CHANGES IN THE INCIDENCE OF DRUNK DRIVING IN THE UNITED STATES, 1973-1986

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INTRODUCTION

In the fall of 1973 the first national roadside breathtesting survey was conducted throughout the contiguous United States in a controlled probability sample of 34 localities chosen to represent the 92 percent of the population living in counties of 20,000 or more (Wolfe 1974). In the spring of 1986 National Roadside Survey II was conducted in a similar representative sample of 32 localities, 18 of which had participated in National Roadside Survey I (Wolfe 1986). The first survey was carried out by the University of Michigan Highway Safety Research Institute under the sponsorship of the National Highway Traffic Safety Administration. The 1986 survey was carried out by the Mid-America Research Institute under the sponsorship of the Insurance Institute for Highway Safety in Washington, D.C. The basic purpose of this second survey was to ascertain if there had been any significant change in the extent of drunk driving in the 13 years since the first survey, a period of increased concern about and attention to the drunk driving problem by the national and state governments, most law enforcement agencies, and the general public.

The two surveys were very similar in methodology. They were conducted on Friday and Saturday nights from 10 p.m. to 3 a.m., using separate roadside sites from 10-12 p.m. and from 1-3 a.m. The survey locations along heavy and medium volume roads (except freeways) numbered 185 in 1973 and 182 in 1986. At all locations drivers from the passing traffic stream were stopped in a random procedure by a law enforcement officer and sent to the civilian interviewer at the road shoulder or in an adjacent parking area. In 1973 most interviews took place in the interviewer's motorhome, van, or car, but in 1986 all interviews took place at the driver's car window. In 1986 four localities required the survey to take place within a larger sobriety checkpoint operation.

Participation in these non-official surveys was necessarily voluntary. The interviewer had to persuade the driver to answer the interview questions and to provide a breath sample at the end. In 1973 a satisfactory breath sample was obtained from 3192 (86.3%) of the 3698 stopped motorists. In 1986 2850 (91.9%) of the 3100 stopped drivers provided a satisfactory breath sample.

In both surveys the interviewers made an estimate of the drinking condition of all selected drivers, both participants and refusers, in order to try to see if there was any refusal bias. In 1986 this judgment was aided in most cases by
a prototype passive alcohol sensor. Neither survey appeared to have much refusal bias. However, the data reported below were weighted to take into account the drinking estimates for refusers, the traffic count and the average speed at the roadside sites, and the relative population of each of the 24 strata in the sample.

SURVEY RESULTS

The overall breathtesting results for the 1986 survey compared to the 1973 survey are shown in Table 1, for the total sample and for the two major time periods separately. These data indicate a substantial reduction in drunk drivers on American roads between 1973 and 1986. For each BAC category above .05% the 1986 percentage is below the 1973 percentage. Concomitantly, the non-drinking and low-drinking categories have higher percentages in 1986.

TABLE 1. COMPARISON OF NATIONAL BREATHTESTING RESULTS FOR THE 1986 AND 1973 SURVEYS, BY SURVEY TIME PERIOD: WEIGHTED DATA IN PERCENT

<table>
<thead>
<tr>
<th>Year</th>
<th>Wtd. N</th>
<th>BAC Reading</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>.000-.019</td>
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<tr>
<td>1986</td>
<td>3100</td>
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<td>1973</td>
<td>3719</td>
<td>77.4</td>
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95% Confidence Limits for the Percent at or above .10% BAC
1986: 3.11% ±0.95 = 2.16% - 4.06%
1973: 4.92% ±1.07 = 3.85% - 5.99% STAT. SIG. OF DIFF. = 94.0%

95% Confidence Limits for the Percent at or above .05% BAC
1986: 8.27% ±1.99 = 6.28% - 10.26%
1973: 13.46% ±2.18 = 11.28% - 15.64% STAT. SIG. OF DIFF. = 99.9%

In 1973 4.92% of the sample were at or above a BAC of .10%, while in 1986 only 3.11% were in this illegal category. This was a reduction of 37%. In 1973 13.46% were at or above a BAC of .05% compared to only 8.27% in 1973, a decrease of 39%. The comparison of 95% confidence limits at the bottom of Table 1 indicates that the change for the illegal category was statistically significant at a 94.0% level of confidence and that the change for the at least somewhat impaired group was statistically significant at a 99.9% level of confidence.

Since there were substantial changes in the sample locations between 1973 and 1986, it is desirable to look at the data just for the 18 common police jurisdictions which took part in both surveys. Table 2 presents the 1986-1973 comparisons just for these 18 common survey areas. These data indicate that even
TABLE 2. COMPARISON OF NATIONAL BREATHTesting RESULTS FOR THE 1986 AND 1973 SURVEYS, BY SURVEY TIME PERIOD: WEIGHTED DATA IN PERCENT FOR THE 18 COMMON SURVEY LOCATIONS

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<th>Year</th>
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<tbody>
<tr>
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<td>.000-.019</td>
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<tr>
<td>1986</td>
<td>1984</td>
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<td>1973</td>
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95% Confidence Limits for the Percent at or above .10% BAC

1986: 2.83% ±1.15 = 1.68% - 3.98%
1973: 5.74% ±1.49 = 4.25% - 7.23%  STAT. SIG. OF DIFF. = 99.8%

95% Confidence Limits for the Percent at or above .05% BAC

1986: 6.33% ±2.27 = 4.06% - 8.60%
1973: 14.96% ±2.69 = 12.27% - 17.65%  STAT. SIG. OF DIFF. = 99.9%

larger reductions in drunk driving took place within these 18 areas than in the total sample. In 1973 5.74% of the drivers in these areas were at or above .10% BAC, somewhat above the overall sample estimate. In 1986 only 2.83% were in this illegal group, slightly less than the overall sample estimate. This was a 51% reduction. From 1973 to 1986 the percentage of drivers at or above .05% BAC in this subsample declined by more than half, from 13.96% to 6.34%. This was a 58% reduction over the 13 years. Comparison of the 95% confidence limits at the bottom of Table 2 indicates that these dramatic changes within the 18 common survey areas were statistically significant at 99.8% and 99.9% levels of confidence, respectively.

There are many other interesting tables which are presented in the full report which relate driver, trip, and site characteristics to BAC levels. For instance, it is interesting to note that the female proportion of the driver sample changed from 15.9% in 1973 to 25.6% in 1986. However, male drivers were still much more likely to have been drinking than female drivers. In 1986 9.7% of the male respondents were at or above .05% BAC compared to only 3.7% of the females. This change in the proportion of female drivers on the road on late weekend nights is clearly one of the factors in the overall decline in drunk driving.

CONCLUSIONS

The data from National Roadside Survey II provide strong additional support to some other indicators that drunk driving is being reduced in the United States. However, without one hundred percent cooperation from all selected motorists, or at least a satisfactory passive sensor reading from all nonparticipants, one can
not be definitive about the results of a voluntary survey of this sort. There is always the gnawing question as to whether more of the nonparticipants than of the participants had been drinking, thus introducing a refusal bias into the sample findings, a bias for which it is difficult to compensate adequately just using interviewer judgements.

Nevertheless, while one can not feel completely confident in the reliability of these specific national estimates of drivers at different BACs, one can feel quite confident that significant change has taken place between 1973 and 1986. The two surveys were quite similar in their methods and procedures, but the 1973 survey had a considerably lower breath test response rate (86.3%) which makes the likelihood of a significant refusal bias even greater in the 1973 results than in the 1986 results. While one can not be absolutely certain, it seems very unlikely that such large differences in the results of the two surveys could be due to chance factors or to differences in survey procedures. The fact that even larger differences were found in the comparison of the 18 common locations than in the comparison of the total samples gives even stronger credence to the contention that a real reduction in drunk driving has taken place.

In this regard the results of one of the 1986 survey questions are particularly interesting. Each driver was asked if he or she had been drinking in a group in which one driver had purposely stayed sober in order to drive everyone home safely. More than two fifths of the responding drivers said they had done so at least once in the previous 12 months, and one out of 11 said they had done so ten or more times. About 5% of the drivers said they were driving as a "designated driver" at the time they were stopped. These figures may have been inflated by the roadside survey context of the questioning, but still they seem indicative of an important facet of the changes in American drinking and driving behavior.

So the results of National Roadside Survey II strongly suggest that progress is being made in the American "War on drunk driving". Clearly the war has not yet been won, for one can not feel very sanguine about finding that only one in seven instead of one in four drivers on the road from 2-3 am on weekend nights are potential accident hazards due to drinking. But it is pleasing to have some evidence that the drunk driving problem is not completely intractable and that some progress is being made.

REFERENCES
