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results. Therefore, these studies did not provide conclusive evidence that .08 BAC laws by themselves have resulted in reductions in drunk driving crashes and fatalities. A task force of the New Jersey State Senate examined this evidence and, in a report issued in December 1998, reached a similar conclusion.[8]

The California Studies

NHTSA has cited California's experience as evidence of the effectiveness of .08 BAC laws. For example, in a publication promoting the need for .08 BAC laws, NHTSA stated that "alcohol-related fatalities significantly decreased after the state's BAC limit was lowered to .08 in 1990." In another publication, it said "California's .08 law was analyzed by . . ., [and] . . . the state experienced a 12% reduction in alcohol-related fatalities, although some of this can be credited to the new administrative license revocation law."

While NHTSA's 1991 study by Research and Evaluation Associates (see table 1) did find a 12-percent decline in alcohol-related fatalities after the .08 BAC law took effect, the study had important limitations. For example, the authors had available to them only 1 year of data for the period after the law went into effect, an unusually short period of time to analyze trends, and the authors acknowledged this limitation. California also had a license revocation law—under which a person deemed to be driving under the influence has his or her driving privileges suspended or revoked—take effect 6 months after the .08 BAC law. Although the authors concluded that this law had no effect, they stated that they were unable to accurately account for the separate effects of the two laws.

A more comprehensive, methodologically sound study of California was released by the state's Department of Motor Vehicles in 1995. In contrast to the 1991 review, this study was based on 4 years of data after the law became effective and found mixed results. The study concluded that the .08 BAC law was not associated with any statistically significant reductions in crashes resulting in fatalities or serious injuries in which drivers were reported to have been drinking, but that reductions did occur in accidents that took place during hours in which alcohol involvement is probable, such as nighttime crashes between 2 and 3 a.m. The study found

[8]State of New Jersey, Senate Task Force on Alcohol-Related Motor Vehicle Accidents and Fatalities, Dec. 11, 1998. Created by the leaders of the New Jersey State Senate, the task force was composed of elected officials and representatives from the state's judicial, medical, academic, and law enforcement communities. The task force was charged with, among other things, evaluating the available studies, and determining whether reducing the BAC limit to .08 would reduce the number of alcohol-related accidents and fatalities in New Jersey. The task force concluded that "the impact of laws that reduce the per se BAC level from .10 to .08, in isolation, is inconclusive" and that the effect of public education and awareness campaigns and license revocation laws "can be greater than changing the legal BAC."

to several or to the rest of the nation.

- Three of the five states had license revocation laws take effect within 10 months of their .08 BAC laws. This study made no effort to separately analyze the relative contribution of the two types of laws to any subsequent decline in fatal motor vehicle crashes in those three states. Thus, in at least three states, the authors' findings could as easily apply to the license revocation law as the .08 BAC law. The authors acknowledged this limitation, but it is rarely cited in NHTSA's literature and public statements endorsing this study and its findings.

- The study's conclusion that 500 to 600 fewer fatal crashes would occur annually if all states had .08 BAC laws is unfounded. The study does not explain how this estimate was derived or how the reduction could be credited to .08 BAC laws since the .08 BAC and license revocation laws went into effect within 10 months of each other in three of the five states. The authors told us that the estimate assumed that all states without .08 BAC laws would experience a reduction of up to 10 percent in alcohol-related crashes after enacting the laws. However, the study provides no basis for assuming that reductions of that magnitude would occur. Even this particular study found that while three of the five states experienced reductions greater than their comparison state, two of the five did not. NHTSA's April 1999 study of the effect of .08 BAC laws in 11 states (see table 1) characterized this conclusion as "unwarranted."

NHTSA Staff Study

In 1994, NHTSA staff conducted a study that examined FARS data in the first five states that enacted .08 BAC laws (see table 1). NHTSA has often cited this study as evidence of the effectiveness of .08 BAC laws. For example, a December 1997 publication with the National Safety Council said, "... significant reductions in alcohol-related fatal crashes were found in 4 out of the 5 states ranging from 4% to 40%. . . ."

The staff study examined 6 measures of alcohol involvement, ranging from fatal crashes involving drivers with high BACs to single-vehicle crashes late at night, in each of the five states (for a total of 30 measures) and found statistically significant decreases in 9 of the 30 measures. The study also had several important limitations, which the authors acknowledged. For example, as with the Boston University study, the staff study made no effort to separately account for the relative contributions of .08 BAC laws and license revocation laws in the three states that enacted them within a short period. The staff study cautioned that the results were preliminary and that they pointed to the need for further research. NHTSA's public

study found statistically significant reductions after .08 BAC laws became effective.

Table 2: Results of the 11-State Study of .08 BAC Laws

State	Year .08 BAC law became effective	Statistically significant reduction occurred in: Alcohol-related fatalities	Fatalities involving "high BAC" drivers	Proportion of fatalities involving "high BAC" drivers to those involving sober drivers
Utah	1983	No	No	No
Oregon	1983	No	No	No
Maine	1988	No	No	No
California	1990	No	No	No
Vermont	1991	**Yes**	**Yes**	**Yes**
Kansas	1993	No	No	**Yes**
North Carolina	1993	No	No	**Yes**
Florida	1994	**Yes**	**Yes**	**Yes**
New Hampshire	1994	No	No	No
New Mexico	1994	No	No	**Yes**
Virginia	1994	No	No	No
Total		**2 of 11**	**2 of 11**	**5 of 11**

Note: "Yes" indicates a statistically significant reduction after the .08 BAC law became effective. "No" indicates no statistically significant reduction.

Reductions in all three measures of fatalities involving alcohol occurred in Florida and Vermont. Although alcohol involvement in fatal crashes began to decline in Florida before the .08 BAC law was enacted, it continued to do so after the law went into effect on January 1, 1994. According to FARS, the number of alcohol-related traffic deaths in Florida declined in 1994 by nearly 10 percent, while the proportion of fatalities involving alcohol fell from 44 to 39 percent—in 1997 it stood at around 34 percent. While the study noted that Vermont has experienced fluctuations in its fatal crash rates, it found that after Vermont's .08 BAC law took effect, it also experienced statistically significant reductions in both the number of fatalities involving alcohol and the proportion of fatalities involving drivers with high BACs to those involving sober drivers. In this study, Vermont was the only state of the first five states to enact .08 BAC laws that showed any reductions in alcohol-related fatalities associated with .08 BAC laws.

it concluded that .08 BAC laws added to the impact that enforcement; public information; and legislative activities, particularly license revocation laws, were having. In addition to the two states where .08 BAC and license revocation laws were found to be effective in combination, the study noted that the five states with .08 BAC laws that showed reductions already had license revocation laws in place. One of the authors told us that this suggested that the .08 BAC laws had the effect of expanding the scope of the license revocation laws to a new portion of the driving public.

University of North Carolina Study

A NHTSA-sponsored study by the University of North Carolina concluded, in contrast to the 11-state study, that the .08 BAC law in North Carolina had little clear effect. The study examined alcohol-related crashes and crashes involving drivers with BACs greater than .10 from 1991 through 1995; compared fatalities among drivers with BACs greater than .10 in North Carolina with such fatalities in 11 other states; and compared six measures of alcohol involvement in North Carolina and 37 states that did not have .08 BAC laws at that time. The study controlled for and commented on external factors that could confound the results, such as the state's sobriety checkpoints, enforcement, and media coverage. The study found the following:

- No statistically significant decrease in alcohol-related crashes after passage of North Carolina's .08 BAC law in three direct and two "proxy" measures.[9]
- A continual decline in the proportion of fatally injured drivers with BACs equal to or greater than .10 but no abrupt change in fatalities that could be attributed to the .08 BAC law.
- Decreases in alcohol-related crashes in North Carolina and in the 11 other states studied. While North Carolina's decreases were greater, the study concluded that no specific effects could be attributed to the .08 BAC law.
- No statistically significant difference between North Carolina and 37 states without .08 BAC laws in four of the six measures. While reductions in police-reported and estimated instances of alcohol involvement were found to be statistically significant, these reductions happened 18 months before North Carolina lowered its BAC limit. The authors attributed these decreases, in part, to increased enforcement.

[9]Direct measures are actual observations, such as police reports of alcohol involvement in crashes, whereas proxy measures are not actual observations, but categories in which the involvement of alcohol is considered probable, such as nighttime crashes between 2 and 3 a.m.

fatalities or drivers as a percentage of all fatalities or drivers. The 50-state study's 8-percent estimate is the change in the ratio of alcohol-involved drivers to sober drivers who are in fatal crashes. While this is not an inappropriate way to measure differences in crashes and fatalities, this method can increase the size of the effect because, rather than comparing fatalities or drivers involving alcohol to all fatalities or drivers, it compares the number of alcohol-involved drivers to just the number of sober drivers. This method produced a larger effect in this study because, since 1982, of the drivers involved in fatal crashes, the number reported to have been using alcohol has dramatically declined (by around 39 percent), while the number reported to have been sober has substantially increased (by around 25 percent). While the 11-state study also measured this ratio, that study did not report a numerical effect.

Table 3 illustrates the difference between these methods of portraying traffic statistics using NHTSA's FARS data on drivers involved in fatal crashes between 1995 and 1997. As the table shows, while the number of alcohol-involved drivers declined by about 6 percent, the ratio of such drivers to sober drivers declined by 9 percent.

Table 3: Drivers Involved in Fatal Crashes, 1995-97

	1995	1997	Difference
Alcohol-involved drivers	14,269	13,393	(6.1%)
Sober drivers	41,895	43,209	3.1%
All drivers	56,164	56,602	0.8%
Ratio of alcohol-involved drivers to sober drivers	34%	31%	(9%)

Source: GAO's analysis of FARS data

Another reason why this study's results cannot be directly compared to other studies' is because it did not include data for drivers under 21. In 1997, drivers under 21 accounted for around 14 percent of the drivers in fatal crashes and about 12 percent of the drivers in fatal crashes involving alcohol. According to the authors, drivers under 21 were excluded from the analysis because other laws affect these drivers, such as minimum drinking age and "zero tolerance" BAC laws, and thus the primary effect of .08 BAC legislation would be expected to be on the population over 21 years old. While this argument may have merit, other arguments exist for including this population. First, NHTSA has stated that .08 BAC laws have a general deterrent effect on drinking and driving among all drivers. Also, young drivers violating .08 BAC laws have been prosecuted under those

conclusively establish that .08 BAC laws by themselves result in reductions in the number and severity of crashes involving alcohol. Until recently, limited published evidence existed on the effectiveness of .08 BAC laws, and NHTSA's position—that this evidence was conclusive—was overstated. In 1999, more comprehensive studies have been published that show many positive results, and NHTSA's characterization of the results has been more balanced. Nevertheless, these studies fall short of providing conclusive evidence that .08 BAC laws by themselves have been responsible for reductions in fatal crashes.

Because a state enacting a .08 BAC law may or may not see a decline in alcohol-related fatalities, it is difficult to accurately predict how many lives would be saved if all states passed .08 BAC laws. The effect of a .08 BAC law depends on a number of factors, including the degree to which the law is publicized; how well it is enforced; other drunk driving laws in effect; and the unique culture of each state, particularly public attitudes concerning alcohol.

As drunk driving continues to claim the lives of thousands of Americans each year, governments at all levels seek solutions. Many states are considering enacting .08 BAC laws, and the Congress is considering requiring all states to enact these laws. Although a strong causal link between .08 BAC laws by themselves and reductions in traffic fatalities is absent, other evidence, including medical evidence on impairment, should be considered when evaluating the effectiveness of .08 BAC laws. A .08 BAC law can be an important component of a state's overall highway safety program, but a .08 BAC law alone is not a "silver bullet." Highway safety research shows that the best countermeasure against drunk driving is a combination of laws, sustained public education, and vigorous enforcement.

Agency Comments and Our Evaluation

DOT provided comments on a draft of this report (see app. I). The Department generally agreed with the information presented in the report. DOT reiterated its long-standing commitment to a systems approach for combating drunk driving and stated that while no individual component, including .08 BAC laws, is effective in isolation, the overall evidence supports the effectiveness of .08 BAC laws. DOT stated that the four original studies provided positive, if not conclusive, results and formed a reasonable basis for supporting .08 BAC laws. The three recent studies added to this body of evidence, including the North Carolina study, which, while finding little clear effect of the state's .08 BAC law, did find

The scope of our study was limited to the effect of .08 BAC laws on the number and severity of alcohol-related crashes. We did not review several other arguments raised by both proponents and opponents of .08 BAC laws; for example, while we describe the medical evidence on impairment, we did not evaluate that evidence. In addition, our ability to review the severity of alcohol-related crashes was limited by the fact that the FARS database—used entirely by five of the seven studies and in part by a sixth—includes only fatal crashes. The .08 BAC laws reviewed may have had a greater or lesser effect on nonfatal crashes than it did on fatal crashes. Finally, section 2008 of the Transportation Equity Act for the 21st Century required us to review the effect of .02 BAC laws for drivers under 21 in reducing the number and severity of alcohol-related crashes. As agreed with your staff, we will not address those laws as all 50 states and the District of Columbia now have laws establishing BAC levels of .02 or less for drivers under 21 years of age.

We performed our work from August 1998 through April 1999 in accordance with generally accepted government auditing standards.

We will send copies of this report to cognizant congressional committees; the Secretary of Transportation; and the Administrator, National Highway Traffic Safety Administration. We will make copies available to others upon request. If you have any questions regarding this report, please contact me at (202) 512-3650 or Ronald Stouffer at (202) 512-4416. Key contributors are listed in appendix II.

Sincerely yours,

Phyllis F. Scheinberg

Phyllis F. Scheinberg
Associate Director,
Transportation Issues

Department of Transportation
Comments on the General Accounting Office (GAO) Draft Report
"Highway Safety: Effectiveness of State .08 Blood Alcohol Laws,"
RCED-99-179

The Department commends GAO for reaching the sound and accurate conclusion that a .08 blood alcohol concentration (.08 BAC) law can be an important component of a state's overall highway safety program. We agree that highway safety research shows that the best countermeasure against drunk driving is a combination of laws, including .08 BAC, sustained public education, and vigorous enforcement. The Department has consistently supported such a systems approach to reduce alcohol related driving fatalities. The .08 BAC laws are an important component of this system, as research has shown substantial evidence that performance in driving-related skills such as reaction time, tracking and steering, and emergency response is substantially impaired for all persons at .08 BAC. It is not the Department's position that .08 BAC laws, by themselves, are sufficient to address the issue of alcohol-impaired driving.

Systems Approach Most Effective for Reducing Alcohol Related Highway Deaths

GAO aptly recognizes in the draft report that the National Highway Traffic Safety Administration (NHTSA) has, since 1970, espoused a systems approach for reducing alcohol-impaired driving. This systems approach must include legislative, enforcement, judicial, licensing and public information components. In 1998, NHTSA further refined this concept with the publication of an action plan to further reduce alcohol related driving fatalities. This plan recommends that all states initiate a wide range of laws and programs including .08 BAC limits, administrative license revocation (ALR) laws, comprehensive screening and treatment programs for alcohol offenders, vehicle impoundment and zero tolerance BAC laws for youth.

While studies conducted for NHTSA have attempted to measure the effectiveness of individual components of such a systems approach to reducing alcohol related deaths, it is recognized that no component operates in a vacuum. All of the efforts to reduce alcohol-impaired driving over the past two decades have built upon and operated in the environment created by the totality of actions which have preceded it. Thus, new laws will be most effective when they complement other laws and activities. Consistent with this position, the Agency has often pointed out that .08 BAC laws are likely to be most effective when combined with ALR laws, and vice versa. The studies conducted to date convincingly support this position.

Three Recent Studies Strengthen Analytical Basis for Supporting .08 BAC Laws

NHTSA recently released the results of these three high quality studies of .08 BAC law effects, which provided additional evidence to support the effectiveness of these laws. When combined with the previously conducted studies, the three new studies provide additional confidence in the expectation that .08 BAC laws, when added to existing laws or programs, reduce alcohol-related traffic fatalities. A substantial body of directionally consistent evidence is now available to support the Department's position that .08 BAC laws are effective in reducing alcohol-related fatalities. The 50-state study, for example, controlled for more extraneous variables than any previous study and showed a significant reduction in the involvement of both low BAC and high BAC drivers in fatal crashes. The 11-state study found that .08 BAC laws were associated with reductions in alcohol-related fatalities in 7 of the 11 states studied, either alone or in conjunction with ALR laws. In the North Carolina study, which found no clear effect of its .08 BAC law, the majority of outcomes were directionally consistent with such an effect, over and above the sharp decline in alcohol-related fatalities that began before the law was enacted.

The methodologies used in these studies provide tools to make responsible estimates of how many lives would be saved if all states enacted .08 BAC laws. It is common and appropriate for such estimates to be made, based on average, pooled, or aggregated study results. Researchers that make such estimates are fully aware that there will be a range of results experienced by individual states. However, if such estimates are based on sound research and appropriate algorithms, it is reasonable to predict average effects which can be expected in states yet to adopt a particular program.

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The methodologies used in these studies provide tools to make responsible estimates of how many lives would be saved if all states enacted .08 BAC laws. It is common and appropriate for such estimates to be made, based on average, pooled, or aggregated study results. Researchers that make such estimates are fully aware that there will be a range of results experienced by individual states. However, if such estimates are based on sound research and appropriate algorithms, it is reasonable to predict average effects which can be expected in states yet to adopt a particular program.

In Depth Rebuttal of Points Made in GAO Report

"Results of Recent .08 Studies are Mixed."

By far the majority of the outcomes contained in the eight studies that have been conducted to date support the contention that .08 BAC laws are associated with reductions in alcohol-related fatalities. For example, in the recent NHTSA-sponsored 11-state study, a total of 39 outcomes were reported in the results section (33 relating to .08 BAC laws alone). Of these, 32 (26 relating to .08 BAC laws alone) were directionally in support of reduction in alcohol-related fatalities associated with .08 BAC laws, alone or in conjunction with Administrative License Revocation (ALR) laws. Eleven of these outcomes (involving 7 of the 11 states) were statistically significant. Of the remaining four states, one (UT) had non-significant outcomes which supported a decrease in alcohol related fatalities; one (ME) had mixed results; and two (OR and NH) had non-significant outcomes in the opposite direction.

In summary, significant reductions associated with .08 BAC laws were found in 5 of 11 states and significant reductions associated with the combination of .08 BAC and ALR laws were found in an additional two states.

It should be added that, in the previously published multi-state study conducted by Boston University (Hingson et. al., 1996), 8 of 10 outcomes were directionally in support of reductions in alcohol related fatal motor vehicle crashes. Six of these outcomes (covering 4 of the 5 states studied) were statistically significant. Two outcomes were neither directionally in support of an impact nor statistically significant.

"Some studies find different results for the same state"

One other aspect of variation in .08 study outcomes involves the fact that different studies have sometimes found different results in the same individual states. The most resent example of this involves the two recent studies which included North Carolina. This statement is somewhat misleading, however, since the majority of the outcomes reported in the NHTSA 11-state study and in the NHTSA North Carolina study are directionally consistent. Outcomes differ primarily in magnitude and statistical significance. Both studies reported evidence of an additional effect of the .08 BAC laws, above and beyond the sharp decline in alcohol-related fatalities that had begun prior to the implementation of the .08 BAC law.

Different studies have reported different results for other states as well, most notably for OR, UT, NH, and ME. However, these kinds of inconsistencies in outcomes have been found in other areas of traffic safety research where the body of research is considered to be consistent and convincing.
Among the studies of the age-21 minimum drinking age (MDA), for example, different results were reported by different studies for several states (most notably GA, IA, ME, and MT). As the 1987 GAO report that reviewed these studies points out, these

include the combined effect of .08 and ALR laws in CA and VA). Thirty two of 39 outcomes directionally support evidence of an impact of .08 laws alone.

The 50-state study controlled for multiple extraneous factors known to be related to fatal crashes (more than any other .08 study conducted to date) and, *in addition*, introduced a time-trend factor to account for variation which *might have been* attributable to unknown or unmeasurable factors. It still found an impact for both low and high BAC drivers.

The North Carolina study conducted approximately 17 analyses where the authors provided information regarding the directionality of the results. In 11 of these 17 analyses, the results suggested the presence of a reduction in alcohol related crashes or fatalities associated with the .08 BAC law, over and above the pre-existing trend.

We consider these results to be directionally unambiguous and consistent with the findings of previous studies.

"The North Carolina researchers found no clear evidence of effect of the .08 BAC law."

Again, most of the outcomes of the North Carolina study were directionally consistent with an impact over and above the sharp decline in alcohol-related fatalities already being experienced in the state. It was this pre-existing sharp decline that prevented the observed effect of the law from being even greater than it was. The North Carolina researchers recognized this possibility when the stated that ...

"... given the dramatic decline in alcohol-related crashes that was occurring in North Carolina during the early 1990s, it may be that any possible effects of reducing the BAC limit were simply obscured by a broad change in drinking-driving behavior that was already occurring."

"The NHTSA 50-state study was well controlled but its results must be interpreted differently from other studies because it used a different outcome measure."

The 50-state study represents one of the most sophisticated, well conceived, comprehensive and controlled studies conducted to date. It directly controlled for many factors which could have affected alcohol-related crashes over the 16 years of the study. It covered the experiences of fifteen .08 BAC law states; it was based on a clear theoretical model of potential variables which affect drinking and driving; data were gathered and entered into the analysis to control for vehicle miles traveled, urban/rural distribution, seasonality, unemployment rates, alcohol consumption; and safety belt usage laws.

In addition, a sophisticated outcome measure was used (just as in the 11-state study) which helped control for any extraneous factors which might affect both alcohol-related

A Comparison of Studies of the Effectiveness of Minimum Drinking Age Laws and .08 BAC Laws

Background to the MDA 21 Literature

A review of the literature on the effectiveness of Minimum Drinking Age (MDA) laws is informative with regard to the current discussion surrounding the studies of the effectiveness of .08 BAC laws. The research literature regarding MDA law effectiveness is considered by many researchers to be among the most consistent and robust of any area. This perception is conveyed in a March 1987 report by the General Accounting Office (GAO) which reviewed these studies.

On page 27, the GAO reviewers stated: *"We identified far more studies that met our minimum threshold criteria for the traffic-accident outcome than for other reported research areas. In addition, almost as many studies met our minimum criteria as did not."*

In its conclusion, the GAO report stated: *"In total, the evidence is persuasive that raising the minimum drinking age has had significant effects on reducing alcohol-related traffic accidents for the age group affected by the law. We conclude that states can generally expect reductions in their traffic accidents, but the magnitude will depend on the outcome measure evaluated and the characteristics of the state. This finding is supported through multiple observations of similar direction and, often, similar magnitude, obtained by alternative approaches to analyzing various measures of traffic accidents. Further support for our conclusion comes from the knowledge that such consistent findings rarely occur in reviews of this sort. "*

What the Current .08 Studies Have Found

Before looking at the MDA law literature, it would be useful to review the results of studies of .08 laws conducted to date. There have been eight studies of the effectiveness of .08 BAC laws in the U.S:

NHTSA (1991); covered California, single outcome measure
- *found 12 percent effect of .08 and ALR together*

Johnson and Fell (1995); covered five states, 6 outcome measures
- 26 of 30 outcomes suggested reductions; 10 were statistically significant
- consistent reductions found in four states (CA, OR, UT, VT)
- mixed results found in one state (ME)
- estimated effect varied between *4 and 40 percent reductions* (no pooling)

Rogers (1995) California DMV study; used a variety of outcome measures
- mixed results, most non-significant
- *7.2% reduction in nighttime fatal* and severe injury crashes
- *10% reduction in fatal and total injury crashes between 2-3 a.m.*

Hingson et al (1996); covered five (early .08) states; single outcome measure

from 5 percent (Hoskin et al, 1986) to 28 percent reductions (Williams et al 1983).

Studies that pooled results from several states always reported overall decreases in (measures of) alcohol-related crashes, but **within these pools, the results for individual states varied considerably**, with the majority of them not reaching statistical significance.

The Characteristics of the MDA 21 Literature Relative to the .08 BAC Literature

With this summary information in mind, it is instructive to compare the characteristics of the highly regarded body of MDA 21 law studies with those of the .08 BAC law studies.

Clearly, the MDA 21 studies have involved a competent group of researchers, sound research methods, and results that have been directionally consistent.

On the other hand, these studies have also reported a *wide range of effect sizes*, used a variety of outcome measures, and *have sometimes reported inconsistent results* -- even among some studies conducted in exactly the same manner. With some states, there were actually findings of increased crash involvement for the age group(s) affected.

The level of consistency (or inconsistency) of outcomes in the .08 BAC law literature is similar to that of the MDA 21 area. Reported inconsistencies have nearly always involved significant versus non-significant findings, not directionally different findings. *In both areas, the level of consistency in the directionality of outcomes is very similar*

With regard to quality of studies, the overall quality and sophistication of studies of .08 BAC laws is just as high, if not higher, than the studies reported in the 1987 GAO report.

Several specific issues of concern have been raised with regard to .08 BAC law studies. They include: *inconsistent or equivocal results*, *use single comparison states*, and *suggested inappropriateness of pooling or aggregating results* across states.

Variation in Reported Outcomes

It has been suggested (by GAO reviewers and others) that there is a degree of inconsistency (and equivocality of results) among the studies of .08 BAC laws.

All research findings are equivocal!

Within both the MDA-21 and the .08 BAC literature, *between-state differences in effect have been common* and *different studies have often reported different results for a particular state.* Usually these differences involve outcomes that are directionally consistent but which vary in magnitude and/or statistical significance. With regard to the .08 BAC law literature, there is no greater inconsistency with regard to either magnitude or directionality of outcomes than in the

However, pooling is a common practice, particularly when dealing with small states. Nearly all of the MDA 21 multi-state studies included some form of pooling, averaging, or aggregating across states (e.g., Arnold (1985); DuMouchell (1985); Hoskin (1985); and Williams et al. (1983)).

Another form of (GAO) criticism that relates to pooling is the suggestion that it is inappropriate to include states in the pool if they have had results that were either not statistically significant or directionally inconsistent.

This is not uncommon and it is not inappropriate. In fact, the 1987 GAO report acknowledges the fact that between-state outcomes varied considerably within the "pools" of states included in the studies they cited as meeting their criteria and showing impact. The report stated that: *"most individual states making up the pool of states evaluated in each study observed statistically significant reductions in this category; however, there were some exceptions. For example, in the Arnold (1985) study, Georgia, Iowa, and Maine exhibited a net percentage increase in "driver fatal" crashes for the age groups affected by the law during the study period."*

Use and Selection of Single Comparison States

Perhaps the most frequently voiced criticism of the Hingson et al. (1996) study of .08 BAC law effectiveness has been that these researchers (arbitrarily) selected single states to serve as a control or comparison for each .08 BAC law state.

Hingson and his associates selected their comparison states on the basis of geographical proximity and similar (high) levels of BAC testing as the .08 law states. Critics (including GAO) have focused on the fact that selection of different states would have produced different results.

Most researchers agree that multi-state comparison groups (such as those used by Foss et. al., and by Apsler et. al.) are more robust than single state comparison groups. As a result, it is preferable to use a combination of states (or even all remaining) states for comparison purposes.

However, it should also be pointed out that the use of single comparison states is common in public health research. *Nearly all of the MDA law studies included single states for comparison with individual law states.* In fact, one of the better multi-state MDA studies included in the GAO review (Williams et al., 1983) used an approach similar to that used by Hingson et al. (1986).

Summary

In summary, many of the current criticisms of the .08 BAC effectiveness literature are inconsistent with the views held regarding similar research conducted with regard to MDA laws. As with the MDA laws, the studies of .08 BAC law impact have been conducted by reputable researchers who have employed sound analytical methods.

RECENT STUDIES OF THE EFFECTS OF .08 BAC LEGISI ATION

NHTSA recently completed three studies of the effects of lowering the illegal blood alcohol concentration (BAC) limit from .10% to .08%. Two of these studies indicate that .08 BAC laws have reduced alcohol-related crash involvement, particularly in conjunction with the presence of other impaired driving laws and programs such as administrative license revocation (ALR). The third study looked at the effect of a .08 BAC law in a single state (NC) and found no statistically significant change in a pre-existing downward trend in factors related to alcohol-related crashes.

The most comprehensive study (covering all 50 states) analyzed the effects of both .08 and .10 illegal per se laws, as well as administrative license revocation (ALR) laws over a 16-year time period. After extensive efforts to control for extraneous factors, this study found that all three laws were associated with reductions in drinking drivers involved in fatal crashes. It estimated that .08 BAC laws had an 8% effect in reducing fatal crashes involving drivers at both high BACs and lower BACs and resulted in 275 fewer fatalities in the 15 states where they were in effect in 1997. If all 50 states had such laws in effect, an additional 590 fatalities would have been prevented.

An 11-state study also examined the effects of .08 BAC (and ALR) laws. It found that 0.08 BAC legislation was associated with reductions in alcohol-related fatalities, alone or in conjunction with ALR laws, in seven of the eleven states studied. In five of these states (VT, KS, NC, FL, NM), implementation of the 0.08 BAC law itself was associated with significantly lower rates of alcohol related fatalities. These results take into account any pre-existing downward trends the states were already experiencing, due to other factors such as the presence of other laws, use of sobriety checkpoints, etc. In two states (CA and VA), significant reductions were associated with the combination of .08 BAC and ALR laws, implemented within 6 months of each other.

The third study analyzed the effects of a .08 BAC law implemented in 1993 in North Carolina, a state which had already been experiencing a sharp decline in alcohol-related fatalities since 1987. This study concluded that there was little clear effect of the lower BAC limit. Results from various analyses suggested that some portion of the reductions may have been associated with the law but the magnitude of these effects was not sufficient to make this conclusion.

In aggregate, these three studies provide additional support for the premise that .08 BAC laws help to reduce alcohol-related fatalities, particularly when they are implemented in conjunction with other impaired driving laws and programs. Nearly all of the findings of these and previous studies show changes that suggest that .08 BAC legislation (as well as .10 BAC laws and ALR laws) have contributed to the trend toward reduced alcohol-related crashes and fatalities that have been experienced across the nation.

- While alcohol-related traffic fatalities have been decreasing (and the 39 percent in 1997 represented an all-time low in the U.S.), we have a long way to go to meet the national goal of no more than 11,000 alcohol-related fatalities by the year 2005.

- We know what works. In order to reduce impaired driving in this Nation, we need tough laws set by the states, highly visible enforcement of these laws, and a change in the public's attitude regarding this problem.

- One step in that direction will be to adopt .08 BAC as the illegal limit for adult drivers in all 50 states. Currently, only 16 states and the District of Columbia have such laws.

- Research shows that virtually all drivers, even experienced drinkers, are substantially impaired at .08 BAC with regard to critical driving tasks (such as braking steering, lane changing, judgement, and divided attention)

- The risk of being involved in a crash increases gradually at each blood alcohol level, but rises very rapidly after a driver reaches or exceeds .08 BAC.

- . 08 BAC is a reasonable limit to set. A 170-lb. male would have to consume 5 or more 12-ounce beers in a 2-hour period on an empty stomach to reach .08 BAC. An average (137 lb.) female would need to consume 4 beers in 2 hours to reach .08.

- Surveys show that most people would not drive after consuming 2 or 3 drinks and that 2 out of 3 Americans favor lowering the limit to .08, when they are made aware of how much alcohol that means.

- Most other industrialized nations have set BAC limits at .08 or lower. For example, Canada and Great Britain have had .08 for many years; Australia, France and Germany are at .05; and Sweden has an illegal limit set at .02 BAC.

- Past research has shown that .08 laws have been effective in reducing impaired driving in several states that have adopted them. However, some have suggested that because these studies have found different results in various states that they provide only "equivocal" evidence of the effectiveness of these laws.

- In fact, the quality and consistency of the results of the past studies is quite similar to that of studies conducted from 1980 -1990 to evaluate the effectiveness of minimum drinking age laws. Any inconsistency found in the studies (in both areas) has generally been in magnitude, not direction of effect, and it has involved primarily smaller states where fatal crashes vary significantly from year-to-year.

- However, because concerns have been raised, the Department of Transportation commissioned these three new studies to further investigate the effectiveness of .08 BAC laws.

effective when coupled with other efforts, including ALR laws, sobriety checkpoints, enforcement blitzes, and public information campaigns.

- Even with these studies, there will undoubtedly be those who will still claim the evidence for the impact of .08 laws is still "equivocal." All research is (equivocal). However, with the addition of these studies, the quantity and quality of studies is reinforced. In fact, it can be argued that both the quality of the studies and the consistency of their results parallels that of the minimum drinking age (MDA 21) studies, which have been widely viewed (including GAO reviewers) as constituting one of the most unequivocal areas of highway safety evaluation]

Questions and Answers Regarding the .08 Issue and the Recent Studies Supporting Its Impact

Questions Directly Related to the .08 Studies

Q. **How do you resolve the fact that in one study of the effects of .08 BAC legislation in North Carolina, the researchers found "no clear effect," while in the other study a significant effect of the law was found?**

There is more consistency than inconsistency in the findings of these two recent studies of the North Carolina .08 law implemented in 1993. Both studies found that the .08 BAC law was *implemented in the midst of a sharp decline* in alcohol-related crashes that had begun in 1987. Thus, both studies attempted to find evidence of an *additional* effect, above and beyond the downward trend that was already occurring.

In fact, both studies did find evidence of an *additional* effect associated with the .08 BAC law. In the 11-state study (Apsler, Char, Harding, and Klein), the outcome (for North Carolina) was a statistically significant reduction in alcohol related fatalities. In the case of the North Carolina study (Foss, Stewart, and Reinfurt), several analyses were conducted, the majority of which found evidence of an *additional* reduction in alcohol related crashes associated with the .08 BAC law (in comparison with all states without .08 laws and in comparison with 11 other states with high BAC testing). In this study, however, the magnitude of these results was not great enough for the researchers to conclude that there was a clear effect. Some of the differences in the size of the effect observed appear to be related to differences in pre/post time periods. In any case, the majority of the outcomes of both studies suggested an *additional* effect associated with the law.

In summary,

Both studies found **long term declines in alcohol-related fatal crashes** in North Carolina, due to a variety of activities and programs implemented within the State.

on this very difficult problem. Thus, many countermeasures are in operation at any one time and it is very difficult try to separate out the impact of specific actions.

In addition, there are many extraneous factors that can affect drunk driving (e.g. alcohol consumption levels and patterns, unemployment, etc.). These factors (at least those which are known to affect alcohol-related crashes) must also be accounted for in any credible study.

Efforts to control for the impact of extraneous variables and to estimate the impact of individual measures are never perfect.

However, primarily because of differences in the timing of various efforts, it is often possible to determine (using time series analysis) with some confidence if a particular countermeasure (such as .08 BAC legislation) is having an impact.

It is also possible to use different measures and comparisons with other states to show differences.

The replication of such impact by an accumulation of studies, conducted over different time periods and using different measures and techniques adds to the confidence of these findings.

Q. **How did you account for public attitude changes to drunk driving mainly due to the work of grass roots groups such as MADD and SADD?**

All of the studies took into account the potential impact of such factors by including a "year trend" factor in their analyses Even taking this trend into account, the two national level studies still found that .08 laws had a significant effect on reducing alcohol related fatal crashes.

Q. **Intuitively a .08 law with lots of publicity and enforcement should work better than a law with little of either. Does that account for some of the variability in your results? Can you be assured that the presence or absence of publicity and/or enforcement in conjunction with these laws has been taken into account?**

Unfortunately, there is not good data available regarding the level of enforcement or publicity that accompanied the implementation of .08 BAC laws in all of the states that enacted them. It is certainly possible that differences in the levels of these complementary activities resulted in differences in measured impact in various states with .08 BAC legislation.

Q. **Everybody knows that the baby boomers are getting older and more health conscious and that alcohol consumption is going down in the U.S. The young population was also decreasing over the years of your study. Those factors cause a long-term decline in drinking and driving along with many other social problems. How did your analyses account for that?**

All of the studies used "time factors" in their analyses to attempt to control for such factors that are highly correlated with time. Again, even after accounting for these time trends, the two

This legislation sends a message to all potential drinking drivers that the standard is being lowered and that their risk of arrest, conviction and sanction is becoming greater.

Q. Doesn't a .08 BAC law mean that a 120-lb woman who has two glasses of wine in two hours will be subject to arrest, fines and jail?

This scenario is extremely unlikely. Obviously, if the woman drinks large glasses of high alcohol-content wine on an empty stomach, her BAC could rise to that level. However, numerous demonstrations have been conducted around the country which have included small-statured women. In those demonstrations, even on an empty stomach, two glasses of wine have not resulted in BACs of .08 -- even though the women often showed obvious signs of impairment.

That is the important point -- all persons, small-statured women or large, heavy men, show significant impairment before reaching a BAC of .08. That is why research shows that the risk of being involved in a fatal or serious injury crash increases significantly by the time one is at a .08 BAC.

Q. If lowering the illegal BAC limit from .10 to .08 saves lives, why not lower it to .06 or .05 and save even more lives?

The research on impairment, risk of crash involvement, and effectiveness of legislation, along with the level of public acceptance of current and proposed BAC legislation all points to .08 as the most appropriate illegal level. If future research suggests that lower levels should be adopted and the public agrees, perhaps lower limits will be considered. Right now, .08 is the level recommended for adults. Keep in mind, all states now have adopted per se levels of .04 BAC for commercial drivers (large trucks, buses, etc) and .02 BAC (or zero tolerance) for drivers under the age of 21.

Q. Some countries with .08 BAC limits (e.g. Mexico, Canada, Austria) have higher alcohol involvement rates in fatal crashes than in the U.S. How do you explain that?

Some countries do have higher alcohol involved fatal crash rates than the U.S., even though they have .08 BAC limits. Such laws are only one among many factors influencing alcohol-related fatality rates. There are many other factors that affect these statistics, such as enforcement levels, sanctions, public attitudes toward drinking and driving, alcohol consumption levels and patterns, availability of alternative transportation, etc.

In the U.S., 39% of the traffic fatality are alcohol-related. In many countries with lower BAC limits, like Sweden, the percent alcohol-related is far lower, usually below 30%.

Q. Even in countries like Sweden, the average BAC of a person involved in an alcohol-related fatal crash is .15. How do you explain that?

The Relationship of Alcohol Safety Laws to Drinking Drivers in Fatal Crashes

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16. Abstract

This paper presents an analysis of the relationships between the passage of key alcohol safety laws and the number of drinking drivers in fatal crashes. The study evaluated three major alcohol safety laws (administrative license revocation laws, .10 illegal *per se* , and .08 illegal *per se* laws) on the proportion of drinking drivers in fatal crashes. Drivers age 21 and older in fatal crashes at two BAC levels--.01 to .09 and .10 or greater--were considered separately. Drivers under age 21 were not included because they are affected by the Minimum Legal Drinking Age law. This study used data on drinking drivers in fatal crashes from the Fatality Analysis Reporting System (FARS) covering 16 years from 1982 though 1997 for all 50 states and the District of Columbia. Also, included in the 'udy were such variables as per-capita alcohol consumption and annual vehicle miles traveled, which could impact the number of alcohol-related crashes. The results indicate that each of the three laws had a significant relationship to the downward trend in alcohol-related fatal crashes in the United States over that period. The paper points out that this long-term trend is not the product of a single law, but the result of the growing impact of several laws over time plus the affect of some factors not included in the model tested, such as the increasing use of sobriety checkpoints and the

Alcohol Safety Laws	Adult drivers in fatal crashes	
	BAC .01–.09	BAC .10+
Illegal *per se* laws (.10)	–13.17%	–8.69%
Per se .08 law	–7.89%*	–8.00%
Admin. license revocation law	–18.96%	–12.81%

* Significant at p=.05; all other significant at p<.001

Because the passage of alcohol safety laws by the states took place over time and is highly correlated with time, it was felt that the introduction of the "time trend" factor absorbed some additional impact properly attributable to the three laws in question and, thus, th' analysis produced conservative estimates of the potential impact of these three laws.

Finally, the attribution of savings to any single law should be made with caution since each new law builds to some extent on existing legislation and on other ongoing trends and act' vities. The synergistic interaction among laws is perhaps most evident in the relationship between illegal per se laws (.10 BAC and .08 BAC) and ALR laws.

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91	.5784	.0882	.9020	.7450	.1569	.4509
92	.5974	.0980	.9412	.7932	.1569	.4750
93	.6373	.1127	.9412	.8300	.1765	.5032
94	.6766	.2158	.9510	.8989	.1765	.5377
95	.7451	.2500	.9608	.9413	.1829	.5621
96	.7626	.2745	.9804	.9608	.2059	.5833
97	.7843	.2843	.9804	.9640	.2283	.5961

* For laws becoming effective part way through the year, state weight was adjusted proportionately to represent time during the year in which the law was in effect.

Fatal crashes result from a multiplicity of factors. Some of the factors that have been shown to affect the number of crashes include amount of travel, the status of the economy, and the quality of vehicles and roadways. Driver alcohol impairment is only one such factor. To properly study the effects of alcohol legislation, it was necessary to control for as many extraneous factors contributing to changes in alcohol-related and non-alcohol-related fatal crash frequency as possible. The most frequently used procedure for studying the legislative impact on crashes is to compare states with and without the stricter BAC laws (for example, see Hingson, Heeren, & Winter, 1994, 1996; and Johnson & Fell, 1995). This approach depends upon selecting *comparison* states similar in significant characteristics to *experimental* states that have enacted the laws in question. An alternative procedure is a panel study that uses all states over a long time. A state-by-year (or state-by-quarter) matrix can be created as a framework for regression analyses where drinking drivers in fatal crashes constitute the dependent variable and where alcohol safety laws and other factors thought to influence fatal crashes constitute the independent (or "predictor") variables.

To conduct such a study, it is necessary to:

1. identify the dependent variable most relevant to the purposes of the study;
2. identify the laws to be evaluated;
3. identify those additional independent variables that can significantly influence the dependent measure, and
4. provide a trend factor to capture those variables omitted from the analysis.

Figure 1 provides a model of the variables thought to be related to crash causation and included in the current analysis. It illustrates the plan for this study. The relationships shown by the arrows are those studied in the current research. Other potential relationships between those measures were controlled, at least partially, through the regression analyses.

Figure 1. Model for analysis of the impact of laws on the proportion of drivers in fatal crashes with BAC >0

involved in fatal crashes are available for all 50 states and the District of Columbia, dating back to 1982 (NHTSA, 1998), and each of the three dependent measures (i.e., number of crashes, drivers, and fatalities) can be related to level of alcohol involvement. Of the 912,954 driver records used in this analysis, 399,348 were fatally injured and 69.2% of those had known BACs. The remaining 513,606 were surviving drivers of which 23.1% had known BACs. The Klein procedure provided a probability estimate for the drivers with unknown BACs in three categories: .00, .01 to .09, $.10.

The laws that were studied were aimed at deterring potential drinking drivers. Therefore, it seemed appropriate to "standardize" the dependent measure by using the ratio created by dividing the number of drivers in fatal crashes with a positive BAC by the number of drivers in crashes who had a zero BAC. Using this ratio assists in controlling for those factors that impact all fatal crashes, not just those related to impaired driving. The total amount of driving, as measured by the vehicle miles traveled in a state, for example, is likely to affect both alcohol and non-alcohol-related crashes, presumably to a similar extent. Using this ratio helps to eliminate the effect of this factor, to the extent that miles of driving has a similar effect on alcohol and non-alcohol-related crashes.

3. Alcohol consumption

Alcohol consumption potentially has a complex relationship with drinking-and-driving laws. Beer has been shown to be the beverage of choice for individuals convicted of driving while intoxicated (DWI) (Berger & Snortum, 1985). For this study, separate state per-capita consumption levels were available for wine, beer, and spirits (Williams, Stinson, Sanchez, & Dufour, 1997). However, only beer and total alcohol consumption correlated significantly with the number of drinking drivers in fatal crashes. Thus, beer consumption was used as the principal relevant measure of alcohol consumption.

The relationship between alcohol consumption, safety legislation, and fatal crashes is complex. It is hypothesized that increased alcohol consumption increases the probability of drivers being involved in an alcohol-related fatal crash. But, it is not clear if decreased consumption has resulted in more alcohol-related safety legislation (and a reduction in alcohol-related fatal crashes) or if such legislation has resulted in a decrease in per-capita consumption.

To determine the direction of this effect, two preliminary analyses were conducted. First, the 1982 annual beer-consumption levels for those states that later adopted .08 laws were compared with consumption levels in those states that, as of 1997, had not enacted such legislation. The average per-capita beer consumption for the .08 BAC law states was 1.42 (±.04 se); the average for the states without .08 BAC laws was 1.40 (±.07 se). This indicates that there was no significant difference (p=.826) in beer consumption between the two groups of states in 1982, prior to the enactment of any .08 BAC laws. Further, an examination of the consumption levels in .08 states, by date of adoption, indicated that the early adopters did not have different levels of per-capita beer consumption than late adopters (p=.311). A second study compared per-capita beer consumption before-versus-after the enactment of .10 BAC, .08 BAC, and ALR laws in states that adopted such legislation. *For all three laws*, there was a reduction in beer consumption following the enactment of the law. The reduction associated with .10 *per se* was 3.22%; the reduction associated with .08 *per se* was 3.49%; and the reduction associated with ALR was 2.16%. All of these differences were significant (p<.001). Thus, the evidence examined in this study favors the hypothesis that the relationship between the safety laws and beer consumption is that the laws affect consumption, rather than the other way around.

4. Drinking-and-driving laws

enacted within 6 months of each other. Rogers (1997) in a study of the .08 BAC law in California found a relatively modest 7% effect on nighttime crashes occurring between 12 AM and 2 AM. Johnson and Fell (1995) reported that four out of five states (California, Maine, Oregon, Utah, and Vermont) implementing .08 BAC laws showed significant reductions in one or more measures of alcohol-related fatal crashes. A study by Hingson and colleagues (1996), which was limited to five states with such legislation and a somewhat controversial selection of five comparison states, found that .08 BAC laws were associated with a significant reduction in the proportion of drivers in fatal crashes who had BACs greater than .08. That study also showed a significant reduction in the proportion of high BAC drivers involved in fatal crashes (i.e., at or above .15 BAC). However, these results were affected by the fact that these states had also recently enacted ALR legislation.

5. Safety belt laws

Occupant restraint programs include three types of laws: child safety seat laws, secondary *safety belt laws*, and primary *safety belt laws*. Secondary laws require the observation of some other traffic offense before a driver can be stopped and cited for nonuse of a safety belt. Primary laws allow an officer to stop and cite the driver based solely on a safety belt violation. Since this study focuses on alcohol use by drivers, child safety seat laws were not included. NHTSA estimates that safety belts have saved 100,000 lives since 1975 (NHTSA, 1997).

Use of safety belts has a complex relationship with alcohol-related crashes. Clearly, usage protects both drinking and nondrinking drivers. However, the usage rates among these two driver groups varies significantly and, depending upon the level of usage, a law requiring usage will affect drinking and nondrinking drivers differently. In the absence of safety belt use laws, safety belt usage is lower among drinking drivers than among nondrinking drivers, but the usage rates of both groups is low. In such a situation, the effect of enacting a safety belt use law generally produces proportionally greater usage among nondrinking drivers than among drinking drivers. At higher usage rates, however, where the use rates of nondrinking drivers are already much higher than those of drinking drivers, an upgrade in the law (which usually makes it more enforceable) is likely to affect drinking drivers to a greater degree than nondrinking drivers since their usage rate is so much lower (Voas & Tippetts, 1998)

Thus, initial safety belt laws (enacted when safety belt use rates are quite low) are likely to increase the ratio of alcohol-positive to alcohol-negative drivers involved in fatal crashes. When upgrades in safety belt laws occur (usually when usage rates are much higher), a larger proportion of alcohol-positive drivers than alcohol-negative drivers will begin to use safety belts (making them less likely to be involved in a fatal crash). Thus, at this level, it is hypothesized that such laws will reduce the alcohol-positive to alcohol-negative ratio of drivers involved in fatal crashes.

Because some states moved directly to primary laws while others first passed secondary laws, attempts in the present research to use two separate variables to represent these laws were complicated by the varying sequence in the enactment of these measures. Ultimately, it was decided to represent secondary and primary safety belt laws with a single three-level variable, with values of zero, 0.5, and one. Primary safety belt laws are weighted twice as effective (value = 1) as secondary laws (value = 0.5). This estimate is based on the fact that initial increases in safety belt usage rates were significantly greater in primary law states than in secondary law states. Furthermore, in recent years when several states have upgraded from secondary to primary laws, significant increases in usage have been observed. Prior to any safety belt use laws, the national usage rate stood at approximately 14%. By 1994, the average usage rate in no law, secondary law, and primary law states was 45%, 62%, and 75%, respectively (NHTSA, 1995).

caused by the sampling size of the state's pool of crashes and, therefore, taps into the size-of-state dimension well (Spearman's rho=.858). In addition, the weighting derived from within-state variability has the desirable qualities of a narrower range and a less extreme distribution. Larger states have lower re-sampling variability because they have more crash-involved drivers and random fluctuations tend to wash out, thereby providing more reliable ratios. Weighting cases by this measure naturally places more importance on the experience of larger states or at least on those states having a larger traffic problem in terms of numbers of fatal crashes. These case weights had a mean of 1.0 across all 51 states (including the District of Columbia) within each period, ranging from a low of approximately 0.25 (North Dakota, Alaska, and Rhode Island) to a high of slightly more than 2.5 (California).

Independent Variables and Covariates

The three alcohol-related laws being evaluated were modeled as dichotomous dummy variables: When a law became effective partway through a quarterly period, the variable represented that portion of the quarter the law was in effect. When a state lowered its *per se* limit from .10 to .08, the dummy variable for the *per se* .10 law was continued so as to ensure that the dummy variable for the .08 law represented only the marginal effect of the lowered limit. Safety restraint laws were modeled as a single three-step variable, with no law represented by a value of zero, a secondary law represented by a value of 0.5, and a primary law represented by 1.0.

Maryland and Massachusetts enacted ALR laws embodying a BAC limit without establishing a *per se* law. Since the ALR limit may have a greater impact in terms of certainty of sanctioning, these two states were modeled as having the corresponding *per se* law BAC limit when they enacted their ALR law. In all other states, the *per se* laws were passed first and then strengthened by the later passage of the ALR.

To avoid over-fitting a model with a dummy parameter for each state and to explain variation over time within states, other variables relating to state environment and conditions were used as covariates. The most important of these in terms of correlating with the prevalence of alcohol in drivers involved in fatal crashes was per-capita beer consumption. Consumption data were not yet available for 1996 and 1997, the two years when many of these laws were enacted. So, rather than eliminate one of the strongest predictors of alcohol-involved crashes, a per-state average beer consumption level, a between state measure that was constant over time within each state, was developed.

As reported earlier in this paper, per-capita alcohol consumption differences between states were unrelated to passage of DWI laws. However, these differences might still be related to the number of drinking drivers in crashes. Where small, but significant, effects of the safety laws on increasing subsequent consumption within states were found, state consumption levels were adjusted for the laws' effects on drinking for those states passing the laws. After averaging the adjusted beer consumption level for each state, this variable served as a between-state covariate only, remaining constant over time within each state.

Among other measures that vary between-states within the same period and within-states over time, three were found to be important predictors: per-capita vehicle miles traveled (VMTPC) changed yearly, urban/rural distribution of the state's population changed yearly, and unemployment rates changed quarterly. The two components of VMTPC—total state VMT and number of licensed

	B	Std. Error	Beta	t	Sig.	Correlations	
						Zero-order	Partial
(Constant)	-4.78598	.146		-32.737	.000		
BEER@ADJ	.58444	.053	.191	11.062	.000	.195	.190
UE@	.01025	.005	.036	2.062	.039	.138	.036
ALR@	-.21021	.027	-.169	-7.764	.000	-.227	-.135
PS@10	-.14125	.028	-.087	-5.031	.000	-.126	-.088
PS@08	-.08224	.041	-.041	-2.019	.044	-.154	-.035
YR2TREND	-.0000851765	.000	-.166	-8.095	.000	-.256	-.141
QTR2	.17652	.023	.124	7.597	.000	.082	.132
QTR3	.21376	.023	.150	9.200	.000	.099	.159
VMT@	.10899	.013	.156	8.153	.000	.183	.142
SB#	.11198	.022	.085	5.016	.000	.132	.088
URBAN	49323	.082	.112	6.016	.000	.213	.105
ALR#	.15287	.031	.105	4.954	.000	.033	.087
PS#08	-.06872	.027	-.050	-2.485	.014	-.026	-.043

Multiple R's—Without trend component: .443; with trend component: .484

Table 3. Variables significantly related to the proportion of drinking drivers in fatal crashes with BACs at or above .10

	B	Std. Error	Beta	t	Sig.	Correlations	
						Zero-order	Partial
(Constant)	-2.39975	.072		-33.150	.000		
BEER@ADJ	.63269	.031	.303	20.687	.000	.258	.341
VMTPERLD	.04778	.004	.233	13.054	.000	-.111	.223
UE@	.01546	.003	.080	4.681	.000	.226	.082
ALR@	-.13708	.014	-.162	-9.489	.000	-.258	-.164
PS@10	-.09090	.018	-.081	-4.979	.000	-.219	-.087
PS@08	-.08340	.025	-.062	-3.334	.001	-.243	-.058
YR2TREND	-.0000889403	.000	-.254	-4.266	.000	-.442	-.075
YR_TREND	-.0050083072	.002	-.220	-3.295	.001	-.441	-.058
QTR2	.11763	.015	.121	8.080	.000	.090	.140
QTR3	.11648	.015	.120	8.003	.000	.069	.139
SEATBELT	.09460	.023	.078	4.201	.000	-.242	.073
PS#08	.04869	.015	.054	3.141	.002	-.023	.055

Multiple R's—Without trend component: .502; with trend component: .594

For both analyses, the adjusted beer consumption factor (BEER@ADJ) was correlated with an increased number of drinking drivers in fatal crashes. This factor represents the difference between states in beer consumption, not a change in sales over time within-state, since our preliminary study indicated that beer consumption fell following the passage of alcohol safety legislation. As previously

* Significant at p=.05; all other significant at p<.001

Interpreting effects sizes: The effect sizes shown in Table 4 are somewhat difficult to interpret because they are percentages of ratios. Further, they are not additive because they are expressed as percentages. Rather, they are multiplicative. This means that the total percentage reduction attributable to a combination of two or more laws is slightly less than it would be if the percentages were simply added together. Thus, two or more of the laws studied account for some involvement of the same drivers. To make these effect sizes more meaningful, the impact of a single law on fatalities can be estimated using the following assumptions and procedures.

The first assumption is that since this analysis included only adult drivers (21 years and older), the calculation assumes that zero lives were saved by a reduction in crasnes involving drivers under age 21. Further, the analyses conducted were based on drivers involved in fatal crashes, not on the number of fatalities. The estimated reductions due to the .08 BAC law "effect" were 7.8% fewer drivers at .01-.09 BAC, and 8% fewer drivers at .10+ BAC. After calculating the number of drivers these percentage reductions represent, that figure is converted into the number of fatalities that would have been associated with those drivers. The conversion rates, calculated from the 1997 FARS data, were .9222 fatalities per driver at .10+ BAC, .8332 fatalities at .01-.09 BAC, and .6901 fatalities at .00 BAC.

To arrive at these conversion "rates," the drivers involved in each crash are divided into three BAC categories based upon the driver-level Klein imputations (.00 BAC, .01–.09, .10+). The total fatalities within each crash are then attributed proportionately to each of the three BAC categories of drivers involved in that crash. For example, if there were four fatalities in a crash involving three drivers, and two of the three drivers were in the .10+ category, with the other driver alcohol-negative, then 2/3 of the 4 fatalities (2.667 fatalities) would be attributed to drivers at the .10+ level, and 1/3 of the fatalities (1.333 fatalities) would be attributed to the driver at the .00 level. This proportional attribution of involvement to drivers implies equal responsibility for the crash to each driver, regardless of BAC level, and ignores the possibility of one or more drivers being more at fault than others. As such, this approach probably underestimates the number of fatalities that alcohol-positive drivers are responsible for, given that these drivers are more likely to be at fault. In the (mathematically) trivial case of single vehicle crashes, the proportional involvement and fault are, with very few exceptions, identical. This procedure yielded the estimate that if, rather than 16 states, all 50 states had .08 laws throughout 1997, 590 (95% confidence interval=200 to 958) additional lives would have been saved. The .08 and .10 illegal per se laws are shown in Table 5.

Table 5. Estimated savings in 1997 for the three alcohol safety laws analyzed in this study

	.08 per se	.10 per se	
States with law in 1997	16	49 & DC*	
Estimated to have been saved in states with laws in 1997	274 95% confidence interval 88 to 472	1115 95% confidence interval 663 to 1586	95% cor 10

shown in Table 4 are probably conservative.

This study is not the first to produce evidence for the effectiveness of the three laws included in the analysis. However, this study covers the longest period (16 years) and more states (all 50 plus the District of Columbia) than most previous studies. It also specifically includes potentially confounding variables such as alcohol consumption and safety belt laws not directly considered in most previous studies. The credibility of the results is strengthened by their conformity to theoretical expectations. Beer consumption, for example, is associated with proportionally more positive BAC drivers in fatal crashes as would be expected. Furthermore, the relationships between alcohol safety laws and reductions in drinking-driver involvements, while significant, are generally consistent with the results of other studies.

Perhaps, more significant than the effect of any one law is the evidence that each of these major alcohol-safety laws has contributed to the downward trend over the last two decades of alcohol-related crashes. As should be expected, this long-term national trend is not the product of any single policy act, and it is undoubtedly influenced by factors not in the present analysis such as the increasing use of sobriety checkpoints in some states. Since factors such as alcohol policies, roadway and vehicle characteristics, and economic conditions all interact in their influence on crashes, it is important to interpret estimates of lives saved due to any single law with considerable caution.

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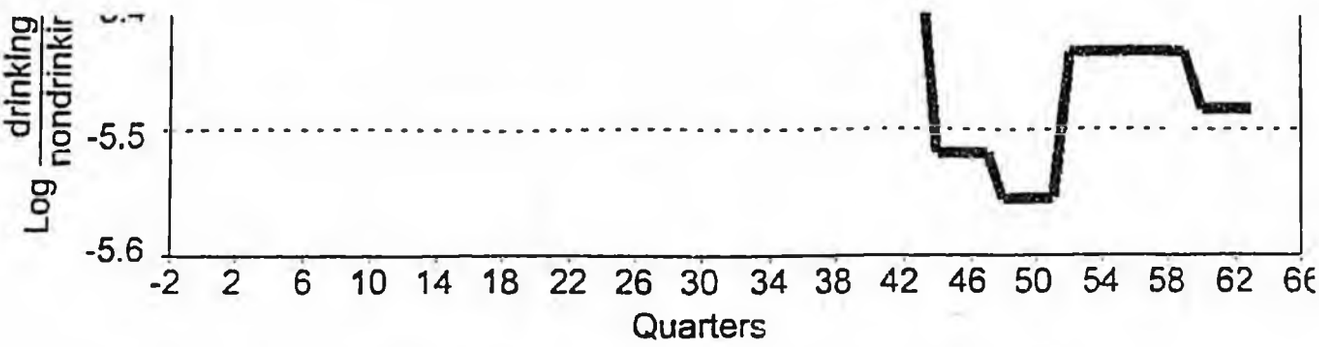
42 Pennsylvania	38.5		59.4	
44 Rhode Island	2.2		3.7	
45 South Carolina	15.3		24.6	
46 South Dakota	2.7		4.4	
47 Tennessee	26.6		43.0	
48 Texas	94.4		155.1	
49 Utah		3.7		6.5
50 Vermont		1.9		3.3
51 Virginia		22.7		39.3
53 Washington	15.3		25.0	
54 West Virginia	8.0		12.7	
55 Wisconsin	17.5		28.4	
56 Wyoming	2.1		3.3	
Total	590.3	274.5	965.0	476.9

Appendix B: Treatment Effects for Analysis Without Time Variable

To illustrate the effect of including the two time trend variables in the analysis, a separate analysis was conducted in which the time trends were not entered. The resulting effect sizes are shown in Table B-1. These should be compared with Table 4 in the text.

Table B-1. Effect sizes for alcohol safety and safety belt laws for two groups of drivers in fatal crashes

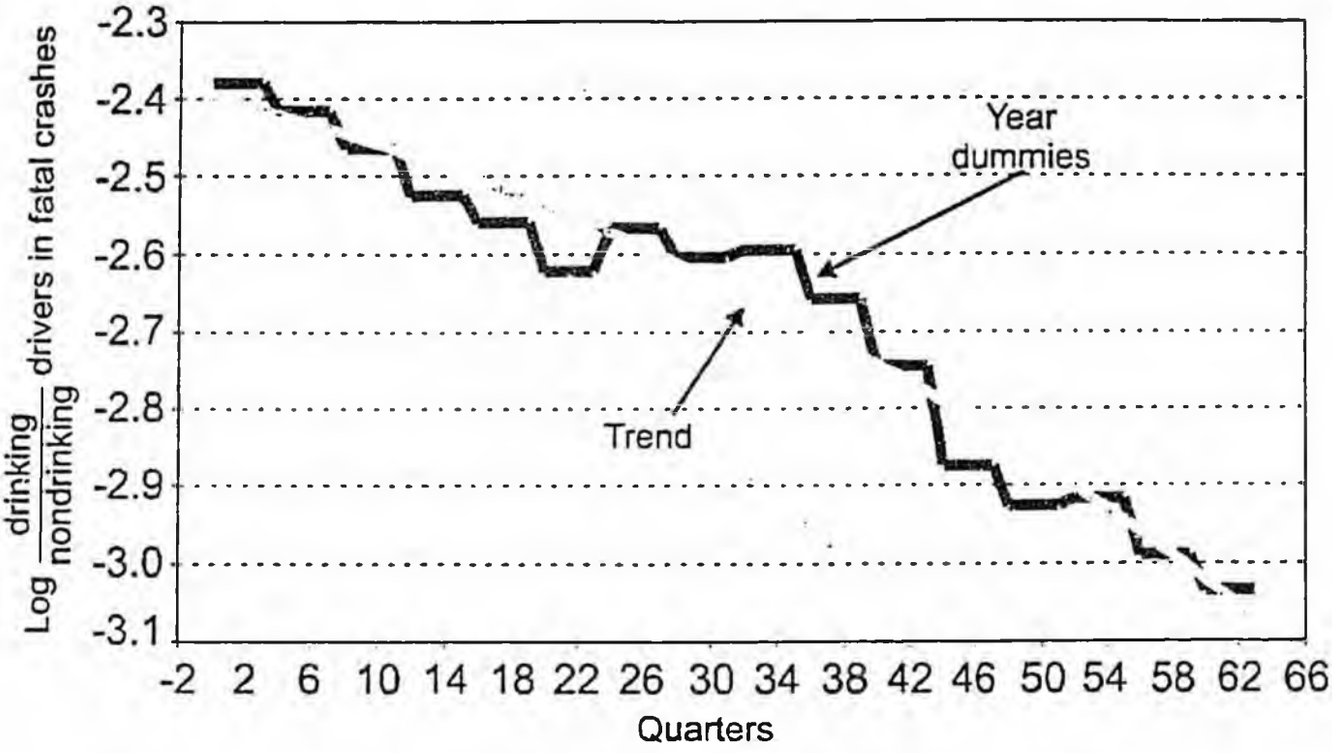
Alcohol safety laws	Drivers in fatal crashes age 21 and older—Estimates
Illegal *per se* laws (.10)	
.01 to .09	*–16.54%*
.10+	*–11.60%*
Per se .08 law	
.01 to .09	*–15.60%*
.10+	*–12.15%*
Admin. license revocation law	
.01 to .09	*–14.60%*
.10+	*–14.88%*



Trend: -.0000851765 x (quarter^2) (where quarter = 0 to 63) (from Jan-Mar 1982 through Oct-Dec 1997)

Year dummies: parameter estimates of the year effects for 50 states and the District of Columbia

Figure C-1. Comparison of trend estimates for impaired drivers with .01 to .09 BACs



Trend: –.0050083072 x (quarter) –.0000889403 x (quarter^2) (where quarter = 0 to 63) (from Jan-Mar 1982 through Oct-Dec 1997)

Year dummies: parameter estimates of the year effects for 50 states and the District of Columbia

Figure C-2. Comparison of trend estimate for intoxicated (.10+) rates

Evaluation of the Effects of North Carolina's 0.08% BAC Law

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March, 1999

Carolina since the early 1980s. To control for the effects of this general trend, as well as seasonal fluctuations, we carried out structural time series analyses examining monthly crash statistics. In each case we looked for evidence of either an immediate decrease in the rate or a change in the general trend of alcohol-related crashes following implementation of the lower BAC limit. There was no significant change in the rate, nor in the trend, coinciding with introduction of the lower BAC limit, for any of the measures examined.

To determine whether the trend in alcohol-related crashes in North Carolina may have benefitted in comparison with a broader general trend in the U.S. (which had leveled out and appeared to be on the verge of increasing again), we compared North Carolina fatal crash data with those from 11 other states that have high rates of alcohol testing for fatally injured drivers. The data series representing the North Carolina proportion of all fatally injured drivers in the 12 states who had BACs in excess of 0.10% was examined for either a step shift or a change in the trend. Again there was no evidence that the pattern in North Carolina changed following enactment of the lower BAC limit, or that it differed in comparison to the other 11 states.

To see whether the BAC levels of persons had been reduced by the 0.08% law, even if not brought below the 0.10% threshold of the previous limit, we examined the mean monthly BACs of fatally injured drivers whose BAC was above 0.10%. Again there was no evidence of an effect of the new BAC limit. The monthly average BACs remained essentially unchanged from 1990 through 1995, with an overall mean of 0.21%.

Finally, we conducted a series of simple before-after comparisons of various indicators of alcohol involvement in fatal crashes. These analyses examined each the six measures that the National Highway Traffic Safety Administration used in its initial examination of the effect of 0.08% laws: (1) driver BAC $\geq$ 0.01%, (2) driver BAC $\geq$ 0.10%, (3) police-reported alcohol involvement, (4) single vehicle nighttime crash, (5) single vehicle nighttime male driver crash, and (6) estimated alcohol involvement. To examine changes in these measures we used the same analytic approach employed by Hingson et al. (1996) in their widely-cited study of the first five states to enact 0.08% limits – comparing changes in North Carolina rates with those in comparison states. To avoid potential pitfalls of trying to select a single appropriate comparison state, we compared North Carolina data with all 37 states that had retained higher per se limits from 1991 through 1996.

Of the six measures considered, two showed a significantly greater decrease in North Carolina than in the comparison states: police-reported alcohol and estimated alcohol, which is based in part on police report as well. For both these measures, the apparent effect of the 0.08% law is an artifact of grouping several months data before the law took effect, rather than an effect of the law itself. During the pre-0.08% period, noteworthy changes occurred in North Carolina that are obscured when the data are grouped. When analyses to ameliorate this artifact were conducted, none of the six measures showed a significantly greater decrease in North Carolina than in the states that retained a higher BAC limit.

Although North Carolina has a reputation for being progressive and aggressive in its efforts to deal with drinking drivers, it does not appear that the state is so different as to render it

THE EFFECTS OF 0.08 BAC LAWS

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March 1999

months of one another, were modeled as a single intervention.

These findings are consistent with the hypothesis that 0.08 laws work best in conjunction with other laws, especially ALR laws. All of the states which exhibited a significant association between a 0.08 BAC law and a reduction in alcohol involvement already had an administrative license revocation law in effect (Vermont, Kansas, North Carolina, Florida and New Mexico). In two states the reductions occurred when 0.08 BAC and ALR laws were enacted in close temporal proximity to each other (California and Virginia).

Again, it is clear that many factors have been at work since the early 1980's, which have resulted in long-term declines in alcohol-related fatalities in most states. Some of these factors were in operation prior to the implementation of the 0.08 BAC laws. While it is difficult to pinpoint all the factors that have been responsible for these long-term declines, it is likely that the declines resulted from a combination of legislative, enforcement, judicial, sanctioning, and public information activities implemented in the states. These analyses suggest that the 0.08 BAC laws added significantly to this impact in several of the states studied, usually in conjunction with the presence of administrative license revocation laws.

Reduction of the legal BAC limit from 0.10 to 0.08 also appears to be associated with a reduction in beer consumption in 4 of the 5 states for which consumption data were available. The association is strong in two of these five states (California and Vermont). The association in California is weaker and is clouded by increased volatility following implementation of the 0.08 law. The absence of an association in Oregon could be due to an artifact. A substantial reduction in annual beer consumption occurred two years before the 0.08 law was implemented. This sharp reduction may have made it difficult for an additional reduction to occur.

08klein2.sum

MADD NATIONAL OFFICE

PUBLIC POLICY DEPARTMENT

SAMPLE TESTIMONY

ON LEGISLATION TO LOWER THE ILLEGAL BAC LIMIT TO .08

TESTIMONY BY LYNNE GOUGHLER
BEFORE THE _____ JUDICIARY COMMITTEE
OF THE MINNESOTA STATE LEGISLATURE
ON THE MERITS OF A .08 BAC PER SE LAW FOR ADULT DRIVERS

FEBRUARY 5, 1997

Thank you for inviting me to testify today. My name is Lynne Goughler, and I am the Public Policy Liaison for the Mothers Against Drunk Driving Minnesota State Organization. I will be testifying specifically in favor of S.B./H.B. ___ which proposes to lower the illegal blood alcohol concentration (BAC) limit from .10 to .08 per se. We believe that lowering the illegal per se BAC limit to .08 will not only save lives and reduce injuries in Minnesota, but will also save substantial amounts of money in associated health care costs.

The National Highway Transportation Safety Administration (NHTSA) has produced two reports to the U.S. Congress on the subject of blood alcohol concentration (BAC) limits for drivers. In both of those reports, it is recommended that all states and Washington, D.C. should establish .08 BAC as the illegal limit for drivers aged 21 and older.

In addition, a study was published in the September 1996 *American Journal of Public Health* which supports that if every state passed an illegal .08 BAC limit, the proportion of fatal crashes caused by impaired drivers would decrease by approximately 16 percent – or approximately 600 fewer deaths each year.

There are a number of reasons why MADD supports the passage of .08 BAC levels in every state:

1. Virtually all drivers are substantially impaired at .08 BAC. Laboratory and test track research shows that the vast majority of drivers, even experienced drinking drivers, are impaired at .08 with regard to critical driving tasks. There are significant decrements in performance in braking, steering, lane changing, judgement and divided attention, among other measures at .08 BAC. Performance decrements in these tasks are as high as 60 to 70 percent at .08 BAC according to studies.

2. The risk of being involved in a crash increases substantially at .08 BAC. The risk of being in a crash gradually increases at each BAC level, but rises rapidly after a driver reaches or exceeds .08 BAC compared to drivers with no alcohol in their blood systems. Research by the Insurance Institute for Highway Safety indicates that the relative risk of being killed in a single vehicle crash at BACs between .05 and .09 is 11 times that of drivers at .00 BAC (no alcohol).

3. Lowering the BAC per se limit is a proven effective countermeasure which will reduce alcohol-related traffic fatalities. We have evidence in four states that significant reductions in alcohol-related fatalities occurred after .08 BAC laws went into

Remarks of State Senator Ida Ruben (D-20-Maryland)
Maryland Senate Sponsor, .08 BAC Legislation
News Conference on Federal .08 BAC Legislation
May 22, 1997

Thank you Senator Lautenberg, Senator DeWine, Congresswoman Lowey and my former Maryland General Assembly colleague Congresswoman Connie Morella. I am very pleased to be here today with you and my friends from Advocates for Highway and Auto Safety and MADD.

You might wonder what a state legislator is doing on Capitol Hill talking in support of federal legislation that sanctions the states to take a prescribed action. When my friends at MADD and Advocates for Highway and Auto Safety told me about this gathering, I very much wanted to be here. The fact is, the problems we face in Maryland are sometimes not just Maryland problems but also national problems.

I am a chief sponsor of the .08 legislation in the Maryland State Senate, and I can tell you that from my vantage point in Annapolis, the situation there with respect to the .08 issue is not a positive one.

The alcohol industry has a presence in the halls of the State House. They thwarted our efforts in this past legislative session. They relayed information to legislators that would criminalize so-called social drinking, and they misrepresented how many drinks it takes to get to .08

We come together today to face the facts about impaired driving. It is fact that .08 is a lot of alcohol and it's a lot of impairment. We all realize that .08 is not the answer to the nation's impaired driving tragedy. Much needs to be done. But it must start with drawing a safer and saner line in the sand against impaired driving at .08.

08 is the right thing to do. But, it is very very tough competing with the power, influence and money of the alcohol industry as they trip up the safety groups in state capital after state capital. To wage and win this battle state by state will take us into the 21st century.

That is why I, as a state legislator, believe federal action is essential, and I hope the Congress will pass this lifesaving legislation this year. The issue is not a matter of states' rights. It's a matter of life or death. There are times when federal action is needed to solve problems in all the states. And this is one of them.

I thought it was called for in 1984 when Senator Lautenberg sponsored and President Reagan signed into law the national uniform 21 drinking age legislation. You saw how quickly those dangerous blood borders between states with different drinking ages were quickly erased after that federal action. And, I thought it was called for in 1985 when Congresswoman Lowey sponsored and President Clinton signed into law the national "zero tolerance" BAC law.

These national laws are saving so many lives every year. And I now realize that a federal law is essential to make .08 the law of the land.

I would like to see the alcohol industry change its position on this issue because they are wrong. I think they tarnish their image even more in the long-run by fighting MADD, Advocates and the other safety groups than by standing out of the way of progress in this war on impaired driving.

I wanted to be here today to lend my support to your efforts in the Congress. I hope the Congress will pass and the Administration will strongly support your legislation this year. It will make our jobs in the state capitals across this country that much easier. Thank you for allowing me to join you here today. (END)

ADVOCATES
FOR HIGHWAY
AND AUTO SAFETY

TESTIMONY OF BILL BRONROTT
ADVOCATES FOR HIGHWAY AND AUTO SAFETY
BEFORE THE HOUSE JUDICIARY COMMITTEE, MARYLAND HOUSE OF DELEGATES

HB 810: A BILL TO REDUCE "DRIVING WHILE INTOXICATED" TO .08 B-A-C

FEBRUARY 20, 1997

Thank you, Mr. Chairman, and members of the committee.

My name is Bill Bronrott and I am with Advocates for Highway and Auto Safety, which is an alliance of consumer, safety and insurance organizations. I am here to testify in favor of HB 810 which will lower the illegal blood-alcohol concentration (BAC) limit from .10 to .08 for "driving while intoxicated," and from .07 to .06 for the lesser offense of "driving under the influence of alcohol."

In 1995, 671 people were killed in highway crashes in Maryland. Among those killed were 234 people who died in alcohol-related crashes. These 234 alcohol-related traffic deaths represented 35 percent of total motor vehicle fatalities in 1995. On top of this enormous human suffering were the huge economic losses.

The cost per alcohol-related fatality is estimated at about $1.1 million, according to the U.S. Department of Transportation. It is estimated that the 234 alcohol-related traffic fatalities in 1995 resulted in $257 million in societal costs in Maryland.

In addition, among these 234 alcohol-related traffic deaths were 57 people who died in crashes where the driver had a BAC below the current .10 limit. In other words, 23 percent of all alcohol-related traffic fatalities resulted from crashes where the driver had a BAC below the current .10 limit.

Lowering the illegal BAC limit will save lives, reduce injuries and result in a substantial savings in related societal costs, including health and medical care.

The U.S. Department of Transportation has produced two reports to the U.S. Congress on the subject of BAC limits for drivers. In both reports, it is recommended that all states establish .08 BAC as the illegal limit for drivers aged 21 and older.

Also, a study published in the September 1996 *American Journal of Public Health* concludes that if every state passed an illegal .08 BAC limit, the proportion of fatal crashes caused by impaired drivers would decrease by approximately 16 percent, resulting in about 600 fewer deaths each year.

1. **Drivers are substantially impaired at .08 BAC.** Laboratory and test track research shows that the vast majority of drivers, even experienced drinking drivers, are impaired at .08 with regard to critical driving tasks. There are significant decrements in performance in braking, steering, lane changing, judgement and divided attention, among other measures at .08 BAC. All the skills a person needs to drive a car are affected at .08 and performance decrements in these tasks are as high as 60 to 70 percent at .08 BAC according to studies.

Nor did it change in Utah and Oregon the year after .08 went into effect. There is evidence from Maine ıt restaurant sales actually increased 11 percent in 1988, the year .08 went into effect. Recently, ı National Restaurant Association Foodservice Industry's 1996 sales projections reported $312.9 billion in food and drink sales – an increase of $74.1 million from 1990.

In summary, 13 states (AL, CA, FL, HI, KS, ME, NC, NH, OR, UT, VA and VT) have already passed .08 BAC per se laws, and more than 25 states are considering .08 BAC limits in legislative sessions this year. Maryland has long been a leader in highway traffic safety countermeasures. Maryland needs to resume its leadership role in highway safety. We can do that by becoming the 14th state with .08. The time is now.

.08 BAC is a level at which critical driving skills are impaired. It is a level at which the risk of a crash increases substantially. It is a level which most industrialized nations have adopted. It is a proven effective measure which will save lives and reduce injuries. And, it is not just a couple of drinks after work. We are talking about a substantial amount of alcohol when we talk about .08 BAC.

While tremendous progress has been made in the war on drunk driving over the past 16 years in Maryland, the fact that 234 people lost their lives in alcohol-related crashes in 1995 clearly indicates that the war has not been won.

234 people killed due to the combination of alcohol and driving is the equivalent of two 737 jetliners crashing in our state. Whenever a jetliner tragically crashes, there is a blizzard of media attention and a huge public outcry . . . justifiably so . . . demanding answers and action.

ıe drunk driving problem deserves comparable treatment, attention and action. A sudden violent death in one mode of transportation is just as tragic as in another.

Impaired driving remains the most frequently committed violent crime in our country. The FBI reports that the crime resulting in the most arrests of adults in the United States in 1995 was "driving under the influence." Arrests for DUI totaled 1.4 million last year. The U.S. Department of Transportation estimates that only one of every 1,000 DUI incidents results in an arrest, so it is mind-boggling to think of the tens of millions of criminal acts of impaired driving that flood our nation's highways.

There seems to be a false perception in many states that the war on drunk driving has been won. Clearly, the great progress of the 1980s and early 1990s is in serious jeopardy. We, as a nation and a state, can and must do better because it is truly a matter of life or death.

That is why Advocates for Highway and Auto Safety, MADD and other highway safety groups recently joined together with the U.S. Department of Transportation to set a new goal to reduce alcohol-related traffic deaths by at least one-third — down to 11,000 or less per year by the year 2005.

The front lines in this battle are drawn in each state capital and on the streets and highways in every local community. No one believes that .08 is THE answer. But, virtually the entire highway safety community feels strongly that .08 BAC is one essential law that every state should adopt to draw a safer, saner and more sensible line in the pavement against intoxicated driving.

Ve urge the House Judiciary Committee to consider the merits of this legislation and to pass HB 810 to lower the illegal BAC to .08 this year. Thank you very much.

ATTACHMENTS

SENATE TESTIMONY

Distinguished Senators and others who have gathered to speak about this bill, my name is Dawn Richardson. I live in Providence. I am a homeowner, taxpayer and voter, and the mother of two school age boys. In spite of my looking like I just graduated from college, I am a 1988 graduate of the medical school at Brown University. I completed my residency at Rhode Island Hospital this past summer, specializing in Emergency Medicine. That's right, just like the television shows ER and Chicago Hope. I am an attending physician in the Emergency Care Center at Sturdy Memorial Hospital in Attleboro, Massachusetts, and part time at Rhode Island Hospital Emergency Department to keep my skills current. I have been recently appointed to the Medical Advisory Board of the Rhode Island Registry of Motor Vehicles, a position I sought because of my outrage about my daily experiences with the carnage of drunk driving.

The trauma rooms at Rhode Island Hospital are where the majority of serious drunk driving victims in Rhode Island end up. I have spent the last two years in those rooms, sometimes 115 hours a week. I have cared for hundreds of critically injured people in the trauma rooms and trauma intensive care. My time is spent fighting keeping them alive. What I am going to tell you is very graphic, but you must hear what the liquor and hospitality industry won't tell you. This is what happens in the trenches of the war against drunk driving.

If these critically injured people are at all conscious, I put them to sleep with powerful drugs. I then shove respirator tubes down their throats to put them on life support. If they have collapsed lungs, I put large tubes in their chests to empty the blood and air that has leaked from their lungs. If there is a sign of internal injury, I cut a 1 inch hole below their belly button to see if their abdomen is filled with blood from a burst spleen. If they are bleeding to death, I put large IV's in their arms or shoulders and pour blood or saline into their veins, sometimes a gallon or more before they go to the operating room. I put a tube in their penis to see if they are bleeding from a burst kidney, but not before putting my finger in their rectum to see if they have bled from torn intestines. I put a tube down their nose into their stomach to see if it is full of blood. Then my trauma surgery colleagues whisk them off to the operating room for emergency surgery. The photograph you see was taken just after the patient left the trauma room for surgery. If they have hit their head on the steering wheel or been thrown out of the car and damaged their brain, I call one of my brain surgery colleagues to drill a hole in their head to release the blood. If their bones are mangled, I call my orthopedic surgery colleagues to straighten or operate on them. If their faces are broken or cut beyond recognition, I call my plastic surgery colleagues to try to put their faces back together. The stitching that takes an hour or less I do myself. At 7 o'clock on Monday mornings we all meet to argue about how we managed the toughest cases the past week at Trauma Conference. The hardest part of my job is telling family members that their loved

This bill has died in committee six years in a row. I have come here today to put it on life support. It is the law in almost every other New England state and many foreign countries. We're not talking about the right to drink or the right of the hospitality and liquor industries to do business. Drunk people just have to find another way home. This is about public safety. I beg of you, please consider the public safety first, and put special interest pressure aside. You are the trauma surgeons of this law. I am turning the patient over to you, because I have done all I can do. Keep it alive. Send this bill to the floor for a general vote. Thank you.

HB

22

Representative Beth Kerttula

Sponsor Statement

Sponsor Substitute House Bill 22

Large Passenger Vessels that Operate in the Marine Waters of Alaska

Sponsor Substitute for House Bill 22 will give Alaskans information about the wastes generated and released by large passenger vessels operating in Alaska. HB 22 builds on Senator Murkowski's federal legislation directed at Alaska cruise ship operations at a time when the cruise ship sector of Alaska's tourism industry continues to grow substantially.

Alaskans have become alarmed by the wastewater pollution violations that led to state and federal fines imposed on cruise ships in the 1990s and by air emission violations in 1999 and 2000. Since late 1999, state and federal agencies, cruise ship companies, and other interested parties have collaborated on the Alaska Cruise Ship Initiative to describe waste handling practices, examine technology, and conduct preliminary sampling of ship discharges and emissions. Inspections and sampling in 2000 identified a number of failing marine sanitation devices and numerous graywater and treated sewage samples with high levels of fecal coliform bacteria.

Federal legislation in late 2000, authored by Senator Murkowski, takes further important steps to limit and clean up waterborne discharges – particularly sewage -- from cruise ships. However, the federal legislation does not establish standards for graywater discharges nor does it address cruise ship air emissions.

House Bill 22 builds on the above-mentioned measures. The bill does not require duplication of efforts by the cruise ship industry. HB 22 calls for:

- annual registration with the state -- so we know how to contact responsible officials of the foreign flag vessels;
- monthly reports of *all* ship waterborne discharges – a requirement that can be readily satisfied because the U.S. Coast Guard will have cruise ships keep these records beginning in the 2001 cruise season;

- sampling of graywater discharges for certain pollutants not currently required under federal law or regulations;
- monthly sampling and reporting of air emissions; and
- an assessment of the data collected after three years to examine what we know about cruise ship waste releases and the risks to our human and marine environments.

HB 22 provides a mechanism so the State of Alaska can begin to understand the composition and disposal of the substantial volumes of wastes generated onboard cruise ships in our state waters. Notwithstanding the cruise line industry assurances of careful shipboard practices and industry cooperation with regulatory agencies, it is imperative that Alaska obtain basic information and examine the waste volumes, composition, and discharge location in order to manage our most valuable tourist asset – our exceptional natural environment.

Thank you for your consideration of House Bill 22.

SSHB 22
Large Passenger Vessels that Operate in the Marine Waters of Alaska

Sectional Analysis

Section 1 adds new sections to AS 46.03, the Environmental Conservation statutes.

Sec. 46.03.460 requires owner/operator who conducts business in Alaska to register annually each vessel. The in-state contact information becomes paramount when contacting a foreign flag vessel that frequently has international crews and officers.

Sec. 46.03.465 requires owner/operator to monitor cruise ship pollutants in order to fulfill the reporting requirements of this legislation. Monthly sampling is required of visible emissions from each vessel while in an Alaskan port. The owner/operator must sample and test graywater at least as frequently as required under federal laws and regulations for treated sewage. Graywater will be tested for conventional pollutants, including fecal coliform bacteria and total suspended solids.

Sec. 46.03.470 requires that records be maintained for three years.

Sec. 46.03.475 establishes the monthly reporting for all wastewater discharges and air emissions. The location, volume, flow rate, weight and type of pollutant must be documented. Significantly, SSHB 22 does not require the cruise line companies to get a new state permit nor does the bill set new performance standards. Reporting data for each vessel individually facilitates site-specific assessments of potential impacts or risks to the human or marine environment. In keeping with other DEC environmental oversight practices, each report must be certified by a responsible vessel official.

Sec. 46.03.477 requires the owner/operator to provide to the state a report of any sampling and testing conducted for a federal agency.

Sec. 46.03.480 establishes civil penalties for failing to register or report. The penalties are based on those imposed on other businesses operating in Alaska or imposed on violations under DEC statutes.

Sec. 46.03.484 exempts vessel merely transiting through state waters in innocent passage.

Sec. 46.03.485 provides DEC rule-making authority to implement this legislation.

Sec. 46.03.490 defines several terms by drawing on existing state and federal laws and regulations, most notably the Clean Water Act and recent federal legislation authored by Senator Frank Murkowski.

Section 2 amends DEC statutes on criminal penalties to incorporate cruise ship wastewater discharge and air emission reporting.

Section 3 specifies the timeframe for vessel registration (within 3 days) and pollutant sampling, testing and reporting (within 21 days) beginning June 1, 2001.

Section 4 directs DEC to prepare an assessment report by January 2004, after three seasons of sampling and record keeping. The report shall:

1. characterize the risks posed by the wastewater discharge and air emissions to the human and marine environments;
2. evaluate pollution abatement and control technologies of the cruise line companies; and
3. recommend future action, as appropriate.

Section 5 establishes an effective date of June 1, 2001 in order to capture as much as possible of the 2001 cruise season.

Organized Village of Kake
P.O. Box 316
Kake, Alaska 99830-0316
Telephone 907-785-6471
Fax 907-785-4902 / Email ovkgovt@seaknet.alaska.edu
(Federally Recognized Tribal Government serving the Kake, Alaska area)

March 30, 2001

Rep. Vic Kohring, Chairman
House Transportation Committee
State Capitol, Room 24
Juneau, AK 99801-1182

Sent via fax to 907/465-3818

Dear Representative Kohring:

This letter is in full support of Representative Kertulla's Sponsor Substitute for HB 22, "An Act relating to certain passenger vessels operating in the marine waters of the state; and providing for an effective date." The bill complements Senator Murkowski's legislation that was recently passed plus addresses gray water discharges and air emissions that were not addressed in Senator Murkowski's bill.

Since the decline of the timber industry, Kake's economy is dependent on the local salmon hatchery and seafood processing/cold storage plant. The community is also focusing on attracting smaller tour ships to experience our rural lifestyle and Tlingit culture. All our local industries are dependent having a clean environment and this Right to Know bill will provide access to information about the wastes generated and released by the cruise ships. It provides for an annual registration with the state, so we know who the responsible parties are and how to contact them, monthly reports of all waterborne discharges, sampling of gray water discharge for certain pollutants, monthly sampling and reporting of air emissions and an assessment of all data after 3 years to examine what we have learned about emissions and what it means to our human and marine environments. We support all these proposed activities and in order to make it accessible to rural Alaskan communities, we would like to see such information posted on the internet. Alaskan citizens have the right to know what is being dumped in our waters and released into our air. By enabling Alaskans to have a better knowledge of the impacts of cruise ships on our environment, we will be armed with the information necessary to insure the impacts are not likely to jeopardize the economic benefits of our fishing & recreation industries.

Sincerely,

Casimero A. Aceveda Jr.
President

cc: Representative Beth Kerttula

April 9, 2001

Dear Rep. Kohring:

It is reassuring to the Lower Chatham Conservation Society that progressive action is being taken to keep Alaskan air and water cleaner. We are in full support of SSHB22 and agree that this legislation is an integral component in planning for and maintaining a healthy marine environment.

LCCS's mission is to protect the integrity of the Lower Chatham Ecosystem, locally defined from south Baranof Island, Chatham Strait to west Kuiu Island. Our membership has close ties with the marine environment, as many people are commercial fishermen and subsistence gatherers. Last summer many people saw an unusual orange oily substance in Chatham that has yet to be identified. Of concern to us are the cruise ship discharges that could potentially harm our food sources and beaches. We agree that by requiring the cruise ships to comply with discharge regulations that are imposed on other industries, one may make a safer bet that the people of this state will be provided clean air and water.

If the cruise industry is so mum about its discharge activities, then one has to wonder what they could be hiding. The right to know what are discharged into Alaskan waters should be public knowledge. We can all rest more assured when we know toxic materials are being disposed of at the proper facilities and not being dumped into our waters. Regular monitoring will tell if they are in compliance, knowledge every Alaskan should be privy to.

Progressive indeed is this legislation's intent, not only clean up dirty dumping practices, but to reassess the program's effectiveness by gathering monitoring information over 3 years and forming the basis for a thorough assessment determining whether there are serious risks to our human health and marine environment. This longer-term approach will rest well on the eyes of the public, who will no longer wonder what has become of the cruise ship issue.

It is our hope that by way of public disclosure, state and federal oversight, monitoring and sound enforcement policy that the not-so-invisible effects of toxic discharge be a problem of the past. The benefits of clean water and a healthy ecosystem will benefit everyone, including the cruise industry.

Sincerely,
Anissa Berry-Frick
President
LOWER CHATHAM CONSERVATION SOCIETY

PO BOX 8118 o PORT ALEXANDER, AK o 99836
PHONE: (907) 568-2210 o EMAIL: BACKLAGOON@AOL.COM

Subject: HB 22
Date: Mon, 16 Apr 2001 14:18:05 -0800
From: "AWRTA - Sarah Leonard, Executive Director" <sleonard@awrta.org>
To: Representative_Beth_Kerttula@legis.state.ak.us

April 12, 2001

Representative Beth Kerttula
Room 430
Capitol
Juneau, AK 99801-1182

Dear Representative Kerttula:

I am writing on behalf of the Alaska Wilderness Recreation & Tourism Association (AWRTA) and in support of HB 22 as it relates to our organization's 2001 Cruise Legislative priority. AWRTA's membership includes almost 300 nature-based tourism business owners, partnering organizations and individuals in Alaska and the United States.

The AWRTA Board of Directors recently adopted our 2001 Legislative Priorities including support for cruise legislation:

"AWRTA encourages regulation focusing on safe waters and consistent monitoring of marine wastewater discharges within all of Alaska's coastal region including the Southeast, Inside Passage, Southcentral and Southwest areas. AWRTA supports legislation that includes monitoring and enforcement mechanisms to ensure compliance by all operators to follow state and federal regulations."
AWRTA also encourages and supports a distinction between foreign-owned cruise ships and American-owned tour boats; and a distinction based on the ship's passenger capacity. We believe these distinctions should be considered separately in all cases of State and Federal jurisdiction and regulation. Many small boat operators are encouraging sound practices and teaching visitors and residents alike about Alaska's natural and cultural environments.

AWRTA is a membership-driven trade organization formed to be a collective voice for wilderness-dependent businesses.
We advocate for the sustainability of Alaska's natural and cultural resources, responsible tourism, and tourism planning for communities. Because we support the sustainability of Alaska's resources, including safe and healthy Alaska waters, we support these components of HB 22. Thank you for the opportunity to comment and I look forward to working with you during this legislative session and in the future.

Best Regards,
--
Sarah Leonard
Executive Director
****
The Alaska Wilderness Recreation & Tourism Association (AWRTA)
The Alaska Institute for Sustainable Recreation & Tourism (AISRT)
****
2207 Spenard Road, Suite 201
Anchorage, AK 99503
907-258-3171 - T * 907-258-3851 - F

ALASKA CRUISE SHIP INITIATIVE

2000 Season Accomplishments

AIR QUALITY

240 total opacity readings of cruise ship emissions were conducted by DEC and EPA. 34 observations exceeded the opacity standard. 16 ships were cited by the state and four by EPA. Opacity readings will occur for the next four seasons as a part of the Royal Caribbean settlement

Ambient air quality was monitored in downtown Juneau at four locations: near the old police station, the Baranof Hotel, Capital School, and the Court Plaza Building. From August 13 through September 30, 2000 levels were well below (50%) health based standards. The work group will determine the extent of future sampling.

WATER QUALITY

Wastewater samples were taken from each of 21 large cruise ships visiting Juneau. Blackwater, (from toilets) and graywater (from showers, sinks, galleys, laundry) were tested in the same manner as land based sewage treatment plants. Results showed that treated blackwater often exceeded the federal treatment standard and that graywater had surprisingly high fecal coliform levels.

Following the initial sampling results, the Coast Guard focused on how marine sanitation devices are operated and maintained by conducting follow-up inspections. Five regulatory actions are pending, based on 12 expanded examinations. Coast Guard oversight of marine sanitation devices will continue as needed, when these same ships call on other U.S. ports.

Each ship's discharges were additionally analyzed for a suite of chemicals, called priority pollutants, that would indicate if there was improper disposal of hazardous chemicals. Current results indicate that hazardous wastes are not being improperly disposed of. A few priority pollutants are present at levels above water quality standards; however, there is not enough information to determine if exceedences have occurred. Priority pollutant analysis is complex. A panel of experts is being assembled to assist with data analysis and determining if there are impacts to public health or the environment. Sampling of blackwater and graywater discharges, and certain priority pollutants will likely continue next year.

The Coast Guard implemented Operation Cruise Watch 2000, which increased the aircraft and cutter oversight of cruise ships. No violations were noted.

OIL SPILL RESPONSE

Through the Royal Caribbean settlement, $2.1 million has been given to the South East Alaska Pollution Response Organization (SEAPRO) to increase oil spill response capabilities in Southeast Alaska. In consultation with the DEC and the U.S. Coast Guard a variety of pollution response equipment was selected for purchase. Major purchases include:

- Two 48 ft. multi-mission fast response vessels
- One 55 ft. oil spill response barge for the Northern Lynn Canal Near Shore oil spill response package
- LORI brush skimming system
- 1,000 feet Shoreguard boom
- 2,000 ft of containment boom
- Seven 21 ft spill response skiffs

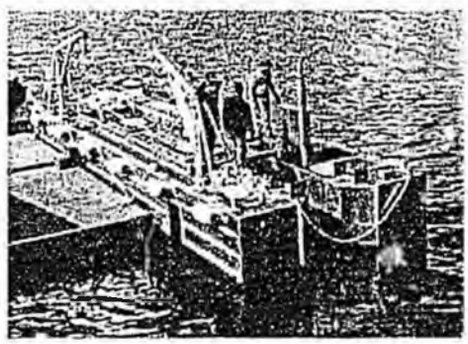
ENVIRONMENTAL LEADERSHIP

Environmental Awareness Days were conducted July 12 through July 14, with tours of ships environmental systems available daily. Additionally, during the evening of July 13, a joint panel of experts provided information to the public on environmental management systems on ships and updated the public on the 2000 Season activities.

Next summer, Princess Cruises will connect four of its ships to Juneau shore power, eliminating the need to run generators, thereby reducing emissions while in port.

The North West CruiseShip Association paid for four sets of Oil Spill Recovery Barges that have been located at Haines, Juneau, Glacier Bay, and Ketchikan. Each set consists of two barges, one with a skimmer, and both with 249 barrels of storage capacity. These barges significantly increase the states oil spill safety net, as they can be used for responses to spills other than just from cruise ships.

WASTE WATER TREATMENT:



- Eliminated discharges of treated blackwater and untreated graywater in ports.
- All capable ships held discharges until 10 miles from port, and discharged at a speed of at least 6 knots.
- There were no discharges of garbage or untreated wastewater in so-called "donut holes", once the policy was enacted.
- Four pilot projects are underway to test new ways of treating graywater.
  - Reverse osmosis: initial analysis indicated this process meets standards.
  - Aerated membrane treatment system: preliminary results from one ship are promising.
  - Activated oxidation process: currently being evaluated.
  - Chemical treatment with mechanical decanting: shipboard sampling indicated that early modifications were successful.
- Industrial wastewater treatment methods have not changed in decades. These initiatives may fundamentally change wastewater treatment methods for the marine trade.

Cruise Ship Legislation Summary of Summer 2000 Water Quality Sampling

Alaska Department of Environmental Conservation
Division of Statewide Public Service

Priority Pollutants

- 24 cruise ship effluent samples were analyzed for priority pollutants to determine if hazardous chemicals were being improperly discharged.
- 10 pollutants exceeded Alaska's water quality standards; there was no evidence of hazardous wastes being mixed with overboard discharges.
- 7 metals – chromium, copper, lead, mercury, zinc, silver and nickel – were present in levels above the water quality standards for aquatic life.

Table 1 lists the priority pollutants that were found, the Alaska Water Quality Standard, the highest sample concentration of a pollutant found, and the number of samples that were above the Alaska Water Quality Standards. Additionally, the table lists the drinking water standard maximum contaminant level (MCL) and the number of samples above the drinking water standard.

Table 1: Highest Concentration of Priority Pollutants Found During Cruise Ship Wastewater Testing, Summer 2000

Metals	WQS	Highest Sample	Number Above	DW MCL's	Number above DW
	ug/L	ug/L	WQS	ug/L	MCL's
Chromium	50	430	2	100	1
Copper	2.9	7100	46	1000	6
Lead	5.6	62	12	15	10
Mercury	0.25	0.33	1	2	0
Nickel	8.3	630	11	100	3
Silver	2.3	610	7	Na	Na
Zinc	86	1800	39	5000	0
Organics					
Diethyl phthalate	3.4	15	14	No Drinking Water Criteria for these organic compounds	
Di-n-butyl phthalate	3.4	98	5		
Ethylbenzene	430	2600	1		

Assessment of Wastewater Treatment

In the summer of 2000 only blackwater (waste from toilets) was regulated. Regulations required blackwater to be treated in a Marine Sanitation Device (MSD) certified by the Coast Guard. MSDs constructed after 1980 have to meet effluent limits of 150 mg/l of total suspended solids (TSS) and 200 fecal coliform per 100 milliliters. Until the passage of the Murkowski amendments, graywater, consisting of drainage from dishwashers, showers, laundry, washbasins and galleys, was discharged legally, without any treatment, into waters anywhere in Alaska.

Results of Black and Graywater Discharges for Fecal Coliform, TSS, BOD, and COD

- 21 cruise ships tested black and graywater effluent samples for fecal coliform, TSS, biological oxygen demand (BOD) and chemical oxygen demand (COD).
- Only one blackwater sample out of 70 samples met both the TSS and fecal coliform standards.
- 78% of the samples exceeded the effluent limit of 200 fc/100 ml for discharges from marine sanitation devices.
- 40% of the graywater samples for TSS exceeded the MSD effluent limit of 150mg/l. These results indicate that graywater is similar to blackwater in number of fecal coliform bacteria and total suspended solids, and that graywater should be treated prior to discharge.

Table 2 displays the number of samples that had fecal coliforms in the 0 to 200, 200 to 1000, 1000 to ! million, 1 million to 10 million and greater than 10 million ranges. Similar ranges are shown for total suspended solids, BOD and COD.

Table 2: Sample Ranges for Fecal Coliform, TSS, BOD and COD

Fecal Coliform per 100 mL	**0 to 200**	**200 to 1000**	**1000 to 1,000,000**	**1,000,000 to 10,000,000**	**more than 10,000,000**
Gray Water	14	2	27	12	9
Black Water*	27	6	16	15	4
Gray & Black Water Combined	1	1	5	2	1
Rev. Osmosis Treated B&G Water	5				
*FC results greater than 200 per 100 ml exceed the federal standard for MSD.					

TSS	**0 to 150 mg/L**	**150 - 1000 mg/L**	**More than 1,000 mg/l**
Gray Water	39	23	3
Black Water*	8	22	6
Gray & Black Water Combined	8	3	
Rev. Osmosis Treated B&G Water**	5		
*Samples >150 mg/l exceed the federal standard for MSDs			

BOD	**0 to 100 mg/L**	**100 to 1000 mg/L**	**More than 1,000 mg/l**
Gray Water	16	36	13
Black Water	18	16	1
Gray & Black Water Combined	1	10	
Rev. Osmosis Treated B&G Water	3	2	

COD	**0 to 100 mg/L**	**100 to 1000 mg/L**	**1000 to 10,000 mg/L**	**more than 10,000 mg/l**
Gray Water	1	39	15	2
Black Water		2	5	1
Gray & Black Water Combined		10	1	
Rev. Osmosis Treated B&G Water		5		

Cruise Ship Legislation
Visible Cruise Ship Emissions

Alaska Department of Environmental Conservation
Division of Statewide Public Service

History of Emissions Testing

From 1990 through June 1996, DEC staff routinely monitored cruise ship smoke emissions in Juneau and Ketchikan. On occasion , DEC also monitored cruise ship opacity in Valdez, Haines, and Glacier Bay. The National Park Service has done monitoring in Glacier Bay for several years. Reductions in general funds reduced the program to monitoring on a complaint basis. From 1997 to 1999, DEC did few or no observations of cruise ship emissions.

In 2000, DEC has contracted for smoke readers in Juneau, Ketchikan, Haines, and Skagway, using money from the Royal Caribbean Cruise Line settlement.

Compliance Summary

Year	DEC Inspections	Out of Compliance	DEC Notices of Violation	Complaints Received by DEC
1992	152	56	20	252
1993	127	25	11	97
1994	109	27	15	45
1995	195	26	20	32
1996	78	-	-	65
1999	-	17*	0	-
2000	240	34	16	-86

- Readings by EPA
-

Penalties

Until funding was cut in 1996, DEC used schedules of fines agreed to by the cruise lines, instead of referring violations to the Attorney General. The amount of the fine depended on the number of violations the ship had during the summer, and whether the cruise line turned in a corrective action report. This agreement has not been in place since 1996.

The fee schedule used in 1995 was:

Number of NOVs	Penalty
1st	$0
2nd	$5,000
3rd	$10,000
4th and subsequent	$20,000
Additional Penalty if corrective action report	$5,000

not turned in after any NOV	

The following schedule was planned to start on July 15, 1996, but was never implemented:

Number of NOVs	Penalty
1st	$10,000
2nd	$20,000
3rd	$40,000
4th and subsequent	$100,000

Changes to Opacity Limits

From 1980 to 1991:
The Opacity limit was less than or equal to 40%. Ships could exceed this 40% requirement for:

- three minutes in any hour;
- six minutes in any hour during diesel startup.

From 1991 to 1995:

- The opacity standard was lowered to 20%.
- To allow safe operation, an exemption was added for 12 minutes in any hour during berthing, anchoring, getting underway, and maneuvering in port.

From 1995 – present:
The exemption during berthing, anchoring, getting underway and maneuvering in port was changed to 40% for one hour, or 20% except for 9 minutes in that hour.

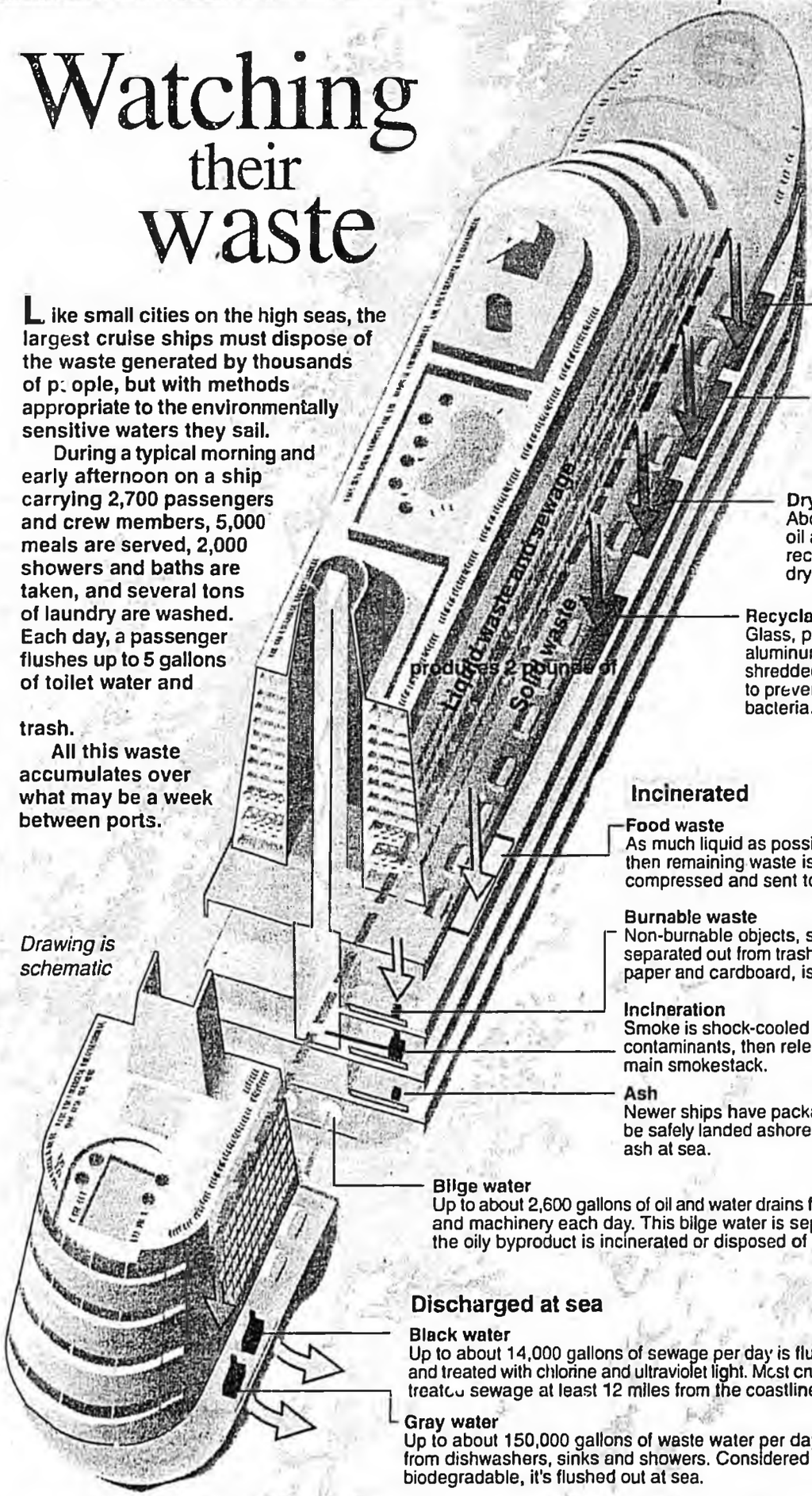
Sunday, April 8, 2001
Anchorage Daily News

Watching their waste

Like small cities on the high seas, the largest cruise ships must dispose of the waste generated by thousands of people, but with methods appropriate to the environmentally sensitive waters they sail.

During a typical morning and early afternoon on a ship carrying 2,700 passengers and crew members, 5,000 meals are served, 2,000 showers and baths are taken, and several tons of laundry are washed. Each day, a passenger flushes up to 5 gallons of toilet water and trash.

All this waste accumulates over what may be a week between ports.



Drawing is schematic

Taken ashore

Photoprocessing
Extraction units separate toxic silver from developing fluids for disposal or recycling on shore.

Pharmaceuticals
Unused drugs are flushed, returned to manufacturers or treated as hazardous waste.

Dry-cleaning
About two pounds of dirt, oil and solvent is recovered weekly from dry cleaning equipment.

Recyclables
Glass, plastic, tin and aluminum are crushed or shredded, then refrigerated to prevent the spread of bacteria.

Incinerated

Food waste
As much liquid as possible is removed, then remaining waste is pulped, compressed and sent to the incinerator.

Burnable waste
Non-burnable objects, such as batteries, are separated out from trash. Burnable waste, including paper and cardboard, is shredded for incineration.

Incineration
Smoke is shock-cooled to eliminate some contaminants, then released through the ship's main smokestack.

Ash
Newer ships have packaging systems so ash may be safely landed ashore. Older ships still discharge ash at sea.

Bilge water
Up to about 2,600 gallons of oil and water drains from engines and machinery each day. This bilge water is separated and the oily byproduct is incinerated or disposed of on shore.

Discharged at sea

Black water
Up to about 14,000 gallons of sewage per day is flushed by vacuum toilets and treated with chlorine and ultraviolet light. Most cruise lines only discharge treated sewage at least 12 miles from the coastline.

Gray water
Up to about 150,000 gallons of waste water per day drains from dishwashers, sinks and showers. Considered biodegradable, it's flushed out at sea.

SOURCES: International Council of Cruise Lines; Alaska Cruise Ship Initiative; Deerberg Systems; Cruise Line International Association

F. Duckett, J. Jurgensen/AP

Comparison Between Recent Federal Law, SSHB 22/SB 18, and HB 183/SB 134 Regarding Cruise Ship Operations in Alaska

Provision	Recent Federal Law (Murkowski)	SSHB 22 (Kerttula) / SB 18 (Halford)	HB 183 / SB 134 (Governor)
1. Applicability	1402. Cruise vessels w/ 500+ passengers; not U.S. or AK owned vessels.	SSHB 22: "large passenger vessels" w/ 500+ passengers; not U.S., AK or foreign govt operated. SB 18: large passenger vessels of 300+ gross registered tons; not US, AK, or foreign govt operated.	"Commercial passenger vessel" w/ overnght accommodations for 50+ passengers; includes state ferries, but not U.S. & foreign govt operated vessels.
2. Vessel Registration	n/a	Vesel owner/operator registers with DEC annually within 72 hrs after port call; incl.agent for service of process authorized to do business in AK.	Info similar to HB22/SB18 required in notification prior to obtaining an annual permit to operate in Alaska. Vessel owner/operator notifies DEC.
3. Fees, Program & Funds	n/a	n/a	Establishes sliding, per-vessel fee equal to approx. $1 per-passenger. Establishes AK Commercial Vessel Coastal Protection Program & Fund to monitor discharges through a permit system. Standard permit by notification, established by negotiated rulemaking with conditions that may vary with vessel size or environmental risk of discharge. Special vessel-specific permit allowed in limited circumstances.
4. Discharge of Untreated Sewage	1403. Prohibited in waters of Alex. Archipelago or navigable waters of U.S. within AK.	n/a (state likely preempted from regulating sewage discharge.)	n/a (state likely preempted from regulating sewage discharge.)
5. Limitations on Discharge of Treated Sewage or Graywater	1404a. Generally, discharge allowed if vessel at 6 knots, at least 1 nmile from shore, & not in area where discharge is prohibited; & discharge meets existing effluent standards in any applicable law.	n/a (state likely preempted from regulating sewage discharge.)	By regulation, state may establish limitations that shall be consistent with federal law, unless state determines additional protection is needed. Limitations carried on standard & special permits. State likely preempted from regulating sewage discharge.
Exceptions	1404c. Exception: discharge allowed w/in 1 nmile & under 6 knots until EPA issues new regulations if: - discharge meets higher standards in CWA (40 CFR 133.102 - for 2nd treatment of sewage); - discharge samples taken in 30-day period do not exceed more stringent standards for fecal coliform bacteria and residual chlorine; and - compliance demonstrated thru periodic sampling.	n/a	Exceptions may be adopted under negotiated rule-making. Special permit on case-be-case basis to provide equivalent environmental protection under alternative terms to meet specific vessel circumstances or experimental pollution control technology.

Provision	Federal Law (Murkowski)	SSHB 22 (Kerttula) / SB 18 (Halford)	HB 183 & SB 134 (Governor)
6. Effluent Standards	1407. EPA may issue new treated sewage & graywater standards; until then, treated sewage discharges shall not have a fecal coliform bacteria count greater than 200 colonies/100ml nor suspended solids greater than 150mg/l.No interim graywater standards for conventional pollutants(fecal, coliform,suspended solids,chlorine, etc.).Graywater standards for priority pollutants under other applicable laws. State may adopt graywater requirements.	n/a (state likely preempted in regulating discharge of sewage)	By regulation, state may establish limitations that shall be consistent with federal law, unless state determines additional protection is needed. State likely preempted in regulating discharge of sewage.
7. Vessel Inspection	1406b. USCG shall inspect: - environmental compliance records & procedures; - functionality & proper operation of equipment installed to abate & control discharges. 1406c. USCG may conduct unannounced inspections of equipment, operations & discharges. **Pending**: regulations sometime this cruise season; self-executing sections (1403,1404,1407) now in effect; industry voluntary sampling until regulations.	n/a n/a	By regulation, state may establish standard permit terms & conditions to examine waste disposal practices, sampling, monitoring, & equipment.
8. Records & Reporting	1406c. USCG may require a logbook be maintained that details times, types, volumes or flow rates, & locations of any discharges of sewage or graywater. **Pending**: regulations sometime this cruise season; self-executing sections (1403,1404,1407) now in effect; industry voluntary sampling until regulations.	Requires record-keeping and monthly reporting of all wastes offloaded (in AK ports) or released into AK waters; requires location; date/time; volume, flow rate or weight; type; source; treatment (if any); circumstances of release; env. damage if identifiable; and remedial action to prevent accidental releases.	By regulation, state may establish standard permit terms & conditions for reporting disposal, discharge or release of pollutants; coordinate with reporting & verification requirements of USCG and EPA.
9. Sampling	1406. A plan for sampling and testing discharges required to verify sewage & graywater discharges comply with any applicable laws & regulations. May be required to do sampling & provide reports. **Pending**: regulations sometime this cruise season; self-executing sections (1403,1404,1407) now in effect; industry voluntary sampling until regulations.	SSHB 22 requires graywater sampling & testing for conventional pollutants (fecal coliform, ammonia, residual chlorine, pH, total suspended solids, & biochemical oxygen demand) at a frequency no less than that required for treated sewage under federal laws & regulations. Requires copies of any report to USCG or EPA be submitted to the state.	By regulation, state may establish standard permit terms & conditions for monitoring & sampling of any pollutant discharged, released or disposed of within the state.
10. Air Emission Measurements & Reports	n/a	Requires measuring & reporting visible emissions from stack at least 1/month when vessel is at berth or anchored in AK port; requires monthly report of continuous emission recordings, if available.	By regulation, state may establish standard permit terms & conditions for sampling & reporting air emissions occurring within the state.

Provision	Federal Law (Title XIV)	HB 22 (Kerttula) / SB 18 (Halford)	HB 183 / SB 134 (Governor)
11. Assessment of Pollutant Releases	n/a	In consultation with agencies, owner/operators, & other parties, DEC prepares an assessment based on data from 2000-2003 seasons; examine risks to human & marine environment posed by releases, evaluate technologies, & recommend actions; report due to Governor by January 15, 2004.	DEC may monitor & study the direct or indirect environmental impacts of the vessels & conduct research to reduce impacts.
12. Exemptions	1405. Safety and saving life at sea exemptions, provided reasonable precautions are taken to prevent or minimize discharges.	Exemption for vessels operating in AK waters solely in innocent passage.	Exemption for vessels operating in AK waters solely in innocent passage.
13. Penalties	1409. Administrative, civil, and criminal penalties up to $25,000/day; a whistleblower may receive up to one-half of civil penalty.	$50/ day for noncompliance with reporting requirement; owner/operator who fails to register loses ability to bring a claim in court for a cause of action that occurred when out of compliance; civil penalty of $500-$100,000 for initial violation of applicable standards and up to $10,000/day thereafter.	Civil penalty of $500-$100,000 for initial violation of permit standards and up to $10,000/day thereafter. Criminal penalty for false information or altering a monitoring device or method. Negotiated rule-making may include provision for permit revocation for non-compliance.
14. No-Discharge Zones	1410. State of Alaska may petition EPA to prohibit discharges in waters AK determines require greater environmental protection; EPA follows Clean Water Act (Sec.312f) procedures.	n/a	By regulation, state may establish limitations on locations & circumstances under which pollutants may be discharged, disposed of, or released in AK.
15. Savings Clause	1411. Does not preempt Alaska's authority to impose additional requirements or a fine/penalty. Does not alter existing preemption, if any.	n/a	n/a
16. Superior Environmental Performance	n/a	n/a	DEC may encourage & recognize environmental performance beyond compliance with law.
17. Definitions			
- discharge	1414(3). Any release thru disposal, spilling, leaking, pumping, emitting or emptying.	see "release"	see "release"

Provision	Federal Law (Title XIV)	HB 22 (Kerttula) / SB 18 (Halford)	HB 183 / SB 134 (Governor)
Definitions (cont'd)			
- release	see "discharge"	spilling, leaking, pumping, pouring, emitting, discharging, injecting, escaping, leaching, dumping, placing or disposing of pollutants into the environment.	same as SSHB 22/ SB 18
- graywater	galley, dishwasher, bath & laundry waste water.	SSHB 22 - same as federal law SB 18 - galley, bath and shower water.	n/a
- sewage	human body wastes & wastes from toilets & receptacles intended to receive or retain body wastes.	SSHB 22 - same as federal law SB 18 - meaning given in 33 USC 1322 (sec. 312, Water Pollution Control Act)	n/a
- pollutant	n/a	a comprehensive term that includes all vessel waste streams except ballast water, consumer product in consumer use, or an offloaded product capable of being put to beneficial use. Includes air contaminants.	similar to SSHB 22, without exceptions defined
- treated sewage	sewage that meets Clean Water Act effluent limitation standards $ processing requirements.	SSHB 22 - same as federal law SB 18 - n/a	n/a
- untreated sewage	sewage that is not treated sewage.	SSHB 22 - same as federal law SB 18 - n/a	n/a
18. Effective Date	Unspecified. Self-executing sections (1403, 1404 a & c, and 1407) now in effect. Impementing regulations anticipated sometime during 2001 cruise season.	June 1, 2001.	Permit not required until January 1, 2002 or 3 days after regulations take effect; fee required as of July 1, 2001.

Prepared by Rep.Kerttula's Office; 4/05/01.

FISCAL NOTE

STATE OF ALASKA
2001 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version: SSHB 22
() Publish Date:

Revision Date/Time (Note if correction):
Dept. Affected: Environmental Conservation
Title: "An Act relating to certain passenger vessels operating in marine waters of the state. . ."
BRU: Air and Water Quality
Component: Water Quality
Sponsor: Kerttula
Requester: House Transportation
Component Number: 2062

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Personal Services	105.3	105.3	88.0	70.8	70.8	70.8
Travel	7.5	7.5	6.0	5.0	5.0	5.0
Contractual	26.6	46.6	22.6	7.6	7.6	7.6
Supplies	2.5	2.5	2.5	2.5	2.5	2.5
Equipment	13.8	1.5	1.5	1.5	1.5	1.5
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	155.7	163.4	120.6	87.4	87.4	87.4
CAPITAL EXPENDITURES						
CHANGE IN REVENUES ( )						

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF	155.7	163.4	120.6	87.4	87.4	87.4
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type)						
TOTAL	155.7	163.4	120.6	87.4	87.4	87.4

Estimate of any current year (FY2001) cost: 0.0

Check this box (X) if funding for this bill is included in the Governor's FY 2002 budget proposal:

POSITIONS

Full-time	1	1	1	1	1	1
Part-time	1	1	1			
Temporary						

ANALYSIS: *(Attach a separate page if necessary)*

See attached

Prepared by: Lynn J. Tomich Kent
Phone 465-5312
Division Air and Water Quality
Date/Time April 12, 2001 3:00pm
Approved by: Kurt Fredriksson
Date 4/12/01 4:15pm
Agency Department of Environmental Conservation

For distribution information, call the Governor's Legislative Office

(Rev 2/7/2001 OMB)

Personal Services (1.5 positions)
The Department may receive as many as 125 monthly reports each year covering visible emissions data, off loading or release of pollutants including hazardous waste, and up to 50 gray-water analytical reports.

One full time Environmental Specialist IV in Juneau will be required to draft and administer regulations for the management of pollutant discharges and emissions into the Alaskan environment; register approximately twenty-five large passenger vessels annually; and in consultation with other agencies, the cruise industry and interested persons, complete an assessment report by January, 2004. The position will assist with review of monthly emissions and waste reports and fully take over this function beginning in the spring of 2004 (upon completion of the assessment report), and provide ongoing technical assistance to the attorney general's office on any necessary enforcement actions. One full time seasonal (6 months) Environmental Engineer Associate I in Juneau during the first two years and for 3 months at the beginning of FY 04 will approve air emissions and wastewater sampling techniques and analytical methods; review monitoring data; conduct quality assurance reviews, and data analysis; assist with development of regulations; provide technical assistance to the cruise ship industry and the public; and establish an information management system.

Travel
Travel funds are for providing technical assistance to the cruise ship industry, public meetings/hearings associated with draft regulations, working with interested parties on the assessment report, and technical/professional training for staff.

Contractual
Contractual funds in FY 02 will be used to develop a database to manage and store emissions/effluent data received from the cruise ship industry; to cover advertising, printing, meeting, and mailing costs for public notice of the regulations; and to cover standard position support costs.

Contractual funds in FY 03 and FY 04 will be used for technical assistance developing the assessment report and to cover standard position support costs.

Supplies and Equipment
Supply and equipment funds during FY 02 cover standard office supplies, furnishings and computers for the positions and are reduced in subsequent years.

Personal Services New Position Detail

DRAFT

Department of Environmental Conservation

Scenario: 02 DEC Fiscal Note Backup (1822)
Component: Water Quality (2062)
BRU Name: Air and Water Quality (206)

PCN	Job Class Title	Time Status	Retire Code	Barg Unit	Location	Salary Sched	Range & Steps	Budgeted Months	Split / Count	Annual Salary	COLA	Premium Pay	Annual Benefits	Total Costs
18-#001	Env Eng Associate	FT	A	GG	Juneau	1A	20 B	6.0		26,058	0	0	8,458	34,516

Justification:
To implement SSHB 22.

Funding Detail:

1004	General Fund Receipts	100.00%	34,516
	Total Funding:	100.00%	34,516

PCN	Job Class Title	Time Status	Retire Code	Barg Unit	Location	Salary Sched	Range & Steps	Budgeted Months	Split / Count	Annual Salary	COLA	Premium Pay	Annual Benefits	Total Costs
18-#002	Environmental Spec IV	FT	A	SS	Juneau	1A	20 B	12.0		52,500	1,250	0	17,013	70,763

Justification:
To implement SSHB 22.

Funding Detail:

1004	General Fund Receipts	100.00%	70,763
	Total Funding:	100.00%	70,763

Component Summary:

Total New Positions: 2

Fund	Description	Fund Percent	Fund Amount
1004	General Fund Receipts	100.00%	105,279
	Total Funding:	100.00%	105,279

Note: If a position is split, an asterisk (*) will appear in the Split/Count column. If the split position is also counted in the component, two asterisks (**) will appear in this column.

Representative Beth Kerttula

Sponsor Statement

Sponsor Substitute House Bill 22

Large Passenger Vessels that Operate in the Marine Waters of Alaska

Sponsor Substitute for House Bill 22 will give Alaskans information about the wastes generated and released by large passenger vessels operating in Alaska. HB 22 builds on Senator Murkowski's federal legislation directed at Alaska cruise ship operations at a time when the cruise ship sector of Alaska's tourism industry continues to grow substantially.

Alaskans have become alarmed by the wastewater pollution violations that led to state and federal fines imposed on cruise ships in the 1990s and by air emission violations in 1999 and 2000. Since late 1999, state and federal agencies, cruise ship companies, and other interested parties have collaborated on the Alaska Cruise Ship Initiative to describe waste handling practices, examine technology, and conduct preliminary sampling of ship discharges and emissions. Inspections and sampling in 2000 identified a number of failing marine sanitation devices and numerous graywater and treated sewage samples with high levels of fecal coliform bacteria.

Federal legislation in late 2000, authored by Senator Murkowski, takes further important steps to limit and clean up waterborne discharges – particularly sewage -- from cruise ships. However, the federal legislation does not establish standards for graywater discharges nor does it address cruise ship air emissions.

House Bill 22 builds on the above-mentioned measures. The bill does not require duplication of efforts by the cruise ship industry. HB 22 calls for:

- annual registration with the state -- so we know how to contact responsible officials of the foreign flag vessels;
- monthly reports of *all* ship waterborne discharges – a requirement that can be readily satisfied because the U.S. Coast Guard will have cruise ships keep these records beginning in the 2001 cruise season;

- sampling of graywater discharges for certain pollutants not currently required under federal law or regulations;
- monthly sampling and reporting of air emissions; and
- an assessment of the data collected after three years to examine what we know about cruise ship waste releases and the risks to our human and marine environments.

HB 22 provides a mechanism so the State of Alaska can begin to understand the composition and disposal of the substantial volumes of wastes generated onboard cruise ships in our state waters. Notwithstanding the cruise line industry assurances of careful shipboard practices and industry cooperation with regulatory agencies, it is imperative that Alaska obtain basic information and examine the waste volumes, composition, and discharge location in order to manage our most valuable tourist asset – our exceptional natural environment.

Thank you for your consideration of House Bill 22.

Organized Village of Kake
P.O. Box 316
Kake, Alaska 99830-0316
Telephone 907-785-6471
Fax 907-785-4902 / Email ovkgovt@seaknet.alaska.edu
(Federally Recognized Tribal Government serving the Kake, Alaska area)

March 30, 2001

Rep. Vic Kohring, Chairman
House Transportation Committee
State Capitol, Room 24
Juneau, AK. 99801-1182

Sent via fax to 907/465-3818

Dear Representative Kohring:

This letter is in full support of Representative Kertulla's Sponsor Substitute for HB 22, "An Act relating to certain passenger vessels operating in the marine waters of the state; and providing for an effective date." The bill complements Senator Murkowski's legislation that was recently passed plus addresses gray water discharges and air emissions that were not addressed in Senator Murkowski's bill.

Since the decline of the timber industry, Kake's economy is dependent on the local salmon hatchery and seafood processing/cold storage plant. The community is also focusing on attracting smaller tour ships to experience our rural lifestyle and Tlingit culture. All our local industries are dependent having a clean environment and this Right to Know bill will provide access to information about the wastes generated and released by the cruise ships. It provides for an annual registration with the state, so we know who the responsible parties are and how to contact them, monthly reports of all waterborne discharges, sampling of gray water discharge for certain pollutants, monthly sampling and reporting of air emissions and an assessment of all data after 3 years to examine what we have learned about emissions and what it means to our human and marine environments. We support all these proposed activities and in order to make it accessible to rural Alaskan communities, we would like to see such information posted on the internet. Alaskan citizens have the right to know what is being dumped in our waters and released into our air. By enabling Alaskans to have a better knowledge of the impacts of cruise ships on our environment, we will be armed with the information necessary to insure the impacts are not likely to jeopardize the economic benefits of our fishing & recreation industries.

Sincerely,

Casimero A. Aceveda Jr.
President

cc: Representative Beth Kerttula

Representative Beth Kerttula

Alaska State Legislature, District 3
State Capitol • Juneau, Alaska 99801-1182 • (907) 465-4766 • Fax (907) 465-4748
E-mail: Representative_Beth_Kerttula@legis.state.ak.us • http://www.kerttula.net

Memorandum

Date: February 27, 2001

To: Representative Vic Kohring, Chair
House Transportation Committee

Vic, Thanks for your consideration -
Beth

From: Representative Beth Kerttula, District 3

Re: **House Bill 22**

I respectfully request that you schedule a hearing in the House Transportation Committee for my Sponsor Substitute for House Bill 22, preferably Tuesday, March 13th or Thursday, March 15th. Attached you will find a copy of the bill and sponsor statement. My staff is preparing additional information that we will provide to your office for the bill packet.

Thank you.

CORRECTION

THE FOLLOWING DOCUMENT(S)
HAVE BEEN REFILMED TO
ASSURE LEGIBILITY OR PAGINATION

Representative Beth Kerttula

Alaska State Legislature, District 3
State Capitol • Juneau, Alaska 99801-1182 • (907) 465-4766 • Fax (907) 465-4748
E-mail: Representative_Beth_Kerttula@legis.state.ak.us • http://www.kerttula.net

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Thank you for your consideration of House Bill 22.

Murkowski's Alaskan Cruise Ship Operations Legislation

Overview

- Creates limits and regulations on black and gray water discharges to ensure compliance with environmental laws.
- Regulates graywater discharge for first time.
- Brings ship discharges under provisions of Federal Water Pollution Control Act.
- Creates monitoring mechanics and penalties for compliance.
- Allows designation of no discharge zones.
- Applies to vessels authorized to carry 500 or more passengers during operations in Alaska's navigable waters.

Limits on black and graywater discharges

- No untreated blackwater can be discharged anywhere in Alexander Archipelago and other navigable waters.
- Vessels must be traveling at least 6 knots/hour.
- Vessels are at least one nautical mile of nearest shore except in designated areas.
- Discharge complies with all established standards.
- Ship is not in a "no discharge" zone.
- Limitations can be waived if ships install – and successfully test – new technology.

Inspection and sampling requirements

- Ships must develop a plan to sample and test discharges for compliance.
- U.S. Coast Guard will inspect ship records and procedures, and the functionality/proper operation of equipment.
- Coast Guard can make surprise inspections at any time.

Cruise ship effluent standards

- EPA can promulgate additional standards.
- Minimum standards for treated blackwater and graywater must meet Alaska water quality standards.
- All violations must be reported.

Penalties

- Establishes both civil and criminal penalties.

Environmental Standards of Care

For Cruise Ships Operating in Alaska

- ❑ Annual Pre-arrival Sample Results: Operators intending to discharge graywater and treated sewage in Alaska waters should sample and test those effluents 30 days prior to arrival and self-certify to the local Captain of the Port that the effluents meet the minimum standards of 200 fecal coliform and 150 total suspended solids.

- ❑ Managed and Serviced Sewage Treatment Plants: Operators should ensure sewage treatment plants are properly maintained and serviced in accordance with operations manuals. In addition, operators should conduct periodic sampling and testing of treated sewage to monitor contents of discharged effluents and potential impacts to the marine environment. An effective sampling program includes regular testing for conventional pollutants as well as random testing for priority pollutants.

- ❑ Graywater Management Program: Operators should conduct periodic sampling and testing of graywater to determine potential impacts to the marine environment. An effective sampling program includes regular testing for conventional pollutants as well as random testing for priority pollutants.

- ❑ Sewage and Graywater Discharge Record Book: Operators should maintain a sewage and graywater discharge record book recording times, volumes, and vessel location where the waste is discharged for each graywater and treated sewage discharge port.

- ❑ Research Into New Treatment Technologies: Operators should continue research into promising new technologies that improve treatment of wastes and share knowledge gained with other operators.

- ❑ Crew Environmental Awareness Training: Operators should train all members of the crew on environmental compliance laws and practices and retrain as necessary to ensure proper management procedures are followed.

- ❑ Shared Commitment: Operators should continue to partner with Federal, State and local stakeholders as well as concerned citizens and environmental groups with the goal of continuous improvement in the quality of waste discharges.

U.S. Department of Transportation
United States Coast Guard

Commanding Officer
United States Coast Guard
Marine Safety Office Juneau

2760 Sherwood Lane, Suite 2A
Juneau, AK 99801-8545
Phone: (907) 463-2450
Fax: (907) 463-2742

16700

To: Master, M/V _____

Subj: 2001 SOUTHEAST ALASKA CRUISE SHIP SEASON

I am very pleased to welcome you back to Southeast Alaska for another cruise ship season! As in previous years I am using this letter to provide a recap of last year's operational season including lessons learned, areas for improvement and to provide a projection of the concerns for the upcoming season. Last year I had the pleasure of making several ship-rides as well as making personal visits to many of the vessels arriving in Juneau. In all cases I was impressed with the professionalism and expertise of the masters and crews. These visits were an excellent opportunity for me to listen to your concerns, exchange information and gain valuable insight on areas where we can strengthen our working relationships. I am confident that by working together and following the principle of Shared Commitment, our joint efforts will ensure safe and environmentally sound operations in Alaskan waters.

Safety of life remains the number one priority for maritime operations in Alaskan waters. You carry the most precious of cargoes and I know that the safety of your passengers and crew is foremost among your operational considerations. Overall, the 2000 season gets high marks for safety. I appreciate your efforts last season in employing risk reduction measures during our periods of heavy weather. There were several instances where masters voluntarily altered routes, delayed transit times and used tug assistance as means to make the voyage safer. However, despite our best efforts, there were casualties last year. The most serious was a crewmember fatality from a watertight door accident and an extensive fire in a crew's quarters. A joint review of each circumstance resulted in immediate corrective action aboard the vessels that will help prevent reoccurrence of similar events. We must maintain our safety vigilance for the 2001 season.

One of the major focuses during the 2000 season was the impact of cruise ship wastewater discharges on Alaskan waters. Under the Alaska Cruise Ship Initiative (ACSI) several voluntary initiatives were implemented including, closure of the "donut holes" for discharge of untreated sewage and wastewater sampling. Test results indicated high levels of fecal coliform and suspended solids and as a result, operational guidelines were established for wastewater discharges. What has changed for this season is that new federal legislation entitled, Title XIV of Public Law 106-554, has been enacted that is applicable to cruise vessels operating in Alaskan waters. You shall observe Section 1403 of Title XIV and not discharge untreated sewage into Alaska waters. Additionally, you shall observe Section 1404 and only discharge treated sewage as permitted therein and only if it meets the standards set in Section 1407. Specifically, your vessel's treated effluent discharge shall not have a fecal coliform bacteria count of greater than 200 per 100 milliliters, nor suspended solids greater than 150 milligrams per liter. Further, you shall immediately self-report any discharge you may have in violation of Sections 1403 and 1404

as required by Section 1408, to the nearest U. S. Coast Guard Captain of the Port. Observance of these noted sections of Title XIV does not relieve you from observance of the statute as a whole. Failure to comply with these new statutory standards may result in civil and criminal penalties.

In addition to the federal legislation, the Coast Guard has developed "Environmental Standards of Care." I encourage each of you to review the standards listed in Enclosure (1) and highly recommend you incorporate those items into your wastewater management procedures. These standards supplement the federal legislation aimed at minimizing the harmful effects on Alaskan waters. Details of the legislation and proposed implementing regulations can be viewed electronically at Marine Safety Office Juneau's website. This link is found at **www.uscg.mil/d17/msojuneau**. Once at the site, click on the **Cruise Ship Information and Links**.

Finally, I encourage you to review several important findings my inspection staff noted during last season; Enclosure (2) provides information from the over 30 examinations conducted. Although the list is not all-inclusive, it captures relevant information for noteworthy areas. I also encourage you to review the Marine Safety Office Juneau Cruise Ship website, which contains several documents and reference material that will enhance safe operations and provide a better understanding to the Control Verification Examination process.

Again, I appreciate your professionalism and commitment to work together to do the right things to improve safety and better protect the pristine waters of Alaska. My staff and I welcome your feedback on these important issues. I look forward to meeting you during the 2001 season.

Sincerely,

R. C. LORIGAN
Captain, U. S. Coast Guard
Officer in Charge, Marine Inspection
Southeast Alaska

Encl: (1) Environmental Standards of Care for Cruise Ships operating in Alaska
(2) 2000 Southeast Alaska Cruise Ship Findings

Environmental Standards of Care

For Cruise Ships Operating in Alaska

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- ❑ Crew Environmental Awareness Training: Operators should train all members of the crew on environmental compliance laws and practices and retrain as necessary to ensure proper management procedures are followed.

- ❑ Shared Commitment: Operators should continue to partner with Federal, State and local stakeholders as well as concerned citizens and environmental groups with the goal of continuous improvement in the quality of waste discharges.