and the impaired ability of alcohol abusers to react to a fire.

Costs to administer and provide social welfare services to alcohol abuse-impacted families were estimated at \$1.3 billion. Five categories of social welfare programs were identified that are likely to provide a significant response to alcohol-caused problems. These programs cost \$53.5 billion in 1975, transferring \$47.6 billion with administration and operation expenses of \$5.9 billion. Transfers are not an economic cost and were therefore excluded. The \$5.9 billion is the real economic cost of these \$48 billion in transfers provided by the five social welfare system programs. To assign a proportion of these costs to alcohol abuse, Berry and Boland estimated the prevalence of alcohol abusers in the client populations of these programs.

Three additional other related cost categories were attributed to alcohol abuse. These were highway safety (\$29 million), fire protection (\$392 million), and the criminal justice system (\$170 million). Criminal justice costs were for alcohol-related offenses such as public inebriation and driving under the influence of alcohol. Highway safety and fire protection expenses were allocated to alcohol abuse on the same basis as productivity and health costs.

The Berry and Boland study also estimated the cost to society of violent crime associated with alcohol abuse. This was estimated to be \$2.9 billion in 1975. Since the authors hesitated to specify any specific proportion of this cost as caused by alcohol abuse or alcoholism, this \$2.9 billion estimate constitutes an upper bound on the cost of crime due to alcohol abuse.

### C. Drug Abuse

Drug Abuse cost estimates in the RTE report included a substantial amount of other related costs - \$4.6 billion in 1975 (see Table 3-10). This included direct costs of expenditures on law enforcement (\$1.3 billion), the judicial system (\$300 million), corrections (\$300 million), drug traffic control (\$90 million) and housing stock Loss (\$80 million) as well as indirect costs for non-drug crime (\$1.3 billion) and incarceration (\$1.2 billion).

Table 3-10

Other Related Costs of Drug Abuse, 1975  
(\$ in millions)

| Cost Category        | Costs    |
|----------------------|----------|
| Direct               | \$ 2,109 |
| Law enforcement      | 1,342    |
| Judicial system use  | 296      |
| Corrections          | 294      |
| Drug traffic control | 93       |
| Housing stock loss   | 84       |
| Indirect             | 2,539    |
| Non-drug crime       | 1,334    |
| Incarceration        | 1,205    |
| Total                | \$ 4,648 |

SOURCE: Rufener et al. (1977)

A common methodology was used to estimate the costs associated with the criminal justice system. Expenditures on law enforcement, judicial system use and corrections were broken down for violations of drug laws and non-drug laws, reflecting the working hypothesis that heroin abuse specifically causes income-generating crime in addition to drug trafficking crimes.

For drug-related expenditures on the criminal justice system, the total expenditures were broken out by the percent of services rendered for drug law violations. Allocation of criminal justice expenditures for non-drug law violations was based on the working hypothesis that heroin abusers committed income-generating crimes because of their drug abuse. The study specified a list of income-generating crimes broken out of the Uniform Crime Reports (U.S. DOJ, FBI 1975) and obtained the proportion of all arrests, persons charged, and convictions accounted for by these crimes. Only a fraction of income-generating crime was committed by drug abusers, and only a fraction of that was caused by their drug abuse.

Classification of the costs of non-drug criminal activity depends on what it is believed to represent. If it is thought that this figure is a proxy for the value of property losses (damaged, or destroyed, not just stolen), then this is an other related direct cost, using the Guidelines classification system. If this cost represents the value of labor

devoted to illegitimate activity instead of work because of drug abuse, then this is an other related indirect cost. This latter approach was used to classify these costs in the RTI study. The estimate of the value of this cost component was based on assumptions about the percent of time spent in criminal activities and the opportunity cost of this time, measured in terms of earnings levels of those involved in criminal activity.

The second other related indirect cost component was earnings losses due to incarceration of drug abusers. This component was estimated from data on person years of incarceration and an assumption about the opportunity earnings of those incarcerated.

#### D. Mental Illness

The Levine and Levine study did not estimate any expenses which could be considered other related costs. All costs estimated were related to health care and lost productivity.

There are other related costs of mental illness which should be included in any further studies. There should include the categories for other related costs of alcohol and drug abuse as well as other categories of costs to society caused by the mentally ill with no alcohol or drug abuse problem. These will include crime, a variety of accidents, any disruption of family employment caused by the mentally ill, and the costs of administering non-health social welfare program serving the mentally ill.

#### E. All Illness

The Paringer and Berk study did not estimate other related costs associated with illness. All estimates were for core direct and indirect costs.

### VI. SUMMARY

The previous section has reviewed estimates of the costs to society from the three ADM problems as well as the costs of all illnesses. A summary of the resulting cost estimates is presented in Table 3-11.

An important criterion for comparing and summarizing the costs to society of these problems is to identify the specific cost components or elements that are included in each study. These components are summarized in exhibit 3-1, which presents a direct cost typology for the primary studies reviewed in this report, and exhibit 3-2, which presents an indirect cost typology.

The left hand column in exhibit 3-1 identifies the eight major components of direct costs (designated by the letters A through H) that were specified in the Guidelines document as appropriate for estimating the costs to society of illness. The remaining columns for each of the four studies reviewed indicate which of these eight components were included and which were excluded in developing the respective cost estimates.

Three of the studies loosely classified certain cost components as "direct costs" which the Guidelines document classified as other than direct core costs. Exhibit 3-1 also highlights these cost components and indicates their classification as supporting core costs (SCC) within the direct core cost category, indirect core costs (ICC), or other related costs (ORC).

Exhibit 3-2 summarizes the indirect cost components that were included in each of the four studies reviewed in this study. Similar to the format of exhibit 3-1, the left hand column identifies the three major components of indirect costs that were specified in the Guidelines document as appropriate for estimating the costs to society of illness. As indicated in exhibit 3-2, none of the studies reviewed included an explicit recognition of the costs of reduced productivity in developing their indirect cost estimates.

Table 3-11

Summary of the Costs to Society of Alcohol Abuse  
Drug Abuse, Mental Illness, and All Illness  
(\$ in millions)

| Illness Category | Total Costs | Core Costs |           | Other Related Costs |
|------------------|-------------|------------|-----------|---------------------|
|                  |             | Direct     | Indirect  |                     |
| Alcohol Abuse    | \$ 42,756   | \$ 12,819  | \$ 19,637 | \$10,300            |
| Drug Abuse       | 10,338      | 1,489      | 4,201     | 4,648               |
| Mental Illness   | 25,326      | 11,147     | 14,179    | a/                  |
| All Illness      | 238,755     | 118,600    | 120,255   | a/                  |

a/ Not estimated

SOURCE: RTI analyses, Berry et al. (1977); Rufener et al. (1977); Levine and Levine (1975); Paringer and Berk (1977).



EXHIBIT 3-1

Direct Cost Typology of Primary Studies

| Guidelines (1979)                                                     | Alcohol Abuse<br>Berry and Boland 1977   | Drug Abuse<br>RTI Report 1977  | Mental Illness<br>Levine and Levine 1975 | All Illness<br>Paringer and Berk 1977          |
|-----------------------------------------------------------------------|------------------------------------------|--------------------------------|------------------------------------------|------------------------------------------------|
| A Hospitalization                                                     | A Hospital Care                          | Medical Expenses               | AB State & Co. M. Hospitals              | AB Hospital Care                               |
| B Outpatient Clinic Care                                              | E Physician Services                     | B Emerg. Rm. Visits            | AB Other Public M. Hospitals             | E Physician Services                           |
| C Nursing Home Care (long term care)                                  | E Dentist Services                       | A Inpatient Care               | AB Private M. Hospitals                  | E Dentist Services                             |
| D Home Health Care                                                    | E Other Professional Services            | A M.H. Inpat. Care             | AB General Hospitals                     | E Other Prof. Services                         |
| E Services of Primary Physicians, Specialists and other Professionals | F Drugs & Drug Sundries                  | E Priv. Physician              | AB CMHC                                  | Nurses                                         |
| F Drugs & Drug Sundries                                               | H Eyeglasses and Appliances              | ORC Law Enforcement            | B Freestanding Outp. Clinics             | Chiropractors                                  |
| G Rehabilitation Counseling                                           | C Nursing Home Care                      | ORC Drug Laws                  | B General Medical Services               | Optometrists                                   |
| H Rehabilitation Aids                                                 | SCC Expenses for Prepay & Administration | ORC Judicial System            | C Nursing Homes                          | Visiting Nurses                                |
| SCC Supporting Costs                                                  | SCC Gov't Public Health Activities       | ORC Drug Laws                  | BCC Rehab Fac's & H-Way Houses           | Other                                          |
| ICC Indirect Costs                                                    | SCC Other Health Svcs.                   | ORC Corrections Costs          | ABE Children's Programs                  | F Drugs & Drug Sundries                        |
| ORC Other Related Costs                                               | SCC Research & Med. Fac's Construction   | ICC Non-Drug Criminal Activity | E Priv. Prac. Psychiatrists              | F Eye glasses and Appliances                   |
|                                                                       | SCC Training & Educ.                     | ORC Drug Traffic Control Costs | E Priv. Prac. Psychologists              | C Nursing Home Care                            |
|                                                                       | Exclusions:                              | SCC Drug Abuse Prev.           | F Psychoactive Drugs                     | SCC Expenses for Prepayment and Administration |
|                                                                       | B Outpatient Clinic Care                 | ORC Housing Stock Loss         | Exclusions:                              | SCC Gov. Publ. Health Activities               |
|                                                                       | D Home Health Care                       | Exclusions:                    | D Home Health Care                       | SCC Other Health Services                      |
|                                                                       | G Rehabilitation Counseling              | C Nursing Home Care            | C Rehabilitation Counseling              | SCC Research                                   |
|                                                                       | H Rehabilitation Aids                    | D Home Health Care             | H Rehabilitation Aids                    | SCC Construction                               |
|                                                                       |                                          | E Other Professionals          |                                          | Exclusions:                                    |
|                                                                       |                                          | F Drugs and Drug Sundries      |                                          | D Home Health Care (except Nurses)             |
|                                                                       |                                          | H Rehab. Aids                  |                                          | G Rehabilitation Counseling                    |
|                                                                       |                                          |                                |                                          | H Rehabilitation Aids                          |

Exhibit 3-2

Indirect Cost Typology of Primary Studies

| Guidelines              | Alcohol Abuse                                                                            | Drug Abuse                                                                                    | Mental Illness                                                                                                        | All Illness                                                                         |
|-------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Morbidity               | Morbidity<br>Reduced income<br>Lost military<br>productivity                             | Morbidity<br>Unemployability<br>Absenteeism<br>Emergency room<br>Inpatient<br>hospitalization | Morbidity<br>Disability<br>Inpatient<br>psychiatric<br>Outpatient<br>psychiatric                                      | Morbidity<br>Lost market work<br>Household<br>Disabled totally<br>Institutionalized |
| Mortality               | Mortality<br>Excess death<br>of alcohol<br>abusers due to<br>any cause<br>Lifetime costs | Mortality<br>Only related to<br>episode of<br>drug abuse<br>Single year costs                 | Mortality<br>Mental illness<br>Suicide<br>Excess death of<br>mentally ill<br>due to other<br>causes<br>Lifetime costs | Mortality<br>All deaths<br>Single year costs<br>Lifetime costs                      |
| Reduced<br>productivity |                                                                                          |                                                                                               |                                                                                                                       |                                                                                     |

A final method of summarizing the results of our literature review is to highlight major differences in the methodologies that were developed and implemented by the authors of each of the studies. These major differences, summarized by major cost category, are as follows:

Direct Core Costs. The direct core costs of alcohol abuse included estimates of the costs of excess utilization of the health care system by alcohol abusers, while these costs were not included in the direct core costs of drug abuse and mental illness.

Indirect Core Costs. The lost production of females was not included in the indirect core costs of alcohol abuse, while the indirect core costs of males was based on estimates of total income rather than the more appropriate earnings figure. The future value of foregone production were excluded from the estimates of the indirect core costs of drug abuse, as was the value of foregone household production. The indirect core costs of mental illness excluded the costs of partial disability and contained potential over-estimates of mortality due to the possibility of duplication in estimating the population at risk (those persons with episodes in 1971 of either hospital or physician visits).

Other Related Costs. All studies appeared to contain potential under-estimates of this cost category. None of the studies included the value of lost production of family members and friends associated with ADM problems. In addition, the study on the costs of drug abuse attributed a significant portion of other related costs to heroin abuse and ignored the value of these costs that could occur from the abuse of other types of drugs.

In conclusion, this chapter has reviewed and summarized differences in methodologies and resulting cost estimates for the three types of ADM problems and for all illnesses. Inappropriate methodologies and deficiencies of data used to generate the cost estimates have been pointed out. The results of this review together with a review of currently available data have been used to develop a consistent, methodologically appropriate approach to estimating the costs to society of alcohol and drug abuse and mental illness.

References - Chapter 3

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## Chapter 4

### Methodological Approach

#### I. INTRODUCTION

##### A. Alternatives

Chapter 2 of this report provided a description of the applicability of the alternative ADM population-specific and ADM illness-specific methodologies to estimating each of the major components of the costs to society of alcohol and drug abuse and mental illness, while Chapter 3 summarized the results of previous studies of these costs using these methodologies. As outlined in Chapter 1, the major objective of this study is to produce use of a uniform and comprehensive methodology for each of the three ADM problem areas. In order to determine the specific approach that should be followed in developing these estimates, a series of criteria for comparing the two alternative methodologies was developed in the RTI study. These criteria were organized into three major categories: definitional/conceptual, data availability, and utilization of results. A brief comparison of the two proposed methodologies according to specific criteria within each of these categories is as follows:

##### B. Selection Criteria

###### 1. Definitional/Conceptual

One of the issues raised in Chapter 2 of this report is that, to the extent possible, estimates of the costs to society of ADM problems should be based on a measure of causality between the ADM problem in question and subsequent behaviors rather than on a more general measure of association between these activities. Although it may be difficult to quantify the extent of causality, nevertheless the ADM illness-specific methodology focuses more specifically on this causal relationship, as it includes a specific factor for the proportion of costs caused by an ADM disorder. On the other hand, the ADM population-specific methodology addresses more general, associative relationships, as it compares the cost experiences of an imperfectly matched group of individuals with and without an ADM disorder.

As indicated throughout this report, the overall objective of the RTI study was to estimate the costs to society of the dysfunctional effects of ADM disorders rather than the costs of all consumption of alcohol and drugs or the general prevalence of alcohol and drug abuse and mental illness. The ADM illness-specific methodology is oriented more toward this dysfunctional behavior than is the ADM population-specific approach in that it focuses on specific types of dysfunctional behavior that are thought to result from alcohol or drug abuse or mental illness.

As discussed in Chapter 2, the ADM population-specific methodology is implemented by estimating the differences in resource utilization and costs between the ADM prevalence population and the non-ADM population. Differences in these costs are then attributed to the specific ADM problem in question. In order to develop valid cost estimates using this methodology, it is essential that members of the ADM and non-ADM groups have similar characteristics except for their ADM problem. In other words, it is necessary to define an appropriate comparison group for the ADM prevalence population, a task that may prove difficult to accomplish. Since a generally poor health status may tend to be correlated with ADM problems, use of an inappropriately defined comparison group may tend to produce upwardly biased estimates of ADM costs to society, as differences between the two groups may be improperly attributed to the ADM problem in question.

In a similar vein, in order to develop appropriate estimates with the ADM illness-specific methodology, it is necessary to identify each specific illness or event that is caused by the ADM problem in question. To the extent that the entire set of illnesses and/or events is not appropriately identified, the ADM illness-specific methodology will yield downwardly biased cost estimates. However, this direction of bias is consistent with that reported in previous ADM costs studies. The authors of these studies have stated that whenever there was a choice, they selected assumptions or data sources that provided conservative estimates of costs to society in order to avoid overstating the problem in the case of uncertainty.

## 2. Data Availability

As outlined in the materials presented in the remainder of this chapter, appropriate and reliable data are more readily available for developing cost estimates using the ADM illness-specific methodology than with the ADM population-specific methodology. Of particular note is the fact that estimates of actual prevalence of the three ADM problems are critical inputs to using the population-specific methodology. As indicated, for some ADM problems reliable prevalence estimates are not readily available. This is of particular importance since we must distinguish between acute and chronic use of alcohol and drugs in order to develop an operational definition of alcohol and drug abuse.

In a related issue, the data requirements of the ADM population specific methodology are such that it is pretty much of an all or nothing proposition to develop estimates for an individual cost component. In other words, if appropriate data are not available, it is difficult to develop any estimate of the cost of that particular component. On the other hand, this restriction may not necessarily be present in implementing the ADM illness-specific methodology. For example, although

information on treatment resource utilization for ADM problems may not be available for the entire range of treatment settings, sufficiently liable data are available to estimate these costs in major settings such as the ADM specialty treatment facilities. Thus, appropriate information will be available to estimate at least a portion of this cost component with the ADM illness-specific methodology, whereas it may not be possible to develop any reliable estimate with the ADM population-specific methodology.

Finally, the ADM illness-specific methodology appears to be less sensitive to errors in data than the ADM population-specific approach. Implementation of the ADM population-specific approach requires a division of the resource utilization by the ADM population by estimates of the prevalence of the ADM problem in question and a subsequent multiplication of differences in per capita resource utilization costs by this same prevalence estimate. To the extent that there are uncertainties in these prevalence estimates, the resulting cost estimates may be subject to a greater degree of error using the ADM population-specific methodology than the ADM illness-specific methodology.

### 3. Utilization

The subsequent use of estimates of costs to society of ADM problems is an important criteria in the selection of a methodology, as was affirmed at the March 1980 ADAMHA-sponsored panel on cost-of-illness studies that was conducted as part of the RTI study. Issues of utilization of the cost estimates also have implications for the choice of methodology for their development. Because of its inherent "building block" approach, estimates of costs to society developed by the ADM illness-specific methodology are more amenable to sensitivity analysis than are estimates developed with the ADM population-specific methodology. This results from the fact that assumptions used to develop estimates of costs of individual subelements can be varied in order to test the sensitivity of the cost estimates to these assumptions. These types of sensitivity analyses would be difficult to undertake with results developed through use of the more global ADM population-specific approach.

Similarly, estimates developed through the ADM illness-specific methodology can be more readily used in analyses of various policy options that may be proposed to reduce the ADM problem in question. In particular, estimates for individual cost elements (e.g., treatment costs in ADM specialty settings) can be incorporated into a benefit/cost framework to examine the potential effects of policies to improve treatment effectiveness.

### C. Recommendations

Although in some sense the ADM population-specific methodology provides a better conceptual framework through which to approach the development of ADM cost estimates, the issues discussed in the preceding section led the RTI study team to recommend that the ADM illness-specific methodology be used to develop cost estimates for its study. This recommendation was accepted by the ADAMHA review panel for the study, with the stipulation that the population-specific methodology be used to estimate the cost of selected elements if lack of data precluded implementation of the preferred illness-specific methodology.

A summary of the ADM illness-specific methodology as it was implemented for this study is contained in the remainder of this chapter. The resulting estimates are presented in Chapter 5.



## II. OVERVIEW

As indicated in Chapter 2 of this report, the basic approach used in the RTI study organizes resulting cost estimates into two major categories: (1) core costs and (2) other related costs. Within each of these major categories, a number of specific direct and indirect cost elements have been estimated. As also pointed out in earlier sections of this report, we have followed a generally conservative approach in estimating these costs. For example, in many cases there are a variety of data sources and/or expert opinion related to a number of assumptions that are necessary to develop the resulting cost estimates. In these cases we have generally selected the assumption and/or data source that yields the lowest or most conservative cost estimate. In other cases, there are no reliable data or assumptions on which to base the cost estimates. In these cases we have generally selected the assumption and/or data source that yields the lowest or most conservative cost estimate. In other cases, there are no reliable data or assumptions on which to base the cost estimates. In these latter situations, estimates of the individual cost elements are not included in our totals. The net result of this approach is that the true cost to society of ADM problems exceeds the estimates presented in this report. However, the portion of the costs developed and presented in the RTI study are based on available data and on research findings and conclusions from a number of studies.

A summary of the completeness of the ADM cost estimates by category is presented in Exhibit 4-1. The row headings in this exhibit present the major categories of cost elements that are discussed in more detail in the remainder of this chapter. As shown in the exhibit, cost estimates are relatively more complete for core direct costs and other related direct costs than they are for other cost categories. However, in reviewing the cost estimates presented in this report, it should be noted that indirect costs can constitute a significant portion of the total cost estimate. Therefore, there is a possibility for a downward bias in the estimates due to incompleteness in these indirect cost estimates, particularly in the case of drug abuse and mental illness.

## III. CORE DIRECT COSTS - TREATMENT

Personal health care treatment expenditures are among the most obvious costs to society of illness. The health care treatment sector

of the national economy produced about \$146 billion worth of goods and services in 1977. This is probably the most visible impact of illness on our nation's economy and also the most easily understood since it involves the flow of real goods and services through a market in which they can be readily valued.

The approach used in the RTI study to estimate the core direct treatment costs of ADM disorders involved a number of operations. First, the study identified the various types of settings in which health care goods and services are provided. Health care settings were first organized into two major categories: (1) alcohol abuse, drug abuse, and mental illness (ADM) treatment facilities, and (2) general health facilities. Within each of these major categories, specific treatment facilities were classified as either hospital-based or other facilities and services. Within each of these four classes, more specific types of settings were next identified. The categories and types of health care treatment settings used in this study are based on those used by the National Center for Health Statistics (NCHS) and the National Institute of Mental Health (NIMH), both of which regularly publish utilization data for a wide spectrum of health care treatment settings.

The second step in developing these estimates involved obtaining expenditure data for each of the selected settings. National expenditure data for a variety of categories and settings are annually collected and published by NCHS. Expenditure data on specialty mental health settings (including alcohol abuse and drug abuse treatment) are collected each year by NIMH, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the National Institute on Drug Abuse (NIDA). Data on expenditures for each of the other settings are also readily available.

The third step in developing estimates of treatment costs was to develop a list of illnesses or diagnostic categories which are caused by an ADM problem and the extent of the causal relationship for each. As shown in exhibit 4-1, these categories may be conveniently organized into four groups: (1) ADM treatment in ADM facilities, (2) ADM treatment in general health facilities, (3) other illnesses caused by ADM, and (4) injury caused by ADM.

A variety of sources was used to estimate the extent of the causal relationship between the ADM problem and specific illnesses. In the case of treatment for the specific ADM problem (i.e., alcoholism, drug abuse, or mental illness), 100 percent of the treatment costs were, of course, allocated to the costs of ADM. For other illnesses related to the ADM disorders, the magnitude and direction of the causal effect is often unknown or poorly established. Of the three ADM components the best information on related illness exists for alcohol abuse and alcoholism. The Third Special Report to the U.S. Congress on Alcohol and Health (Noble 1978) provides a summary of the biomedical consequences of alcohol use and abuse, effects of alcohol on the fetus, and alcohol-

## Exhibit 4-1

Completeness of ADM Cost Estimates by Category

| Category                                   | Alcohol Abuse | Drug Abuse | Mental Illness |
|--------------------------------------------|---------------|------------|----------------|
| Core Costs                                 |               |            |                |
| Direct                                     |               |            |                |
| Treatment                                  |               |            |                |
| ADM treatment in ADM facilities            | C             | C          | C              |
| ADM treatment in general health facilities | C             | C          | C              |
| Other illness caused by ADM                | I             | N          | N              |
| Injury caused by ADM                       | I             | N          | N              |
| Support                                    |               |            |                |
| ADM treatment                              | C             | C          | C              |
| Other illness/injury                       | I             | N          | N              |
| Indirect                                   |               |            |                |
| Mortality                                  |               |            |                |
| Death due to ADM disorder                  | I             | I          | I              |
| Death due to ADM-caused illness            | I             | N          | N              |
| Death due to ADM-caused injury             |               |            |                |
| Morbidity                                  |               |            |                |
| Reduced productivity                       |               |            |                |
| Current employment                         | C             | I          | I              |
| Future employment                          | N             | N          | N              |
| Lost employment                            |               |            |                |
| Disability due to ADM disorder             | I             | I          | C              |
| Disability due to ADM-caused illness       | I             | N          | N              |
| Disability due to ADM-caused injury        | I             | N          | N              |
| Other Related Costs                        |               |            |                |
| Direct                                     |               |            |                |
| Social welfare administration              | C             | C          | C              |
| Criminal justice system                    | C             | C          | N              |
| Motor vehicle crashes                      | C             | N          | -              |
| Other property damage                      | C             | C          | N              |
| Other                                      | C             | C          | N              |
| Indirect                                   |               |            |                |
| Noninjury time loss                        | I             | N          | -              |
| Incarceration                              | C             | C          | N              |
| Crime career                               | -             | C          | -              |

Legend: C = relatively complete estimate  
 I = incomplete estimate  
 N = not estimated due to data unavailability  
 - = not relevant



related accidents. Although this report summarizes the information on the effects of alcohol on the physiologic and biochemical system and the increased risk of illness and death, little quantitative information is provided. The exception is for accidents, where the results of a number of studies were summarized by Aarens et al. (1977) and the ranges of the involvement of alcohol in various types of accidents were presented (in percentages).

Information on illnesses caused by drug abuse is limited. Apparently, the only known related illnesses are trauma and side effects and adverse reaction to drugs. However, no reliable data on the extent of this relationship were located during this study. Therefore, these categories were dropped from further consideration.

Eastwood and Trevelyan (1972) found evidence that there is a positive association between physical and psychiatric disorders. However, they suggested the appropriate model may be of many having a generalized psychophysical propensity to disease rather than one which seeks a cause and effect relationship. If this psychophysical propensity model is valid, then it is inappropriate to attribute other illnesses to mental disorders. More information is needed to establish causal relationships if, in fact, there is a causal relationship. For these reasons, the costs of treatment for mental illness-related illnesses and trauma were excluded from further consideration in this study.

The final step involved estimating the utilization of health care services and goods to treat ADM disorders, a task that is more difficult than simply estimating the total value of goods and services provided in each setting. To accomplish this final task, it was necessary to estimate the proportions of goods and services within each health care treatment setting which are used to treat specific ADM disorders. The health care treatment sector generally maintains detailed data on the utilization of goods and services by diagnosis or type of treatment episode. Typical unit of treatment measures include days of care in inpatient settings and the number of visits or periods of treatment for outpatient care facilities. The key to allocating these goods and services to the ADM disorders lies in the diagnosis of illness which is attributed to each episode of health care treatment. This was generally done by using the International Classification of Diseases Adapted (ICDA) system (U.S. DHEW, NCHS 1968). The proportionate utilization of health care goods and services to treat ADM disorders has been used to allocate expenditures within specific treatment settings to these ADM disorders. In addition, expenditures for non-ADM disorders have been included to the extent that these disorders can be shown to be caused by ADM problems.

While total expenditure data are available for each of this study's settings, utilization data by diagnosis are not always readily available. Where this happens, this study has allocated expenditures between



diseases based on the utilization factor found in similar health care treatment settings.

The strengths of the approach outlined above are: (1) it is consistent with the approach used in studies on the cost of all illness, and (2) it is the approach recommended in the recently published Guidelines document. This approach also uses sources of data for expenditures and utilization which have been used in cost-of-illness studies by Rice (1966), Cooper and Rice (1976), and Paringer and Berk (1977). In each of these studies, total treatment expenditures were estimated by setting and then allocated across illnesses within each setting. However, these prior studies did not present their utilization data by diagnosis in sufficient detail to allow estimates for the various ADM disorders to be broken out. This study of the costs of ADM has taken the prior work as its basis in each sector and developed estimates for the specific ADM disorders. Thus, these estimates are comparable with prior estimates made for the costs of all illness.

#### IV. CORE DIRECT COSTS - SUPPORT

There are expenditures for health care goods and services which are not provided directly to ill persons. These goods and services do, however, facilitate the further provision of treatment services to ill persons and may be termed expenditures for the support of treatment. The types of expenditures which play this support role include research, education and training, construction of health care facilities, and administration of insurance plans.

National expenditures for research, construction, and administration of insurance plans are collected and published along with data on health care treatment expenditures by the Health Care Financing Administration (Gibson 1979). Education and training expenditures have also been obtained from a study performed for the National Academy of Sciences (1974).

The nature of many of these support services is such that they form part of the infrastructure for the entire health care treatment sector of the economy. As infrastructure expenditures, support services may ultimately be used to provide treatment for any one of many different illnesses. A hospital or clinic may be used for general treatment or as a specialty facility. Furthermore, it may change its orientation at any time. Similarly, health personnel may provide treatment to persons with many different illnesses even if they develop specialized skills or work in a specialty facility. In addition, health research may be focused on a specific illness or illness in general ("basic" research).

Such conceptual difficulties led Paringer and Berk (1977) to not allocate support costs to disease categories. However, because this study has a greater focus on disease categories, it has allocated support costs among the different ADM disorders. It has done so by assuming that the proportion of these support expenditures attributable to an ADM disorder is the same as the proportion of total treatment goods and services attributable to that ADM disorder.

#### V. CORE INDIRECT COSTS - MORTALITY

In addition to consuming health care resources, the ADM disorders exact a cost in terms of morbidity and mortality. Thousands of persons die and millions are incapacitated either temporarily or permanently each year because of studies by Rice (1966), Cooper and Rice (1976) and Paringer and Berk (1977) for all illness and are featured prominently in the cost-of-illness framework outlined in the Guidelines document.

While it is one thing to assert that ADM disorders cause a great deal of death and disability, it is quite another to measure that death and disability and to express those losses in terms that can be compared with the level of resources consumed for health care treatment for ADM disorders. Yet this is precisely what must be done in preparing estimates of the economic costs of ADM disorders. The challenge is to express the ADM-caused death and disability as a dollar value so that the costs of these disorders may be compared with each other, with the value of the treatment services provided, and with these costs for other illnesses.

This section describes how a value has been estimated for the deaths caused by ADM disorders in 1977. The approach used is similar to the approaches used in the earlier studies mentioned above. It first estimates the number of lives lost due to ADM problems in a particular year. The human capital approach is then used to place a dollar value on lost future productivity due to ADM - caused death. The underlying assumption of the human capital approach is that present and future productive time losses by a person due to an ADM-related illness should be valued at a rate commensurate with how the national economy would value the individual's probable productive activity. Market work and housekeeping are both productive activities. Thus, the death of an individual who could have been expected to perform any market work or housekeeping constitutes an economic loss.

Although the human capital approach has been criticized on various conceptual grounds, the primary alternative, the willingness-to-pay approach, has not yet been able to be effectively implemented in cost-of-illness studies. The human capital approach to valuing human life is well defined, generally understood, and in widespread use. It has been used in most of the major cost-of-illness studies, including Rice (1966), Cooper and Rice (1976), and Paringer and Berk (1977).

Accordingly, the Guidelines document recommends that the human capital be used in cost-of-illness studies to estimate the value of mortality losses.

The economic cost of mortality attributed to ADM disorders is calculated by estimating the number of deaths due to ADM disorders in a particular year and assigning a value to each death. The basic data to carry out this procedure have been obtained from the NCHS (U.S. DHEW, NCHS no date). Its Vital Statistics series on mortality lists all deaths recorded in the nation during a calendar year by age and sex of the victim as well as by the primary reason for death as coded by ICDA classification. This study has also obtained estimates from the NCHS on the estimated present discounted value of lifetime productivity of persons by age and sex, using the human capital approach. These values are combined with the mortality data to estimate the economic costs of deaths caused by ADM disorders.

Computationally, the methodology involves determining a priori the diagnostic reasons for death which are causally related to ADM disorders. Appendix A contains a list of these reasons by ICDA diagnostic code. This list does not include all illness for which ADM causality has been demonstrated to date, merely those for which it has been possible to obtain some estimate of the proportion of deaths which can be attributed to ADM. For some illnesses such as trauma and gastrointestinal cancer which may have multiple causes it is difficult to determine what portion of cases are actually due to ADM disorders. Therefore, whenever the proportionate size of the causal relationship between illness and ADM disorder is unknown, this study follows the very conservative approach of assuming no causal relationship.

As indicated above, this study uses the human capital approach once the number of mortalities attributable to ADM disorders has been identified. This approach calculates the present discounted value of expected lifetime productivity for individuals of specific age and sex groups. For each age and sex group a number of factors are calculated: average full-time equivalent earnings, value of average full-time equivalent housekeeping services, value of housekeeping services if employed, labor force participation rates, average supplemental wages, and age/sex cohort survival rates. These factors are all estimated at a point in time, and the calculations assume that individuals will experience these rates over the remainder of their expected lifetime. Productivity rates are assumed to increase at an annual rate of 2 percent throughout the remainder of their expected life. The results are presented in real terms, with the effects of future inflationary increases in wage rates excluded from the present discounted value calculations.

As indicated in earlier sections of this report, a general consensus on the appropriate discount rate to be used in estimating these present values has not been developed.



Therefore, as is recommended in the Guidelines document, our estimates are presented for three separate discount rates--21, 6 and 10 percent. The 6 percent rate represents what many individuals think is the real long-term social discount rate in the U.S., and is consistent with the assumption used in several prior cost-of-illness studies. The choice of the 21 and 10 percent rates was made to provide a reasonable range of alternative estimates of these indirect costs. As shown in the results presented in the following chapter, the estimates of indirect costs are fairly sensitive to the assumed value of the discount rate. Therefore, care must be taken to specify the assumed value of the discount rate in interpreting the resulting indirect cost estimates.

## VI. CORE INDIRECT COSTS - MORBIDITY

Losses to society of potential productivity occur because ADM disorders can be highly disruptive of normal life patterns. Cost-of-illness studies traditionally estimate the morbidity which is associated with an illness or disease. These studies estimate the number of hours, days, weeks, and years that individuals are prevented from participating in productive activities because of the illness. The time lost from productive activities is then valued at the potential productive level of the individual. This approach is almost universally used and has been recommended in the Guidelines document.

The most straightforward methodology for calculating these costs is to estimate the amount of time lost from market and household activities and to attribute a value to that time. This procedure has been used in this study. However, the estimates are more difficult to make for ADM disorders than for other illnesses because ADM disorders can cause other illnesses and problems and because the social and legal stigmas attached to ADM disorders discourage full acknowledgement of the true impact of ADM disorders on these other illnesses. These difficulties require that the estimation of productivity losses be conducted through a series of indirect procedures. As a result, estimates of lost productivity due to morbidity tend to be less precise than those for other categories of economic costs to society.

Morbidity resulting from ADM problems causes persons to lose productive time from their endeavors. Any time which is taken away from market or household responsibilities (which these individuals would ordinarily carry out) because of an ADM problem is a loss to society. There are several different avenues through which it is believed that ADM problems cause lost productivity. These avenues include health problems, absenteeism and tardiness, time spent in ADM treatment facilities, lowered quantity or quality of output, incarceration and crim careers.



Health problems from ADM can be manifest in total (chronic) work and withdrawal from the workforce (institutionalized or not), in short-term (acute) illness and disability, or in excessive work loss due to ADM-caused illness (absenteeism and tardiness). In addition to lost time, ADM problems may reduce the productivity of the ADM population which is engaged in market or household activities. This is reflected in lower productivity for this group on the average than for the general population with similar sociodemographic characteristics. In our cost framework, the time an individual is incarcerated and the time spent in crime careers and thus lost from productive activities is designated as an other related indirect cost; procedures for estimating this component are detailed in the concluding section of this chapter.

The key to operationalizing this approach is to identify persons who experience lowered productivity due to ADM-related reasons. These reasons have been specified above, although they can involve greater detail in such areas as health-related problems. In theory the productivity losses can be calculated and summarized for reduced on-the-job productivity, lost productive time, and lost employment opportunities. However, data limitations precluded us from developing separate estimates of productivity losses for reduced on-the-job productivity and lost productive time. As shown in exhibit 4-1, these morbidity losses are estimated as a single category--reduced productivity. Therefore, our estimates are presented for two major categories: (1) reduced productivity and (2) lost employment.

In developing the estimates it is first necessary to estimate the number of persons with a given ADM problem who have a specific reason for losing productivity. To facilitate use of productivity data, these estimates are made separately for a series of age/sex cohorts. Then, the average annual loss of time per person must be obtained. Multiplication of these two numbers defines the total lost productive time in a year for this group of people. This lost productive time is valued at the wage rate of the general population in the given age/sex cohort, with the results summed across age/sex cohorts.

Next, it is necessary to estimate the proportion of the lost productivity that is caused by the ADM problem. In some cases (e.g., reductions in on-the-job productivity), available data and information are not as clear cut. As discussed in detail in appendix A, in these cases we have based our estimates on the best available information from prior studies. Furthermore, we have consistently selected conservative assumptions, with the result that the cost estimates presented in this report underestimate the true economic cost to society of these ADM problems.

As outlined in exhibit 4-1, costs of reduced productivity on the job may occur for both current (1977) employment and future employment. As discussed in more detail in chapter 7 of this report, these future productivity losses may occur because of events such as time lost from

schooling or premature infant deaths due to an ADM problem. However, there are no data available for developing reliable estimates of these productivity losses for future employment and they have therefore been excluded from our study.

The first step in estimating the costs of productivity losses due to alcohol abuse for currently employed individuals was to determine the number of individuals suffering these losses. Previous studies have used a variety of definitions and concepts to estimate this number. In many cases, it is difficult to develop precise estimates of the number of individuals who suffer productivity losses. Based on a review of a number of previous studies, we decided to use the term "problem drinkers" in defining this set of individuals, with the term referring to alcohol abusers who are either alcoholics or persons with drinking problems. A prevalence estimate that 10 percent of the labor force can be classified as problem drinkers has been widely quoted in several official NIAA documents and in other literature on alcohol abuse problems in the labor force. Applying Cahalan's (1970) data on the prevalence of drinking problems across several age and sex categories in the general population, we have estimated that there were about 7.8 million male (14 percent prevalence) and 1.2 million female (3.2 percent prevalence) problem drinkers employed in 1977. This amounts to a total of 9.0 problem drinkers or 9.7 percent of the employed population. In addition, these prevalence rates suggest that .07 percent of housewives were problem drinkers in 1977.

Similarly, reliable data on the extent of reduction in productivity experienced by these problem drinkers was difficult to obtain. After reviewing a number of sources, it was decided that Berry and Boland's estimate of a 14.0 percent reduction was the best available. This value was used to estimate the value of reduced productivity for individuals currently engaged in productive activities. Further detail on the development of these estimates is provided in Appendix A.

Our attempts to estimate the value of reduced productivity due to drug abuse were characterized by a paucity of available, reliable data. Although several excellent studies of the prevalence of drug abuse in the general population are available, we were unable to find any reliable information on the effects of this drug abuse on the work performance of the employed population.

However, we were able to estimate the value of reduced productivity for one population segment--young males--using data from a worldwide survey of alcohol and drug abuse in the U.S. military (Burt and Biegel 1980). Using the results of this study and other information on the prevalence of drug abuse in the general population, we estimated that about 17 percent of employed young males experience drug-related work impairment. In the absence of specific information, we estimated that the degree of work impairment was identical to that for problem drinkers - a 14.0 percent reduction in productivity. However, lack of adequate

data prevented us from estimating the value of reduced productivity due to drug abuse among other population segments.

Individuals who experience a partial work disability due to a mental disorder were identified as a source of reduced productivity for mental illness. Using information from the Survey of Income and Education (U.S. DOC, BOC 1978) we estimated the magnitude of these costs for individuals with chronic nervous disorders and severe emotional disorders. As in the case of productivity losses due to drug abuse, we believe that these estimates are incomplete, due in large part to the social stigma associated with mental illness and the probable under-reporting of the prevalence of these problems in general population surveys such as the Survey of Income and Education.

As indicated in exhibit 4-1, the costs of lost employment can occur from a disability due to an ADM disorder or from an ADM-caused illness or injury. Our estimates of the value of lost employment from the ADM disorders are relatively complete in the case of mental illness, but are somewhat incomplete for alcohol abuse and drug abuse. In the case of ADM-caused illness or injury, we were able to obtain sufficient data with which to estimate some of these costs for alcohol abuse. As indicated in this exhibit, insufficient data were available for estimating this cost component for drug and mental illness.

Data were available to estimate three major sources of costs of lost employment caused by alcohol abuse: (1) residential treatment, (2) trauma (accidents and violence), and (3) long-term disability. In terms of the typology of costs presented in exhibit 4-1, the indirect costs of residential treatment are classified as the costs of lost employment due to alcohol abuse, while the indirect costs of trauma and long-term disability are classified as costs of lost employment due to alcohol abuse-caused illness or injury.

The only problem for which data were available to estimate the costs of lost employment caused by drug abuse was time spent in residential treatment. Two major sources of lost employment were included in the morbidity costs of mental illness: (1) complete work disability, and (2) institutionalization. We were able to estimate costs of lost employment for separate reasons for each of these categories. In the case of complete work disability costs were estimated for chronic nervous disorders and severe emotional disorders. Costs for two separate types of institutionalization were incorporated into our estimates: nursing homes and psychiatric hospitals.

The basic approach used to estimate these costs was to estimate the amount of lost employment, measured in units such as person-days, and then to estimate the value of this lost employment with the market and nonmarket productivity data used to develop estimates of other indirect cost elements.



In some cases (e.g., time spent in residential treatment), 100 percent of the costs of employment losses were attributed to the appropriate ADM problem. In others (e.g., complete or partial work disability), estimates of the portion of the lost employment due to the relevant ADM problem were made using data from a variety of sources. In particular, it should be noted that this approach provides estimates of the costs of lost employment due to ADM treatment that are consistent with the direct core treatment costs and with standard information included in NIAAA, NIDA, and NIMH treatment utilization reporting systems.

## VII. OTHER RELATED COSTS - DIRECT

### A. Introduction

As indicated in chapter 2 of this report, a number of specific cost elements are included within the general category of other related direct costs within the overall cost framework employed for this study. Examples of these cost elements are provided in exhibit 2-1 of this report.

Previous studies of the costs to society of ADM problems have incorporated a number of specific cost elements in this category. As presented in the previous chapter, the most relevant cost elements for each of the three ADM problems have been:

| <u>Alcohol Abuse</u>       | <u>Drug Abuse</u>       | <u>Mental Illness</u> |
|----------------------------|-------------------------|-----------------------|
| Criminal justice system    | Criminal justice system | Social welfare system |
| Social welfare system      | Social welfare system   |                       |
| Motor vehicle crash losses | Drug traffic control    |                       |
| Fire losses                |                         |                       |
| Fire protection            |                         |                       |
| Highway safety             |                         |                       |

A brief summary of the procedures used to estimate each of these components is as follows

### B. Criminal Justice System

In estimating criminal justice system costs associated with alcohol and drug abuse, we have developed estimates for each of the three major components of the criminal justice system--law enforcement, the judicial process, and corrections. Using the general taxonomy of the Uniform Crime Reports (U.S. DOJ, FBI 1978), we first developed a list of the major crime categories that previous studies indicated could be caused by or associated with alcohol or drug abuse. A listing of these crimes is provided in exhibit 4-2.



We next distributed the costs of the three major components of the criminal justice system to each of these crime categories, using appropriate measures of criminal justice system activity. For example, law enforcement costs were distributed in proportion to the number of arrests for each offense; and judicial costs were distributed in proportion to the number of cases charged for each offense. Corrections costs were separated into state, Federal, and local components and distributed according to the number of incarcerations in state and Federal prisons and according to the number of persons charged in the case of local jail costs.

This procedure suffers from the implicit assumption that the average cost per unit activity (e.g., arrest, trial) is the same for each of the crime categories. However, in the absence of more detailed data on resource utilization, this approach is necessary and appropriate. The approach does take into account the varying levels of intensity of resource utilization that are experienced as the set of cases moves through the criminal justice system. This occurs because the different factors (e.g., arrests, cases tried, incarceration rates) are used to allocate costs of the three components of the system.

Once the portion of criminal justice system costs required to process individuals committing each type of crime has been determined, the next step is to estimate the portion of these costs that are caused by alcohol or drug abuse.

There are several sources of available data for estimating these causal factors. In the case of alcohol abuse, Berry and Boland reviewed a number of studies of these causal factors and devise a series of single estimates based on these studies. In addition, data useful for this purpose are available from a national survey of approximately 10,000 inmates in state correctional institutions (U.S. DOJ, LEAA 1976). During this survey, inmates were asked about their use of alcohol at the time of the offense that resulted in their incarceration. Both published and unpublished data from this survey have been used to estimate the magnitude of these causal relationships.

Each of the above sources provides information on the number of crimes "associated with" alcohol use or abuse; none provides definitive information on the proportion of crimes "caused by" alcohol abuse. In addition, a recently completed National Institute of Justice (NIJ)-sponsored project conducted by the Research Triangle Institute indicated that definitive information on the percentage of various types of crimes caused by alcohol abuse simply does not exist (Collins forthcoming). Therefore, our approach to implementing the event-specific methodology here has been to confer with both the NIJ-sponsored project's advisory panel of nationally recognized experts and RTI staff participating in the project to develop

## Exhibit 4-2

Crimes Associated With Alcohol Abuse and Drug Abuse

| <u>Crime Category</u>             | <u>Alcohol Abuse</u> | <u>Drug Abuse</u> |
|-----------------------------------|----------------------|-------------------|
| <u>Violent Crimes</u>             |                      |                   |
| Homicide                          | X                    |                   |
| Forcible rape*                    | X                    |                   |
| Aggravated assault                | X                    |                   |
| <u>Property Crimes</u>            |                      |                   |
| Robbery                           | X                    | X                 |
| Burglary                          | X                    | X                 |
| Larceny                           | X                    | X                 |
| Auto Theft                        | X                    | X                 |
| Receiving or selling stolen goods |                      | X                 |
| <u>Other</u>                      |                      |                   |
| Prostitution                      |                      | X                 |
| Drug abuse violations             |                      | X                 |
| Driving under influence           | X                    |                   |
| Liquor law violations             | X                    |                   |
| Public drunkenness                | X                    |                   |

\* Forcible rape and aggravated assault are combined under felonious assault in later analyses.

reasonable estimates of the portion of crimes caused by alcohol abuse. Although this procedure does not provide us with an empirically developed estimate, it does provide us with current state-of-the-art knowledge with respect to "expert opinion" of this causality factor.

A similar approach was used to estimate the causal factors for crimes associated with drug abuse. The principal empirical data source for drug related crime was information from LEAA's survey of inmates (U.S. DOJ, LEAA 1976). This survey includes tabulations of the proportions of inmates who were regular drug users at the time they committed the crime for which they were incarcerated. In addition, the survey provides information on the distribution of incarcerations in state prisons for all types of offenses, information which can be readily used to estimate corrections costs.

A supplemental source of information for these factors is data from the Treatment Outcome Prospective Study (TOPS) currently being conducted by NIDA by the Research Triangle Institute (Rachal et al. 1981). The project collects detailed information on drug use, employment experiences, criminal behavior, and other factors from a sample of about 3500 clients in drug treatment programs in six cities around the nation. The information on criminal activity includes types and frequencies of crimes committed during various time periods prior to entering treatment.

Preliminary analyses of the TOPS data have enabled us to assess the relationships between use of various licit and illicit drugs and different types of criminal activities. The major drug categories used have been opiates and nonopiates. As in the case of alcohol abuse, the TOPS staff have been asked to indicate their best estimates of the causal relationship between drug abuse and crime. These, together with estimates from previous studies, have been used to develop current state-of-the-art estimates of the magnitude of this causal factor.

#### Social Welfare System

Many individuals who abuse alcohol or drugs or who suffer from mental illness also receive cash transfer payments from various programs in the nation's social welfare system. As indicated in chapter 2 of this report, these payments do not represent costs to society in our framework since they are merely transfers from one group in society to another. However, the management and administration activities of these programs do consume resources and are properly included as costs to society within our framework.

Our approach to estimating these costs was to first identify the relevant social welfare programs in which individuals with ADM problems participate. Based on previous ADM cost-of-illness studies and an analysis of income data from studies of individuals with these problems (e.g., unpublished data from the TOPS study), the following were identified as the pertinent programs: Age, Survivors, Disability and Health Insurance (OASDHI) Program administered by the Social Security Administration; unemployment insurance; railroad temporary disability insurance; state temporary disability insurance; worker's compensation; public assistance, primarily Aid to Families with Dependent Children; Supplemental Security Income; Food Stamps; Veteran's compensation and benefits; and vocational rehabilitation. The next step was to identify the amount of management and administrative costs for each program and the proportions of client caseloads due to each of the three ADM disorders. Finally, the ADM cost to society for each of these programs was calculated by determining the proportions of administrative and management expenses required to provide services to clients with ADM disorders.

#### Motor Vehicle Crash Losses

As discussed in the Berry and Boland report, there are a number of specific elements present in estimating the costs to society of motor vehicle accidents. According to Faigin (1976) these include: lost production/consumption and medical, funeral, legal and court, insurance administration, accident investigation, second party, vehicle damage, and traffic delay costs.



Of these elements, production/consumption losses are considered indirect core costs within our framework and a summary of procedures for their estimation has been included in an earlier section of this chapter. Similarly, procedures for estimating medical (direct core costs) and losses to others (other related indirect costs) are discussed in the appropriate sections of this chapter.

The event-specific methodology was appropriate for estimating the magnitudes of the remaining cost elements. Barry and Boland and Jones and Joscelyn (1978) reviewed an extensive literature to determine the portions of these costs that were caused by alcohol abuse, using as their causal factor the percent of drivers with different levels (0.05 and 0.10 percent) of blood alcohol concentration (BAC) at the time of the accident. During this study, conversations with the staff of the Office of Program Evaluation of the National Highway Traffic Safety Administration (NHTSA) indicated that no additional studies of these costs had been undertaken since the Faigin study. Therefore, the basic approach used by Berry and Boland and Faigin for estimating the costs to society of motor vehicle crashes is still appropriate for the event-specific methodology and was thus used in this study.

Additional data requirements to estimate the costs to society of motor vehicle accidents in 1977 include the number of fatalities, injuries (reported by severity level), and vehicle accidents involving property damage only. These data are available from the National Crash Severity Study (Ricci 1980) in current operation by NHTSS and from the National Safety Council (1979). Values of these data for 1977 were used with the other relevant data from the Faigin report (1976) to develop estimates of these cost components.

Although it is hypothesized that drug abuse also may lead to an increased number of motor vehicle accidents, reliable data with which to estimate the value of this cost element do not yet exist. Therefore, these costs were excluded from our study.

#### E Other

The remaining cost elements for alcohol abuse-fire losses, fire protection, and highway safety-represent relatively small portions of the total costs to society of alcohol abuse. For this reason and because the Berry and Boland estimates were developed using the event-specific methodology, we have applied their estimated causal factors to the relevant expenditure data for 1977 in order to develop our estimates of these cost elements.

In the case of drug abuse, expenditures for law enforcement expenditures for drug traffic control have not been included in the earlier studies of criminal justice system expenditures. However, this study was able to obtain data from appropriate documents to estimate these cost elements for 1977.



### VIII. OTHER RELATED COSTS - INDIRECT

Estimates of three major categories of other related indirect costs have been developed for the study. These are: (1) the costs of lost work time experienced by individuals other than the victims in alcohol-caused accidents and by other persons delayed in traffic because of alcohol-caused accidents, (2) the lost productivity from incarceration brought on by either alcohol or drug abuse, and (3) the costs of crime careers caused by drug abuse. Consistent with our estimates of the other costs of motor vehicle crashes, the Faigin (1976) methodology was used to estimate costs in the first category. Incarceration costs were estimated by first calculating the number of persons incarcerated due to alcohol- and drug-related offenses, estimating the amount of time of incarceration for the crime, and attaching an estimate of the value of this time spent incarcerated. The data and assumptions used for these calculations were consistent with those used to develop estimates of other cost components (e.g., criminal justice system costs) for this study.

One of the major sources of other related indirect costs of ADM problems is the opportunity costs of the time of individuals who are engaged in crime careers as a result of drug abuse. We have developed estimates of these losses based on the hypothesis that serious drug abuse can cause a person to forego normal productive activities in favor of selling drugs, committing income-generating crimes, or engaging in other illicit activities. These costs were estimated in a relatively straightforward fashion. First, the prevalence of heroin abuse, heroin addiction, and dysfunctional abuse of other drugs was estimated. Second, estimates were made of the socioeconomic and demographic characteristics of these populations. Third, the portions of these populations which have been caused to move into illicit activities because of their drug abuse problem were specified. Finally, this lost productive time was assigned a potential market value.

Previous studies of the costs to society of drug abuse have resulted in a wide range of estimates of this cost component. This variation is due primarily to uncertainty in estimates of both the prevalence of drug abuse, particularly for opiate abuse, and the portions of illicit activities that are caused by drug abuse. For our estimates, we used data in official NIDA and ADAMHA publications as our source of prevalence estimates. Estimates of the causal relationships between drug abuse and illicit activities were obtained from special analyses of data on the drug treatment population who are participating in the NIDA-sponsored Treatment Outcome Prospective Study (Rachal et al. 1981). This study, which is currently in progress, provided detailed information on the treatment population's employment history and illicit activities for one year prior to admission and during treatment. Further data on socioeconomic characteristics of these individuals and drug of choice are also available.

Among the individuals admitted to treatment in the TOPS study in 1979, illicit activities were the major occupation for 54 percent of the male opiate abusers, 39 percent of the female opiate abusers, 46 percent of the male nonopiate abusers, and 29 percent of the female nonopiate abusers. These percentages were applied to the appropriate general prevalence populations to estimate the total numbers of drug abuser engaged in illicit activities. Details are provided in appendix A.

References - Chapter 4

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## Chapter 5

### Results

#### I. OVERVIEW

Application of the ADM illness-specific methodology summarized in chapter 4 produced an estimated economic cost to society of ADM problems of approximately \$106 billion in 1977. The estimated for each ADM disorder ranged from a high of \$49.4 billion for alcohol abuse to \$16.4 billion for drug abuse. The cost to society of mental illness in 1977 was \$40.3 billion. A summary of these costs is presented in table 5-1. Details of each of the major cost components are presented in the remaining sections of this chapter.

As was mentioned in chapter 4, this study could identify either no data or only incomplete data for many categories of cost. In these instances, either no cost estimates or only partial cost estimates were developed. Thus, the estimated economic costs to society presented here tend to be very conservative. On the other hand, there were instances where the association between ADM disorders and various economic costs could not be fully adjusted to reflect causality. To the extent that this occurred, the estimates may be liberal. However, it is the authors' belief that, overall, the estimates lean strongly in the conservative direction.

In addition, data availability was uneven across the three ADM problems, with the greatest amount of available data pertaining to alcohol abuse. Thus, although particular types of costs can be compared where adequate data are available, it would not be valid to compare this study's estimates of the total economic costs to society of each of the three ADM disorders.

#### II. CORE DIRECT COSTS - TREATMENT

As indicated in chapter 4, treatment for ADM problems can occur in a variety of settings. The categories of settings for which treatment costs are estimated for this effort include ADM facilities, both hospital-based and other and general health facilities, both hospital-based and other. A summary of the treatment costs in various settings within each of these major categories is presented in table 5-2.

As shown in the table, direct treatment costs range from \$1.1 billion for drug abuse to \$15.8 billion for mental illness. Treatment costs for alcohol abuse were estimated at \$5.6 billion in 1977. The distribution of treatment costs across the categories of settings was different for each of the three ADM problems. For alcohol and drug abuse, the higher treatment costs were found in general health facilities, primarily non-Federal community hospitals.

However, for mental illness the highest treatment costs were found in ADM specialty facilities, primarily state and county psychiatric hospitals.

In the case of treatment for alcohol abuse, were able to estimate costs for various types of illnesses. As shown in table 5-2, \$2.7 billion, or 48.0 percent of the treatment costs, were used to treat alcohol abuse-specific illness (e.g.: alcoholism, alcohol psychosis, alcoholic cirrhosis). Treatment for alcohol abuse-related trauma constituted \$1.2 billion, or 21.5 percent of the total, while the remaining \$1.7 billion or 30.4 percent (con't on page 5-2)

Table 5-1

| Costs to Society of Alcohol Abuse, Drug Abuse and Mental Illness, 1977 |                              |                              |                              |                  |
|------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|------------------|
|                                                                        | (\$ in millions)             | Drug Abuse                   | Mental Illness               | Total            |
| Core Costs .....                                                       | <u>\$43,161</u>              | <u>\$5,174</u>               | <u>\$39,739</u>              | <u>\$ 88,074</u> |
| Direct.....                                                            | <u>6,372</u>                 | <u>1,290</u>                 | <u>18,197</u>                | <u>25,859</u>    |
| Treatment.....                                                         | <u>5,637</u>                 | <u>1,078</u>                 | <u>15,761</u>                | <u>22,476</u>    |
| Support.....                                                           | <u>735</u>                   | <u>212</u>                   | <u>2,436</u>                 | <u>3,383</u>     |
| Indirect.....                                                          | <u>36,789</u>                | <u>3,884</u>                 | <u>21,542</u>                | <u>62,215</u>    |
| Morbidity <sup>a/</sup> .....                                          | <u>10,715</u>                | <u>831</u>                   | <u>5,926</u>                 | <u>17,472</u>    |
| Morbidity.....                                                         | <u>26,074</u>                | <u>3,053</u>                 | <u>15,616</u>                | <u>44,743</u>    |
| Reduced productivity..                                                 | <u>23,593</u>                | <u>2,330</u>                 | <u>1,646</u>                 | <u>28,069</u>    |
| Lost employment.....                                                   | <u>2,481</u>                 | <u>223</u>                   | <u>13,970</u>                | <u>16,674</u>    |
| Other Related Costs.....                                               | <u>6,213</u>                 | <u>11,213</u>                | <u>548</u>                   | <u>17,974</u>    |
| Direct.....                                                            | <u>4,441</u>                 | <u>4,776</u>                 | <u>548</u>                   | <u>9,765</u>     |
| Motor vehicles crashes                                                 | <u>1,782</u>                 | <u>*</u>                     | <u>-</u>                     | <u>1,782</u>     |
| Crime.....                                                             | <u>1,685</u>                 | <u>4,453</u>                 | <u>*</u>                     | <u>6,138</u>     |
| Public                                                                 | <u>1,479</u>                 | <u>3,347</u>                 | <u>*</u>                     | <u>4,826</u>     |
| Private                                                                | <u>191</u>                   | <u>1,033</u>                 | <u>*</u>                     | <u>1,224</u>     |
| Property loss/damage                                                   | <u>15</u>                    | <u>73</u>                    | <u>*</u>                     | <u>88</u>        |
| Social Welfare program                                                 | <u>142</u>                   | <u>12</u>                    | <u>548</u>                   | <u>702</u>       |
| Other.....                                                             | <u>832</u>                   | <u>311</u>                   | <u>*</u>                     | <u>1,143</u>     |
| Indirect.....                                                          | <u>1,772</u>                 | <u>6,437</u>                 | <u>*</u>                     | <u>8,209</u>     |
| Crime careers.....                                                     | <u>-</u>                     | <u>5,143</u>                 | <u>-</u>                     | <u>5,143</u>     |
| Incarceration.....                                                     | <u>1,418</u>                 | <u>1,294</u>                 | <u>*</u>                     | <u>2,712</u>     |
| Motor vehicle crashes....                                              | <u>354</u>                   | <u>*</u>                     | <u>-</u>                     | <u>354</u>       |
| Total.....                                                             | <u>\$49,374<sup>b/</sup></u> | <u>\$16,387<sup>b/</sup></u> | <u>\$40,287<sup>b/</sup></u> | <u>\$106,048</u> |

Totals may not add due to rounding.

\*Although costs are hypothesized to occur in this category, sufficient data are not available to develop a reliable estimate.

<sup>a/</sup> At 6 percent discount rate. As suggested by the PHS Guidelines document, the present value of lost future productivity due to premature mortality was also calculated using discount rates of 10 and 2½ percent. The use

(continuation of Table 5-1)

of a 10 percent rate decreases indirect costs by the following amounts: alcohol abuse--\$3,634 million; drug abuse--\$304 million; and mental illness \$2,022 million. The use of a 2½ percent rate increases indirect costs by the following amounts: alcohol abuse--\$7,164 million; drug abuse--\$602 million; and mental illness--\$3,820 million.

b/ The total costs to society for each of the three ADM disorders are not comparable, since the completeness of data available for each cost category varied significantly. For example, the estimate of reduced productivity is relatively complete for alcohol abuse, only partially complete for drug abuse, and incomplete for mental illness. Table 4-1 can be used to identify those categories of cost which are comparable across the three ADM disorders.

SOURCE: Research Triangle Institute.

of the treatment costs were used to treat various alcohol abuse-related illnesses. As shown in table 5-3, approximately \$608 million or 35 percent of the costs of treating alcohol abuse-related illnesses were used to treat illnesses of the endocrine system. Evidence on the relationship between specific physical diseases and drug abuse and mental disorders is not yet sufficiently developed to justify including an estimate here. However, it should be noted that many studies have found that those in treatment for mental disorders also use a disproportionately high level of medical care services.

### III. CORE DIRECT COSTS - SUPPORT

The support costs of providing ADM health care treatment in 1977 were approximately \$3.4 billion. These expenditures are for the infrastructure of the health care treatment sector. Activities financed by these expenditures do not include direct health care services. However, they do make treatment services possible. These expenditures include research, training and education, construction, and expenses for administration of health care insurance programs. ( see table 5-4)

Expenditures for alcohol abuse support services were estimated at \$7735 million in 1977. The largest component of this was for administration of insurance programs--\$289 million. The second largest component was for training and education of health care personnel, estimated at \$225 million. Finally, \$193 million was expended for construction and \$28 million for research.



5-3  
Table 5-2

ADM Expenditures by Setting, 1977  
(\$ in millions)

| Settings                                                          | Expenditures                         |                                           |                                       |                                        |               |                   | All<br>ADM | All<br>Illnesses |
|-------------------------------------------------------------------|--------------------------------------|-------------------------------------------|---------------------------------------|----------------------------------------|---------------|-------------------|------------|------------------|
|                                                                   | All<br>Alcohol<br>Abuse<br>Illnesses | Alcohol<br>Abuse<br>Specific<br>Illnesses | Alcohol<br>Abuse<br>Related<br>Trauma | Alcohol<br>Abuse<br>Related<br>Illness | Drug<br>Abuse | Mental<br>Illness |            |                  |
| ADM Facilities                                                    | 707                                  | 707                                       | -                                     | -                                      | 364           | 7,624             | 8,695      | 8,695            |
| Hospital-based                                                    | 306                                  | 306                                       | -                                     | -                                      | 51            | 4,747             | 5,104      | 5,104            |
| State and county psychiatric hospitals                            | 200                                  | 200                                       | -                                     | -                                      | 33            | 3,097             | 3,330      | 3,330            |
| Private psychiatric hospitals                                     | 34                                   | 14                                        | -                                     | -                                      | 6             | 524               | 563        | 563              |
| VA neuropsychiatric hospitals                                     | 29                                   | 29                                        | -                                     | -                                      | 5             | 454               | 488        | 488              |
| Non-federal general hospitals with separate psychiatric hospitals | 43                                   | 43                                        | -                                     | -                                      | 7             | 672               | 723        | 723              |
| Other ADM facilities and services                                 | 401                                  | 401                                       | -                                     | -                                      | 313           | 2,877             | 3,591      | 3,591            |
| Federally funded CMHCs                                            | 129                                  | 129                                       | -                                     | -                                      | 39            | 822               | 990        | 990              |
| Residential treatment centers for children                        | -                                    | -                                         | -                                     | -                                      | -             | 359               | 359        | 359              |
| Halfway houses                                                    | 37                                   | 37                                        | -                                     | -                                      | 12            | 42                | 91         | 91               |
| Multiservice mental health facilities                             | 8                                    | 8                                         | -                                     | -                                      | 1             | 127               | 136        | 136              |
| Other freestanding facilities                                     | 198                                  | 199                                       | -                                     | -                                      | 195           | 434               | 827        | 827              |
| ADM units in correctional facilities                              | 3                                    | 3                                         | -                                     | -                                      | 20            | -                 | 23         | 23               |
| Private practice psychiatrists                                    | 18                                   | 13                                        | -                                     | -                                      | 32            | 763               | 813        | 813              |
| Private Practice psychologists                                    | 8                                    | 5                                         | -                                     | -                                      | 14            | 330               | 352        | 352              |
| General health facilities                                         | 4,930                                | 2,001                                     | 1,217                                 | 1,711                                  | 714           | 8,137             | 13,781     | 139,010          |
| Hospital-based                                                    | 2,848                                | 1,285                                     | 628                                   | 935                                    | 432           | 2,655             | 5,935      | 57,864           |
| Non-federal community hospitals (excluding psychiatric units)     | 2,274                                | 880                                       | 586                                   | 808                                    | 363           | 1,557             | 4,194      | 52,230           |
| VA general hospitals and other facilities                         | 425                                  | 321                                       | 19                                    | 85                                     | 37            | 940               | 1,402      | 3,362            |
| Other federal facilities                                          | 149                                  | 84                                        | 23                                    | 42                                     | 32            | 158               | 330        | 2,272            |
| Other general health facilities and services                      | 2,082                                | 716                                       | 589                                   | 776                                    | 282           | 5,482             | 7,846      | 81,146           |
| Nursing homes                                                     | 108                                  | 63                                        | 40                                    | -                                      | -             | 2,225             | 2,333      | 13,364           |
| Private practice physicians                                       | 548                                  | 16                                        | 250                                   | 281                                    | 31            | 487               | 1,066      | 30,429           |
| Dentists                                                          | 443                                  | 195                                       | 93                                    | 155                                    | 82            | -                 | 525        | 11,650           |
| Other health professionals                                        | 133                                  | 62                                        | 27                                    | 44                                     | 12            | 111               | 250        | 3,345            |
| Drugs and drug sundries                                           | 525                                  | 232                                       | 110                                   | 183                                    | 97            | 1,643             | 2,265      | 13,810           |
| Other health services                                             | 222                                  | 98                                        | 47                                    | 77                                     | 41            | 695               | 958        | 5,844            |
| Volunteer services                                                | 103                                  | 45                                        | 22                                    | 36                                     | 19            | 321               | 443        | 2,700            |
| TOTAL                                                             | 5,627                                | 2,703                                     | 1,217                                 | 1,711                                  | 7,078         | 15,761            | 22,476     | 147,705          |



5-3  
Table 5-2

ADM Expenditures by Setting, 1977  
(\$ in millions)

| Settings                                                          | Expenditures                         |                                           |                                       |                                        |               |                   | All<br>ADM | All<br>Illnesses |
|-------------------------------------------------------------------|--------------------------------------|-------------------------------------------|---------------------------------------|----------------------------------------|---------------|-------------------|------------|------------------|
|                                                                   | All<br>Alcohol<br>Abuse<br>Illnesses | Alcohol<br>Abuse<br>Specific<br>Illnesses | Alcohol<br>Abuse<br>Related<br>Trauma | Alcohol<br>Abuse<br>Related<br>Illness | Drug<br>Abuse | Mental<br>Illness |            |                  |
| ADM Facilities                                                    | 707                                  | 707                                       | -                                     | -                                      | 364           | 7,624             | 8,695      | 8,695            |
| Hospital-based                                                    | 306                                  | 306                                       | -                                     | -                                      | 51            | 4,747             | 5,104      | 5,104            |
| State and county psychiatric hospitals                            | 200                                  | 200                                       | -                                     | -                                      | 33            | 3,097             | 3,330      | 3,330            |
| Private psychiatric hospitals                                     | 34                                   | 14                                        | -                                     | -                                      | 6             | 524               | 563        | 563              |
| VA neuropsychiatric hospitals                                     | 29                                   | 29                                        | -                                     | -                                      | 5             | 454               | 488        | 488              |
| Non-federal general hospitals with separate psychiatric hospitals | 43                                   | 43                                        | -                                     | -                                      | 7             | 672               | 723        | 723              |
| Other ADM facilities and services                                 | 401                                  | 401                                       | -                                     | -                                      | 313           | 2,877             | 3,591      | 3,591            |
| Federally funded CMHCs                                            | 129                                  | 129                                       | -                                     | -                                      | 39            | 822               | 990        | 990              |
| Residential treatment centers for children                        | -                                    | -                                         | -                                     | -                                      | -             | 359               | 359        | 359              |
| Halfway houses                                                    | 37                                   | 37                                        | -                                     | -                                      | 12            | 42                | 91         | 91               |
| Multiservice mental health facilities                             | 8                                    | 8                                         | -                                     | -                                      | 1             | 127               | 136        | 136              |
| Other freestanding facilities                                     | 198                                  | 199                                       | -                                     | -                                      | 195           | 434               | 827        | 827              |
| ADM units in correctional facilities                              | 3                                    | 3                                         | -                                     | -                                      | 20            | -                 | 23         | 23               |
| Private practice psychiatrists                                    | 18                                   | 13                                        | -                                     | -                                      | 32            | 763               | 813        | 813              |
| Private Practice psychologists                                    | 8                                    | 5                                         | -                                     | -                                      | 14            | 330               | 352        | 352              |
| General health facilities                                         | 4,930                                | 2,001                                     | 1,217                                 | 1,711                                  | 714           | 8,137             | 13,781     | 139,010          |
| Hospital-based                                                    | 2,848                                | 1,285                                     | 628                                   | 935                                    | 432           | 2,655             | 5,935      | 57,864           |
| Non-federal community hospitals (excluding psychiatric units)     | 2,274                                | 880                                       | 586                                   | 808                                    | 363           | 1,557             | 4,194      | 52,230           |
| VA general hospitals and other facilities                         | 425                                  | 321                                       | 19                                    | 85                                     | 37            | 940               | 1,402      | 3,362            |
| Other federal facilities                                          | 149                                  | 84                                        | 23                                    | 42                                     | 32            | 158               | 330        | 2,272            |
| Other general health facilities and services                      | 2,082                                | 716                                       | 589                                   | 776                                    | 282           | 5,482             | 7,846      | 81,146           |
| Nursing homes                                                     | 108                                  | 63                                        | 40                                    | -                                      | -             | 2,225             | 2,333      | 13,364           |
| Private practice physicians                                       | 548                                  | 16                                        | 250                                   | 281                                    | 31            | 487               | 1,066      | 30,429           |
| Dentists                                                          | 443                                  | 195                                       | 93                                    | 155                                    | 82            | -                 | 525        | 11,650           |
| Other health professionals                                        | 133                                  | 62                                        | 27                                    | 44                                     | 12            | 111               | 250        | 3,345            |
| Drugs and drug sundries                                           | 525                                  | 232                                       | 110                                   | 183                                    | 97            | 1,643             | 2,265      | 13,810           |
| Other health services                                             | 222                                  | 98                                        | 47                                    | 77                                     | 41            | 695               | 958        | 5,844            |
| Volunteer services                                                | 103                                  | 45                                        | 22                                    | 36                                     | 19            | 321               | 443        | 2,700            |
| TOTAL                                                             | 5,627                                | 2,703                                     | 1,217                                 | 1,711                                  | 7,078         | 15,761            | 22,476     | 147,705          |

Table 5-3

Estimated Direct Treatment Costs for Alcohol  
Abuse by Type of Illness - 1977  
(\$ in millions)

| Type of Illness                                         | Costs          |
|---------------------------------------------------------|----------------|
| Alcohol abuse-specific illness - specialty setting .... | <u>\$ 707</u>  |
| Alcohol abuse-specific illness - general setting .....  | <u>\$2,001</u> |
| Alcohol abuse-related illness - categories .....        | <u>\$1,711</u> |
| Gastrointestinal tract .....                            | 220            |
| Liver disease .....                                     | 181            |
| Nervous system .....                                    | 6              |
| Heart .....                                             | 17             |
| Endocrine system .....                                  | 608            |
| Nutritional deficiency .....                            | 108            |
| Cancer .....                                            | 171            |
| Mental disorder .....                                   | 293            |
| Infectious disease .....                                | 107            |
| Alcohol abuse-related trauma .....                      | <u>1,217</u>   |
| Total                                                   | <u>\$5,637</u> |

Totals may not add due to rounding.

SOURCE: Research Triangle Institute.

Table 5-4

Support Costs for ADM Health Care Provision, 1977  
(\$ in millions)

| Expenditure Category              | Total Health Expenditures | Share of Total Health Services and Supplies Due to |                      |                          | COSTS         |            |                |                   |
|-----------------------------------|---------------------------|----------------------------------------------------|----------------------|--------------------------|---------------|------------|----------------|-------------------|
|                                   |                           | Alcohol Abuse (percent)                            | Drug Abuse (percent) | Mental Illness (percent) | Alcohol Abuse | Drug Abuse | Mental Illness | All ADM Disorders |
| Research*                         | \$ 3,684                  | 0.77                                               | 2.08                 | 6.33                     | \$ 28.2       | \$ 76.6    | \$ 233.2       | \$ 338.0          |
| Training & education**            | 5,882                     | 3.82                                               | 0.73                 | 11.90                    | 224.7         | 42.9       | 700.0          | 967.6             |
| Construction**                    | 5,055                     | 3.82                                               | 0.73                 | 11.90                    | 193.1         | 36.9       | 601.5          | 831.5             |
| Health insurance administration** | 7,572                     | 3.82                                               | 0.73                 | 11.90                    | 289.3         | 55.3       | 901.1          | 1,245.7           |
| TOTAL                             | \$22,193                  | 3.21                                               | 0.95                 | 10.98                    | \$735.3       | \$211.7    | \$2,435.8      | \$3,382.8         |

\*From the Report by President's Commission on Mental Health (1978).

\*\*Calculated by assuming that the ADM portions of total expenditures for this category are the same as the ADM portion for direct health treatment.

SOURCE: Research Triangle Institute.

Drug abuse support expenditures were \$212 million in 1977. The largest component was research, estimated at \$77 million. Other expenditures included health insurance administration--\$55 million, training and education \$43 million, and construction--\$37 million.

Support expenditures for mental illness were much greater than those for either alcohol abuse or drug abuse--\$2.4 billion in 1977. The largest component was for health insurance administration at \$901 million, followed by training and education with \$700 million, construction at \$602 million, and research with \$233 million.

#### IV. CORE INDIRECT COSTS - MORTALITIES

As shown in table 5-5, mortalities due to alcohol abuse that occurred in 1977 resulted in \$10.7 billion worth of lost future productivity, assuming a 6 percent discount rate. This estimate is based on the estimate that approximately 65,300 deaths that occurred in 1977 were due to alcohol abuse. Alternative estimates for discount rates of 2½ and 10 percent are also shown in table 5-5. These range from \$7.1 billion for a 10 percent discount rate to \$17.9 billion for a 2.5 percent discount rate. These three discount rates were used, as is recommended in the PHS Guidelines document. For the sake of simplicity, the estimates shown in summary tables are those derived by using the 6 percent or middle rate.

Alcohol-related premature mortality may be broken down into three major groups. The first of these is termed direct primary causes. This group includes alcohol psychoses, alcoholism, alcoholic cirrhosis of the liver, and alcohol poisoning. All deaths in this are attributed to alcohol abuse. In 1977, there were a total of 18,800 deaths due to these causes, accounting for a cost of \$2.6 billion in foregone productivity at a 6 percent discount rate.

The second group of mortalities is termed direct secondary causes, and includes diseases such as other cirrhosis of the liver, various neoplasms, pancreatitis, and respiratory tuberculosis. In 1977, there were a total of 10,800 deaths in this group attributed to alcohol abuse, resulting in a cost of \$1.1 billion at a 6 percent discount rate. As shown in table 5-5, the percentages of these deaths attributed to alcohol abuse varies according to the specific disease. In addition, no reliable data were available to estimate either the percentage of other malignant neoplasms of the gastrointestinal tract or the percentage of other associated diseases due to alcohol abuse. Since 1977 deaths in these categories constituted approximately 75 percent of the total deaths in this group, the unavailability of reliable data with which to establish this causal factor may result in an underestimate of mortality costs in this category.



Table 5-5  
Economic Cost of 1977 Mortalities Due to Alcohol Abuse - for Various Discount Rates  
(\$ in millions)

| Cause of Death -<br>Primary diagnosis                         | Mortalities in 1977 |                                           |        | Discount Rates |          |          |
|---------------------------------------------------------------|---------------------|-------------------------------------------|--------|----------------|----------|----------|
|                                                               | Total               | Attributed to<br>Alcohol Abuse<br>Percent | Number | 10%            | 6%       | 2½%      |
| <u>Direct Primary Causes</u>                                  | 18,784              | 100                                       | 18,784 | \$1,953        | \$1,953  | \$3,608  |
| Alcohol Psychosis                                             | 318                 | 100                                       | 318    | 33             | 43       | 59       |
| Alcoholism                                                    | 5,100               | 100                                       | 5,100  | 569            | 775      | 1,097    |
| Alcoholic cirrhosis of liver                                  | 13,029              | 100                                       | 13,029 | 1,307          | 1,738    | 2,365    |
| Alcoholic poisoning                                           | 337                 | 100                                       | 337    | 43             | 59       | 86       |
| <u>Direct Secondary Causes</u>                                | 97,108              |                                           | 10,767 | 803            | 1,063    | 1,448    |
| Cirrhosis of liver--other                                     | 17,819              | 44.6                                      | 7,948  | 640            | 847      | 1,152    |
| Malignant primary liver neoplasms.                            | 2,409               | 56                                        | 1,349  | 59             | 75       | 97       |
| Other malignant neoplasms of gas-<br>trointestinal tract..... | 63,084              | *                                         | 0      | -              | -        | -        |
| Pancreatitis                                                  | 2,550               | 35.5                                      | 905    | 73             | 100      | 142      |
| Respiratory tuberculosis                                      | 2,259               | 25                                        | 565    | 31             | 41       | 57       |
| Other associated diseases                                     | 8,987               | *                                         |        |                |          |          |
| <u>Indirect Causes</u>                                        | 151,579             |                                           | 35,774 | 4,325          | 7,035    | 12,823   |
| Motor vehicle crashes                                         | 49,513              | 37                                        | 18,320 | 2,532          | 4,210    | 7,838    |
| Falls                                                         | 13,946              | 44.4                                      | 6,192  | 280            | 401      | 634      |
| Fires                                                         | 6,361               | 25.9                                      | 1,647  | 146            | 243      | 476      |
| Other **                                                      | 33,379              | 11.1                                      | 3,705  | 432            | 712      | 1,337    |
| Homicide                                                      | 19,699              | 30                                        | 5,910  | 935            | 1,469    | 2,538    |
| Suicide                                                       | 28,681              | 0                                         | 0      | 0              | 0        | 0        |
| <u>TOTAL.....</u>                                             | 267,471             |                                           | 65,325 | \$7,081        | \$10,715 | \$17,879 |

\*

Values of causal factors unknown and are assumed to be zero for this study.

\*\*

Includes all accidents not listed above but excludes accidents incurred in medical and surgical procedures and psychoactive drugs.

SOURCE: Research Triangle Institute, unpublished mortality data from the Vital Statistics files provided by NCHS.

The balance of the mortalities attributed to alcohol abuse were due to trauma--accidents and violence. These include motor vehicle crashes, falls, fires, other accidents, and homicides. These reasons accounted for 35,800 mortalities attributed to alcohol abuse and \$7.0 billion worth of lost future productivity. The single largest component of alcohol abuse mortality losses in this group was motor vehicle crashes, which was estimated at \$4.2 billion in 1977, using a 6 percent discount rate. Thus, approximately 40 percent of the total value of mortality losses due to alcohol abuse was due to driving while intoxicated.

Drug abuse is implicated in a more limited number of mortalities than is alcohol abuse. The U.S. Vital and Health Statistics series (U.S. DHEW, NCHS no date) indicates that 3590 persons died due to drug abuse in 1977. This suggests an estimated lost future production of \$831 million at a 5 percent discount rate (table 5-6). The reasons for death included drug dependence, accidental overdose of psychoactive drugs, accidental overdose of other drugs and medicaments, and overdose of drugs and medicaments for undetermined reasons. Suicides by use of drug overdose have been included in the costs of mental illness.

Table 5-6 presents estimates for the three alternative discount rates used in this study. These estimates are \$831 million at a 5 percent discount rate and range from \$527 million at a 10 percent discount rate to \$1,433 million at a 2.5 percent discount rate.

There are three possible categories of mortality that might be due to mental illness: (1) psychoses and neuroses, (2) suicide, and (3) homicide. As discussed in greater detail in appendix A, there are no reliable data available with which to measure the extent of causality between mental illness and homicide. Therefore, it has been assumed that none of the homicides reported in 1977 were caused by mental illness. On the other hand, it is assumed that all of the deaths in the first two categories above were due to mental illness. However, the number of deaths due to psychoses and neuroses were first adjusted for deaths due to alcoholic psychoses and alcoholism and drug dependence to eliminate potential duplications in the estimates of the costs of mortalities from these three problems. Suicidal overdoses of drugs and medicaments are attributed to mental illness. They are presented separately in the other suicide category for expository purposes.

In all, 32,398 premature deaths were estimated to have been due to mental disorders in 1977 at a cost in lost future production of over \$5.9 billion, calculated at a 6 percent discount rate (table 5-7). The estimates are \$3.9 billion and \$9.7 billion for the 10 and 2.5 percent discount rates, respectively.

Table 5-6

**Economic Cost of 1977 Mortalities Due to Drug Abuse - for Various Discount Rates  
(in millions)**

| Cause of Death -<br>Primary diagnosis                          | Mortalities in 1977 |                             |              | Discount Rates |              |                |
|----------------------------------------------------------------|---------------------|-----------------------------|--------------|----------------|--------------|----------------|
|                                                                | Total               | Attributed to<br>Drug Abuse |              | . 10%          | 6%           | 2½%            |
|                                                                |                     | Percent                     | Number       |                |              |                |
| Drug dependence.....                                           | 551                 | 100                         | 551          | \$ 99          | \$157        | \$ 271         |
| Accidental overdose of psycho-<br>active drugs.....            | 1,045               | 100                         | 1,045        | 164            | 260          | 449            |
| Accidental overdose of other drugs<br>and medicaments .....    | 1,203               | 100                         | 1,203        | 149            | 236          | 412            |
| Suicidal overdose of drugs and<br>medicaments.....             | 3,125               | 0                           | 0            | 0              | 0            | 0              |
| Overdose of drugs and medicaments,<br>reason undetermined..... | 791                 | 100                         | 791          | 115            | 178          | 301            |
| <b>TOTAL.....</b>                                              | <b>6,715</b>        |                             | <b>3,550</b> | <b>\$527</b>   | <b>\$831</b> | <b>\$1,433</b> |

SOURCE: Research Triangle Institute. unpublished mortality data from the Vital Statistics files provided by NCHS (U.S. DHEW, NCHS no date).

Table 5-7

**Economic Cost of 1977 Mortalities Due to Mental Illness -  
for Various Discount Rates  
(\$ in millions)**

| Cause of Death -<br>Primary Diagnosis              | Mortalities in 1977             |         |               | Discount Rates |                |                |
|----------------------------------------------------|---------------------------------|---------|---------------|----------------|----------------|----------------|
|                                                    | Attributed to<br>Mental Illness |         |               |                |                |                |
|                                                    | Total                           | Percent | Number        | 10%            | 6%             | 2½%            |
| Psychoses and<br>neuroses* .....                   | 3,715                           | 100     | 3,715         | \$ 105         | \$ 147         | \$ 233         |
| Alcoholic psychoses and alcoholism•                | 5,418                           | 0       | 0             | 0              | 0              | 0              |
| Drug dependence .....                              | 551                             | 0       | 0             | 0              | 0              | 0              |
| Suicide (excluding overdose)•••••                  | 25,556                          | 100     | 25,556        | 3,412          | 5,188          | 8,543          |
| Suicidal overdose of drugs or<br>medicaments ..... | 3,125                           | 100     | 3,125         | 390            | 591            | 965            |
| Homicide .....                                     | 19,699                          | 0       | 0             | 0              | 0              | 0              |
| <b>Total•••••</b>                                  | <b>58,064</b>                   |         | <b>32,396</b> | <b>\$3,907</b> | <b>\$5,926</b> | <b>\$9,741</b> |

\*Excluding alcohol and drug abuse-related deaths.

SOURCE: Research Triangle Institute, unpublished mortality data from the Vital Statistics files provided by NCHS (U.S. DHEW, NCHS no date)



## V. CORE INDIRECT COSTS - MORBIDITY

As indicated in chapter 4, our core indirect costs are divided into two major categories--reduced productivity and lost employment. A summary of estimated costs in each of these categories for the three ADM disorders is provided in table 5-8. A brief discussion of these costs follows.

Table 5-8

Core Indirect Costs--Morbidity Due to  
ADM Disorders--1977  
(\$ in millions)

| Cost Category         | Alcohol Abuse | Drug Abuse | Mental Illness | Total         |
|-----------------------|---------------|------------|----------------|---------------|
| Reduced productivity  | \$23,593      | \$2,830    | \$ 1,646       | \$28,069      |
| Males                 | 20,178        | 2,830      | 932            | 23,940        |
| Females               | 3,415         | -          | 714            | 4,129         |
| Lost employment       | <u>2,481</u>  | <u>223</u> | <u>13,970</u>  | <u>16,674</u> |
| Trauma                | 545           | -          | 12,665         | 13,210        |
| Residential treatment | 328           | 223        | 1,305          | 1,856         |
| Long-term disability  | 1,608         | -          | -              | 1,608         |
| TOTAL                 | \$26,074      | \$3,053    | \$16,616       | \$44,743      |

SOURCE: Research Triangle Institute.

A. Alcohol Abuse

As shown in table 5-8, morbidity caused by alcohol abuse is estimated to have resulted in morbidity losses of approximately \$26.1 billion in 1977. This total includes estimated productivity losses of \$23.6 billion for the problem drinking population and lost employment valued at \$2.5 billion. This latter category includes losses to individuals who are injured in accidents or violent crime caused by alcohol abuse, those who suffer a long-term disability due to alcohol abuse and who were unable to work in 1977, and individuals who were in residential treatment facilities in 1977.

The majority of the productivity losses are incurred by male problem drinkers. In 1977, there were an estimated 7.8 million employed male problem drinkers in the U.S., accounting for a total of \$20.2 billion in productivity losses (absenteeism and lower on-the-job productivity). In contrast, there were an estimated 1.9 million female problem drinkers, with a total of \$3.4 billion in productivity losses. Of the estimated 1.9 million female problem drinkers, approximately 1.2 million were employed in 1977, while 0.7 million were housewives.

Some perspective on these figures is gained when they are compared to prevalence estimates for alcohol abuse. The Third Special Report to the U.S. Congress on Alcohol and Health (Noble 1978) estimates that "almost 10 million American adults" were either problem drinkers or alcoholics in 1975. This was about 7 percent of the adult population. In The ADM National Data Book (Vischi et al. 1980), alcoholism and alcohol problems were estimated to have a point prevalence of 2.5 to 8 percent in the adult (18-65) population, representing between 3.2 and 10.3 million persons in 1977. The lower figure appears to be an estimate of the minimal number of alcoholics and the higher one an estimate of alcoholics plus other problem drinkers based on general population studies by Cahalan et al. (1969; 1974). The estimate used in this study (9.7 million persons) is for alcoholics plus other problem drinkers. Thus, it is roughly comparable to the higher ADAMHA estimate and the NIAAA figure. For these 9.7 million problem drinkers, this study used Berry and Boland's 14.0 percent estimate of reduced productivity. As is evident from the discussion in appendix A, this yields a conservative estimate of these productivity losses consistent with our overall approach in this study.

Turning to estimates of costs of trauma, alcohol abuse--related accidents were fairly evenly distributed between motor vehicles, the workplace, home, and other kinds of accidents. Males lost 20,000 person-years of productive time due to these accidents, compared to 18,000 person-years of time lost by females. Male productivity losses are estimated at \$282 million, compared to \$245 million of losses for females. In addition, there is an estimated \$18 million in lost employment to individuals injured in violent crimes which could not be readily allocated to the sex of the victim.

A total of 274,000 individuals experienced some alcohol abuse-caused physical impairment in 1977, resulting in lost employment valued at \$1.6 billion. A variety of impairments were estimated to have been caused by alcohol abuse, with the largest portion, approximately 40 percent, classified as orthopedic impairments other than paralysis of the back or spine.

Finally, a total of \$328 million in lost employment in 1977 occurred while individuals were in residential treatment facilities for alcohol abuse. An average census of 18,800 individuals were in these facilities--15,800 males and 3,000 females. Males in residential treatment accounted for \$291 million

in lost employment, while females accounted for a total of \$37 million.

#### B. Drug Abuse

Due to the unavailability of reliable data, estimates of productivity losses caused by drug abuse could only be made for young males. An estimated 1,784,000 employed young males aged 18-24 experienced absenteeism or a reduction in their on-the-job productivity in 1977 due to their drug abuse. As indicated in table 5-8, the total productivity losses are estimated at \$2.8 billion, or approximately \$1,590 per employed individual.

It was possible to obtain some details by sex for the value of lost employment due to time spent in residential treatment for drug abuse. In 1977, there were an estimated average census of 11,900 males and 4,600 females in residential treatment facilities for drug abuse. The value of lost employment is estimated at \$171 million for males, or \$14,400 per individual, and \$52 million for females, or \$11,300 per individual.

#### C. Mental Illness

The value of reduced productivity in 1977 due to mental illness is estimated for partial work disability due to either chronic nervous disorders or severe emotional disorders. A total of 616,000 individuals--287,000 males and 329,000 females--were estimated to have experienced a 25 percent loss in productivity due to these mental illnesses in 1977. Chronic nervous disorders accounted for \$1,328 million, or approximately 81 percent of the total estimated employment loss. Severe emotional disorders accounted for \$318 million or 19 percent of the total.

As shown in table 5-8, lost employment due to mental illness may be classified into two major categories--long-term disability or complete work disability and residential treatment or institutionalization. A total of 871,000 individuals--372,000 males and 499,000 females--were estimated to have a long-term disability due to mental illness in 1977. As in the case of partial work disability, chronic nervous disorders were the larger category of complete work disability--with a total of \$9.0 billion or 71 percent of the total. Severe emotional disorders again accounted for approximately \$3.6 billion or 29 percent of the total.

In 1977, a total of 223,900 individuals were estimated to have been institutionalized for mental illnesses in nursing homes and psychiatric hospitals. Approximately 167,000, or 75 percent of the total, were in nursing homes. While about 57,000 individuals, or 25 percent of the total, were in psychiatric hospitals. Because of the differing age characteristics of these populations, the distribution of the value of lost employment across these two settings is not proportional to the distribution of individuals in the settings.



Costs of lost employment for individuals in psychiatric hospitals were estimated at \$844 million in 1977, or approximately 65 percent of the total, while nursing home lost employment costs were \$461 million, or 35 percent of the total.

Conservative point prevalence estimates for mental illness (including alcohol and drug abuse) range between 10 and 15 percent for the adult population (Vischi et al. 1980). Excluding the estimates for alcohol and drug dependence results in a mental disorder point prevalence of between 7 and 12 percent or between 9.0 and 15.4 million Americans. The data sources used in this study have estimated productivity losses of \$15.6 billion for 1.7 million persons (between 11 to 19 percent of estimated the actual extent of these morbidity losses.

#### VI. OTHER RELATED COSTS - DIRECT

A number of specific cost elements are included in the general cost category of other related direct costs of alcohol and drug abuse and mental illness. These include: motor vehicle damage, criminal justice system, social welfare system, fire losses, fire protection, highway safety, and drug traffic control. A summary of these costs is provided in table 5-9.

As shown in the table, other related direct costs are highest for drug abuse (\$4.8 billion, or 93 percent of the drug abuse costs, arise from the direct costs of the criminal justice system and private security activities. The only other related direct costs that can be currently estimated for mental illness are social welfare administrative costs (welfare benefits are not counted since they are economic transfer costs). Finally, as shown in the table, other related direct costs for alcohol abuse can be estimated for most of the same categories as for drug abuse plus several additional categories, the largest of which is motor vehicle damage. The total estimate for other related direct costs due to alcohol abuse is \$4.4 billion.

#### VII. OTHER RELATED COSTS - INDIRECT

Within this study, three sources of other related indirect costs were identified: (1) the opportunity costs of time for individuals who pursue a career in crime as a result of drug abuse, (2) the opportunity costs of time spent in prison as a result of alcohol or drug abuse-related crime, and (3) the value of time lost by individuals other than



Table 5-9

Other Related Direct Costs of Alcohol Abuse,  
Drug Abuse, and Mental Illness, 1977  
(\$ in millions)

| Cost Category                   | Alcohol Abuse | Drug Abuse | Mental Illness | Total   |
|---------------------------------|---------------|------------|----------------|---------|
| Motor vehicle crashes           | \$1,782       | *          | *              | \$1,782 |
| Crime                           | 1,685         | \$4,453    | *              | 6,138   |
| Public criminal justice System  | 1,479         | 3,347      | *              | 4,826   |
| Law enforcement                 | 313           | 1,787      | *              | 2,100   |
| Legal and adjudication          | 139           | 604        | *              | 743     |
| Corrections                     | 1,027         | 966        | *              | 1,983   |
| Private criminal justice System | 191           | 1,033      | *              | 1,224   |
| Law enforcement                 | 184           | 1,005      | *              | 1,189   |
| Legal and adjudication          | 7             | 28         | *              | 35      |
| Corrections                     | *             | *          | *              | *       |
| Property loss/damage            | 15            | 73         | *              | 88      |
| Social welfare programs         | 142           | 12         | \$548          | 702     |
| Fire losses                     | 319           | *          | *              | 319     |
| Fire protection                 | 482           | *          | *              | 482     |
| Highway safety                  | 31            | *          | *              | 31      |
| Drug traffic control            | *             | 311        | *              | 311     |
| Total                           | \$4,441       | \$4,776    | \$548          | \$9,765 |

Totals may not add due to rounding.

\*

Although costs are hypothesized to occur in this category, sufficient data are not available to develop a reliable estimate.

SOURCE: Research Triangle Institute.

crash victims and by individuals delayed in traffic as a result of motor vehicle accidents caused by alcohol abuse. Another type of costs in this category is the productivity losses of persons who care for individuals with ADM problems. However, it has not been possible to estimate this last type of cost with the data available. Thus, it has been omitted from our estimates. A summary of these costs is presented in table 5-10.

One of the major sources of other related indirect costs of ADM problems is the opportunity cost of time of individuals who are engaged in crime careers as a result of drug abuse. This study has developed estimates of these losses based on the hypothesis that serious drug abuse can cause a person to forego normal productive activities in favor of selling drugs, committing income-generating crimes, or engaging in other illicit activities. In 1977, it is estimated that a total of 350,100 persons--223,400 opiate abusers and 126,700 nonopiate abusers--experienced such losses in normal productivity due to their drug abuse. These figures are consistent with NIDA and ADAMHA drug abuse prevalence estimates published by Vischi et al. (1980) in The ADM National Data Book and with information on the major activities of clients admitted to treatment in the Treatment Outcome Prospective Study (Rachal et al. 1981). As shown in table 5-10, losses due to opiate abuse are estimated at \$3.5 billion, while nonopiate abuse was estimated to have caused \$1.6 billion in productivity losses in 1977.

Estimates of the productivity losses due to incarcerations were developed by first identifying the person years of incarceration due to either alcohol or drug abuse and then assigning a value of lost productivity to that time spent in prison. In 1977, it is estimated that a total of 83,700 person years were spent in prisons by individuals convicted of crimes caused by alcohol abuse. The comparable figure for drug abuse-caused incarcerations is 76,400 person-years. As shown in table 5-10, this time spent in prison generated the following indirect costs: alcohol abuse--\$1.4 billion, and drug abuse -- \$1.3 billion. The largest portions of this loss due to alcohol abuse was incurred for public drunkenness (\$461 million or approximately 33 percent of the total) and driving under the influence (\$287 million or approximately 20 percent of the total); the largest portions for drug abuse were for drug law violations (\$640 million or approximately 50 percent of the total) and robbery (\$316 million or approximately 25 percent of the total).

Finally, a total of \$354 million in other related indirect costs was caused by motor vehicle crashes. This total included losses to individuals other than the victim of a traffic accident (\$180 million) and traffic delay costs (\$174 million).

Table 5-10

Other Related Indirect Costs of  
Alcohol Abuse and Drug Abuse, 1977  
(\$ in millions)

| Cost Category                  | Alcohol Abuse  | Drug Abuse   |
|--------------------------------|----------------|--------------|
| Crime careers.....             | -              | \$5,143      |
| Opiates.....                   |                | 3,530        |
| Nonopiates.....                |                | 1,613        |
| Incarceration.....             | <u>\$1,418</u> | <u>1,294</u> |
| Homicide.....                  | 276            | -            |
| Felony assault.....            | 120            | 0            |
| Robbery.....                   | 46             | 316          |
| Burglary.....                  | 49             | 234          |
| Drug laws.....                 | 0              | 640          |
| Driving under the influence... | 287            | 0            |
| Liquor laws.....               | 158            | 0            |
| Public drunkenness.....        | 461            | 0            |
| Other.....                     | 21             | 104          |
| Motor vehicle crashes.....     | 354            | -            |
| Total.....                     | \$1,772        | \$6,437      |

SOURCE: Research Triangle Institute.

#### VIII. SPECIAL ISSUES - COSTS OF CRIME

As indicated throughout this report, the costs to society of ADM problems have been developed and presented in the cost framework contained in the Guidelines document. This framework organizes costs into two principal categories--core costs and other related costs--and includes subcategories of direct and indirect costs within each. Although this framework is a useful approach for developing these estimates, it does not enable one to readily identify costs related to a specific type of behavior

caused by the ADM problem. An important example of this type of behavior, and one for which cost estimates are frequently requested, is crime.

Estimates of the costs of crime due to alcohol abuse and drug abuse are presented in table 5-11. As shown in the table, crimes due to alcohol abuse and drug abuse resulted in costs to society of \$15.8 billion in 1977. Drug abuse accounted for approximately 70 percent of these costs--\$4.6 billion. Unfortunately, a current lack of data prevents us from making a reliable estimate of crime-related costs due to mental illness.

The development of the cost estimates presented in table 5-11 was a relatively straightforward procedure. All of the drug abuse-caused crime costs fall in the other related cost category and were taken directly from the appropriate totals presented in table 5-1. Similarly, the other related costs of alcohol abuse associated with crime were taken directly from the appropriate entries in table 5-1.

In the case of mortality and morbidity, the appropriate subtotals of the costs of trauma due to homicide were obtained from tables A-12 and A-20, respectively. A portion of the treatment costs for alcohol-abuse related trauma was estimated as the treatment costs for victims of crime. This portion was obtained from the data in table A-20 and was assumed to be the ratio of the number of person/years of lost employment due to violent crimes (1,100) to the total person years of lost employment for all types of trauma (39,700). Using data presented in table A-10, support costs for treatment were estimated as 3.21 percent of the treatment costs resulting from crime.

Additional details of these costs, particularly the other related direct costs of crime, are presented in the appropriate sections of appendix A.



5-19  
Table 5-11

Crime-Related Costs of Alcohol and  
Drug Abuse, 1977  
(\$ in millions)

| Cost Category                 | Alcohol Abuse  | Drug Abuse      | Total           |
|-------------------------------|----------------|-----------------|-----------------|
| Core costs                    | <u>\$1,522</u> | -               | <u>\$1,522</u>  |
| Direct .....                  | <u>35</u>      |                 | <u>35</u>       |
| Treatment .....               | 34             |                 | 34              |
| Support .....                 | 1              |                 | 1               |
| Indirect .....                | <u>1,487</u>   |                 | <u>1,487</u>    |
| Mortality <sup>a/</sup> ..... | 1,469          |                 | 1,469           |
| Morbidity .....               | 18             |                 | 18              |
| Reduced productivity.         | -              |                 | -               |
| Lost employment .....         | 18             |                 | 18              |
| Other related costs .....     | <u>3,103</u>   | <u>\$11,201</u> | <u>14,304</u>   |
| Direct .....                  | <u>1,685</u>   | <u>4,764</u>    | <u>6,449</u>    |
| Motor vehicle crashes..       | -              | -               | -               |
| Crime .....                   | 1,685          | 4,453           | 6,138           |
| Public criminal justice       |                |                 |                 |
| system .....                  | 1,479          | 3,347           | 4,825           |
| Private criminal justice      |                |                 |                 |
| system .....                  | 191            | 1,033           | 1,224           |
| Property loss/damage...       | 15             | 73              | 88              |
| Social welfare programs..     | -              | -               | -               |
| Drug traffic control .....    | -              | 311             | 311             |
| Indirect .....                | <u>1,418</u>   | <u>6,437</u>    | <u>7,855</u>    |
| Crime careers .....           | -              | 6,143           | 6,143           |
| Incarceration .....           | 1,418          | 1,294           | 2,712           |
| Motor vehicle crashes...      | -              | -               | -               |
| Total .....                   | <u>\$4,625</u> | <u>\$11,201</u> | <u>\$15,826</u> |

<sup>a/</sup> At 6 percent discount rate.

SOURCE: Research Triangle Institute.

- Cahalan, D.; Cisin, I.; and Crossley, H. American Drinking Practices. New Brunswick, N.J.: Rutgers University, Rutgers Center on Alcohol Studies, 1969.
- Cahalan, D., and Room, R. Problem Drinking Among American Men. New Brunswick, N.J.: Rutgers University, Rutgers Center of Alcohol Studies, 1974.
- Nonle, E., ed. Third Special Report to the U.S. Congress on Alcohol and Health. DHEW Pub. No. (ADM) 78-569. Rockville, Md.: U.S. Department of Health, Education, and Welfare, Alcohol, Drug Abuse, and Mental Health Administration, 1978.
- The President's Commission on Mental Health. Report to the President from the President's Commission on Mental Health. Vol. I. Washington, D.C.: Supt. of Docs., U.S. Govt. Print Off., 1979.
- Rachal, J.; Hubbard, R.; Cavanaugh, E.; Bray, R.; Collins, J.; Allison, M.; and Craddock, G. Annual Report - Characteristics, Behaviors and Intreatment Outcomes of Clients in TOPS - 1979 Admission Cohort. Research Triangle Park, N.C.: Research Triangle Institute, 1981.
- U.S. Department of Health, Education, and Welfare, National Center for Health Statistics. Unpublished mortality data. Hyattsville, Md.: the Center, no date.
- Vischi, T.; Jones, K.; and Lima, L. The Alcohol, Drug Abuse, and Mental Health National Data Book. Rockville, Md.: U.S. Department of Health Education, and Welfare, Alcohol, Drug Abuse, and Mental Health Administration, 1980.

## Chapter 6

Differences from Earlier Studies

## I. INTRODUCTION

Chapter 3 summarizes the RTI review of the key previous studies of the economic costs to society of each of the three ADM problems. Fairly substantial differences exist between the estimates in these studies and the current study. Since these studies were completed for different time periods, part of the differences between our results and those estimated by previous authors are due to inflation. However, as summarized in chapter 4 of this report and detailed in appendix A, the cost estimates of this study are based on a consistent methodology applied to each of the three ADM problems. For some of the cost components, the use of our illness-specific methodology results in significant differences in cost estimates from those obtained in prior studies.

This chapter presents a brief summary of the differences between the cost estimates developed for this study and those estimated in previous studies and the major reasons for these differences. These comparisons are presented in three major sections--one each for alcohol abuse, drug abuse, and mental illness.

## II. ALCOHOL ABUSE

The NRTI study made significant changes in the methodology used to estimate the economic costs to society of alcohol abuse. The results obtained in the study are compared in table 6-1 with those in the prior study by Berry and Boland.

The first and most obvious difference is the increase in total costs due to alcohol abuse. Berry and Boland estimated the total cost to be \$42.8 billion in 1975. The NRTI study estimated a total cost of \$49.4 billion for 1977, representing an increase of approximately 15 percent over the 1975 estimate. If the two methodologies were similar, most of this difference would be due to inflation experienced between 1975 and 1977. However, as stated previously, there are strong methodological differences between the two studies which affect each of the major cost categories.

The NRTI study has estimated that treatment costs due to alcohol abuse were \$5.6 billion in 1977. Berry and Boland estimated these costs to be \$11.0 billion in 1975. The reason for this difference lies in the methodologies used. The prior study used a population-specific approach,

- Cahalan, D.; Cisin, I.; and Crossley, H. American Drinking Practices. New Brunswick, N.J.: Rutgers University, Rutgers Center on Alcohol Studies, 1969.
- Cahalan, D., and Room, R. Problem Drinking Among American Men. New Brunswick, N.J.: Rutgers University, Rutgers Center of Alcohol Studies, 1974.
- Nonle, E., ed. Third Special Report to the U.S. Congress on Alcohol and Health. DHEW Pub. No. (ADM) 78-569. Rockville, Md.: U.S. Department of Health, Education, and Welfare, Alcohol, Drug Abuse, and Mental Health Administration, 1978.
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- Rachal, J.; Hubbard, R.; Cavanaugh, E.; Bray, R.; Collins, J.; Allison, M.; and Craddock, G. Annual Report - Characteristics, Behaviors and Intreatment Outcomes of Clients in TOPS - 1979 Admission Cohort. Research Triangle Park, N.C. : Research Triangle Institute, 1981.
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Table 6-1

Comparison of Results of Present Study with  
the Prior Major Study - Alcohol Abuse  
(\$ in billions)

| Cost Category             | Research<br>Triangle<br>Institute<br>(1977) | Berry<br>and<br>Boland<br>(1975) |
|---------------------------|---------------------------------------------|----------------------------------|
| Core costs .....          | <u>\$43.2</u>                               | <u>\$38.7</u>                    |
| Direct .....              | <u>6.4</u>                                  | <u>12.3</u>                      |
| Treatment .....           | 5.6                                         | 11.0                             |
| Support .....             | 0.7                                         | 1.8                              |
| Indirect .....            | <u>36.8</u>                                 | <u>25.8</u>                      |
| Mortality .....           | 10.7 <sup>a/</sup>                          | 9.7                              |
| Morbidity .....           | 26.1                                        | 16.1                             |
| Other related costs ..... | <u>6.2</u>                                  | <u>4.1</u>                       |
| Direct .....              | 4.4                                         | 4.1                              |
| Indirect .....            | 1.8                                         | -                                |
| Total .....               | \$49.4                                      | \$42.8                           |

<sup>a/</sup>  
At 6 percent discount rate.

Individual items may not add to totals due to rounding.

Source: Research Triangle Institute.

while the present study uses an illness-specific methodology. In the Berry and Boland study, all health care costs experienced by persons with a history of alcohol abuse were calculated. That is, a per capita rate of health care utilization for this population was calculated and compared to a per capita rate for the nonalcohol abusing population. The difference between these two rates was attributed to alcohol abuse. This difference was multiplied by the estimated prevalence of alcohol abuse to produce an estimate of total health care costs due to alcohol abuse.

In the NRTI study, an illness-specific methodology has identified those illness which are clearly related to a history of alcohol abuse or which result from incidents of alcohol abuse. In the case of illnesses that result solely from alcohol abuse, all expenditures in the appropriate treatment settings have been allocated to alcohol abuse. In the cases of illnesses that can be caused by alcohol abuse or by something else, a further analysis was undertaken to allocate only a portion of the expenditures for that diagnosis to alcohol abuse.

These two methodologies yield significantly different estimates because persons with a history of alcohol abuse may have other problems or attributes which require further health care treatment. This additional health care treatment may not necessarily be causally related to the alcohol abuse problem and hence use of the population-specific methodology tends to overestimate treatment costs. On the other hand, our estimates are probably conservative, because there are a number of illness which have been related to alcohol abuse, but the degree to which they are caused by alcohol abuse is currently unknown. For example, more than two dozen cancers of the gastrointestinal system have been strongly linked to high consumption of alcoholic beverages, but the portion of such cancers caused by alcohol abuse is not yet known with certainty. In these situations we have attributed a portion of the costs of treatment to alcohol abuse, but the resulting total may be an underestimate of the actual total. In addition, alcohol abuse may result in a generally poorer state of health and result in a greater incidence of many diseases not currently related to alcohol abuse.

Estimates of support costs differ in the same degree as treatment costs because each study estimated support costs in a fashion analogous to that for treatment costs.

Estimates of mortality costs are remarkably similar for the two studies. However, they were estimated by different approaches. The Berry and Boland study used several steps to estimate the total number of mortalities as well as the total value of losses due to mortality. First of all, epidemiological surveys on alcohol abusing populations were used to estimate excess mortality rates for these populations. Similar to the case of treatment costs, this approach tends to overestimate the costs of mortalities, since differences in mortality experience between

alcohol abusing and non-alcohol abusing populations may be due to factors other than alcohol abuse. Next, mortalities due to various traumatic causes were estimated. These causes included motor vehicle accidents, fires, and homicides. For each of these other causes only a portion of the deaths was attributed to alcohol abuse and the values of these deaths were estimated accordingly.

The NRTI used an illness-specific approach in estimating the cost of mortalities due to alcohol abuse. First of all, causes of death related to alcohol abuse were identified; and the degree to which these causes were the result of alcohol abuse was estimated. Then, once the number of deaths due to alcohol abuse was estimated, the present discounted value of lost future productivity due to these deaths was estimated. This methodology is similar to that used by Berry and Boland in making estimates of the value of mortalities due to motor vehicle crashes, fires, and homicides. As in the case of direct treatment costs, use of the illness-specific methodology here tends to underestimate the value of this cost component. This is due to the fact that we have not included any costs of mortalities for illnesses that are associated with alcohol abuse but for which we were not yet able to clearly establish a reliable causal factor.

Costs of reduced productivity due to alcohol abuse have increased significantly from the prior study to the present study. This has occurred even though the two studies have used similar methodologies in making the estimates. Both estimates are based on results of the same studies that estimated the extent to which productivity is impaired by alcohol abuse. However, the Berry and Boland study estimated the economic costs of alcohol abuse only in lost market productivity and excluded the costs of reduced productivity in the household by both males and females. Furthermore, Berry and Boland made no estimates of lost productivity by females in the work force. This latter omission is particularly critical in view of the increasing labor force participation by women. Finally, Berry and Boland also omitted the value of wage supplements and benefits in estimating the value of lost production. These supplements and benefits are worth about 15 percent of total wages.

In the other related cost category, direct costs were estimated in a similar fashion with similar results. However, only the NRTI study included other related indirect costs. These were of two types: lost productivity due to incarceration and lost productivity by persons indirectly affected by alcohol caused traffic accidents.

### III. DRUG ABUSE

Cost estimates for drug abuse are also greater in the current study than in the previous RTI study. These increases result primarily



from changes that have been made in the methodology used in the current study in order to be consistent with estimates prepared for alcohol abuse and mental illness. The cost estimates for the two studies are summarized in table 6-2.

Health care treatment costs due to drug abuse are estimated to have been virtually the same in 1975 as in 1977. The methodologies use were very similar, both of them using an illness--specific approach. Support costs for drug abuse treatment services are somewhat different in the two studies. This difference can be attributed to the fact that the current study has estimated support costs for a variety of activities, while the prior study used an estimate obtained from a single secondary data source. That source included some duplications and is incompatible with the more detailed methodology used in the current study.

Mortality costs were estimated at \$831 million in the RTI study. This is an estimate of the present discounted value of lost future productivity due to drug abuse deaths in 1977. The previous RTI study estimated lost productivity due to drug abuse deaths only for the year 1975 and omitted the present value of lost productivity for future years. The appropriate inclusion of lost future productivity results in a significant increase in this cost component. On the other hand, while the prior study allocated suicides by use of psychoactive drugs to drug abuse, the current study has assumed that the costs of all suicides belong in the mental illness category.

The estimates of the costs of morbidity are somewhat lower in the recent RTI study. However, there are a number of factors contributing to this decrease, some of which produce a higher value and others which produce a lower value.

Turning to the factors which produce higher estimates, the current RTI study included estimates of the value of reduced productivity of non-opiate abusers, while the previous RTI study included only opiate abusers in this cost component. In addition, the current RTI study includes the value of household production and has adjusted earnings levels for the value of wage supplements and benefits, both of which were excluded in the previous study.

On the other hand, the methodology used in the current RTI study has reduced or eliminated some of the cost elements contained in the previous RTI study. First, the previous RTI study included some doublecounting of individuals in their estimates of the costs of unemployability and productivity losses due to non-drug crime by drug abusers. Secondly, the previous study estimated absenteeism costs to the economy for employed drug abusers. The information on drug-abuse-related absenteeism used in the previous study was judged to be of insufficient reliability for the 1977 estimates due to the fact that it is several years out of date, concentrated on a heavy



Table 6-2

Comparison of Results of Present Study with  
the Prior Major Study - Drug Abuse  
(\$ in billions)

| Cost Category                 | Research<br>Triangle<br>Institute<br>(1977) | RTI<br>Study<br>(1975) |
|-------------------------------|---------------------------------------------|------------------------|
| Core costs .....              | <u>\$ 5.1</u>                               | <u>\$ 5.7</u>          |
| Direct.....                   | <u>1.3</u>                                  | <u>1.5</u>             |
| Treatment .....               | 1.1                                         | 1.1                    |
| Support .....                 | 0.2                                         | 0.4                    |
| Indirect .....                | <u>3.9</u>                                  | <u>4.2</u>             |
| Mortality <sup>a/</sup> ..... | 0.8                                         | <u>b/</u>              |
| Morbidity .....               | 3.0                                         | 4.2                    |
| Other related costs .....     | <u>11.2</u>                                 | <u>4.6</u>             |
| Direct .....                  | 4.8                                         | 2.1                    |
| Indirect .....                | 6.4                                         | 2.5                    |
| Total .....                   | \$16.4                                      | \$10.3                 |

<sup>a/</sup> At 6 percent discount rate.

<sup>b/</sup> Less than \$60 million.

Individual items may not add to totals due to rounding.

SOURCE: Research Triangle Institute.

manufacturing industry with a high number of blue collar workers, and is developed from a relatively small sample of persons. Instead, the only data source on lost employee productivity that was found to be sufficiently reliable for the current study covered only young males, 18 to 25 years of age. Although this is the key population segment for drug abuse, the exclusion of other population groups does considerably lower this study's estimate of indirect costs due to drug abuse induced morbidity.

Other related direct costs were calculated by RTI using similar methods in the two studies. The increase in the current RTI study occurs in the category of the direct costs of the criminal justice system. This increase is due primarily to the fact that the current study includes not just the costs of property crime but also of violent crimes and not just crime committed by opiate abusers but also by some non-opiate abusers. In addition, the current study includes estimates of the costs of replacing property that was damaged or destroyed during property crimes, a cost element that was omitted from the previous RTI study.

Turning to other related indirect costs, the most recent RTI study contains a significantly greater estimate of the costs of crime careers (\$5.1 billion) than the previous RTI study (\$1.3 billion). This increase is due to several factors. First, estimates in the previous RTI study were developed only for crimes committed by heroin abusers, while the current study includes estimates of the costs of crime caused by opiate as well as non-opiate abusers. Second, the estimates of foregone productivity incorporated in the current study include the value of fringe benefits and wage supplements, a factor that was omitted in the previous study. Finally, using information from more current research, the portions of criminal activities caused by drug abuse are assumed to be higher in the current study than they were in the previous RTI study.

The second component of other related indirect costs, lost productivity due to incarceration, is similar in the two studies. The 1977 estimate is that \$1.3 billion was lost due to incarceration stemming from drug abuse, compared with \$1.2 billion in 1975. The previous estimate was developed by first estimating the number of incarcerations for drug law violations and then the number of incarcerations due to income-generating crime by heroin users. These numbers were multiplied by the average sentence served for these violations and then adjusted for unemployment and nonlabor force participation by the drug abusing population. Finally, a value was assigned using a weighted estimate of earnings for drug abusers.

In contrast, this study reduced the number of person years served during 1977 for non-drug offenses related to drug abuse by counting only a portion of these crimes as being actually caused by drug abuse. However, this reduction was largely offset by including in lost productivity the value of nonmarket production as well as wage benefits and supplements, none of which were included in the previous RTI study.

#### IV. MENTAL ILLNESS

The RTI estimates of the costs to society of mental illness in 1977 can be compared with those of two prior studies. The first estimates were developed for 1971 and are presented in the Levine and Levine report. The second estimates were developed for 1974 by Levine and Willner (1976). The latter estimates were based on the original Levine and Levine methodology and were developed primarily by adjusting the 1971 estimates for inflation. Only minor methodological changes were made. Therefore, although table 6-3 lists the results of all three studies the following discussion of differences will focus primarily on the current RTI study and the Levine study.

Estimates of core direct treatment costs are most comparable among the three studies, with the most recent estimate of \$15.8 billion representing approximately a 9 percent annual increase over the estimate by Levine and Levine of \$9.5 billion for 1971. The difference between the two estimates can be explained primarily by inflation and moderate population growth. However, it should be noted that current estimates exclude the expenses of services provided to alcohol and drug abusers, as these costs are reported under the appropriate ADM problem in this study. The extent that these alcohol and drug abuse related mental health expenditures were subtracted from the Levine and Levine estimates, growth in treatment expenditures would be greater over the six year period.

Support costs for this study have been estimated in a manner similar to that used in Levine and Levine. Total costs of the various support services were first identified, and then the portion of those costs due to mental illness were estimated on the basis of the portion of total health treatment services used by the mentally ill. The estimated increase in support expenditures is about 6.6 percent annually. Although this is somewhat less than inflation plus population growth over the six year period, once again expenditures due to alcohol and drug abuse have been allocated to those respective cost categories in this study.

Mortality costs have been estimated in somewhat different ways in the two studies. Levine and Levine used the methodology employed by Berry and Boland in estimating the mortality costs due to alcohol abuse. First, epidemiological data on excess mortality of mentally ill populations were used to estimate excess mortality of the mentally ill. Next, this estimate of mortality was adjusted by including additional deaths due to mental



These causes included any suicides or mental disorders in excess of those estimated in the first step. In contrast, our estimates of the costs of mortalities are based upon the illness-specific approach, in which only deaths attributable to a specific list of mental illness-related diagnostic codes have been attributed to mental illness.

Both studies used the human capital approach to valuing the lost future productivity. Comparable adjustments were made in the two studies for wage supplements and benefits and for the value of household productivity.

Turning to morbidity costs, Levine and Levine used data from the Health Information Survey administered by the National Center for Health Statistics to estimate the number of persons with total work disabilities due to mental and nervous disorders. This number of persons was inflated by a factor of four to adjust for what the authors expected would be significant underreporting of mental conditions. Then, estimates were made of time lost because of treatment by individuals. To the extent that persons disabled with mental illness also received treatment in inpatient and outpatient settings for their disorders, there was probably some double counting.

The estimates have also been made using data from a general population survey on the disability status of the noninstitutional population in the U.S. The 1976 Survey of Income and Education by the Department of Commerce obtained data on disability due to mental and nervous disorders. These two categories of disorders are analogous to those used by Levine and Levine. A further expansion on the prior estimates was made by attributing some productivity loss to persons who experienced partial disabilities. Losses in productivity due to partial disabilities are experienced when persons are limited in either the kind or amount of productive activity that they can undertake. This component probably captures a large part of productivity losses estimated by Levine and Levine as being due to patient care. Unlike Levine and Levine, the current study does not make any adjustments for potential underreporting of mental disorders. Lastly, the current estimates include productivity losses due to institutionalization of individuals. These persons experienced complete work disabilities over the year in question, and would not have been included in the general population surveys of the noninstitutional population.

Finally, the current RTI includes estimates of other related direct costs, specifically the costs of the social welfare system; as shown in table 6-3, this cost category was omitted in the Levine and Levine study.



Table 6-3

Comparison of Results of Present Study with  
the Prior Major Study - Mental Illness  
(\$ in billions)

| Cost Category                 | Research<br>Triangle<br>Institute<br>(1977) | Levine &<br>Levine<br>(1971) | Levine &<br>Willner<br>(1974) |
|-------------------------------|---------------------------------------------|------------------------------|-------------------------------|
| Core costs .....              | <u>\$39.7</u>                               | <u>\$25.3</u>                | <u>\$36.8</u>                 |
| Direct .....                  | <u>18.2</u>                                 | <u>11.1</u>                  | <u>16.9</u>                   |
| Treatment.....                | 15.8                                        | 9.5                          | 14.5                          |
| Support.....                  | 2.4                                         | 1.6                          | 2.4                           |
| Indirect .....                | <u>21.5</u>                                 | <u>14.2</u>                  | <u>19.8</u>                   |
| Mortality <sup>a/</sup> ..... | 5.9                                         | 3.5                          | 4.9                           |
| Morbidity.....                | 15.6                                        | 10.6                         | 14.9                          |
| Other related costs.....      | <u>0.5</u>                                  | -                            | -                             |
| Direct.....                   | 0.5                                         | -                            | -                             |
| Indirect.....                 | -                                           | -                            | -                             |
| Total .....                   | \$40.3                                      | \$25.3                       | \$36.8                        |

<sup>a/</sup>

At 6 percent discount rate.

Individual items may not add to totals due to rounding.

SOURCE: Research Triangle Institute.

## Chapter 7

### Interactions of ADM Problems and the Overall Economy

In addition to developing estimates of the costs to society of alcohol and drug abuse and mental illness, a secondary objective of the RTI study is to conceptualize and discuss the nature of the more complex levels of interactions between ADM problems and the overall economy. Five such issues have been identified for examination in the study. Brief discussions of the nature and extent of these interrelationships are as follows.

#### I. MEASUREMENT OF LOST PRODUCTIVITY

The methodology generally used in the RTI and other cost-of-illness studies to estimate productivity losses results in estimates which are not sensitive to changes in the unemployment rate. This is true for both current losses and future mortality losses because these estimated losses are of potential lost productivity and not actual lost productivity.

By estimating potential losses instead of actual losses, cost-of-illness studies tend to overestimate the productivity losses due to health problems. These studies are estimating the maximum loss that may accrue to the economy. They assume that the loss of productive time is irreplaceable and therefore society's production declines by the value of that time (its opportunity cost).

The actual decline in production will be less than the potential loss. The exception to this will be when the economy is at full employment or when a particular segment of the economy is operating at full capacity. This will be demonstrated by discussing short-term and long-term reactions in the economy to health problems.

Acute or short-term health problems cause unexpected losses of productivity by individuals. However, the economy can generally adjust quickly so that the loss of an individual's time does not necessarily result in the loss of output to society. For example, if an individual loses a day of work due to illness, then the indirect cost to society of that illness is the value of the individual's productive activity (both market and nonmarket) that could not be performed. However, it is often likely that the work or household responsibilities would have been performed anyway, and no actual loss of market or nonmarket activities would occur. Manufacturing and service industries can almost always find a replacement by hiring temporary help, by using a worker who has slack time, by shifting workers with less pressing responsibilities to perform the task, or

by putting some work off to a future date when temporary workers can be found or when slack time is likely to occur. Home responsibilities may be performed by another member of the household, or may be delayed for some time, and time that would have been used for leisure activities may be used for work. Of course, this kind of substitution may diminish leisure time for someone.

Furthermore, because short-term, acute illnesses of various kinds are very common, personnel policies will adjust, with the result that more workers are employed than are ordinarily needed to insure against unforeseen illness. Wage levels would also be adjusted for expected illness and resulting lost productivity.

The substitutions described above are possible because the economy is almost never at full employment. The result is there is almost always some way to substitute workers, or delay work, or sell goods out of stocks which will satisfy the need for current production and consumption of goods and services. The excess or slack may not always exist in one plant or office, but it is generally available some place in the economy.

Chronic or long-term illnesses may have a different kind of impact on the economy than short-term acute illnesses. This can be demonstrated using a graph depicting a labor market model. Workers offer their labor in the market in increasing quantities for higher wages (upward sloping supply). Employers will hire more labor at lower wage rates, less at higher wage rates (downward sloping demand). Wages are equal to the marginal product of labor at that quantity of labor. Equilibrium market wages and employment levels are determined by the intersection of the supply and demand functions. These are the standard hypotheses of market models.

A key difference between labor markets and goods markets is that the labor market is rarely at equilibrium (full employment). Labor markets generally have a greater supply of labor at the current market wage than is demanded. This is shown in exhibit 7-1. At the prevailing market wage rate  $W_0$ , the available supply of labor is  $L_0$ . However, the amount of labor demanded (persons employed plus job vacancies) is less --  $L_1$ . The difference between  $L_1$  and  $L_0$  is unemployed workers that are willing to work but cannot find jobs.

The labor market - unlike products markets -- can be classified as a disequilibrium market because typically more people want jobs than are available at the current wage. Wages do not adjust downward in response to the excess supply as in product markets because of institutional rigidities such as union wage contracts and minimum wage laws. The result is unemployment because more persons want work than jobs are available.

Acute, short-term illnesses reduce the supply of labor. However, the availability of unemployed labor allows actual output to remain unchanged by putting unemployed persons to work. Potential production falls because the supply of potential workers decreases. Chronic, long-term illnesses on the other hand result in removing persons from the labor market, shifting the supply of labor to the left and reducing potential production at a given wage level. This is demonstrated in exhibit 7-2. If this were the only impact of the reduced supply of labor, then potential production would be decreased without any fall in actual output. Unemployment would fall as well, as unemployed workers are hired to fill in for lost workers.

The impact of a tighter labor market (either decreased supply or increased demand or both) is to raise the market wage rate. This occurs in the market for labor, with wage rates rising in response to falling unemployment. The amount of the wage increase depends on how close to full employment the market is before and after the labor market tightens. In a labor market with high unemployment, a decrease in the supply of labor may have an insignificant effect on the wage. In a labor market with low unemployment the reaction to a similar change may be strong upward pressures on wage rates. The amount of wage change is therefore variable.

Increased wage rates result in fewer persons being hired, with production actually declining and unemployment rising above what it would have been at the old wage rate. Furthermore, the higher wage rate may encourage more persons to enter the labor market.

These results of an increase in chronic illnesses can be readily summarized using exhibit 7-2 (assuming demand for labor does not change): the supply of labor shifts from  $S_{L0}$  to  $S_{L1}$ ; unemployment decreases from  $L_0 - L_1$  to  $L_2 - L_1$ ; lower unemployment results in upward pressure on wage rates, which rises from, say,  $W_0$  to  $W_1$ ; the new quantity of labor supplied is  $L_3$ ; the new quantity of labor demanded is  $L_4$ ; the new amount of unemployment is  $L_3 - L_4$ . Potential and actual employment and production at the new wage rate is lower than before the change. The wage rate in the economy has increased and the number of persons employed has declined. The number of persons willing to work at the new wage is higher than the number of persons willing to work at the old wage after the supply of labor decreased. It would require highly sophisticated models and studies to estimate the magnitude of the changes outlined above.

To estimate lost production due to health problems, studies must make use of actual values which reflect the adjustments explained above: the supply of labor is already shifted back to  $S_{L1}$  and wages are higher than would be the case without the problem. The values that can be measured are the number of persons currently in the labor market, the number of persons disabled due to illnesses, and the current wage rate.



The Labor Market in the Short Run

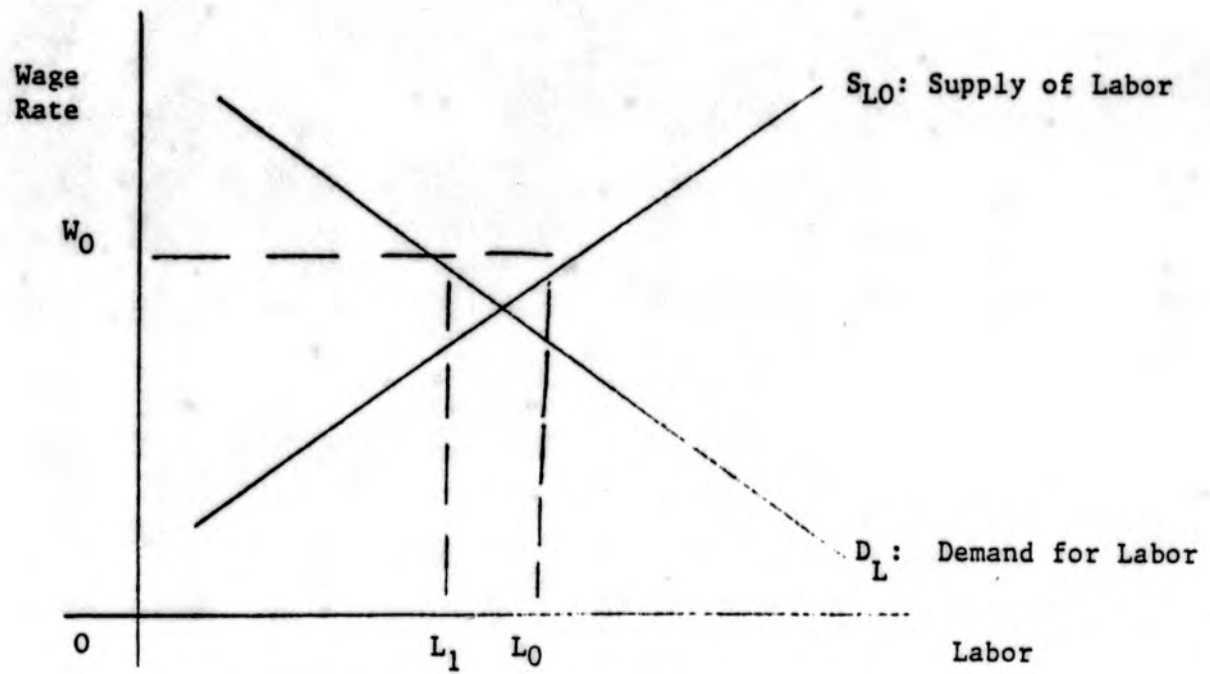
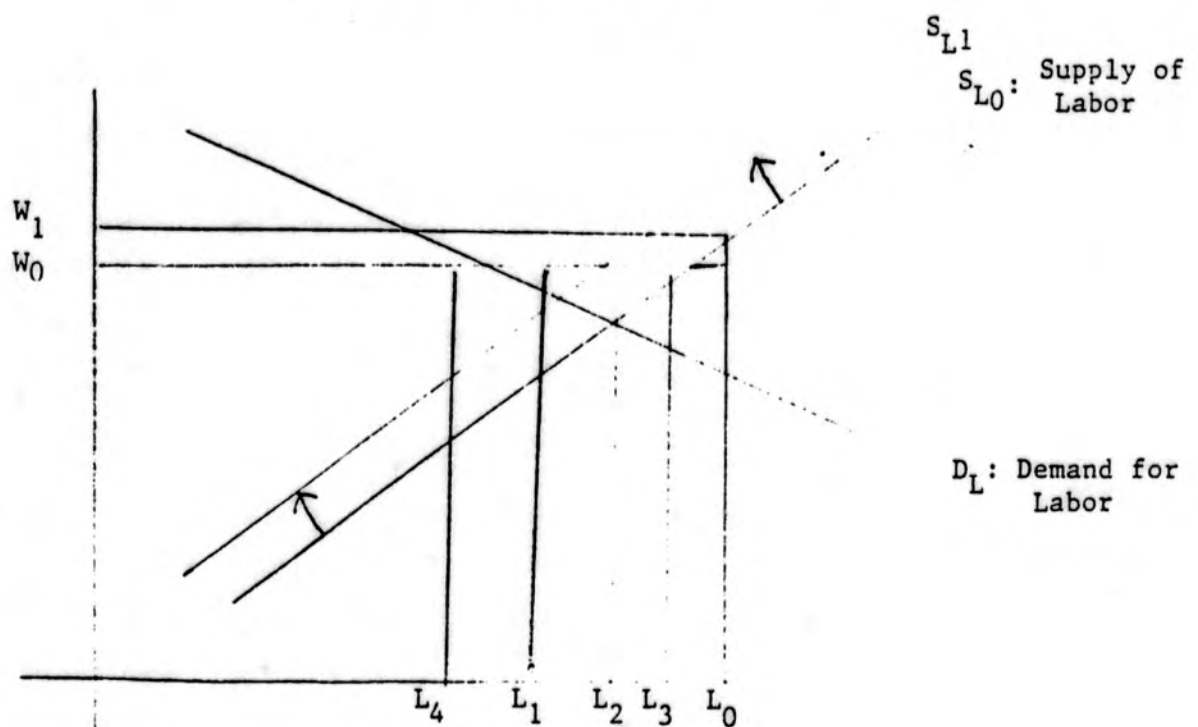


Exhibit 7-2

The Labor Market with Long-Run Adjustments  
to a Reduction in Supply



The simplest and most direct estimate that can be made given our knowledge of labor markets is to value lost productive time at current wage rates. The estimate derived in this methodology will be an over-estimate of actual and potential losses, due to the tendency of wage rates to increase as a result of the reduced supply of labor. However, this approach does yield consistent estimates across the different ADM problems.

## II. SECONDARY COSTS OF REDUCING ADM DISORDERS

The implication of a cost-of-illness study such as the one described in the RTI report is that a reduction in the amount of illness will reduce the amount of subsequent economic costs to society. While in general this would be true, a full assessment of the results of this reduction should take into account the effects of the reduction on different segments of our economy.

For example, since substance abusers consume a large portion of the production of legitimate industries, these industries and their associated distribution systems might be adversely affected if policies were implemented to reduce the extent of the ADM problem. An indication of the possible magnitude of these problems can be obtained by examining selected economic indicators of the distilled liquor industry. In 1972, the total value of shipments from this industry was \$1,798 million; and 14,500 production workers were employed in this industry (U.S. DOC 1976). Assuming a constant ratio of output per worker, each percentage point reduction in output from this industry would result in a reduction of \$18 million of shipments and a loss of approximately 150 production jobs. These reductions would result in additional losses throughout the economy through the multiplier effects and linkages of employment and output in the distilled spirits industry and employment and output in other related industries.

Another source of secondary costs of reducing ADM disorders is in the ADM treatment industry itself. If the magnitude of the ADM problem is reduced, there will be a reduced demand for these treatment resources. As shown in chapter 5 of this report, a total of \$22.7 billion was expended for treatment of all ADM problems in 1977. Based on the assumption of a constant average cost of treatment, each percentage point reduction in the number of individuals in treatment would reduce treatment costs by \$223 million. In other words, a reduction of the treated prevalence of ADM problems of 10 percent would produce a savings of \$2.2 billion in treatment costs. This reduction in treatment costs would also be accompanied by a reduction in the number of personnel employed in the ADM treatment industry.

In the long run, these displaced resources in the alcoholic beverage and ADM treatment industries would find alternative employment opportunities

as the necessary adjustments were made to changing patterns of demand throughout the economy. However, in the short run some of these individuals may be unemployed as the necessary adjustments are transmitted throughout the economy.

### III. INCIDENCE OF COSTS

Another complex issue in estimating the costs of ADM is the perspective from which these costs are measured. Our primary approach has been to estimate the total economic costs to all segments of society without regard to which segment is financing or paying these costs. However, in addressing alternative policies for reducing these costs, the issue of the incidence of these costs to various segment of society may become important. Therefore, it is useful to develop a general framework for addressing this issue.

In the case of direct core treatment costs, it is possible to develop estimates of the major sources by which these costs are financed. These estimates are presented in detail in appendix A of this report, which estimates the proportions of treatment costs that are borne by various levels of government (Federal, state, and local) and by the private sector.

Another issue that could be examined is the incidence of the indirect costs of productivity losses. These losses have been valued here in terms of earnings before taxes plus fringe benefits. This measure best represents the opportunity costs of these labor resources to society. However, to the individuals who are either no longer employed or who suffer from reduced earnings as a result of their ADM problem, these costs should be valued at after-tax earnings levels, which are the proper measure for assessing individual costs. The remaining amount is the amount lost by government.

Another issue that can be addressed in assessing the incidence of ADM costs is the treatment of transfer costs. From society's perspective, transfer payments do not represent a cost since they do not involve the loss of society's productive resources. However, from an individual's perspective the receipt of a transfer payment is definitely a benefit; and from the government budget perspective, a transfer payment is certainly a cost. However, this issue is not particularly critical with respect to ADM costs because the amount of payments from various social welfare programs received by individuals with ADM problems is not a significant portion of the total ADM costs to society.

A final issue is related to the incidence of these costs through time. For example, if law enforcement efforts to combat the effects of drug or alcohol related crime were intensified, total costs to society would initially increase as law enforcement expenditures increased, but they might subsequently decrease if these crimes were reduced, resulting in a decrease in court and

Corrections costs. As a second example, costs to individuals would likely increase initially as taxes would have to be raised to finance these increased expenditures. Subsequently, however, costs to individuals might decrease as a result of lower crime rates and less stolen property.

#### IV. INSTITUTIONAL FACTORS

The general framework for estimating economic costs to society is based on the premise that no direct costs are incurred unless resources are utilized. Thus, direct treatment costs are not incurred if resources are not available for use in treatment activities. In turn, the availability of these treatment resources depends on a variety of institutional factors, including the organization and financing of treatment services delivery.

One of the interactions between ADM problems and the economy that could be examined is the effects of changes in these institutional factors on the availability and utilization of resources for treatment. For example, if the price to an individual of access to treatment for ADM problems were lowered due to inclusion of these services under some form of national health insurance, utilization of these resources might expand. Under our general methodological framework, the measured costs to society of ADM problems would then probably increase even though the severity of the underlying problem may not have changed. It should be noted that the shift of treatment from the household to the market sector does not necessarily imply no prior costs of treatment. These costs may have been present but not measured in that they may formerly have occurred in the home and outside the market for health care services. In addition, it should be noted that the increased flow of treatment services might alter the time stream of ADM costs, as the availability of treatment in the present time might reduce later costs to society from disease, death, or other consequences.

In examining this general issue, a limited number of current policy options under consideration could be analyzed in terms of the implications of changes in institutional arrangements on resource utilization. Appropriate information on the effects of these proposed policies on resource utilization could be used to develop rough, order-of-magnitude estimates of the effects of these changes on estimates of cost to society.

#### V. INTRA-GENERATIONAL EFFECTS OF ADM PROBLEMS

The intra-generational effects of alcohol or drug abuse is an area of concern that is seldom addressed. Conceptually, measuring the economic costs of substance abuse by youth is analogous to making estimates for the adult population. The common principle is the measuring of the opportunity costs of an action or situation. Consistent application of the opportunity cost principle is one way of answering what the costs of substance abuse are throughout an individual's lifetime.



Youth are not generally assigned an opportunity cost value due to current alcohol or drug abuse problems because their primary activity --schooling--is not immediately perceived as a productive activity. Schooling of youths makes no contribution to current market output. Neither does it affect current household production. Because market and household production are generally perceived to be the two primary productive activities of persons stricken by health (and ADM) problems, only these two product activities have been emphasized in cost-of-illness studies by Rice (1966), Cooper and Rice (1976), Paringer and Berk (1977) and in the Public Health Service Guidelines document. The opportunity cost principle applied to market and household productivity losses is well understood and has been readily applied. The contribution of youth to production in these areas is generally ignored because it is thought to be insignificant.

However, the future productivity of youth is included in cost-of-illness studies. This occurs when the mortality costs (present discounted value of lost future productivity) are estimated using the human capital approach to valuing lost lives. It is recognized that youth have a long productive lifetime ahead of them, and that premature mortality will constitute a significant loss when the discounted future losses are summed.

Cost-of-illness studies to date have not addressed a corollary of mortality losses: that the current period's alcohol or drug abuse problems may have a harmful effect on future productivity even if no death results. This corollary has been extensively studied in the context of human capital analysis. One of the fundamental concepts of human capital analysis is that current actions by individuals will affect their future earnings prospects and that individuals will rationally act on that information. Education is believed to augment the stock of productive skills and knowledge ("human capital") of individuals, thereby increasing their potential future earnings. Increases in education are reflected by increases in income, and decreases would presumably result in lessened income.

The economic rationale for education then is to sacrifice present (market or household) production of an individual in order to accumulate human capital. Since additional human capital will result in higher future income, this amounts to a sacrifice of current productivity for enhanced future income. This sacrifice is decided on by a careful weighing of present and future costs and yields to the individual. In operationalizing the framework outlined above, the value of time spent on education is estimated. Becker (1964) and many others have assigned a value to time spent in education equal to the earnings foregone by an individual's not spending those hours in productive market or nonmarket activity.

With this kind of analysis numerous studies have estimated the rate of return on various kinds of investments in human capital: high School education, college education; vocational training; and on the job training. The results consistently indicate that by valuing time invested in education at its opportunity cost (in market or nonmarket activities) the human capital models provide an appropriate framework for testing various hypotheses concerning the time individuals and groups spend in these activities.

This implies that the opportunity cost for a high school student staying in school is the value of earnings that could have been received for market (or nonmarket) work. Consequently, if a high school student misses school (whether due to an ADM disorder or otherwise) his sacrifice of discounted future earnings is equal to the amount it was possible to earn from market or nonmarket work during that time period.

The current costs of ADM problems for students is equal to the time lost from school (in class, studies or homework) due to the ADM problem times the value of the student's potential (market or nonmarket) productivity with that time. Conceptually, there are no difficulties in estimating the value of lost future productivity due to ADM problems of students. The problem in making these estimates is in calculating the time lost from school and studies by youth due to ADM problems.

Some data available from a study on alcohol use by youth (Rachal et al. 1981) suggest that the problem should be examined in greater detail. The Rachal study estimates that 31.2 percent of youth aged 14-18 in 1978 were alcohol "misusers." Misuse was defined as either having been drunk a certain number of times within the prior year or having a certain number of defined negative consequences during that year. This definition is analogous to that of "problem drinkers" used in studying adult alcohol abusers. However, there is no direct correspondence between estimates for the two populations. Although Rachal estimates the percentage of youth who are misusers, the study does not include an estimate of the amount of school missed by youth due to ADM problems.

To make some rough estimate of the current cost of alcohol abuse by youth it might be assumed that productivity losses of these misusers (lost time, reduced alertness and attention) is equal to that assumed for adult alcohol abusers in appendix A: 18.75 percent of annual productivity. A student has 1440 productive education hours a year, assuming a 180 day school year and 8 hours a day for class and home study. The minimum wage of \$2.30 per hour in 1977 is probably close to the value of market productivity of high school youth. These assumptions indicate a loss of productivity equal to \$621 a year per high school student who misuses alcohol. With a high school (grades 9-12) population of 15.8 million in 1977 this suggests a potential loss due to alcohol "misuse" on the order of \$3,061 million.

This human capital approach to valuing ADM problems of youth can stand significant refinement. It can probably be subjected to many of the same criticisms leveled at the human capital approach to estimating mortality losses. However, it does establish a conceptual framework within which such losses can be examined and provides a rough order approximation of the value of these costs resulting from alcohol abuse by high school youth.

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## CHAPTER 8

### Summary

As summarized in the preceding materials, the cost estimates presented in the RTI report were developed through a variety of procedures from a number of data sources. In many cases reliable knowledge and/or data were not available for making these estimates. In order to avoid over-stating the economic costs to society of ADM problems, RTI deliberately selected conservative data and/or assumptions where such data or assumptions were available and a choice could be made. In other cases where no data or assumptions were available, RTI omitted estimates for specific cost elements entirely.

CHRF used the RTI study to develop cost estimates for the State of Alaska. Given the enormous (prohibitive) costs involved in replicating this type of study for a county or state analysis, CHRF used an extrapolative strategy that approximates the national figures to a county or state.

CHRF has calculated the percentage of each cost included in Chart 1-1 against the National GNP for 1981. CHRF then worked with Alaska's economic figures to calculate a "State Gross Product". While time consuming, this is the only legitimate design to develop extrapolative approximations. The base line percentages are then used with the "State Gross Product" to calculate the county impact costs.

This methodology was reviewed and considered an excellent low cost extrapolative cost approximation strategy. More important, this approach leverages the benefits of a major national study to counties and states that could not otherwise afford to replicate the national study.

FEASIBILITY STUDY ON THE  
EFFECTS OF THE LOCAL OPTION LAW  
ON LOCAL COMMUNITIES

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### APPENDIX

## ABSTRACT

Since its enactment in 1980, Alaska's Local Option Law (AS 4.11.480-504) has been used by scores of villages. This law was intended to provide small communities with alternative state-enforced methods to control the access to and availability of commercial alcohol within their boundaries. In mid-1984, the State Office of Alcoholism and Drug Abuse (SOADA), as part of its continuing program to create and monitor effective preventions to alcohol abuse and its related dangerous behaviors, commissioned the Justice Center and the Center for Alcohol and Addiction Studies of the University of Alaska, Anchorage to conduct a feasibility study on the investigation of the criminal justice effects of the Local Option Law. The 80-page final report on the study of four northern villages is intended to be read in conjunction with two previous reports prepared for the Alaska State Legislature - Village Alcohol Control and the Local Option Law (1983) and Community Social Indicator Study (1984).

There is no doubt that the immediate effect of village bans on the sale and importation of alcohol by a village is a significant alteration in drinking behaviors and a decline in public drunkenness and alcohol-related violence. Alcohol consumption becomes more cautious and private and the incidence of threatening behavior, interpersonal violence and accidents declines, suggesting some break in the link between alcohol consumption and dangerous behavior. There are also significant improvements in the appearance and scholastic performance of the children of drinking parents and the general quality of public safety as per-



ceived by residents. To a lesser degree, there are increases in local bootlegging and manufacture of homebrew.

As a result of these changes, communities remain attached to the Local Option Law as a useful tool in preserving community health and safety, in conjunction with a wide array of programs devised and provided, both separately and jointly, by community members and SOADA.

The Local Option Law has placed increased burdens on community and regional law enforcement, the courts, and the alcohol treatment programs. Constructing sound legal cases against violators has proved to be difficult for both village public safety officers (VPSO) and troopers, thus reducing the threat perceived by violators. This suggests the need for greatly increased training and support of local law enforcement if the Local Option Law is to continue to produce positive effects.

Communities often enact local bans in order to control the dangerous behaviors of a select number of residents, using the threat of state trooper enforcement. Since the bans apply to all residents equally, all residents are seen to be threatened by arrest, jail, and a criminal record, reducing the likelihood of local people reporting on one another. When the community, its leadership, its VPSO, the troopers, the prosecutors, and the courts are not in accord on the manner of enforcement and punishment, the force of the law on the alteration of behaviors is seen to decline over time. It is likely that village bans on the actual possession of alcohol would encounter even more enforce-

ment problems. This suggests the need for far more accord, flexibility, and sensitivity among community and state officials and the development of more local and tribal methods of adjudication and punishment of offenders, as an adjunct or alternative to the state criminal justice system.

Rather than jailing offenders of the Local Option Law, local courts often refer them into regional alcohol treatment programs, thus increasing treatment caseloads and "medicalizing" the new criminal problem. Reducing the legal threat to the individual may also erode the enforcement impact of the law. Community control of alcohol has raised, but not resolved, many conflicting values - the rights of individuals versus the well-being of the community, local versus non-local enforcement, and control over alcohol versus control over dangerous behaviors. In dealing with these dilemmas, the villages included in this study and the social agencies which serve them are taking a very active role in creating many new local solutions which warrant consideration and support by state government.

## I. INTRODUCTION

Alaska's Local Option Law (AS 4.11.480-504) has been used by scores of villages since 1980. This law was intended to provide villages with alternative methods to control the access to and availability of commercial alcohol within their boundaries. Two studies on the early effects of implementation of the Local Option Law were commissioned by the Alaska State Legislature and resulted in two final reports - Village Alcohol Control and the Local Option Law (1983) and Community Social Indicator Study (1984). In mid-1984, the State Office of Alcoholism and Drug Abuse (SOADA) commissioned the School of Justice and the Center for Alcohol and Addiction Studies of the University of Alaska, Anchorage to conduct a feasibility study on the investigation of the criminal justice effects of the Local Option Law on local communities. This volume is the final report of that study.

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Lewney*

The long-range purpose of this study was to formulate appropriate problem statements for subsequent community investigation by SOADA, that is, to discover what questions were useful to pursue, what data would be required and available to answer these questions, and what methods would produce these data. The study was to provide preliminary statements on the effects of the Local Option Law and describe relevant data systems for the routine monitoring of change over time.

### Results

As SOADA and the study team had anticipated, the quantified data bases for public agencies - public safety, justice, public health, mental health, social services, and alcoholism - located

in the village or its regional hub were found to be of little utility in establishing a pattern of change over time in key measures of community life or linking change to a single cause, such as a new law. In this respect, the local data bases were not worse, but no better, than their larger statewide counterparts.

In order to examine systematically the positive and negative effects of the Local Option Law, the study team developed an exploratory method for village-level inquiry into the changes accompanying the adoption of a local option. This method relied on interviews with key informants within communities and within public agencies serving them. These interviews were to identify and establish important measures and indicators of change which would remain stable and instructive over time, even though agencies might not currently be collecting or maintaining them.

The interview guide was applied both to four villages which had volunteered to assist in the study and to the agency personnel who provide services to these villages. The cooperation of the villages and the agencies was overwhelming. Much as we would like to thank them by name, our agreement with them included stringent requirements for the maintenance of confidentiality. We are of the opinion that the same method could be used in these villages or others to develop a longitudinal information base. Much of the investigation could be usefully and sensitively conducted by local residents and officials themselves.



The interview guide was established to address the following questions:

- has the volume of alcohol present or visible in villages changed since passage of elected options?
- has the rate or type of various forms of criminal or delinquent behavior changed?
- has the rate of alcohol-related injury, accident, mortality, or illness changed?
- has the rate or type of alcohol referral to local programs changed?
- has the level or type of local control and enforcement over alcohol changed?
- has the rate of positive outcomes and other indicators not commonly tabulated by external agencies changed?
- what unintended changes have occurred since the local option?
- how do residents and agencies know that these changes have actually occurred; that is, what indicators do they use to assess change and what evidence do they look at within an indicator?
- to what degree and through what means are these changes attributable to the adoption of a local option?
- what is the best method through which outsiders to the community could "see" these changes?
- how do village residents feel about the effectiveness of community and agency actions?

These questions were found to be "on target" with our key agency and village informants, and the open-ended interview guide

seemed a useful tool for the exploration of questions. Based on our experience, we would suggest replication of the study, using the same basic questions and interview guides, in these villages and others on a routine basis.

### Summary of Project Findings

The following constitute the key findings of this qualitative study:

1. Since the inception of the Local Option Law, there has been a decline in the availability of commercial alcohol in LO communities, as signaled by the increased manufacture of homebrew and by the increase in small-scale bootlegging.

2. Concern over strict enforcement of local option and other liquor laws has resulted in significant reduction in alcohol-related dangerous behaviors in the villages, disproportionately large compared to the change in commercial alcohol availability. This suggests that the link between alcohol consumption and dangerous behaviors has been, at least partially, severed.

3. Local option, as a community control effort, is now operating within a much wider array of community efforts to find solutions to dangerous, problem, and abusive drinking. Local option is looked upon as a significant, even indispensable, tool among many others (e.g., village public safety officer, elders' meetings, tribal authority), part of an arsenal at the disposal of the people. Pages 54-56 provide a greater explication of these extant and proposed tools.

4. Local option has become an indirect behavioral control

tool, in lieu of the villages having direct control over residents' alcohol use and alcohol-related behaviors.

5. The behavioral changes are evidenced primarily by declines in public drinking, public drunkenness, alcohol-related interpersonal violence, and accidents and by marked improvements in the physical appearance and scholastic performance of the children of drinking parents.

6. The behavioral changes appear to have long-term effects, even in those communities which have rescinded and re-enacted their local option. These changes reflect aggregate changes in attitudes within these villages and the region as a whole.

7. The effect of enacting a local option is an immediate alteration in these behaviors and a decline in some problem rates; these successes erode over time, as perceived or real law enforcement declines as a deterrent. However, the rates do not appear to return to their original high levels. Those whose behaviors appear most altered by the local option are those whose drinking behaviors are not so abusive or dangerous as to be beyond the influence of continuing social, peer, or legal pressure. Those who require assistance in maintaining moderation or sobriety appear considerably assisted by the local option.

8. If a village adopts a local option and delegates its enforcement exclusively to city council members, the VPSO, or the state trooper, the local option will not succeed. The effectiveness of the local option is directly dependent on the involvement of the entire community, peer pressure, and other

forms of community social control.

9. Theoretically, the VPSO and local option are mutually sustaining; having a law without an enforcement officer or having an enforcement officer without a legal tool are similarly insufficient to combat the alcohol-related problems.

10. Community division over alcohol control, complex problems inherent in the law, and lack of village control over enforcement and adjudication outcomes continue to pose employment risks for the VPSOs attempting to uniformly or selectively enforce the local option. Both uniform and selective enforcement of the local option places the VPSO at risk with important families, the city council, the alcohol council, the trooper supervisor, and the VPSO's peer group, or all of them simultaneously. Lack of significant communitywide support and lack of extensive trooper support and training erode the VPSO capacity to enforce the law or remain in their jobs.

11. The villages view the "wet" hub as a significant source of local option enforcement problems. However, the hub offers a more controlled environment in which drinking can occur and dangerous behaviors curbed by law enforcement personnel, thus reducing the prevalence of problems in the villages. The volume of behavioral problems exported from the villages to the hub is not seen by hub agencies as considerable or difficult to manage. This is due, in part, to improvements in the capacity of hub public safety agencies.

12. The Local Option Law has criminalized what had previously



been legal importation of alcohol. The courts, in turn, have referred many offenders to alcohol treatment, in effect "medicalizing" the newly defined criminal problem and reducing some of the threat posed by the law. The courts are using their own discretion in distinguishing among "alcoholics," "abusive drinkers," "dangerous drinkers," and "problem drinkers" within the total population of local option law violators appearing before them.

13. The hub view of the villages is often distorted by being based on the behaviors of some villagers in the hub and the growth in social agency caseloads, that is, negative cases. These events and caseloads do not reflect the range of positive changes occurring in the villages.

14. The search for positive indicators of change, based on community perceptions, generates a much clearer view of local option outcomes than reliance solely on changes in agency-generated data on negative events. Agency-generated data bases, as noted in the earlier report - Community Social Indicator Study, are currently too new and limited to assess the effects of the Local Option Law, even on an aggregate basis.

The authors provide an additional discussion of findings, speculations, and considerations for future study in Chapter 6.

#### Method

The study team contacted the board of the regional non-profit health corporation asking for assistance in conducting the study in four villages. The board met with the team, asked for and

received additional information and modification of the study design. The health board members polled their villages; four villages expressed their willingness to participate in the study.

All four villages had adopted a local option banning sale and importation of alcohol. However, in some cases, the option has been repealed, then reenacted, as each community attempted to achieve electoral consensus. This limits severely any ability to measure change in small data systems from "before" to "after" local option. Therefore, we asked these communities to generalize about changes from 1980 to 1985, but without regard for the "dry-wet-dry" period. It was important for us to keep in mind that popularly described "dry" communities (those with a local option) were not without alcohol and that "wet" communities (those without a local option) were not, of necessity, without limitations on the presence or use of alcohol.

The study team solicited the consent of the Research Review Committee of the Indian Health Service and the Institutional Review Board of the University. These matters of protocol took considerable time to complete but ensured amity among the regional authorities, the public agencies, the villages, and the study team. It is anticipated that the study results will be communicated back to the villages using the same means.

Once the goals and methods of the study were approved by regional authorities, fieldwork was begun. Key informants were approached and interviewed using the interview guide. Informants included health care providers (public health nurses, community

health representatives, mental health and alcohol treatment directors and staff), law enforcement personnel (troopers, municipal police, police dispatchers, jailers, village public defender), teachers and principals, mayors, councilmembers, city managers, elders, alcohol retailers, tribal authorities, search and rescue personnel, and others. Although the fieldwork period was six weeks, many persons were absent from the villages during our visits. Because there is not an exclusive individual access to village-based information, we did not feel that we missed any facts of major importance. The wide array of responses and respondents in the study provided us with confidence about our findings, even though we did not conduct a formal survey or use a random sampling procedure.

Key regional agency personnel were interviewed about each of the villages individually and then collectively. The village informants reflected carefully on their own communities. On many questions we received convincing consensus, while on other issues, major differences were reported. Different informants, because of a different stance toward alcohol, alcohol control, and the future, tended not to report different factual outcomes of local option as much as differences in their interpretation of facts. We found surprising similarities in the elements of village life in which changes were reported.

Questions were recorded, examples given, and answers were probed for more information. The probes elicited the most useful information and new categories of inquiry.

Because the existing agency data base on villages is both weak and problem-oriented, we expended considerable effort on developing positive indicators and non-agency data. We came to discover how each community assesses itself, on its own measures, many of which we could not have predicted. We also obtained a sense of the processes and chains of connected events which resulted in a variety of different outcomes.



## II. VILLAGES VIEW OF THEMSELVES

### How Have the Villages Changed Since Local Option?

Local Option (LO) is not the most significant community change in the villages we examined. Other changes, variously, include increased population, increased suicides, improved telephone service, increased air services, introduction of satellite television, increased sports activity, new housing, less turnover among teachers and community health representatives, increased turnover among VPSOs, many more snowmachines and three-wheelers, improved student performance and attendance, increased family entertainments (such as basketball and bingo), more complaints about the lack of arrests for law breakers, improved juvenile diversion programs, the election of more committed leaders to local office, increased use of drugs, increased manufacture of homebrew, and so on.

There has been an increase in Bingo activities. People are looking for other things to do besides drink, and there doesn't seem to be much else, especially for the after-school crowd in their late teens and 20s.

(Statements set off in this manner represent direct quotations from interviews conducted for this study.)

Younger people, particularly village officials, tend to feel more positively about some of the recent changes in the villages, although they do not readily agree on the nature and role of these changes.

The four villages in this study have enacted a local option, banning the sale and importation of alcohol. Some villagers, particularly elders, expected LO to get rid of all alcohol in the

village and so put an end to all drunkenness. The health practitioners expected a significant decline in alcohol-related trauma. Most people were curious about what would happen.

What villagers anticipated included:

1. decreased alcohol consumption;
2. decreased drunken behavior;
3. decreased alcohol-related violence;
4. improved quality of life; and
5. increased bootlegging.

#### Does the Supply of Alcohol Change with Local Option?

Villagers were asked about the supply of alcohol present since LO. The general response to this question was that the volume of alcohol present and consumed was about the same amount, maybe slightly less.

There has been no noticeable change in the amount of alcohol in the village since LO. Those who want to drink just bring it in any time they want. Oh, maybe there's a little less booze in the village with LO.

When residents and others suggest that the amount of alcohol in the villages has remained about the same, we found that they do not differentiate among commercial products, alcohol-based lotions, and homebrew.

What LO does seem to have achieved (impact upon) is a reduction in the volume of commercial alcohol in the villages because of the increased risk of getting caught, the significantly inflated delivery price, and the uncertain supply. The result of this change is that homebrew has increased and brought another

set of alcohol management difficulties. The increase in homebrew available may indicate that the supply of commercial alcohol has been constricted.

Alone among all respondents, one VPSO reported a significant change in supply:

Since we've had LO, I estimate that the volume of alcohol in the village has decreased 25%.

#### What Indicators Do Villagers Use to Record Positive Change?

We asked villagers what indicators they used within their community to measure positive change. What we found, rather convincingly, is that agency statistics do not tell a villager about the changing quality of life in his community or indicate the level of safety within his community. The reporting systems are so weak that the village-based numbers on public health and safety have little meaning.

The endemic indicators used by villagers to assess positive change consist of a very narrow band of popular indicators or impressions. For example, "change" among school children, as reported by school teachers, is considered as a lay community indicator. Teachers in these villages reported:

We see a definite difference among the kids in school during LO times. They're rested, more attentive, more neatly dressed. When the village is wet, we get more alcohol-related stories during our "show-and-tell" period. There is also a difference among the kids at play. . . when drinking is going on in their homes, they stay out later, come over to our place, etc.

Kids are better dressed, kids come to school alert and with a good night's sleep, kids have had breakfast. Their attendance and performance rise when LO is effec-

tively in place.

They suggest that none of these behaviors are possible when parents are engaged in heavy drinking.

Front-line health care providers also provide good indicators of change. Community health practitioners (CHP) uniformly reported that when LO is in force in the village (not merely on the books) they get more sleep at night. One reported that she used much less gauze when LO is in force, a wonderful if impossible piece of empirical data. Another CHP noted that, when the village is "wet," she gets five to six calls a month around midnight to patch up people who have sustained interpersonally inflicted alcohol-related injuries. During the one calendar year since LO, she could count only three such instances. The CHPs considered these "off duty" interruptions as very important indicators, since it is the midnight calls that contribute so heavily to their employment burnout rate.

There is considerable consensus about these behavioral changes. There is consensus that people's drinking has not declined very much, yet their behaviors (the who, what, where, when, with whom, why, and with what consequences) may have changed markedly. Residents reported:

I don't believe there have been any homicides or suicides since LO.

There seems to have been a shift in behavior among drinkers. Before LO they were pretty open about it: public drunkenness, parties spilling over onto streets, intimidation and assaults on others. After LO the drinkers tend to stay inside behind closed doors. They



have become more guarded and protective of their supply of booze, and tend not to give it away as freely as before.

I have noticed less public drunkenness. Violent behavior related to alcohol consumption initially seemed less frequent.

People are not walking around with bottles, engaged in excessive drinking.

Stay indoors helps, because there used to be more fights, affects younger kids. It's hidden so much now, it's hard to say. The drinkers are more careful because they have to pay the fine or work for the City.

I don't know much about it because I stay home. The drinkers don't come around here any more, not even my kids. I guess they stay home and drink.

Before local option, when we wanted to party, we would party out in the open. Now new ways to bring in liquor. It changes everything. People are sneakier.

If it's done nothing else, it's driven the drinkers inside. It's made the "problem drinker" more careful with his supply of alcohol, although there has been a small increase in use of homebrew, aftershave.

There has been a decrease in domestic violence since LO, even in the "drinking houses." Even so, 90% of the calls I get are alcohol/drug related. (VPSO)

The drinking is kept so much behind closed doors now, that it's hard to know if so-and-so still drinks. If they are, you don't see them around.

The LO has helped us to have fewer accidents. People who are drinking stay indoors more now. It helped a lot, the LO law. People don't bring in booze by the cases.

Villagers in general suggest that there are fewer bad events (e.g., wild parties at night, fights where people are seriously hurt, public assaults on the street, DWIs) occurring since the development of LO, although not necessarily because of it. The standards for village judgment are principally behavioral, that is, comportment and civility, rather than drinking per se. These

changes allow them to live in the community without being hassled or assaulted. This allows them a feeling of privacy and safety within their own houses.

Village Public Safety Officers (VPSOs) sense that, since LO, there are fewer bad events but the bad events which do occur may be more intense, because they are concentrated in private homes, the "castles" of the owner, and "the guns are right there." These tense situations of real or imminent violence appear more difficult and dangerous to handle. It is reasonable to attribute this change and its consequences for the drinker(s), spouses, children, friends, and VPSO to the LO which has, by consensus, altered the location for drinking in the village.

One opinion suggests that, following LO, there are fewer cases of violence but that domestic violence has become far more serious. We found, however, no evidence that could substantiate that this has occurred to any measurable extent. The numbers within the region, while producing high per capita incidence rates of violence, remain too small to generalize about changes in severity within the incidence rate. Villagers, recalling individual cases of violence in their communities, are dubious about the generalization itself.

Villagers sensed a change toward "responsible" drinking. By responsible drinking is meant responsibility to the community not to engage in negative behaviors when drinking, i.e., not to take party behaviors out of doors.

The chain of events flowing from a single act, such as

enacting LO in a village reveals a complex, probably indirect, cause-effect linkage. For example, having the Community Health Representatives say that LO has resulted in far fewer late night calls is probably the result of LO altering alcohol availability and cost, altering location of drinking due to fear of being seen and reported, and altering some drinking behaviors due to community actions and expressions regarding drinking behaviors. It is unlikely that the reduction in number of calls is directly correlated with less alcohol being imported into the community. These outcomes are at the very end of a long chain of related actions, many of which cannot be seen or understood by casual observers.

#### Do Positive Changes Continue Over Time?

We asked residents about the permanence of positive changes related to LO. Most indicated that over time there was a significant erosion of gains, complicated particularly by efforts to rescind LO.

Respondents suggested that various groups in the village responded to LO differently. One group would immediately stop drinking and then, in small increments, resume drinking to some level approximate to, or below, their previous norm, particularly if the law were rescinded. Another group, serious problem drinkers, were reported to drink somewhat more under local option, and then to increase their intake upon rescision. For example, one individual recalled:

As you are aware, there was a period during the summer of 1983 when the local option law was voted out by

younger voters. During that period, the local police quit, drinking in public increased as both local persons and out-of-towners came here to drink. The council as a body went out and collected and jailed up to 35 persons in a single day. The troopers finally came into the village to restore order. The population voted local option into law again by summer's end.

Both drinking and related problem behaviors were seen to increase over time.

(Have these problems gotten better or worse?)

Seems better since LO, although since then some improvement has disappeared.

(Do you think there is less alcohol in the village?)

At first, probably. Now probably not.

People who drink during LO do stay indoors more. Now that we are wet again they are still careful about managing their drinking behavior and tend to stay indoors still.

When (Village) B first went dry, people went to (the hub); now they bring it home. When it changed from dry to wet, people were drinking around town. They weren't scared to bring in booze. They weren't careful. Then things slowed down (when it went back to Local Option). Now people are getting more careful.

Some changes have influenced policy at the local level.

Our 'Search and Rescue' team has made a decision to change part of our operating policy. This involves drunk drivers. You know that everytime we have to go out and look for someone, it costs money. Well, from now on, whenever we have to go out on a search and rescue mission and discover evidence that that person was driving under the influence of alcohol, that person will have to pay for the cost of the mission. Some people have been abusing our service. So the next time you think you can get all boozed up and then take off somewhere on your snow machine, think of that big bill you're going to get.

There is no evidence that this policy has been actively implemented.



### Whose Behavior Has Changed?

LO is a small, but important, tool for those villagers who have a marginal problem with alcohol. Since they do not wish to import or manufacture their own alcohol illegally, LO and the community support underlying it change their behaviors. Some "problem drinkers" themselves vote for LO, even though they would rather drink. They vote for LO and then honor those new restrictions because it gives them a supportive context for altered behavior. They contribute to community "structures" which help them in their personal areas of weakness.

We found some villagers use LO as a device for their own sobriety. That is, as soon as LO is adopted, they stop drinking as if they had created their own external locus of control. If alcohol is not around and they are not part of a circle of drinking friends, they will not seek it out nor take the risk of importing. Those individuals who are going through personal life transitions or who require only a little encouragement are most markedly assisted by the LO.

Local option has helped alcoholics. They were going downhill. Local option helps them not to bring in booze excessively.

I believe LO, or the threat of it, has helped some to become more responsible in their drinking patterns, even when we are wet.

While the community as a whole has experienced improved behaviors, certain individuals and families are reported to be continuing to experience the same number and severity of problems. It may be persons in the middle of the behavioral con-

tinuum whose behaviors have been most modified by the enactment of LO and related community changes, particularly those most concerned about having their behaviors criminalized and those who perceive an increased policing and reporting function in the community. While their behaviors may not violate the LO, in fact, they perceive, through LO, an increased willingness to report all prohibited alcohol behaviors, including DWI, selling to minors, and so on.

Those villagers with the worst drinking problems are most untouched by the law, except that they find their behaviors criminalized.

#### What Indicators Do Villagers Use to Record Negative Change?

The indicators immediately used by villagers to assess change tend to be in the negative category. Negative changes are many, although less profound or significant than positive changes.

Some ask "What's the local option law for? I thought they were supposed to catch those guys drinking. I don't know who they're catching, probably nobody. The same drinking is still going on in private.

Villagers do understand that they do not have to go outside the village to drink. Persons who brought liquor into the village continue to do so and have simply gotten "sneakier." Liquor is packed into the village in ways not readily observed at the airport. Also, people bring it into the village on sno-gos, leaving it out on the tundra until the village is sleeping.

Local option does not stop drinking. It just makes it harder for them. People are getting more sneakier because of that law. In the daytime, you just leave it

out on the tundra. People do not drink publicly, but are more violent, now hiding their drinking.

Some villagers have attributed the rise in marijuana use to the LO. One mayor noted:

I would say that the drugs, mainly pot, are the most important problem among our youth now. Since LO, drug use has really increased. They seem to be related.

LO has increased the use of drugs among our young people, by making alcohol less available.

There seems to have been an increase in marijuana usage primarily among the idle, post-high school males, but also among those over 40.

There is some difficulty in explaining the rise in drug use with the enactment of LO, since the rise in drug use coincided with national fads, increases in disposable income, and generational differences. There was uniform concern about the inconsistency of prohibiting alcohol but allowing marijuana.

One very negative and visible change related directly to LO is the labeling of friends and kin as criminals. While dry villages view public alcoholics and abusive drinkers in a criminal context, they oppose the resulting permanent criminal record assigned to the offender.

One villager noted, "When we have LO here and we are drinking, we feel really bad about it. We look at each other and all of a sudden we're criminals. We've got to do it in secret, sneak around like criminals." The drinkers vote for LO because they know that it is good for the community, even though they also know they are going to violate the LO and feel unhappy about that



violation. Another explanation for this paradoxical situation is that these drinkers do not define themselves, individually, as part of this community problem and are, therefore, somehow exempt from its application.

When this village adopted LO, some people drank less, but others drank even more.

I think LO makes it worse for us who like to drink but who also like to be responsible. When LO is in force, we tend to drink more. The reason is, if we got it, let's drink it up fast, because it won't last. It might be seized if it just stays around, or else someone else will see it and drink it all up. So you see, LO makes us drink more than we would otherwise.

With LO, the drinkers stay indoors and hide. That's not good. They drink closer to their families, and sometimes the kids are involved. With LO you're afraid to invite certain people because if they screw up with the law, you're in trouble.

Occasionally, family violence is in evidence in relation to drinking (black eyes, etc.) or some neglect of children (kids have gotten selves up for school, no breakfast, or missed school or a special event because they were "baby-sitting" parents).

One neighboring village went dry and the men then went into the hub to drink. Their wives, who voted for LO thinking it would stop their men from drinking, then wanted LO rescinded because they would rather have their men home and drinking than away and drinking.

People would rather have their family members home even if they're drinking, rather than have them in jail.

The volume of alcohol in the villages may actually have declined, although the perceived intensity with which the serious and problem drinkers still drink may be magnified or telescoped into a shorter period of time. The shorter period of time is due, in turn, to the illegality of its introduced presence, the uncertainty of the supply, the drinker's fear about being seen or reported, and the fear of confiscation. This drinking pattern -



using the entire supply rapidly - ran counter to our expectation that some would hoard their supply, spreading its use for a longer period of time, sharing it among fewer people, and thus limiting the intensity of its effects.

#### The Problems of Enforcement

Villagers do not consider the LO to be "white man's law" - if it works. If it works, it is perceived as their own law. When it fails, political leaders and law enforcement officers report that "they give us this law to stop the booze, but, on the other hand, they make it impossible for us to enforce it by all these other restrictions on search and seizure, which really ties our hands."

Even though we have the law, people still bring alcohol into the village. We're right on the trail between \_\_\_\_\_ & \_\_\_\_\_. I guess you'd need a full-time person just to check all the baggage coming through. Enforcement is the problem.

When they enforce the law and the offender is returned to the village the following day, the villagers view this as his having gotten a free round-trip to the hub. When he goes back to the hub for his court hearing, he will keep this quiet and no one may know the final outcome of the charge. All the village sees is that he was taken to jail and the next day he is back.

After awhile, people just laugh at the law, and that's not good.

Elders point out that it is very difficult to obtain a search warrant to investigate violations of prohibition on importation because no one in the village has warrant-issuing authority.

They complain that they have to see someone with the bottle in his hand, selling it to someone else, before a complaint can be filed.

I thought the whole town would dry up just like that, that cops would catch anyone and put them in the can and treat them as bootleggers. But we can't pick them up without probable cause unless someone calls them, the police or council.

What we need is a better way to enforce it (LO). As it stands now, you have to catch the person with the bottles in his hand. The evidence is too strict for us to handle.

Unlike Community Health Practitioners who have less work because of the LO, VPSOs have far more to do and it is far more difficult to do these tasks because of their own drinking practices, the friends they have, the habits of their peer group, and their family and other ties. In addition, the tasks themselves are complicated, time-consuming, and often repeated without resolution. In addition, they are often criticized by the trooper supervisor about the inadequate handling of evidence and paperwork and also criticized by family, friends, and council about selective enforcement, excessively strict enforcement, or non-enforcement. As a VPSO put it,

The indoors drinking has refocused some problems. Now when I get calls about fighting or other violent behavior, the calls are tougher to handle. One, it is their homes and two, their guns are handy. In some of these cases we may actually see an increase in domestic violence, although most of the party houses are those of the 18-25 year-old singles. They're afraid of DWI so they stay at home, drinking, and getting madder and madder. In a village, LO as it stands is impossible to enforce.

Strict and consistent enforcement of LO has cost some VPSOs

their jobs because it alienates every family in the community as their children acquire "criminal" records. Such records are seen to threaten the later desire to obtain public agency jobs, join the National Guard, and so on. The threat may or may not be real, but it is implied as a social control mechanism.

The turnover rate among village law enforcement personnel is reported to be very high, due to the backgrounds, values, and skills of the individuals, the complexity of supervision and management, and the style of law enforcement the community wishes and will tolerate. In one community under study, for example, the entire "police department" has turned over three times within seven months.\*

Turnover rates for front-line service providers may be an important indicator of LO. In these communities, LO is seen to have increased the turnover rate for VPSOs and potentially decreased the turnover rate among community health practitioners.

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\* The turnover period itself creates major gaps in the reporting of village behaviors; as well, the differences between incumbents and their perceptions of their roles and tasks create differences in reporting which cannot be considered to be true reflections of community behaviors. Given the loss of these personnel on a regular and rapid basis, there is no formal community "memory" of alcohol-related crime in the villages and no consistent style of law enforcement over time. (The turnover, due to reassignment, of troopers is somewhat slower, but the loss of "memory" is as significant.) These factors, in combination with the weakness of past data reporting systems reported elsewhere, make much of the resulting crime data meaningless at the village level. Over time, if the newly-introduced reporting systems are maintained and uniformity of reporters and reporting maintained, there may be a data base upon which change can be assessed.



The LO has increased pressure on elected village officials who are expected to produce enforcement of LO but who lack the legal and material means to enforce the law. One mayor complained that he had no means of enforcing village law on the state-owned airport; villagers can stash their alcohol in the bushes near the airport and recover it at any later time, without his knowledge or intervention. Also, there is no way that village officials can successfully enforce without such enforcement being a community-wide and community-backed activity. If officials succeed in strictly enforcing LO, they alienate major portions of the community, members of the council, the youth, the elders, and prominent families. If they are weak in enforcement, they alienate the population that delegated to them the responsibility for concrete change. They can win neither way, yet the pressure "to do something" persists.

LO has been hard on me as a leader. What can I do with a state-owned airport? How can I enforce it the way some want me to, when the others know their rights? We can't enforce non-importation, it's that simple. We also don't want our young people getting criminal records. To come down hard on a small quantity importer as a criminal doesn't make sense, when the drug laws are so lenient.

What we really need here are strong leaders. Our leaders are weak, that's why we're in the trouble we're in. Our own leaders drink and smoke pot themselves. Do you expect them to take any real action against themselves? The drinkers elect drinkers to the Council, so they take care of each other. The non-drinkers stay home and don't vote. We need strong leaders who aren't afraid.

#### Local Option and Legal Education

The consensus among the villages is that LO has been a help in improving the quality of village life, but that there are



aspects of its enforcement that require review or revision. One of the most popular negative assessments of the law is that it provided offenders and bootleggers with a complete experience and education in the law. Finding out what the law meant, being arrested, being charged and arraigned, these offenders have found that "it's no big thing." They know and exercise their rights sufficiently to deny police any search of their belongings without a warrant.

We were repeatedly told that those who know the most about LO in the villages are not those who enacted or enforce the law, but those violators who have been educated into a thorough knowledge of how to beat the law, based on its internal limitations - probable cause, warrants, proper search, evidence handling, testimony, witnesses, and so on. This education is conducted not only by lawyers, police, and judges, but by word-of-mouth within the offending peer groups.

A legal race has ensued between law enforcers and offenders. As the VPSO's become procedurally more adept, the offenders become better educated about their civil rights; this change is not insignificant because it raises the conflict between "community rights" and "individual rights," a new phenomenon in the villages.

The offenders rapidly learn more about LO and individual rights than do the villagers. This knowledge is used freely to perpetuate illegal activities and place VPSOs in a "no win" situation. This fact was very depressing for the elders. "See,

blacklist were prohibited from all legal purchases.

The assumption pervades the villages that if someone tried bootlegging "in a big way" he would be caught. This is not an unrealistic expectation as there appears to be a number of persons who have been caught for a variety of liquor law violations and who are being processed by the judicial system. It should be recalled here that a single act of alcohol transport can comprise a variety of LO and other legal violations, including transporting for sale without a license, selling without a license, selling to minors, providing to minors, importing to an LO community, and so on. Since there is no regional newspaper or other routine form of mass communication of these events, residents hear about such cases and their disposition primarily through word-of-mouth, with all of the unreliability and mythology which tend to accompany this form of communication. The mythology may actually heighten the social and behavioral effects of such actions. There are also stories of successful violation, those who proudly "beat the system."

Some concern has been expressed by some elders that, in the absence of state law prohibiting homebrew, each community will have to pass some ordinances governing homebrew as they have in the past. They clearly see that LO has resulted in increased production of homebrew, due to the general fear of being caught importing and the high cost of the commercial alcohol itself. Homebrew is usually kept among a small group of friends and has not become a major bootleg item.

powers. Without great selectivity in enforcement, many village values and relationships are at risk.

Law enforcement personnel uniformly reported that LO and other liquor laws were very difficult to enforce because they were prohibited from being selective. They objected to having to give all young people police records and they did not have sufficient bases or authority (e.g., probable cause) to search and seize baggage selectively. They have adopted their own standards for who and what qualifies for "protective custody," have engaged in their own "youth diversion" methods, and have asked for legal mechanisms to treat drunken behavior or high blood alcohol content as a presumed violation of LO. They used the village council as the adjudicating body on "minor consuming" rather than the court system. They clearly want more and broader powers to search and seize and to be selective in their investigations.

One regional attorney noted:

The village enforcers also need to be able to select and regulate enforcement by being able to distinguish between problem drinkers and non-problem drinkers, between large-quantity importers and small-quantity importers.

The large bootlegging runs have stopped because people have been caught, according to the social worker. This is reported to have happened not because of increased law enforcement but because the region views large-scale bootlegging as illegitimate and residents turn these bootleggers in. There are two classes of bootleggers and the villagers selectively report principally the large-scale violators. They also report those who are pro-

viding alcohol to minors or to people who can be considered "dangerous drinkers" or "problem drinkers."

One of our bootleggers was told by another villager, I don't mind you selling booze to some (non-problem drinkers), but if you sell some to \_\_\_\_\_ I'll turn you in.

The way communities would like LO to work would be to allow for fewer restrictions on search and seizure and greater latitude in selective application. When it is exactly applied and delegated to the troopers, the VPSO, or the council, it does not work.

We could record drinking/offense history of individuals in our village, with relaxed search and seizure procedures for those people for a time period.

I just can't enforce LO here with search and seizure restrictions the way they are. If they could find some way to relax search and seizure procedures for some people, it would be a big help.

Another flexibility desired by local communities was for the police to take someone to jail for a few hours in "protective custody" while drunk and disorderly, but not to charge the person with a crime. This flexibility, when exercised in one community, created a division between trooper instructions to arrest and charge and council desires to "contain" the problem.

Prior history provides the basis for much of the selective enforcement which is exercised by the VPSO and condoned by the village; that is, if the VPSO leans heavily on the repeated offender but ignores the occasional problem, the community is accepting. One VPSO noted:



If I know that someone has imported a small quantity of alcohol and this person does not have a history of creating problems when drinking, I just let it go. But I am stricter if the booze is getting to our problem drinkers.

The selective enforcement, however, that is based on family or friendship ties between the VPSO and the offender is, generally, unacceptable and can result in the VPSO leaving his job or being fired.

LO is probably totally impossible to enforce here. The village is divided into two political factions (family groupings), so any attempts by the resident VPSO to enforce it will be slanted to one side or the other. Some residents think that a VPSO from outside the village would be the answer, but they had one awhile ago and booted him out when he began to enforce it effectively.

There are lots of problems with trying to enforce LO when everyone is related. Family members stick together, help and protect each other. They don't like to see another family member taken away to jail.

The community becomes nervous about personal forms of selective enforcement by the VPSO. Villagers want selective enforcement to reflect the community policy or family consensus, not the predilections of enforcement officers operating solely on personal judgment. Villagers do not want to be victimized by someone else's unpredictable and uncontrolled selective enforcement.

There are some bad feelings when young people are arrested. They're (VPSOs) not consistent. Sometimes they enforce it real strongly and other times they let a lot of people get by. I guess that's what makes a lot of people so angry.

Each law enforcement person adopts his own rules of enforcement of LO, based on a variety of factors. A mayor noted:

(Has local enforcement changed?)

Often - it depends on who happens to be the VPSO at the time.

Even if a person's civil rights may be at risk due to enforcement policy, the intentions of the officer involved and of the community are of some significance. However, it is less common for a citizen's rights to be violated than for the VPSOs to violate a condition of their employment, by being selective or flexible in their handling of cases. The VPSO may be caught between his contract (actually a negotiated order) with the community and his contract with his law enforcement supervisors. By not reporting a crime, he is placing himself at risk. The VPSO, in turn, may be protected by his trooper supervisor who encourages the selectivity and flexibility of enforcement as the best means to accomplish the agreed-upon community aims. The trooper, then, is placing himself at risk as well for tolerating this form of discretion.

Almost everyone expressed some interest in selective enforcement, that is, selecting individuals for control of purchase, use, or possession based on his/her own personal history of problems with alcohol. This sentiment is true not only for elders and VPSOs, but also for bootleggers and licensed alcohol retailers. Since it is a narrow band of individuals with troubled histories which cause the problems, it is argued, why make life difficult for everyone in the community?

### III. THE HUB VIEWS THE VILLAGES

The function of the hub community is to provide services to the villages; otherwise, the hub itself would be only a village. The services it provides include not only government, agency programs, transportation, and materials, but a location in which the villagers can release feelings in relative safety. For those who need to recreate, relieve boredom, "blow out," or give in to their appetites on occasion, the hub presents a locale which tolerates and controls such intermittent behaviors. This function enables the person to continue to reside in the "dry" village by providing some time out and opportunity to blow out without violating any village norms or threatening village public safety.

The hub does not exhibit a great deal of public drunkenness, particularly when compared with earlier times when its reality and reputation witnessed a great deal of public drunkenness which was, itself, a violation of law. In the past, according to one hub resident, it "was no big thing to be drunk on the street, because you weren't really drunk unless you were passed out. The standards have changed; now you are considered drunk if you are 'staggering around.'" Being this drunk is no longer a sign of sociability. This does not mean that the hub is consuming less alcohol but that its consuming and subsequent behaviors have been altered. Public drunkenness is perceived to be remarkable and usually involves the same small group of people.

Much of the serious drinking in the hub, as in the villages, occurs in private residences and in a pattern regular enough to

require routine police intervention. The younger population in the regional hub tends to be more like the controlled drinkers found in any large community with ready access to alcohol, responsible alcohol retailers, and a significant professional law enforcement presence. The socialization process towards "normalized" drinking appears more pronounced in the hub, although the hub is by no means free of excessive alcohol consumption and related problems. These problems, however, can be contained by the civil authorities of the hub.

In the hub, public safety and other agencies often take drunk persons into a very brief "protective custody" and return them safely to their homes. This appears to be a part of their normal motorized "patrol" functions, rather than only a response to calls. They do not appear to conduct regular checks on bars. They appear to keep no records of these informal activities.

The alcohol retailers in the region make a large public appearance of being responsible in the manner of their retailing, including participating in industry seminars on this subject. Alcohol retailers seem to understand that people hurting themselves while intoxicated is bad for their business.

We ourselves practice "selective selling." We won't sell to those whom we know have a problem. There used to be "state-ordered lists" of people who were convicted of alcohol-related offenses, to whom we could not sell. This was a help to us, but these lists were stopped a "year or so ago." It would be good if these lists were started again. That way we could know specifically whom we should not sell to. Not only the Court, but the villages also could submit such a list of names to us, and we would cooperate with it. The DA's office used to send these lists to us.



Hub views of their satellite villages are often formed by very large generalizations based on very few specifics. Concerning one village which had experienced several very negative events around the recission of their LO, some hub informants had formed a view that the village was "coming apart at the seams." On the other hand, the residents of that village expressed great pride and positive feelings toward the progress they had made in identifying their problems, analyzing their strengths, and establishing objectives and corrective measures.

The hub views the LO negatively when it sees that village people are coming to the hub to drink and get into trouble. However, some hub residents see no real change in the rate of hub visitation, drinking, and problems as a result of LO; they suggest that the changed rate is the result of altered and heightened perception, not real change in behaviors or volume of alcohol sales.

Some hub residents perceive that village people "do not know how to drink right, so they don't know how to control themselves. Not like us." In order to reduce the violence, they feel, people are "just going to have to learn how to drink." "Learning to drink" means "learning when to stop" and how to be "high" and sociable without becoming dangerous or unconscious.

The problem here is the Natives who come into town from the villages. They're not used to a big place. They don't know how to behave. They just come to get wiped-out. That's right. You got to know when to stop. You need an inner policeman.

To the degree that hub locations offer a variety of more or

less protected drinking settings, the hub resident's choice of settings is, in fact, a form of self-controlled drinking behavior. In some settings, the determinant of when to stop drinking is inherent in the custom of the place; in other settings, the determinant may be the bouncer. Some hub residents feel, as a consequence, that stringent restrictions, such as LO, are without merit because "people are going to drink anyhow."

There is a potential lag between changes in the villages and the perceptions of these changes at the regional level, masked by the continuing casualties received by the hub. Villagers tend to disagree with some of what the regional informants say about the consequences of LO, such as increased domestic violence. They agree that one or two cases seemed to reflect the generalization, but that, on the whole, the generalization is not accurate. The difference in perceptions is accounted for in that villagers are generalizing from all cases in their village and regional informants are generalizing from their caseloads, two very different perspectives.

Discussions with a major alcohol retailer suggest that, since LO, there has been no decrease in alcohol sales in the hub or the region as a whole. He noted:

Less people may be buying, but they are buying more, suggesting an increase in the number of small-amount bootleggers. I think, judging from our sales, that the amount of alcohol getting into the villages has been the same.

Since the retailer owns the bars and the package liquor store, his judgment that there is about the same amount of alco-

hol in the villages as in the past is significant. Perhaps the presence of alcohol in the village is not the most or even among the most significant indicators of change in the village. If the village could control and change the negative behaviors directly, it would not make much difference how available the alcohol was, except insofar as the children and the problem drinkers are concerned.

#### IV. THE AGENCIES VIEW THE VILLAGES

In searching in the village for reliable data bases on crime, health, truancy, school drop-outs, and so on, to create an "empirical" set of measures of community change, we were unsuccessful. In some cases, the records were never maintained; in other cases, the records were lost, misplaced, destroyed on a routine annual basis, or sent to larger reporting systems for coding and management. If these data are reported, they tend to appear in aggregate form, no smaller than at the regional level. This does not allow for the measurement of change based on a single event, such as LO, or for examination of possible "cause-effect" relationships between community actions and reported community rates of social health.

There is little agreement in the hub agencies about the statistical changes in problems in the region and in the villages. The impressions of agency staff suggest significant changes in numbers, patterns, severity, and caseloads, but with little meaning to that pattern. For example, an increasing caseload may be a positive sign because cases that were not reported in the past are now being reported and dealt with or it may be taken as a negative signal that there are more cases or that some cases are more severe now than in the past. It is our overall impression that, while caseloads are higher, in fact, the prevalence and seriousness of some behaviors have lessened in the recent past. However, certain critical categories, such as suicide, have remained extraordinarily high.

On almost all measures, we lack before-to-after data during



the LO period. Three years from now, if the reporting systems now in place remain stable, we shall be better able to analyze community change remotely.

The hub community, which hosts the service agencies and their personnel, sees and interprets their satellite villages very differently from the way villages view themselves. Because the service agents see themselves as inundated by large numbers of very difficult and tragic cases, they often generalize from these village casualties to the entirety of the village. Thus, in one interview, a mental health worker, seeing the caseload of alcoholics, battered wives, suicides, and so on, all clustered together, concluded that the villages in which they were resident were uniformly suffering social debilities in epidemic proportions. He surmised that the epidemic was caused by historical and economic changes marching into the region.

While the casualty rate might indeed be alarming to a small service receiving unit and while it may be increasing due to real changes in willingness to report, it is not certain that these casualties reflect the entirety of village reality. Unless one spends a great deal of time in the village, one will miss all of the countervailing forces and indicators of social health. Thus, if casualties are all one sees, one's view of the village will be negative. If the village sees a mixture of positive and negative events and exports some of the casualties to the hub or elsewhere, its view of itself is likely to be far more positive and supporting.

These agencies tend to derive their view of village social health from the caseloads which appear at their doors in the hub. Those agency people who visit regularly in villages and whose contact with villages is not solely on pathological cases seem measurably more positive about village progress and prospects. Even though the agencies have outreach workers in the villages, other aspects of the communities, such as successful and aggressive prevention programs, do not seem readily reported to the hub. Hub agencies may be too clinically "problem-oriented" to be an accurate gauge of changes in village life.

A. Health Care

Health care providers at the regional level report that, as a result of LO,

more people are consciously aware of alcohol as a drug. Since 1981, people have been rating it as the number one health problem in their region, based on regional surveys.

Less positively,

In areas that have seen a decrease in alcohol use, we are seeing an increase in marijuana use.

Homebrew has become a concern for health providers in the region, primarily because of the toxic effects of the ingredients used by some, including rubbing alcohol, aftershave, and so on. It is a low-quality substance so its main appeal may be to those whose need for alcohol is intense.

B. Mental Health, Alcohol, and Social Services

These providers deal with the casualties of alcohol abuse and

its related behaviors. One mental health administrator noted:

I would say that 35-40% of our mental health clients have problems that involve alcohol abuse. Maybe higher. There is a suicide epidemic going on around here that's very heavily related to alcohol. Families of successfully completed suicides tend to heavy drinking afterward since they seem to have no other coping skills. The families then drink because there's nothing in the tradition that permits them to get over that kind of loss; whereas the people might get over other losses quite easily, they have a lot of trouble getting over suicide loss.

The files in these programs were not arrayed so that one could break out the casualty information by village. However, at least 50% of their new caseload was court-referred, presumably as a result of increased enforcement of the entire range of liquor law violations (e.g., LO, minors consuming, DWI) and alcohol-related domestic situations and abuse.

One surprise is the increased load of court-referred cases to treatment here. Our increased court-referred caseload is mostly bootleggers - amateurs who themselves are abusers get arrested and sent here. Our "success-rate" with court-referrals tends to be lower in all cases. Then, they will, 6-12 months after discharge, return to us as self-referrals, and they tend to complete treatment quite seriously and thoroughly, including the bootleggers.

These programs are seeing a great increase in court-ordered referrals for care, in other words, a "medicalization" of what were previously criminally-defined offenses. It is somewhat paradoxical that, while LO has criminalized what was previously considered a medical-social problem, persons convicted for LO violations are often referred by the courts to medical-social treatment, in effect medicalizing a criminal problem.

The increasing inclination by the court system to refer first offenders to treatment rather than an increasing prevalence rate within the villages or hub, probably accounts for the increasing caseload of these programs. Treatment becomes an alternative to jail. Since these cases are harder for treatment workers to work with (being involuntarily drawn to the program), this may add significantly to the burnout and negative attitudes of service agency workers. A capacity-stretching new caseload of involuntary cases tends to interfere with the treatment of voluntary cases and so drags down the entire treatment process, itself a slow and difficult process under the best of conditions. This appears to be an indirect consequence of LO since LO is only one of several forces heightening the visibility and reporting of certain altered drinking-related behaviors, liquor law violations, and other offenses resulting in formal adjudication.

These treatment and counseling programs generally support the villages' use of the LO.

Our outreach counselors say that the quality of life in the villages has improved since LO.

My clients look on the fact that their village is dry as a help to them to stay sober, since they themselves would not import or manufacture alcohol.

When a recent LO election was held, rescinding the existing ban on sale and importation, the mental health response was:

Too bad, now we're going to have trouble again.

A women's shelter director reported:



It is very seldom that we get women here who are battered by husbands who are sober. Anything that keeps alcohol out of their lives is a help to us.

C. The Judicial System

The courts were less informative about changed community functioning, because they, too, were more involved in the volume of new individual cases and the development of appropriate guidelines for new offenders under the new LO law. The regional court officers and attorneys seemed to be looking for new ways to deal with these offenses rather than treating them as if they were similar to all other liquor law violations. They seemed very concerned about developing youth diversion programs and village probation through the IRA councils or elders councils.

The court officers did not suggest that the LO had reduced or increased the number or severity of crimes related to alcohol other than those cases produced directly by violations of the new law. Most of the court data appeared in aggregate form only for the region. Because of the changes in reporting systems, the data from "before" to "after" are either missing or unreliable. The cost of dissecting and compiling data from a hands-on individual analysis of each case file for a number of years would be prohibitive; the meaning of such data as a reflection of community life would be doubtful, since the number of cases in any one year for a single community is small, in any event, and the court system records only those cases which (1) have been brought to trooper attention, (2) have been deemed chargeable by the trooper after examining the evidence, and (3) have been deemed chargeable by a district attorney. Since these systems them-

selves change, in terms of agreed-upon priorities and standards and individual judgments, their utility is limited. Such changes would have to be very dramatic for the data to be convincing and VPSOs and troopers have not suggested such dramatic change.

The regional court system, district attorney, and public defender seem to share the common hub understanding of the villages. Their particular viewpoint seemed in no way special or more detailed a view, even though they had ready access to many separate instances upon which to reflect. They, too, tended to aggregate their view of all the villages, not treat them separately.

Local attorneys, sharing the language of villagers, suggest that LO has had some negative effects as well:

We are making criminals out of people who ain't criminals. When the villages voted for LO, they did it to stop the booze, not inflict their people with criminal records. The village law enforcement officials should be free to confiscate booze, but without proceeding with charges leading to criminalization for small-quantity importers.

A new law can be devised - criminal or civil - which would make it illegal to sell alcohol to someone who then, under the influence, hurts someone else or destroys property on village land making that person an accessory to assault.

These suggestions are not necessarily recommendations for enactment but areas and directions for legal and social research. They are criteria by which solutions should be judged - flexible, selective, responsive, non-punitive, and immediate. Once the ideal criteria are set, how we then arrange the law to meet these criteria is the question.

#### D. Law Enforcement

Local law enforcement officials were unable to locate much of the detailed village-level information (essentially "calls for assistance") we were seeking on those communities which had adopted, rescinded, and re-adopted the LO. Many of the old VPSO records are of very poor or uneven quality. The more recent VPSO data are being entered into a new statewide computer system but are not available centrally or locally on the time period we were investigating. Local files are destroyed on an annual basis. Many aspects of the files are sufficiently uncertain from a research perspective to have utility in studying change.

Troopers seemed very supportive of villages finding their own solutions to many of these serious problems and also presented themselves as committed to helping the villages implement these solutions. In turn, they requested that villagers be responsible in reporting violations to the troopers and supporting the VPSOs. Both the troopers and the district attorney reinforced the notion that the LO was the villages' law and that it was up to the villages to provide the information without which these agencies cannot be of assistance.

While the LO is popularly perceived to have increased the hub workload for law enforcement, the increased police workload in the hub due to LO in the villages was not seen to be unexpected or unmanageable by the hub police. The greater law enforcement concern is with effective enforcement of community objectives.

Troopers, too, tend to use LO selectively, that is, against

chronic offenders. There is such a potentially large at-risk group that troopers and VPSOs must concentrate their efforts towards those most likely, based on their personal histories, repeatedly and significantly to violate the law. By definition, then, their watchfulness on the community as a whole is somewhat diminished.

The major law enforcement workload under LO is small-time bootlegging. Troopers suggest that, because of the expense of transportation from the village to the hub, bootlegging goes on even without the LO.

I don't think the bootlegging problem is much different because of LO. My observation is, when there's booze in town, it's hard enough to get into town at \$150-\$200, a lot of people think it's easier to spend \$100 on a bottle from a bootlegger than to go into town, and stay home. In most of the communities bootlegging is on a continuing, small scale. Those who import large quantities get caught. The pattern is to take 4 bottles home and sell 1-3 of of those.

There's much more bootlegging but small scale and amateur. The result is that, while LO has greatly inflated the price of alcohol in the villages, it hasn't really made it less available. There are some who have ceased their drinking behavior in the villages and moved their drinking behavior to (the hub). Simply, they did not want to take the risk.

Bootlegging is seen to have risen due to LO but it is not the organized system of distribution and sale we commonly ascribe to bootlegging. LO has apparently resulted in a great increase in the number of small-time operators who come to town with a shopping list for all their friends or who are merely covering their own costs. There are stories of attempts at more large-scale bootlegging operations, most of them dramatic failures



because they were caught by the troopers.

Over the past few years, troopers report,

From a law enforcement standpoint, there has not been much change. The population has remained stable in the communities we handle, the types of crimes have been the same.

The principal policing problems have occurred during periods of LO recision:

In the summer of 1983, when they voted to go wet again, we had more calls in these first 30 days than we had for the entire 6 months, including a trooper-involved shooting. They went dry again as soon as they could.

Not all communities experienced the same rise in criminal behaviors with recision, as many of these behaviors had been significantly altered by changes in community behavioral standards.

In summary, there is some consensus among agency people that the villages are getting better as measured by the increasing conscious awareness of the magnitude of the alcohol problem. They report an increase and spread in marijuana and other drug use, but not much of a decline in alcohol use (for some, even an increase).

## SECTION V. THE ROLE OF ELDERS

Encouraging changes in the past two years are the active engagement of elders in planning and conducting problem-solving village meetings on alcohol abuse and related problems and the widening participation by other age groups. This activation is occurring statewide through the efforts of rural providers and SOADA support. In the region the leadership on this issue seems far more diffuse, mobile, non-institutional, and spontaneous than the leadership on governance and corporate issues. The substance, function, and the content of leadership seem to precede the form, which is as yet unclear.

The efforts of elders have been to create and disseminate a regionwide philosophy through a process of meetings and village visits. The actions of elders and other, similar actions seem to create a "community of concern" among the villages, bringing issues to the fore, engaging regional and state institutions, and creating new forms in the absence of legal challenge.

The alcohol meetings are of interest because they are attempts to form consensus on what are problems and what are solutions. The method of seeking these solutions is quite consistent with the past. The solutions devised may be either legal or illegal under state law or Indian law but they probably result more pertinently in a reinforcement of traditional social control mechanisms.

The village meetings were spurred by three suicides in rapid succession and were brainstorming sessions with people discussing

what happened to the kids, the high suicide rates, the high rates of violence and drug abuse and the lack of jobs.

The meetings changed over the course of the year. In both cases, the people called the meeting. The first meeting dealt with blame but not responsibility. The second meeting dealt with positive action. The first was probably a necessary step to the second, an historical maturation.

Elders' meetings in the villages are far from informal affairs. They invite specific agencies to participate; they follow a planned format, and they produce very specific resolutions, calling for a strengthening of LO enforcement by law enforcement agencies and local people, the instituting of monthly visits to each village by a psychiatrist to conduct meetings on the issue of suicide, and the including of more villagers in increased education and information on LO. They also called for the examination of traditional models of behavior and responsibility which are no longer being taught. They spoke of "community service" (e.g., cutting firewood for the elderly, cleaning the dump) as a desired form of probation for juvenile offenders which avoids the creation of a criminal record. Elders called for increased participation of both youth and parents in taking responsibility for solving the alcohol and drug issues.

The elders took legal testimony on issues of strict interpretation of and options under the search-and-seizure of alcohol within tribal and non-tribal law. They also took testimony on the questionable voting procedure violations accompanying recent

LO elections in some of the villages. They were given advice on their powers and on possible methods for controlling the manufacture of homebrew.

They took testimony from mental health and alcohol counselors on the individual, familial, community, regional, and economic forces at work in alcohol and suicide problems and solutions; the testimony also covered the need for, and techniques of, earlier identification of "at-risk" persons in the villages, the development of prevention plans, and the need for mental health workers to increase their presence in the villages through more regular visitation. Testimony suggested to the elders that they formulate their solutions and take the leadership in implementation by directing the work of the regional health and social services agency. They also spoke of the need for some funding to continue their work on a regular basis, particularly to defray the costs of travel to and between villages.

Elders seemed distressed that (1) young people were arrested and then immediately returned to the community and (2) villages were not able to "take care of our own people and not send our children away." They wanted to come up with their own enforcement and punishment procedures.

In the work of the elders in the region, a great deal of constructive thought has gone into alcohol problems, reasons underlying the problems, solutions to the problems, and the resources required and/or present to implement the solutions. Their meetings have been organized into these categories and



information within each category carefully noted.

The reasons were not ignored but rather were clearly identified: cultural confusion and breakdown; the stress of complying with the Western world; lack of jobs; loss of friends, relatives, and jobs; self-pity; lack of self-respect; lack of discipline; and inadequate funding for programs by the state.

Village meetings on alcohol expressed less concern over the damage caused by alcohol than in devising methods "which we can do" for combating the damage and setting agendas, tasks and participants for subsequent meetings. In particular, they planned the inclusion of more young people and leaders, so that it was not elders alone formulating and implementing these plans.

The meetings were a coming together of people confronted by a very dangerous common enemy and very committed to fighting that enemy with any tool. They focused less on the hopeless and helpless aspects of the problems than on the possible solutions and real actions which could be taken. The "downside" perspective was not the theme or tone but only set the context for the discussion. That context is: this is our vision - why are we falling so short of that vision?

The problems were not restricted to alcoholism alone, but ranged across wider and related problems, specifically including family violence, fear of drunks, child neglect, elder neglect, gambling, suicide attempts and gestures, failure to recognize problems, lack of communication between parents and children, poor role models, negative peer pressure, individual and social

conflicts, poor school performance, and lack of education in subsistence. This understanding of the range and relatedness of problems suggests to the elders that a large number of internally-generated and externally-supported steps will be required to resolve the problems.

Taking the issue of alcohol abuse only, the elders have identified a number of serious problems and their suggested solutions. Among others the problem include:

- the multiple forms for the illegal importation of alcohol, such as airplanes, boats, and snowmachines
- the lack of police enforcement effort on the local option
- the lack of community enforcement (e.g., villagers' reluctance to report offenders)
- the problem drinkers' propensity for violence
- the lack of control in the hub over alcohol exportation to the "dry" villages
- the inherent limitations within the local option law
- bootlegging
- the manufacture and presence of homebrew
- drunken and hazardous driving
- the consumption of alcohol by juveniles
- the existence of "wet" communities adjacent to "dry" communities
- the lack of common understanding of alcohol problems

This sophisticated analysis of the alcohol problem is met with suggestions for a number of equally creative and sophisti-

cated solutions, among which are:

- village meetings with the hub city council to discuss alcohol, cocaine, and marijuana problems and solutions
- closing the package liquor store in the hub
- easier and more effective use of search warrants
- x-raying for alcohol in the baggage and luggage on air carriers and prior to leaving the hub
- rewriting the local option law to include local solutions
- "blue-ticketing" (exile) offenders out of the villages
- strengthening local police force
- reviewing the licenses of air carriers reportedly transporting alcohol
- stronger court action on offenders
- more reliable court decisions on sentencing in each community
- use of community service, youth diversion, and treatment as alternative to fine or jail
- use of city ordinances to deal with certain violations, such as "minor consuming"
- establishment of tribal ordinances and tribal court systems
- improving communication between local police and regional law enforcement
- exposing community members who are importing or selling alcohol and/or marijuana
- counseling bootleggers about the likely results of their continued activities

- arraigning bootleggers before the elders' council, city council, or IRA council
- making homebrew an illegal substance
- providing volunteer help to the police
- devising an intervillage police exchange program
- improving police training and supervision
- improving legal education of public
- reinstating local control of correction centers
- instituting neighborhood watch
- increasing the salaries of police
- confiscating vehicles for repeat DWI offenders
- supporting safe homes and women's shelters
- improving youth activities, jobs, and sport-recreation facilities
- improving parental control of and expectations for children
- supporting alcohol education in the schools
- supporting family and individual counseling
- increasing community respect, communications, forgiveness, responsibility, discipline, and social gatherings

Cultural revitalization was seen as a tool in reducing the alcohol problem. This includes a conscious return to subsistence activities, commercial trapping, relearning older skills, and so on. Suggestions were also made that the school year should follow a different schedule, enabling children to be out of school and involved in seasonal subsistence activities as appropriate. This would obviate some of the need to create new



activities (e.g., basketball) and new buildings (e.g., gyms) to fill the new leisure time.

The resources with which the elders suggest the change can be accomplished are equally diverse, displaying a sophistication in the area equal to that in problem identification and solution-building. These resources include: city councils, IRA council, regional non-profit corporations, Alaska Legal Services Corporation, the Office of the Governor, Department of Public Safety, the regional profit corporation, Alaska legislators, Alaska statutes, the court system, probation officers, the social concern committee of a local church, the air carriers, families, elders councils, school district, and so on, each specific to a particular solution.

The elders, like the hub agency personnel, perceive a decline in the quality of village life. Some of the elders appeared quite depressed by this perception. For them, an entire set of values and beliefs seem to be falling apart, underscoring their great nostalgia for the culture of their own youth. They have great difficulty in accommodating the new idea that what is coming might be a combination of parts of that past and some new and unknown features.

Elders express great dismay over the increase in problems and decrease in community controls. Yet they are foremost in expending energies to combat these problems. It is the young, with no direct knowledge of or experience with past successful models of behavioral control and village amity, who remain at

risk.

The depression among elders is a serious matter in the villages. The depression is based not only on the immediacy and number of tragic village events, but the sweep of international tragedies which now appears in the midst of the village through the immediacy of television. They also have the memory, through oral tradition, of other cultures and villages which have died out. We could not determine to what degree their very energetic and determined approach to the alcohol issues was prompted by real hope or by the necessity to at least try to alter the dismal shape of the future. The continued successful intrusion into the region of non-Native values and the continued encapsulation of Native values into an area called "heritage" and "tradition" (celebrating the past) are perceived as quite threatening to these "culture carriers."

The elders generally conclude that the LO is not working although the villages may be improving. This is due, in part, to the long-term negative changes they see in the villages, combined with the ease of violation of the law. Since elders in particular want the villages free of alcohol as distinguished from having behaviors moderated, the LO is not doing what they wanted it to do. They do recognize and feel positive toward the moderated behaviors, such as drinking being removed from the streets and drinking being controlled slightly, but the elders want more than this: they wish the flow of alcohol into the village to be stopped entirely as stated in the law.

Some, when confronted with the question, had not considered that the alcohol-related behaviors, as compared to consumption itself, may have changed. Some thought that the severity of alcohol-related behaviors had increased in the home because men, drinking at home, were venting their anger on their friends and family, afraid to get out on their snowmachines for fear of being arrested for drunk driving, a far more public crime readily enforced by the VPSO.

One elder related a story of some significance in comparing the controls of the past to the controls of the present.

I'll tell you a story about how our villages used to take care of their own law and order.

Once, when my father was a young man, three young men in a village got drunk together and killed a missionary. They shot him. Maybe they didn't really know what they were doing, or maybe they did. That's what alcohol can do to you. It messes you up, and breaks your mind.

What they did was wrong. Everyone in the village knew what they did, and knew that something had to be done. When word got back to the village, the Elder's Council had a meeting immediately. They brought the three young men before the Elders, and the Elders asked each of them if they had done what it was said they had done. All three confessed. Each of them was about 17 years old at the time. Then everyone went out and left the Elders Council alone to decide what should happen next. They talked among themselves and decided that each one of the three young men should be killed.

One of the Elders was the grandfather of one of the three young men. He said that he should be the one who would kill his grandson. "If anyone else kills him," he said, "I might have reason to hate them and maybe fight with them later. But if I kill him, I won't have reason to hate anyone else."

So the Elders' decision was announced to the whole village. Immediately three rifles were loaded, and the grandfather and a few other men walked with the three young men over to the graveyard. Each young man carried a shovel, and dug his own grave. Then they knelt down.

The one young man asked his grandfather, "Grandfather, do you love me?" "Yes, grandson, I love you." "All right," he said, "I love you too."

Then the decision of the Elders was carried out.

The story has a mythical quality, making it no less real in its implications, about the loss of traditional self-controls and the authority of elders. The imposition of law does not suggest a lack of love, but preservation of the village. Imposition of law is best done by a family member, otherwise hate and murder will be perpetuated.

Other implications of the story include the importance of the immediacy of corrective action; of wholesale support of collective and representative difficult action; of acceptance by the accused of the authority and judgment of the elders' council; of the love within the family legitimating the elder's action in the eyes of his grandson; of humane application of law; of intimacy, survival, finality, participation, responsibility, and taking consequences for one's action; of toughness and strength; and of community responsibility.



## VI. DISCUSSION

The discussion which follows highlights some considerations about the development of legal mechanisms to control alcohol and alcohol-related behaviors.

### Local Option and Behavior Control

The issue and intent of the law was not controlling the amount of alcohol per se but rather the behavior of drinkers. Only in churches with strong positions on alcohol was alcohol itself the issue. The question remains is LO a useful tool in severing the behavior from the alcohol and in avoiding criminalizing villagers?

The communities which rely heavily on LO are attempting to modify the behavior of those who drink by a roundabout process. If they violate the prohibition on importation and their drunken behavior is witnessed, the community and its law enforcement have to work backward from the behavior to the violation. In other communities, which do not prohibit alcohol, the community may come down very hard and directly on the behaviors themselves.

This difference probably stems from a combination of historical and cultural factors. Those communities and regions which have had extensive contact with outside forces, where the traditional authority of the community and its leadership may have eroded over time, or whose cultures did not invest great authority over behaviors in leaders or the community-at-large may be more prone to rely on control instruments external to the community. Communities with strong traditional control mechanisms

in place are far more prone to deal with deviant or dangerous behavior directly, without official sanction or Western legal basis.

Thirty to forty years ago, it never used to be this bad. When somebody got drunk then, everybody would come out to take a look at him. Then the next day when he was sober, everybody would tell him to his face, "Why do you do that? That's no way to be. You should be ashamed of yourself . . ." They'd come to him and tell him that all day long.

If the amount of alcohol in a village does not change markedly when an LO goes into effect, how do we explain the increased problems which are experienced and reported when it rescinds its LO and goes "wet"? We conjecture that the rescision of the LO does not result in greatly altered drinking patterns or volume consumed but reopens the range of public alcohol-related behaviors which the presence of the LO and its underlying public support had severely restricted. The intimidation effect of LO on public behaviors is what is primarily lost with rescision.

People "normalizing" their drinking patterns and related behaviors as a result of LO is what we mean by "controlled drinking." The problem is that the control measure is an abnormal means, an artificial limitation on alcohol. It may be a necessary interim step. But it may also fade away, over time, through declining enforcement. However, LO has proved to be, to a greater or lesser extent, an effective public health prevention tool, in concert with many other community forces.

### Selective Enforcement and Selective Application

Selective enforcement is key to behavioral change. The villages desire to exercise control over only certain behaviors by certain people; they do not have the energy or desire to over-control all members. Without options and selectivity, villagers find themselves too constrained and rigid to maintain their vigilance against the most serious threats as well as to continue to have respect for law.

The hazards of selective enforcement come less from complaints by villagers than from concerns raised by external law enforcement and judicial officers.

We have some variations on LO enforcement here which are flatly illegal, and which would really get us in trouble if the troopers or judge found out about it.

Some villagers would have liked "possession of alcohol" to be either an offense in itself or constitute prima facie evidence of an LO violation; however, many wanted these powers on a selective basis as well, that is, to be used on chronic offenders only.

The key to formal selective application of laws would be the prior history of each individual. An individual with a prior history of chronic trouble would be unable to purchase or possess alcohol, would be particularly vulnerable to searches and seizures, and would be under the close constraint of village or other authority.

Villagers suggest increased search-and-seizure powers to be used on those persons identified by the courts as chronic alcohol

offenders, based on a provision from the courts of a list of names of those persons whose conditions of probation, parole, or sentencing included a ban on their use of alcohol or, if bootleggers, possession of alcohol. This would strengthen the position of the retailers in the region in denying sale to these persons as well as making both seller and buyer liable to citation for contempt of court. This "blacklist" is an older power, apparently still operative in the region until very recently.

The impact of LO has been to spur the villages to reevaluate and readjust their local ordinances, deleting from the LO the parts they do not like and calculating what they would like to incorporate through their tribal councils.

We would rather have our own local controls for alcohol-related offenders. That's what we want.

We also don't want our young people getting criminal records. To come down hard on an occasional small-quantity importer of alcohol doesn't make sense when the drug laws regarding marijuana are so lenient.

There was great interest expressed in having the court system turn over the juvenile alcohol offenders to the IRA councils for adjudication, penalty, and custody; that is, both corrections and social services functions.

For instance, instead of bringing criminal charges in cases of MCA (minor consuming alcohol), I, with the support of the City Council, impose 40 hours of community labor. The offender is supervised by a city employee, and works it off this way, without getting a criminal record. Everyone is satisfied.

Some suggest granting formal authority to the village council to manage those on probation or parole, those with suspended sen-



tences, and particularly for the youth for whom no one in the village is directly assigned the responsibility.

The state's probation system might be handled in cooperation with some appropriate village organization (City Council, IRA Council, Tribal Court) who would then oversee the offender's return.

This movement is due, in part, to issues of the distribution of powers among institutions and also to the inability to work out satisfactory arrangements with persons within all these institutions; that is, part of the issue is political and part is personal.

#### Prohibition on Possession

The LO is bound up by the legal structure in which it is embedded. It cannot be viewed in isolation any more than can other prohibitions, such as those on possession. Laws prohibiting possession are far more profound than those prohibiting importation and sale.

Prohibition of possession does not address the behaviors occurring while having or using the substance. It makes the substance itself illegal, thus simplifying the task for law enforcement officers who no longer have to apply impossibly complex standards to definitions and indicators of importation. It solves part of the problem currently confronted by LO communities that, once the alcohol is "in," the substance can be freely used. It strengthens the evidentiary base for making cases but it suggests a level of strict enforcement which may not be congruent with other basic community and cultural values. If the LO

passed with narrow electoral margins in many communities, possession is likely to fail in a far greater number because it is too restrictive. Prohibition may compel some residents to leave their communities entirely since all alcohol possession and consumption is made a criminal offense.

It is quite possible that those communities which would actively support and enforce prohibition are already doing so to the limits of their ability but not relying on Western law and law enforcement to accomplish it. If, however, a ban on possession were combined with selective enforcement and blacklisting, it might prove successful.

#### Local Option and Legal Education

Local option had the effect of introducing state law more directly into traditional, extra-legal and informal approaches to village alcohol control. It has driven out or at least made suspect extra-legal law enforcement. This phenomenon is very similar to the replacement of the village council with the magistrate.

The law prompted a legal education and evaluation of the village legal system as an adjunct of a state and Western legal system by both those who sought to avoid the law and by those who sought to impose it. The potential for the education of the violators is that, at some point, an individual may sue his community, the council, or the elders, asserting that the informal community processes violate his civil rights, thus placing one law protecting the individual against all the actions taken to

local control. If villagers then wish to develop tribal law, tribal law enforcement, and tribal courts, it remains an open question about what methods, under the United States Constitution, they will use to control individual behaviors in Native communities.

#### Local vs. State Powers

The assumption underlying LO is that there can be one solution to a wide array of problems in very diverse communities, regions, and cultures. The solutions suggested by villages on behalf of their own safety needs are considerably more complex, varied, and subtle than the four options provided by LO. Some wanted to control who could buy, how much someone could buy, when they could buy, what could be bought. Others wanted the enactment of restrictive local ordinances backed by state enforcement, authorization of searches and seizures, bans on possession, enactment of selective enforcement, designation as dry regions (including the Hub), and tribal government control over all aspects of alcohol use. Some wanted far more than LO, some wanted far less, some wanted something quite different. What they all wanted was the threat of state enforcement for whatever solution was adopted.

In those villages which did not seek state intervention to assist in alcohol control, but only the threat of state intervention, there has also been some disappointment with the de facto emptiness of that threat over time. If the state law enforcement and judicial power were seen as a backstop to local authority, there was an implied promise that the state would actually come

state-sanctioned law is weak or restricted. The IRA, too, was seen as a tool to "accomplish what we want to."

The IRA government structure is seen as useful by these villages in dealing with youthful offenders because the form implies a consolidation of powers - ordinance-making, local enforcement, selective enforcement, local adjudication, local corrections, lack of criminal records, and so on. The question which we are unable to address is whether IRA ordinances would replace the LO, create impossibly-stringent new behavioral standards and strictures, or alter controls to be more congruent and useful to each village, via various forms of selective application and selective enforcement.

Some suggest, "Maybe we shouldn't have the local option at all. Maybe we should have local ordinances through the IRA." They have heard about some more "radical" villages in other regions where rumor says this is being accomplished. They watch other villages with great interest.

#### Community and Public Purposes

The basic premise behind this study is simple: do actions such as LO actually create change, what is the linkage between the action and the perceived change, and what indicators are used to know that change has occurred? And how do they know? We found that villagers have discovered, over the past years, what kind of village they do not want. We have seen much evidence of their movement to pursue the kind of village they may want without defining too precisely what that final outcome is to look



like. They are moving with direction but without a complete vision of the end state. The movement itself is being spearheaded by several different groups of people, not only elders or only council members or only young leaders expressing their own sense of responsibility.

There are a series of factors which dictate why villages have decided to act now to change community aspects. One well-placed regional informant noted that there has been a "gradual change in consciousness over the past few years." Alcohol was not, in his view, seen or defined as a problem a few years ago but it is now considered to be major problem. It is a matter of redefining the problem. A few years ago, the region laughed at having an alcohol treatment center. "Now, no one is laughing anymore." The changes in perception were the result of closer looks at the unacceptable number of "deaths before their time." Some have calculated how many more men, women, and children there would be in the village today if it had not been for alcohol: men have killed themselves, women have died before their child-bearing years, and some children were either never born or have died while their parents were out drinking. The exact figures can and are being calculated by some village residents, family by family, person by person. These changes in perception of the realities of alcohol use have taken some years.

There is a larger sense of danger which they now feel for themselves, their villages, their culture, the way of life, and the language. While the erosion of values has occurred over a long period of time, recent years have witnessed a surprisingly

rapid evolution of forces and events emphasizing restoration.

To an outsider looking in, the danger appears quite real; some service agencies have expressed the feeling that the region is undergoing a devastating epidemic of loss and disability. Some villagers' response is "yes, but we have gotten ourselves together to deal with this and taken the following steps." The agencies focus on the casualty rate; the villages focus on the organization of responses and actions. There is little consensus among these viewpoints and no past pattern upon which to predict which set of forces will dominate the future.

It is not the purpose of this paper to do more than report on the development of village concern and commitment expressed in the perception of problems and the suggestion of solutions. The role of the local option law in contributing to this development was, we suggest, important; that this centrality will continue is unlikely, as the methods of focused community change become more diverse and interrelated.

We suggest that SOADA examine, document, and support the full range of community-based solutions, to facilitate these processes of change rather than design or direct them. This support may be far more in tune with the future economic constraints underlying public service systems. It is consistent with earlier requests by villages to mount their own programs and mobilize their own resources.

### Research Implications

The villages' attitude in the region visited was that if a new technology to stem the tide of alcoholism is available, "let's get it." This is different from villages in other regions which tend to adopt a "wait and see" attitude, watching the experience of other villages before acting themselves. This attitude in the region studied bespeaks the seriousness with which they view the problem, the determination they have to make progress, and their willingness to mobilize all levels of the community and all combinations of tools to accomplish this end. No part of the village is left out of active participation. If a community improves, no one will be able to tell which particular new (since 1980) tool (e.g., LO, selective enforcement, intimidation, extralegal enforcement, elders' meetings, religious meetings, peer counseling, natural helpers, spirit committees, school prevention programs, talking circles, community development, counselors, mental health and suicide programs, safe houses, women's shelters, treatment programs, protective custody, VPSO, courts, trooper support, self-determination movement) did the trick. The whole is seen as operating, not only the individual parts.

There was a general uniformity of response to questions about LO and its consequences in the four villages within this region. Villages focused on the same strong points, weak points, and recommended changes. This suggests the possibility of using one or two communities as an index for a region, to assess change over time. While family relationships and events differ, the core

processes seem quite similar.

Villagers seemed to draw their sense of community change about equally from both positive and negative social indicators; the differences among villagers seemed to reflect more on their individual and personal perspectives than on any formal consensus about community functioning.

Since there is a lack of a quantified data base, we would have to create one for each community on the indicators of significance and ensure accurate reporting on a regular interval basis. This could be done by having a long-term resident research assistant in each village tabulating these data from the various sources in the village.

The quantified data base would rely on an index of indicators as reported through community perceptions, social agency perceptions, social agency reports and alcohol retail records. We would recommend one additional research tool. The great concern within these villages seems to be for the children. If community efforts are successful, we would expect that the substance use of children would reflect changes over time, in terms of the age of starting use of each substance, the volumes and frequency of use, and the social situations and personal purposes of this use. These patterns of use can be measured on a routine and quantified basis through a self-report survey already validated in rural regions. Applying this survey on a semi-annual basis in the hub and certain index villages should reveal the degree of progress or change created by these many community efforts to combat alco-



hol and drug use.

## The Effects of the Local Option Law

The purpose of this study, funded by the State Office of Alcoholism and Drug Abuse, is to discover in what ways villages have changed as the result of the enactment and implementation of their local option.

There are two ways of examining how the villages have changed. The first way is to look at changes in official records, such as health, public safety, education, social services, and so on. Much of this can be done in the offices of agencies which keep their records in (the Hub). Only a small number of records need to be examined in the villages.

The second way is to ask village people, particularly members of boards and councils, VPSOs, and health aides, what good and bad changes they have seen since the local option election. The information from village people and from local records will be studied and reported in our final report.

No community or person will be named in our final report; we want to explain what has happened and why as a result of local option, but not affect the reputation or privacy of any person, village, or agency.

We have asked for and received the kind assistance of (Regional Non-Profit Board), its village representatives, and the Public Health Service. We request your assistance in answering these important questions and will make sure that the findings of the study are reported back to the participating communities and agencies.

Please feel free to contact us should you have any questions or comments. Thank you for your assistance.

Sincerely,

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School of Justice  
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Quantified Systems Data Guide - Participation: Council, Civil Activities Church, School Board, Health Board, Alcohol Council, Spirit Committee, etc.

Village    A B C D    (circle one)

**Describe system:**

**Where is it?**

Who maintains it?

How old is the system?

How reliable is it (is the information gathered and recorded in a uniform fashion)?

How valid is it (does it seem to reflect the reality of village life)?

Why was the system created and what kinds of questions can it answer?

**Describe changes:**

BEFORE LO/AFTER LO

|                                        | (numbers) | explanation/<br>description |  |
|----------------------------------------|-----------|-----------------------------|--|
| <u>number of persons participating</u> |           |                             |  |
| <u>amount of their participation</u>   |           |                             |  |
| <u>type of person participating</u>    |           |                             |  |
| <u>nature of activity</u>              |           |                             |  |
| <u>nature of concerns</u>              |           |                             |  |
| <u>others</u>                          |           |                             |  |
|                                        |           |                             |  |

Village    A   B   C   D   (circle one)

**Regional Informants**

| Name                                         | Address | Telephone | Interview | Data Review |
|----------------------------------------------|---------|-----------|-----------|-------------|
| <b>Health:</b>                               |         |           |           |             |
| <u>Physicians</u>                            |         |           |           |             |
| <u>Emergency Room Nurse</u>                  |         |           |           |             |
| <u>Itinerant PMN</u>                         |         |           |           |             |
| <b>Mental Health Program</b>                 |         |           |           |             |
| <u>Counselor 1</u>                           |         |           |           |             |
| <u>Counselor 2</u>                           |         |           |           |             |
| <u>Counselor 3</u>                           |         |           |           |             |
| <b>Alcohol Program</b>                       |         |           |           |             |
| <u>Counselor 1</u>                           |         |           |           |             |
| <u>Counselor 2</u>                           |         |           |           |             |
| <u>Counselor 3</u>                           |         |           |           |             |
| <u>Itinerant 1</u>                           |         |           |           |             |
| <u>Itinerant 2</u>                           |         |           |           |             |
| <b>Social Services:</b>                      |         |           |           |             |
| <u>Family Service Agency</u>                 |         |           |           |             |
| <u>Children's Services</u>                   |         |           |           |             |
| <u>(including custody and abuse matters)</u> |         |           |           |             |
| <u>Women's Shelter</u>                       |         |           |           |             |
| <u>Counseling Service</u>                    |         |           |           |             |
| <u>Suicide Prevention</u>                    |         |           |           |             |



Legal System:

District Court Judge

District Attorney

Public Defender

Alaska Legal Services

Alaska State Troopers

VPSO Coordinator/Supervisor

Education:

School District

Employment:

Manpower

Village      A   B   C   D   (circle one)

Local Informants

| position (no name)                          | Data Review | Interview |
|---------------------------------------------|-------------|-----------|
| <u>Village Public Safety Officer 1</u>      |             |           |
| <u>Village Public Safety Officer 2</u>      |             |           |
|                                             |             |           |
| <u>Health Board member(s)</u>               |             |           |
|                                             |             |           |
| <u>Health Aide 1</u>                        |             |           |
| <u>Health Aide 2</u>                        |             |           |
| <u>Community Health Representative</u>      |             |           |
|                                             |             |           |
| <u>Alcohol Counselor</u>                    |             |           |
|                                             |             |           |
| <u>Mental Health Counselor</u>              |             |           |
|                                             |             |           |
| <u>Village Alcohol Council Member(s)</u>    |             |           |
|                                             |             |           |
| <u>Spirit Committee Member(s)</u>           |             |           |
|                                             |             |           |
| <u>Minister(s) (may reside in Kotzebue)</u> |             |           |
|                                             |             |           |
| <u>School Board Member(s)</u>               |             |           |
|                                             |             |           |

|                                       |  |  |
|---------------------------------------|--|--|
| <u>School Teacher/Principal</u>       |  |  |
|                                       |  |  |
| <u>Students</u>                       |  |  |
|                                       |  |  |
| <u>Village/City Council Members</u>   |  |  |
| 1                                     |  |  |
| 2                                     |  |  |
| 3                                     |  |  |
| 4                                     |  |  |
| 5                                     |  |  |
|                                       |  |  |
| <u>Village/City Council Secretary</u> |  |  |
|                                       |  |  |
| <u>Other Village Informants</u>       |  |  |
| <u>e.g., elders</u>                   |  |  |
| <u>village corporation manager</u>    |  |  |
| <u>community services manager</u>     |  |  |
| <u>etc.</u>                           |  |  |
|                                       |  |  |
|                                       |  |  |

## Quantified Systems Data Guide - Public Safety

Village A B C D (circle one)

### Describe system:

Where is it?

Who maintains it?

How old is the system?

How reliable is it (is the information gathered and recorded in a uniform fashion)?

How valid is it (does it seem to reflect the reality of village life)?

Why was the system created and what kinds of questions can it answer?

### Describe changes:

|                               | BEFORE LO/ AFTER LO |  | explanation/<br>description |
|-------------------------------|---------------------|--|-----------------------------|
|                               | (numbers)           |  |                             |
| <u>violating local option</u> |                     |  |                             |
| <u>bootlegging</u>            |                     |  |                             |
| <u>public drunkenness</u>     |                     |  |                             |
| <u>drunken driving</u>        |                     |  |                             |
| <u>threatening behavior</u>   |                     |  |                             |
| <u>discharging firearms</u>   |                     |  |                             |
| <u>assault/fighting</u>       |                     |  |                             |
| <u>domestic disturbance</u>   |                     |  |                             |
|                               |                     |  |                             |



|                                |  |  |  |
|--------------------------------|--|--|--|
| <u>spouse abuse</u>            |  |  |  |
| <u>child abuse</u>             |  |  |  |
| <u>rape</u>                    |  |  |  |
| <u>homicide</u>                |  |  |  |
| <u>suicide</u>                 |  |  |  |
| <u>breaking and entering</u>   |  |  |  |
| <u>theft</u>                   |  |  |  |
| <u>possession of drugs</u>     |  |  |  |
| <u>disorderly conduct</u>      |  |  |  |
| <u>arson</u>                   |  |  |  |
| <u>accidents</u>               |  |  |  |
| <u>drowning</u>                |  |  |  |
| <u>burns</u>                   |  |  |  |
| <u>frostbite</u>               |  |  |  |
| <u>operating a vehicle</u>     |  |  |  |
| <u>operating equipment</u>     |  |  |  |
| <u>firearms</u>                |  |  |  |
| <u>boats</u>                   |  |  |  |
| <u>aircraft</u>                |  |  |  |
| <u>curfew violations</u>       |  |  |  |
| <u>detoxification</u>          |  |  |  |
| <u>juvenile problems</u>       |  |  |  |
| Classes of required<br>action: |  |  |  |
| <u>a call/report</u>           |  |  |  |
| <u>arrest</u>                  |  |  |  |
| <u>complaint</u>               |  |  |  |
| <u>charge</u>                  |  |  |  |

# Quantified Systems Data Guide - Health, Alcohol, Mental Health

Village A B C D (circle one)

## Describe system:

Where is it?

Who maintains it?

How old is the system?

How reliable is it (is the information gathered and recorded in a uniform fashion)?

How valid is it (does it seem to reflect the reality of village life)?

Why was the system created and what kinds of questions can it answer?

## Describe changes:

|                              | BEFORE LO/ | AFTER LO | explanation/<br>description |
|------------------------------|------------|----------|-----------------------------|
| <u>alcohol abuse</u>         |            |          |                             |
| <u>alcohol problems</u>      |            |          |                             |
| <u>cirrhosis</u>             |            |          |                             |
| <u>withdrawal</u>            |            |          |                             |
| <u>psychosis</u>             |            |          |                             |
| <u>depression</u>            |            |          |                             |
| <u>self-neglect (e.g.,</u>   |            |          |                             |
| <u>hygiene</u>               |            |          |                             |
| <u>nutrition</u>             |            |          |                             |
| <u>drug problems</u>         |            |          |                             |
| <u>accidents</u>             |            |          |                             |
| <u>self-inflicted trauma</u> |            |          |                             |

|                                       |  |  |  |
|---------------------------------------|--|--|--|
| <u>suicide gestures/<br/>attempts</u> |  |  |  |
| <u>victim of inflicted<br/>trauma</u> |  |  |  |
| <u>spouse abuse</u>                   |  |  |  |
| <u>child neglect</u>                  |  |  |  |
| <u>emotional problems</u>             |  |  |  |
| <u>nutritional problems</u>           |  |  |  |
| <u>life crisis</u>                    |  |  |  |
| <u>other</u>                          |  |  |  |

Quantified Systems Data Guide - Social Service, Child Custody, Women's Services

Village A B C D (circle one)

Describe system:

Where is it?

Who maintains it?

How old is the system?

How reliable is it (is the information gathered and recorded in a uniform fashion)?

How valid is it (does it seem to reflect the reality of village life)?

Why was the system created and what kinds of questions can it answer?

Describe changes:

|                                        | BEFORE LO/ AFTER LO<br>(numbers) |  | explanation/<br>description |
|----------------------------------------|----------------------------------|--|-----------------------------|
| <u>child abuse</u>                     |                                  |  |                             |
| <u>child neglect</u>                   |                                  |  |                             |
| <u>runaway child</u>                   |                                  |  |                             |
| <u>abandoned child</u>                 |                                  |  |                             |
| <u>sexual abuse victim</u>             |                                  |  |                             |
| <u>physical abuse</u>                  |                                  |  |                             |
| <u>rape victim</u>                     |                                  |  |                             |
| <u>alcohol abuse</u>                   |                                  |  |                             |
| <u>drug abuse</u>                      |                                  |  |                             |
| <u>mental illness</u>                  |                                  |  |                             |
| <u>child relinquished<br/>to state</u> |                                  |  |                             |



|                            |  |  |  |
|----------------------------|--|--|--|
| child removed from<br>home |  |  |  |
| other                      |  |  |  |
|                            |  |  |  |
|                            |  |  |  |

# Quantified Systems Data Guide - Education

Village A B C D (circle one)

## Describe system:

Where is it?

Who maintains it?

How old is the system?

How reliable is it (is the information gathered and recorded in a uniform fashion)?

How valid is it (does it seem to reflect the reality of village life)?

Why was the system created and what kinds of questions can it answer?

## Describe changes:

|                                               | BEFORE LO/ | AFTER LO | explanation/<br>description |
|-----------------------------------------------|------------|----------|-----------------------------|
| truancy                                       |            |          |                             |
| delinquency                                   |            |          |                             |
| scholastic performance                        |            |          |                             |
| athletic performance                          |            |          |                             |
| participation in extra<br>curricular activity |            |          |                             |
| health problems                               |            |          |                             |
| home problems                                 |            |          |                             |
| alcohol use                                   |            |          |                             |
| drug use                                      |            |          |                             |
| other behaviors                               |            |          |                             |
|                                               |            |          |                             |
|                                               |            |          |                             |

Interview Guide for Informants

Village A B C D (circle one)

Position in village:

1. How long have you been in or serving the region/village?
2. Who preceded you in office, back to 1980?
3. Is this person still in region/village?
4. How has the community changed since 1980?
5. How has the community changed since local option?
6. How does the community feel, as a place to live?  
(safety, danger, alcohol presence, happy, etc.)
7. What kind of people in the community seem to be having problems, such as alcohol, violence, accidents, emotional problems, employment)? Are they kids, young adults, etc.?
8. Have these problems gotten better or worse in the last few years?
9. When was the local option law enacted?
10. What were the events or forces which led to local option?

11. What consequences were desired, anticipated, or feared by community members as a result of local option?
12. What positive changes have occurred since the local option election?
13. What negative changes have occurred since the local option election?
14. What unintended or surprising changes have occurred since the local option election?
15. How do you know that these changes have actually occurred? That is, what have you actually seen in terms of behavior and events and how do you relate that to the local option law?
16. Were these changes due directly to the law or other changes also occurring in the village? What are these changes?
17. Is it only village residents who are in a position to see these non-reported positive and negative changes?
18. How do you feel about the effectiveness of community actions about alcohol?
19. Are there people in the village who are opposed to the local option or would like to see it rescinded? Why are they opposed? Do you think the law will be rescinded?



20. Do you think that there is less alcohol used in the village since the local option?

21. Has the number of bad events related to alcohol gotten smaller since the local option election? For example,

|                           | yes | no | how |
|---------------------------|-----|----|-----|
| <u>violence</u>           |     |    |     |
| <u>random shooting</u>    |     |    |     |
| <u>public drunkenness</u> |     |    |     |
| <u>accidents</u>          |     |    |     |
| <u>fighting</u>           |     |    |     |
| <u>spouse abuse</u>       |     |    |     |
| <u>drug abuse</u>         |     |    |     |
| <u>school dropout</u>     |     |    |     |
| <u>others</u>             |     |    |     |
|                           |     |    |     |

|                                         | yes | no | how |
|-----------------------------------------|-----|----|-----|
| <u>threats</u>                          |     |    |     |
| <u>drunk driving</u>                    |     |    |     |
| <u>bootlegging</u>                      |     |    |     |
| <u>injuries</u>                         |     |    |     |
| <u>stealing</u>                         |     |    |     |
| <u>child abuse</u>                      |     |    |     |
| <u>truancy</u>                          |     |    |     |
| <u>bad council or corporate actions</u> |     |    |     |
|                                         |     |    |     |

22. Has the seriousness of bad events declined? (e.g., homicide, suicide)?

23. Has the number of people needing alcohol treatment changed? How?

24. Has the amount and local enforcement of local option and drunken behavior changed? How?

25. Has the number of people drinking outside of the village changed? How?

26. Whom else do you think I should talk to about all this?

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**RURAL HEALTH ISSUES STUDY  
AND  
STATEWIDE SUICIDE EVALUATION PROJECT**

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**Executive Summary**

Prepared by:

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November, 1985

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## PREFACE

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This document represents a brief summary of the combined results of two studies authorized by the 1984 Alaska State Legislature. These are the Rural Health Issues Study and the Statewide Suicide Evaluation Project.

The Alaska Native Health Board was asked by the Legislature to evaluate recommendations made in *Alaska Native Health Care* in 1982 (a publication of the House Finance Committee) in light of policy and budget changes that have occurred since that document was published. Additionally, the Alaska Native Health Board was to expand the scope of the 1982 document to include rural health problems.

The Statewide Suicide Evaluation Project grew out of the Legislature's concern of a perceived suicide problem in Alaska. The report provides only a preliminary assessment of the extent of the problem.

The major page report on combined results of the Rural Health Issues Study and Statewide Suicide Evaluation Project is available through the Alaska Native Health Board. It provides findings on selected rural health-related issues. The report includes a compendium of program models being used in Alaska and elsewhere for prevention and intervention of suicide and other behavioral problems.

The Alaska Native Health Board did discover major weaknesses in the State's rural health care delivery system. The report makes policy recommendations crucial to the future needs of Alaska's public health system or paradigm. It calls for an innovative methodology for delivering public health services to rural Alaskans.

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## EXECUTIVE SUMMARY

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The formal health care delivery system that now serves rural Alaskans originated during a time when the health status of rural Alaskans (largely Alaska Natives) was well below that of general populations in Alaska and the United States. Villages were being decimated by communicable diseases and chronic illness. The public health delivery system that evolved was crisis oriented. Its very purpose in being was to provide a medical model for the treatment of infectious diseases and acute illnesses.

The ANHB believes that public health, to a degree, has been captured by its very success. Infectious diseases, for instance, are not the threat to rural Alaskans they once were.

Nonetheless, results of the Rural Health Issues Study and Statewide Suicide Evaluation Project lead the ANHB to conclude that the overall health status of rural Alaskans continues to remain below the level of good health enjoyed by urban Alaskans and the general U.S. population. What has changed is that the types of health-related problems being experienced now are different.

Today, changing lifestyles and behavioral problems account for much of the ill health experienced by rural Alaskans.

As the rural areas of the State move from a subsistence to a cash economy, lifestyles change. People are getting less exercise, nutrition is sometimes poor, and far too many people are choosing to smoke and to use alcohol. As a result, diseases such as cancer and diabetes appear to be on the increase among Alaska Natives. Because of a lack of adequate data, less is known about the prevalence of these diseases among non-Native rural Alaskans.

Although dramatic improvements have been made, infant morbidity and mortality rates for rural Alaska continue to be considerably higher than those for urban Alaska. Pregnant women do not have universal access to good prenatal care or for hospital deliveries. Pregnant women some-



times have poor nutrition, they smoke while pregnant, and some choose to drink while pregnant. An especially important problem is the high rate of teenage pregnancies with associated high numbers of low birth weight babies being born.

Behavioral problems also manifest themselves in needlessly very high rates of injury and death from voluntary and involuntary acts of violence, including injuries and deaths involving all forms of motorized vehicles, fires, drownings, violent and abusive behaviors against self and others, including suicide gestures.

Results of the Statewide Suicide Evaluation Project revealed the following trends in suicide behaviors:

- Suicide attempts and completions occur more frequently among the Alaska Native population than among non-Native Alaskans.
- The peak year for suicide completions in Alaska was 1976, the year marking the height of rapid change in socio-economic conditions associated with oil exploration and development activities.
- While overall rates for suicide completions declined from 1976 to 1980, there are now some areas in the State where suicide completions have increased since the early 1980s.
- During the late 1960s and early 1970s, 25-34 year old Alaska Native males were highest at-risk for suicide. By the early 1980s, the highest at-risk group had become the 15-24 year old Alaska Native males.
- Suicide attempts in rural Alaska increased fourfold during the 1970s and early 1980s. Urban suicide attempts in Alaska increased twofold during the same time period.
- Rural suicide attempts occur at two times the rate of urban gestures.
- From 110 unvalidated community responses to a 1985 ANHB Suicide Survey, it would appear highest at-risk for attempting suicide are Alaska Native females and males in the approximate 15-24 age group.

Alcohol and its related behaviors remain the State's most significant health problem, affecting far too many rural communities. The behaviors are manifesting themselves in suicide gestures, injury and death from events involving vehicles, domestic violence, homicide, sexual assaults, depression, self-neglect, child abuse and neglect, employment problems, truancy, and school dropouts.

Crime statistics and anecdotal information suggest that drug abuse is also occurring in rural Alaska. However, because good data is not available, less is known about the extent of drug abuse and its possible implications in the myriad of violent and abusive behaviors described above.

Data shows that young rural Alaskans, and Alaska Natives in particular, in the approximate 15-24 age group are overrepresented in many of the negative health status indicators.

The above referenced behaviors and resulting health-related problems have two major elements in common. First, it appears that most occur more frequently among rural Alaskans. Secondly, the ANHB believes that — to a very large extent — all are preventable.

This last statement then leads one to wonder why these problems do exist and to such a great extent if, in fact, they are preventable.

As eluded to at the onset, the philosophy of the public health delivery system that serves rural Alaskans has always been and continues to be to provide treatment. The system is crisis oriented. From a medical standpoint, it served its purpose well. Infectious diseases, in fact, are not the problem they once were.

But, over the years new problems or "crises" arose and needs changed. Health problems became more behavioral in nature. As Mental Health, Alcohol, EMS and other response programs were developed and readied for implementation, unfortunate decisions were made to continue to adhere rather strictly to the once successful clinical model of providing treatment as opposed to initiating preventive measures to mitigate the potential for widespread negative effects from these behavioral problems.

Providing treatment only after a behavioral problem has become severe and only to select individuals ignores the fact that examples may have already been set that will be followed by family and community members. Unless people are provided with reliable, consistent information over time, behavioral problems can and do escalate and can, in fact, become inter-generational.

Urban areas are not totally unaffected by the kinds of behavioral and attitudinal problems being experienced in rural Alaska. These same problems are occurring in urban areas; however, they occur much less frequently among urban Alaskans on a per capita basis.

The ANHB believes the fact that both the federal and State governments failed to systematically fund adequate or appropriate behavioral health promotion and prevention activities for more than 30 years is partly responsible for many of the negative behavioral problems rural Alaskans in particular are now experiencing.

The Alaska State Legislature must declare the elevation of the health status of rural Alaskans as their highest priority. Strong emphasis should be placed on health promotion and the prevention of unnecessary illness, injury and death.

The Rural Health Issues Study and Statewide Suicide Evaluation Project revealed some major glitches in the very system that should be encouraging and promoting the kinds of prevention activities that need to take place to effect change. The ANHB believes, however, that these system problems are not insurmountable; they can and must be overcome.

Three initial legislative actions will be required to correct existing system deficiencies. They are: (1) creation of a State Office of Prevention; (2) establishment of a responsive rural health system; and (3) major improvements to State health data systems.

### **State Office of Prevention**

Elevating the health status of a people — and thus reducing the need

for medical care and a myriad of ancillary and specialty services — can best be accomplished by aggressive health promotion and disease prevention activities.

At present, health promotion and disease prevention strategies are virtually non-existent in most villages. Local resources must be explored, developed and utilized. Communities must take responsibility for identifying problems, for establishing a priority among them, and for developing and implementing programs. Villages need technical assistance in carrying out these planning activities and to insure the ongoing success of local programs.

Health promotion is a specialty unto itself. It is, therefore, the consensus of the ANHB and the regional health programs it represents that a State Office of Prevention within the Department of Health and Social Services is essential. The State Office of Prevention should function strictly as a program funding office.

Existing prevention funds from various categorical divisions within DHSS should be combined with increased cigarette excise tax revenues to serve as a funding base for the State Office of Prevention. These funds should ultimately be made available to regional, municipal and local nonprofit organizations for long-term, wellness-based health promotion activities.

Emphasis should be on initiating health promotion and prevention activities in rural Alaska, where both the need and the cost of providing treatment are the greatest.

Priority should be given to funding health promotion and prevention activities to counteract those behavioral and attitudinal problems having the greatest negative impact on the health status of rural Alaskans.

### **Rural Public Health System**

The ANHB recognizes that Alaska's public health needs vary from time to time and from place to place. It recognizes also the difficulties

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inherent in providing services to a client group as varied as Alaska's and in an environment as vast as Alaska's. Rural Alaskans overwhelmingly argue they are currently underserved by the State's public health system.

As the State begins to shift its emphasis from treatment to the prevention of needless illness, injuries and death, the concept of a Rural Resource Center becomes increasingly important. As the State's Rural Resource Center, the ANHB will provide a central office to identify small community program models and to act as a clearinghouse for receipt and dissemination of new information to be shared with the twelve regions of the State.

The ANHB believes that public health must emphasize prevention and be community specific. Public health for rural Alaska must advocate community well-being. Above all, it must utilize local human resources. The ANHB is well prepared to serve as the organization to facilitate a shift in emphasis toward community empowerment.

The Alaska Federation of Natives, Inc. and the Alaska Public Health Association endorse the concept and need for a Rural Resource Center. AFN and ALPHA, by formal resolution, have requested that the ANHB be designated the State's Rural Resource Center and funds provided to establish the program.

## **Research and Health Data Systems**

Morbidity and mortality data, along with social indicators, must be an integral part of any responsible public health care delivery system. Current, reliable data must be readily available to tell planners and responsible agencies what people are getting sick and dying from so appropriate program responses can be initiated. Current, reliable data is again needed to evaluate program effectiveness.

A reliable data system will become increasingly important and provide the impetus for program direction as the State moves toward a more complete embrace of health promotion and prevention. Current

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mortality data is not readily available from DHSS. There are far too many areas where morbidity data is not routinely collected or reported in an organized or formal fashion.

The ANHB, therefore, recommends establishment of a statewide health data collection system to function at the regional level. Funds should be provided to maintain a collaborative network among the regions. In addition, the regional network should collect behavioral health statistics to allow for targeting prevention programs.

At present an impasse exists between the Alaska Department of Health and Social Services and health organizations concerning the ability of DHSS to provide timely access to accurate health data. The ANHB believes only legislative action can resolve the issue for both providers and users of vital health data.

The ANHB believes Alaska should examine results of epidemiology studies conducted elsewhere and, when necessary, begin new epidemiological studies of the major causes of morbidity and mortality in the State. These studies should begin to define risk factors and establish surveillance systems to allow for tracking the incidence of these injuries and deaths over time. The ANHB urges a public commitment to support these long-term research needs. Consideration should be given to using research guidelines presented in the American Public Health Association's National Arctic Health Science Policy.



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## SUICIDE

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### Data Needs

The ANHB recommends funds be appropriated for establishing a statewide health data system to function at the regional level and for a collaborative data network among the regions. The regional network should collect behavioral health statistics to allow for targeting suicide and other behavioral prevention programs.

The regional data bases need to include suicide morbidity and other evidence of self-destructive behavior, such as accidents, abuse, violence, etc.

The statewide network of regional health data bases needs to be linked with service. The ANHB believes such a regionally based data system would be invaluable for identifying those at highest risk for suicide. Education and consciousness raising at the village level can then be targeted to high risk people and communities identified by the regional data base systems.

Many professional health organizations in Alaska have called for the Legislature to shift the Bureau of Vital Statistics back to the Division of Public Health.

The ANHB recommends that sufficient funds be allocated to restore the Bureau of Vital Statistics to the operating level that existed prior to the dismantling of the Office of Information Systems.

The ANHB recognizes regrettably that an impasse now exists between the Alaska Department of Health and Social Services and professional health organizations concerning the needs of the Bureau of Vital Statistics. The ANHB requests a legislative audit be conducted to determine the health data needs of the State. The ANHB believes that only legislative action can resolve the issue for both the providers and users of vital data.



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The ANHB recommends the Legislature mandate that Blood Alcohol Concentrations (BACs) on all violent deaths and self-inflicted injuries be checked as soon as possible after injury or death to determine possible involvement of alcohol. Results should then be reported to the Division of Public Health. The suspected strong correlation between alcohol and these activities may then be verified and prevention efforts targeted to appropriate audiences.

The ANHB recommends that regional research aides/assistants be trained to function at community and regional levels. Local residents, sensitive to cultural and related communications differences, may best assist regional and statewide researchers and planners.

### **Demonstration Projects in Communities**

The ANHB recommends that funds be allocated for continuation of existing suicide demonstration projects and for the initiation of additional community suicide prevention projects.

As the State begins to formulate a response to the problem of suicides and suicide attempts, the primary emphasis should be on the prevention of suicide. Prevention must be viewed as equally as important as primary care and treatment. It should be the State's responsibility to encourage and assist communities in developing suicide prevention strategies.

### **Regional Training In Support of Communities**

The regional health entities may consider the benefits of developing in-house trainers-of-trainers for subsequently assisting rural communities in addressing their own problems. Such assistance may be developed to address the various behavior related self-destructive activities plaguing Alaskans.

### **Economic Development**

The ANHB recommends that State economic planners work with

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villages to develop appropriate economic alternatives for the development of village-based jobs. According to observations of an American Psychiatric Association review team visit to Alaska in August 1985, feelings of a loss of control and suicide may be resulting from a lack of meaningful work in villages. Various general literature on suicide has cited meaningful employment as a primary suicide prevention activity.

*Prepared by the Alaska Native Health Board, Inc. 17*

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## PATIENT TRAVEL

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The IHS is exploring ways of increasing the enrollment of IHS beneficiaries in public assistance entitlement programs. Therefore, the State should be prepared to see an increase in demand for Medicaid and GRM travel.

Medicaid and GRM remain crucial programs for providing access to health care in Alaska. However, due to substantial increases in travel costs and demand in the past year, the State's Division of Public Assistance is considering the elimination of coverage for routine diagnostic care. The ANHB believes such action could adversely affect the health status of rural Alaskans.

The data and the perception of need indicate a need for efforts to inform rural residents of their entitlements and to enroll eligible residents in programs which will enable them to qualify for Medicaid and GRM travel. Specifically, village fee agents need more instruction in outreach work to actively enroll eligible people. The Division of Public Assistance may require additional staff at regional centers to do outreach work and process applications.

Delays in activating Medicaid and GRM cause undesirable delay in delivering services. Medicaid can take up to two months to activate and requires monthly eligibility reports. GRM takes three days to two weeks to process an application which then must be reauthorized monthly. Since a person can only initiate an application when ill, it becomes a cumbersome process not adequately responsive for acute illnesses.

If travel to a regional hospital or urban hospital is authorized by Medicaid or GRM, the patient should be assured round-trip travel regardless of eligibility status on the day of discharge. Similarly, patients brought to Anchorage for treatment at the Alaska Psychiatric Institute (API) should be assured return travel to their villages regardless of discharge from API to an alcohol treatment center, hospital, or other facility or program.

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## ALCOHOL ABUSE

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The Alaska State Legislature should ensure greater and improved coordination among programs dealing with alcohol abuse, domestic violence, sexual and physical abuse, mental health, suicide, accident prevention, etc. These efforts should include coordination of agency objectives, cross-training of village/community personnel and the achievement of complimentary programs. Reporting mechanisms should be uniform in nature and regionally coordinated for the purposes of planning, auditing, grant reporting and data collection.

Alcohol abuse is closely tied to low self-esteem and lack of appropriate coping skills. It is a community issue and must be treated holistically. A holistic approach should strive to upgrade the economic, social, educational and health conditions of each community and will require the cooperation of State agencies.

Education is the key to prevention. It should teach people to become aware of how they are conducting their lives, identify options realistically available to them, and encourage use of options available. Teachers should endeavor to educate students to become self-sufficient and serve as facilitators. Health curriculum should include the study of village culture, history, traditional coping and life skills from which to build positive self-esteem, healthy attitudes and lifestyles. Teachers should consist of respected Elders and certified staff. The use of Elders will validate local cultural values and provide positive role models for the students.

The ANHB recommends the Legislature mandate that Blood Alcohol Concentrations (BACs) on all violent deaths and self-inflicted injuries be checked as soon as possible after injury or death to determine possible involvement of alcohol. Results should then be reported to the Division of Public Health. The suspected strong correlation between alcohol and these activities may then be verified and prevention efforts targeted to appropriate audiences.

To validate the move toward community empowerment, communities

should be included in the development of substance abuse programs. The programs should include support systems that were traditionally used.

## **INFANT MORBIDITY AND MORTALITY**

Providing early and continued prenatal care is perhaps the single most effective strategy for preventing infant deaths and other complications of pregnancy causing severe illness and disability to newborns. To bring about these savings, however, and to prevent infant death and disabilities, travel funds must be allocated so prenatal care and hospital deliveries are universally accessible.

The leading cause of infant morbidity and mortality in Alaska, as well as worldwide, is low birth weight. Some factors affecting low birth weight are known. These include smoking, use of alcohol, poor nutrition, and previous low birthweight pregnancies. Nutritional counseling should be made available during all prenatal visits and referrals made to WIC when indicated.

Providers need to be well trained to assess problems and make proper referrals in the case of teenage pregnancies.

Efforts to educate the public regarding pregnancy and the importance of early prenatal care should become part of any health promotion program in Alaska. Certainly efforts to educate the public about dangers associated with alcohol abuse and smoking should include the effects both have on the fetus.

The ANHB believes the subpopulation characteristics of drinking pregnant women need to be identified so that community health professionals can target prevention and intervention efforts to women most at risk. Health professionals should inquire routinely about patient alcohol consumption at every clinic visit, and counsel all women in the child-bearing ages about alcohol's effects. Identification on patient care records by qualified clinicians of women with previous FAS/FAE births would be a ready indicator of women and areas needing increased prevention efforts and the need for further evaluation of existing program efforts. These data would also serve to identify the extent of the problem of FAS/FAE in Alaska.



Health care providers should be encouraged to refer suspected FAS children to pediatricians, Public Health Service field physicians, or March of Dimes Genetics and Birth Defects Clinics for clinical diagnosis to determine the clinical manifestations of FAS in children and to provide a treatment plan that can be carried out to promote each child's optimum development.

Alcohol programs, public health personnel, physicians, Community Health Aides, special workers, teachers, etc. need to create an awareness of the problem of drinking during pregnancy. FAS prevention efforts should include targeting information to school age children.

## ADOLESCENT HEALTH

Although adolescents look to the medical profession for assistance with pressing health questions, they are often faced with fragmented services and fears about the lack of confidentiality. Providers often feel uncomfortable or lack skills in working with adolescents. Baseline data is needed to begin establishing quality services for adolescents. These services can be incorporated by existing agencies.

There is a critical lack of treatment facilities for juvenile offenders.

Rural Alaska communities have no specific health programs aimed at adolescent health issues. Health education does exist in the school curriculum in rural Alaska, as in all public schools. Schools could work more closely with local and itinerant health care providers. Part of this coordination could include, but not be limited to, early detection of psychological, emotional and physical health care needs.

Research has shown that adolescents will seek advice and counsel from their peers. In keeping with these tendencies, peer counselors should be identified and taught adolescent counseling skills. The involvement of teenagers is paramount in the planning of such a program.

Presently, adolescent legal issues need to be defined on matters of justice, health care, incarceration in mental institutions and emancipation. The judicial system needs a legal clarification on the concrete definition of the term "adolescent." It is not clear if this definition means chronological or cognitive age.

Rural Alaskan youth will often complain of a lack of teen-related activities in the villages. Communities should foster a full range of constructive leisure time activities. These activities can include, but not be limited to cultural events, sports, local field trips, drama, etc.



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## CANCER

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Among the data currently not being collected statewide in Alaska are cancer data. The ANHB believes that collecting cancer information relative to the statewide population is an urgent need. As the State's population ages, the incidence and types of cancer can be expected to increase. By beginning to track the disease now, policy for future needs can be determined more effectively. A population-based cancer registry for Alaska would allow for identification of the incidence of cancer, types of cancer, and provide the basis for programs to reduce known causes of cancer in Alaska.

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## 3-WHEELER MORBIDITY AND MORTALITY

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Potential risk factors involved in ATV-related injury and death include use of alcohol, failure to use helmets and other protective gear, rider inexperience and inattention, and excessive speed. These factors, as well as vehicle use patterns and vehicle characteristics, must be evaluated as part of a rational approach for planning suitable prevention strategies.

The ANHB recommends completion of the ongoing epidemiology study of ATV-related injury and death so appropriate legislation, if needed, can address all the risk factors involved.

Legislation requiring use of an approved helmet while riding any all-terrain vehicle would be an effective prevention strategy.

Without mandatory registration of vehicles, a helmet law would be difficult to enforce. Also, ATVs illegally using roadways or otherwise engaging in dangerous activities cannot be issued citations unless such vehicles can be identified.

The ANHB further recommends that any person 16 years of age or younger be required to complete a safe driving course before using any ATV on public lands in Alaska.

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## HAZARDOUS WASTE

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No comprehensive source of information assesses the adverse effects of hazardous wastes and materials on rural health. This lack of information results from an inadequate data collection system and from the lack of necessary investigative capacity. Laboratory facilities, staff and equipment are all needed for the State to respond to hazardous materials and waste incidents in rural Alaska.

Additionally, Alaska's Department of Health and Social Services has no direct connection to the State's Hazardous Waste Program which is administered by the Department of Environmental Conservation (DEC). The result is that many incidents involving exposures to hazardous waste and otherwise toxic substances often go unrecorded and are not evaluated from a public health perspective.

Land disposal and conveyance proceedings in Alaska should include surveys of hazardous materials and wastes prior to land selections. If wastes and materials are discovered, the culpable party should be directed to clean up the site before lands are exchanged. If liability cannot be determined, the current owner of the property should be responsible for the clean-up, unless the involved parties agree to some other method.

The ANHB supports current efforts by DEC to develop a hazardous waste disposal system in Alaska. The system should emphasize alternatives to landfill disposal and should consider the unique needs of rural Alaska.

The ANHB believes rural areas must receive education in hazardous waste management, including hazardous waste treatment, storage, transportation, disposal, and information about handling.

Findings lead the ANHB to conclude there is a fundamental need for improved laboratory capabilities in Alaska. Hazardous waste sites typically present unknown chemical exposures to workers, enforcement officers, and the general public. The ill-defined nature of the contaminants requires detailed laboratory analysis. Precise knowledge of the toxins is necessary from a regulatory and public health standpoint.

Lack of in-state laboratory facilities limits DHSS' ability to fully investigate incidents involving hazardous wastes and materials to document health risks associated with human exposure.

Existing State regulations for intrastate transportation of hazardous materials were adopted in 1977 and modeled after outdated 1974 federal transportation regulations. Alaska's intrastate regulations are now inconsistent with current federal regulations governing interstate transport of hazardous materials and wastes.

In-depth analysis of hazardous materials transportation and storage practices in the Bush is critical in order to protect rural residents and to allow for proper emergency response planning.

The clean-up and disposal of hazardous wastes in rural Alaska is very costly. The ANHB sees merit to the establishment of a State Hazardous Materials Response Fund.

February 1985

ANALYSIS OF AVAILABILITY FACTORS  
RELATED TO PER CAPITA ALCOHOL CONSUMPTION

For

THE ALASKA COUNCIL ON PREVENTION  
OF ALCOHOL AND DRUG ABUSE, INC.  
Anchorage, Alaska

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## SUMMARY

### DO ALCOHOL LAWS AFFECT ALCOHOL CONSUMPTION

#### Synopsis

In the simplest possible terms, this report indicates that:

- States with "strict," "tight," or "conservative" liquor laws have low per capita alcohol consumption.
- And, states with "permissive," "loose," or "liberal" liquor laws have high per capita alcohol consumption rates.

The factors which apparently most affect per capita consumption are:

- The cost of alcohol.
- The hours in which alcohol is available for sale.
- The number of outlets in which alcohol may be purchased.

#### Background and Reason for this Research

This report is a small part of an intensive two-year study by the Alaska Council on Prevention of Alcohol and Drug Abuse, Inc., to determine if Alaska's liquor laws and policies were in any way responsible for that state's inordinately high per capita alcohol consumption rate.

Much research has been done on the relationship of individual factors in affecting per capita consumption, and/or attempting to tie in one factor or another with a specific type of health disorder or crime problem.

Only one piece of research attempted to look at the overall liquor policies of a specific state as they relate to per capita alcohol consumption. In 1975, Dr. Reginald Smart of the Addiction Research Foundation in Toronto, developed an "availability score" by assigning weights to a variety of factors. He has proved that states with a high "availability score" (e.g. Alaska) had high per capita alcohol consumption rates. States which had low scores on his "availability scale" (e.g. North Carolina) had low per capita alcohol consumption levels.,

The 1975 Smart Study, which was cited as "an overwhelming preponderance of scientific evidence," indicated a direct correlation between availability factors and per capita consumption. However, any attempt to change liquor laws to moderate alcohol availability anywhere is always challenged with the statement that the specific factor under discussion cannot be proven to have any specific effect. This research attempted to find the specific effect.



## Methodology

The following factors were considered in an attempt to learn how much each of these factors influences per capita alcohol consumption in each of the 50 states and the District of Columbia.

- Minimum drinking age.
- Per capita income.
- Hours per week that alcohol may be purchased.
- Number of outlets which sell alcohol per population.
- Whether alcohol is sold through licensed, independent retail outlets or a state monopoly.

Baseline data was accumulated for each state, for the year 1980. Regression analysis, a commonly-used statistical technique, was utilized with a formula designed to indicate how much each of these factors influenced per capita consumption.

In the final analysis:

- Minimum drinking age does not seem to affect the per capita consumption rate.
- Having individual licensees rather than a state monopoly does not seem to affect the per capita consumption rate.
- Per capita income does affect per capita consumption. Every \$1,000 of per capita income indicates additional consumption of approximately one quart of alcohol.
- The cost of alcohol does directly affect consumption. Each additional dollar of cost reduces consumption by more than a quart.
- The number of outlets does affect consumption. One point of logarithmic difference will decrease per capita consumption by .39 gallons.

## Conclusions

There are many demographic variables which influence per capita consumption, that cannot be changed by legislation. For example, per capita income is a variable that would be of little help to decision makers in attempts to reduce per capita consumption.

Should any political jurisdiction wish to lower its per capita consumption level, the three most influential factors to be considered are:

- Cost of alcohol
- Number of outlets
- Hours of availability

## ANALYSIS OF AVAILABILITY FACTORS RELATED TO PER CAPITA ALCOHOL CONSUMPTION

### Introduction

The analysis described below represents an effort to understand how per capita alcohol consumption may be related to a small set of potential influences, most of which are directly affected by alcohol laws or policies. Specifically, we wish to explore whether any of the following characteristics are connected to per capita alcohol consumption:

- The minimum drinking age.
- The cost of liquor.
- Per capita income.
- The number of hours per week that an outlet is allowed to operate and serve alcohol.
- The density of alcohol outlets within a population.
- Whether a state controls alcohol sales through alcohol licenses or instead through a state monopoly.

Our goal is to be able to summarize how much each of these factors contributes to alcohol consumption.

### Method

The method used is regression analysis. A commonly-used technique, regression analysis takes the phenomenon that is the center of concern (for us, per capita alcohol consumption) and expresses it as a function of several influences or factors added together. In our analysis, we can show this relationship as:

$$\text{Alcohol Consumption} = \text{Drinking Age} + \text{Age} + \text{Cost} + \text{Per Capita Income} + \text{Hours per Week} + \text{Density} + \text{License State}$$

As it stands, the expression above implies that one would just add all the factors together, as they are. However, we can anticipate that some of the factors will be more influential than others. Perhaps the density of outlets has a greater effect on alcohol consumption than whether a state has a monopoly on a alcohol sales. A more accurate way to show the equation above would then be:

$$\text{Alcohol Consumption} = W(1) \text{ Drinking Age} + W(2) \text{ Cost} + W(3) \text{ Per Capita Income} + W(4) \text{ Hours per Week} + W(5) \text{ Density} + W(6) \text{ License State}$$

The "W's" represent the weights that can be assigned to each of the factors, and are one way to tell how "strong" each one is when compared to the others. A weight of zero, for instance, would mean that the factor had no influence on alcohol consumption, and could be left out of the equation altogether.

The regression analysis will determine these weights by taking data for alcohol consumption and the other factors from each state (and the District of Columbia). Computing the weights results in a single equation which gives the best fit possible when applied to the full set of states. Before we can really accomplish this, however, we need to describe each of the factors in the equation in a way that will permit the statistical analysis we have just described.

### Measures Used in the Analysis

Table 1 lists each of the factors for which data were collected, an abbreviation and a short description of how it is defined or computed. Table 2 shows the values of these variables for the 50 states and the District of Columbia.

Tables 3 through 9 show the frequency distributions and descriptive statistics for each of the variables we have defined. (1) Their purpose is to better inform us of the quantitative properties of these variables and to alert us to anything that may seem out of keeping with our expectations. In that regard, two tables require a closer look.

First, Table 3 (per capita alcohol consumption) shows three cases as having unusually high consumption rates when compared to the others. We can see that they are New Hampshire (5.35 gallons), District of Columbia (5.7) and Nevada (6.18). There is, in fact, a large gap between these three cases and the fourth highest rate, Alaska (4.04). These high rates can be plausibly attributed to out-of-state drinkers whose numbers, of course, are not figured into the per capita consumption rates, but whose numbers are large enough relative to the small populations of those states to throw the consumption rates off. We must, therefore, regard these three cases as poor measures. Should these three cases be then eliminated from further analysis? No, because while this one, admittedly important, variable is not valid for these cases, the information the cases convey about the relationships among all the other variables is not likely to be so affected and will thus improve the utility of the overall "equation" that we are trying to construct.

Table 9 also requires some attention. Here, in the distribution of the people per license measure, we have several states that "trail out" at the high end of the measure (say, those states with more than 1800 people per license). Not only that, but we see that most of the states are clumped at the low end of the range. The problem here is not that the measures may be inaccurate, but it is rather a technical issue that requires us to do something to "even out" the distribution of cases over the range. If we do not, the regression analysis itself is likely to be a much poorer fit to our data and our weights are less likely to reflect their proper values.

Unfortunately, the solution to this technical problem makes our discussion a little bit confusing for laymen. Instead of using "people per license" as one



of our factors, we must instead use the (natural) logarithm of that number. In the case of Alabama, for instance, we would compute the log of 1771 to get 7.4793. It is important to see that this recalculation does not alter the relative standing of any state with respect to the others. Wisconsin still has the lowest number, North Carolina having the highest. Table 10 shows the frequency distribution of the new variable (called LOGPPLIC) and while it still has a longish tail at the high end of the range, it is much less strung out than the original variable. From this point on, then, we will be using the log of people per license in all discussion.

Finally, as an experiment, another variable was constructed to show the relative cost (RELCOST) of alcohol in a given state. Naturally, this new number can easily be constructed by dividing COST by INCOME. The resulting ratio can then be compared across states (see Table 11). Our interest in this variable will depend on its utility in our analysis, as we shall discuss below. Table 12 lists all the variables that have been described for each of the 50 states and the District of Columbia.

#### Simple (Bivariate) Relations Between Factors and Per Capita Alcohol Consumption

Figures 1 through 7 give us a first look at how each of the factors may be related to alcohol consumption. In each case, per capita consumption is plotted against one of our factors (2). Figure 1, for example, compares consumption rates for states with different minimum drinking ages. Leaving aside our three "outliers" at the top of the graph, we can see that there is no obvious change in consumption levels across the different groups of states. Figure 5, though, does suggest that consumption rates are lower in those states with higher numbers of people per license. Though suggestive, these figures cannot really tell us how the factors are related to per capita consumption when considered all at one time. This is why regression analysis is useful.

#### Preliminary Regression Model

Returning to the idea of expressing consumption as a function of our factors added together, we would like to find the weights associated with each of those factors such that: (3)

$$\text{PC\_CNSMP} = W(1)\text{INCOME} + W(2)\text{COST} + W(3)\text{HRS\_WK} + W(4)\text{LOGPPLIC} \\ + W(5)\text{AGE} + W(6)\text{LICSTATE}$$

Table 13 shows the results and the summary measures for the regression analysis. The analysis reveals that neither AGE nor LICSTATE is sufficiently related to per capita alcohol consumption to warrant its inclusion. This suggests that we recalculate the other weights with those variables left out. Table 14 shows the result.

Table 14 represents the major results for this analysis. What it says is that the following equation may be taken to represent the relationship of alcohol consumption to the set of factors influencing it:



$$PC\_CNSMP = 4.41 + .26 INCOME - .30 COST + .01 HRS\_WK - .39 LOGPPLIC$$

This equation tells us how much each of the factors contributes to per capita consumption. Per capita income, measured in thousands of dollars, increases consumption by .26 gallons (about a quart) when all other factors are, so to speak, held constant. For every dollar (per 750 ml) that liquor costs, per capita consumption decreases by .30 gallons. Similarly, every additional hour per week that alcohol is available increases consumption by .01 gallon. Next, and just a little bit more difficult to interpret, each single point increase in the logarithm of people per license decreases per capita consumption by .39 gallon. To illustrate the sense of this last figure, we can see (in Table 12) that a one-point difference in logarithms corresponds roughly to the difference between Colorado (with 602 people per license) and Georgia (with 1679 people per license), or Washington (1,486 people per license) and North Carolina (3939 people per license).(4) Finally, the number 4.41 is added into the equation so that when all the weighted factors are added to it, the result is a predicted level of per capita consumption. If the predicted level of consumption comes close to what we know it to be, we have greater confidence that the weights we calculated are valid. For example, if we took the data for Maine and inserted them into the right half of our equation, we would get:

$$\begin{aligned} \text{(Predicted) } PC\_CNSMP &= 4.41 + .26 (7.87) - .30 (6.90) + \\ &\quad .01 (115) - .39 \log (873) \end{aligned}$$

Which gives an answer of 2.83 gallons (when not rounding off the numbers). Since Maine's actual per capita rate of consumption is 2.81 gallons, we have an excellent fit. The worst fit, not surprisingly, is for New Hampshire, where the equation predicts a rate of 3.50 gallons whereas the rate (inflated, we have surmised) for that state is given as 5.35 gallons.(5)

The language used in the last paragraph, while helpful for interpreting the numbers, is a bit misleading. We may say that every thousand dollars of income gives an increase of a quart of alcohol, but we really do not have the kind of data to support the statement literally. That is, we cannot say that were we to raise the per capita income in a state by a thousand dollars we would increase consumption by an extra quart of alcohol. Instead, we are summarizing how all of these factors are to be found together with things as they stand now. States that presently have a per capita income of a thousand dollars more than another will also consume more alcohol--about a quart more per person over fifteen years of age.

A second point to be emphasized here is that the data are measures of state characteristics and should not be confused by analogy to an individual level. We cannot say here, for example, that giving a person an extra thousand dollars will result in his or her consuming an additional quart of alcohol. While our regression equation is suggestive of how individuals may behave, a much more extensive effort would be required to look into what happens for individual people.

### Excursion: Relative Cost

Table 15 shows the results when a regression is done using relative cost (REL COST) instead of income and cost separately. The prediction equation in this case would be:

$$\begin{aligned} \text{(Predicted) PC\_CNSMP} &= 6.62 + .01 \text{ HRS\_WK} - .40 \text{ LOGPPLIC} \\ &\quad - 2.53 \text{ RELCOST} \end{aligned}$$

Where, again, relative cost is obtained by dividing COST by INCOME. Looking back to Table 12, we can insert the numbers for Wyoming, for instance, to get:

$$\text{(Predicted) PC\_CNSMP} = 6.62 + .01 (130) - .40 (6.26) - 2.53 (.61)$$

And get a value of 3.61 gallons (without rounding) compared to the actual figure of 3.60 gallons, a good fit, especially when compared to District of Columbia, where the predicted rate is 3.84 gallons compared to our (suspect) actual rate of 5.70 gallons.

While there is certainly no reason not to use this last regression equation, it really gives us no advantages over the former one. Either model fits the data as well as the other when one looks at the F Value, R-Squared and Root Mean Square Error values. Since using income and cost directly has an intuitive appeal over combining them into a different measure, we are better off using the equation with those terms included directly.(6)

To summarize our look at the regression equations, Table 16 lists, for each state, its actual per capita consumption rate and its predicted rate for each of the three equations described in Tables 13, 14 and 15. Beside each consumption rate (actual or predicted) is the rank, from highest to lowest consumption, that the state has in each case. Comparing these values across the columns shows us: 1) Where actual rates are poorly or well fit by any of the regression equations, and 2) Which of the equations best predicts a given state's rate of per capita consumption. Overall, none of the equations is measurably better at ranking the states than the other two.(7)

On a closing note, we will describe one more way in which the weights in our primary equation (from Table 14) may be regarded. From our previous discussion of that equation, we learned that per capita consumption is related almost equally to a change in per capita income of \$1,000 or a cost difference of \$1.00. Either factor can change per capita consumption by about a quart of absolute alcohol. Comparing the other factors, hours per week and log of people per license particularly, is more difficult. The problem lies in trying to compare apples to oranges, or dollars to log people per license. When asking for a guide to how "strongly" each of the factors is related to per capita consumption in the abstract and without regard to their units of measurement, we can compute what are known as "standardized" estimates of our "weights." When computed for our primary regression equation, these standardized weights are:

|          |      |
|----------|------|
| INCOME   | .38  |
| COST     | -.23 |
| HRS WK   | .25  |
| LOGPPLIC | -.27 |

Though it is not technically correct to do so, these numbers are often looked at as an approximation to how relatively influential each of the factors is. Income, then, has a bit greater influence than density of outlets followed by operating hours and cost of liquor. But these are rough approximations that are heavily dependent on features of the factors beyond their relationship to per capita consumption.

### Conclusion

We have derived a preliminary estimate of how a small set of factors is related to alcohol consumption at the state level. In particular, we found that we can predict per capita alcohol consumption by calculating, for a given state:

$$\begin{aligned} \text{(Predicted) PC\_CNSMP} &= 4.41 + .26 \text{ INCOME} - .30 \text{ COST} + .01 \\ &\quad \text{HRS\_WK} - .39 \text{ LOGPPLIC} \end{aligned}$$

The weights, or coefficients, tell us how strongly each factor is related to per capita consumption when the other factors are (statistically) held constant. Overall, the equation results in a fairly good fit to the data we have, resulting in a multiple correlation of .72.(8)

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- (1) Note: All computer output is included here for completeness. We will not take the space here to describe how to read all of it.
  - (2) Each chart will also highlight (at the top of each page) those three unusual cases (NV, DC, & NH) with high consumption rates.
  - (3) Note: The order of factors in this case is not crucial, but the tables included with this report have a certain order of variables that we wish to duplicate for the sake of clarity.
  - (4) Note that a single point on the logarithmic scale does not equal a fixed number of people per license.
  - (5) It is quite likely that our "predicted" rate is closer to the mark than the number given by the original data.
  - (6) Including all three variables (income, cost and relative cost) reduces the overall fit of the equation and makes the individual weights less reliable

to boot. Besides, RELCOST is redundant when the other two variables are included.

- (7) Correlations with actual ranks are .73 for the equation in Table 13; .72 for the equation in Table 14; and .71 for the equation in Table 15.
- (8) This number is calculated by taking the square root of R-Squared in Table 14. It ranges from 0 to 1.00 and provides a guide to how well the equation predicts the level of per capita alcohol consumption.



Table 1

Original Variables Used in the Analysis

| <u>Variable</u>        | <u>Abbrev.</u> | <u>Source</u>                                                                                                                                                                                                                                                  |
|------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Per Capita Consumption | PC_CNSMP       | Calculated using figures published by the Distilled Spirits Council of the United States as the Annual Statistical Review for the Year 1980. Beer, wine, and distilled spirits have been translated by alcohol content to reflect gallons of absolute alcohol. |
| Minimum Drinking Age   | AGE            | From compendium of state laws published by the Distilled Spirits Council of the United States. Some states permit purchase of beer at a lower age than used in this analysis.                                                                                  |
| Cost of Liquor         | COST           | From the Distilled Spirits Council of the United States actual survey of nine identical brands in 750 ml sizes for 1980.                                                                                                                                       |
| Per Capita Income      | INCOME         | Given in \$1,000 units of per capita personal income of individuals for 1980. From United States Bureau of Economic Analysis Survey of Current Business, published in April of 1982.                                                                           |
| Hours of Operation     | HRS_WK         | Modal maximum hours per week in which alcohol may be sold in a given state. Local option, special exemptions for "resorts", and differences for on and off sale hours are not figured in.                                                                      |

---

<sup>1</sup> See James Mosher and Dan Beauchamp's article "Justifying Alcohol Taxes to Public Officials" in the Journal of Public Health Policy, December, 1983 for a discussion of how these numbers are calculated

| <u>Variable</u>    | <u>Abbrev.</u> | <u>Source</u>                                                                                                                                                                                             |
|--------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| License State      | LICSTATE       | Coded "1" if state uses liquor licenses to control alcohol sales, "0" if state has a monopoly on sales.                                                                                                   |
| Density of Outlets | PPLIC          | From the Distilled Spirits Council of the United States Annual Statistical Review for the Year 1980. These figures represent the number of people per license, a measure of the density of sales outlets. |

Table 2

## Values for Original Variables Used in the Analysis

| STATE | PC_CNSMP | AGE | COST | INCOME | HRS_WK | PPLICS | LICSTATE |
|-------|----------|-----|------|--------|--------|--------|----------|
| AL    | 1.95     | 19  | 7.32 | 7.434  | 108.0  | 1771   | 0        |
| AK    | 4.04     | 19  | 9.94 | 12.759 | 147.0  | 364    | 1        |
| AZ    | 3.28     | 19  | 7.79 | 8.814  | 126.0  | 688    | 1        |
| AR    | 1.90     | 21  | 7.92 | 7.185  | 108.0  | 1864   | 1        |
| CA    | 3.62     | 21  | 7.05 | 10.929 | 140.0  | 962    | 1        |
| CO    | 3.57     | 21  | 6.98 | 10.033 | 126.0  | 602    | 1        |
| CT    | 2.87     | 19  | 8.03 | 11.692 | 115.0  | 605    | 1        |
| DE    | 3.33     | 20  | 7.18 | 10.291 | 96.0   | 650    | 1        |
| FL    | 3.51     | 19  | 7.48 | 8.993  | 119.0  | 1276   | 1        |
| GA    | 2.54     | 19  | 7.54 | 8.041  | 94.5   | 1679   | 1        |
| HI    | 3.50     | 18  | 8.25 | 10.091 | 140.0  | 540    | 1        |
| ID    | 2.75     | 19  | 7.71 | 8.176  | 90.0   | 949    | 0        |
| IL    | 3.07     | 21  | 6.69 | 10.479 | 140.0  | 574    | 1        |
| IN    | 3.23     | 21  | 7.73 | 8.924  | 134.5  | 856    | 1        |
| IA    | 2.35     | 19  | 7.15 | 9.310  | 120.0  | 602    | 0        |
| KS    | 2.04     | 21  | 7.76 | 9.864  | 90.0   | 1049   | 1        |
| KY    | 2.00     | 21  | 7.58 | 7.662  | 96.0   | 1660   | 1        |
| LA    | 2.84     | 18  | 7.35 | 8.456  | 168.0  | 460    | 1        |
| ME    | 2.81     | 20  | 6.90 | 7.868  | 115.0  | 873    | 0        |
| MD    | 3.27     | 21  | 6.80 | 10.477 | 120.0  | 874    | 1        |
| MA    | 3.40     | 20  | 7.41 | 10.118 | 114.0  | 722    | 1        |
| MI    | 2.80     | 21  | 7.14 | 9.967  | 128.0  | 695    | 0        |
| MN    | 3.00     | 19  | 7.71 | 9.765  | 102.0  | 987    | 1        |
| MS    | 2.20     | 21  | 6.89 | 6.557  | 84.0   | 2023   | 0        |
| MO    | 2.44     | 21  | 6.74 | 8.865  | 108.5  | 589    | 1        |
| MT    | 3.37     | 19  | 7.90 | 8.652  | 126.0  | 479    | 0        |
| NE    | 2.78     | 20  | 7.53 | 9.086  | 121.0  | 520    | 1        |
| NV    | 6.18     | 21  | 6.93 | 10.723 | 168.0  | 373    | 1        |
| NH    | 5.35     | 20  | 6.17 | 9.119  | 120.0  | 877    | 0        |
| NJ    | 3.00     | 21  | 7.96 | 10.935 | 91.0   | 646    | 1        |
| NM    | 3.05     | 21  | 7.96 | 7.876  | 124.0  | 847    | 1        |
| NY    | 3.05     | 18  | 7.46 | 10.252 | 136.0  | 636    | 1        |
| NC    | 2.28     | 21  | 7.11 | 7.832  | 123.5  | 3939   | 1        |
| ND    | 2.96     | 21  | 8.03 | 8.626  | 102.0  | 543    | 1        |
| OH    | 2.44     | 21  | 7.43 | 9.480  | 119.0  | 878    | 0        |
| OK    | 2.10     | 21  | 5.88 | 9.066  | 72.0   | 3823   | 1        |
| OR    | 2.98     | 21  | 8.39 | 9.296  | 136.5  | 1503   | 0        |
| PA    | 2.51     | 21  | 7.90 | 9.427  | 133.0  | 600    | 0        |
| RI    | 3.32     | 20  | 7.31 | 9.429  | 127.0  | 545    | 1        |
| SC    | 2.59     | 21  | 7.25 | 7.265  | 60.0   | 1189   | 1        |
| SJ    | 2.69     | 21  | 8.47 | 7.818  | 114.0  | 470    | 1        |
| TN    | 2.01     | 19  | 8.77 | 7.702  | 129.0  | 3048   | 1        |
| TX    | 2.95     | 19  | 7.98 | 9.528  | 116.0  | 1356   | 1        |
| UT    | 1.80     | 21  | 7.81 | 7.681  | 72.0   | 3532   | 0        |
| VT    | 3.50     | 18  | 6.33 | 7.810  | 123.0  | 456    | 0        |
| VA    | 2.52     | 21  | 6.77 | 9.406  | 120.0  | 2615   | 0        |
| WA    | 3.17     | 21  | 8.37 | 10.355 | 140.0  | 1486   | 0        |
| WV    | 1.90     | 18  | 7.34 | 7.814  | 142.0  | 1405   | 0        |
| WI    | 3.73     | 18  | 7.12 | 9.413  | 119.0  | 329    | 1        |
| WY    | 3.60     | 19  | 7.90 | 10.876 | 130.0  | 524    | 0        |
| DC    | 5.70     | 21  | 7.33 | 12.050 | 131.0  | 650    | 1        |



SAS

UNIVARIATE

VARIABLE=V8

PC\_CNSHP

TABLE 3

## MOMENTS

## QUANTILES(DEF=4)

## EXTREMES

| N        | 51       | SUM HGTS | 51       | 100% MAX | 6.18 | 99% | 6.18  | LOWEST  | ID | HIGHEST | ID |
|----------|----------|----------|----------|----------|------|-----|-------|---------|----|---------|----|
| MEAN     | 3.01647  | SUM      | 153.84   | 75% Q3   | 3.37 | 95% | 5.49  | 1.0(UT  | )  | 3.73(WI | )  |
| STD DEV  | 0.805005 | VARIANCE | 0.783375 | 50% MED  | 2.96 | 90% | 3.708 | 1.9(AR  | )  | 4.04(AK | )  |
| SKEWNESS | 1.63764  | KURTOSIS | 3.98786  | 25% Q1   | 2.44 | 10% | 2.002 | 1.9(MV  | )  | 5.35(MI | )  |
| USS      | 503.223  | CSS      | 39.1688  | 0% MIN   | 1.8  | 5%  | 1.9   | 1.95(AL | )  | 5.7(DC  | )  |
| CV       | 29.3417  | STD MEAN | 0.123937 |          |      | 1%  | 1.8   | 2(KY    | )  | 6.18(MV | )  |
| T:MEAN=0 | 24.3388  | PROB> T  | 0.0001   | RANGE    | 4.38 |     |       |         |    |         |    |
| SGN RANK | 663      | PROD> S  | 0.0001   | Q3-Q1    | 0.93 |     |       |         |    |         |    |
| NUM = 0  | 51       |          |          | MODE     | 1.9  |     |       |         |    |         |    |
| D:NORMAL | 0.149615 | PROB>D   | <0.01    |          |      |     |       |         |    |         |    |

## STEM LEAF

## BOXPLOT

## NORMAL PROBABILITY PLOT

```

60 0
58
56 0
54
52 5
50
48
46
44
42
40 4
38
36 023
34 00017
32 378237
30 005577
28 0147568
26 958
24 441249
22 005
20 0140
18 0005
16

```

```

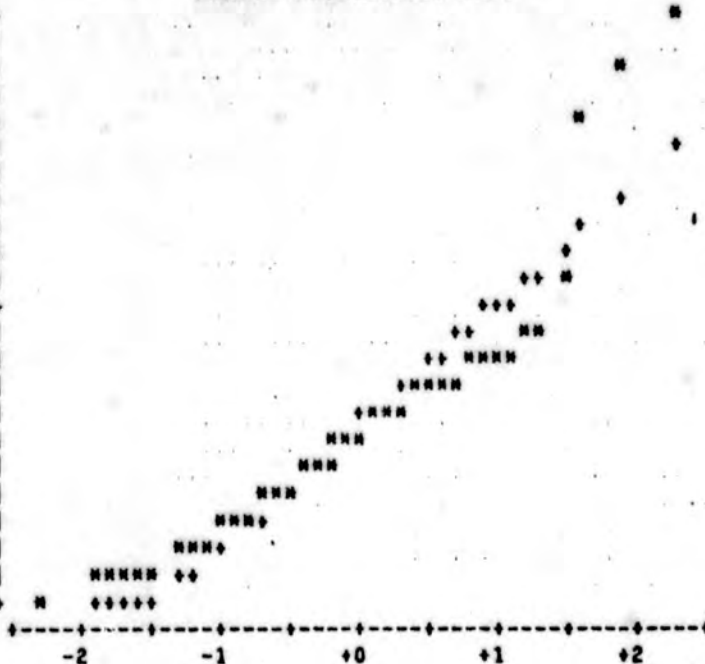
1  *
1  0
1  0
1
3
5
6  +---+
6  |   |
7  |   |
3  |   |
6  +---+
3
4
4

```

```

6.1+
|
|
|
3.9+
|
|
|
1.7+
|
|
|

```



MULTIPLY STEM.LEAF BY 1000-01

## FREQUENCY TABLE

| VALUE | COUNT | PERCENTS | VALUE | COUNT | PERCENTS | VALUE | COUNT | PERCENTS | VALUE | COUNT | PERCENTS |
|-------|-------|----------|-------|-------|----------|-------|-------|----------|-------|-------|----------|
| 1.8   | 1     | 2.0      | 2.0   | 2.44  | 2        | 3.9   | 25.2  | 2.84     | 1     | 2.0   | 45.1     |
| 1.9   | 2     | 3.9      | 5.9   | 2.51  | 1        | 2.0   | 27.5  | 2.87     | 1     | 2.0   | 47.1     |
| 1.95  | 1     | 2.0      | 7.8   | 2.52  | 1        | 2.0   | 29.4  | 2.95     | 1     | 2.0   | 49.0     |
| 2     | 1     | 2.0      | 9.8   | 2.54  | 1        | 2.0   | 31.4  | 2.96     | 1     | 2.0   | 51.0     |
| 2.01  | 1     | 2.0      | 11.8  | 2.59  | 1        | 2.0   | 33.3  | 2.98     | 1     | 2.0   | 52.9     |
| 2.04  | 1     | 2.0      | 13.7  | 2.69  | 1        | 2.0   | 35.3  | 3        | 2     | 3.9   | 56.9     |
| 2.1   | 1     | 2.0      | 15.7  | 2.75  | 1        | 2.0   | 37.3  | 3.05     | 2     | 3.9   | 60.8     |
| 2.2   | 1     | 2.0      | 17.6  | 2.78  | 1        | 2.0   | 39.2  | 3.07     | 1     | 2.0   | 62.7     |
| 2.28  | 1     | 2.0      | 19.6  | 2.8   | 1        | 2.0   | 41.2  | 3.17     | 1     | 2.0   | 64.7     |
| 2.35  | 1     | 2.0      | 21.6  | 2.81  | 1        | 2.0   | 43.1  | 3.23     | 1     | 2.0   | 66.7     |
|       |       |          |       |       |          |       |       | 3.27     | 1     | 2.0   | 68.6     |
|       |       |          |       |       |          |       |       | 3.28     | 1     | 2.0   | 70.6     |
|       |       |          |       |       |          |       |       | 3.32     | 1     | 2.0   | 72.5     |
|       |       |          |       |       |          |       |       | 3.33     | 1     | 2.0   | 74.5     |
|       |       |          |       |       |          |       |       | 3.37     | 1     | 2.0   | 76.5     |
|       |       |          |       |       |          |       |       | 3.4      | 1     | 2.0   | 78.4     |
|       |       |          |       |       |          |       |       | 3.5      | 2     | 3.9   | 82.4     |
|       |       |          |       |       |          |       |       | 3.51     | 1     | 2.0   | 84.3     |
|       |       |          |       |       |          |       |       | 3.57     | 1     | 2.0   | 86.3     |
|       |       |          |       |       |          |       |       | 3.6      | 1     | 2.0   | 88.2     |



SAS

TABLE 3 (Cont.)

UNIVARIATE

VARIABLE=V8

PC\_CHSHP

FREQUENCY TABLE (CONT.)

| VALUE | COUNT | PERCENTS<br>CELL | CUM  |
|-------|-------|------------------|------|
| 3.62  | 1     | 2.0              | 90.2 |
| 3.73  | 1     | 2.0              | 92.2 |

| VALUE | COUNT | PERCENTS<br>CELL | CUM  |
|-------|-------|------------------|------|
| 4.04  | 1     | 2.0              | 94.1 |
| 5.35  | 1     | 2.0              | 96.1 |

| VALUE | COUNT | PERCENTS<br>CELL | CUM   |
|-------|-------|------------------|-------|
| 5.7   | 1     | 2.0              | 98.0  |
| 6.10  | 1     | 2.0              | 100.0 |

Table 4  
Frequency of Minimum Drinking Age

| <u>Age</u> | <u>Freq</u> | <u>Cumulative Freq</u> | <u>Percent</u> | <u>Cum Percent</u> |
|------------|-------------|------------------------|----------------|--------------------|
| 18         | 6           | 6                      | 11.8           | 11.8               |
| 19         | 13          | 19                     | 25.5           | 37.3               |
| 20         | 6           | 25                     | 11.8           | 49.0               |
| 21         | 26          | 51                     | 51.0           | 100.0              |

SAS

UNIVARIATE

VARIABLE=V3

COST

TABLE 5

| MOMENTS  |          |          |           | QUANTILES(DEF=4) |      |     |       | EXTREMES |    |          |    |
|----------|----------|----------|-----------|------------------|------|-----|-------|----------|----|----------|----|
| N        | 51       | SUM WGTs | 51        | 100% MAX         | 9.94 | 99% | 9.94  | LOWEST   | ID | HIGHEST  | ID |
| MEAN     | 7.49882  | SUM      | 382.44    | 75% Q3           | 7.9  | 95% | 8.59  | 5.88(OK) | )  | 8.37(HA) | )  |
| STD DEV  | 0.602805 | VARIANCE | 0.466223  | 50% MED          | 7.46 | 90% | 8.346 | 6.17(IH) | )  | 8.39(OR) | )  |
| SKEWNESS | 0.606897 | KURTOSIS | 2.48511   | 25% Q1           | 7.11 | 10% | 6.746 | 6.33(VT) | )  | 8.47(SD) | )  |
| USS      | 2891.16  | CSS      | 23.3111   | 0% MIN           | 5.88 | 5%  | 6.266 | 6.69(IL) | )  | 8.77(TN) | )  |
| CV       | 9.10549  | STD MEAN | 0.0956118 |                  |      | 1%  | 5.88  | 6.74(MO) | )  | 9.94(AK) | )  |
| T:MEAN=0 | 78.4299  | PROB> T  | 0.0001    | RANGE            | 4.06 |     |       |          |    |          |    |
| SGN RANK | 663      | PROB> S  | 0.0001    | Q3-Q1            | 0.79 |     |       |          |    |          |    |
| NUM ^= 0 | 51       |          |           | MODE             | 7.9  |     |       |          |    |          |    |
| D:NORMAL | 0.100657 | PROB>D   | >0.15     |                  |      |     |       |          |    |          |    |

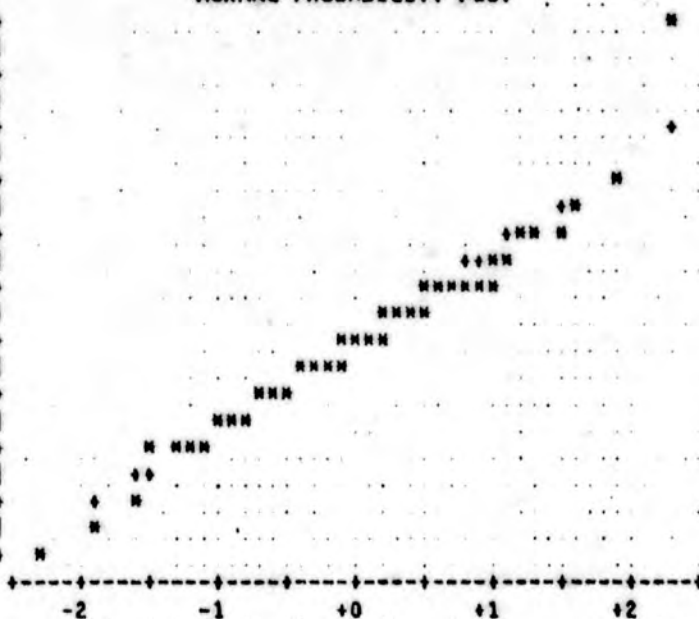
STEM LEAF

BOXPLOT

NORMAL PROBABILITY PLOT

|             |   |       |      |
|-------------|---|-------|------|
| 98 4        | 1 | 0     | 9.9+ |
| 96          |   |       | 9.5+ |
| 94          |   |       | 9.1+ |
| 92          |   |       |      |
| 90          |   |       |      |
| 88          |   |       |      |
| 86 7        | 1 |       | 8.7+ |
| 84 7        | 1 |       |      |
| 82 579      | 3 |       | 8.3+ |
| 80 33       | 2 |       |      |
| 78 10002668 | 8 | ----- | 7.9+ |
| 76 11369    | 5 |       |      |
| 74 1368348  | 7 | ----- | 7.5+ |
| 72 512345   | 6 |       |      |
| 70 512458   | 6 | ----- | 7.1+ |
| 68 09038    | 5 |       |      |
| 66 947      | 3 |       | 6.7+ |
| 64          |   |       |      |
| 62 3        | 1 |       | 6.3+ |
| 60 7        | 1 |       |      |
| 58 8        | 1 | 0     | 5.9+ |

MULTIPLY STEM.LEAF BY 1000-01



FREQUENCY TABLE

| PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |       |
|----------|-------|------|------|----------|-------|------|------|----------|-------|------|------|----------|-------|------|-------|
| VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM   |
| 5.88     | 1     | 2.0  | 2.0  | 7.11     | 1     | 2.0  | 25.5 | 7.43     | 1     | 2.0  | 49.0 | 7.92     | 1     | 2.0  | 78.4  |
| 6.17     | 1     | 2.0  | 3.9  | 7.12     | 1     | 2.0  | 27.5 | 7.46     | 1     | 2.0  | 51.0 | 7.96     | 2     | 3.9  | 82.4  |
| 6.33     | 1     | 2.0  | 5.9  | 7.14     | 1     | 2.0  | 29.4 | 7.48     | 1     | 2.0  | 52.9 | 7.98     | 1     | 2.0  | 84.3  |
| 6.69     | 1     | 2.0  | 7.8  | 7.15     | 1     | 2.0  | 31.4 | 7.53     | 1     | 2.0  | 54.9 | 8.03     | 2     | 3.9  | 88.2  |
| 6.74     | 1     | 2.0  | 9.8  | 7.18     | 1     | 2.0  | 33.3 | 7.54     | 1     | 2.0  | 56.9 | 8.25     | 1     | 2.0  | 90.2  |
| 6.77     | 1     | 2.0  | 11.8 | 7.25     | 1     | 2.0  | 35.3 | 7.58     | 1     | 2.0  | 58.8 | 8.37     | 1     | 2.0  | 92.2  |
| 6.8      | 1     | 2.0  | 13.7 | 7.31     | 1     | 2.0  | 37.3 | 7.71     | 2     | 3.9  | 62.7 | 8.39     | 1     | 2.0  | 94.1  |
| 6.89     | 1     | 2.0  | 15.7 | 7.32     | 1     | 2.0  | 39.2 | 7.73     | 1     | 2.0  | 64.7 | 8.47     | 1     | 2.0  | 96.1  |
| 6.9      | 1     | 2.0  | 17.6 | 7.33     | 1     | 2.0  | 41.2 | 7.76     | 1     | 2.0  | 66.7 | 8.77     | 1     | 2.0  | 98.0  |
| 6.93     | 1     | 2.0  | 19.6 | 7.34     | 1     | 2.0  | 43.1 | 7.79     | 1     | 2.0  | 68.6 | 9.94     | 1     | 2.0  | 100.0 |
| 6.98     | 1     | 2.0  | 21.6 | 7.35     | 1     | 2.0  | 45.1 | 7.81     | 1     | 2.0  | 70.6 |          |       |      |       |
| 7.05     | 1     | 2.0  | 23.5 | 7.41     | 1     | 2.0  | 47.1 | 7.9      | 3     | 5.9  | 76.5 |          |       |      |       |

SAS

UNIVARIATE

VARIABLE=V4

INCOME

TABLE 6

| MOMENTS  |           |          |           | QUANTILES(DEF=4) |        |     |         | EXTREMES |    |           |    |
|----------|-----------|----------|-----------|------------------|--------|-----|---------|----------|----|-----------|----|
| N        | 51        | SUM HGTS | 51        | 100% MAX         | 12.759 | 99% | 12.759  | LONEST   | ID | HIGHEST   | ID |
| MEAN     | 9.22092   | SUM      | 470.267   | 75% Q3           | 10.110 | 95% | 11.0352 | 6.557(MS | )  | 10.929(CA | )  |
| STD DEV  | 1.33462   | VARIANCE | 1.78121   | 50% MED          | 9.296  | 90% | 10.9104 | 7.185(AR | )  | 10.935(HJ | )  |
| SKEWNESS | 0.344575  | KURTOSIS | -0.102577 | 25% Q1           | 7.076  | 10% | 7.6658  | 7.265(SC | )  | 11.692(CT | )  |
| USS      | 4425.36   | CS       | 89.0605   | 0% MIN           | 6.557  | 5%  | 7.233   | 7.434(AL | )  | 12.05(DC  | )  |
| CV       | 14.4738   | STD MEAN | 0.186884  |                  |        | 1%  | 6.557   | 7.662(KY | )  | 12.759(AK | )  |
| T:MEAN=0 | 49.3403   | PROB> T  | 0.0001    | RANGE            | 6.202  |     |         |          |    |           |    |
| SGN RANK | 663       | PROB> S  | 0.0001    | Q3-Q1            | 2.242  |     |         |          |    |           |    |
| IUM = 0  | 51        |          |           | MODE             | 6.557  |     |         |          |    |           |    |
| D:NORMAL | 0.0981073 | PROD>D   | >0.15     |                  |        |     |         |          |    |           |    |

STEM LEAF

```

12 8
12 0
11 7
11
10 557999
10 0011334
9 5589
9 0111334444
8 567899
8 02
7 777080899
7 234
6 6

```

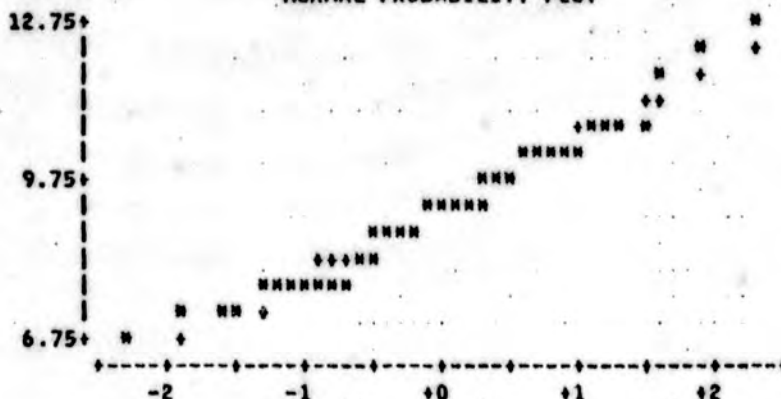
# BOXPLOT

```

1 |
1 |
1 |
6 |
7 |-----+
4 |-----+
10 |-----+
6 |-----+
2 |-----+
9 |-----+
3 |-----+
1 |-----+

```

NORMAL PROBABILITY PLOT



FREQUENCY TABLE

| PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |       |
|----------|-------|------|------|----------|-------|------|------|----------|-------|------|------|----------|-------|------|-------|
| VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM   |
| 6.557    | 1     | 2.0  | 2.0  | 8.041    | 1     | 2.0  | 27.5 | 9.31     | 1     | 2.0  | 52.9 | 10.252   | 1     | 2.0  | 78.4  |
| 7.185    | 1     | 2.0  | 3.9  | 8.176    | 1     | 2.0  | 29.4 | 9.406    | 1     | 2.0  | 54.9 | 10.291   | 1     | 2.0  | 80.4  |
| 7.265    | 1     | 2.0  | 5.9  | 8.456    | 1     | 2.0  | 31.4 | 9.413    | 1     | 2.0  | 56.9 | 10.355   | 1     | 2.0  | 82.4  |
| 7.434    | 1     | 2.0  | 7.8  | 8.626    | 1     | 2.0  | 33.3 | 9.427    | 1     | 2.0  | 58.8 | 10.477   | 1     | 2.0  | 84.3  |
| 7.662    | 1     | 2.0  | 9.8  | 8.652    | 1     | 2.0  | 35.3 | 9.429    | 1     | 2.0  | 60.8 | 10.479   | 1     | 2.0  | 86.3  |
| 7.681    | 1     | 2.0  | 11.8 | 8.814    | 1     | 2.0  | 37.3 | 9.48     | 1     | 2.0  | 62.7 | 10.723   | 1     | 2.0  | 88.2  |
| 7.702    | 1     | 2.0  | 13.7 | 8.865    | 1     | 2.0  | 39.2 | 9.528    | 1     | 2.0  | 64.7 | 10.876   | 1     | 2.0  | 90.2  |
| 7.81     | 1     | 2.0  | 15.7 | 8.924    | 1     | 2.0  | 41.2 | 9.765    | 1     | 2.0  | 66.7 | 10.929   | 1     | 2.0  | 92.2  |
| 7.814    | 1     | 2.0  | 17.6 | 8.993    | 1     | 2.0  | 43.1 | 9.864    | 1     | 2.0  | 68.6 | 10.935   | 1     | 2.0  | 94.1  |
| 7.818    | 1     | 2.0  | 19.6 | 9.066    | 1     | 2.0  | 45.1 | 9.967    | 1     | 2.0  | 70.6 | 11.692   | 1     | 2.0  | 96.1  |
| 7.832    | 1     | 2.0  | 21.6 | 9.086    | 1     | 2.0  | 47.1 | 10.033   | 1     | 2.0  | 72.5 | 12.05    | 1     | 2.0  | 98.0  |
| 7.868    | 1     | 2.0  | 23.5 | 9.119    | 1     | 2.0  | 49.0 | 10.091   | 1     | 2.0  | 74.5 | 12.759   | 1     | 2.0  | 100.0 |
| 7.876    | 1     | 2.0  | 25.5 | 9.296    | 1     | 2.0  | 51.0 | 10.110   | 1     | 2.0  | 76.5 |          |       |      |       |



SAS

TABLE 7

UNIVARIATE

VARIABLE=V5

MRS\_MK

## MOMENTS

## QUANTILES(DEF=4)

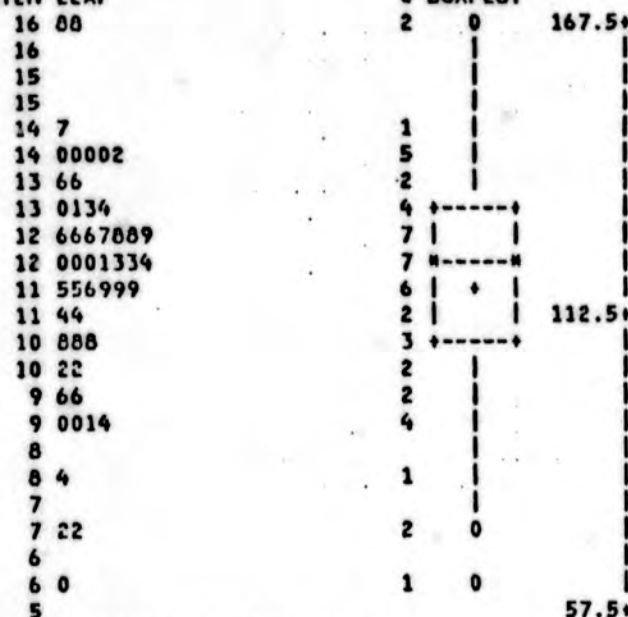
## EXTREMES

| MOMENTS  |           | QUANTILES(DEF=4) |          | EXTREMES |     |
|----------|-----------|------------------|----------|----------|-----|
| N        | 51        | SUM WGTs         | 51       | 100% MAX | 168 |
| MEAN     | 118.284   | SUM              | 6032.5   | 75% Q3   | 131 |
| STD DEV  | 21.8907   | VARIANCE         | 479.203  | 50% MED  | 120 |
| SKEWNESS | -0.392328 | KURTOSIS         | 0.684754 | 25% Q1   | 108 |
| USS      | 737510    | CSS              | 23960.1  | 0% MIN   | 60  |
| CV       | 18.5068   | STD MEAN         | 3.06531  |          |     |
| T:MEAN=0 | 38.589    | PROB> T          | 0.0001   | RANGE    | 108 |
| SGN RANK | 663       | PROB> S          | 0.0001   | Q3-Q1    | 23  |
| NUM ^= 0 | 51        |                  |          | MODE     | 140 |
| D:NORMAL | 0.128299  | PROB>D           | 0.035    |          |     |

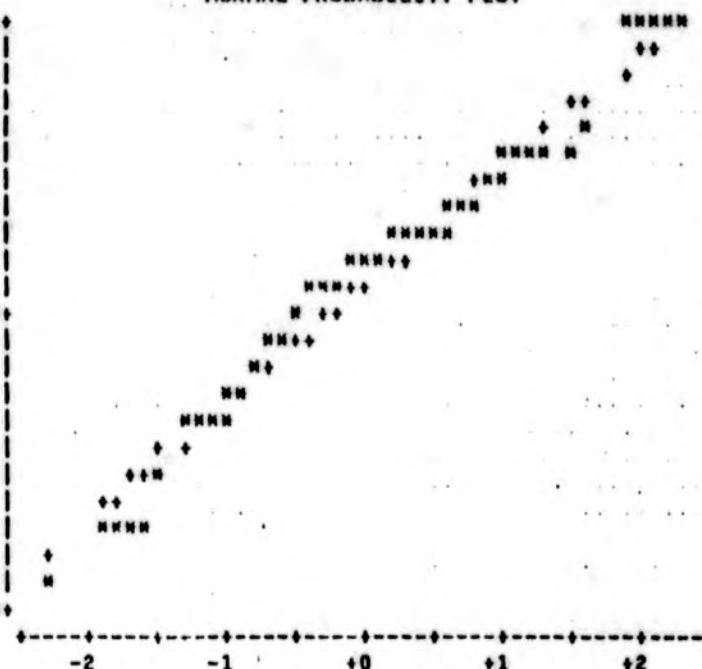
## STEM LEAF

## BOXPLOT

## NORMAL PROBABILITY PLOT



MULTIPLY STEM.LEAF BY 1000+01



## FREQUENCY TABLE

| PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |       |
|----------|-------|------|------|----------|-------|------|------|----------|-------|------|------|----------|-------|------|-------|
| VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM   |
| 60       | 1     | 2.0  | 2.0  | 108.5    | 1     | 2.0  | 29.6 | 124      | 1     | 2.0  | 58.8 | 136      | 1     | 2.0  | 82.4  |
| 72       | 2     | 3.9  | 5.9  | 114      | 2     | 3.9  | 33.5 | 126      | 3     | 5.9  | 64.7 | 136.5    | 1     | 2.0  | 84.3  |
| 84       | 1     | 2.0  | 7.8  | 115      | 2     | 3.9  | 37.3 | 127      | 1     | 2.0  | 66.7 | 140      | 4     | 7.8  | 92.2  |
| 90       | 2     | 3.9  | 11.8 | 116      | 1     | 2.0  | 39.3 | 128      | 2     | 3.9  | 70.6 | 142      | 1     | 2.0  | 94.1  |
| 91       | 1     | 2.0  | 13.7 | 119      | 3     | 5.9  | 45.1 | 129      | 1     | 2.0  | 72.5 | 147      | 1     | 2.0  | 96.1  |
| 94.5     | 1     | 2.0  | 15.7 | 120      | 3     | 5.9  | 51.0 | 130      | 1     | 2.0  | 74.5 | 168      | 2     | 3.9  | 100.0 |
| 96       | 2     | 3.9  | 19.6 | 121      | 1     | 2.0  | 53.0 | 131      | 1     | 2.0  | 76.5 |          |       |      |       |
| 102      | 2     | 3.9  | 23.5 | 123      | 1     | 2.0  | 55.0 | 133      | 1     | 2.0  | 78.4 |          |       |      |       |
| 108      | 2     | 3.9  | 27.5 | 123.5    | 1     | 2.0  | 56.0 | 134.5    | 1     | 2.0  | 80.4 |          |       |      |       |

**Table 8**  
**Frequency of License and Monopoly States**

| <u>Code</u> <sup>1</sup> | <u>Freq</u> | <u>Cumulative Freq</u> | <u>Percent</u> | <u>Cum Percent</u> |
|--------------------------|-------------|------------------------|----------------|--------------------|
| 0                        | 17          | 17                     | 33.3           | 33.3               |
| 1                        | 34          | 51                     | 66.6           | 100.0              |

---

<sup>1</sup> 0 = Monopoly State, 1 = License State

VARIABLE=V6

TABLE 9

NUMERICUS

## MOMENTS

QUANTILES(DEF=4)

## EXTREMES

| N        | 51        | SUM WGTs | 51       | 100% MAX | 3939 | 99% | 3939    | LOWEST ID | HIGHEST ID |
|----------|-----------|----------|----------|----------|------|-----|---------|-----------|------------|
| MEAN     | 1121.24   | SUM      | 57183    | 75% Q3   | 1405 | 95% | 3648.4  | 329(WI)   | 2615(VA)   |
| STD DEV  | 878.472   | VARIANCE | 771713   | 50% MED  | 847  | 90% | 2496.59 | 364(LA)   | 3048(TN)   |
| SKEWNESS | 1.94547   | KURTOSIS | 3.37683  | 25% Q1   | 574  | 10% | 462     | 373(INV)  | 3532(UT)   |
| USS      | 102701239 | CSS      | 38585641 | 0% MIN   | 329  | 5%  | 369.4   | 456(VT)   | 3823(OK)   |
| CV       | 78.3486   | STD MEAN | 123.011  |          |      | 1%  | 329     | 460(LA)   | 3939(INC)  |
| T:MEAN=0 | 9.11494   | PROB> T  | 0.0001   | RANGE    | 3610 |     |         |           |            |
| SGH RANK | 663       | PROB> S  | 0.0001   | Q3-Q1    | 831  |     |         |           |            |
| NUM ^= 0 | 51        |          |          | MODE     | 602  |     |         |           |            |
| D:NORMAL | 0.227391  | PROB>D   | <0.01    |          |      |     |         |           |            |

**STEM LEAF**

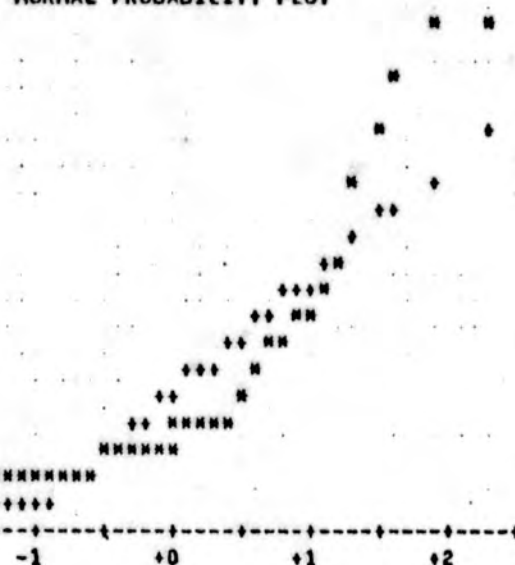
### ■ BOXPLOT

### NORMAL PROBABILITY PLOT

30 24  
36  
34 3  
32  
30 5  
28  
26 1  
24  
22  
20 2  
18 6  
16 687  
14 090  
12 86  
10 59  
8 567788569  
6 00004555992  
4 66782244479  
2 367

|    |   |
|----|---|
| 2  | n |
| 1  | 0 |
| 1  | 0 |
| 1  |   |
| 1  |   |
| 1  |   |
| 3  |   |
| 3  | + |
| 2  |   |
| 2  | + |
| 9  | + |
| 11 |   |
| 3  |   |

3900+  
2100+  
300+



MULTIPLY STEM.LEAF BY 10NN+02

### FREQUENCY TABLE

| VALUE | COUNT | PERCENTS |      |
|-------|-------|----------|------|
|       |       | CELL     | CUM  |
| 329   | 1     | 2.0      | 2.0  |
| 364   | 1     | 2.0      | 3.9  |
| 373   | 1     | 2.0      | 5.9  |
| 456   | 1     | 2.0      | 7.8  |
| 460   | 1     | 2.0      | 9.8  |
| 470   | 1     | 2.0      | 11.8 |
| 479   | 1     | 2.0      | 13.7 |
| 520   | 1     | 2.0      | 15.7 |
| 524   | 1     | 2.0      | 17.6 |
| 540   | 1     | 2.0      | 19.6 |
| 543   | 1     | 2.0      | 21.6 |
| 545   | 1     | 2.0      | 23.5 |
| 574   | 1     | 2.0      | 25.5 |

| VALUE | COURT | PERCENTS |      |
|-------|-------|----------|------|
|       |       | CELL     | CUM  |
| 589   | 1     | 2.0      | 27.5 |
| 600   | 1     | 2.0      | 29.4 |
| 602   | 2     | 3.9      | 33.3 |
| 605   | 1     | 2.0      | 35.3 |
| 636   | 1     | 2.0      | 37.3 |
| 646   | 1     | 2.0      | 39.2 |
| 650   | 2     | 3.9      | 43.1 |
| 688   | 1     | 2.0      | 45.1 |
| 695   | 1     | 2.0      | 47.1 |
| 722   | 1     | 2.0      | 49.0 |
| 847   | 1     | 2.0      | 51.0 |
| 856   | 1     | 2.0      | 52.9 |
| 873   | 1     | 2.0      | 54.9 |

| VALUE | COUNT | PERCENTS |      |
|-------|-------|----------|------|
|       |       | CELL     | CUM  |
| 874   | 1     | 2.0      | 56.9 |
| 877   | 1     | 2.0      | 58.8 |
| 878   | 1     | 2.0      | 60.8 |
| 949   | 1     | 2.0      | 62.7 |
| 962   | 1     | 2.0      | 64.7 |
| 987   | 1     | 2.0      | 66.7 |
| 1049  | 1     | 2.0      | 68.6 |
| 1189  | 1     | 2.0      | 70.6 |
| 1276  | 1     | 2.0      | 72.5 |
| 1356  | 1     | 2.0      | 74.5 |
| 1403  | 1     | 2.0      | 76.5 |
| 1406  | 1     | 2.0      | 78.4 |
| 1503  | 1     | 2.0      | 80.4 |

| VALUE | COUNT | PERCENTS |       |
|-------|-------|----------|-------|
|       |       | CELL     | CUM   |
| 1660  | 1     | 2.0      | 82.4  |
| 1679  | 1     | 2.0      | 84.3  |
| 1771  | 1     | 2.0      | 86.3  |
| 1864  | 1     | 2.0      | 88.2  |
| 2023  | 1     | 2.0      | 90.2  |
| 2615  | 1     | 2.0      | 92.2  |
| 3048  | 1     | 2.0      | 94.1  |
| 3532  | 1     | 2.0      | 96.1  |
| 3823  | 1     | 2.0      | 98.0  |
| 3939  | 1     | 2.0      | 100.0 |

SAS

UNIVARIATE

TABLE 10

VARIABLE=V10

LOGPPLIC

## MOMENTS

## QUANTILES(DEF=4)

## EXTREMES

| N        | 51       | SUM WGTs | 51        |
|----------|----------|----------|-----------|
| MEAN     | 6.80395  | SUM      | 347.001   |
| STD DEV  | 0.627095 | VARIANCE | 0.393248  |
| SKEWNESS | 0.759967 | KURTOSIS | -0.101531 |
| USS      | 2380.64  | CSS      | 19.6624   |
| CV       | 9.21663  | STD MEAN | 0.0878109 |
| T:MEAN=0 | 77.4841  | PROB> T  | 0.0001    |
| SGH RANK | 663      | PROB> S  | 0.0001    |
| NUM = 0  | 51       |          |           |
| D:NORMAL | 0.131397 | PROB>D   | 0.025     |

| 100% MAX | 8.27868  | 99% | 8.27868 |
|----------|----------|-----|---------|
| 75% Q3   | 7.24779  | 95% | 8.20129 |
| 50% MED  | 6.7417   | 90% | 7.81768 |
| 25% Q1   | 6.35263  | 10% | 6.13553 |
| 0% MIN   | 5.79606  | 5%  | 5.91181 |
|          |          | 1%  | 5.79606 |
| RANGE    | 2.48262  |     |         |
| Q3-Q1    | 0.895164 |     |         |
| MODE     | 6.40026  |     |         |

| LOWEST      | ID | HIGHEST     | ID |
|-------------|----|-------------|----|
| 5.79606(MI) | 1  | 7.86902(VA) | 1  |
| 5.89715(AK) | 1  | 8.02224(TN) | 1  |
| 5.92158(HV) | 1  | 8.16962(UT) | 1  |
| 6.12249(VT) | 1  | 8.24879(OK) | 1  |
| 6.13123(LA) | 1  | 8.27868(NC) | 1  |

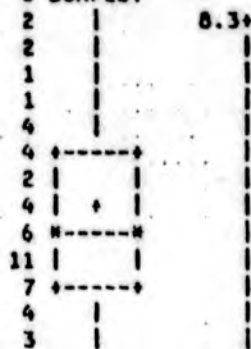
## STEM LEAF

```

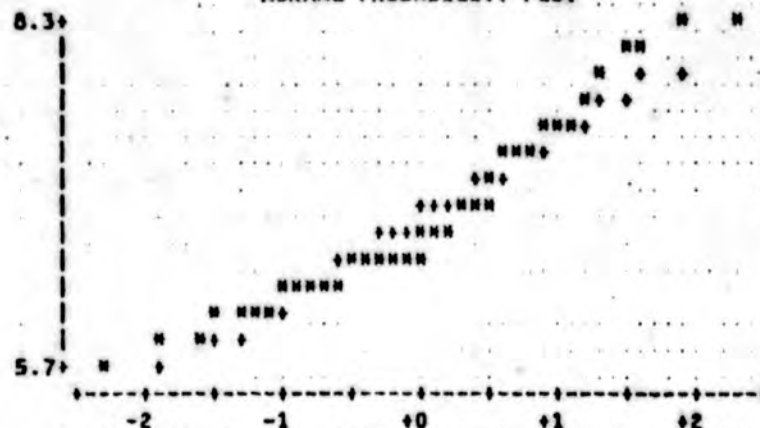
82 59
80 27
78 7
76 1
74 1383
72 1502
70 85
68 6796
66 457788
64 00016788348
62 5690058
60 2357
58 002
56

```

## BOXPLOT



## NORMAL PROBABILITY PLOT

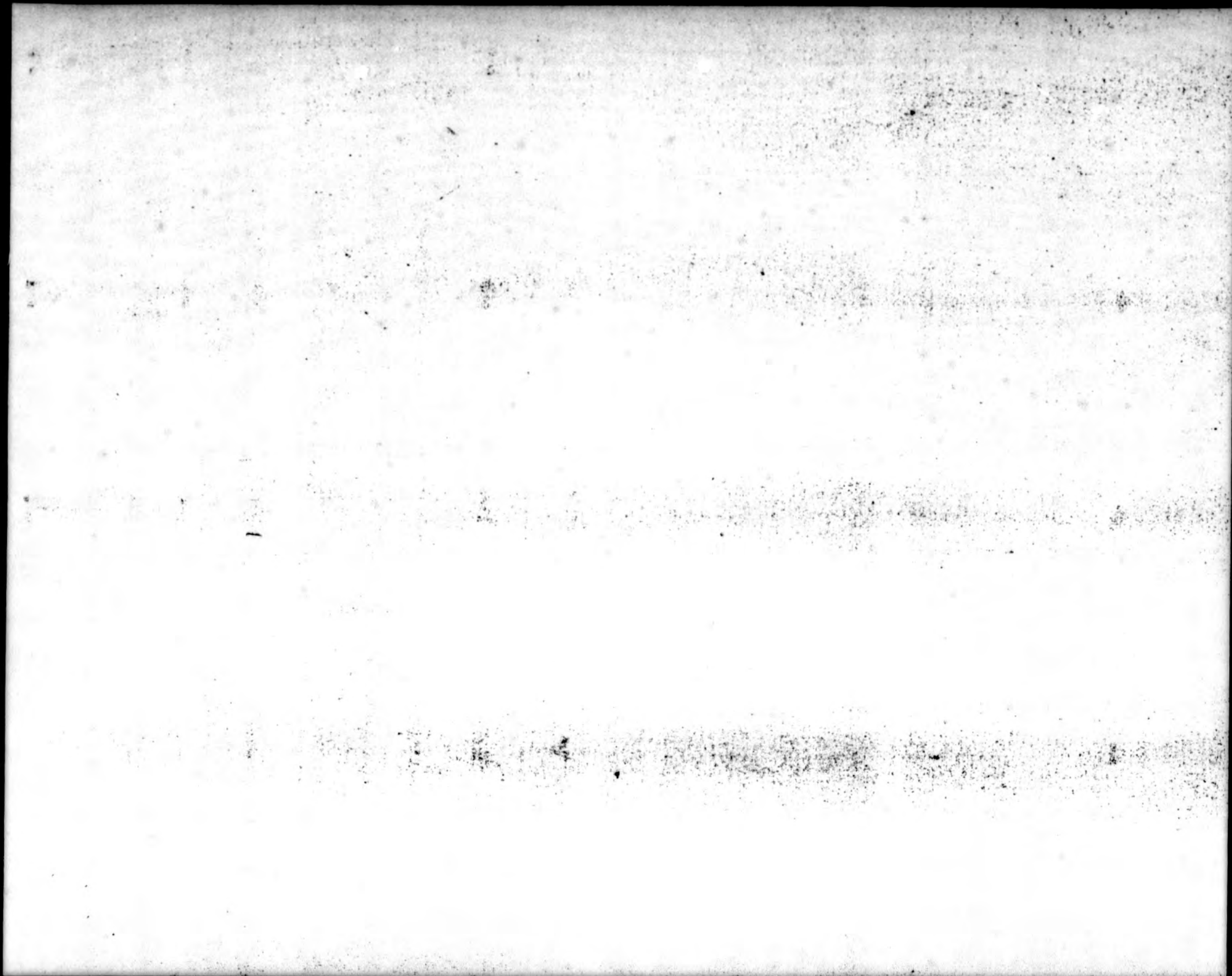


MULTIPLY STEM.LEAF BY 10\*\*01

## FREQUENCY TABLE

| PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |       |
|----------|-------|------|------|----------|-------|------|------|----------|-------|------|------|----------|-------|------|-------|
| VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM   |
| 5.79606  | 1     | 2.0  | 2.0  | 6.37843  | 1     | 2.0  | 27.5 | 6.77308  | 1     | 2.0  | 56.9 | 7.41457  | 1     | 2.0  | 82.4  |
| 5.89715  | 1     | 2.0  | 3.9  | 6.39693  | 1     | 2.0  | 29.4 | 6.77651  | 1     | 2.0  | 58.8 | 7.42595  | 1     | 2.0  | 84.3  |
| 5.92158  | 1     | 2.0  | 5.9  | 6.40026  | 2     | 3.9  | 33.3 | 6.77765  | 1     | 2.0  | 60.8 | 7.4793   | 1     | 2.0  | 86.3  |
| 6.12249  | 1     | 2.0  | 7.8  | 6.40523  | 1     | 2.0  | 35.3 | 6.85541  | 1     | 2.0  | 62.7 | 7.53048  | 1     | 2.0  | 88.2  |
| 6.13123  | 1     | 2.0  | 9.8  | 6.4552   | 1     | 2.0  | 37.3 | 6.86901  | 1     | 2.0  | 64.7 | 7.61234  | 1     | 2.0  | 90.2  |
| 6.15273  | 1     | 2.0  | 11.8 | 6.4708   | 1     | 2.0  | 39.2 | 6.89467  | 1     | 2.0  | 66.7 | 7.86902  | 1     | 2.0  | 92.2  |
| 6.1717   | 1     | 2.0  | 13.7 | 6.47697  | 2     | 3.9  | 43.1 | 6.95559  | 1     | 2.0  | 68.6 | 8.02224  | 1     | 2.0  | 94.1  |
| 6.25303  | 1     | 2.0  | 15.7 | 6.53379  | 1     | 2.0  | 45.1 | 7.08087  | 1     | 2.0  | 70.6 | 8.16962  | 1     | 2.0  | 96.1  |
| 6.26149  | 1     | 2.0  | 17.6 | 6.54391  | 1     | 2.0  | 47.1 | 7.15149  | 1     | 2.0  | 72.5 | 8.24879  | 1     | 2.0  | 98.0  |
| 6.29157  | 1     | 2.0  | 19.6 | 6.58202  | 1     | 2.0  | 49.0 | 7.21229  | 1     | 2.0  | 74.5 | 8.27868  | 1     | 2.0  | 100.0 |
| 6.29711  | 1     | 2.0  | 21.6 | 6.7417   | 1     | 2.0  | 51.0 | 7.24779  | 1     | 2.0  | 76.5 |          |       |      |       |
| 6.30079  | 1     | 2.0  | 23.5 | 6.75227  | 1     | 2.0  | 52.9 | 7.30384  | 1     | 2.0  | 78.4 |          |       |      |       |
| 6.35263  | 1     | 2.0  | 25.5 | 6.77194  | 1     | 2.0  | 54.9 | 7.31522  | 1     | 2.0  | 80.4 |          |       |      |       |





SAS

TABLE 11

UNIVARIATE

VARIABLE=V9

RELCOST

## MOMENTS

## QUANTILES(DEF=4)

## EXTREMES

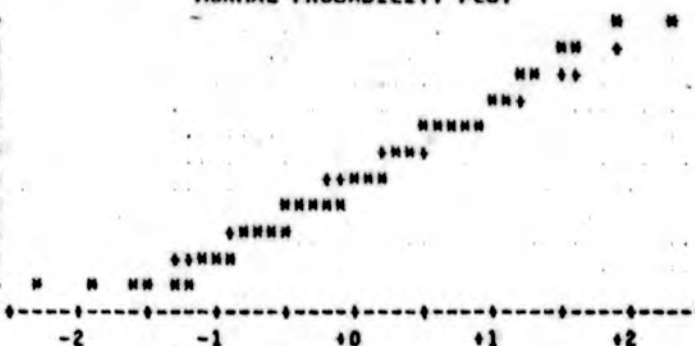
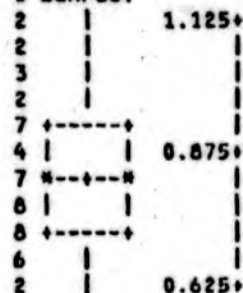
| N        | 51        | SUM HGTS | 51        | 100% MAX | 1.13867  | 99% | 1.13867  | LOWEST      | ID | HIGHEST    | ID |
|----------|-----------|----------|-----------|----------|----------|-----|----------|-------------|----|------------|----|
| MEAN     | 0.028617  | SUM      | 42.2595   | 75% Q3   | 0.930907 | 95% | 1.09096  | 0.608299(DC | )  | 1.01679(UT | )  |
| STD DEV  | 0.133548  | VARIANCE | 0.017835  | 50% MED  | 0.010499 | 90% | 1.01557  | 0.63842(IL  | )  | 1.05079(MS | )  |
| SKEWNESS | 0.43598   | KURTOSIS | -0.567471 | 25% Q1   | 0.72637  | 10% | 0.64867  | 0.645073(CA | )  | 1.0834(SD  | )  |
| USS      | 35.9037   | CSS      | 0.891752  | 0% MIN   | 0.608299 | 5%  | 0.642411 | 0.646274(HV | )  | 1.1023(AR  | )  |
| CV       | 16.117    | STD MEAN | 0.0187004 |          |          | 1%  | 0.608299 | 0.648577(OK | )  | 1.13867(TN | )  |
| T:MEAN=0 | 44.31     | PROB> T  | 0.0001    | RANGE    | 0.530367 |     |          |             |    |            |    |
| SGH RANK | 663       | PROB> S  | 0.0001    | Q3-Q1    | 0.204537 |     |          |             |    |            |    |
| IRN1 ~ 0 | 51        |          |           | MODE     | 0.608299 |     |          |             |    |            |    |
| D:NORMAL | 0.0856348 | PROB>D   | >0.15     |          |          |     |          |             |    |            |    |

## STEM LEAF

## BOXPLOT

## NORMAL PROBABILITY PLOT

11 04  
10 58  
10 012  
9 89  
9 0113444  
8 7708  
8 1123344  
7 66788899  
7 00223333  
6 555589  
6 14

MULTIPLY STEM.LEAF BY 10<sup>HH-01</sup>

## FREQUENCY TABLE

| PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |      | PERCENTS |       |      |       |
|----------|-------|------|------|----------|-------|------|------|----------|-------|------|------|----------|-------|------|-------|
| VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM  | VALUE    | COUNT | CELL | CUM   |
| 0.608299 | 1     | 2.0  | 2.0  | 0.727663 | 1     | 2.0  | 27.5 | 0.81756  | 1     | 2.0  | 52.9 | 0.937694 | 1     | 2.0  | 78.4  |
| 0.63842  | 1     | 2.0  | 3.9  | 0.727938 | 1     | 2.0  | 29.4 | 0.828748 | 1     | 2.0  | 54.9 | 0.93934  | 1     | 2.0  | 80.4  |
| 0.645073 | 1     | 2.0  | 5.9  | 0.732358 | 1     | 2.0  | 31.4 | 0.831758 | 1     | 2.0  | 56.9 | 0.943004 | 1     | 2.0  | 82.4  |
| 0.646274 | 1     | 2.0  | 7.8  | 0.756401 | 1     | 2.0  | 33.3 | 0.837531 | 1     | 2.0  | 58.8 | 0.984665 | 1     | 2.0  | 84.3  |
| 0.648577 | 1     | 2.0  | 9.8  | 0.760293 | 1     | 2.0  | 35.3 | 0.838018 | 1     | 2.0  | 60.8 | 0.989298 | 1     | 2.0  | 86.3  |
| 0.649041 | 1     | 2.0  | 11.8 | 0.767991 | 1     | 2.0  | 37.3 | 0.866203 | 1     | 2.0  | 62.7 | 0.997935 | 1     | 2.0  | 88.2  |
| 0.676609 | 1     | 2.0  | 13.7 | 0.775260 | 1     | 2.0  | 39.2 | 0.869205 | 1     | 2.0  | 64.7 | 1.01066  | 1     | 2.0  | 90.2  |
| 0.686794 | 1     | 2.0  | 15.7 | 0.779058 | 1     | 2.0  | 41.2 | 0.87697  | 1     | 2.0  | 66.7 | 1.01679  | 1     | 2.0  | 92.2  |
| 0.695704 | 1     | 2.0  | 17.6 | 0.783755 | 1     | 2.0  | 43.1 | 0.883821 | 1     | 2.0  | 68.6 | 1.05079  | 1     | 2.0  | 94.1  |
| 0.697697 | 1     | 2.0  | 19.6 | 0.786699 | 1     | 2.0  | 45.1 | 0.902539 | 1     | 2.0  | 70.6 | 1.0834   | 1     | 2.0  | 96.1  |
| 0.716364 | 1     | 2.0  | 21.6 | 0.789554 | 1     | 2.0  | 47.1 | 0.907814 | 1     | 2.0  | 72.5 | 1.1023   | 1     | 2.0  | 98.0  |
| 0.719753 | 1     | 2.0  | 23.5 | 0.808305 | 1     | 2.0  | 49.0 | 0.913084 | 1     | 2.0  | 74.5 | 1.13867  | 1     | 2.0  | 100.0 |
| 0.72637  | 1     | 2.0  | 25.5 | 0.810499 | 1     | 2.0  | 51.0 | 0.930907 | 1     | 2.0  | 76.5 |          |       |      |       |

Table 12

## List of Values for All Variables

| STATE | PC_CNSHP | AGE | COST | INCOME | HRS_WK | PPLICS | LICSTATE | RELICOST | LOGPPLIC |
|-------|----------|-----|------|--------|--------|--------|----------|----------|----------|
| AL    | 1.95     | 19  | 7.32 | 7.434  | 108.0  | 1771   | 0        | 0.96467  | 7.47930  |
| AK    | 4.04     | 19  | 9.94 | 12.759 | 147.0  | 364    | 1        | 0.77906  | 5.89715  |
| AZ    | 3.28     | 19  | 7.79 | 8.814  | 126.0  | 688    | 1        | 0.88382  | 6.53379  |
| AR    | 1.90     | 21  | 7.92 | 7.185  | 108.0  | 1864   | 1        | 1.10230  | 7.53048  |
| CA    | 3.62     | 21  | 7.05 | 10.929 | 140.0  | 962    | 1        | 0.64507  | 6.86901  |
| CO    | 3.57     | 21  | 6.98 | 10.033 | 126.0  | 602    | 1        | 0.69570  | 6.40026  |
| CT    | 2.87     | 19  | 8.03 | 11.692 | 115.0  | 605    | 1        | 0.68679  | 6.40523  |
| DE    | 3.33     | 20  | 7.18 | 10.291 | 96.0   | 650    | 1        | 0.69770  | 6.47697  |
| FL    | 3.51     | 19  | 7.48 | 8.993  | 119.0  | 1276   | 1        | 0.83176  | 7.15149  |
| GA    | 2.54     | 19  | 7.54 | 8.041  | 94.5   | 1679   | 1        | 0.93769  | 7.42595  |
| HI    | 3.50     | 18  | 8.25 | 10.091 | 140.0  | 540    | 1        | 0.81756  | 6.29157  |
| ID    | 2.75     | 19  | 7.71 | 8.176  | 90.0   | 949    | 0        | 0.94300  | 6.85541  |
| IL    | 3.07     | 21  | 6.69 | 10.479 | 140.0  | 574    | 1        | 0.63842  | 6.35263  |
| IN    | 3.23     | 21  | 7.73 | 8.924  | 134.5  | 856    | 1        | 0.86620  | 6.75227  |
| IA    | 2.35     | 19  | 7.15 | 9.310  | 120.0  | 602    | 0        | 0.76799  | 6.40026  |
| KS    | 2.04     | 21  | 7.76 | 9.864  | 90.0   | 1049   | 1        | 0.78670  | 6.95559  |
| KY    | 2.00     | 21  | 7.58 | 7.662  | 96.0   | 1660   | 1        | 0.98930  | 7.41457  |
| LA    | 2.84     | 18  | 7.35 | 8.456  | 168.0  | 460    | 1        | 0.86921  | 6.13123  |
| ME    | 2.81     | 20  | 6.90 | 7.868  | 115.0  | 873    | 0        | 0.87697  | 6.77194  |
| MD    | 3.27     | 21  | 6.80 | 10.477 | 120.0  | 874    | 1        | 0.64904  | 6.77308  |
| MA    | 3.40     | 20  | 7.41 | 10.118 | 114.0  | 722    | 1        | 0.73236  | 6.58203  |
| MI    | 2.80     | 21  | 7.14 | 9.967  | 128.0  | 695    | 0        | 0.71636  | 6.54391  |
| MN    | 3.00     | 19  | 7.71 | 9.765  | 102.0  | 987    | 1        | 0.78955  | 6.89467  |
| MS    | 2.20     | 21  | 6.89 | 6.557  | 84.0   | 2023   | 0        | 1.05079  | 7.61234  |
| MO    | 2.44     | 21  | 6.74 | 8.855  | 108.5  | 589    | 1        | 0.76029  | 6.37843  |
| MT    | 3.37     | 19  | 7.90 | 8.652  | 126.0  | 479    | 0        | 0.91308  | 6.17170  |
| NE    | 2.78     | 20  | 7.53 | 9.086  | 121.0  | 520    | 1        | 0.82875  | 6.25383  |
| NV    | 6.18     | 21  | 6.93 | 10.723 | 168.0  | 373    | 1        | 0.64627  | 5.92158  |
| NH    | 5.35     | 20  | 6.17 | 9.119  | 128.0  | 877    | 0        | 0.67661  | 6.77651  |
| NJ    | 3.00     | 21  | 7.96 | 10.935 | 91.0   | 646    | 1        | 0.72794  | 6.47080  |
| NM    | 3.05     | 21  | 7.96 | 7.876  | 124.0  | 847    | 1        | 1.01067  | 6.74170  |
| NY    | 3.05     | 18  | 7.46 | 10.252 | 136.0  | 636    | 1        | 0.72766  | 6.45520  |
| NC    | 2.28     | 21  | 7.11 | 7.832  | 123.5  | 3939   | 1        | 0.90781  | 8.27868  |
| ND    | 2.96     | 21  | 8.03 | 8.626  | 102.0  | 543    | 1        | 0.93091  | 6.29711  |
| OH    | 2.44     | 21  | 7.43 | 9.480  | 119.0  | 878    | 0        | 0.78376  | 6.77765  |
| OK    | 2.10     | 21  | 5.88 | 9.066  | 72.0   | 3823   | 1        | 0.64858  | 8.24879  |
| OR    | 2.98     | 21  | 8.39 | 9.296  | 136.5  | 1503   | 0        | 0.90254  | 7.31522  |
| PA    | 2.51     | 21  | 7.90 | 9.427  | 133.0  | 600    | 0        | 0.83802  | 6.39693  |
| RI    | 3.32     | 20  | 7.31 | 9.429  | 127.0  | 545    | 1        | 0.77527  | 6.30079  |
| SC    | 2.59     | 21  | 7.25 | 7.265  | 60.0   | 1189   | 1        | 0.99794  | 7.08087  |
| SD    | 2.69     | 21  | 8.47 | 7.818  | 114.0  | 470    | 1        | 1.08340  | 6.15273  |
| TN    | 2.01     | 19  | 8.77 | 7.702  | 129.0  | 3048   | 1        | 1.13867  | 8.02224  |
| TX    | 2.95     | 19  | 7.98 | 9.528  | 116.0  | 1356   | 1        | 0.83753  | 7.21229  |
| UT    | 1.80     | 21  | 7.81 | 7.681  | 72.0   | 3532   | 0        | 1.01679  | 8.16962  |
| VT    | 3.50     | 18  | 6.33 | 7.810  | 123.0  | 456    | 0        | 0.81050  | 6.12249  |
| VA    | 2.52     | 21  | 6.77 | 9.406  | 120.0  | 2615   | 0        | 0.71975  | 7.86902  |
| WA    | 3.17     | 21  | 8.37 | 10.355 | 140.0  | 1486   | 0        | 0.80831  | 7.30384  |
| WV    | 1.90     | 18  | 7.34 | 7.814  | 142.0  | 1405   | 0        | 0.93934  | 7.24779  |
| WI    | 3.73     | 18  | 7.12 | 9.413  | 119.0  | 329    | 1        | 0.75640  | 5.79606  |
| WY    | 3.60     | 19  | 7.90 | 10.876 | 130.0  | 524    | 0        | 0.72637  | 6.26149  |
| DC    | 5.70     | 21  | 7.33 | 12.050 | 131.0  | 650    | 1        | 0.60830  | 6.47697  |

Table 13

Regression Analysis with All Variables Included

|           |          |
|-----------|----------|
| Intercept | 3.41     |
| INCOME    | 0.24 *** |
| COST      | -0.30 ** |
| HRS_WK    | 0.01 **  |
| LOGPPLIC  | -0.41 ** |
| AGE       | 0.05     |
| LICSTATE  | 0.10     |

$$F = 8.27 \quad ***$$

$$R^2 = .53$$

Table 14

Regression Analysis Without AGE and LICSTATE

|           |          |
|-----------|----------|
| Intercept | 4.41 **  |
| INCOME    | 0.26 *** |
| COST      | -0.30 ** |
| HRS_WK    | 0.01 **  |
| LOGPPLIC  | -0.39 ** |

$$F = 12.62 \quad ***$$

$$R^2 = .52$$

- \* p less than .10
- \*\* p less than .05
- \*\*\* p less than .01



Table 15

Regression Analysis with All Variables Included

|           |           |
|-----------|-----------|
| Intercept | 6.62 ***  |
| HRS_WK    | 0.01 **   |
| LOGPPLIC  | -0.40 **  |
| RELCOST   | -2.53 *** |

F = 15.74 \*\*\*

R<sup>2</sup> = .50

\* p less than .10  
 \*\* p less than .05  
 \*\*\* p less than .01

Table 16

Comparison of Predicted Per Capita Consumption for Each Regression  
Equation with Actual, Including Ranks<sup>1</sup>

| STATE | PC_CNSMP | CONSRANK | PREDICTED VALUE | PRANK1 | PREDICTED VALUE | PRANK2 | PREDICTED VALUE | PRANK3 |
|-------|----------|----------|-----------------|--------|-----------------|--------|-----------------|--------|
| AL    | 1.95     | 48.0     | 2.13524         | 46     | 2.24427         | 44     | 2.24439         | 45     |
| AK    | 4.04     | 4.0      | 3.79162         | 5      | 3.82742         | 4      | 3.80174         | 4      |
| AZ    | 3.28     | 16.0     | 3.00712         | 28     | 3.00909         | 29     | 3.06448         | 29     |
| AR    | 1.90     | 49.5     | 2.08150         | 47     | 1.97834         | 47     | 1.92585         | 47     |
| CA    | 3.62     | 6.0      | 3.85476         | 4      | 3.78470         | 5      | 3.67960         | 6      |
| CO    | 3.57     | 8.0      | 3.70135         | 6      | 3.61876         | 8      | 3.59459         | 10     |
| CT    | 2.87     | 28.0     | 3.54536         | 9      | 3.60908         | 10     | 3.50162         | 13     |
| DE    | 3.33     | 14.0     | 3.28220         | 19     | 3.28768         | 20     | 3.24912         | 23     |
| FL    | 3.51     | 9.0      | 2.80967         | 33     | 2.83468         | 32     | 2.87667         | 32     |
| GA    | 2.54     | 36.0     | 2.18098         | 45     | 2.21564         | 45     | 2.24540         | 44     |
| HI    | 3.50     | 10.5     | 3.37223         | 16     | 3.43334         | 15     | 3.47392         | 15     |
| ID    | 2.75     | 33.0     | 2.25037         | 43     | 2.37687         | 42     | 2.41407         | 42     |
| IL    | 3.07     | 20.0     | 4.06897         | 3      | 3.98222         | 3      | 3.90333         | 2      |
| IN    | 3.23     | 18.0     | 3.16474         | 25     | 3.05620         | 28     | 3.10934         | 27     |
| IA    | 2.35     | 41.0     | 3.20731         | 22     | 3.32139         | 18     | 3.34951         | 18     |
| KS    | 2.04     | 45.0     | 2.79836         | 34     | 2.75313         | 36     | 2.76994         | 38     |
| KY    | 2.00     | 47.0     | 2.20996         | 44     | 2.12653         | 46     | 2.13471         | 46     |
| LA    | 2.84     | 29.0     | 3.63331         | 8      | 3.63808         | 7      | 3.69635         | 5      |
| ME    | 2.81     | 30.0     | 2.78731         | 35     | 2.83214         | 33     | 2.87288         | 33     |
| MD    | 3.27     | 17.0     | 3.63961         | 7      | 3.57897         | 12     | 3.50152         | 14     |
| MA    | 3.40     | 12.0     | 3.32972         | 17     | 3.31597         | 19     | 3.30503         | 20     |
| MI    | 2.80     | 31.0     | 3.50440         | 13     | 3.51724         | 13     | 3.50534         | 12     |
| MN    | 3.00     | 23.5     | 2.83963         | 31     | 2.88941         | 30     | 2.91099         | 30     |
| MS    | 2.20     | 43.0     | 1.84375         | 50     | 1.85393         | 50     | 1.77582         | 50     |
| MO    | 2.44     | 39.5     | 3.31145         | 18     | 3.22362         | 22     | 3.25904         | 22     |
| MT    | 3.37     | 13.0     | 2.98855         | 29     | 3.07669         | 26     | 3.13540         | 25     |

| STATE | PC_CNSMP | CONSRANK | PREDICTED VALUE | PRANK1 | PREDICTED VALUE | PRANK2 | PREDICTED VALUE | PRANK3 |
|-------|----------|----------|-----------------|--------|-----------------|--------|-----------------|--------|
| NE    | 2.78     | 32.0     | 3.26332         | 21     | 3.21656         | 23     | 3.26456         | 21     |
| NV    | 6.18     | 1.0      | 4.54422         | 1      | 4.42670         | 1      | 4.34516         | 1      |
| NH    | 5.35     | 3.0      | 3.44400         | 15     | 3.50400         | 14     | 3.51289         | 11     |
| NJ    | 3.00     | 23.5     | 3.20230         | 23     | 3.16654         | 24     | 3.12336         | 26     |
| NM    | 3.05     | 21.5     | 2.73588         | 37     | 2.61590         | 39     | 2.63917         | 39     |
| NY    | 3.05     | 21.5     | 3.53462         | 10     | 3.60926         | 9      | 3.59484         | 9      |
| NC    | 2.28     | 42.0     | 2.34095         | 42     | 2.25346         | 43     | 2.27896         | 43     |
| ND    | 2.96     | 26.0     | 2.83020         | 32     | 2.73644         | 38     | 2.79225         | 37     |
| OH    | 2.44     | 39.5     | 3.10611         | 26     | 3.12114         | 25     | 3.14806         | 24     |
| OK    | 2.10     | 44.0     | 2.43907         | 41     | 2.42846         | 41     | 2.41600         | 41     |
| OR    | 2.98     | 25.0     | 2.74886         | 36     | 2.74973         | 37     | 2.81240         | 34     |
| PA    | 2.51     | 38.0     | 3.26576         | 20     | 3.25735         | 21     | 3.30762         | 19     |
| RI    | 3.32     | 15.0     | 3.45760         | 14     | 3.41367         | 16     | 3.44318         | 16     |
| SC    | 2.59     | 35.0     | 1.95150         | 48     | 1.88942         | 48     | 1.87488         | 48     |
| SD    | 2.69     | 34.0     | 2.70090         | 39     | 2.57573         | 40     | 2.58762         | 40     |
| TN    | 2.01     | 46.0     | 1.87149         | 49     | 1.87297         | 49     | 1.85349         | 49     |
| TX    | 2.95     | 27.0     | 2.72794         | 38     | 2.76483         | 35     | 2.80672         | 35     |
| UT    | 1.80     | 51.0     | 1.47067         | 51     | 1.51983         | 51     | 1.51481         | 51     |
| VT    | 3.50     | 10.5     | 3.19177         | 24     | 3.32743         | 17     | 3.38405         | 17     |
| VA    | 2.52     | 37.0     | 2.84756         | 30     | 2.88384         | 31     | 2.88332         | 31     |
| WA    | 3.17     | 19.0     | 3.04858         | 27     | 3.06627         | 27     | 3.09184         | 28     |
| WV    | 1.90     | 49.5     | 2.63851         | 40     | 2.77304         | 34     | 2.80295         | 36     |
| WI    | 3.73     | 5.0      | 3.52048         | 12     | 3.58414         | 11     | 3.61060         | 8      |
| WY    | 3.60     | 7.0      | 3.52126         | 11     | 3.64983         | 6      | 3.61378         | 7      |
| DC    | 5.70     | 2.0      | 4.09699         | 2      | 4.04809         | 2      | 3.83692         | 3      |

<sup>1</sup> Actual PC\_CNSMP and rank followed by two columns each for equations given in Tables 13, 14 and 15.

PLOT OF V0=V2

LEGEND: A = 1 OBS, B = 2 OBS, ETC.

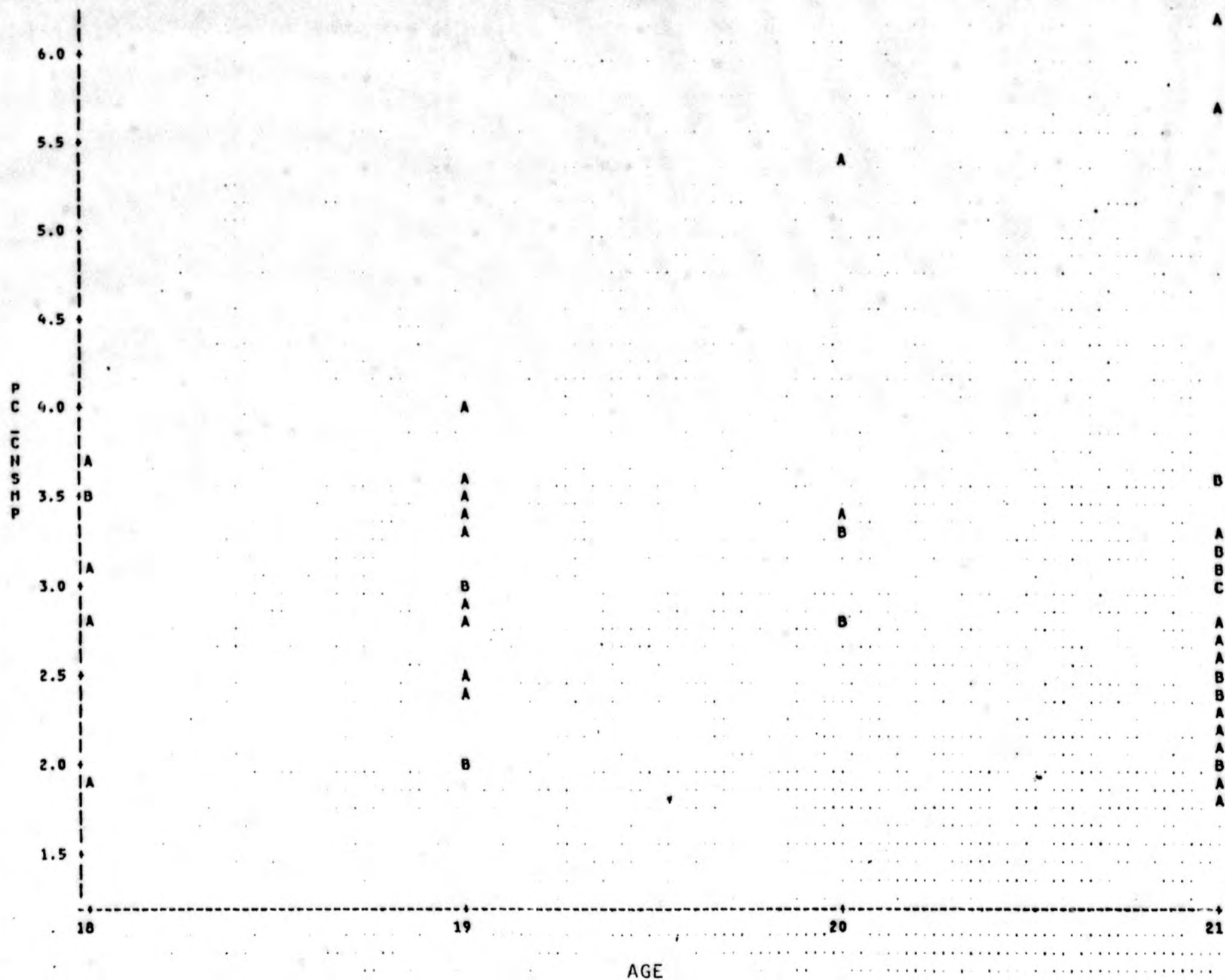
FIGURE 1

FIGURE 2

PLOT OF V0\*V3      LEGEND: A = 1 OBS, D = 2 OBS, ETC.

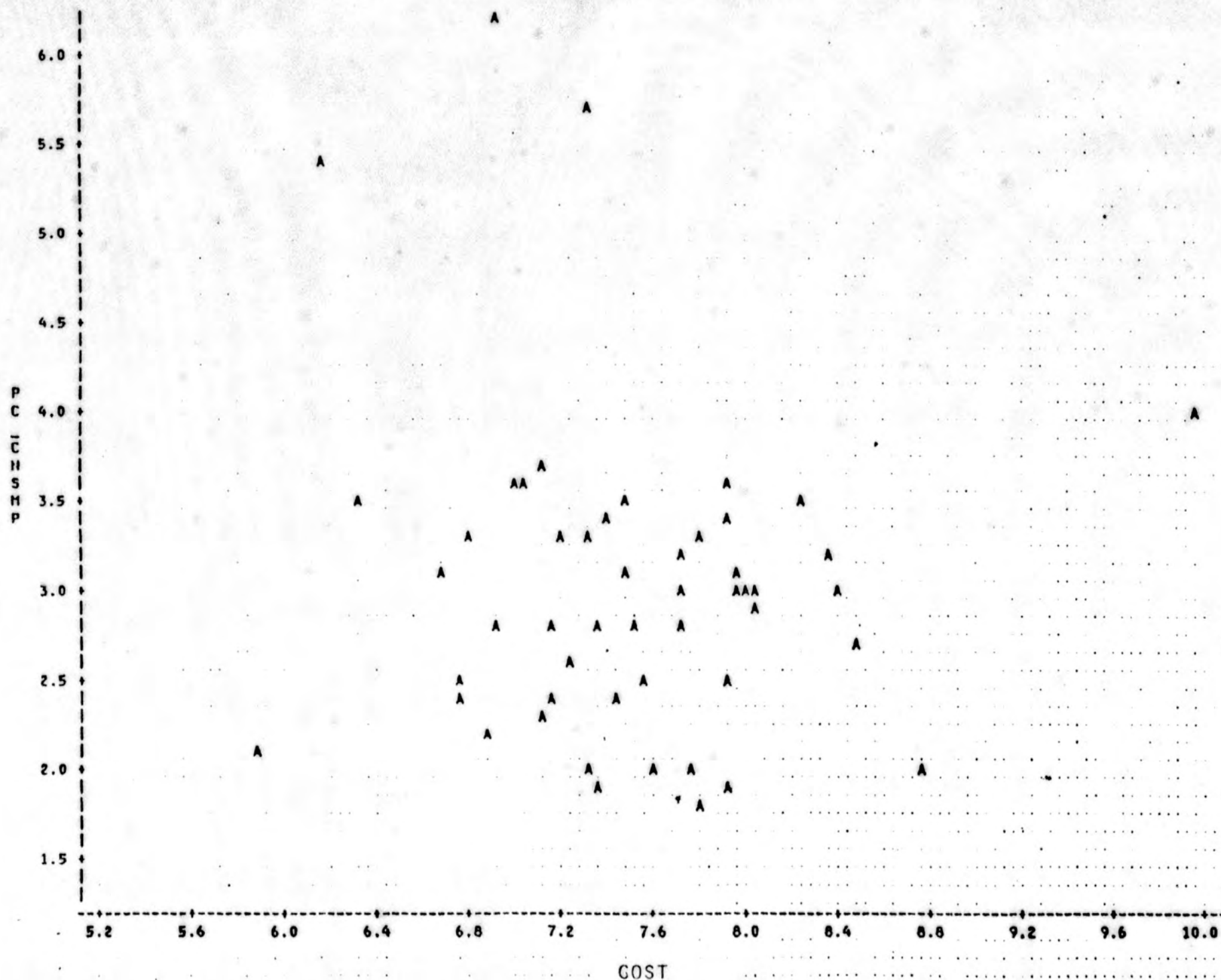
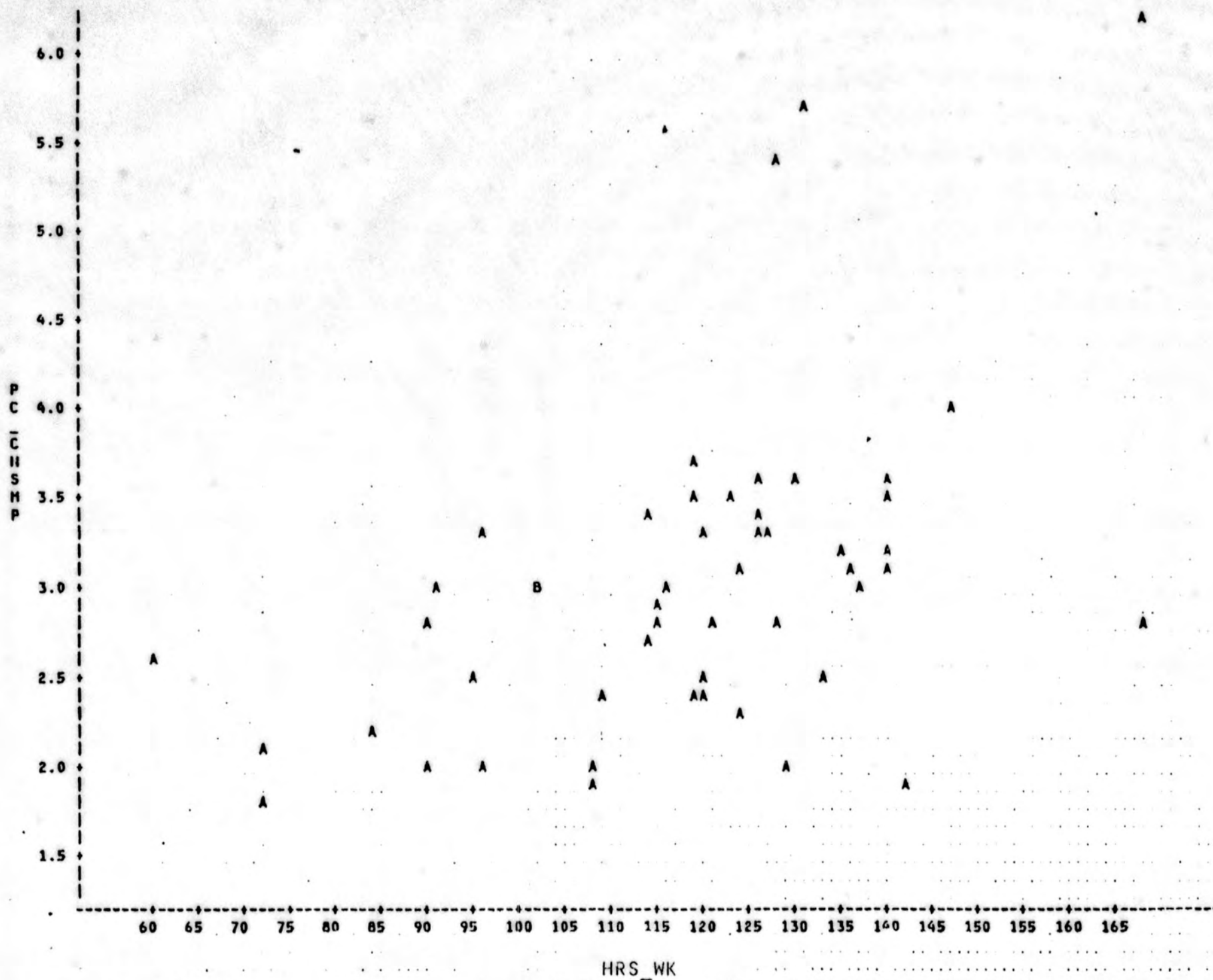




FIGURE 4

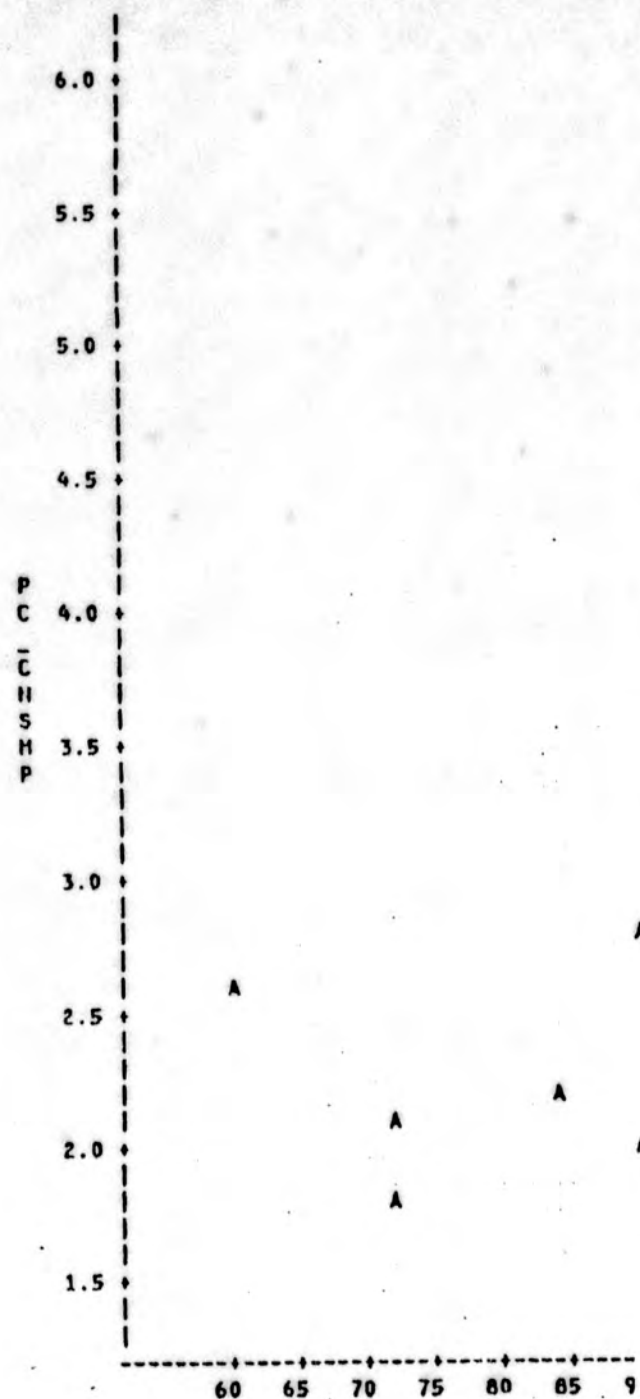
PLOT OF VS\*VS

LEGEND: A = 1 ODS, B = 2 ODS, ETC.



PLOT OF V8\*V5

LEGEND: A = 1 OBS, B = 2 OBS, E1



PLOT OF V8\*V4

LEGEND: A = 1 OBS, B = 2 OBS, ETC.

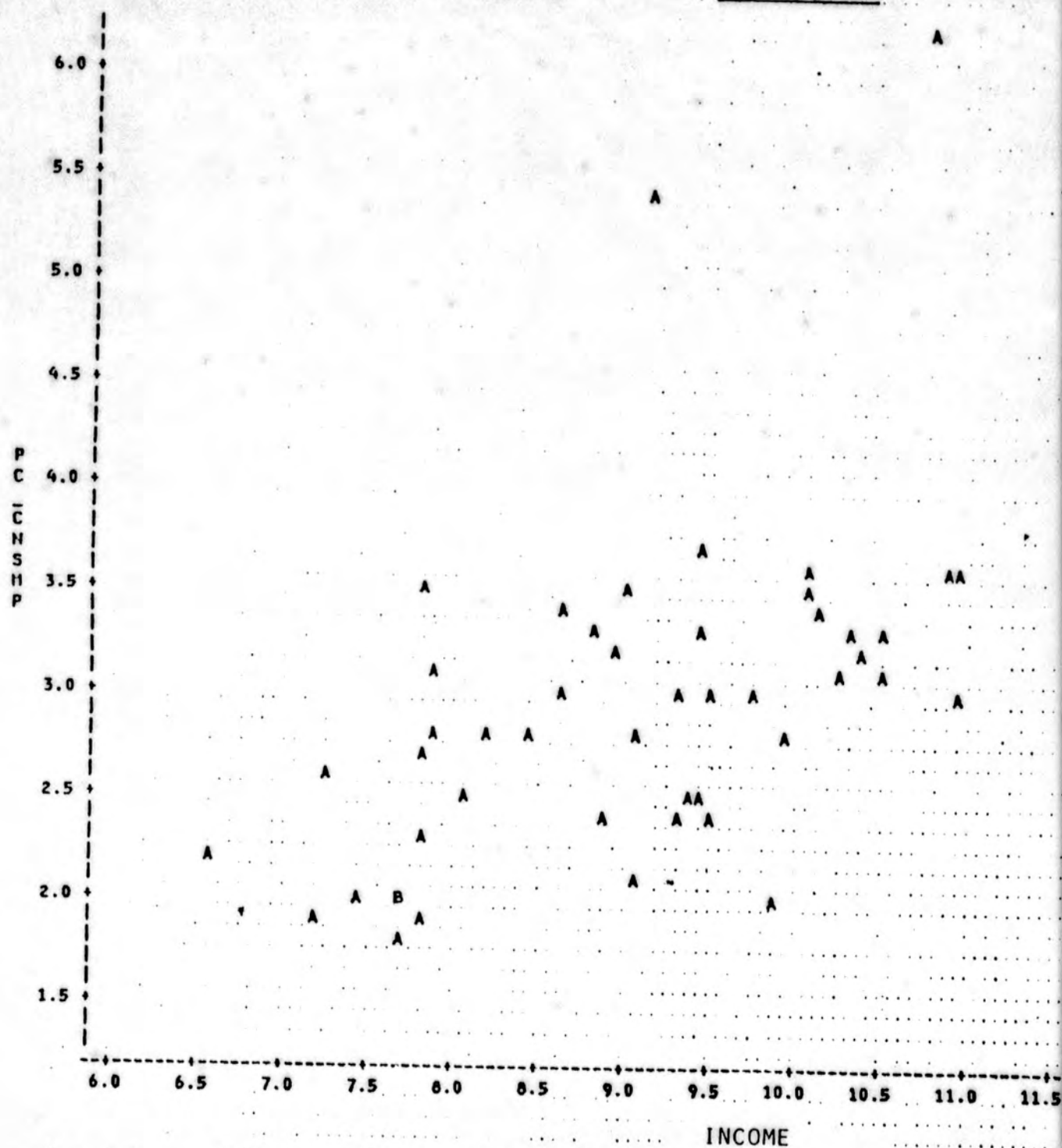
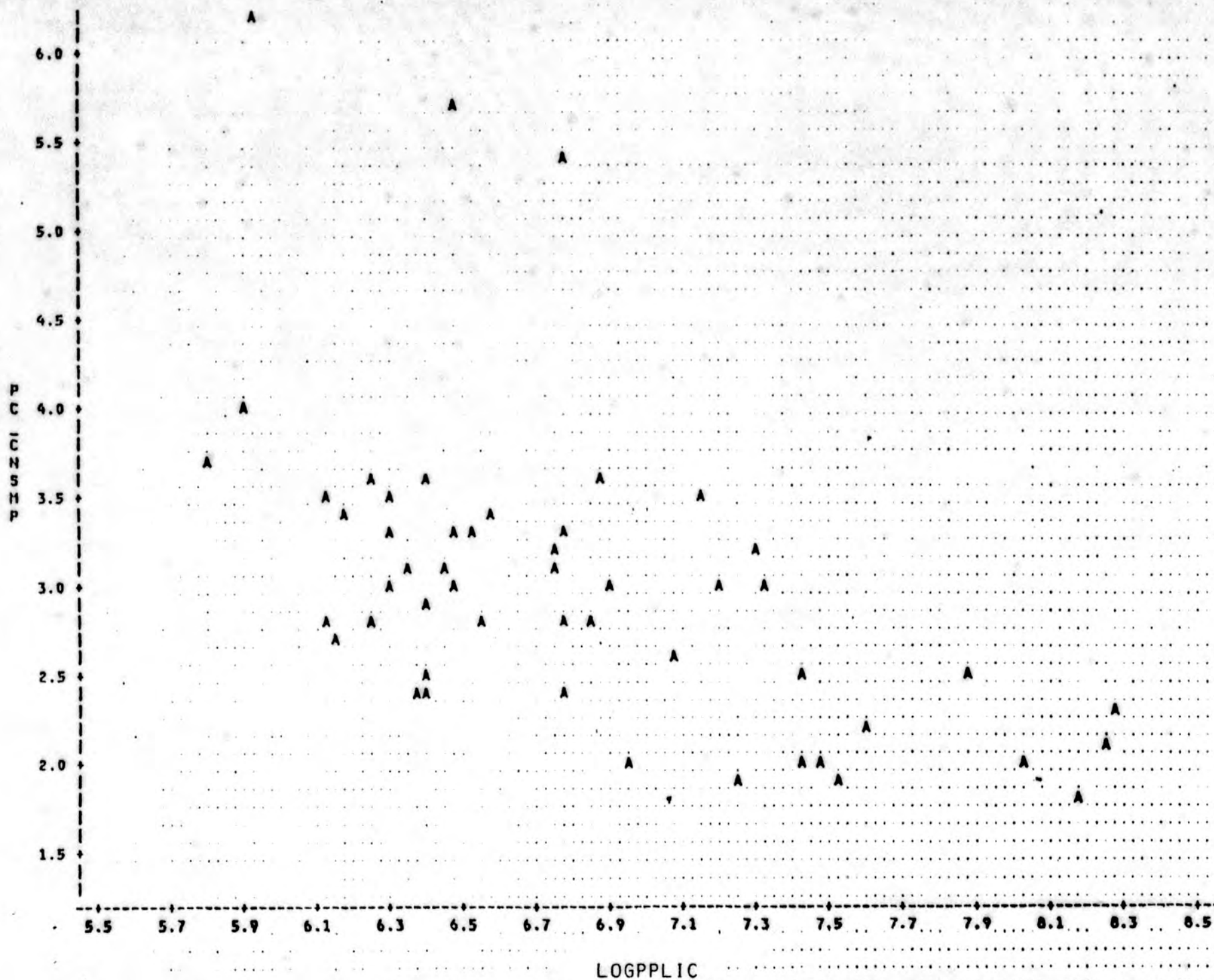


FIGURE 3

FIGURE 5

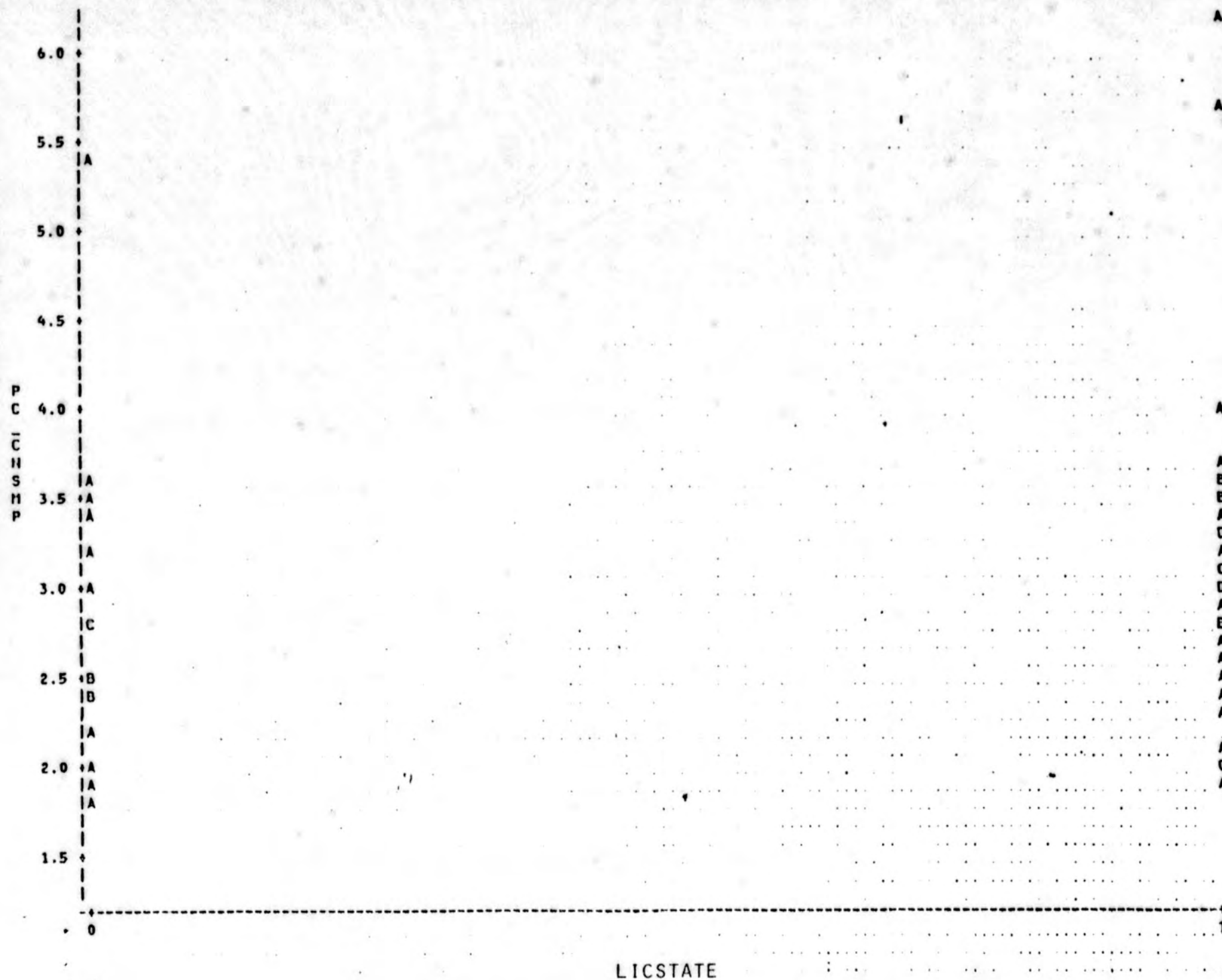
PLOT OF V8-V10

LEGEND: A = 1 OBS, B = 2 OBS, ETC.



PLOT OF V8=V7

LEGEND: A = 1 ODS, B = 2 ODS, ETC.

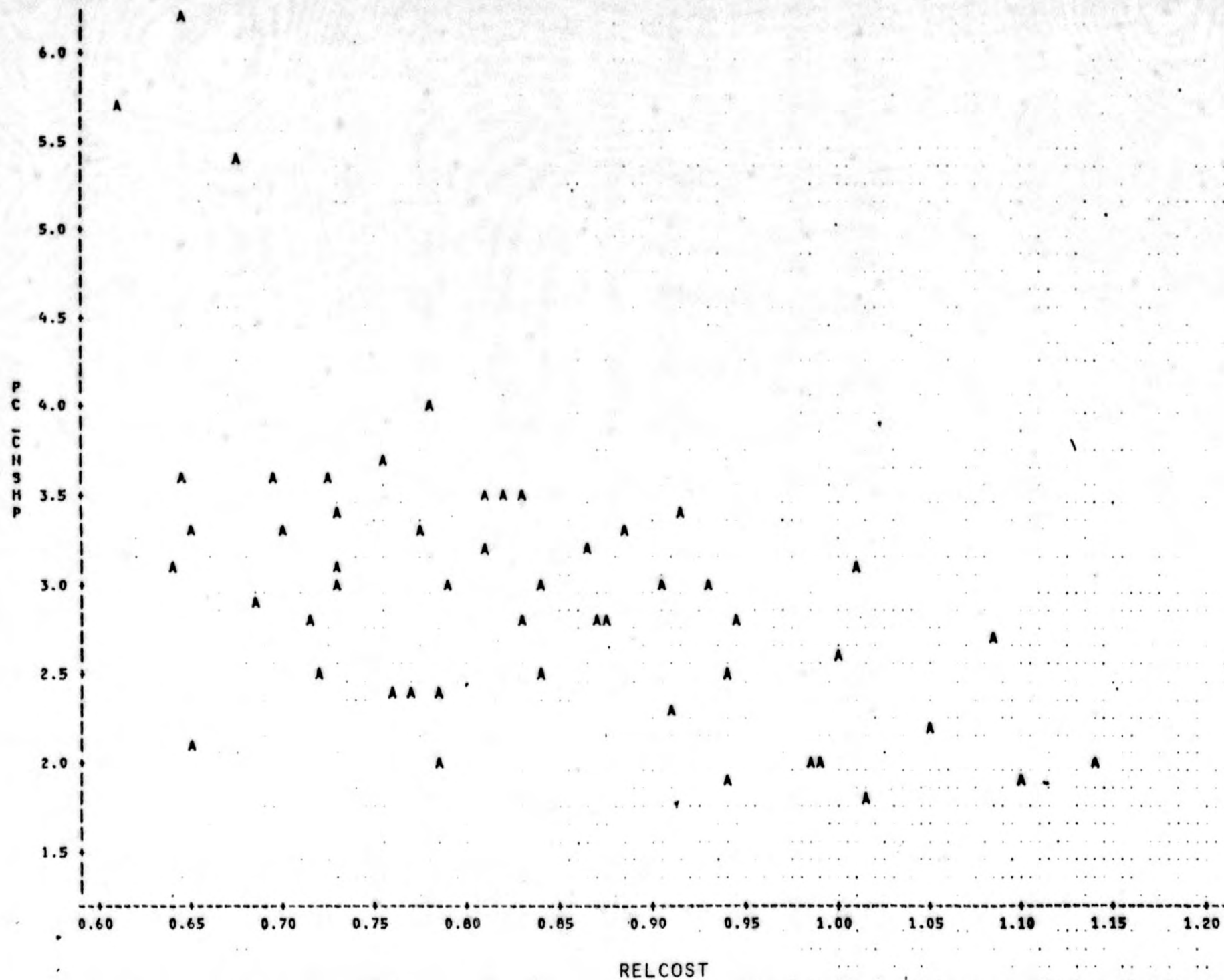
FIGURE 6



PLOT OF V8=V9

LEGEND: A = 1 OBS, B = 2 OBS, ETC.

FIGURE 7



# NORTH SLOPE BOROUGH

## OFFICE OF THE MAYOR

P.O. Box 69  
Barrow, Alaska 99723

Phone: 907-852-2611

George N. Ahmaogak, Sr., Mayor



December 27, 1985

Bert Hall  
H&SSA  
P.O. Box 69  
Barrow, Alaska 99723

Dear Bert:

The report prepared by the Blue Ribbon Panel on Alcohol and Drug Abuse has been received. I wanted to take this opportunity to personally express my appreciation for your contribution to that effort.

I have very carefully reviewed the total document and discussed it in depth with both representatives from the panel as well as with several Directors whose Departments will play an important role in implementing the well prepared and comprehensive recommendations.

It is my intention to request a special work session with the Assembly some time in January so that the report can receive the attention it deserves. Subsequent to that, I expect that we will be moving ahead in several areas - in fact, we have already taken appropriate action within current authorities and budget restraints.

Again, on behalf of North Slope Borough, please accept my thanks for a job well done.

Sincerely,

*George N. Ahmaogak, Sr.*  
George N. Ahmaogak, Sr.  
Mayor

BLUE RIBBON PANEL ON ALCOHOL AND  
DRUG ABUSE

December 16, 1985

Hon. George Ahmaogak, Sr.  
Mayor  
North Slope Borough  
P.O. Box 69  
Barrow, Alaska 99723

Dear Mayor Ahmaogak:

The Blue Ribbon Panel that you called together on October 9, 1985, to consider the problem of alcohol and drug abuse in our community has met many times. We now share with you our recommendations for actions that could be taken to deepen current efforts to deal with this critical issue.

As you know, the Panel brought together elders from the Barrow community, political leaders, service providers from Borough, State and Federal agencies, members of Alcoholics Anonymous, and interested citizens. A lot of hard work was accomplished in group meetings and subcommittees, and there has already been some solid results from these efforts: both the City of Barrow and the North Slope Borough have made a \$3.5 million capital grant request for a Residential Alcohol and Drug Treatment Facility their most urgent request from the Alaska Legislature for Barrow fiscal year 1986-87. Support from yourself and City Mayor Nathaniel Olemaun, Jr., were important in bringing about this grant request.

We offer these recommendations to you knowing that alcohol and drug abuse is a complicated problem. We are praying that the Lord will give guidance to our leaders and to our community to use these suggestions and their own experience to help lessen this terrible health threat to the North Slope people. These priorities are brought together from the efforts of our subcommittees. All of them are important, and they are not listed in order of importance.

A consensus from our group supports the following action plan:

1. Treatment Center for Barrow: Establishing a local residential alcohol and drug abuse treatment facility in Barrow to serve the North Slope was one of the clearest priorities expressed during all the meetings of the Commission. Right now, only out-patient counselling and protective custody for intoxicated persons are available in Barrow. Someone who needs a more intense, residential program must go to Fairbanks, Anchorage or even to Seattle to participate in one. These programs

may be able to serve the needs of North Slope people, but frequently do not. In addition, they cannot work with a person's home environment. When the person returns to the Slope, the person goes right back to the same home situation in which the drinking and/or drug abuse began. In order to make sure that a residential program starts in Barrow, we recommend the following actions:

- The Borough should lobby the Governor and the Legislature to obtain passage of the full \$3.5 million capital funding request for a Residential Alcohol and Drug Treatment Facility in Barrow. The facility should include space for emergency treatment, for a residential 30 day program and for a halfway house for persons needing a sober place to stay for limited periods.

- The Borough should advance the construction start date of NSB Capital Project 19-30 (Alcohol Treatment Center, Phase II) from the presently scheduled October, 1988, to at least early 1987. We understand that \$2 million in G.O. Bonds have already been sold for this project. We recognize the need for a carefully designed schedule for CIP projects to provide for continued employment and financial stability. However, we feel that this particular project needs to be given top priority for our community. Advancing the construction start date to early 1987 would make funds available which could be used for design and feasibility studies necessary to predict the operating and maintenance costs of the more adequate facility made possible by the expected combination of state capital funds and Borough G.O. Bond funds. We understand that actual construction may not begin until state funds are received and design is complete.

2. Interim facility. We realize that even if the above support is received, design and construction of a permanent facility with all of the necessary programs will take some time. The alcohol and drug abuse problem is so important that expanded efforts should not wait. The current Friendship House/SATS program requires our continued strong support, and it should expand into an interim facility to meet treatment needs until the "ideal" facility is possible. We propose using existing buildings and reprogramming available funds to start an interim facility by July 1, 1986. The facility would allow a prompt beginning to various programs that we hope to see in the permanent facility. The programs would be added to the interim facility as staff and funds become available.

- The Borough Housing Department should be urged to make available the existing 8 unit apartment building in Browerville after construction of the new 32 unit and/or new 8 unit make it possible for the present tenants of the old 8 unit to be moved to new housing.

- After consultation with the State Fire Marshall's office appropriate renovations should be done so that use of the building for a halfway house and/or a small residential



treatment program will meet state standards. The changes would be accomplished with already budgeted funds for renovation of the building required for use by any new tenant. If additional funds are required, we hope that donations or Assembly discretionary funds would be made available for this purpose. The money would have a permanent benefit to the Borough and the community: not only would the alcohol/drug abuse facility get started earlier, but when the permanent facility is built, the 8 unit could then be available for other NSB social service programs.

-Existing Substance Abuse Treatment Services funding could be used to move existing group and individual counselling services from the present Friendship House location to the 8 unit.

-The Borough Administration should ensure that the Substance Abuse Treatment Services program makes necessary budget requests now from both the State Office of Alcoholism and Drug Abuse and the North Slope Borough to make sure that operating and maintenance funds are available for the interim facility. Starting now with these requests should make funding of these costs for the permanent facility easier.

-Both Ukpeagvik Inupiat Corporation and the Arctic Slope Regional Corporation should be encouraged to donate funds and/or design and engineering work for the interim facility (and the permanent facility).

3. Permanent Citizen's Advisory Board. The North Slope Borough should require that the SATS program meet state grant requirements and establish a local Citizen's Advisory Board to continue community involvement in addressing the alcohol and drug abuse problem in our area. We understand that the NSB Assembly now technically fills this role. However, the Assembly obviously has a substantial amount of additional business to consider. Having a specialized citizen's advisory board will allow clearer advice to SATS, the NSB Assembly and the Borough Administration concerning alcohol and drug abuse. In addition, the community of Barrow itself will have a feeling of participation in SATS efforts if more local citizens are involved in alcohol and drug abuse prevention. Our elders, who represent the cultural and traditional strengths of our community, must be included on the Board. Any treatment and prevention program in our area needs to recognize these traditional values.

4. Law Enforcement. We recommend that the North Slope Borough fund two additional investigators for the NSB Department of Public Safety for alcohol and drug abuse cases. Large profits are flowing to drug dealers and bootleggers every week. Providing useable evidence for criminal prosecution of such cases across the North Slope, including Barrow and Prudhoe Bay is a time-consuming and difficult job. Having only one investigator assigned to these issues for the whole Borough does not meet the need for effective prosecution of such cases.

5. Recognize efforts of Commission members concerning ban on alcohol importation. An effort is now underway to give the voters of Barrow a chance to express their views about whether or not alcohol importation into Barrow should be stopped. The Borough Administration should make sure that adequate publicity is given about this issue and for the need for the citizens to vote on it.

6. Mayor's office staff coordination for alcohol and drug abuse efforts. We recommend that the Borough Mayor assign a high-level person on the Mayor's staff to coordinate efforts of the different Borough departments relating to drug and alcohol abuse. This individual, perhaps a Special Assistant to the Mayor, could inspire public attention for this issue, coordinate capital and operating fund requests to address the issue, recognize community efforts concerning the problem, and work with the Citizen's Advisory Board.

7. Health educator positions. We recommend that the North Slope Borough reestablish the health education function within the NSB Health and Social Services Agency. One of the educators must be bi-lingual, to make sure that all NSB residents are reached by the health education efforts. Community awareness of available programs through SATS and Alcoholics Anonymous and other agencies would then be increased. Workshops for service providers and community members about the issue could be organized.

8. Alcohol and drug abuse education for our children. The NSB School Board, the NSB School District Administration and the Parent Teacher Association should be encouraged to put more school district resources into alcohol/drug abuse education for our children:

-Each school should have its own "tub" of the "Here's Looking At You" alcohol and drug abuse materials. This seems to be an excellent program, but the current system of sharing the "tubs" among several schools makes it difficult for concerned teachers to thoroughly cover the material at all grade levels.

-Presently-scheduled district-wide teacher inservice programs must include presentations to make sure that even new teachers understand the deep importance of alcohol and drug abuse prevention on the North Slope. The Citizen's Advisory Board and the health educators could help with inservices by providing speakers and suggestions.

-Although all grade levels need this type of education, there should be special concentration of 4th, 5th and 6th graders. These students have not yet entered the high school area where there is more peer pressure to use alcohol and drugs.

9. Increased funding for media efforts concerning alcohol and drug abuse. We recommend that the North Slope Borough provide increased funding for media efforts for prevention of alcohol and drug abuse. The NSB Teleproduction facility could produce radio and television programs and short presentations that speak directly to North Slope people. A percentage, a minimum of 10%, of the SATS budget in the future should be specifically earmarked for alcohol and drug abuse prevention education. Existing programs such as the "Young People's Show" and "Barrow School News" on KBRW, and the new "Barrow School News" and the Leona Makok talk show on TV could be used for much of this effort.

10. Drug and alcohol abuse treatment for juveniles. Our group has not been able to address the special treatment needs of juveniles who are abusing alcohol and drugs. We know that confidentiality regulations about juveniles may make it impossible for them to participate in adult treatment programs in our community. We recommend that the North Slope Borough work with state agencies to ensure that those of our children who are abusing drugs and alcohol receive treatment programs appropriate for juveniles.

11. Public support. We recommend that the Borough Mayor, other top officials, and especially our community elders, speak out publicly and strongly against the abuse of alcohol and drugs in our community.

\* \* \* \* \*

Mayor Ahmaogak, we have all learned a great deal from meeting together in response to your request. We feel that implementation of the above recommendations will go a long way toward dealing with the drug and alcohol abuse problem. Thank you for giving us the opportunity to meet together and to express our views to you. Our prayers are with you.

Signed,

THE MAYOR'S BLUE RIBBON PANEL ON ALCOHOL AND DRUG ABUSE

[See the attached signup sheet for the listing of people who attended our final meeting of December 16, 1985. For your information, we have also attached a list of the dozens of additional Barrow residents who have attended earlier sessions].

cc: Members of Blue Ribbon Panel



|                          |           |        |
|--------------------------|-----------|--------|
| Josephine Angak          | Box 783   | Barrow |
| Henry E. Christensen     | Box 85    | Barrow |
| BERT HALL                | Box 783   | Barrow |
| Eda Olsen                | Box 6     | Barrow |
| James E. Christensen     | Box 85    | Barrow |
| Ralph Anderson           | Box 801   | Barrow |
| Bill Hall                | Box 17283 | Barrow |
| Michael A. Hall          | Box 808   | Barrow |
| Jack Allen               | Box 951   | Barrow |
| Eda Olsen                | Box 6     | Barrow |
| Nycki Saxton             | Box 783   | Barrow |
| Reginald E. Gates        | Box 66    | Barrow |
| TOM SAXTON               | Box 703   | Barrow |
| JOE M. BARNAMEDA         | SATS      | Barrow |
| Lee A. Okakak            | Box 957   | Barrow |
| Francis Hyle             | Box 1058  | Barrow |
| Charles A. Cyle          | PHS       | Barrow |
| Hugo Engel               | Box 538   | Barrow |
| Robert Covarrubias (Bob) | Box 450   | Barrow |
| David Baumgartner        | Box 324   | "      |
| Eda Swenson              | Box 422   | "      |



December 16, 1985

| NAME                      | ADDRESS      |         |
|---------------------------|--------------|---------|
| Kenneth Toovak, Jr.       | Box 381      | Barrow  |
| Stephen J. Gerrison, M.D. | PHS Hospital | Barrow  |
| Wally Nashaknik           | Box 557      | Barrow  |
| Bert Hall                 | Box 736      | Barrow  |
| Ida Olemaun               | Box 6        | Barrow  |
| James E. Christensen      | Box 85       | Barrow  |
| Ralph Andersen            | Box 801      | Barrow  |
| Bill Hess                 | Box 872383   | Wasilla |
| Michael Jeffery           | Box 808      | Barrow  |
| Jack Smith                | Box 951      | Barrow  |
| Nate Olemaun              | Box 6        | Barrow  |
| Nycki Saxton              | Box 783      | Barrow  |
| Reginald E. Gates         | Box 66       | Barrow  |
| Tom Saxton                | Box 783      | Barrow  |
| Joe M. Barrameda          | SATS         | Barrow  |
| Rex A. Okakok             | Box 957      | Barrow  |
| M. Frances Hoyle          | Box 1058     | Barrow  |
| Carols A. Pyle            | PHS Hospital | Barrow  |
| Hugo Engel                | Box 538      | Barrow  |
| Robert Covarrubias        | Box 450      | Barrow  |
| David Baumgartner         | Box 34       | Barrow  |
| Helen Solomon             | Box 422      | Barrow  |

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|-----------------------|------------------------------------|-------------------|
| GEORGE AHMAOGAK, SR.  | NSB MAYORS OFFICE                  | 852-2111          |
| MARIE ADAMS           | CITY OF BARROW                     | 852-5211          |
| RALP ANDERSEN         | BOX 85, BARROW                     | N/A               |
| JOE BARRAMEDA         | SATS PROGRAM                       | 852-4673          |
| DAVID BAUMGARTNER     | BAHA'I COMMUNITY BOX 321           | 852-6653          |
| RON BOYNTON           | PRESBYTERIAN CHURCH BOX 730        | 852-6567          |
| STANLEY BROWER        | BOX 250                            |                   |
| JAMES CHRISTENSEN     | PUBLIC SAFETY BOX 470              | 852-6111          |
| BOB COVARRUBIAS       | IPALUK ELEMMENTARY SCHOOL, BOX 450 | 852- 11           |
| THOMAS DRAKE          | PUBLIC SAFETY/CORRECTIONS BOX 470  | 852-6111          |
| HUGO ENGEL            | BOX 538                            | 852-4846          |
| CHERYL FRALEY-FINLEY  | A.W.I.C. PROGRAM BOX 69            | 852-3999          |
| SHERYL FRENCH         | DFYS/POUCH A                       | 852-5600 ext. 326 |
| KEN GARDNER           | JUVENILE PROBATION BOX 729         |                   |
| STEPHEN GERRISH, M.D. | PHS HOSPITAL                       | 852-4611          |
| REGINALD E. GATES     | BARROW TRIAL COURTS BOX 2700       | 852 4800          |
| NICK GONZALES         | GENERAL DELIVERY BARROW            |                   |
| PAUL GUNNELS          | BOX 2066, BARROW                   |                   |
| BERT HALL             | HASSA BOX 69                       | 852-3999          |
| MIKE HUELSMEN         | 732 WEST 18th ANCHORAGE            | 276-7723          |
| SUSAN HEASTON         | SATS PROGRAM BOX 69                | 852-4673          |
| BILL HESS             | BOX 872383, WASILLA, AK.           |                   |
| NORM HIBBARD          | UTKEAGVIK PRES. CHURCH BOX 730     | 852-6566          |
| EBEN HOPSON, JR.      | IKAYUQTIT                          | 852-5633 or 3088  |
| ROSIE HABEICH         | CITY OF BARROW                     | 852-5211          |
| M. FRANCES HOYLE      | BOX 1058, BARROW                   | 852-5106          |
| ED HUSSEY             | CITY OF BARROW                     | 852-5211          |
| MICHAEL JFFERYS       | BARROW TRIAL COURTS BOX 2700       | 852-4800          |
| BERTHA LEAVITT        | SENIOR CITIZEN/BARROW              | 852-3966          |
| EDNA P. LEAVITT       | BOX 302                            | 852-2746          |
| BOBBIE LEONE          | SATS PROGRAM BOX 69                | 852-4673          |
| LEEANNE MERCIER       | PHN BOX 69                         | 852-5600          |
| CHARLES MUMFORD       | VILLAGE HEALTH SERVICES BOX 69     | 852-8322          |
| HENRY NASHAKNIK       | BOX 557                            |                   |
| JAMES NEAKOK          | BOX 276                            |                   |
| DEANNE NELSON         | POSTMASTER BARROW                  | 852-6800          |
| REX OKAKOK            | NSB MAYORS OFFICE                  | 852-2611          |

| NAME                | ADDRESS                         | PHONE #           |
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| IDA OLEMAUN         | H&SSA BOX 69                    | 852-3999          |
| NATE OLEMAUN        | PERSONNEL BOX 69                | 852-2611 ext. 229 |
| VERA OLEMAUN        | HEALTH DEPT./BOX 69             | 852-6350          |
| MARGARET OPIE       | BOX 248, BARROW                 | 852-2611          |
| DIANE ORBECK        | PHS HOSPITAL                    | 852-3044          |
| DENNIS PACKER       | PUBLIC L FETY/BOX 470           | 852-6111          |
| MABEL PANIGEO       | DENTAL CLINIC/BOX 69            | 852-5600          |
| ELISE PATKCTAK      | KEYS/POUCH A                    | 852-5600          |
| CAROLE PYLE         | PHS HOSPITAL                    | 852-4611          |
| NYKI SAXTON         | BAHA'I                          | 852-8122          |
| TOM SAXTON          | BAHA'I/FIRE DEPT.               | 852-8122          |
| DOREEN SILVASY      | WAINWRIGHT, AK.                 |                   |
| JACK SMITH          | BOX 951, BARROW                 | 852-3997          |
| HELEN SOLOMON       | VILLAGE OUTREACH/A.W.I.C.       | 852-2942          |
| CLIFF SPENCER       | PASTOR, ASSEMBLY OF GOD/BOX 229 | 852-6101          |
| JOHN TILLY          | PHS HOSPITAL                    | 852-4611          |
| KENNETH TOOVAK, SR. | NSB                             | 852-6335          |
| ERIC M. TIEGER      | ALCOHOLIC ANONYMOUS             | 852-4904 or 4846  |
| LORETTA WILHELM     | MOTHER'S CLUB                   | N/A               |

Perception of Alcohol and Alcoholism among Alaskan Communities

W. Jack Peterson, Bernard Segal, and Robert S. Heasley

University of Alaska, Anchorage



Perception of Alcohol and Alcoholism  
among Alaskan Communities

W. Jack Peterson, Bernard Segal, and Robert B. Heasley  
University of Alaska, Anchorage

Abstract

This study was conducted to learn something about how Alaskans perceive alcohol and alcoholism. The findings indicate that differences in attitudes toward and knowledge of alcohol are related to both urban/rural and native/non-native differences in our sample. The implications of our findings are discussed with respect to alcohol education programs.

Introduction

Alcohol abuse and alcoholism is the primary health and social problem in Alaska. The cost in social and economic terms is only beginning to be recognized (Kelso, 1977), together with an awareness that the problem needs to be confronted on a statewide basis. The extensive use of alcohol in Alaska has propelled Alaska to be the leading state with respect to per capita alcohol consumption. The national rate of alcohol use, about 2.90 gallons per person per year, is far exceeded in Alaska with its rate of 4.54 gallons per person. Alcohol has apparently been incorporated as a normative or customary function for a great many Alaskans, becoming well integrated into some of its peoples' social life.

Despite the widespread use of alcohol, little information is available regarding how alcohol and alcoholism is perceived. It would be interesting, for example, to determine if conflicting or uniform attitudes are held regarding an understanding of alcoholism, and how these perceptions may differ from region to region in Alaska. This study, part of an ongoing series of investigations exploring alcoholism in Alaska, focuses on providing some information about how a sample of adult Alaskans view alcohol and alcoholism.

Learning how the public views alcohol and alcoholism is particularly important in that public opinion on the etiology of alcoholism can influence how the problem is treated, especially from a legislative viewpoint. If, for example, public opinion perceives alcohol addiction as related to the availability of alcohol, the emphasis will be directed toward regulation of beverage alcohol. If, on the other hand, social conditions are believed to be a contributing cause, then a solution to the problem shifts from a legalistic and punitive approach to a human services orientation. The public attitude, however, is not generally consistent (Kinder, 1975), ranging from a demand for prohibition to the lowering of the drinking age in some states. Thus, it is important to not only assess prevailing attitudes toward alcohol and alcoholism in order to determine its implications for education,

prevention, and treatment, but to also evaluate how public opinion is likely to affect public policies. Additionally, knowledge of how alcoholism and alcohol abuse is perceived can aid in the development and implementation of educational campaigns focusing on alcohol education. Specifically, knowledge of how people view alcohol can contribute to the development of a strategy to maximize the effects of alcohol education campaigns. Since the state of Alaska has been exposed to an extensive media campaign on alcoholism, it would also be of interest to learn what impact this campaign might have had.

### Method

#### Sampling

An area probability sample of 512 households was conducted in nine different communities representing the diversity of Alaska's peoples. The sample sites represented the geographic and climactic differences, social and economic differences, and included representation of Alaskan ethnic groups, Eskimos, Indians, Aleut, and non-native. The communities of Barrow (n = 29) and Aniak (n = 18) were selected so as to have representatives of both Northern and Southern Eskimo. Fort Yukon (n = 29) and Beaver (n = 12) were included to represent the interior Athabascan Indian. Old Harbor (n = 20), Angoon (n = 25), and Hydaburg (n = 26) were

chosen to represent the Aleut, Tlingit and Haida respectively. Anchorage (n = 300) was selected since it is the largest city in the state, containing nearly half of the state's population. And finally, Valdez (n = 53) was included in our sample because it was one of the communities along the trans-Alaska pipeline corridor and went through a process of great change during the construction period. Drinking also takes place in all of these settings, although it is not always socially or legally sanctioned.

The person interviewed was an adult member of the household present at the time of the interview. Of the 512 respondents, 54% were women; 46% were men. The ethnic composition is as follows: 68% non-native, 8% Eskimo, 9% Tlingit-Haida; 3% Aleut, 7% Athabascan, 3% black and 2% classified as "other." Ages ranged from the late teens to above sixty, with a median age of 34.5 years. The median education level was 12.2 years. The selection of households in each community was done randomly.

#### Questionnaire

Each interviewee was asked to respond to a 47-item questionnaire containing a series of questions pertaining to alcohol and alcoholism, together with demographic data. Each question was asked by the interviewer and the answer recorded verbatim or by checking an appropriate category on the survey.



## Perception of Alcohol

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In some communities a translator was required, and in these cases special care was taken to ensure the reliability of responses by asking the respondent if what was recorded or scored represented the intended answer.

### Results

One section of the survey dealt with attitudes toward and knowledge of alcoholism. One of the items was whether the respondent approved or disapproved of drinking. Of 505 total answers, 68% (344) voiced approval, while 32% (161) did not. There is, however, significant variation in attitudes with the larger non-native communities (Anchorage and Valdez) accounting for 75% (260) of the total number of people (344) who expressed approval of drinking. Opinion among the remaining several communities was less supportive, with 54% (84) approving and 46% (73) disapproving.

A second question was "How would you define alcoholism?" The definitions which were obtained ranged from the very sophisticated, "a physical dependence on alcohol," to a functionally descriptive definition, "It's when you start drinking the after-shave lotion." Other responses were: "a person isn't capable of helping himself; " "a disease;" "a method of escaping existing reality;" "it's bad;" "a sickness;" and "not able to handle alcohol."

Each of the responses was categorized into one of four

classes of definitions derived by Peterson (1975). The classification and statistics for each category are: (a) Alcoholism related to excessive drinking--19% (102); (b) Alcoholism as a form of dependency--47% (244); (c) Alcoholism as a mental or physical illness--24% (126); and (d) Alcoholism defined as affecting a person's life style--10% (53).

The response to the question, "Do you think alcoholism is a disease?" resulted in 79% (406) saying "yes" with opinions equally divided between rural (80%) and urban (79%) areas. Respondents were also asked why they thought alcoholism was a disease. The most frequent answer was "because it cannot be controlled by the individual," given by half of the sample (50%, n = 237). Twenty-eight percent (146) answered that alcoholism is a disease "because it has physical repercussions." Other responses were quite varied, and too vague for categorization.

Several questions were also presented exploring personal attitudes and knowledge about drinking and about alcohol and alcoholism. Of these, the question, "What kinds of people become alcoholics?" obtained one predominate answer, "all kinds" (56%, n = 283), with "those lacking in will power" (22%, n = 114) second, followed by "those people being under pressure" (6%, n = 32), ranking third. Eighty-five percent (n = 407) of the respondents thought that alcohol is a drug,

and 83% (426) thought that there is a statewide drinking problem in Alaska, with 50% (256) thinking that people in Alaska drink more than people outside of Alaska, but 46% (232) of the sample thought that alcoholism is worse in Alaska than "Outside" (in the lower forty-eight states). Only 38% (195) thought that there would be fewer alcoholics if alcohol were harder to get, while 59% (303) thought not. Rural respondents agreed (52%, n = 83) with the above statement to a greater extent than did urban ones (32%, n = 112).

#### Discussion

Our findings indicate that although there is a general awareness about alcohol and alcoholism in Alaska, there is also much variation with respect to knowledge and attitudes toward alcohol and alcoholism. The recent extensive alcohol education campaign apparently contributed to inform about alcohol (e.g., alcoholism is a disease) but did not seemingly have a uniform effect. Some of the variation in the responses we obtained is related to rural-urban differences. For example, although alcohol is consumed all over the state, it is predominately the larger, urban, primarily non-native cities (Anchorage and Valdez) that express a greater approval of drinking than rural areas. While drinking does occur in the rural areas, it is not met with the same level of approval as indicated in Anchorage and Valdez. This differences seems to

suggest that alcohol may not be as well integrated into the rural, predominately native, communities as it is in the larger urban centers. Native communities may be expressing greater concern about drinking because alcohol is not handled well and thus is perceived with a great deal of ambivalence.

There is general agreement among respondents that alcoholism is a disease, but there seems to be little agreement and/or understanding as to why it is constituted as such. Yet, a large percentage of those interviewed believed that alcoholism is a problem in Alaska. Interestingly, those in the rural areas believed to a greater extent than those in Anchorage and Valdez that restrictions on the availability of alcohol would reduce the problem.

These results have an interesting implication for Alaska and for alcohol education campaigns. On the basis of this survey, in which we believe a representative sample of rural native communities was obtained, it appears that educational efforts, particularly directed at the native level, may have to change emphasis. There is ample recognition that alcohol is a problem, and that its reduction will curtail the problem, a view currently held by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and expressed by its director, Ernest Noble, Ph.D., M.D. Thus efforts might need to be directed toward furthering an understanding of how to deal



with the problem in terms of developing community awareness, and not focusing on individual drinking. Efforts to further an understanding of the nature of alcoholism may also be undertaken. In contrast, educational campaigns for larger centers, such as Anchorage and Valdez, might need emphasis on changing overall consumption patterns, that is, educating the general public that there is a relationship between availability of alcohol and incidence of alcoholism. Thus, it appears that in addition to any general alcohol education program, more specialized or tailored ones are needed which are directed toward specific target groups.

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Footnote

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Elements of this type of community response are used on American Indian Reservations in Indian Health Service Hospitals where the medicine man is used side-by-side with the modern physician in seeking holistic medical care of their target populations.

The Spirit Movement program does not support an unrealistic "going back" to an earlier time of life when satellites, television, telephones, and computers did not exist. It does advocate looking towards the elements of strength and spirituality that have sustained these peoples throughout the centuries as a way of surviving this cultural shock and combatting the trend toward cultural assimilation, by being proud of who Native peoples are and of the heritage that makes them special and unique.

There is a way of providing health and social services to Native communities without alienating them or imposing non-

traditional, threatening ways of treatment on them. It is by being aware of their historical roots and cultural differences and bringing the awareness into the type of medicine we practice.

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## VILLAGE ALCOHOL CONTROL: TRADITIONAL METHODS AND THE "LOCAL OPTION LAW"

THOMAS D. LONNER

The primary immediate cause of death and significant injury in rural Alaska is alcohol-related behavior resulting in homicides, suicides, and accidents. This paper reports on the early implementation and consequences of a modern legal solution to this public health problem--the "local option law." Alaska's is one of many efforts to combat the loss of village residents due to abusive and problem drinking. Although too recent a law to evaluate its outcomes on village health and safety statistics, it is not too early to compare the law to purposes, history, culture, and social and political organization of the villages for whom the law was provided.

Alaska's local option law is a legal solution devised to assist villages in the exercise of greater local control over the availability of alcohol. The law provides an opportunity for villages to elect one of the following mutually exclusive "options": 1) prohibit the sale of alcohol unless sold under a single community liquor license, 2) prohibit the sale of alcohol with the exception of specific types of retailing, 3) prohibit the sale of alcohol, or 4) prohibit the sale and importation of alcohol. Due to the magnitude of the public health problem, the state government, through the local option law, granted to villages certain powers usually reserved to larger municipal powers; it also reinforced village options with the threat of state police enforcement.

The problems stemming from the use of alcohol in villages affect not only the drinking individual but the entire community. Due to their cultural, social, and economic origins, Alaska villages operate as large family units. Village populations are so small, interrelated, and interdependent that they become vulnerable to the entire array of negative effects associated with excessive drinking, including interpersonal violence, child neglect, loss of economic opportunity, demoralization, and physical deterioration. Therefore, the alcohol-related social impacts severely impair family and community morale, perpetuate a cycle of negative, even disastrous, events, and jeopardize the physical and cultural survival of the village.

Many villagers consider that the future of their culture is dependent solely on the traditional values and caliber of the future community leaders, that is, the young people of the community. The villagers' concern with alcohol is less a preoccupation with the personal health or moral implications of ingesting alcohol than with the death of village members, particularly death among

the young men. The deaths of young men, while terrible personal and family tragedies, also constitute a major cultural concern.

Banning alcohol importation and sale was justified in arguments for the local option law which suggested that the public health problem posed by alcohol was quite great and that there is a close and substantial relationship between the means (the local option law) and the ends (limiting the magnitude and tragedy of the public health problem). The prohibition of sale and importation becomes potentially more powerful under the local option law than under the limited prior authority available to villages in that:

- 1) the local option law extends village authority over all residents and visitors, who previously may have denied the authority of the village governing bodies to constrain the sale and importation;
- 2) the local option law extends village authority to a five mile boundary around the village;
- 3) the local option law requires compliance by commercial carriers, under severe penalty for violations;
- 4) the local option law requires compliance by all state-wide and regional alcohol distributors; and
- 5) the local option law implies some state law enforcement and judiciary response to violations.

In practice, the option banning sale and importation is by far the most popular choice, given village desires to limit severely, if not prohibit, access to alcohol. Many have translated their option to mean "prohibition." They (and many government agency personnel) talk about voting "dry" and having "dry" communities. To villagers, "dry" means no more alcohol, no more drinking, and no more drunks in the villages. Were it possible for village law to prohibit totally the manufacture or possession of alcohol and to search and seize persons and property for evidence, many villages would have chosen to do so. The fact that the United States Constitution denies villages these powers is inexplicable and frustrating to them, since their motive is to save human lives, entire communities, and entire cultures.

The new state law did not provide for: 1) real increases in police effort; 2) the cultural, social, and situational variety



among villages; 3) the village-desired prohibition of the manufacture, possession, or use of alcohol; or 4) alternative flexibilities of enactment or enforcement desired by villages in order to have the least intrusive law to solve their particular problems. Thus, in many villages, the law is and must be supplemented by the use of more traditional, ingenious, sensitive, extra-legal, culturally appropriate, and sovereign means to achieve desired ends. These supplemental means suggest that untapped self-controls are still available in villages or may be re-learned to enhance public health and safety while maintaining cultural integrity and continuity.

If power is known primarily through its exercise, then villages retain powers via extra-legal, unsanctioned elections and ordinances as well as local enforcement and adjudication; that is, the consequences of the exercise of power are real, even if the authority of the village is only apparent or achieved through the consent of the governed. There appears to be some implied consent to or support of village extra-legal methods by external authorities to accomplish ends desired by both the village and external authorities, as long as these methods become neither publicized nor challenged.

Some villages, having adopted an option under the local option law, find it necessary to pass implementing and supplementary ordinances dealing with public drunkenness, alcohol possession, search and seizure, involuntary commitment, and jail and financial penalties. These villages see the local option law as merely a back-up to other forms of local control, and an external threat to be used if local authority is violated. In some instances, these ordinances have been used to modify the terms of the elected option, even though they do not have the legal power to do so.

Some village cultures find the local option law inconsistent with their accepted modes of community problem-solving. Differences occur in the arena of who makes decision, how decisions are made, how interventions are made in the behaviors of others, the role of informing as a form of social control, the range of acceptable control mechanisms (e.g., embarrassment, isolation, exile, jail, internal versus external policing), and the degree of rigidity or flexibility that is desired in community-wide laws, enforcement, penalty, and rehabilitation.

The local option law, while empowering villages to control aspects of their own lives, still remains a Western law. It was not designed or written by rural people, and its purpose, intent, powers, procedures, language, limitations, and relationships to other parts of Western law and law enforce-

ment remain unclear to many rural people. Villagers also see that other, vaguely understood aspects of Western law formally prohibit villages from taking actions which would solve the very problems for which they are turning to the local option law. In order for them to utilize fully the local option law, they may wittingly or unwittingly violate other laws.

In effect, villages using the local option law are not writing their own law, consistent with the underlying elements that make aggregations of individuals and families into "communities." The writing of law comes from receiving or assuming generalized powers, then convening to draft, adopt, implement, and revise one's own laws to deal directly with self-perceived problems. The use of the local option law is less an exercise in the writing of law than in trying to solve a most difficult problem through the adoption of a pre-formulated and externally-designed option.

Given these conditions, the enactment of a new law facilitating local control over alcohol raises many questions. The most obvious question is whether the various legal options will significantly help communities over time, to reduce the incidence of negative and dangerous events. A less obvious but potentially more significant product may be the growth of local and indigenous management of problems and the personal internalization of community values and rules. In addition to the process of extra-legal modification of the law, some villages initiated a reinvestment of authority in more traditional local governance and in those social control methods which had proved acceptable and effective in the past. Thus, these villages appear to pursue their local objectives by relying on the threat of external force, the enhancement of local control authority, and the flexibility of action afforded by their remoteness and the consent of the governed.

Communities which believe that they have retained sovereign powers to control their internal affairs and their relationships with the outside world tend to expend more energy than other communities in the construction and enforcement of local laws. Since they do not derive their authority from larger governments or bodies of law, nor do they feel they can depend on outside law enforcement supports, they must exercise their authority continuously; it is likely that continuous exercise of authority makes it easier to continue. Characteristics of continuous law-making and enforcement in these communities include some of the following:

- signed commitment by each community member to support community laws and the actions of council

- members;
- commitment by each community member to support physically and psychologically the law enforcement effort;
- annual review, reconsideration, amendment, specification, rejection, and re-enactment of the law by the entire community;
- creation and maintenance of local law on a wide range of daily life matters, such as loose dogs, curfews, speed limits, truancy, drug use, drunken behavior, theft, threatening behavior, family neglect, gambling, fish and game salvage, and others;
- no assignment of enforcement to specific individuals, so that responsibility rests with each and every community member;
- enforcement by large numbers of persons (men, women, children, elders, council members) at the same time and place, creating mutual pride and support and re-individualization of the burden;
- formal investigation, trial, and punishment methods;
- no record kept of violators except in community memory, so that there is no long-term permanent reduction of future opportunities for individuals;
- formal methods of exile with hoped-for and encouraged returns and re-integrations;
- semi-permanent exile of consistent violators, particularly violent persons and substance distributors;
- increased, rather than decreased, enforcement of alcohol restrictions during major celebrations;
- extensive monitoring of luggage and freight at points of entry into the community;
- immediate destruction of prohibited substances at point of entry, as the basic fine (rather than later trial) for attempted importation and as the basic social embarrassment;
- more intensive enforcement of repeated violators' activities within and without the village (through villages' or relatives' reporting systems in other, particularly hub, communities);
- conviction of violators on the grounds of possession and use or using possession and use as *prima facie* evidence of illegal importation;

- exercise of controls over visitors as well as residents;
- illegal search, seizure, and destruction of alcohol from private homes based on observed and reported possession and use;
- unaltered policy of prohibition, but methods and penalties of enforcement renewed or otherwise modified to meet new needs; for example, penalties may be stiffened by reducing the amount of basic physical support provided by peers;
- non-reliance on outside enforcement entities or procedures, since these commonly result in after-the-fact actions; the village desires and achieves immediate behavior intervention and modification.

Thus, the local option law is only one mechanism of many which encourage more community self control.

There are communities which view the local option law as an unnecessary, redundant, and useless tool to reduce access to alcohol. These communities have had a long tradition of controlling access through internal formal governance (i.e., each community member sharing some of the active responsibility for controlling access and use). Some of the means used by these communities are legitimized by community consensus but may be illegal in that they violate the constitutional rights of residents; lack of complaint about violations is due, in large measure, to shared cultural community values, respect for traditional and community authority, and a desire to live within the protected confines of a conservative but healthy community.

The supports for the continuing tradition of enforced "dryness" appear limited in number:

- geographic remoteness;
- late contact with the outside world;
- strong religious values from the origins of the community;
- consensus about 1) the authority of the elected or traditional government and the community itself, 2) legal and/or traditional local sovereignty, 3) the merits of a conservative range of tolerated behaviors, and 4) absolute restrictions and strict enforcement being the only means to maintain the healthy lifestyle;
- remoteness from state-supplied law enforcement agencies;

- no tradition of extensive alcohol use, related problems, or tolerance of use;
- a tradition of local law-making, continuous law enforcement, and verified attachment to the substance and pre-eminence of the law;
- pride in having a good community reputation;
- ability to control or maintain distance to nearby industrial development;
- ability to control the behaviors of new Native and non-Native residents;
- a healthy continuing subsistence resource base;
- maintenance of distant relationships with government programs, resulting in reduced contact, few negotiated compromises, and greater self-determination;
- family and cultural obligations which require extensive visiting and, thus, close uniform scrutiny of private lives as a form of social control and support;
- members who cannot tolerate such close restriction emigrating or exporting their activities;
- members who refuse to abide strictly by community rules being closely watched, counselled, penalized, or exiled;
- members who violate the rules but whose behavior is not found troublesome being watched closely but not unduly punished;
- persons who wish a retreat from more permissive communities being allowed to immigrate and settle in the village;
- continuous discussion of, voting on, and enforcement of local restrictions;
- continuous monitoring of the bad events in other communities.

Some villages appear too divided or demoralized, at present, to organize themselves to utilize any of the options provided under state law or take other actions to control alcohol use and behaviors.

It appears that those communities that desire greater self-determination over aspects of their quality of life and whose traditional systems no longer suffice (for a variety of reasons) to meet these objectives are the most likely to look to the local option law and other tools to achieve their goals. In other words, the communities that are most likely to avail themselves of the local option law are those that are in a transition, returning to a healthier, self-controlling state; these may be commu-

nities that have experienced a twenty-year decline in quality of life due to factors mentioned earlier. Thus, it is suggested that the local option law does not create healthier communities but that healthier communities or communities that are becoming healthier are the ones most attracted to the local option law as an additional support. In general, the village attributes which are most likely to be predictive of successful local option law outcomes are:

- a secure, activist, and strong village or city council;
- a village council which is not itself typified by abusive use of alcohol;
- consolidation of or unanimity among all village power bases;
- a population marked by stability, in terms of racial composition, migration, economy, goals, and problem rates;
- a community desire and ability to identify problems, set goals, establish priorities, establish solutions, and take action as a community;
- other difficult goal-directed actions taken by the community which indicate that the community can exercise self-control.

Even in the most positively responding villages, the use of Western legal tools to meet community objectives is highly problematic. The contrasts which exist in the introduction of Western legal solutions to problems in the daily lives of geographically and culturally remote villages are predictive of unresolvable tensions, if not direct conflict. These contrasts are summarized in Table 1.

Given these complexities, it is worthwhile to ask, how well has the local option law served village public health and safety objectives? The immediate objective was to reduce the incidence of alcohol-related public behavior (such as violence and public drunkenness) and the community fear which accompanies it. Since the local option law elections, many villages have perceived a steep decline in visible drunken behavior. Whether or not this perception is correct (and it is likely to be correct), whether or not there is less actual drinking or drunkenness as distinct from visible or public drinking or drunkenness, are probably not relevant distinctions in the villagers' assessment of the quality of their daily lives.

There is no indication that the overall rates and volume of alcohol consumption have declined since the inception of the local option law. What, then, accounts for the perceived steep decline in alcohol-related

Table 1. Contrasts between local option law and Western legal system (non-local) in controlling alcohol in Alaska's villages.

| Local                               | Non-local                            |
|-------------------------------------|--------------------------------------|
| community power                     | state power                          |
| Native                              | non-Native                           |
| traditional                         | modern and Western                   |
| protective solutions                | punishing solutions                  |
| preventive solutions                | punishing solutions                  |
| person-oriented                     | law-oriented                         |
| rule by consensus                   | rule by constitution                 |
| decentralized solutions             | centralized solutions                |
| flexible solutions                  | inflexible solutions                 |
| pre-eminent rights of the community | pre-eminent rights of the individual |

problems and behaviors in the village? Findings suggest these changes are due to altered patterns of use by the using population, including:

- a) increased "privatization" of alcohol use and behaviors,
- b) altered and intermittent patterns of distribution and consumption,
- c) substitution of other substances, and
- d) externalization of the behaviors and problems from the villages to regional hubs and larger communities with large health care and public safety services.

What, then, is the benefit of the local option law? Some villagers are under the illusion that the law is self-executing, that by passing the law, the reality of daily life will automatically change. This

illusion is not totally without foundation. What appears to happen in some villages is that the vote on the local option constitutes an elaborate reaffirmation of village authority and rules. The threat of external force appears to support and mobilize the internal control mechanisms of the village and thereby produce modified behaviors among residents, including reduced drinking and improved morale. The longevity of these positive social health changes will depend, ultimately, on the continuing development of greater internal village controls and corresponding improvements in the perceived quality of life. What is achieved, ultimately, by the local option law may be less some formal control over alcohol than enhanced village self-control over vital aspects of community life, health, safety, and morale.

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forces in this rural environment contributed to the medical and mental health problems of the people, we believe that the dynamics of this rural system also contributed to the successful implementation of the linkage. The strong value accorded cooperation in this rural area affected systems collaboration positively. Additionally, the basic competence of professional and lay persons, a competence laced with a healthy pragmatism, promoted the interpersonal relationships that strengthened the cooperative effort.

The Mental Health Initiative concept was designed in the mid-1970s, but it has great relevance to the political and service realities of the 1980s. National emphasis is now being placed on the local delivery of services. The appropriate expectation is that community-based services shall be provided with a minimum of duplication and with maximum efficiency, achieved partly by interdisciplinary and interorganizational cooperation. Local health workers attuned to such a philosophy can comprehensively intervene with the family and the community systems where the patient lives and works.

The linkage project we describe is relevant to the 1980s. It was formally ended with a commendable

record after 14 months. Reduced Federal support for community programming has prematurely terminated this linking of primary health care and mental health services.

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## Self-Inflicted Gunshot Wounds Among Alaska Natives

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#### SYNOPSIS . . . . .

*Deaths by violence (accidents, homicide, suicide) have increased significantly among Alaska Natives who have a suicide rate three times that of the general U.S. population. Self-inflicted gunshot wounds comprised 75 percent of the suicides among Alaska Natives from 1976 through 1980. A review of psy-*

*chiatric consultations concerning 34 Alaska Natives who had survived a self-inflicted gunshot wound indicated some common characteristics.*

*Of the group, 28 were male, and 20 had been using alcohol at the time of the shooting. Interpersonal conflicts were cited by most persons as partial motivation for the shooting, and most shootings were impulsive rather than premeditated. Few patients had a psychiatric history or appeared impaired at the time of the consultation.*

*Cultural and intrapsychic factors that might contribute to this high rate of self-destructive behavior were examined. These include a proscription against verbal expression of negative affect and an increase of non-Native influences with subsequent social disorganization and cultural conflict.*

**F**OR SEVERAL DECADES, DEATH BY VIOLENCE has increased significantly among Alaska Natives. In the period from 1950 to 1974, mortality by violence

(accidents, homicide, suicide, alcohol) in this population grew from less than 20 percent to greater than 40 percent of all deaths. During the same pe-

riod, the death rate per 100,000 for suicides among Alaska Natives grew from less than 15 per 100,000 population to greater than 30. The rate for the non-Native United States population remained constant at slightly more than 10 per 100,000 (1).

A large number of deaths by suicide of Alaska Natives have been committed by self-inflicted gunshot wounds. It is probable that survivors of self-inflicted gunshot wounds are similar psychodynamically to those who died by this method, since most survivors sustained serious wounds to the trunk or head which would have been fatal if they had not been treated. Further, these persons are likely to differ qualitatively from people whose suicide attempts, such as a drug overdose, were less likely to result in mortality or significant morbidity. Drug overdose attempts are often accompanied by ambivalence and the knowledge that one will likely survive. This study attempts to explore and begin to understand factors contributing to the alarming rate of suicide by firearms of Alaska Natives.

### Methodology

The Alaska Native Medical Center in Anchorage serves as a source of primary care for Alaska Natives in the Cook Inlet region as well as the referral center for regional hospitals in rural and Bush Alaska (areas accessible only by plane). The center has an active psychiatry department staffed by psychiatrists and psychiatric nurse practitioners. This department provides consultation upon request for medical and surgical patients.

For the 6 years from July 1975 through June 1981, 34 consultations were completed concerning patients who were admitted for the treatment of a self-inflicted gunshot wound. Their charts were reviewed for information that might suggest factors contributing to these self-inflicted injuries. The non-systematic nature of the consultations in this retrospective study suggests an underreporting of potentially significant issues contributing to the shootings.

### Results

Table 1 is a summary of the cases. The 34 charts were reviewed for age, sex, Native group, alcohol intake at the time of the event, location of the wound, and alleged motive. Chi square analysis was employed to determine significance.

Of the 34 consultations completed, 5 self-inflicted wounds were felt to be accidental by the patient or consultant. In one of these events the patient was playing Russian roulette, while another patient re-

ported that he had been cleaning his weapon when it discharged. Six patients were female, and the remaining 28 were male. The ages ranged from 13 to 47 with a mean of 21.4 years. Fifty-nine percent had been using alcohol at the time of the shooting.

Interpersonal conflicts were cited in the majority of cases as partial motivation for the self-inflicted shooting. The conflict was usually within the family of origin or within a romantic relationship. Although an intrapsychic conflict might have been experienced and, indeed, could have been a major factor in the shooting, many patients attributed the act to the coexisting interpersonal conflict or to the fact that they had been drinking. Several patients reported the recent suicide of a close family member, often as a result of a gunshot wound.

### Case Reports

**Case A.** A 31-year-old single Eskimo male shot himself in the chest while intoxicated. The patient was not certain why he shot himself; "The gun was on the wall, not loaded, and I took it down and loaded it and just pulled the trigger . . . Can you figure out why I did that? Loneliness is all I can figure." At the time of the consultation it was noted that he was not depressed in affect and was reluctant to discuss what had occurred; "I can't think about killing or shooting myself anymore. Just forget it. It happened. It's over."

**Case B.** A 20-year-old single Eskimo male was admitted twice in 2 months, having shot himself in the abdomen with a 22-caliber rifle both times. The first incident occurred at a boarding school away from his home village, and the second at his parent's home, where he had returned to convalesce. Both episodes were alcohol related.

Two months before the initial admission, a brother of the patient had died after shooting himself. The patient mentioned dreams about his brother which increased while in the hospital. Each time he expressed remorse over his act and denied ongoing suicidal ideation. During the second admission another brother was killed in a snowmobile accident, resulting in this patient's early discharge to his village.

**Case C.** A 21-year-old Eskimo female separated from her husband shot herself in the abdomen with a 30.06 rifle. She was not drinking at the time. She had separated from her husband 3 months earlier and stated, as a motive for the shooting, an inability to choose between her boyfriend or her hus-



Table 1. Survey of consultations concerning 34 Alaska Natives with self-inflicted gunshot wounds

| Native group and sex | Alcohol related | Wound location | Motive or comment                                                                         |
|----------------------|-----------------|----------------|-------------------------------------------------------------------------------------------|
| Eskimo, M            | No              | Abdomen        | Brother beats him.                                                                        |
| Eskimo, F            | No              | Chest          | Marital problems.                                                                         |
| Eskimo, M            | Yes             | Abdomen        | Marital problems.                                                                         |
| Eskimo, M            | No              | Abdomen        | Ejected from home by father.                                                              |
| Aleut, M             | Yes             | Face and chest | 2 separate shootings 8 months apart.                                                      |
| Eskimo, M            | No              | Hand           | Mentally retarded. Considered accidental.                                                 |
| Eskimo, M            | Yes             | Abdomen        | Brother committed suicide by firearm several months earlier.                              |
| Eskimo, M            | Yes             | Axilla         | Despondent over girlfriend's marriage to another man.                                     |
| Eskimo, M            | Yes             | Abdomen        | Ejected from home by brother.                                                             |
| Eskimo, M            | Yes             | Abdomen        | No motive given. Remembered nothing.                                                      |
| Eskimo, M            | No              | Abdomen        | Not getting along with older brother.                                                     |
| Indian, M            | Yes             | Jaw            | Brother beats him.                                                                        |
| Eskimo, M            | Yes             | Thigh          | Argument with brother.                                                                    |
| Eskimo, M            | Yes             | Abdomen        | Conflict with a woman.                                                                    |
| Eskimo, M            | Yes             | Thigh          | Conflict with sister and brother-in-law.                                                  |
| Eskimo, M            | Yes             | Leg            | Father died 11 months earlier. Girlfriend marrying another man.                           |
| Eskimo, M            | Yes             | Head           | Playing Russian roulette. Claimed shooting was accidental.                                |
| Eskimo, M            | No              | Abdomen        | Felt to be accidental.                                                                    |
| Eskimo, M            | No              | Abdomen        | Stated he was cleaning gun and it discharged.                                             |
| Eskimo, F            | No              | Abdomen        | Could not choose between husband and boyfriend.                                           |
| Indian, F            | Yes             | Abdomen        | Multiple domestic problems.                                                               |
| Eskimo, M            | No              | Abdomen        | Argument with girlfriend.                                                                 |
| Eskimo, F            | Yes             | Abdomen        | Boyfriend in jail.                                                                        |
| Eskimo, M            | No              | Neck           | Older brother committed suicide by firearm 6 months earlier.                              |
| Eskimo, M            | No              | Abdomen        | Angry at others interfering in his life.                                                  |
| Eskimo, M            | No              | Forearm        | Marital discord.                                                                          |
| Eskimo, M            | Yes             | Face           | Brother committed suicide 5 years earlier. Patient stabbed self in heart 4 years earlier. |
| Eskimo, M            | No              | Leg            | Felt to be accidental.                                                                    |
| Indian, F            | No              | Leg            | Prior drug overdose.                                                                      |
| Eskimo, F            | Yes             | Arm            | Despondent over relationship with boyfriend.                                              |
| Eskimo, M            | Yes             | Abdomen        | Ex-girlfriend would not talk to him.                                                      |
| Indian, M            | Yes             | Face           | Problem with girlfriend. 3 suicides in family.                                            |
| Aleut, M             | Yes             | Chest          | Loneliness.                                                                               |
| Eskimo, M            | Yes             | Abdomen        | Fight with a girl. Brother committed suicide by gunshot 1 year earlier.                   |

NOTE: M male, F female.

band. She stated, "I was overwhelmed with personal problems and did not feel I could talk with anybody about them . . . I was only thinking about shooting myself and was touching the gun when it went off." She expressed a difficulty in being able to verbalize her problems.

At the time of the interview, she felt more able to handle her concerns and an increased openness and ability to communicate with her parents. She said that she felt like living again.

**Case D.** A 16-year-old Eskimo male shot himself in the abdomen with a low-caliber pistol. He had been drinking at the time and used this fact to explain the shooting: "It was an accident . . . I was drinking." The motive given was remorse following a fight with a girl he described as disliked by the majority of villagers: "I just couldn't get the bad feeling inside of me away . . . I wanted to get that feeling out."

Twelve months earlier a brother of the patient shot himself in the abdomen and died. The patient was close to this brother. The patient had recently expressed to friends that he felt alone and lonely. He had told someone at school that he had a pocketful of bullets and would be dead by the next day.

### Comparison with Total Alaska Population

Mortality data from death certificates were examined to identify deaths attributed to self-inflicted gunshot wounds among all Alaskans for the years 1976-80 to gather an impression on the magnitude of the problem. Computer printouts were obtained from the Office of Information Systems, Department of Health and Social Services, State of Alaska, Juneau. Deaths judged to represent suicide by firearm and accidental death by firearm were tabulated separately. Accidental deaths included those in

which someone other than the deceased discharged the weapon accidentally.

The Alaska State demographer supplied the following estimates for the State's population, based on the 1980 census, which were used to derive death rates per 100,000 population:

| Year | Total population |
|------|------------------|
| 1976 | 410,700          |
| 1977 | 413,100          |
| 1978 | 403,100          |
| 1979 | 400,600          |
| 1980 | 400,481          |

There were minor variations in the population from year to year, primarily among the non-Native population, but the variation was less than 10 percent from the highest to the lowest year. Death rates in all years were based on the 1980 census data (table 2). Components of the Alaska population in 1980 by race and group were as follows:

| Race or group              | Population | Percent of total <sup>1</sup> |
|----------------------------|------------|-------------------------------|
| Indian                     | 21,849     | 34.1                          |
| Eskimo                     | 34,135     | 53.3                          |
| Aleut                      | 8,063      | 12.6                          |
| Total Alaska Native        | 64,047     | 100.0                         |
| White                      | 308,455    | 91.7                          |
| Black                      | 13,619     | 4.0                           |
| Asian and Pacific Islander | 8,035      | 2.4                           |
| Other                      | 6,325      | 1.9                           |
| Total non-Native           | 336,434    | 100.0                         |

Statistics on suicide and accidental deaths by firearm for the Native and non-Native populations are presented in table 2. The mean rate for Natives was 24.0 and for non-Natives, 13.3. When deaths by firearm which were ruled accidental are compared, the 14.1 rate among Natives is remarkably greater than the 3.6 per 100,000 for non-Natives.

Total suicide deaths by all means were also observed (table 2). The higher rate of suicide among Natives as compared with non-Natives is maintained. Four of five deaths ruled to be suicide in Alaska resulted from firearms in these years.

Since 1978, deaths among Alaskan Natives were recorded by the decedent's group. The rate of suicide by gunshot wound in relation to total suicide deaths of Eskimos, Indians, and Aleuts are compared in table 3. No significant difference was observed ( $P > 0.3$ ).

## Discussion

Suicide attempts by firearm have a high potential for lethality. Many persons whose case records were reviewed required air evacuation to the Alaska Native Medical Center in Anchorage, and they arrived in a severely compromised physiological state. Without skilled surgical and medical intervention both before their journey and on arrival, they might not have survived. That they survived might have been due to the fortuitous course of the bullet; many do not survive such wounds long enough to receive medical care.

Table 2. Firearm deaths (suicides and accidents) and total suicides among Alaskans, by sex, 1976-80

| Year                         | Native |        |       |                   | Non-Native |        |       |                   |
|------------------------------|--------|--------|-------|-------------------|------------|--------|-------|-------------------|
|                              | Male   | Female | Total | Rate per 100,000  | Male       | Female | Total | Rate per 100,000  |
| Total suicides by firearm    | 60     | 17     | 77    | <sup>1</sup> 24.0 | 181        | 43     | 224   | <sup>1</sup> 13.3 |
| 1976                         | 12     | 3      | 15    | 23.4              | 32         | 9      | 41    | 12.2              |
| 1977                         | 17     | 1      | 18    | 28.1              | 43         | 10     | 53    | 15.8              |
| 1978                         | 12     | 3      | 15    | 23.4              | 46         | 8      | 54    | 16.1              |
| 1979                         | 8      | 4      | 12    | 18.7              | 25         | 7      | 32    | 9.5               |
| 1980                         | 11     | 6      | 17    | 26.5              | 35         | 9      | 44    | 13.1              |
| Accidental deaths by firearm | 37     | 8      | 45    | <sup>1</sup> 14.1 | 59         | 2      | 61    | <sup>1</sup> 3.6  |
| 1976                         | 5      | 2      | 7     | 10.9              | 17         | 2      | 19    | 5.6               |
| 1977                         | 3      | 1      | 4     | 6.2               | 7          | 0      | 7     | 2.1               |
| 1978                         | 3      | 1      | 4     | 6.2               | 14         | 0      | 14    | 4.2               |
| 1979                         | 12     | 1      | 13    | 20.3              | 6          | 0      | 6     | 1.8               |
| 1980                         | 14     | 3      | 17    | 26.5              | 15         | 0      | 15    | 4.5               |
| All suicides                 | 74     | 24     | 98    | <sup>1</sup> 30.6 | 220        | 55     | 275   | <sup>1</sup> 16.3 |
| 1976                         | 16     | 5      | 21    | 32.8              | 37         | 11     | 48    | 14.3              |
| 1977                         | 21     | 4      | 25    | 39.0              | 52         | 12     | 64    | 19.0              |
| 1978                         | 15     | 4      | 19    | 29.7              | 54         | 12     | 66    | 19.6              |
| 1979                         | 10     | 4      | 14    | 21.9              | 35         | 9      | 44    | 13.1              |
| 1980                         | 12     | 7      | 19    | 29.7              | 42         | 11     | 53    | 15.8              |

<sup>1</sup> Mean rate



Table 3. Suicide by firearms and total suicides, by Alaska Native group, 1978-80

| Year                      | Eskimo |                  | Indian |                  | Aleut  |                  |
|---------------------------|--------|------------------|--------|------------------|--------|------------------|
|                           | Number | Rate per 100,000 | Number | Rate per 100,000 | Number | Rate per 100,000 |
| Suicides by firearm ..... | 23     | 22.4             | 12     | 18.3             | 6      | 24               |
| 1978 .....                | 9      | 26.4             | 5      | 22.9             | 1      | 12               |
| 1979 .....                | 6      | 17.6             | 3      | 13.7             | 2      | 24               |
| 1980 .....                | 8      | 23.4             | 4      | 18.3             | 3      | 37               |
| All suicides .....        | 29     | 28.3             | 14     | 21.4             | 7      | 28               |
| 1978 .....                | 12     | 35.2             | 6      | 27.5             | 1      | 12               |
| 1979 .....                | 8      | 23.4             | 3      | 13.7             | 2      | 24               |
| 1980 .....                | 9      | 26.4             | 5      | 22.9             | 4      | 49               |

Only 8 of the 34 patients were wounded in an extremity. The other 26 shot themselves in the trunk or the head. It could reasonably be assumed that they resemble, psychodynamically, persons who completed suicide, and they are dissimilar from those who made less serious suicide attempts, or used less certain means, in which survival is the norm.

The profile resulting from the review of 34 cases was of a male Native in his second or third decade who shot himself in the abdomen with a low-caliber rifle, often under the influence of alcohol. He is unlikely to have a formal psychiatric history or be experiencing a major depression. The incident often followed a conflict with a family member or girlfriend. It is likely that a family member or friend had died by violence, often self-inflicted.

Suicide is a major cause of death among Alaska Natives. Recently, it has been second only to motor vehicle accidents as a cause of death. It has not always ranked so high. In the 1950s, suicide deaths in this group averaged fewer than five per year. An upward trend began to be noted in the 1960s (2). This trend is deplored by the Alaska Natives I have encountered. The high rate of suicide does not imply a positive social sanction. Many of the patients expressed a feeling of shame and feared nonacceptance in their village following their shooting. One patient stated, "The people in the village are angry at me. I don't know if I can face them now."

Historically among some Alaska Native cultures, specifically the Inupiat Eskimo, a traditional pattern of suicide has been recognized (3). Typically the person was a middle-aged or older man who was often ill or infirm and could not perform his usual roles in society. The suicide was undertaken after reflection and sometimes consultation with family members, who might assist in the final act. This form of suicide was positively sanctioned and had a cohesive effect upon the community.

That firearms are an important instrument of death in Alaska should come as no surprise. The concept of gun control in Alaska is relatively unpopular. Firearms are ubiquitous among Native and non-Natives alike, especially in rural and Bush areas. Guns are essential to those who hunt for part of their food, as do many Alaskans. Among American adolescents as a whole, the use of firearms as the instrument of suicide has been increasing (4). In addition to the acceptability and availability of guns in Alaska, the victims' frequent acquaintance with others who have used this weapon to kill or attempt to kill themselves is likely a major factor in its use. An association between victims of self-inflicted gunshot wounds to the face was noted among 18 such events reviewed at the University of New Mexico; 6 persons in this series were from the same pueblo (5).

Alcohol is a well-known adjunct to suicidal behavior. A significant correlation between recent interpersonal loss, and subsequent suicide had been observed in a series of alcoholics (6). The use of alcohol associated with suicidal behavior among Alaska Natives has been previously observed (7-9). Among the patients included in my study, some regarded the use of alcohol as an explanation for their act: "It was an accident. I was drinking."

It was more common for alcohol to function in a dissociative role. The patient became detached from the self-destructive act, as if it had occurred in another time and place and bore little relationship to the current reality: "My head was out there . . . nobody could have stopped me. It was like my mind wasn't a part of me."

Some are amnesic about the events and denied any recollection of suicidal feelings. One young man simply stated his only recollection as "I was pretty drunk," adding, "I feel stupid." However, upon further questioning of the patient a possible precipitant such as recent loss could often be found.

Another man said, "I can't remember why it happened . . . I was drunk." He later acknowledged, "I think about my brother who hung himself last year. It really bothers me . . . I guess maybe that was on my mind. I can't seem to forget it."

In the aggregate, the retrospective motives given for the shootings, while important to the patient, would not appear to warrant such a dramatic response. The clinician must wonder why one would raise a gun to oneself after a minor family fight. Most of the attempts described previously could be classified as impulsive; such impulsive attempts are believed to be motivated by the desire to reduce tension (7). The Alaska Native is uniquely beset by a combination of forces both intraphysic and cultural that contribute to an alarming level of suicide.

While the explanation offered was often a conflict between the patient and others, this event contributes only in a small way to the suicide attempt. Far more important is the internal world that allows such conflicts to weigh so heavily. Tabachnik described two groups of suicide attempters, the interpersonal and intrapersonal among American Indians (8). The patients in my series appear to have features of both. Overt expression of anger is relatively proscribed in Alaska Natives. In her study of the Utku of the Canadian Arctic, an Eskimo group, Briggs addressed this subject. "As a warm, protective, nurturant, even-tempered person represents the essence of goodness, so an unkind, bad-tempered person represents the opposite. Expressions of ill temper toward human beings are never justified in anyone over the age of three or four" (9).

Such an attitude toward negative affect appears prevalent in Alaska Natives as well. A tendency to internalize anger, pain, and worry has been observed among other Native Americans (10). Suicidal activity appears to be related to a lack of culturally sanctioned techniques for acting out hostile affect (11).

A difference in the internal world of the Alaska Native can not explain the precipitous increase in suicide in recent decades. The external world, the society in which Alaska Natives find themselves, has changed dramatically. Kraus and Boffler noted: "... a process of acculturation which has been accelerating in its speed and intensity. For many Native Alaskans, especially the young, the breakdown of the organized, consistent, traditional relationships due to pressures from without has resulted in a reduced ability to find and hold a position of psychological integrity and centrality. Loneliness,

anxiety, frustration, continuing stress and at times despair characterize the lives of many Native Alaskans today" (1). The traditional village life and economy in Alaska has been forced to undergo major changes by external influences. The presence of non-Native influence and subsequent partial loss of control over their lives has been an ongoing feature in Native life since the 1800s, with the coming of missionaries, fur traders, and gold seekers. This trend intensified with Alaska's attainment of statehood in 1959 and more recently with the trans-Alaska oil pipeline of the 1970s and the Native Claims Settlement Act of 1971. A visitor to a Native village today will find many symbols of this change, perhaps exemplified by the satellite earth station providing convenient telephone communication and live network television. While many changes, such as improved communications, transportation, and health care have been welcome, none are without major social impact. Rapid, externally generated change has at times contributed to social disorganization, cultural conflict, and family disorder. These consequences in turn can precipitate low self-esteem, depression, and hopelessness which might trigger self-destruction.

Unfortunately, the problems I have described are not limited to Alaska Natives. Suicide and violent death trouble many other Native American groups (12). Others have described the relationship of suicide among Native Americans to cultural conflict (13-20). To various degrees and at various times, Native Americans and Alaska Natives have shared a common heritage of cultural disruption.

In order to prevent suicide, one needs either to identify those at risk and intervene individually or identify and effectively alleviate the social roots of this behavior. This series of cases of self-inflicted gunshot wounds is remarkable in a lack of ability to distinguish the victim from his or her peers. Most were not clinically depressed and made no statements of intent. Many suffered the recent loss of a loved one by violence, but such a loss unfortunately is not uncommon for the group, and it is in no way unique to those with suicidal behavior. Gun control in an environment where guns are common, necessary, and accepted would not be realistic.

Limiting the easy availability of alcohol would reduce the overall level of traumatic death. Currently some Native villages are considering measures to restrict the sale or importation of liquor. Of course if a person has demonstrated suicidal intent, individual treatment and prevention should be used. However, ultimately to reverse the tragic and dis-



proportionate hazard of suicide among Native Americans and Native Alaskans, the cultural causes will need to be addressed by Natives who have regained hope and control of their own lives.

Suicidal behavior, exemplified by the self-inflicted gunshot wound, continues to be a threat to young Alaska Natives. Its prevalence appears to be a function of increasing disruption and alienation, imposed upon a set of behavioral norms that limit one's ability to convey anger and pain.

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## A Study of Underreporting of Down's Syndrome on Birth Certificates in an Ohio County, 1970-78

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the Bureau of Community Health Services, Public Health Service. Tearsheet requests to Dr. Huether.

#### SYNOPSIS .....

In a previous statewide assessment in Ohio of the percentage reporting of Down's syndrome (DS) on birth certificates, it was found that 33.9 percent of the cases chromosomally analyzed were so recorded. The objectives of this study were to gain a greater understanding of the basis of this low reporting percentage by concentrating on Hamilton County births only, to compare these percentages among hospitals in the county, and to determine the commonality of

proportionate hazard of suicide among Native Americans and Native Alaskans, the cultural causes will need to be addressed by Natives who have regained hope and control of their own lives.

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SELECTED COMPUTATIONS ON  
ALCOHOL/DRUG RELATED COSTS

Tables

|                    |                                                                                                                                                  |                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1,2,3              | PUBLIC ASSISTANCE PAYMENTS:                                                                                                                      | 5,828,210          |
| 4                  | MEDICAL ASSISTANCE PAYMENTS:                                                                                                                     | 5,650,892          |
| 6                  | SOCIAL      Foster Care, Institutional care for children,<br>SERVICES:   Daycare, Protective Services, Homemakers<br>*(Some Drug costs included) | 8,718,444          |
| 8                  | MOTOR<br>VEHICLE:   Accidents, Fatalities, Injuries, Property Damage                                                                             | 31,903,460         |
| 13,14              | CRIMINAL<br>JUSTICE    Prosecution, Enforcement, Courts, Corrections<br>SYSTEM:                                                                  | 78,644,355         |
|                    | SOADA:                                                                                                                                           | 15,109,700         |
| 15,16,17,<br>18,19 | COSTS OF LOST PRODUCTION:                                                                                                                        | 19,870,000         |
| 20                 | ESTIMATED INSTITUTIONAL EXCESS COSTS, HEALTH AND<br>MEDICAL CARE:                                                                                | 19,569,000         |
| <u>TOTAL COSTS</u> |                                                                                                                                                  | <u>185,294,061</u> |

---

|                      |                                                       |                   |
|----------------------|-------------------------------------------------------|-------------------|
| 12                   | Net Revenue to State from Licensure Fees and Taxation | <u>14,868,433</u> |
| <u>TOTAL REVENUE</u> |                                                       |                   |

---

|          |                                             |            |
|----------|---------------------------------------------|------------|
| 10,11,12 | Estimated Loss of Income to Alaska Families | 54,900,000 |
|----------|---------------------------------------------|------------|

|                 |                    |
|-----------------|--------------------|
| Cost            | 185,294,061        |
| Revenue         | (14,868,433)       |
| <u>NET COST</u> | <u>170,425,628</u> |

The State Spends \$12.46 on Services for Each \$1 of  
Revenue Collected for Alcohol Products.

\*\*\*Supporting calculations on following pages.



TABLE 1  
AID TO FAMILIES WITH DEPENDENT  
CHILDREN--ASSISTANCE PAYMENTS  
FY 84

| TOTAL<br>Average #<br>of AFDC<br>Cases per<br>Month | Percent<br>Estimated<br>Alcohol-<br>Related | Average #<br>of Alcohol-<br>Related<br>Cases per<br>Month | Average<br>Cost per<br>Case per<br>Month | Cost of all<br>Alcohol-Related Cases |             |
|-----------------------------------------------------|---------------------------------------------|-----------------------------------------------------------|------------------------------------------|--------------------------------------|-------------|
|                                                     |                                             |                                                           |                                          | Per Month                            | Per Year    |
| 2297                                                | 15%                                         | 345                                                       | \$564                                    | \$194,326                            | \$2,331,914 |

Source: Division of Public Assistance, Dept. of Health and Social Services

TABLE 2  
AID TO THE DISABLED--ASSISTANCE  
PAYMENTS, FY 84

| TOTAL<br>Average #<br>of AD Cases<br>Per Month | Percent<br>Estimated<br>Alcohol-<br>Related | Average #<br>of Alcohol-<br>Related<br>Cases Per<br>Month | Average<br>Cost Per<br>Case Per<br>Month | Cost of All<br>Alcohol-Related Cases |             |
|------------------------------------------------|---------------------------------------------|-----------------------------------------------------------|------------------------------------------|--------------------------------------|-------------|
|                                                |                                             |                                                           |                                          | Per Month                            | Per Year    |
| 2578                                           | 20%                                         | 516                                                       | \$202                                    | \$104,151                            | \$1,249,814 |

Source: Division of Public Assistance, Dept. of Health and Social Services

TABLE 3  
AID TO ADULT ASSISTANCE  
PAYMENTS, FY 84

| TOTAL<br>Average #<br>of Adult<br>cases per<br>Month | Percent<br>Estimated<br>Alcohol-<br>Related | Average #<br>of Alcohol-<br>Related<br>Cases Per<br>Month | Average<br>Cost Per<br>Case Per<br>Month | Cost of All<br>Alcohol-Related Cases |             |
|------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------|------------------------------------------|--------------------------------------|-------------|
|                                                      |                                             |                                                           |                                          | Per Month                            | Per Year    |
| 6,534                                                | 11.1%                                       | 725                                                       | \$189                                    | \$137,076                            | \$1,644,912 |

Source: Division of Public Assistance, Dept. of Health and Social Services



TABLE 4  
MEDICAID PAYMENTS RELATED  
TO ALCOHOL, FY 84

| Medicaid<br>Cost for<br>AD's Per<br>Year | Estimated<br>Percent<br>Alcohol-<br>Related<br>AD Cases | Medicaid<br>Alcohol-<br>Related<br>Costs for<br>AD's Per<br>Year | Medicaid<br>Cost for<br>AFDC &<br>Under 21<br>Per Year | Estimated<br>Percent<br>Alcohol-<br>Related<br>AFDC &<br>Under 21 | Medicaid<br>Alcohol-<br>Related<br>Costs for<br>AFDC &<br>Under 21<br>Cases Year | Total<br>Medicaid<br>Costs for<br>Alcohol-<br>Related<br>AFDC, 21<br>AD Cases<br>Per Year |
|------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 16,117,431                               | 20%                                                     | \$3,233,486                                                      | 16,182,708                                             | 15%                                                               | 2,427,406                                                                        | \$5,650,892                                                                               |

Source: Division of Medical Assistance, Dept. of Health and Social Services

TABLE 5  
MEDICAL AND PUBLIC ASSISTANCE AGGREGATED DIRECT COSTS ATTRIBUTABLE  
TO ALCOHOLISM AND ALCOHOL ABUSE, FY 84

| Category                                   | Cost of All<br>Alcohol-Related<br>Cases Per Year |
|--------------------------------------------|--------------------------------------------------|
| AFDC                                       | \$2,331,914                                      |
| AD                                         | 1,249,814                                        |
| Adult Programs                             | 1,644,912                                        |
| Medicaid                                   | 5,650,892                                        |
| Total Alcohol-<br>Related Assistance Costs | 10,877,532                                       |

Total of Tables 1, 2, 3, 4,

TABLE 6  
PROGRAM SERVICES AND SOCIAL SERVICES COSTS  
FOR ALCOHOL/DRUG RELATED CASES, FY '84

| Program                                                         | Foster<br>Care                | Institutional<br>Care for Children | Day<br>Care    | Protective<br>Services | Homemakers     | Total     |
|-----------------------------------------------------------------|-------------------------------|------------------------------------|----------------|------------------------|----------------|-----------|
| Total<br>State<br>Cost                                          | \$5,303,100                   | \$10,836,300                       | \$357,500      | \$244,200              | \$3,826,000    |           |
| % Attri-<br>butable to<br>Alcohol/Drug<br>Relatedness<br>& Cost | 44% <sup>b</sup><br>2,333,364 | 44%<br>4,767,972                   | 44%<br>157,300 | 44%<br>1,077,208       | 10%<br>382,600 | 8,718,444 |

The percent attributable to alcohol/drug related problems is based upon a weighted average, determined by a survey of actual cases reported by social workers which showed child neglect to be 47% alcohol-related and child abuse to be 32% alcohol-related. The resultant is 44%.

Source: Division of Family and Youth Service, DHSS

TABLE 7  
SUMMARY  
ECONOMIC COST OF SOCIAL SERVICES AND TRANSFER PAYMENTS  
ATTRIBUTABLE TO ALCOHOLISM AND ALCOHOL AND DRUG ABUSE  
ALASKA, FY 84

| Category            | Amount<br>(\$Millions) |
|---------------------|------------------------|
| Social Services     | \$8,718,444            |
| Assistance Programs | \$10,877,532           |
| Total               | \$19,595,976           |

Total of Tables 1 to 5

**TABLE 8**  
**ECONOMIC COSTS OF EXCESS MOTOR VEHICLE ACCIDENTS**  
**ATTRIBUTABLE TO ALCOHOLISM AND ALCOHOL ABUSE**  
**ALASKA, FY 84**

| Accident Type                                              | 1<br>Number | 2<br>Unit Cost<br>(dollars)   | 3<br>Total Cost<br>(dollars) | 4<br>EAA | 5<br>Excess Cost<br>(dollars) |
|------------------------------------------------------------|-------------|-------------------------------|------------------------------|----------|-------------------------------|
| Fatalities                                                 | 137         | \$306,000                     | \$44,662,000                 | 51.1%    | \$22,822,282                  |
| Injuries                                                   | 6,840       | 5,000                         | 34,200,000                   | 15.5%    | 5,301,000                     |
| Property<br>Damage                                         | 14,499      | Actual<br>Reported<br>Damages | 40,210,258                   | 9.4%     | 3,779,764                     |
| Total Excess<br>Cost Attri-<br>butable to<br>Alcohol Abuse |             |                               |                              |          | \$31,903,046                  |

**Source:**

- Column 1. Provided by Alaska Department of Public Safety and the Department of Highways.
- Column 2. Unit Costs for Alaska provided by Mr. Mike Lewis, Alaska Highway Safety Planning Agency
- Column 3. Product of Columns 1 and 2. Total Cost for Property damage accidents provided by actual reported damages.
- Column 4. Excess proportion due to alcohol abuse.
- Column 5. Product of Columns 3 and 4.

TABLE 9

**MEDIAN INCOME DIFFERENTIAL BY AGE GROUPINGS  
FOR ALCOHOL ABUSERS AND NON-ABUSERS  
IN ALASKA, 1984**

| Age   | 1<br>Family Median Income | 2<br>% Decrease in Income<br>Due to Alcohol Abuse | 3<br>Decrease in Income<br>Due to Alcohol Abuse |
|-------|---------------------------|---------------------------------------------------|-------------------------------------------------|
| 20-29 | \$21,736                  | 11.25                                             | \$2,445                                         |
| 30-39 | 32,159                    | 17.35                                             | 5,580                                           |
| 40-49 | 38,961                    | 22.85                                             | 8,903                                           |
| 50-59 | 41,101                    | 15.48                                             | 6,362                                           |

Column 1. Computed from Table 209, Alaska, U.S. Department of Commerce, Bureau of Census 1980.

Column 2. Results are from National Probability Samples of Social Research Group, School of Public Health, University of California, Berkeley, 1974 (unpublished paper), cited in Economic Cost, p. 47.

TABLE 10

**NUMBER OF FAMILIES WITH AN ALCOHOL ABUSING MALE AS HEAD,  
ADJUSTED FOR 1984**

| Age of Head | 1<br>Estimated Number of Families | 2<br>Percent of Families with Male Head | 3<br>Percent of Families with Alcohol-Abusing Male | 4<br>Estimated Number of Families with Alcohol-Abusing Male<br>(1 x 2 x 3) |
|-------------|-----------------------------------|-----------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------|
| 20-29       | 20,490                            | 93.9                                    | 21                                                 | 4,040                                                                      |
| 30-39       | 26,964                            | 93.9                                    | 13                                                 | 3,291                                                                      |
| 40-49       | 18,974                            | 93.9                                    | 12                                                 | 2,138                                                                      |
| 50-59       | 11,640                            | 93.9                                    | 11                                                 | 1,202                                                                      |

Column 1. From Table 239 in correlation with Table 174, Alaska, U.S. Department of Commerce, Bureau of Census, 1980. A determination was made as to the number of families per age group by graphing the information provided in the tables and readjusting the data for difference in age groupings, and population projections between 1980 and 1984.

Column 2. From Table 209, Alaska, Census 1980.

Column 3. Economic Cost, p. 47.



TABLE 11

LOST PRODUCTION COSTS AMONG FAMILIES WITH ALCOHOL ABUSING MALE HEADS  
BY AGE GROUPS AND TOTAL POPULATION

| Age<br>Income<br>Group | 1<br>Decrease in Median<br>Income Due to Alcohol<br>Abuse of Male Head<br>of Household | 2<br>Estimated Number<br>of Families<br>With Alcohol-Abusing<br>Male Head | 3<br>Estimate of Total<br>Lost Income<br>(millions) |
|------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------|
| 20-29                  | \$2,445                                                                                | 4,040                                                                     | 9.8                                                 |
| 30-39                  | 5,580                                                                                  | 3,291                                                                     | 18.4                                                |
| 40-49                  | 8,903                                                                                  | 2,138                                                                     | 19.1                                                |
| 50-59                  | 6,362                                                                                  | 1,202                                                                     | 7.6                                                 |
| Total                  |                                                                                        | <u>10,671</u>                                                             | \$54.9                                              |

Column 1. From Table 1, Column 3.

Column 2. From Table 2, Column 4.

Column 3. Product of Column 1 multiplied by column 2.

TABLE 12

NET REVENUE OF STATE REGULATION OF SALE  
AND CONSUMPTION OF BEVERAGE ALCOHOL FY '84<sup>a</sup>

| Source                                     | Amount<br>(Dollars) |
|--------------------------------------------|---------------------|
| Beverage Dispensary Fees                   | \$ 852,155          |
| Wholesale Malt Fees                        | 17,000              |
| Pub Fees                                   | ---                 |
| Restaurant Dispensary Fees                 | 51,850              |
| Commercial Carrier Fees                    | 36,675              |
| Club Fees                                  | 44,900              |
| Application Fees                           | 101,850             |
| Wholesale Licenses                         | 139,100             |
| Retail Licenses                            | 373,300             |
| Excise Tax                                 | 13,849,483          |
| Wholesale Industry Income Tax <sup>b</sup> | 100,000             |
| Multi State Tax                            | 5,000               |
| GROSS STATE REVENUE                        | \$15,606,733        |
| Administrative Costs:                      |                     |
| Alcohol Beverage Control Office            | 667,500             |
| Auditan Collection Division                | 70,800              |
| Total Administrative Costs                 | \$738,800           |
| NET STATE REVENUE                          | <u>\$14,868,433</u> |

<sup>a</sup>All figures provided by Department of Revenue, Division of Audit and Collections, except as noted.

<sup>b</sup>Review of the Wholesale Liquor Industry, State of Alaska Legislative Council, Subcommittee of Taxation and Revenue Report. Figure is an estimate; direct information is unavailable.

Source: Department of Revenue

TABLE 13  
EXPENDITURES OF THE CRIMINAL  
JUSTICE SYSTEM BY COMPONENT  
ALASKA, FY 84

| COMPONENT        | AMOUNT            |
|------------------|-------------------|
| Enforcement      |                   |
| State Troopers   | \$ 33,786,800     |
| Municipal Police | 54,354,701        |
| Prosecution      | 9,288,700         |
| Judicial         | 35,932,700        |
| Corrections      | <u>56,617,100</u> |
| TOTAL            | 189,980,001       |

Source: Budget expenditures obtained from Division of Budget and Management reports. Municipal expenditures obtained from Department of Public Safety.

Table 14  
ESTIMATED EXPENDITURES OF CRIMINAL JUSTICE SYSTEM ATTRIBUTABLE TO  
ALCOHOLISM AND ALCOHOL ABUSE AS A PROPORTION OF EACH AND ALL SYSTEM  
COMPONENTS, FY 84

| Component   | Total<br>Component<br>Expenditure | Alcohol<br>Related<br>Expenditures | Percent of<br>Expenditure<br>for each* | Percent of<br>Total<br>Expenditures |
|-------------|-----------------------------------|------------------------------------|----------------------------------------|-------------------------------------|
| Enforcement | 88,141,500                        | 40,016,241                         | 45.4%                                  | 23.8%                               |
| Courts      | 35,932,700                        | 5,569,568                          | 15.5%                                  | 3.2%                                |
| Corrections | 56,617,100                        | 33,058,546                         | 28.5%                                  | 13.4%                               |

\*Percent expenditures determined from survey of various agencies.

TABLE 15  
EXCESS DEATHS ATTRIBUTABLE TO ALCOHOLISM AND ALCOHOL ABUSE

|           | 1            | 2                     | 3             |
|-----------|--------------|-----------------------|---------------|
| Age Group | Total Deaths | Percent Excess Deaths | Excess Deaths |
| 20-24     | 109          | 19                    | 21            |
| 25-34     | 194          | 20                    | 39            |
| 35-44     | 155          | 40                    | 62            |
| 45-54     | 232          | 19.5                  | 45            |
| 55-64     | 327          | 12.3                  | 40            |

Sources:

Column 1. Alaska Bureau of Vital Statistics

Column 2. Economic Cost of Alcohol Abuse and Alcoholism, 1971,  
HMS 42-73-114, NIAAA

Column 3. Column 1 multiplied by column 2.



TABLE 16

PERSON YEARS LOST DUE TO EXCESS DEATHS DUE TO ALCOHOLISM AND ALCOHOL ABUSE

| Age Group<br>of Death | AGE GROUP WHEN YEARS LOST |        |        |        |        |
|-----------------------|---------------------------|--------|--------|--------|--------|
|                       | 20-24                     | 25-34  | 35-44  | 45-54  | 55-64  |
| 20-24                 | 49.84                     | 196.96 | 191.36 | 179.04 | 153.28 |
| 25-34                 |                           | 102.34 | 200.56 | 187.38 | 160.18 |
| 35-44                 |                           |        | 222.12 | 421.56 | 360.00 |
| 45-54                 |                           |        |        | 112.42 | 189.35 |
| 55-64                 |                           |        |        |        | 93.12  |

Source: Economic Cost of Alcohol Abuse and Alcoholism, 1971, Hms 42-73-114  
NIAAA

TABLE 17

MEDIAN TOTAL INCOME BY  
AGE FOR 1980

| AGE GROUP | MEDIAN TOTAL<br>INCOME |
|-----------|------------------------|
| 20-24     | 10,601                 |
| 25-34     | 14,662                 |
| 35-44     | 18,252                 |
| 45-54     | 17,029                 |
| 55-64     | 13,743                 |

Source: Department of Labor, 1980 Census report.

TABLE 18

UNDISCOUNTED COST OF LOST PRODUCTION DUE TO EXCESS  
MORTALITY ATTRIBUTABLE TO ALCOHOL ABUSE AND ALCOHOLISM (millions of dollars)

| Age Group<br>of Death | 20-24 | 25-34 | 35-44 | 45-54 | 55-64 |
|-----------------------|-------|-------|-------|-------|-------|
| 20-24                 | .528  | 2.887 | 3.492 | 3.048 | 2.106 |
| 25-34                 |       | 1.5   | 3.66  | 3.19  | 2.201 |
| 35-44                 |       |       | 4.054 | 7.178 | 4.847 |
| 45-54                 |       |       |       | 1.914 | 2.602 |
| 55-64                 |       |       |       |       | 1.279 |

Product of Table 18 Times Table 19

TABLE 19

THE FY 84 VALUE\* OF COSTS OF LOST PRODUCTION DUE TO  
EXCESS MORTALITY OF ALCOHOL ABUSERS (millions of dollars)

| Age Group<br>of Death | 20-24 | 25-34 | 35-44 | 45-54 | 55-64 | TOTAL        |
|-----------------------|-------|-------|-------|-------|-------|--------------|
| 20-24                 | .45   | 1.79  | 1.12  | .51   | .17   | 4.04         |
| 25-34                 |       | 1.11  | 1.39  | .93   | .22   | 3.65         |
| 35-44                 |       |       | 2.99  | 2.65  | .94   | 6.58         |
| 45-54                 |       |       |       | 1.39  | .99   | 2.38         |
| 55-64                 |       |       |       |       | .93   | .93          |
| Total**               |       |       |       |       |       | <u>17.58</u> |
| Adjusted total***     |       |       |       |       |       | <u>19.87</u> |

\*Discount rate of 7%

\*\*1980 dollar value

\*\*\*Adjustment from 1980 to 1983 dollar value based on 13% increase in  
consumer price index.

TABLE 20  
ESTIMATED INSTITUTIONAL COSTS OF HEALTH AND MEDICAL CARE  
ATTRIBUTABLE TO ALCOHOLISM AND ALCOHOL ABUSE\*

|                               | Low<br>Estimate   | High<br>Estimate  | Average<br>(millions \$) |
|-------------------------------|-------------------|-------------------|--------------------------|
| <b>Hospitals - Acute Care</b> |                   |                   |                          |
| Non-Native-Private            | 2,364,553         | 3,715,807         | 3.041                    |
| Public Health                 | 1,411,715         | 2,270,228         | 1.840                    |
| Military                      | 437,939           | 700,131           | .569                     |
| API                           | <u>828,599</u>    | <u>882,599</u>    | <u>.883</u>              |
| SUB-TOTAL                     | 5,096,806         | 7,568,765         | 6.333                    |
| <b>Physician's Services</b>   |                   |                   |                          |
| Non-Native and Military       | 5,341,125         | 15,435,000        | 10.388                   |
| Public Health Service         | <u>116,600</u>    | <u>856,069</u>    | <u>.487</u>              |
| SUB-TOTAL                     | 5,457,725         | 16,291,069        | 10.875                   |
| <b>Drug and Drug Sundries</b> |                   |                   |                          |
|                               | 546,840           | 614,960           | .581                     |
| <b>Nursing Services</b>       |                   |                   |                          |
|                               | 1,782,198         | 1,782,198         | 1.782                    |
| <b>TOTAL</b>                  | <b>12,883,573</b> | <b>26,256,494</b> | <b>19.569</b>            |

\*Update of previous estimate completed by Dennis Kelso, Ph. D., the Economic Impact of Alcoholism and Alcohol Abuse in Alaska, 1975 Volume I. pp. 63-99.

# FY85 ALCOHOLISM AND DRUG ABUSE GRANTS

| PROGRAM                                                                                                  | BRIEF DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                  | FUNDING |                     |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------|
|                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SOURCE  | FY 84 FY 85         |
| Tanana Chiefs Conference<br>1st & Hall Streets<br>Doyon Building<br>Fairbanks, AK. 999701                | The TCC Regional Prevention Project provides information, education, and preventive services in the northern region. This year the project is divided into five separate program components: Youth Prevention, Broadcast Services, Fetal Alcohol Syndrome Prevention, Village Local Option Support, and Provider Conferences.                                                                                                                                      | Drug    | \$150,000 \$150,000 |
| Fairbanks School District<br>P.O. Box 1250<br>Fairbanks, AK. 99707                                       | This program will implement the "Here's Looking at You Two" comprehensive drug/alcohol curriculum in the Fairbanks North Star School District. The groups which will be specifically targeted for instruction are Junior High School students, their teachers and their parents.                                                                                                                                                                                   | Drug    | \$10,000 - 0 -      |
| Craig Youth Center<br>Box 148<br>Craig, Alaska 99921                                                     | The Craig Youth Center offers its services to all area youth from ages 6-18 years of age. The specific service components offered are as follows: Structured and recreational activities; educational information to all area youths identified as "at risk" concerning alternatives to substance abuse; improved parenting skills presentations to youth and their families community awareness presentations targeted to community members and parents of youth. | Drug    | \$35,000 \$375,000  |
| Anchorage Behavioral Hlth.<br>Treatment Center<br>825 L Street<br>Pouch 6-650<br>Anchorage, Alaska 99502 | Through various sub-contracts the municipality provides the following drug abuse services: outpatient detox, methadone maintenance, drug-free counseling, intermediate care, residential drug-free therapeutic community, information/education, youth outpatient, youth residential treatment.                                                                                                                                                                    | Drug    | \$647,500 \$889,500 |
| NCA - Juneau<br>147 S. Franklin<br>Juneau, Alaska 99801                                                  | Provides a drug abuse prevention specialist for the school-age youth of Juneau to deliver prevention/education, intervention and outreach services. Also provides individual, vocational and educational counseling, and Alaska Safety Action (ASAP) services.                                                                                                                                                                                                     | Drug    | \$56,000 \$123,573  |



|                                                                                                      |                                                                                                                                                                                                                                         |      | <u>FY 84</u> | <u>FY 85</u> |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------|--------------|
| KILA, Inc.<br>3098 Airport Way<br>Fairbanks, AK. 99574                                               | Provides outpatient detox, methadone maintenance, outpatient drug free counseling, prevention education in Fairbanks area. Specially targeted groups are abusers of heroin, amphetamines and barbituates.                               | Drug | \$210,000    | \$237,400    |
| Fairbanks Native Assoc.<br>Youth Alternatives to<br>Drug Abuse<br>950 Cowles<br>Fairbanks, AK. 99701 | Provides prevention and education information regarding drug abuse to Fairbanks youth through a variety of delivery settings. Maintains drop-in center and provides drug-free recreation alternatives in 5 low income housing projects. | Drug | \$120,000    | \$128,165    |
| Ketchikan Youth Services<br>Box 7202<br>Ketchikan, AK. 99901                                         | KYS provides drug abuse prevention/education, information/referral and alternative activities for youth. Also maintains operation of youth drop-in center and related youth activities.                                                 | Drug | \$155,000    | \$157,494    |
| Petersburg Youth Program, Inc.<br>212 Indian Street<br>Petersburg, AK. 99833                         | Operates a drop-in center and provides special drug-free alternative activities and academic tutoring to high risk youth. Provides drug-abuse prevention information for area community and schools.                                    | Drug | \$ 89,000    | \$ 89,000    |
| Sitka Teen Service<br>Box 1714<br>Sitka, AK. 99835                                                   | Provides drug abuse prevention education through drug-free recreational alternatives and skill development to youth ages 13-19 in Sitka.                                                                                                | Drug | \$ 77,500    | \$ 80,000    |

| <u>PROGRAM</u>                                                                                            | <u>DESCRIPTION</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>Funding Source</u> | <u>FY 84</u> | <u>FY 85</u> |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|--------------|
| Alaska Council on the Prevention of Alcohol and Drug Abuse<br>7521 Old Seward Hwy, Suite A<br>(Statewide) | The ACOPADA provides statewide prevention services via several programs. The "Here's Looking at You" alcohol education curriculum implementation project has been on going for three years and the evaluation continues each year. This project will be continued as well as Media and Alcohol Awareness Week efforts. The ACOPADA will also continue to provide technical assistance, materials, speakers, and public information as requested by other programs, groups or the general public on a staff/material available basis. Assistance to Employee Assistance programs will also be continued. | Alcohol               | \$800,000    | \$918,343    |
| Anchorage Behavioral Health Treatment System<br>825 L Street<br>Anchorage, AK. 99502                      | Provides for delivery of alcohol services in Anchorage through sub-contracts for the following services components: emergency care, outreach, intermediate care, outpatient care, aftercare, ASAP and justice system services, corrections services, corrections, information and education. Target groups include women, youth, parents of abused or neglected children, convicted OMVI offenders, alcohol abusers, chronic public inebriates, elderly and employed persons. (See back pages for list of subcontractors.)                                                                              | Alcohol               | \$2,900,000  | \$2,950,000  |
| Aleutian/Pribilof Islands Assoc. Inc.<br>1689 C Street<br>Anchorage, Alaska 99501                         | A/PIA is also providing training, travel and associated costs for one community paraprofessional from each community in the region. The trained individuals will return to their homes and provide outreach, consultation and education services to individuals, families and the community.<br><br>A/PIA also will provide for referral and transportation services from the Chain to Anchorage for individuals suffering from acute problems related to alcohol abuse and in need of emergency treatment.                                                                                             | Alcohol               | 111,100      | \$100,000    |

|                                                                                                       |                                                                                                                                                                                                                                                                                                                                                         | <u>Funding Source</u> | <u>FY 84</u> | <u>FY 85</u> |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|--------------|
| North Pacific Rim<br>903 W. Northern Lights Blvd.<br>Suite 203<br>Anchorage, Alaska 99503-2496        | Provides community organization activities based on the community identified needs. Prevention of substance abuse using community developed strategies.                                                                                                                                                                                                 | Alcohol               | - 0 -        | \$ 10,000    |
| Barrow Alcohol Program<br>P.O. Box 69<br>Barrow, Alaska 99723                                         | Services include alcohol education, information and referral, EAP coordination and prevention, outpatient, aftercare counseling, ASAP and justice system services.                                                                                                                                                                                      | Alcohol               | \$205,000    | \$250,000    |
| Ikayugtut, Inc.<br>P.O. Box 730<br>Barrow, Alaska 99723                                               | Services - include outpatient counseling services, aftercare, consultation, treatment, family therapy.                                                                                                                                                                                                                                                  | Alcohol               | - 0 -        | \$ 8,000     |
| Bristol Bay Area Health Corporation<br>Box 10235<br>Dillingham, Alaska 99575                          | Provides service to 22 villages and the City of Dillingham in the form of outpatient counseling, follow-up, outreach, aftercare, ASAP and justice system services, referral, alcohol information school, information education and prevention.                                                                                                          | Alcohol               | \$160,000    | \$205,600    |
| Center for Alcohol & Addiction Studies<br>U of A<br>3211 Providence Avenue<br>Anchorage, Alaska 99504 | Provides quality control for Level I and II counselor certification training, curriculum orientations to residential trainers. Also provides specialized training to subcontractors, publishes a resource catalog of certification training materials, and conducts Annual School of Alcohol and Addiction Studies. Conducts special research projects. | Alcohol               | \$84,000     | \$840,000    |
| Chevak Alcoholism Program<br>Box 6083<br>Chevak, Alaska 94563                                         | Community education, individual, group and family counseling, crisis intervention, mental health and public health Antabuse Program, out-patient treatment, after care, outreach, prevention.                                                                                                                                                           | Alcohol               | - 0 -        | \$ 57,000    |

|                                                                                                                       |                                                                                                                                                                                                                                                                                                  | Funding      |              |              |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|
|                                                                                                                       |                                                                                                                                                                                                                                                                                                  | <u>Level</u> | <u>FY 84</u> | <u>FY 85</u> |
| Cook Inlet Council on Alcoholism<br>Benco Building<br>Kenai, Alaska 99611                                             | Program includes ASAP and justice services, outpatient, aftercare, information/education, and youth alternative services. Serves both Homer, Kenai and Tyonek areas with emphasis on youth, women, misdemeanor/felony offenders.                                                                 | Alcohol      | \$180,000    | \$303,000    |
| Copper River Native Assoc.<br>Human Services Division<br>Copper Center, Ak. 99573                                     | Copper River Native Association offers alcoholism services such as: Outpatient counseling, referral, outreach aftercare, OMVI, information/education and crisis intervention. Eight villages are served by the program in the Copper River area.                                                 | Alcohol      | \$83,000     | \$ 88,810    |
| Cordova Community Services<br>Community Hospital<br>Cordova, AK. 99574                                                | Provides information, counseling, consultation, education outpatient treatment, aftercare, outreach and prevention education consultation.                                                                                                                                                       | Alcohol      | \$45,000     | \$ 58,000    |
| Fairbanks Native Assoc.<br>Comprehensive Alcoholism Program<br>First & Hall<br>Doyon Building<br>Fairbanks, AK. 99701 | Provides comprehensive alcoholism services such as: Emergency care, detox, short-term intermediate care, halfway house for men and women, ASAP and justice system services, outpatient, aftercare, outpatient counseling and education prevention services for Fairbanks area.                   | Alcohol      | \$950,000    | \$1,107,40   |
| Galena Alcoholism Program<br>P.O. Box 17<br>Galena, Alaska 99741                                                      | Provides outpatient counseling, aftercare, family therapy outreach, prevention education, consultation to residents of Galena.                                                                                                                                                                   | Alcohol      | \$54,000     | \$ 54,000    |
| Juneau Alcoholism & Drug Abuse Central Agency<br>210 Admiral Way<br>Juneau, AK. 99801                                 | The program provides comprehensive services such as emergency care, inpatient care, intermediate and long-term care, outreach, outpatient, aftercare, ASAP and justice system services, and prevention education to entire Juneau community. Prevention activities are aimed primarily at youth. | Alcohol      | \$675,000    | \$ 700,000   |



|                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <u>Funding Source</u> | <u>FY 84</u> | <u>FY 85</u> |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|--------------|
| Ketchikan Comprehensive Alcoholism Program<br>3131 Tongass<br>Ketchikan, Alaska 99901                   | Program provides intermediate care services, emergency care, outpatient, outreach, aftercare, referral, quarterway, halfway house, prevention education, ASAP and justice system services, and employees assistance program.                                                                                                                                                                                                                          | Alcohol               | \$265,000    | \$ 350,800   |
| Kodiak Council on Alcoholism<br>Box 497<br>Kodiak, Alaska 99615                                         | Provides intermediate care, outpatient counseling (individual and group), family counseling, information and education diagnostic screening and referral, alcohol information school and ASAP and justice system services.                                                                                                                                                                                                                            | Alcohol               | \$265,000    | \$ 308,000   |
| Kuskokwim Native Assoc. Alcohol Abuse Awareness Program<br>P.O. Box 106<br>Aniak, Alaska 99557          | Provides alcoholism services for 11 villages served by corporation. Services include education/prevention, emergency services assessment and referral, outpatient program, alcohol abuse groups, aftercare/follow-up and support services. Services to the villages are provided on an itinerant basis to everyone with special targeting of episodic binge drinkers, chronic drinkers, women ages 14-30 and parents of abused or neglected children. | Alcohol               | \$92,000     | \$100,000    |
| Mat-Su Council on Alcohol- and Drug Abuse<br>Wasilla Business Park<br>Box 656<br>Wasilla, Alaska 99687  | Mat-Su Council offers outpatient counseling, aftercare, information, referral, ASAP and justice system services, alcohol information school, and outreach to residents of Mat-Su Valley.                                                                                                                                                                                                                                                              | Alcohol               | \$180,000    | \$272,300    |
| Northwest Regional Alcoholism Program<br>Maniilaq Association<br>P.O. Box 256<br>Kotzebue, Alaska 99752 | Services - Emergency care, outreach, outpatient care, aftercare, alternatives, residential treatment, prevention education and referral in surrounding villages.                                                                                                                                                                                                                                                                                      | Alcohol               | \$553,600    | \$700,700    |
| McGrath-Anvik Mental Health and Drug Abuse<br>Box 16 F<br>McGrath, AK 99627                             | Community Education, individual and group counseling, crisis intervention, outpatient, aftercare, outreach, prevention and Mental Health Services.                                                                                                                                                                                                                                                                                                    | Alcohol               | \$ 85,000    | \$100,000    |

|                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                            | <u>Funding Source</u> | <u>FY 84</u> | <u>FY 85</u> |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|--------------|
| Norton Sound Health Corp.<br>Comprehensive Alcoholism Program<br>P.O. Box 966<br>Nome, Alaska 99762          | Serves Norton Sound area by delivering the following services: emergency detox, individual family group, outpatient, outreach, aftercare information, ASAP and justice system services, prevention/education and intermediate care. Specially targets women, youth, misdemeanor offenders and public inebriates.                                                           | Alcohol               | \$500,000    | \$629,000    |
| Inter-Cap<br>Box 00349<br>Nenana, Alaska 99760                                                               | Inter-Cap will provide a comprehensive and unique alcohol training curriculum. This training will provide Rural Alaska Natives with a community-based, culturally relevant prevention and treatment approach to alcoholism; coupled with college degrees and a working relationship with parent communities, we will begin to answer the documented needs of Rural Alaska. | Alcohol               | - 0 -        | \$ 19,890    |
| Petersburg Council on Alcoholism<br>215 Indian Street<br>Petersburg, AK. 99833                               | This program provides outpatient and group counseling, aftercare and outreach services to the community of Petersburg and residents of Mitkof Island as well as prevention education, ASAP and justice system services, information/referral, drop-in center.                                                                                                              | Alcohol               | \$71,000     | \$ 81,000    |
| Phillip Alcoholism Treatment Center<br>PACT Building<br>Box 388<br>Bethel, Alaska 99559                      | Provides services to Bethel areas that include: intermediate care, outpatient, outreach, aftercare, prevention education, misdemeanor/felony diversion and ASAP justice system services. Specially targets youth and chronic public inebriates.                                                                                                                            | Alcohol               | \$575,000    | \$621,000    |
| Rural Alaska Community Action Program (Rural CAP)<br>327 Eagle Street<br>Anchorage, AK. 99501<br>(Statewide) | Coordinates a community run, school based cultural heritage program for emphasizing that it is "good to be Native". Also provides technical support to AVAIL and publishes a statewide newsletter and operates a tele-conference series for village based counselors.                                                                                                      | Alcohol               | \$100,000    | \$ 83,000    |

|                                                                                                  |                                                                                                                                                                                                                                                                                                                         | <u>Funding</u> | <u>Source</u> | <u>FY 84</u> | <u>FY 85</u> |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|--------------|--------------|
| Seward Life Action Council<br>502 Adams Street<br>Seward, Alaska 99664                           | Operates alcohol program services in combination with mental health program. Services include emergency care, outpatient, outreach, aftercare, ASAP and justice system services, information and referral, detox and recover, and prevention education for community of Seward.                                         | Alcohol        |               | \$100,000    | \$123,000    |
| Sitka Council on Alcoholism and Other Drug Abuse<br>100 Katlian Street<br>Sitka, Alaska 99835    | Sitka Council provides a comprehensive alcoholism program which consists of an inpatient unit, intermediate care, outpatient, outreach, emergency care, aftercare, community information education, and ASAP and justice system services. Special target groups are women, youth, public inebriates and OMVI offenders. | Alcohol        |               | \$350,000    | \$415,600    |
| Southeast Alaska Regional Health Corporation<br>2055 Jordan Avenue<br>Juneau, Alaska 99803       | Will provide education, referral and outpatient services in 7 villages. Target groups are youth, women, families, children and elderly in villages. Information and referral, crisis intervention, individual and group outpatient counseling, aftercare and family counseling.                                         | Alcohol        |               | \$160,000    | \$160,000    |
| South Kachemak, Inc.<br>P.O. Box 197<br>Seldovia, AK. 99663                                      | Provides for travel for counselors from Port Graham and English Bay to Seldovia for training meetings. Also for supervisor's travel to communities and travel for board members to meetings. Program services currently funded by Indian Health Service.                                                                | Alcohol        |               | \$7,000      | \$ 10,000    |
| Upper Tanana Regional Alcoholism Program<br>Box 155<br>Tok, Alaska 99780                         | Provides alcoholism treatment services to the populations of Tok, Tanacross, Tetlin, Dot Lake and Eagle. Services offered are outreach, outpatient, counseling, ASAP and justice system services, education and prevention, aftercare, and follow-up.                                                                   | Alcohol        |               | \$50,000     | \$ 52,500    |
| Upper Yukon Behavioral Health Project<br>TCC/Ft. Yukon<br>Doyon Building<br>Fairbanks, AK. 99701 | Provides alcohol and mental health services for the community of Ft. Yukon and surrounding villages. Service delivery includes outpatient, aftercare and prevention education, outreach and referral.                                                                                                                   | Alcohol        |               | \$78,000     | \$ 81,900    |



|                                                                                                               |                                                                                                                                                                                                                                                                                | <u>Funding<br/>Source</u> | <u>FY 84</u> | <u>FY 85</u> |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------|--------------|
| Valdez Counseling Center<br>P.O. Box 307<br>Valdez, Alaska 99686                                              | Program services are offered in a combined mental health program. Provides outpatient, outreach and aftercare, prevention/education, and ASAP and justice system services. Special target groups are misdemeanor/felony offenders, OMVI and family violence and youth.         | Alcohol                   | \$45,000     | \$ 67,000    |
| Wrangell Council on Alcoholism and Related Drug Abuse<br>216 Front Street<br>Wrangell, AK. 99929              | Provides information and referral, individual and group outpatient, aftercare, outreach, family counseling, Driver Alcohol Information School (DAIS), Alcohol Information School (AIS), youth education, emergency care, employee assistance and prevention education.         | Alcohol                   | \$67,000     | \$ 75,000    |
| Yakutat Alcoholism Program<br>Box 6<br>Yakutat, Alaska 99689                                                  | Program offers outpatient counseling, information, referral and alternative activities primarily to reach youth, women, public inebriates and accident victims in the Yakutat community.                                                                                       | Alcohol                   | \$40,000     | \$ 42,000    |
| Yukon-Kuskowkim Health Corp.<br>P.O. Box 528<br>Bethel, Alaska 99559                                          | Operates a program utilizing a group of village based counselors to provide alcoholism information and education, and limited counseling to residents of the Yukon-Kuskokwim Delta. Incorporates early intervention, referral, outpatient, prevention, and education services. | Alcohol                   | \$285,000    | \$285,000    |
| Fairbanks Native Assoc.<br>Northern Regional Training Program<br>950 Cowles Avenue<br>Fairbanks, Alaska 99701 | Provide level I and level II counselor certification training, plan technical assistance, internship program, specialized and education to community.                                                                                                                          | Alcohol                   | \$80,000     | \$102,000    |
| Alaska S.E. Regional Training Program<br>ASERT<br>Box 963<br>Sitka, Alaska 99835                              | Provide level I and level II counselor certification training, plan technical assistance, internship program, specialized and education to community.                                                                                                                          | Alcohol                   | \$80,000     | \$102,000    |



|                                                                              |                                                                                                                                                                                                                                                                                                                                                                                  | <u>Funding<br/>Source</u> | <u>FY 84</u> | <u>FY 85</u> |
|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------|--------------|
| Southwestern Regional<br>Training Project<br>Box 528<br>Bethel, Alaska 99559 | Provides level I and level II counselor certification training, plan technical assistance, internship program, specialized training and education to community.                                                                                                                                                                                                                  | Alcohol                   | \$114,000    | \$114,000    |
| Nugens Ranch<br>Box 1545<br>Wasilla, Alaska 99687                            | Provide approximately 35 beds in a ranch setting which will allow treatment through work therapy, individual and group therapy, recreation therapy, nutritious foods, medical supervision and daily experience in group living. Also daily AA meetings. This facility is for the long term care and rehabilitation of those who are the most severely affected by alcohol abuse. | Alcohol                   | \$550,000    | \$550,000    |

\*Municipality of Anchorage Sub-contracts

|                                |                                                                                                                                                                                                                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Akeela House, Inc.             | Provides 45 adult residential treatment beds for substance abusers and provides adult outpatient counseling. Also provides outpatient counseling to youth and women as specific target groups.                                                                                                                            |
| Narcotic Drug Treatment Center | Provides outpatient detoxification, methadone maintenance, and outpatient substance abuse treatment to adults.                                                                                                                                                                                                            |
| Volunteers of America          | Provides a residential substance abuse treatment program for youth ages 12 to 16.                                                                                                                                                                                                                                         |
| Salvation Army                 | Provides community service patrol, detoxification services <u>20 beds</u> , substance abuse service in two Anchorage correctional facilities, women's residential program <u>12 beds</u> , <u>30</u> intermediate care treatment beds, transitional residential care unit (halfway house) and outpatient adult treatment. |
| Cook Inlet Native Assoc.       | Provides special outreach efforts in the Native community and provides 10 intermediate care beds in Eklutna.                                                                                                                                                                                                              |