It is generally agreed that smoking five or six 1-gram cannabis cigarettes daily is a large dose (Dornbush et al., 1971; Rosenkrantz, 1981). Because of the variability of Δ-9-THC content of cannabis available from street samples, it would be more appropriate to consider this heavy use. The definition of a low dose is more controversial. Some consider one marijuana cigarette a day to be a large dose. Others think even one cigarette a week is regular, frequent, and a high dose.

With tobacco and alcohol, for which dose is easier to quantify, it took many years to establish what a small or large dose might be in terms of specifying doses that significantly increased the risk of various behavioral and health consequences. Even with those drugs, there is still disagreement as to precisely what a small and "safe" dose might be. There will be even more problems in specifying typical cannabis doses and predicting their likely health consequences.

In controlled laboratory conditions, ingested doses of more than 20 mg of Δ-9-THC generally are considered by both investigators and cannabis users to be large doses. Doses of less than 10 mg are considered small. Marijuana cigarettes containing more than 20 mg of Δ-9-THC seem to be a large dose, and those with 10 mg produce effects generally considered the result of a small dose. When volunteers were allowed to select their own self-determined smoked doses in controlled experiments, some smoked only one or two 20-mg cigarettes daily, while other similar volunteers smoked six to ten or more cigarettes per day. Variability in smoking patterns is great and not easily quantified; only broad range estimates of dose are possible.

GENERAL TOXICOLOGY

Delta-9-THC and related cannabinoids have very low lethal toxicity. That is, a very high single acute dose of Δ-9-THC is required to kill half of a population of experimental animals. This lethal dose for 50 percent of the animals is called the LD_{50}. The lack of well-authenticated cases of human deaths from acute Δ-9-THC or cannabis overdose is consistent with the experimental animal data. The lethal dose increases as the phylogenetic tree is ascended. The rat has an LD_{50} of 40 mg/kg intravenously, in contrast to a 125 mg/kg in the monkey (Rosenkrantz, 1981). Death is usually due to cardiac dysfunction. Delta-9-THC appears to be the most toxic of the cannabinoids.

Studies of chronic cannabis administration to animals have demonstrated delayed lethality. Animals die after several days of a repeated high dose (Rosenkrantz, 1981). The reason for this pattern is unclear. It could be related to accumulation of Δ-9-THC or metabolites in tissues.

A 1-year chronic treatment of rats with lower doses of cannabinoids produced a pattern of toxicity consisting of weight loss, pulmonary pathology when the drug is inhaled, and slowly

(8) marijuana may cause schizophrenia, illusions, and hallucinations, including a dulling of the senses, creating the possibility that the user is unable to respond to body signals such as pain;

There is no clinical evidence that physical dependence plays an important role in persistent use of marijuana. Withdrawal symptoms would not be expected in intermittent users; however, daily round-the-clock users of high-dose marijuana may be expected to show some symptoms of withdrawal soon after stopping regular use.

Chronic Effects

Cannabis Psychosis

Cannabis psychosis refers to a chronic psychotic condition (out of contact with reality) reportedly seen in heavy marijuana users, but extending beyond the period of acute intoxication. Some authors have described a schizophrenialike picture with delusions and hallucinations, and others have stressed the existence of organic mental confusion. Most of the reports have come from observation of hospitalized patients in Asian and African countries (Asuni, 1964; Chopra and Smith, 1974; Thacore and Shukla, 1976). There are no reports in the North American literature. At this time, there is insufficient evidence to say that cannabis psychosis exists as a separate clinical entity (Murphy, 1963; Edwards, 1976).

"Amotivational Syndrome"

Clinicians coined the term "amotivational syndrome" to describe a characteristic set of personality changes seen in some daily users of marijuana (McGlothlin and West, 1968; Smith, 1968). The changes include apathy, loss of ambition, loss of effectiveness, diminished ability to carry out long-term plans, difficulty in concentrating, and a decline in school or work performance. As usually described, these changes are seen in frequent or daily users, and thus they may be considered a form of chronic intoxication. The term "amotivational syndrome" is not an official diagnosis, but there is agreement among many clinicians who treat young people that this constellation of symptoms is common. It may also be seen in nonmarijuana users, and daily use of marijuana is not always associated with loss of motivation.

The evidence presented for the linking of this syndrome with marijuana consists of case reports. For example, Baker and Lucas (1969) described the case of a man whom friends described as previously conscientious, capable, and effective; but after smoking hashish daily for 3 years, he changed into a person for whom use of drugs was a way of life and in whom a serious deterioration of social function was observed. Other reports consist of groups of cases with similar histories (Thurlow, 1971). The symptoms mentioned, in addition to loss of motivation, include failing grades, difficulties in concentration, intermittent confusion, and impaired memory. Some authors report improvement when use of marijuana is stopped (Kolansky and Moore, 1971, 1972).

4

EFFECTS OF MARIJUANA ON THE BRAIN

The most clearly established effects of cannabis are upon behavior. These effects, described in Chapter 6, indicate that major actions of cannabinoids are upon the brain. The ways in which marijuana alters the brain to produce its behavioral effects are not known.

Efforts to discover the causes of the behavioral effects have included studies on brain morphology, physiology, and chemistry to be reviewed in this chapter. Effects of marijuana on brain electrical activity and on brain chemistry have been measured, but their significance for brain function is not known because of our limited knowledge of brain-behavior relations. Marijuana causes temporary intoxication and results in changes in brain physiology and chemistry similar to those caused by other intoxicating drugs. Although these kinds of studies may ultimately shed light on the way marijuana produces its behavioral changes, they do not provide answers to important clinical questions. Does marijuana cause long-term changes in the brain that lead to chronic psychiatric or neurological disorders? So far, the studies reviewed below provide no convincing evidence for long-term changes because of use of marijuana.

BRAIN MORPHOLOGY

#8

There is substantial controversy about whether marijuana causes changes in brain structure or in brain cells. Two studies have reported that marijuana produces changes in brain morphology. Both suffer sufficiently from methodologic and interpretational defects that their conclusions cannot be accepted. Furthermore, other studies have not found changes in morphology.

Gross Morphology

Data suggesting that use of marijuana causes brain atrophy were obtained by pneumoencephalography (injection of air into spaces in and surrounding the brain) on 10 users of marijuana who had sought medical attention because of neurologic complaints (Campbell et al., 1971). The size of the largest brain cavities (ventricles) was

(9) although it may take a heavy cigarette smoker as long as 20 years to develop lung cancer, one marijuana cigarette a day may cause lung cancer in three years;

(10) THC affects eggs, sperm, sexual hormones, and the development of a fetus and marijuana use may result in deformed or undersized offspring;

However, extensive testing with Δ-9-THC using three established ...s for mutagenesis failed to detect any mutagenic effect, or any ...ct as an inhibitor of DNA repair (Legator et al., 1976; Glatt et ..., 1979; Zimmerman et al., 1978).

#10

Cytogenetic Effects

The numbers and kinds of chromosomes (structures in a cell nucleus that contain and transmit genetic information carried in DNA) are highly characteristic for a given species. Structural variation and changes in numbers of chromosomes may be evidence for genetic damage produced by drugs and other chemical agents. Unfortunately, the literature on the effects of marijuana on chromosomes is limited and conflicting. Studies suggesting that marijuana probably does not break chromosomes are fairly conclusive. There is less evidence that marijuana may produce aneuploidy (abnormal numbers of chromosomes) in some daughter cells during cell division.

Does marijuana cause chromosome breaks? The weight of the evidence from in vitro cultures of human cells and from in vivo animal and human studies is that neither marijuana nor Δ-9-THC causes chromosome breaks.

In Vitro and Animal Studies

Cultures of human leukocytes, exposed to different concentrations of Δ-9-THC, showed no increase in the incidence of chromosome breaks or gaps when compared to controls (Stenchever and Allen, 1972). Studies of golden hamsters given subcutaneous injections for 10 days of marijuana extract distillate containing 17.1 percent Δ-9-THC (Nicholson et al., 1973), and of beagle dogs trained to smoke high doses of marijuana (3 g/day/week for 30 months), showed no significant differences in chromosome gaps or breaks when compared with control groups (Genest et al., 1976).

Human Studies

Cytogenetic analysis of chromosomes from peripheral blood leukocytes and cultures of subjects exposed to marijuana smoking, marijuana extract, or synthetic Δ-9-THC revealed no increase in chromosome breakage attributable to these compounds (Nichols et al., 1974; Matsuyama, 1976; Morishima et al., 1979). Doses ranged from 20 mg Δ-9-THC per day to 12-16 marijuana cigarettes per day. Studies that have reported chromosome breaks or gaps in cell cultures of users of marijuana have largely been carried out on multiple drug users, and the breaks and gaps may be due to other factors associated with a life of heavy drug use (Gilmour et al., 1971; Nerha and Obe, 1974). However, in a retrospective study on college students, chromosome breaks were found in blood cultures of 49 light (one or

Mice were given five daily intraperitoneal injections of Δ-9-THC, cannabidiol, or cannabinol at doses approaching or exceeding the LD_{50} (the dose necessary to kill 50 percent of the animals). Thirty-five days after the last treatment, animals were killed and sperm were evaluated by scanning electron microscopy. Control animals had 1.5 percent abnormal forms. Animals that received LD_{50} doses of the various derivatives had 2.4 to 5.0 percent abnormal forms.

Only a few studies have examined the effects of cannabis on spermatogenesis (Huang et al., 1979). Marijuana was administered to rats in a smoke machine. After 30 days of exposure, marijuana smoke lowered the sperm counts in animals significantly, as did cannabinoid-free smoke. By 75 days, however, only the marijuana smoke group maintained a low sperm count. In the marijuana-treated group, there was an increased number of abnormal forms, particularly with an increase in dissociation of sperm heads and tails. In the discussion of this paper, the authors reported elevated serum FSH levels following marijuana exposure, but did not present data. They concluded that marijuana has a direct effect on the testis. A variety of in vitro studies support this suggestion (Jakubovic et al., 1977, 1979).

Marijuana and its derivatives also have been shown to be antiandrogenic (antagonistic to male hormones) (Purohit et al., 1980). Several constituents, including Δ-9-THC, can bind to the receptor for androgen. Marijuana also has been demonstrated to be estrogenic (like female sex hormones) in vivo, and recent studies suggest that these effects may be mediated via the estrogen receptor. These observations have been disputed by others (reviewed by Purohit et al., 1980). The ability to inhibit or mimic the action of sex steroids provides one mechanism by which these agents can produce their effects. There obviously are many others.

FEMALE REPRODUCTIVE FUNCTION

The effect of cannabis on female reproduction has been studied in rats, mice, rabbits, and monkeys. The work in rhesus monkeys is of particular importance, because of the similarity in the menstrual cycle among primate species, including human beings.

Human Studies

There is only one study reported on the effects of marijuana on reproductive function in women. The work has appeared in print as a report of the proceedings of a 1978 symposium held in Mexico City (Bauman et al., 1979) and as part of the congressional record subsequent to testimony before a Senate committee hearing (Bauman, 1980). These publications do not provide details on methodology or on individual hormone values. Differences between the control and experimental groups, recognized by the investigators, could be of

importance; alcohol use, for example, was more frequent in the marijuana-using group. The study attempted to establish the endocrine (hormonal) profile and menstrual patterns of women who used marijuana on a chronic and frequent basis. Twenty-six women who used it at least three times a week for 6 months were compared with 17 women who had never used the substance. The number of cycles studied for each variable investigated is not clear from the publications. This difficulty notwithstanding, the report reveals no difference in plasma levels of LH and FSH between the two groups and no change in peaks and basal values of the female hormones estradiol or progesterone, the critical hormone levels controlling the process of ovulation. It would be expected that no major difference was found in the incidence of anovulatory cycles between the two groups. By combining anovulation and shortened lutsal phase, however, the authors report a statistically significant difference in the marijuana-using group, which could be clinically important in causing subfertility. This evidence is, at best, only suggestive. The observation that testosterone levels in marijuana-using women are elevated is difficult to interpret in terms of clinical significance; apparently, the subjects did not report episodes of acne, abnormal hairiness, or other testosterone-dependent side-effects. According to the authors, serum prolactin levels are lower in marijuana users than in controls. The implications of this observation for fertility, lactation, or the development of breast cancer are not clear.

The absence of other studies on users of marijuana makes it difficult to draw conclusions on the implications of the data cited above. Several of the effects noted are different from the more extensive and experimentally controlled observations in rhesus monkeys and other laboratory animals. This situation calls attention to the urgent need for more comprehensive endocrine and gynecologic investigations of women who use marijuana.

Animal Studies

Administration of crude marijuana extract to rats or mice resulted generally in suppression of ovarian function and in various aspects of estrogen activity, such as uterine metabolism, weight, glycogen content, and levels of RNA and sialic acid (Chakravarty et al., 1975; Dixit et al., 1975).

The administration of crude marijuana extract for 30 days to rats and mice abolished the estrus cycle and caused a significant reduction in the size of the ovaries and in some primordial ova (Dixit et al., 1975). Intraperitoneal administration of Δ-9-THC to rats, appropriately timed, has also been reported to block ovulation (Nir et al., 1973). This effect of Δ-9-THC was exerted by suppressing the characteristic preovulatory surge of plasma LH. Other investigators have reported suppression also of plasma FSH and prolactin when Δ-9-THC is given just before ovulation (Ayalon et al., 1977). The substance was found to depress plasma concentration of LH in ovariectomized rats (Marks, 1973; Tyrey, 1978, 1980) and

rhesus monkeys (Besch et al., 1977). Asch et al. (1979) also showed in the rabbit, a reflex ovulator, that a precoital single dose of Δ-9-THC blocks the postcoital LH surge and ovulation.

Administration of LHRF was able to bring about the release of LH in Δ-9-THC treated rats and rhesus monkeys (Smith et al., 1979). These results indicate a direct effect of cannabinoids at the level of the hypothalamus, part of brain important in reproductive hormone regulation. The ovulation-blocking effect of the cannabinoids was further investigated by Cordova et al. (1980). Natural and chemically modified cannabinoids blocked ovulation in rats.

Administration of Δ-9-THC to rhesus monkeys during the follicular phase resulted in prolonged periods of amennorhea (absence or abnormal stoppage of the menstrual flow), absence of midcycle LH surge, and progesterone levels characteristic of anovulation (Asch et al., 1981).

BIRTH DEFECTS AND TERATOGENICITY

Because Δ-9-THC crosses the placenta it is a potential teratogen, agent that causes defects in the developing embryo. This effect ld occur in either of two ways: (1) exposure to cannabis prior to ception could harm the sex cells (the ova and sperm), or (2) the us could be harmed directly during organogenesis. In addition,)-THC can be secreted in breast milk and, therefore, can be toxic stnatally.

Human Studies

he evidence for teratogenicity in human beings is very difficult to nterpret. Although there is widespread use of marijuana in young woman of reproductive age, there is no evidence yet of any teratogenic effects of high frequency or consistent association with the drug. There are isolated reports of congenital anomalies in the offspring of marijuana users, but there is no evidence that they occurred more often in users than in nonusers and in those cases there was coincident use of other drugs. Subtle development effects in offspring, such as nervous system abnormalities, and reductions in birth weight and height may indeed exist (Finnegan, 1980; Fried, 1980; Hingson et al., in press). Additional carefully designed, prospective studies should provide valuable information in this area.

Animal Studies

Crude marijuana extract and Δ-9-THC are teratogenic at certain doses in animals.*

*Bibliography available upon request from the Institute of Medicine, National Academy of Sciences.

(11) other physical reactions to marijuana include irreversible changes in the brain, sinusitis, pharyngitis, bronchitis, emphysema, increased heart rate, and decreased blood circulation;

In two cross-sectional national samples of high school students, surveyed in 1974 and 1978, Jessor et al. have found that not only are the patterns of association between use of marijuana and deviant characteristics similar in both surveys, but also that the strength of the associations, as reflected in the sizes of the correlation coefficients, are almost identical. The very same conclusions derive from analyses based on five successive cohorts of high school seniors, sampled at yearly intervals in Monitoring the Future (Bachman et al., 1981).

Longitudinal studies of students aged 12-21 have done much to extend our understanding of the precursors of using various forms of drugs. Studies have been reviewed in detail by Kandel (1978a,b; 1980a; also see Appendix C) and document that many of the factors found to be associated with use of drugs at one point in time, such as low academic performance, crime, low self-esteem, depressive mood, rebelliousness, and other personality characteristics, precede the use of drugs (see in particular Mellinger et al., 1976; Jessor and Jessor, 1977; Johnston et al., 1978; Kandel, 1978a; Kandel et al., 1978b,c; Kaplan and Pokorny, 1978; Smith and Fogg, 1978; Wingard et al., 1979; Kaplan, 1980). Some of the predictive factors can be identified in childhood, such as aggressiveness with or without association with shyness (Kellam et al., 1980, in press) and rebelliousness (Smith and Fogg, 1978).

Other longitudinal studies also document that many of the factors found to be associated with use of drugs at one point in time, such as low academic performance, delinquency, low self-esteem, and depressive mood actually precede the use of drugs (O'Malley, 1975; Mellinger et al., 1976; Jessor and Jessor, 1977; Johnston et al., 1978; Kandel et al., 1978a; Kaplan and Pokorny, 1978; Wingard et al., 1979; Kaplan, 1980).

One study shows not only that certain behaviors predict use of marijuana, but also that drugs may aggravate or exaggerate certain behaviors. A cohort of high school students was followed at annual intervals throughout the four years of high school (Jessor and Jessor, 1977). During this time annual scores for various attributes were charted in four groups of students distinguished by differing drug histories: veteran users, who used drugs pre-high school; early initiates, who began relatively early in their high school career, i.e., between the first and second year of testing; late initiates, who began relatively late, i.e., between the second and the third year; and nonusers, who had not started to use marijuana at the last testing in the senior year of high school (Jessor and Jessor, 1977, 1978). These four groups of students differed on measures, such as general deviant behavior (a 12-item scale measuring frequency of involvement in stealing, fighting, property destruction, truancy, or other delinquent activities in the last year) or value on academic achievement (a five-item scale, measuring the value placed on the attainment of success in school work), at the beginning of the study. Scores predicted if and when students initiated use of marijuana. Those students already involved in use of drugs before high school scored highest on deviance and lowest on achievement motivation at

THE IMMUNE SYSTEM

The immune system functions in protecting the body against viruses, bacteria, and other infections. It also plays a major role in preventing the growth and dissemination of cancerous cells.

There have been reports that cannabis is immunogenic, capable of activating components in the immune system. These components include such cells as lymphocytes, some of which produce antibodies in response to invasion by a foreign agent, and macrophages, which can be stimulated by inflammation to ingest invaders.

Human Studies

There have been reports that cannabis interferes with components in the immune system in man. Antibodies will develop in response to marijuana in some people, along with an allergic response, while others develop antibodies without apparent allergic reaction (Liskow et al., 1971; Shapiro et al., 1974, 1976; Lewis and Slavin, 1975). However, the studies reporting these effects were not designed to determine which components of the marijuana are immunogenic and which are allergenic.

Studies of various aspects of the immune system in persons who were chronic users of marijuana have indicated mild decreases in activity of one or another component of the system; however, other investigators have noted no changes outside of the normal range. (Gupta et al., 1974; Petersen et al., 1975, 1976; White et al., 1975; Lau et al., 1976; Rachelefsky et al., 1976; Silverstein and Lessin, 1976; Cushman and Khurana, 1977; McDonough et al., 1980). These apparent inconsistencies may stem from the variability in the amount of marijuana consumed among users in different studies and the differences in the immune system assays. Hashish, as distinct from marijuana, was shown to have a slight temporary stimulatory effect on immune system (Kaklamani et al., 1978; Kalofoutis et al., 1978).

nal Studies

umber of studies have shown that Δ-9-THC and other cannabinoids uce immunological defects in rodents (Petersen and Lemberger, 5; Lefkowitz and Klager, 1978, Lefkowitz et al., 1978; Preuss and kowitz, 1978). The doses varied from 5 to 25 mg/kg (intra- itoneally) to 100 mg/kg (orally). At the higher doses there was a inution of immune response, as measured by standard immunological ays. Delta-9-THC had the same effects on cells grown *in vitro*. Other cannabinoids also have been tested for their effects. Cannabinol, Δ-8-THC, and 1-methyl-Δ-8-THC had the same immunosuppressive effects as Δ-9-THC, but cannabidiol had no immunosuppressive effect. Immunizing rabbits with Δ-9-THC resulted in the production of antibodies (Chiarotti et al., 1980).

(12) other psychological reactions to marijuana include loss of memory, anxiety, panic, paranoia, psychosis, psychological dependence, and impairment in thinking, reading comprehension, verbal and arithmetic problem solving, and perception of distance and time;

2

USE OF MARIJUANA IN THE UNITED STATES

Epidemiologic studies provide information on the use of drugs in various subgroups of the population and on the changes in patterns of use over time. The epidemiologic approach is particularly useful in defining patterns of use of marijuana in American society and in describing and analyzing the behavioral and psychosocial antecedents and consequences of that use. One of the more difficult questions is whether particular behavior or effects that are associated with use of a drug are the consequences of that use, or whether attitudes, values, and behavior develop about the use of drugs to constitute factors that may actually lead to the use of drugs. One of the more useful epidemiologic study designs is a cohort study that follows the same individual with repeated observations at regular intervals over time. Such longitudinal studies have the potential for obtaining the most compelling evidence on the antecedents of known patterns of use of marijuana, as well as possible long-term psychosocial and biological outcomes for these individuals.

The committee, with the help of consultants, sought answers in the epidemiologic literature to the following five questions:

1. What are important patterns of use of marijuana in the American population including special groups?
2. What are the general characteristics of users of marijuana?
3. What is the profile of a user of marijuana on a "daily"* basis?
4. What is known about the antecedents of use of marijuana?
5. How is use of marijuana related to the use of other drugs?

The epidemiologic and survey literature have been extensively reviewed and the major longitudinal studies are summarized in a table in Appendix C. Much of our recent knowledge derives from two well-designed major, continuing nationwide monitoring efforts

*When placed in quotation marks, "daily" is used as defined by Johnston et al. (1980b), i.e., those individuals using marijuana 20 or more times in the preceding 30 days.

significant association with the precipitation of LSD flashbacks among five classes of abused drugs. Clinical studies also have provided evidence that marijuana precipitates a recurrence of the LSD flashbacks experience (Holsten, 1976; Abraham, 1981).

The existence of flashbacks following use of either LSD or marijuana is entirely based on self-reports, because there are no distinctive physical signs or tests, such as EEG changes, to identify this condition. There is no current pharmacological explanation of the phenomenon, and data regarding dose and time parameters do not exist. Still, the reports by users are reasonably consistent. Thus, there is clinical evidence that use of marijuana by those who have previously used LSD increases the likelihood of recurrence of the LSD experience.

Effects on Preexisting Mental Illness

The only evidence available regarding this issue consists of case reports of patients who had recovered and apparently were doing well until they used marijuana. There is no information on the number of mentally ill patients who have used marijuana without complications.

The available data, therefore, do not prove that marijuana worsens mental illness. Still, there are sufficient numbers of uncontrolled clinical reports showing a temporal association between use of marijuana and return of mental symptoms, so that patients should be warned of this possibility.

Patients with a history of schizophrenia may be particularly sensitive to marijuana's effects. Four schizophrenic patients who were otherwise well controlled with medication suffered serious relapse of their schizophrenic symptoms following use of marijuana (Treffert, 1978). Other cases have been reported (Smith and Mehl, 1970; Weil, 1970; Bernhardson and Gunne, 1972). These all were cases in which marijuana was purchased on the street, so the dose and purity were unknown.

Patients with mood disorders have also been reported to show worsening of mental symptoms after use of marijuana. For example, four cases are known in which marijuana apparently precipitated a relapse of psychotic (hypomanic) behavior (Harding and Knight, 1973). Furthermore, depressed patients treated with Δ-9-THC have been observed to show a high incidence of dysphoric reactions (Ablon and Goodwin, 1974).

Effects Sometimes Reported By Users

Mood Changes

There is a general belief that use of marijuana alters mood. This property is one of the desired effects sought by many users. Investigators have described a number of variables that enter into the mood response to marijuana (Jones, 1971). These include dosage,

past experience, attitude, expectations, and setting. For example, individuals who used marijuana in isolation tended to be relaxed and slightly drowsy; in contrast, when the user was in a group situation, marijuana was associated with euphoria and lack of sedative effect (Jones, 1971). Further evidence that mood changes are not attributable solely to the pharmacological action of marijuana comes from a study that found that elevation in mood occurred immediately before use of marijuana and immediately after, but that mood was not correlated with other indications of the subjective level of intoxication (Rossi et al., 1978). Instead, mood was correlated significantly with the moods of others, whether or not the other persons were intoxicated.

It appears that preexisting mood can influence the decision to use marijuana. High school students who exhibit symptoms of depression are more likely than are others to begin using marijuana as well as other illicit drugs (Paton et al., 1977). There is some evidence that students use the drug as a self-prescribed remedy for their own mood problems, often reporting that they use marijuana as a means of psychological coping (Johnston et al., 1980; Kaplan, 1980).

A belief that marijuana can be used to alleviate clinical depression is not supported by other studies, including one in which Δ-9-THC was carefully tested as an antidepressant. It was given to depressed patients as an experimental treatment without success (Ablon and Goodwin, 1974) (see Chapter 7).

Interpersonal Behavior

Adolescents and young adults often report that they use marijuana to facilitate interaction in new social situations (Mirin and McKenna, 1975). In a survey of 704 midwestern undergraduate students, most reported that marijuana was a meaningful "tool of social bonding" (Linn, 1971). There seems to be a widespread belief that marijuana smoking has several facilitative effects, including enhanced social effectiveness, closer social bonding, heightened interpersonal sensitivity and empathy, and enhanced sexual pleasure. The subcultural lore on one of these measures of interpersonal behavior--sexual effects--has not been studied systematically either in surveys or in experimental studies. The effects on sex hormones are controversial (see Chapter 5). Studies in experimental situations have failed to show any enhancement of social interaction and, in fact, some decrements were noted (Galanter et al., 1974; Clopton et al., 1979; Janowsky et al., 1979). Data from natural settings rather than experimental settings are not available.

Effects on Aggression

Because marijuana users have been involved in delinquent behavior, a number of investigators have questioned whether use of marijuana enhances aggressiveness in human beings. There are specific concerns

Marijuana also has been found to produce an acute brain syndrome. This is a more severe mental problem consisting of confusion and loss of contact with reality. It lasts from several hours to several days and appears to be more likely to occur with higher doses.

#12

Chronic effects of any drug are more difficult to assess than are immediate effects. The evidence that marijuana produces a chronic psychosis is not convincing. The possible role of marijuana in causing an amotivational syndrome is a matter of great concern. Apathy, poor school work or work performance, and lack of goals characterize a number of long-term marijuana users. But it has not been possible to determine how much is caused by use of marijuana and how much was antecedent; it seems likely that both factors (drug effect and self-selection) contribute to the motivational problems seen in chronic users of marijuana. Existing studies have produced conflicting results. None of the investigators has looked at effects on the very young daily marijuana user, who is regarded as potentially at high risk for damaging effects because of physiological and psychological immaturity.

There is clinical evidence that marijuana use by former LSD users may precipitate a recurrence of LSD-type hallucinations known as a "flashback." Other clinical evidence raises the possibility that marijuana use can worsen preexisting mental illness.

RECOMMENDATIONS FOR RESEARCH

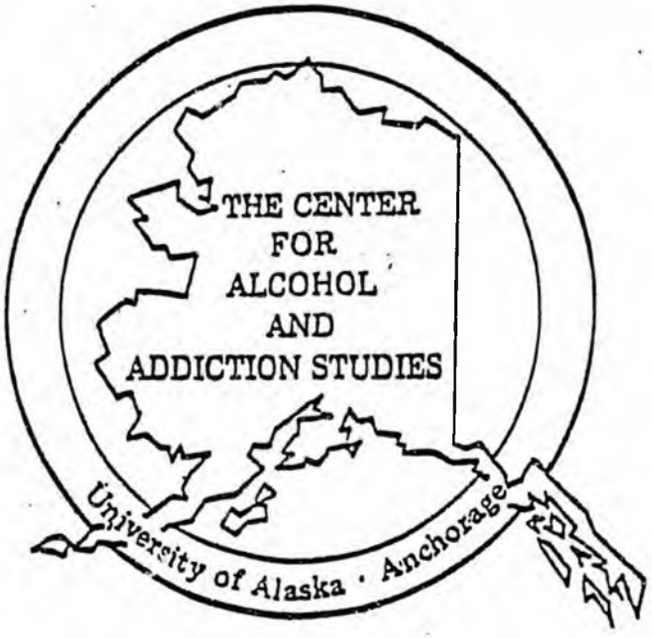
The committee recommends the following types of studies.

- Systematic research on acute behavioral and psychosocial effects of marijuana should be extended to other age groups. There are virtually no data on prepubertal children, young adolescents, older adults, and aging persons.
- Studies of effects of daily use of marijuana on school children are greatly needed. These effects should include the learning of new material, physical, psychological, and social development, acquisition of coping skills, and tools of daily living.
- Systematic studies of long-term effects of marijuana are increasingly possible now that longitudinal studies have identified representative panels of persons known to be chronic heavy users. These studies should cover interactive effects of marijuana and other drugs on behavioral and psychosocial responses, especially interactions of alcohol and marijuana because of their frequency of associated use.
- Dosage effects should be restudied, taking into account the higher potency cannabis that is in current use. Further study is needed of the timing and depth of inhalation of cigarettes with standard doses of marijuana. More animal studies at varying doses are needed. In view of the long-term retention of marijuana in body tissues, further study is needed to see whether or not chronic users may have impairments of function even in the absence of an acute dose

Back-up SB 32

EXECUTIVE SUMMARY

PATTERNS OF DRUG USE: SCHOOL SURVEY



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I

EXECUTIVE SUMMARY:
Highlights of the Study

A. Introduction

This report presents the findings from a study conducted by the Center for Alcohol and Addiction Studies (CAAS) of the University of Alaska, Anchorage. The research, sponsored by the State Office of Alcoholism and Drug Abuse (SOADA), surveyed students in grades 7-12 in school districts in eight locations in the state: Anchorage, Barrow, Bethel, Kotzebue, Fairbanks, Juneau, Nome and Sitka. The project was designed to obtain information on the use or nonuse of a broad spectrum of chemical substances, ranging from legal socially-sanctioned drugs for those of legal age, such as alcohol and tobacco, to illegal and unsanctioned drugs taken for nonmedical purposes, such as marijuana, cocaine, hallucinogens and stimulants, among others.

In recent years American society has experienced an increase in the frequency and intensity of substance use and abuse, particularly among college and secondary school age youth. In particular, the nonmedical use of illicit mood-altering drugs by youth of elementary, junior and senior high school age has become a problem of major concern. Although legal and social sanctions exist to preclude nonmedical use of psychoactive drugs for recreational or social purposes, they continue to be taken, and youngsters who take them are placing themselves at risk for potential legal, social, and health problems.

Recent research (c.f., Richards, 1981) has shown that the prevalence of drug use is generally fairly low among elementary school youth, but that the prevalence increases dramatically among junior and senior high school students. The

use of drugs among school age youth began to emerge slowly in the early 1960's, and increased dramatically during the mid to late 1970's. Although the prevalence of drug use is believed to be moderating (Miller, 1983; Johnston, Bachman, & O'Malley, 1982), the overall level of drug use by youth remains a significant concern.

Interest in learning about the nature and extent of drug use by school age youth has prompted a number of national surveys sponsored by the National Institute of Drug Abuse (NIDA), as well as a myriad of research studies directed at investigating adolescent drug use (c.f., Richards, 1981). Alaska has been isolated from participation in these studies, thereby leaving a void with respect to reliable information on the use and nonuse of drugs by Alaska's school age youth. Without this information state and local agencies are hampered in their planning for drug related services, education, and prevention programs.

The present research is directed at achieving information concerning experiences with mood-altering drugs by school age youth. It is the specific aim of the study to identify current trends and patterns of use by these youthful Alaskan residents, and to also obtain knowledge about students' perceptions and consequences of using drugs. In order to achieve these objectives, surveys were conducted in eight school districts (listed above) in diverse locations within the state. The major topics to be addressed from the results of the survey in this report are the current prevalence of drug use among the students and an analysis of some of the characteristics of those who have had experiences with psychoactive drugs. Also reported are data on use by grade, age of first use, intensity of drug use, and perceptions about taking drugs. Emphasis is also given to addressing the non-using student, and to explore why they did not experiment with chemical substances.

The results to be presented have been summarized in a series of tables, charts and graphs; a discussion of results follows the presentation of the tables. In the following section a glossary has been provided to help define terms and to provide a key to the interpretation of the graphic figures. When appropriate, comparisons of the Alaskan data have been made with comparable school age youth included in some of the national survey research.

It is envisioned that the findings of the drug survey will be useful to schools in their efforts to develop education programs designed to address the issue of drug-taking behavior. Additionally, the study is designed to assist SOADA with respect to its planning and policy development, as well as to be of value to local and state governments and govermental agencies in their efforts to understand and deal with the health, social and legal consequences of drug-taking behavior by school age youth.

In summary, the five sets of results share several critical characteristics which contribute to the integration of findings, and which also contribute to their utility to estimate drug use among the general population of school age youth in Alaska:

- data collection from students in grades 7-12, which consistently includes those in age from 12 to 18;
- adequate and consistent sampling methodology;
- comparability of drugs investigated;
- comparability of question formats; and
- accessibility of detailed tabular data.

Each of the five data sets are found in Chapter III, the section on results. Chapter IV contains a discussion of the results, followed by conclusions and recommendations (Chapter V).

B. Glossary

This section is provided to acquaint the reader with precise definitions of the terms and concepts used in this report. Included in this glossary are definitions of substances and frequently used terms, as well as information on reading tables, and clarification of the statistical terms used in the report. Phrases are listed in alphabetical order.

Adults	This category includes persons age 26 years and older. For other age groups see: Youth and Young Adults.
Alcohol	Alcoholic beverages - beer, wine, and whiskey, such as gin, and other hard liquors.
Barbiturates	See depressants.
Cocaine (see stimulants)	A behavioral stimulant drug taken to induce a "rush" which involves a feeling of intense euphoria and a sense of well-being.
Confidence Level (Interval)	A range of values within which the true statistic or value may be found, or where there is a probability of locating the true population value.
Current Use	Has used within past month.
Depressants	Chemical substances which act to exert a nonselective general depressant action upon the central nervous system, and which are taken to induce a mild state of euphoria similar to alcohol intoxication. Sedatives are divided into four subgroups: intermediate/long acting barbiturates, nonbarbiturate/nonbenzodiazepine sedatives, short acting barbiturates and Dalmane.
Drug	For purposes of the study, a drug is defined as any chemical substance that alters mood, perception, or consciousness.
Frequency	How often a drug was taken, e.g., once a week, weekly, etc.
Ever Used	Taking/trying a drug one or more times during one's lifetime.
Hallucinogens	Drugs classified as hallucinogens and/or psychedelics have the capacity to induce visual, auditory, and other hallucinatory experiences, and to separate the individual from reality. Such drugs as LSD, phencyclidine (PCP), mescaline, psyote, psilocybin, and DMT, among others, are included within general data on hallucinogens.
Heroin	A semisynthetic opiate produced by a chemical modification of morphine, taken to induce a subjective experience characterized by an extremely pleasant, euphoric state, feelings of warmth, well-being, peacefulness and contentment.

Inhalants — For the purpose of this report, substances currently being inhaled to alter subjective states are being defined as inhalants. Inhalants may be classified into three basic classes: commercial and related volatile solvents, aerosols, and anesthetics. The following substances have been defined as inhalants: 1) Gasoline or lighter fluids; 2) Spray paints; 3) Other aerosol sprays (PAM or deodorants); 4) Shoe shine, glue, or toluene; 5) Lacquer thinner, or other paint solvents; 6) Amyl nitrite, "poppers"; 7) Halothane, ether, or other anesthetics; 8) Nitrous oxide, whippets; 9) Locker room odorizer; 10) Other substances used as inhalants.

Lifetime Prevalence (Ever Used) — Percent who ever used; i.e., has used the drug one or more times in lifetime.

Marijuana — A mixture of the crushed leaves, flowers, and small branches obtained from the hemp plant, and taken to induce feelings of well-being, relaxation, tranquility, and a heightened state of awareness.

Nonuse — A "No" answer to any of the questions which inquire whether one had ever taken a chemical substance.

Opiates — Any natural or synthetic drug that acts in the same way as morphine to relieve pain, such as codeine, demerol and other such drugs.

Past Month, Past Year Use — See: Use in Past Month, Use in Past Year.

Percents/ Percentage — A given part or amount in every hundred, e.g., a 20% rate means 20 in every 100. Percents are shown to the nearest tenth for the data in this study.

Prevalence — The incident of drug taking, represented by the percent of respondents who tried a drug, such as 40% tried a drug 6 or more times.

Recency of Use — The categories of recency are: past 30 days, past year, and lifetime use.

Relative Percent — The amount or number of persons among those within a specific group, e.g., taking or not taking a specific drug, who have responded to questions which pertain only to use or non-use of the drug.

Rounding — The tables sometimes add to 99% or 101% when they should add to 100%. Similarly, tables shown to one decimal place sometimes add to 99.9% or 100.1% instead of 100%. These discrepancies are due to the rounding of percents.

Sedatives — See depressants.

Significance (level of) — The reliability of finding or the dependability one can place on an obtained statistic as an indicator of the true population

value. Significance always refers to probability, or how much an obtained value can be explained as a chance occurrence. The significance value used in this research is $p = .05$, which means that we anticipate that 95 times out of 100 chances we have obtained reliable statistics.

Stimulants — Any drug that increases behavioral activity is defined as a stimulant drug. Stimulants are divided into amphetamines, nonamphetamine anorectics, Ritalin, and Cylert. These drugs are generally taken to feel more alert, to achieve a "rush," or to enhance the effects of other drugs.

Tranquilizers — Psychoactive drugs which are used principally to reduce anxiety, stress or tension and to treat neurotic disorders. The tranquilizers concerned in this survey are Librium, Valium, Equanil and other such types.

Use in Past 30 Days — Reports given which indicate have taken a drug one or more times during the past 30-day period.

Use in Past Year — Respondent reports use one or more times during year prior to interview date.

Young Adults — This category includes persons age 18 to 25 years. For other age groups see: Youth and Older Adults.

Youth — This category includes persons who participated in Junior and Senior High School samples. Age of respondents will vary but will generally range from 12 to 18. For other groups see Adults and Young Adults.

Key to Graphs and Figures

MJ - Marijuana	ST - Stimulants
HL - Hallucinogens	DP - Depressants
CK - Cocaine	TQ - Tranquilizers
HR - Heroin	OP - Opiates
IH - Inhalants	TB - Tobacco
AL - Alcohol	

C. Major Findings

The major findings of the study are summarized in the tables, graphs and figures which follow, and in the summary statements listed below:

- Half the students sampled have reported experiences with one or more illicit mood-altering drugs. A substantial proportion of these experiences involved marijuana. The percentages of students who tried different illicit drugs is illustrated in Figure 1. After marijuana, the other drugs experienced reflect the following order of lifetime prevalence: stimulants, cocaine, inhalants, depressants, tranquilizers, hallucinogens and heroin.

- The level of lifetime experiences with psychoactive drugs among students is high. The extent to which drugs have been tried/taken among Alaska's students is illustrated vividly when the present findings are compared to results of a national survey of drug use among a sample of 12-17 year olds. Although the ages of the two samples are not exactly comparable, the national data nevertheless provides a "baseline" which helps to achieve a perspective on drug use by Alaska's youth. The comparison in Figure 2 shows clearly that Alaskan students are having more experiences with psychoactive drugs than their counterparts in the "lower 48."

- Although many students have tried drugs, the majority of such use has been chiefly experimental. Only a small percent of students have taken drugs with any consistency or regularity. Marijuana, however, is the exception, with about 4% of the sample using it once or more a day.

FIGURE 1

LIFETIME EXPERIENCES WITH PSYCHOACTIVE DRUGS

TOTAL SCHOOLS

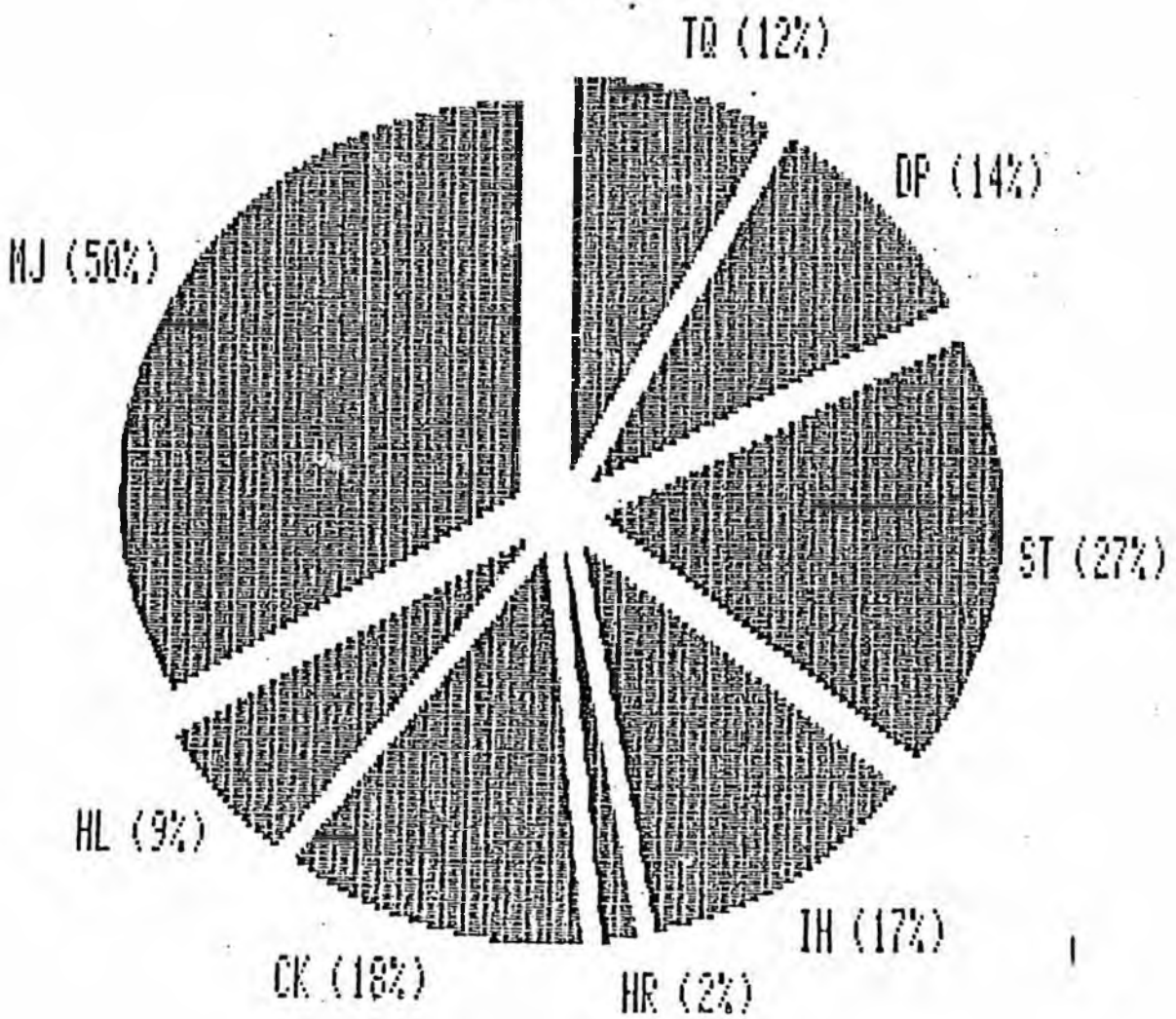
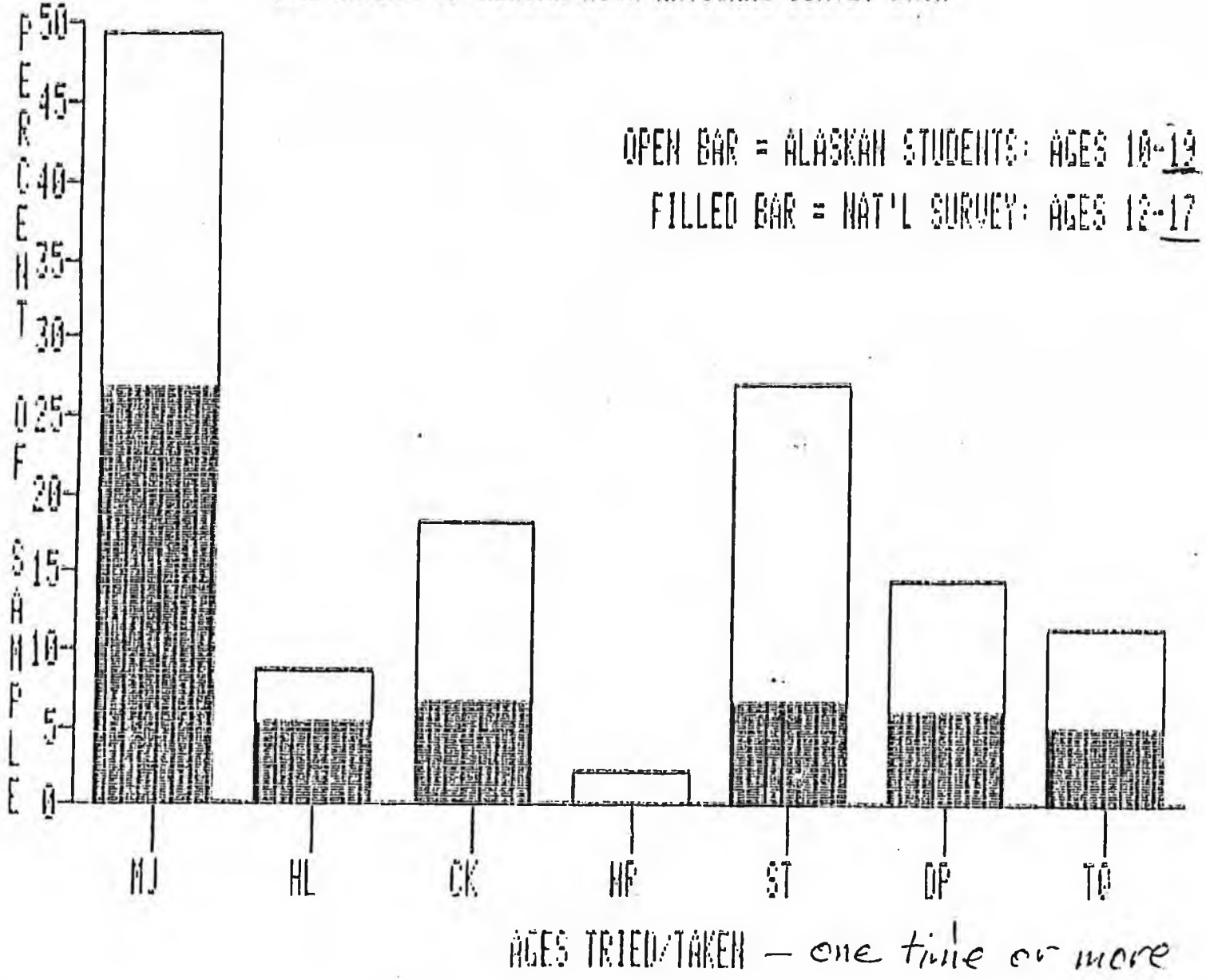


FIGURE 2

COMPARISON OF ALASKA WITH NATIONAL SURVEY DATA



- Slightly higher proportions of males than females are involved in taking/trying drugs.

- Distinct relationships exist between age, grade, and drug-taking behavior. These relationships are represented by the following results:

(1) Age and First Trying Psychoactive Drugs

As age increases, the proportion of students who try/take drugs increases correspondingly, but this relationship appears to be non-linear. That is, as age increases, the number of students who try different drugs varies at different age levels, thereby presenting distinct patterns for trying each drug. Figure 3 illustrates this process for the three most widely tried/taken drugs - marijuana, stimulants and cocaine - for all but the Anchorage school sample (where the question of age of first trying each drug was not asked).

(2) Grade and Drug-Taking Behavior

A direct, almost linear, relationship exists between grade level and the taking of drugs. As grade level increases, the percent of students who have tried/taken drugs increases correspondingly. The nature of this relationship is illustrated in Figure 4, for the three most tried drugs - marijuana, stimulants and cocaine.

(3) Junior-Senior High School Comparisons

The extent of drug-taking behavior differs significantly between junior high school (grades 7-9) and senior high school (grades 10-12) students. Senior high school students experiment with taking drugs more frequently than junior high school students.

- Most students who do not try drugs report that it is because of concern that drugs would "hurt" their minds, and because of fear that drugs would also cause physical harm.

FIGURE 3

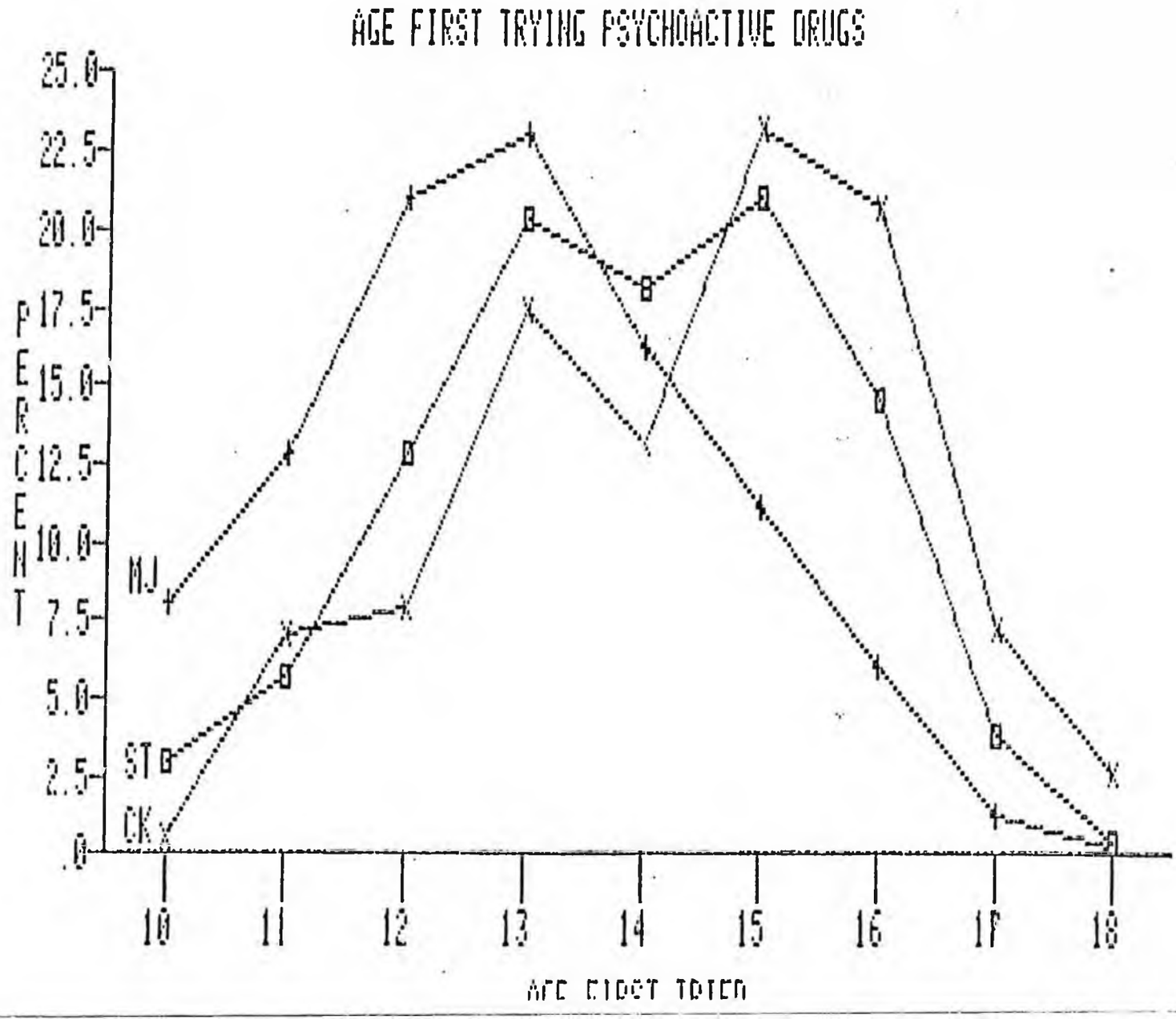
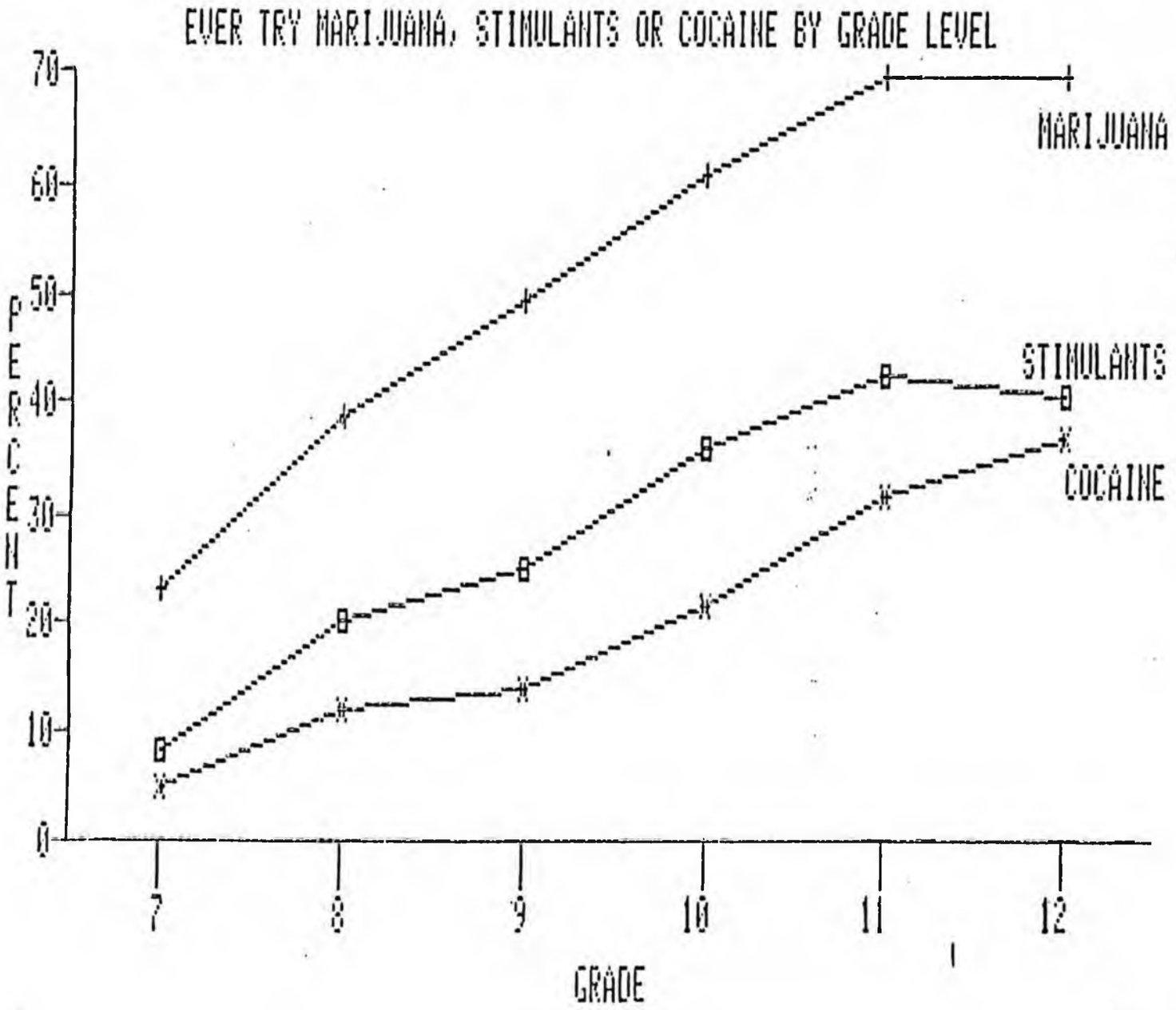

AGE FIRST TRYING PSYCHOACTIVE DRUGS
PERCENT
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0
MJ
ST
CK
10
11
12
13
14
15
16
17
18
AGE FIRST TRIED

FIGURE 4


EVER TRY MARIJUANA, STIMULANTS OR COCAINE BY GRADE LEVEL
PERCENT
70
60
50
40
30
20
10
0
7
8
9
10
11
12
GRADE
MARIJUANA
STIMULANTS
COCAINE

- Of those who have tried/taken drugs, the reasons for stopping are also mainly because of concern over psychological and physical harm.

- More students who have tried drugs express a need for drug education than those who did not try drugs.

- Corresponding to the relationship between grade level and drug-taking behavior, problems related to drug-use increase as grade level increases, but there is much variation within and between grade levels.

D. Abstraction of Summary and Conclusions

In reviewing the overall findings from the statewide study, it is readily apparent that the opportunities to try mood-altering drugs are very high, and that the rate of trying drugs is also correspondingly high. Athough it is not known whether it is the "real thing" as opposed to a "look-a-like" or a substitute chemical that students are taking/trying, the important fact is that students report that they are involved in drug-taking behavior. A question which arises is, Why is the opportunity to try drugs so very high?

The most apparent answer is that the drugs are available for them to try. It is clear the these youth are reflecting what is alleged about drug use in general in Alaska, especially in the larger communities - that it is high. The drugs that are available - albeit illegally - find their way down to adolescents and early teenagers in the school system. Also, a large percent of students are willing to try certain illicit drugs such as marijuana, cocaine and stimulants among those available.

Another questions is, Why do so many students experiment with drugs? There are several possible answers to this question. One is that many of the illicit drugs such as marijuana, stimulants and cocaine have become incorporated into

the "lifestyle" of so many people that adolescents themselves experiment with them as part of their own "normative" behavior. That is, the wide scale prevalence of drug use in general makes it a phenomenon which adolescents may pursue in order to know what drug experiences are like. It thus appears that adolescent drug use may be related to the attitudes and behavior found in the larger adult society. Research by Segal (1983), which has shown that experimentation with drugs and even moderate drug taking by a significant percentage of youth is divorced from any particular pattern of deviant behavior or severe emotional distress, tends to support the above conclusion.

The implications from the study are clear. Efforts need to be directed toward reducing the high rate of experimentation with drugs by a large number of students, as well as reducing the on-going usage by the small percentage of students who are involved in such behavior. The data suggest that intervention strategies should be emphasized within grades 8 and 9, or at least prior to age 14, since experiences with drugs tend to peak by 14 years of age.

III

RESULTS

Overview

This section provides the report of the results of the school surveys with respect to nonmedical drug-taking behavior by students in eight different locations within the state in grades 7 through 12. Also included is data on alcohol consumption and cigarette smoking.

Information compiled from surveying over 3,000 students, utilizing a comprehensive questionnaire, can be very extensive. There are a multitude of different ways of reporting results, some may have either special or unique significance, and some may be too general to be of value. It was therefore necessary to place some limitations on the reporting of the survey findings with the aim of presenting data which would be best utilized by the schools, by the State Office of Alcoholism and Drug Abuse (SOADA), by health planners, and by governmental bodies. Thus, the primary emphasis of this section, in keeping with the study's research objectives, is to present information which describes the extent, type, patterns, frequency, and distribution of nonmedical drug use among a large sample of Alaska's junior and senior high school students. Additionally, the results also describe age and grade differences with respect to drug-taking behavior, as well as data on some of the motivations for trying or not trying drugs, and on some consequences of drug-taking.

The data to be reported are presented in tabular and graphic form. They illustrate the prevalence and frequency of drug use for eight major drug categories (marijuana, inhalants, hallucinogens, cocaine, heroin, stimulants, sedatives, and tranquilizers) listed by frequency of occurrence, by gender, and by

selected school-related characteristics such as grade and comparison of junior and senior high school. A table and graph illustrating the relationship between age and first experience with drugs is also included.

Contingency tables have been utilized to help describe the results. This procedure is a way of showing the relationship between two or more classificatory variables. The display of the distribution of cases by their positions on two or more variables is the chief component of contingency table analysis and is a commonly accepted and popular procedure used by social scientists. The joint frequency distributions can be systematically analyzed by certain tests of significance (e.g., the Chi Square statistic) to determine whether or not the variables are statistically independent; these distributions can also be summarized by a number of measures of association, such as the contingency coefficient, which describes the degree to which the values of one variable predict or vary with those of another.

Contingency tables or cross-tabulation tables also allow for a determination of whether the differences which occur with respect to selected variables (e.g., specific sample characteristics such as selected demographic variables) are significantly different.

Finally, the surveys from the eight school districts have been grouped together to form five sets of results. This procedure was followed for two basic reasons: (a) to account for the procedural differences which necessitated using revised forms of the school survey in different school districts, and (b) to facilitate regional comparisons. The classification of results is as follows:

1. Total Sample (Tables T-1 - T-14)

This section links together all similar items which were used in Anchorage, Barrow, Bethel, Fairbanks, Juneau, Kotzebue, Nome and Sitka. It provides a

comprehensive summary of the responses of 3,609 students, giving an extensive overview of the nature and pattern of drug use by students in grades 7-12. The remaining four sets of tables represent subsets of the total results and, except for items not in the total sample, they essentially mirror the total findings, with some minor fluctuations.

2. Total Less Anchorage (Tabes A-1 - A-14)

This data set contains the aggregated results from all the communities less Anchorage. Thus, Barrow, Bethel, Fairbanks, Juneau, Kotzebue, Nome, and Sitka are represented. Since the Anchorage sample constitutes such a large percent of the total (44%), and since Anchorage is the state's largest school district it was decided to compare the aggregated data from all other locations with the Anchorage sample.

3. Anchorage, Barrow, Kotzebue, Nome, and Sitka (Tables A1-1 - A1-13)

The results were aggregated because they were obtained from a total school district or were obtained from a random survey of students representative of the district. These compiled results not only link the findings from different sections of the state, but they are also used to contrast with schools where nonrandom samples were obtained.

4. Bethel, Fairbanks, and Juneau (Tables A2-1 - A2-13)

This aggregation represents those school districts in which a nonrandom sample was obtained. These districts required parental permission and only students with such authorization were surveyed.

5. Barrow, Kotzebue, and Nome (Tables A3-1 - A3-13)

This aggregated unit links the three northern communities into a single data set, and also provides a means of maintaining the anonymity of each location.

In summary, the five sets of results share several critical characteristics which contribute to the integration of findings, and which also contribute to their utility to estimate drug use among the general population of school age youth in Alaska:

- Data collection from students in grades 7-12, which includes those in age from 12 to 18;
- Adequate and consistent sampling methodology;
- comparability of drugs investigated;
- comparability of question formats; and
- accessibility of detailed tabular data.

Each of the five data sets are found in the following pages. The next chapter contains a discussion of the results.

TABLE T-1

OPPORTUNITY TO TRY AND TRYING DRUGS
Lifetime Experiences

Total Schools
Students Grades 7-12
(N = 3609)

	1	2	3	4	5
Drug	Number of Students Having a Chance to Try a Drug	Percent of All Students Having a Chance to Try a Drug	Number of Students Reporting Having Tried a Drug	Percent of Students who Had a Chance to Try and Did Try a Drug	Percent of All Students Trying a Drug
Marijuana	2384	66.1	1784	74.8	49.5
Hallucinogens	653	18.1	314	48.1	8.7
Cocaine	1046	29.0	662	63.3	18.3
Heroin	261	7.2	78	29.9	2.2
Inhalants	968	26.8	595	61.5	16.5
Stimulants	1288	35.7	982	76.2	27.2
Depressants	725	20.1	516	71.2	14.3
Tranquilizers	573	15.9	416	72.6	11.5

FIGURE T-1

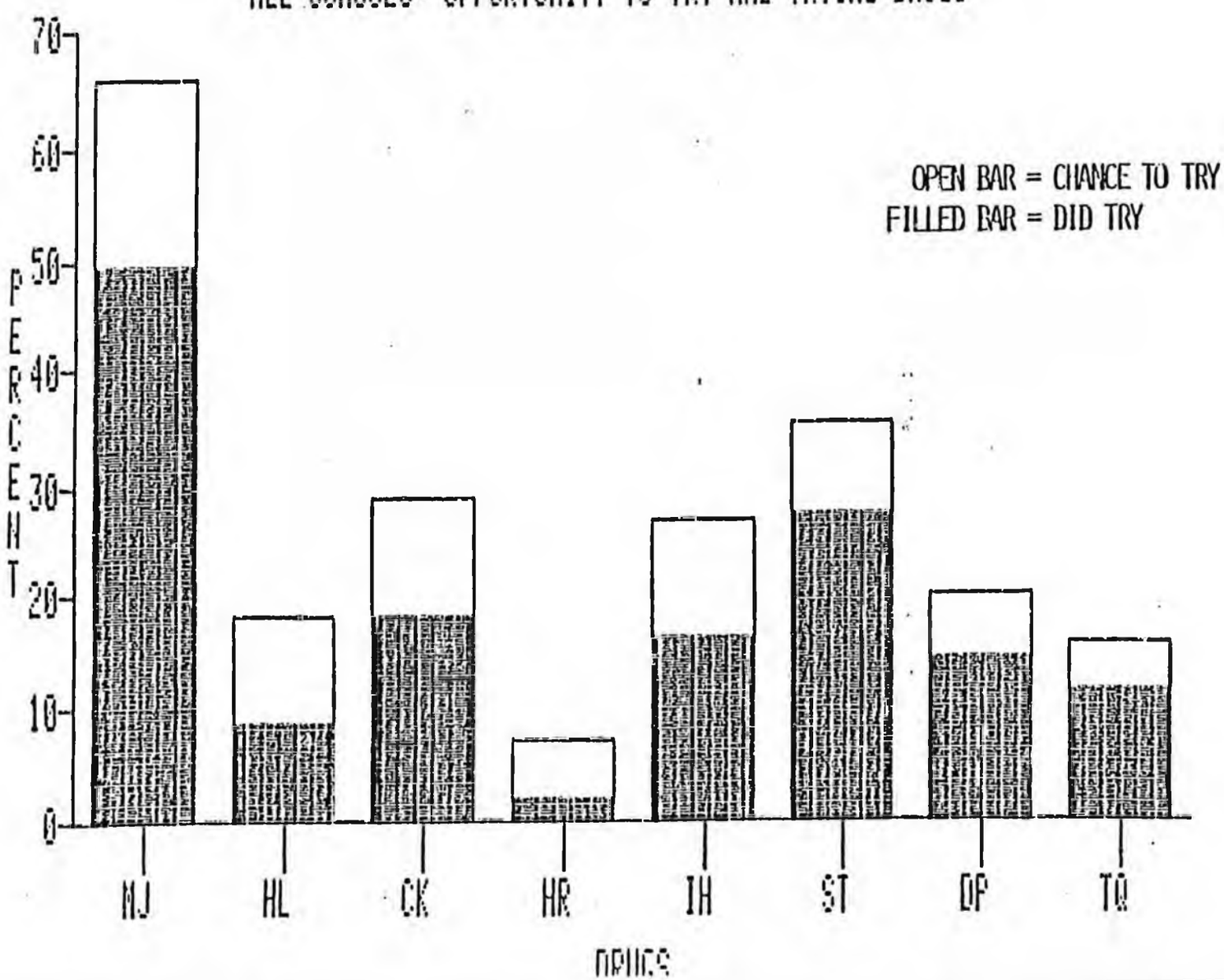

ALL SCHOOLS: OPPORTUNITY TO TRY AND TRYING DRUGS
OPEN BAR = CHANCE TO TRY
FILLED BAR = DID TRY
PERCENT
70
60
50
40
30
20
10
0
MJ
HL
CK
HR
IH
ST
DF
TQ
DRUGS

TABLE T-2

LIFETIME EXPERIENCES WITH PSYCHOACTIVE DRUGS

Total Schools
Students Grades 7-12
(N = 3609)

Drug	Number of Students Reporting Trying	Lower* Limit	Percent of Sample who Ever Tried	Upper* Limit	Percent of Sample who Tried Within Past Year
Marijuana	1784	47.2	49.5	51.6	42.6
Hallucinogens	314	7.5	8.7	10.0	7.1
Cocaine	662	18.3	18.3	16.6	15.6
Heroin	78	1.9	2.2	2.7	1.7
Inhalants	595	15.1	16.5	18.0	11.9
Stimulants	982	25.4	27.2	29.2	22.0
Depressants	516	12.5	14.3	16.2	11.8
Tranquilizers	416	10.2	11.5	11.6	11.4
Alcohol	2589	69.7	71.7	73.8	-
Tobacco	1986	3.3	55.0	57.2	56.9

*Confidence Limits

TABLE T-3

FREQUENCY OF DRUG-TAKING BEHAVIOR
Past Year Experiences

Percent of Students Who Have Tried/Taken a Drug

Total Schools
Students Grades 7-12
(N = 3609)

Drug	Percent of Sample Responding	Not Taken	Frequency*						Total Once or More
			Once a Month or Less	2-3 Times a Month	Once A Week	2-5 Times a Week	Daily	More Than Once a Day	
Marijuana	88.0	46.6	19.0	7.1	4.0	6.0	2.6	2.8	41.5
Hallucinogens	82.0	75.5	4.9	0.7	0.2	0.2	0.2	0.0	6.4
Cocaine	83.0	67.7	11.0	2.5	0.6	0.7	0.3	0.4	15.5
Heroin	81.9	79.4	1.7	0.2	0.1	0.1	0.1	0.3	2.5
Inhalants	82.6	72.2	7.4	1.4	0.5	0.4	0.4	0.4	10.5
Stimulants	83.1	62.1	112.2	4.0	1.7	1.3	0.8	0.9	20.9
Depressants	82.2	70.9	7.3	2.1	0.6	0.6	0.2	0.5	11.3
Tranquilizers	81.7	72.3	6.5	1.4	0.6	0.3	0.2	0.4	9.4

*Because of missing responses, those who report having tried a drug in the past year will not always correspond to the percent who reported ever trying a drug.

TABLE T-4

LIFETIME EXPERIENCES WITH PSYCHOACTIVE DRUGS BY GENDER

Females and Males Who Reported Ever Having Tried a Drug*

Total Schools
Students Grades 7-12
(N = 3609)

	Males (N=1770)			Females (N=1732)		
	1	2	3	1	2	3
Drugs	Number Having Tried	Percent of Males who Tried a Drug	Percent of All Students who Tried Drug	Number Having Tried	Percent of Females who Tried a Drug	Percent of All Students who Tried Drug
Marijuana	904	51.1	51.9	837	48.3	48.1
Hallucinogens	185	10.5	60.5	121	87.0	39.5
Cocaine	351	19.8	54.4	294	17.0	45.6
Heroin	57	3.2	73.1	21	1.2	26.9
Inhalants	317	17.9	54.7	262	15.1	45.3
Stimulants	466	26.3	46.8	489	28.2	49.1
Depressants	272	15.4	53.5	236	13.6	46.5
Tranquilizers	219	12.4	53.8	188	10.9	46.2

*107 students did not report gender.

TABLE T-5

LIFETIME EXPERIENCES WITH PSYCHOACTIVE DRUGS
Junior-Senior High School Comparisons

Total Schools
Students Grades 7-12
(N = 3609)*

	Junior High School** Grades 7-9 (N=1950)				Senior High School** Grades 10-12 (N=1567)			
		1	2	3		1	2	3
Drugs	F***	Percent of Jr. H. S. Students who Ever Tried (N=479)	Percent of All Students who Have Tried each Drug	Percent of Total Sample (N=798)	F***	Percent of Sr. H. S. Students who Ever Tried (N=291)	Percent of All Students who Have Tried each Drug	Percent of Total Sample (N=798)
Marijuana	716	36.7	40.9	19.8	1033	65.9	59.1	28.6
Hallucinogens	105	5.4	34.1	2.9	203	13.0	65.9	5.6
Cocaine	199	10.2	30.7	5.5	450	28.7	69.3	12.5
Heroin	32	1.6	41.0	0.9	46	2.9	59.0	1.3
Inhalants	290	14.8	50.0	8.0	290	18.5	50.0	8.0
Stimulants	343	17.6	35.7	9.5	618	39.4	64.3	17.1
Depressants	207	10.6	40.5	5.7	304	19.4	59.5	8.4
Tranquilizers	151	7.7	37.1	4.2	256	16.3	62.9	7.1

*89 students did not report grade level.
**The differences in frequencies and percentages between junior and senior high students are statistically significant for each drug ($p < .01$).
***F=Frequency or number of students reported having tried each drug.

FIGURE T-5

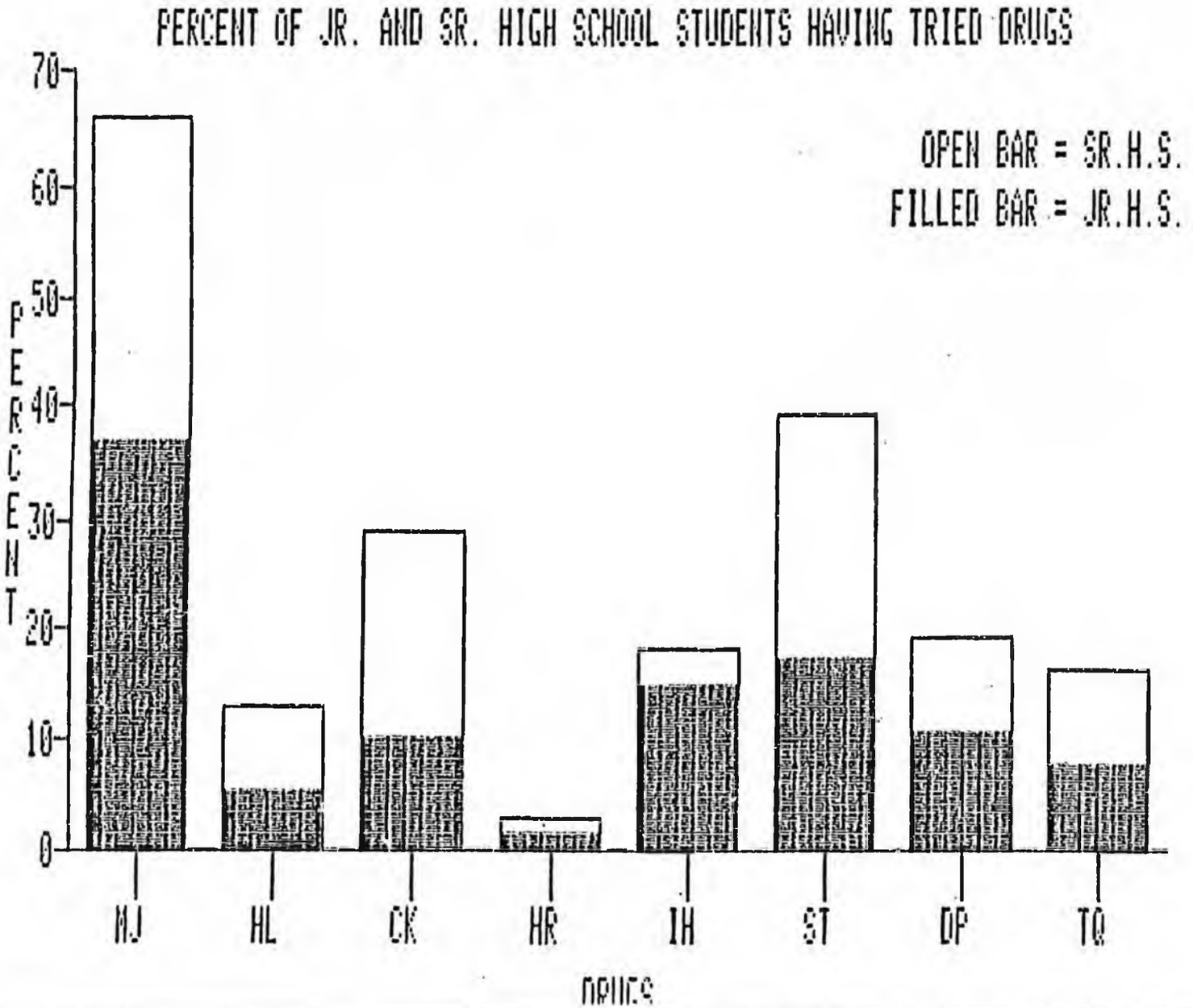

PERCENT OF JR. AND SR. HIGH SCHOOL STUDENTS HAVING TRIED DRUGS
OPEN BAR = SR.H.S.
FILLED BAR = JR.H.S.
PERCENT
70
60
50
40
30
20
10
0
MJ
HL
CK
HR
IH
ST
DP
TQ
DRUGS

TABLE T-6A

FREQUENCY OF TAKING DRUGS:
Past Year Experiences

Total Schools
Junior H. S.*
(N = 1953)

Drug	Percent of Jr. H. S. Students Responding	Not Tried	Percent of Jr. H. S. Students who Have Tried Up to 3 Times a Month	Percent of Jr. H. S. Students who Have Taken Once a Week or More
Marijuana	86.4	63.6	24.5	11.9
Hallucinogens	80.9	94.8	4.5	0.7
Cocaine	81.9	88.0	10.6	1.4
Heroin	80.8	97.3	2.0	0.4
Inhalants	82.0	86.9	11.0	2.1
Stimulants	82.0	82.9	13.6	3.5
Depressants	81.4	89.3	8.9	1.8
Tranquilizers	80.5	91.7	6.9	1.4

*304 students did not report grade level.

TABLE T-6B

FREQUENCY OF TAKING DRUGS:
Past Year Experiences

Total Schools
Senior H. S.*
(N = 1567)

Drug	Percent of Sr. H. S. Students Responding	Not Tried	Percent of Sr. H. S. Students who Have Tried Up to 3 Times a Month	Percent of Sr. H. S. Students who Have Taken Once a Week or More
Marijuana	90.8	39.9	35.9	24.2
Hallucinogens	84.1	88.7	9.9	1.4
Cocaine	85.3	73.4	23.1	3.5
Heroin	83.9	96.6	2.3	1.1
Inhalants	84.1	88.2	9.9	1.8
Stimulants	85.3	64.7	26.8	8.5
Depressants	84.1	82.3	14.8	2.9
Tranquilizers	83.9	84.6	12.7	2.7

*304 students did not report grade level.

TABLE T-7

DRUG-TAKING BEHAVIOR BY GRADE

Percent Within Each Grade Who Reported
Trying/Taking a Drug

Total Schools
Students Grades 7-12
(N = 3609)

	Grade*					
	7	8	9	10	11	12
Drug	(N=665)	(N=685)	(N=603)	(N=658)	(N=564)	(N=345)
Marijuana	23.3	38.7	49.1	60.6	69.9	69.6
Hallucinogens	2.9	5.5	8.0	10.9	13.8	15.4
Cocaine	4.8	12.1	13.9	21.9	31.6	37.1
Heroin	0.9	1.8	2.3	2.6	4.4	1.2
Inhalants	12.0	18.0	14.4	18.8	18.8	17.4
Stimulants	8.1	20.0	25.2	36.0	42.6	40.9
Depressants	6.2	12.4	13.4	18.7	21.1	18.0
Tranquilizers	3.8	9.6	10.0	15.7	18.3	14.5

*304 students did not report grade levels.

FIGURE T-7

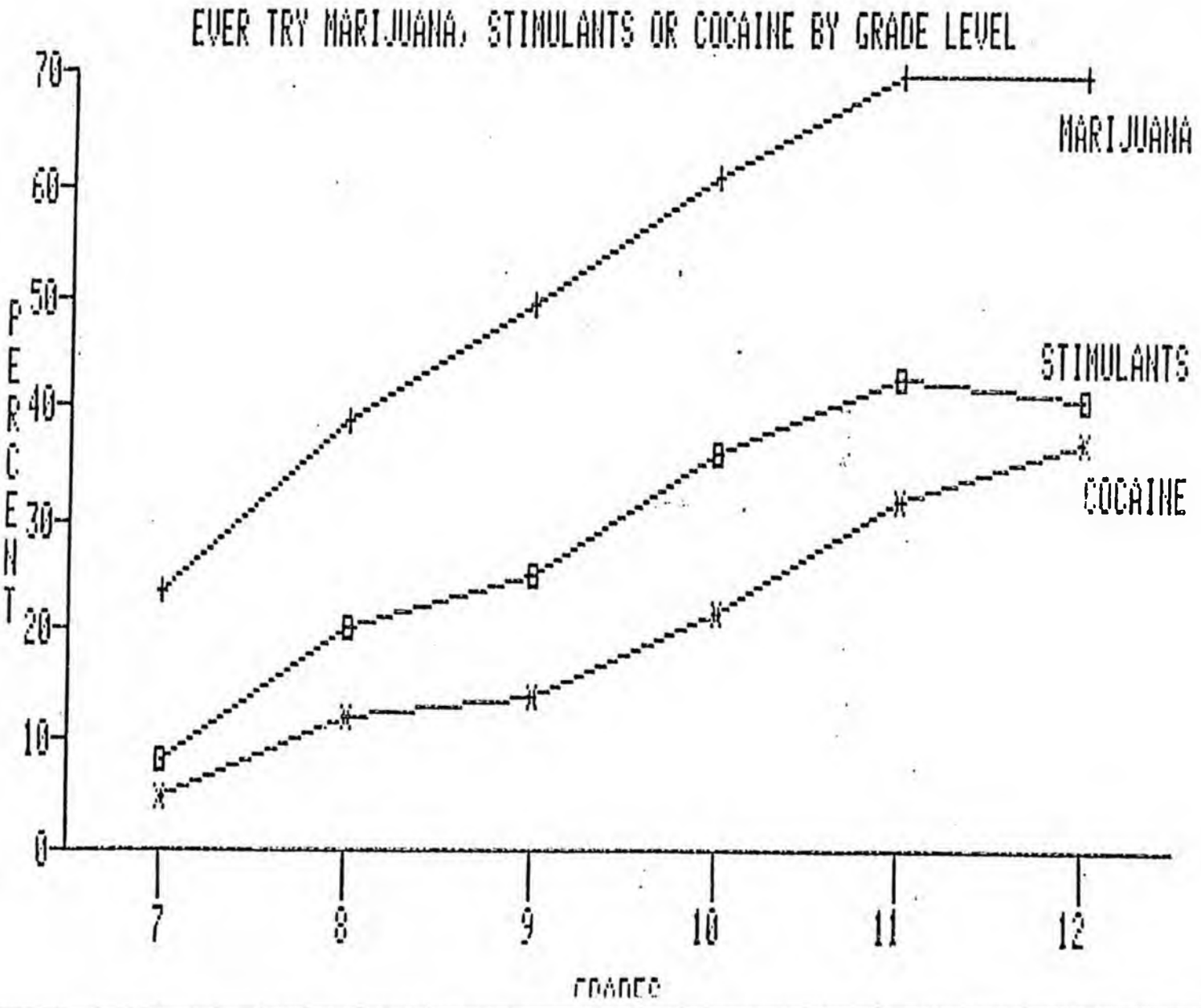

EVER TRY MARIJUANA, STIMULANTS OR COCAINE BY GRADE LEVEL
PERCENT
70
60
50
40
30
20
10
0
7
8
9
10
11
12
GRADE
MARIJUANA
STIMULANTS
COCAINE

TABLE T-8

REASONS FOR NOT TRYING OR HAVING STOPPED
EXPERIMENTING WITH PSYCHOACTIVE DRUGS

Total Schools
Students Grades 7-12
(N = 3609)

Reasons Given:	Total Number of Students Responding	For Not Trying Drugs: Percent of Respondents Not Trying for each Reason	For Having Stopped Experimenting with Drugs: Percent of Respondents who Tried and Stopped for each Reason
1. May hurt my body.	2779	18.3	41.9
2. May hurt my mind.	2780	15.8	44.6
3. May cause addiction.	2744	20.6	40.0
4. Friends disapprove.	1675	37.4	17.9

TABLE T-9

DRUG EDUCATION AND TRYING DRUGS

Percent of Students Responding

Total Schools
Students Grades 7-12
(N = 3609)

Drug	Percent of Students Responding	Have Had Drug Education and Have Tried	Have Had Drug Education and Have Not Tried	Have Not Had Drug Education and Have Tried	Have Not Had Drug Education and Have Not Tried
Marijuana	72.2	28.6	18.3	34.2	18.9
Hallucinogens	45.2	7.9	38.0	9.9	44.2
Cocaine	50.5	13.5	31.8	20.1	34.6
Heroin	37.7	2.1	42.5	3.0	52.4
Inhalants	47.7	15.4	31.5	16.2	36.9
Stimulants	54.5	20.5	26.0	25.1	28.4
Depressants	42.9	13.0	32.0	17.2	37.8
Tranquilizers	40.2	10.8	33.9	16.0	39.3

TABLE T-10

STUDENTS' PERCEPTIONS OF DRUG-TAKING BEHAVIOR

Total Schools
Students Grades 7-12
(N = 3080)

Students who:	Percent of Students who*		
	Expressed a need for drug education	Expressed no need for drug education	Total
Have Tried Drugs	43.2	12.8	56.0
Have Not Tried Drugs	37.1	6.9	44.0
Total	80.3	19.7	100.0

*The differences between classifications are not statistically significant: $X^2 = 14.1$, d.f. = 1, $p < .001$.

TABLE T-11

PERCENT OF STUDENTS RESPONDING "TRUE" TO VARIOUS STATEMENTS

Total Schools
By Grade Levels
(N = 3609)

Statement	Grades*						
	7	8	9	10	11	12	Total
1. I have missed school because of drug use.	2.1	5.8	8.2	11.7	14.8	17.3	9.2
2. I have had problems in school because of drug use.	4.3	5.6	8.5	11.1	11.4	12.9	8.6
3. I have had problems outside of school because of drug use.	6.3	10.0	11.6	16.0	15.8	15.0	12.1

*Each statistic represents the proportion of students within each grade who answered "yes" to each question. The total represents the percent of all students responding "yes" to each question.

TABLE T-12

COMPARISONS OF LIFETIME EXPERIENCES WITH PSYCHOACTIVE DRUGS

Surveys: Percent Who Ever Tried Each Drug

Total Schools
Students Grades 7-12

Drug	Total Sample (N=3609)	Anchorage Sitka Nome Barrow Kotzebue (N=2811)	Total Sample Less Anchorage (N=2021)	Bethel Juneau Fairbanks (N=798)	Barrow Kotzebue Nome (N=600)	Anchorage (N=1588)	1982* National Survey of 12-17 Yr. Olds (N=1581)
Marijuana	49.5	50.7	50.8	44.9	58.8	51.4	26.7
Hallucinogens	8.7	8.7	9.4	8.6	9.2	9.4	5.2
Cocaine	18.3	18.5	17.0	17.8	18.0	23.5	6.5
Heroin	2.2	2.1	1.8	2.3	2.2	3.2	<.1
Inhalants	16.5	15.5	17.3	20.1	15.0	18.4	-
Stimulants	27.2	26.9	28.6	28.2	25.8	29.6	6.7
Depressants	14.3	14.6	12.5	13.2	10.5	19.9	5.8
Tranquilizers	11.5	12.0	8.9	9.9	6.3	17.9	4.9
Alcohol	71.7	44.8	65.8	66.2	62.0	82.1	65.2
Tobacco	55.0	34.0	50.9	47.5	54.7	64.9	49.5

*Miller, 1983.

FIGURE T-12

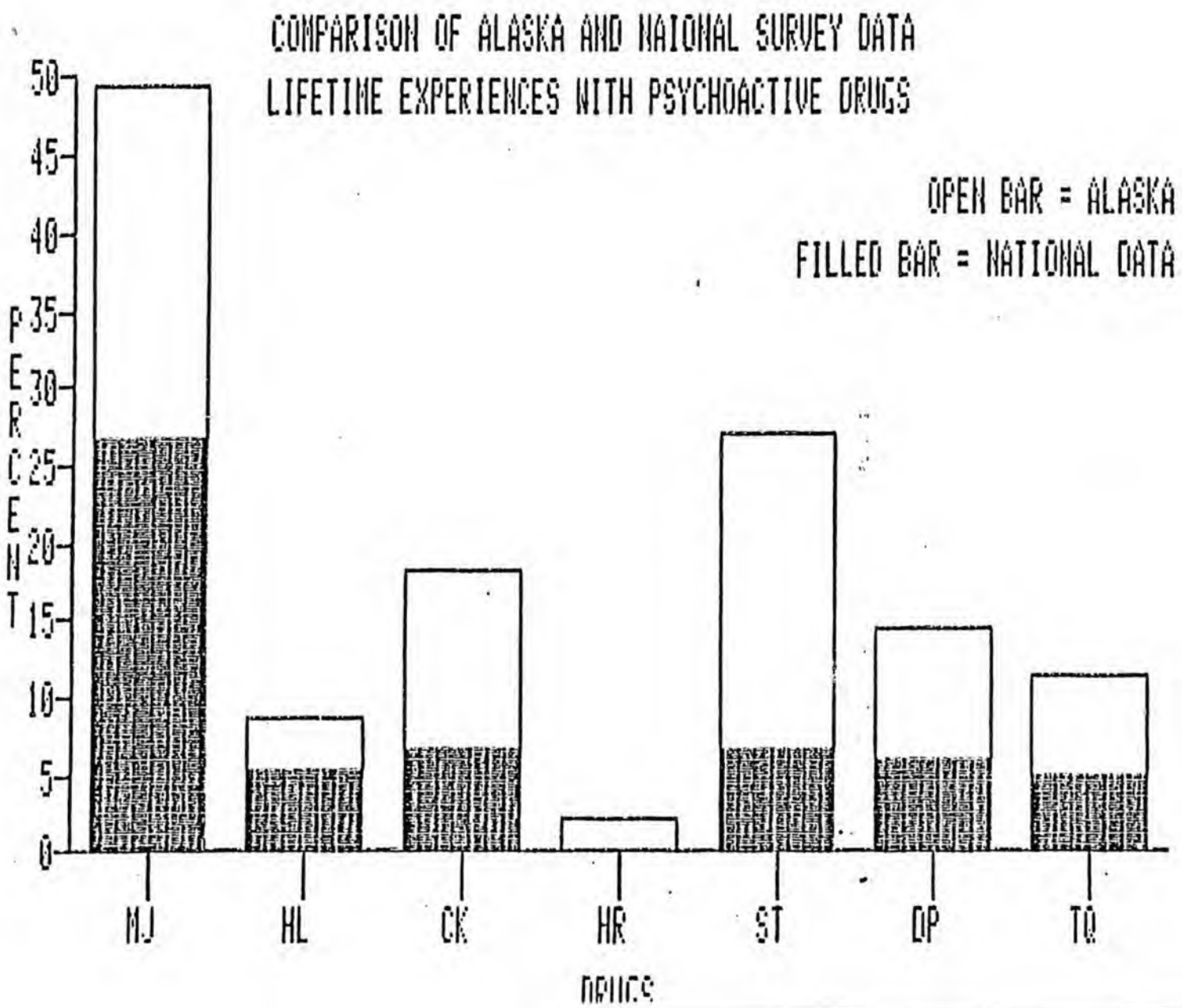

COMPARISON OF ALASKA AND NAIONAL SURVEY DATA
LIFETIME EXPERIENCES WITH PSYCHOACTIVE DRUGS
OPEN BAR = ALASKA
FILLED BAR = NATIONAL DATA
PERCENT
50
45
40
35
30
25
20
15
10
5
0
MJ
HL
CK
HR
ST
OP
TQ
DRUGS

TABLE T-13

COMPARISONS OF LIFETIME EXPERIENCES WITH PSYCHOACTIVE DRUGS
ALASKAN SENIORS AND NATIONAL STUDENT SURVEY

High School Seniors Who Ever Tried Each Drug

Total Schools
Students Grades 7-12

Drug	Total Sample (N=345)	Anchorage Sitka Nome Barrow Kotzebue (N=277)	Total Sample Less Anchorage (N=215)	Bethel Juneau Fairbanks (N=68)	Barrow Kotzebue Nome (N=73)	Anchorage (N=123)	1982* National Survey of 12-17 Yr. Olds (N=17500)
Marijuana	69.6	77.2	77.2	72.1	78.9	60.2	58.7
Hallucinogens	15.4	17.7	17.7	14.7	9.4	12.2	12.5
Cocaine	37.1	40.0	40.0	42.6	39.7	34.1	16.0
Heroin	1.2	1.4	1.4	0.0	4.1	0.8	1.2
Inhalants	17.4	19.5	19.5	17.6	17.8	14.6	18.0
Stimulants	40.9	48.8	48.8	42.6	49.3	29.3	27.9
Depressants	18.0	17.7	17.7	17.6	13.7	19.5	15.2
Tranquilizers	14.5	12.6	12.6	11.8	8.2	18.7	14.0

*Johnston, Bachman, & O'Malley, 1982.

V

CONCLUSIONS AND RECOMMENDATIONS

The major objective of this project was to assess the extent, type of patterns, frequency and distribution of drug-taking behavior among school age youth in grades 7-12 in eight locations of the state: Anchorage, Barrow, Bethel, Fairbanks, Juneau, Kotzebue, Nome and Sitka. The results of this undertaking found generally high rates of lifetime experiences with mood-altering drugs among students surveyed. This high level of drug-taking behavior contrasts dramatically with reports from surveys conducted in the "lower 48," which indicate that "American young people are continuing to moderate their use of illicit drugs..." (Johnston et al., 1982, p. 9). Reports from two recent national surveys (Johnston et al., 1982; Miller, 1983) indicate that there have been declines in use of marijuana and in other drugs and a leveling off of cocaine use by youth. Although there is no previous survey data of Alaskan youth to compare trends, a comparison of current findings of Alaskan youth with their counterparts in the "lower 48" shows considerably higher levels of drug use, except for heroin, which is just slightly higher.

One factor which may contribute to the extensive differences found between the National Survey of 12-17 year olds and Alaskan youth may be related to differences in methodology. The National Survey conducted face-to-face interviews while our procedure involved anonymous responses to questionnaires. It may be that when youth are selected from a general population and interviewed, the reports of prevalence of drug use may be more guarded than when responding anonymously to a survey.

Prior to elaborating on these findings it should be restated that it is not known whether the students who report having tried a drug actually took the drug, that is, whether it is the "real thing" as opposed to a "look-a-like" or a substitute chemical. The important fact, however, is that students apparently believe that they took the reported drug. Also, students, whether taking real or substitute drugs, were involved in drug-taking behavior.

What is evident in the results is that when there is an opportunity to try a drug, particularly marijuana, large percentages of those students having the chance will try it. The question which arises is, Why is the opportunity to try drugs so very high among junior and senior high school students?

A factor which seemingly contributes to the high prevalence rates reported in our study is that drugs are generally available in the state, a phenomena which is supported by anecdotal evidence. The drugs which are available - albeit illegally - find their way down to adolescents and early teenagers who are willing to try them. Additionally, it also appears that these youngsters can afford to buy the available drugs.

Thus, with apparent opportunities to try, students are trying/taking drugs, and the number of students reporting such experiences is high. The pattern of drug use generally follows the pattern described for the "lower 48." Marijuana is the most frequently tried/taken drug, followed by experiences with stimulants and cocaine. While experiences with the other drugs vary, a consistency exists in that heroin is the least tried. In all, the findings indicate that at least half of all students are likely to try marijuana and/or some other drug by the time of high school graduation. More than 75% of students will have also have tried/consumed alcohol prior to their graduation from high school. Most of the "hard" drug use, however, will be experimental.

The important question is, Why do so many students experiment with and/or

take drugs? There are several possible answers to this question. One is that many of the illicit drugs such as marijuana, stimulants and cocaine, have become incorporated into the "lifestyle" of so many people that adolescents themselves experiment with them as part of their own "normative" behavior. That is, the wide scale prevalence of drug use in general makes it a phenomenon which adolescents may pursue in order to know what drug experiences are like. It appears that adolescent drug use may, to a large extent, be related to the attitudes and behaviors found in the larger adult society. Simply put, the "kids" do what the adults are doing!

Related to this "imitation" phenomena is what may be called a "curiosity" motive for trying drugs. This motive is discussed in greater detail in the Anchorage School District Report (see Appendix 2), in which an analysis of students' motives for trying/taking drugs was completed. Briefly, a common reason for many youngsters to try mood-altering drugs is curiosity — just to see what it is like. Many students try a drug once, or several times, with no intention to continue use in the future. However, this motive may not be totally applicable to use of alcohol, cigarettes, marijuana and, to a lesser extent, stimulants and cocaine.

Another reason for the trying/taking of drugs, interrelated with the "curiosity" motive, is a willingness to seek new and different experiences. This motive was found to prevail within the Anchorage School sample and has been reported in other research (Segal, 1982; 1983, in press). Drugs do provide a new and different experience; some students seem to find it rewarding or gratifying whereas others do not find it pleasurable.

Some youngsters may use mood-altering drugs to gain the ability to cope with personal problems and/or stress. Drugs may not only temporarily help one to

escape from personal discomfort, but they also help to delay having to deal with conflict or stress. This motive for taking drugs has been found consistently in research investigating both adolescent and adult drug-taking behavior (Jessor & Jessor, 1977; Segal, Huba, & Singer, 1980). It is unlikely that the high level of drug use found in this study is attributable to this motive, but it is possible that a small percentage of students, particularly those who take a variety of drugs with some degree of frequency, may be using drugs to "feel better" as well as to feel "high."

An important finding in this study is that age, opportunity to try and first experiences with mood-altering drugs are signficantly interrelated and also vary greatly for each drug. As experiences with some drugs, such as marijuana, begin to taper off, first experiences with other drugs, such as cocaine, tend to increase. The relationship between age and first experiences with drugs is revealing itself to be curvilinear, that is, a relationship which can change direction at any given age level for any given drug. The most frequent ages for trying drugs are 13 and 15, which are related to beginning junior and senior high school. It may be, as advocated within some recent research literature (Huba, Winegard and Bentler, 1979; Segal, 1983; Segal, Huba and Singer, 1980; Segal, Cromer, Hobfoll and Wasserman, 1982) that drug-taking behavior by adolescents is mainly experimental and is in large part "normative" and unrelated to any pattern of deviance or serious emotional distress.

Another interesting finding which characterizes the Alaskan findings (as discussed more fully in the Anchorage School District Report) is that peer pressure or influences do not appear to be as significant a factor as is reported in other studies (Jessor & Jessor, 1977; Kandell, Kessler, & Margulies,

1978). Why this is the case is not totally clear; it may be that drug-taking behavior has become so acceptable among all youth that the traditional schism between "users" and "nonusers" no longer exists, thereby making it unnecessary for those who take drugs to seek mutual support from others who take drugs. Additionally, the generally widespread use of drugs may offset any special status attributable to those who take drugs, thus reducing the peer influences to try or not try drugs.

In summary, it is evident that drug-taking behavior is attributable to many interrelated factors, some exerting greater influences than others at different points during one's secondary school career. Further research is needed to focus more specifically on students' perceptions of why they take drugs and the particular expectations that they have of what drugs will do for them.

The results of the present study have a number of implications concerning drug education/prevention programs. One important consideration is that the students perceive a need for such programs, particularly the ones who have had experiences with psychoactive drugs. This finding suggests that the students may be inferring that if other students are "educated," or if they themselves learned more about "drugs," the risks of taking drugs may be reduced. It is presumed that presentation of information regarding the "dangers" and risks of taking drugs, especially in light of the findings that most students fear the harmful psychological and physical effects of taking drugs, can help to lessen the curiosity to experience the anticipated sensations which drugs can engender. The issue becomes one of how to develop and implement an effective drug education/prevention program. This question is one which educators and researchers have been struggling with for over a decade. While the evidence supports the continued need for educational efforts (Wepner, 1979), it is apparent that such programs generally tend to restrain young persons who were

not inclined to try drugs in the first place. The major problem is how to identify those who are at greater risk of trying drugs. A variety of drug education/prevention programs have been implemented over the country, each to a large extent providing a uniform curriculum across age and grade level.

An important implication concerning drug education from the foregoing analysis of age/grade trends is that different prevention goals should be devised for different points in the incidence and prevalence curves. The most logical starting point is that age in the curve at which positive acceleration begins in the prevalence curve. Prior to this point prevention efforts should focus on delaying or preventing the onset of nonmedical taking of mood-altering drugs, and/or extrafamiliar alcohol consumption. After this point intensive prevention efforts should concentrate on the reduction of prevalence, giving special emphasis to multiple substance use, frequency of drinking, regular use of marijuana, and on reducing the trying/taking of stimulants and cocaine. Emphasis should also be given to other types of mood-altering drugs, capitalizing on the apparent self-moderating factors that appear to already be "at work" with students to avoid taking drugs perceived as particularly harmful. What is needed is the involvement of a rational program of drug education/prevention - a program derived from an informational base which provides data on the prevalence and developmental trends of drug-taking behavior and on some of the psychosocial aspects related to use and nonuse of mood-altering drugs. This data base can serve as a conceptual basis for prevention strategies designed to prevent and reduce drug-taking behavior by school age youth.

Another important implication of the findings concerns the issue of availability of mood-altering drugs. It should be noted that if a reduction of experimentation with and continued use of drugs is to be achieved, the availabi-

lity of drugs needs to be reduced. There is, however, no easy solution to achieving such a reduction.

The recent history of attempts to address drug use in the United States has tended to deal with the problem through strong legislation aimed at reducing "drugs on the street" by increasing penalties for possession and use of drugs. Such an approach has led to a preoccupation with and elaboration of penalties associated with drug use which has not generally resulted in an overall reduction of "drug problems." Rather than focusing only on the elimination of drugs by legislation, efforts also have to be directed toward focusing on people and the circumstances which contribute to their use of drugs. It has been shown that the "legal" approach to drug misuse puts an unfair and sometimes overwhelming burden on the justice system, leading to the unrealistic expectation that this system will eliminate the problem.

Legal measures can only be effective if society perceives them to be reasonable and realistic. The experience of decades of having to confront drug use in this country makes it clear that without a comprehensive approach the likelihood of reducing drug use is low. This comprehensive approach, requires the joining together of legal, social, education and legislative bodies to pool resources, experiences and knowledge to develop an integrated, comprehensive and relevant approach to address problems of drug use in the community, as well as focusing on the drug-taking behavior of school age youth.

The accomplishment of the above goal requires that a price be paid. This price lies in the implications for policy decisions made by local and state governmental bodies regarding drug use. With respect to youth, in order to prevent the taking of drugs prior to the age at which most of the experimentation with and continued use of drugs occurs, and in order to reduce the incidence and prevalence thereafter, governmental bodies will have to appropriate program

funds. The level of funds will have to be sufficient to allow systematic research and comprehensive program development to be initiated, implemented, and evaluated over a period of time. Legislators and other governmental officials will also need to realize that the efforts of prevention programs are difficult to assess, especially since the effects may not be immediate. Efforts directed at fourth graders, for example, may not be realized until students reach junior high school, where exposure to drugs becomes more widespread and where influences to try drugs exert themselves. Additionally, the importance of drug education/prevention efforts directed at those students in the peak years of drug experimentation may not be fully realized until they reach young adulthood. What is important is the understanding that an investment in a rational educational/prevention program subject to ongoing evaluation, while costly at the point of initial undertaking, can save costs associated with health, social and legal consequences. Only through the acceptance and commitment to alter the attitudes and behaviors of the next generation can a reversal in the trend to take drugs be achieved.

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Introduced: 1/19/87
Referred: Health, Education and
Social Services and Judiciary

5-0131A

IN THE SENATE BY FISCHER AND FAIKS

SENATE BILL NO. 32

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to marijuana; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. FINDINGS. (a) The legislature finds that

(1) THC, the mind altering ingredient in marijuana, is not soluble in water, but goes into the fatty tissues of the brain, testicles, ovaries, and other internal organs, and takes 30 days to be eliminated from the body;

(2) the buildup of THC in the body causes the user to smoke more marijuana to achieve the desired high and may result in loss of sleep, appetite, and initiative, as well as moodiness and depression;

(3) it is possible for a human being to overdose from the use of marijuana, especially if it is used in conjunction with alcohol, because it increases the effects of alcohol;

(4) the THC content of a marijuana cigarette 10 years ago was one percent, but is as high as 10 percent per cigarette today;

(5) marijuana causes schizophrenia, illusions, and hallucinations, including a dulling of the senses, creating the possibility that the user is unable to respond to body signals, such as pain;

(6) although it may take a heavy cigarette smoker as long as 20 years to develop lung cancer, one marijuana cigarette a day may cause lung cancer in three years;

(7) THC affects eggs, sperm, sexual hormones, and the development of a fetus, and marijuana use may result in deformed or undersized

offspring;

(8) other physical reactions to marijuana include irreversible changes in the brain, sinusitis, pharyngitis, bronchitis, emphysema, increased heart rate, and decreased blood circulation;

(9) other psychological reactions to marijuana include loss of memory; impairment in thinking, reading comprehension, and verbal and arithmetic problem solving; impairment of perception of distance and time; and anxiety, panic, paranoia, psychosis, and psychological dependence; and

(10) the use of even small amounts of marijuana by adults in the home subjects children present to a substantial health hazard.

(b) The legislature further finds there is a legitimate and compelling governmental interest, based on testimonial evidence, that the public health and welfare will suffer if personal use of marijuana even in small amounts is allowed.

* Sec. 2. AS 11.71.060(a) is amended to read:

(a) Except as authorized in AS 17.30, a person commits the crime of misconduct involving a controlled substance in the sixth degree if the person

(1) uses or displays any amount of a schedule VIA controlled substance or possesses one or more preparations, compounds, mixtures, or substances of an aggregate weight of <u>less than one-half pound</u> [ONE OUNCE OR MORE] containing a schedule VIA controlled substance [ON A PUBLIC STREET OR SIDEWALK OR ON THE PREMISES OF A PUBLIC CARRIER OR BUSINESS ESTABLISHMENT OR IN ANY OTHER PUBLIC PLACE]; <u>or</u>

[(2) KNOWINGLY POSSESSES ANY AMOUNT OF A SCHEDULE VIA CONTROLLED SUBSTANCE WITHIN THE IMMEDIATE CONTROL OF THAT PERSON WHILE OPERATING A PROPELLED VEHICLE;

(3) BEING UNDER 19 YEARS OF AGE, POSSESSES ONE OR MORE PREPARATIONS, COMPOUNDS, MIXTURES, OR SUBSTANCES OF AN AGGREGATE

WEIGHT OF LESS THAN FOUR OUNCES CONTAINING A SCHEDULE VIA CONTROLLED SUBSTANCE;

(4) POSSESSES ONE OR MORE PREPARATIONS, COMPOUNDS, MIXTURES, OR SUBSTANCES OF AN AGGREGATE WEIGHT OF FOUR OUNCES OR MORE CONTAINING A SCHEDULE VIA CONTROLLED SUBSTANCE; OR]

(2) [(5)] refuses entry into a premises for an inspection authorized under AS 17.30.

* Sec. 3. AS 11.71.070 is repealed.

* Sec. 4. This Act takes effect immediately under AS 01.10.070(c).

SB 32, ORIGINAL BILL

CS SB 32 (HESS)

SECTIONAL ANALYSIS

FISCAL NOTES

RESOLUTIONS IN SUPPORT OF SB 32

INDEX OF STUDIES, ARTICLES & PUBLICATIONS

SYNOPSIS OF S. HESS COMMITTEE ACTION

EVIDENCE & STUDIES SUPPORTING FINDINGS

Introduced: 1/19/87
Referred: Health, Education and
Social Services and Judiciary

IN THE SENATE BY FISCHER AND FAIKS

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(3) it is possible for a human being to overdose from the use of marijuana, especially if it is used in conjunction with alcohol, because it increases the effects of alcohol;

(4) the THC content of a marijuana cigarette 10 years ago was one percent, but is as high as 10 percent per cigarette today;

(5) marijuana causes schizophrenia, illusions, and hallucinations, including a dulling of the senses, creating the possibility that the user is unable to respond to body signals, such as pain;

(6) although it may take a heavy cigarette smoker as long as 20 years to develop lung cancer, one marijuana cigarette a day may cause lung cancer in three years;

(7) THC affects eggs, sperm, sexual hormones, and the development of a fetus, and marijuana use may result in deformed or undersized

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* Sec. 2. AS 11.71.060(a) is amended to read:

(a) Except as authorized in AS 17.30, a person commits the crime of misconduct involving a controlled substance in the sixth degree if the person

(1) uses or displays any amount of a schedule VIA controlled substance or possesses one or more preparations, compounds, mixtures, or substances of an aggregate weight of <u>less than one-half pound</u> [ONE OUNCE OR MORE] containing a schedule VIA controlled substance [ON A PUBLIC STREET OR SIDEWALK OR ON THE PREMISES OF A PUBLIC CARRIER OR BUSINESS ESTABLISHMENT OR IN ANY OTHER PUBLIC PLACE]; <u>or</u>

[(2) KNOWINGLY POSSESSES ANY AMOUNT OF A SCHEDULE VIA CONTROLLED SUBSTANCE WITHIN THE IMMEDIATE CONTROL OF THAT PERSON WHILE OPERATING A PROPELLED VEHICLE;

(3) BEING UNDER 19 YEARS OF AGE, POSSESSES ONE OR MORE PREPARATIONS, COMPOUNDS, MIXTURES, OR SUBSTANCES OF AN AGGREGATE

WEIGHT OF LESS THAN FOUR OUNCES CONTAINING A SCHEDULE VIA CONTROLLED SUBSTANCE;

(4) POSSESSES ONE OR MORE PREPARATIONS, COMPOUNDS, MIXTURES, OR SUBSTANCES OF AN AGGREGATE WEIGHT OF FOUR OUNCES OR MORE CONTAINING A SCHEDULE VIA CONTROLLED SUBSTANCE; OR]

(2) [(5)] refuses entry into a premises for an inspection authorized under AS 17.30.

* Sec. 3. AS 11.71.070 is repealed.

* Sec. 4. This Act takes effect immediately under AS 01.10.070(c).

Offered: 3/31/87 5-0131B
Referred: Judiciary & Finance

Original sponsors: Fischer and Faiks

IN THE SENATE BY THE HEALTH, EDUCATION AND SOCIAL SERVICES COMMITTEE

CS FOR SENATE BILL NO. 32 (HESS)

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to marijuana; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. FINDINGS. (a) The legislature finds that marijuana use is a serious health problem for the following reasons, each of which constitutes a legitimate and compelling state interest:

(1) marijuana and other cannabis preparations may contain over 420 different compounds;

(2) tetrahydrocannabinol (THC), one of the pharmacologically active compounds in marijuana, is not soluble in water, but goes into the fatty tissues of the brain, testicles, ovaries, and other internal organs, and takes as long as 30 days to be eliminated from the body;

(3) the buildup of THC in the system means that repeated administration of even small doses may lead to an accumulation of the drug higher than levels reached at any time after a single dose;

(4) the buildup of THC in the body causes the user to smoke more marijuana to achieve the desired high and may result in loss of sleep, appetite, and initiative, as well as moodiness and depression;

(5) it is possible for a human being to overdose from the use of marijuana, especially if it is used in conjunction with alcohol, because it increases the effects of alcohol;

(6) the THC content of commonly obtainable marijuana has increased from less than one percent 10 years ago to as high as 10 percent today;

(7) marijuana with THC content higher than one percent is generally available in the state, through both importation and local cultivation;

(8) marijuana may cause schizophrenia, illusions, and hallucinations, including a dulling of the senses, creating the possibility that the user is unable to respond to body signals such as pain;

(9) although it may take a heavy cigarette smoker as long as 20 years to develop lung cancer, one marijuana cigarette a day may cause lung cancer in three years;

(10) THC affects eggs, sperm, sexual hormones, and the development of a fetus and marijuana use may result in deformed or undersized offspring;

(11) other physical reactions to marijuana include irreversible changes in the brain, sinusitis, pharyngitis, bronchitis, emphysema, increased heart rate, and decreased blood circulation;

(12) other psychological reactions to marijuana include loss of memory, anxiety, panic, paranoia, psychosis, psychological dependence, and impairment in thinking, reading comprehension, verbal and arithmetic problem solving, and perception of distance and time;

(13) the use of even small amounts of marijuana by adults in the home subjects children present to a substantial health hazard; and

(14) marijuana and tetrahydrocannabinols have been found by the United States Congress to possess a high potential for abuse.

(b) The legislature further finds that

(1) patterns of marijuana use in the state have changed over the past decade;

(2) the daily use of marijuana in the state has increased to as high as four percent among the general population and as high as six percent among secondary school students;

(3) marijuana use in the state within both the general population and among adolescents is significantly higher than in the nation as a whole;

(4) there is a direct relationship between the use of marijuana at home by adults and the percentage of secondary school students who experience disciplinary and academic problems in public schools; over the last three years in the Anchorage School District, of the 230 students who have been suspended from school for possession or use of marijuana, 29 percent have indicated that marijuana is used by adults in their living environment;

(5) the changing patterns of marijuana use and the relationship between marijuana use by adults and adolescents have significantly compromised the state's legitimate efforts to prevent the spread of marijuana use to adolescents and protect the health of adolescents; and

(6) these efforts constitute a legitimate and compelling state interest.

(c) The legislature further finds there is a legitimate and compelling governmental interest, based on testimonial and scientific evidence, that the public health and welfare will suffer if personal use of marijuana even in small amounts is allowed.

* Sec. 2. AS 11.71.060(a) is amended to read:

(a) Except as authorized in AS 17.30, a person commits the crime of misconduct involving a controlled substance in the sixth degree if the person

(1) uses or displays any amount of a schedule VIA controlled substance or possesses one or more preparations, compounds, mixtures, or substances of an aggregate weight of <u>less than one-half pound</u> [ONE OUNCE OR MORE] containing a schedule VIA controlled substance [ON A PUBLIC STREET OR SIDEWALK OR ON THE PREMISES OF A PUBLIC

CARRIER OR BUSINESS ESTABLISHMENT OR IN ANY OTHER PUBLIC PLACE]; or

[(2) KNOWINGLY POSSESSES ANY AMOUNT OF A SCHEDULE VIA CONTROLLED SUBSTANCE WITHIN THE IMMEDIATE CONTROL OF THAT PERSON WHILE OPERATING A PROPELLED VEHICLE;

(3) BEING UNDER 19 YEARS OF AGE, POSSESSES ONE OR MORE PREPARATIONS, COMPOUNDS, MIXTURES, OR SUBSTANCES OF AN AGGREGATE WEIGHT OF LESS THAN FOUR OUNCES CONTAINING A SCHEDULE VIA CONTROLLED SUBSTANCE;

(4) POSSESSES ONE OR MORE PREPARATIONS, COMPOUNDS, MIXTURES, OR SUBSTANCES OF AN AGGREGATE WEIGHT OF FOUR OUNCES OR MORE CONTAINING A SCHEDULE VIA CONTROLLED SUBSTANCE; OR]

(2) [(5)] refuses entry into a premises for an inspection authorized under AS 17.30.

* Sec. 3. AS 11.71.070 is repealed.

* Sec. 4. This Act takes effect immediately under AS 01.10.070(c).

STATE OF ALASKA
THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH Y STATE CAPITOL
JUNEAU, ALASKA 99811
907 465 3800

MEMORANDUM April 3, 1987

SUBJECT: Sectional analysis of CSSB 32(HESS), relating to marijuana

TO: Senator Paul Fischer
Chairman, HESS Committee

FROM: Keith B. Levy KBL
Legislative Counsel

You have requested a sectional analysis of CSSB 32(HESS). As a preliminary matter, note that a sectional analysis or summary of a bill should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents. If you would like an interpretation of the bill as it may apply to a particular set of circumstances, please advise.

Section 1 sets out legislative findings related to marijuana, including the finding that the state has a compelling interest in regulating even small amounts of marijuana.

Section 2 amends existing law to make the possession of up to one-half pound of a "schedule VIA controlled substance," i.e., marijuana, a class B misdemeanor (AS 11.71.060(a)).

Section 3 repeals AS 11.71.070, because that section applies to amounts of marijuana that would be covered by AS 11.71.060, as amended by section 2 of the bill.

Under current law, it is already a class B misdemeanor:

(1) to use or display any amount of marijuana in public (AS 11.71.060(a)(1));

(2) to possess any amount of marijuana in a propelled vehicle (AS 11.71.060(a)(2));

(3) for a person under 19 years of age to possess less than four ounces of marijuana (AS 11.71.060(a)(3)); or

(4) for anyone to possess four ounces of marijuana or more anywhere (AS 11.71.060(a)(4)).

It is a class A misdemeanor under current law to manufacture or deliver one-half ounce or more of marijuana (AS 11.71.050(a)(1)) or to possess a half-pound or more of marijuana (AS 11.71.050(a)(3)). It is a class C felony under current law to manufacture or deliver one ounce or more of marijuana (AS 11.71.040(a)(2)) or to possess any amount of marijuana on school grounds if the person is 18 years of age or older (AS 11.71.040(a)(4). And it is a class B felony to deliver any amount of marijuana to a person under 19 years of age if the person is at least three years younger than the person delivering the marijuana. Thus, the use, possession, or sale of marijuana is already a crime under existing law except for the possession of under four ounces of marijuana by an adult in the home. The bill adds this narrow area to the criminal law. As discussed in the memorandum dated October 29, 1986, it is this narrow area of marijuana possession that presents constitutional problems under the ruling of the Alaska Supreme Court in Ravin v. State, 537 P.2d 494 (Alaska 1975).

If I may be of further assistance, please advise.

KBL:mkr
m10/100

STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE

REQUEST:

Bill Version : Senate Bill 32
Publish Date :

Revision Date:
Title : "An act relating to marijuana"

Agency Affected : Department of Corrections
BRU :

Sponsor : Senator Paul Fischer
Requestor : Senator Paul Fischer

Components :

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

FUNDING: (Thousands of Dollars)

GENERAL FUND	0	0	0	0	0	0
FEDERAL FUNDS						
OTHER						
TOTAL						

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME						
TEMPORARY						

ANALYSIS : (Attach a separate page if necessary)

Prepared by : Susie Riley, Budget Analyst
Phone : 465-3376
Division : Administrative Services
Date : 01/26/87

Approved by Commissioner : by William W. Ladwig
Date : 01/26/87
Agency : Department of Corrections

Distribution (by preparer) :
Legislative Finance
Legislative Sponsor
Requestor
Office of Management and Budget
Impacted Agency(ies)
Senate Secretary

page ____ of ____

BILL NO: SB 32 DATE: 1/21/87

TITLE: "An Act relating to marijuana; and providing for an effective date.

CONTACT: Maj. Walter J. Gilmour
Acting Director

The Division of Alaska State Troopers is neutral on this legislation.

Many individuals and groups in Alaska feel that the use of marijuana is harmful to public health and welfare. The purpose of this legislation is to recriminalize the possession of any amount of marijuana.

Presently the state law allows up to four ounces of marijuana for personal use. This is in direct conflict with the existing Federal law. This in effect encourages the violation of Federal law.

The existing conflict of Federal and State law is confusing in the mind of the public. The public expects consistency rather than diversity in the law. Such diversity tends to breed disrespect for the law in general, especially upon the impressionable minds of our youth.

Alaska's lenient attitude toward marijuana in effect creates a legal market for a substance that is illegally grown in other states.

Alaska's legalization of small amounts of marijuana directly contravenes the terms of the Single Narcotics Convention, the international treaty which outlaws marijuana and other controlled substances. The United States is one of numerous countries which are signators to the convention.

Recriminalizing marijuana would not, as some fear, result in wholesale arrest of individuals possessing small amounts of marijuana. The present drug enforcement philosophy of source interdiction recognizes the far greater cost-effectiveness of striking against high-level distributors, and sadly, there is no lack of high-level drug dealers in Alaska to occupy the enforcement efforts of narcotics officers.

William R. Nix
Acting Commissioner

DEPARTMENT OF PUBLIC SAFETY / / FILED

STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE

Bill Version: SB 32
Publish Date:

REQUEST
Revision Date:
Title: "An Act relating to marijuana; and providing for an effective date."
Sponsor: Sen. Fischer
Requestor: Senate HESS

Agency Affected: Public Safety
BRU: Alaska State Troopers
Components: Detachments & C.I.B. Narcotics

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92
OPERATING						
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUNDS						
FEDERAL FUNDS						
OTHER						
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME						
TEMPORARY						

ANALYSIS: (Attach a separate page if necessary)

No additional enforcement activities are anticipated and thus no fiscal impact is anticipated.

F.C.C.

Prepared by: Francis C. Allan
Division: Alaska State Troopers
Phone: 269-5691
Date: 1/21/87

1/26/87

Approved by Commissioner:
Agency: Public Safety
Date: 1/26/87

Distribution (by preparer):
- Legislative Finance
- Legislative Sponsor
- Requestor
- Office of Management and Budget
- Impacted Agency(ies)
- Senate Secretary

POSITION PAPER/Department of Health & Social Services

POSITION PAPER
SB 32

For an Act entitled: "An Act Relating to Marijuana; providing for an effective date."

The Department of Health and Social Services is neutral regarding this legislation. The department, through the State Office of Drug and Alcohol Abuse, discourages the use of drugs of all kinds, including marijuana, and promotes this position through its support of community education and treatment of individuals who use drugs or alcohol. The criminalization of the use of marijuana by adults will not affect these programs.

The use of marijuana by youth is already a violation of law. These laws are enforced by local law enforcement agencies with the support of the Division of Family and Youth Services through its juvenile intake functions and delinquency programs. Discouraging the use of drugs and alcohol by youth is accomplished, again, through the work of the Division of Family and Youth Services in its direct contact with youth who may be using drugs or alcohol, and through the community education and treatment programs sponsored through the State Office of Drug and Alcohol Abuse.

Myra M. Munson

Myra M. Munson, Commissioner
Department of Health
and Social Services

DATE: March 4, 1987