# DRINKING-DRIVING ATTITUDES: A COMPARISON OF THE FIRST TWO HOUSEHOLD SURVEYS OF THE FAIRFAX ALCOHOL SAFETY ACTION PROJECT

by

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## ABSTRACT

This report provides an analysis of the community response to the public information countermeasure of the Fairfax Alcohol Safety Action Project—one thrust of a national effort to get the drunken driver off the highway.

A series of in-depth household surveys form the primary tool for the analysis. Among the variables measured were: knowledge of alcohol-related driving offenses, attitudes toward the penalties for drunken driving, knowledge of drinking quantities, and information regarding blood alcohol concentration (BAC) and its measurement. Annual survey samples included 500 subjects both in 1971 and 1972, and were by design matched to the population in the study area by age, sex, and proportion of licensed drivers.

The major findings of this study include: (1) an increased recognition among those surveyed of the problem drinker, rather than the social drinker, as the cause of most fatal traffic accidents, (2) a public attitude shift away from strong punitive sanctions for driving while intoxicated (DWI) offenders, (3) growing support for the use of rehabilitative measures, and (4) an increase in recognition of the presumptive limit used for determining when DWI violations in fact occur.

It was recommended that future community based public information and education campaigns should emphasize those specific topics for which survey respondents indicated only minor improvement or static reaction over time. Recommendations also included greater use of broadcast media campaigns for the dissemination of the public information programs.

## RESEARCH FINDINGS

Research findings, presented in outline form, were as follows:

- A majority of subjects in both surveys agreed that drunken drivers (29%) and driver disregard of traffic regulations (27%) are the principal causes of traffic collisions.

- A statistically significant attitude shift brought from 36% to 47% the proportion of respondents who recognize the problem drinker, rather than the social drinking group, as more likely to be involved in fatal traffic crashes.

- Public knowledge of traffic deaths appeared static since half of those interviewed in each of the surveys accurately recognized that between four and six of every ten traffic fatalities are alcohol-related.

- Survey findings indicate a public shift away from strong punitive sanctions for DWI (driving while intoxicated) offenders, while support is growing for the use of rehabilitative techniques.

- When asked to identify the presumptive limits, an intoxication level above which drivers are assumed in violation of drunk driving statutes, 11% of the 1971 and 20% of the 1972 respondents provided correct answers.

- A comparison of answers to a series of eleven true-false questions on alcohol consumption and intoxication revealed no change between surveys. The distributions of ten of the eleven questions proved statistically equivalent across both surveys.

- A significant improvement was achieved in the percentage of respondents who explained that they had read or heard of a campaign aimed at reducing alcohol-related traffic deaths. Forty-seven percent of 1971 and 60% of the 1972 survey participants acknowledged awareness of the ASAP campaign.

- Participants ranked the effectiveness of alternate methods for reducing the drinking-driving problem according to the following order of priority:

  (1) More severe penalties for convicted drunken drivers.

  (2) A device that would prevent a drunken person from starting the car.

  (3) Greater police enforcement of drunk driving laws.

  (4) Improved treatment services for problem drinkers.

  (5) Police using random road checks to find drivers who have been drinking.

(6) A large-scale public information and education campaign.

(7) Special alcohol education courses for convicted drunken drivers.

(8) Having convicted drunken drivers use a pill which causes them to be sick if they drink alcohol.

- Both surveys verified that eight of ten respondents admitted to consuming alcoholic beverages.

- Interview participants were asked to select which alcoholic beverages are most frequently drunk. Liquor was preferred by a majority of drinkers (34%), beer was ranked second in popularity (31%), while wine was preferred least (23%).

- As detected by cross-tabulating self-appraisals of drinking behavior with admitted frequency of drinking, a bias was observed whereby an unrealistic number of participants classified themselves as light to fairly light drinkers.

- About 70% of both interview populations related they either hardly ever or never drive after drinking.

- About 22% of survey participants in 1971 and 29% in 1972 reported that they believed their risks of traffic accident involvement after drinking would be very high.

## CONCLUSIONS AND RECOMMENDATIONS

Findings from the current survey revealed a series of positive changes—concurrent with a number of static situations—in public knowledge and attitudes concerning the drinking and driving problem. Certainly though, even for those areas where improvements were detected, the public has not yet demonstrated expert knowledge and optimal attitude levels concerning the specifics of drunken driving. There remains room for improvement which must be stimulated through the operation of public information and education campaigns, currently funded at $75,000 yearly.

Those subject areas in which the greatest improvements can be promoted are subsequently listed here in a recommended priority sequence.

(1) Public knowledge of drinking quantities.

(2) Emphasis upon drinking and driving situations.

(3) Focusing on public reaction to ASAP public information campaigns (program identification).

(4) Opinions concerning the status of court penalties for drunk driving offenders.

(5) Attitudes concerning alcohol consumption and intoxication.

Specific items from the preceding topic areas should be heavily emphasized in each new media plan and public relations campaign. Those topic areas — of equal importance—which do not have to be stressed as frequently are next listed.

(1) Behavioral patterns in relation to the consumption of alcoholic beverages.

(2) Reported driving habits and historical driving violation records.

(3) Public assessment of countermeasure performance.

(4) Basic public attitudes pertinent to traffic accidents and drinking drivers.

For the continuation of needed public information and education countermeasure operations one major recommendation emerged. Revise the 1972 type of media program which did not include a single radio or television spot commercial. This key deficiency must be surmounted in order to effectively alter public response to ASAP campaigns.

It is recognized that 84 special TV programs and 226 special radio programs were promoted by ASAP officials during 1972. In addition to these there were 113 speakers bureau appearances and 300 newspaper items sponsored by ASAP during the same period. Yet, the degree of success achieved with these should be augmented by expanding each broadcast media campaign to concentrate upon having radio and TV spots made available. The public information and education campaign was designed to encompass a three-year time span with a target audience of more than 550,000 residents. Here, a key goal of the public information and education countermeasure should be to sustain public exposure—preferably via the broadcast media. The newspaper items and speakers bureau appearances are adequate, but broadcasting should prove the key for captivating the local audience which lives in the "electronic generation."[1/]

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1/ McLuhan, Marshall, Understanding Media., McGraw-Hill Book Co., 1964.

To date, coverage has been achieved by having TV and radio stations donate time for special programs concerning the activities of the Fairfax ASAP. Yet, the future challenge should be confronted by developing a variety of radio or TV spots (minimessages of 30 seconds or less) to high standards of attractiveness. These should be offered to any station that can be encouraged to periodically donate broadcast time as a community service.

Development of the methodology for this research analysis produced an experimental computer program; and it is recommended that this new computerized routine supplement the use of the standard battery program CHISQS A 408-36043 (University of Virginia computer library— Hewlett Packard series). The modified program, labeled EVARES—Evaluative Research; Chi-square model, provides expanded capabilities for processing statistical calculations, expecially those integral to this type of time study, (refer to Appendixes B and C).

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## BACKGROUND

The Highway Safety Act of 1966 included a significant section on alcohol and highway safety and required that the Secretary of Transportation report to the Congress on the nature and extent of the problem of alcohol abuse as related to highway crashes. In 1968, the landmark study titled Alcohol and Highway Safety was submitted to Congress and led to the reorganization of the National Highway Safety Bureau. The newly created National Highway Traffic Safety Administration made alcohol countermeasures one of its top priorities.

In 1971, Fairfax County, Virginia, was selected as one of twenty sites which were to organize and implement a community based demonstration program of alcohol countermeasures. The Fairfax Alcohol Safety Action Project (ASAP) included Fairfax County, Fairfax City, Falls Church, Vienna, and Herndon, a geographical area of approximately 400 square miles which included approximately 520,000 people in this Northern Virginia locale. The community alcohol countermeasure concept directed by the Fairfax ASAP included increased police enforcement during the nighttime hours, a special probation office and court procedures, programs of rehabilitation and treatment, and public information and education.

As part of the contract for the implementation of the Fairfax ASAP, evaluation of overall project impact and the evaluation of each individual countermeasure were required. Prior to the start of project operations, baseline data had to be developed as a benchmark from which changes in the course of the project could be measured. One of the major elements of baseline data collection was the survey of 500 households in Fairfax in 1971 to determine community attitudes regarding drinking and driving. 2/ Data from this baseline survey were used to guide the development of public information programs by Martin & Woltz Advertising, Inc., of Richmond, Virginia.

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2/ Rodman, Reed M., Drinking-Driving Attitudes: A Survey of Fairfax County, 1971, Charlottesville, Virginia, Virginia Highway Research Council, March 1973.

## PURPOSE

The detailed project plan called for annual household attitude surveys to gauge project impact and the improvement in community knowledge and attitude toward drinking and driving. The second household survey was conducted at the end of the first year of project operations. It is the purpose of this report to measure overall project awareness and more specifically, the effectiveness of the public information countermeasure.

## METHODOLOGY

### Survey Description

The Virginia Highway & Transportation Research Council, as evaluator for the Fairfax ASAP, subcontracted with the Stoneland Corporation of Chesapeake, Virginia, to carry out the four household surveys. The surveys are conducted at one-year intervals during the life of the project, roughly corresponding to the completion of a year of project operations.

The sample universe included all persons 16 years or older living in the Fairfax ASAP area. Interviews were completed with 250 men and 250 women in 500 households. A random cluster sampling procedure using 1970 census tract information furnished by the Northern Virginia Planning Commission was used to obtain representative samples of the ASAP population.

In determining the number of subjects to be sampled per census tract, each tract was assigned the same percentages of the total sample size as the percentage of total ASAP area population in that tract; i.e., a census tract containing 3% of the total population would be represented by 3% of the sample of 500, which is 15.

After determination of the number of sample subjects to be interviewed in each census tract, the specific subjects were chosen by a random cluster sample technique. In no case did a cluster contain more than five subjects.

Each interview was conducted on a personal basis in the respondent's home. On the average, an individual interview lasted approximately 25-35 minutes, depending on the nature of the responses given. If a subject was not at home for the interview, it was rescheduled. This was done until three unsuccessful interview calls were made. Then, another randomly selected subject was used as a replacement.

Completed interview forms were edited by the Stoneland Corporation, and telephone calls were made to verify a sample of reported contacts. No discrepancies were noted on the baseline survey, but on the second survey, a number of fraudulent questionnaires were discovered to have been submitted by one of the interviewers. All questionnaires submitted by the interviewer were discarded, and a new interviewer was assigned the task of completing the sample.

### Questionnaire

The questionnaire developed by the National Highway Traffic Safety Administration was augmented by a number of questions requested by Martin & Woltz to assist them in market segmentation. A copy of the questionnaire is shown in Appendix A.

## ANALYSIS

### Changes in Alcohol-Related Traffic Statutes

During the months between the base year survey and the second year survey, there were legislative changes which revised several of the statutes dealing with the offense of driving while intoxicated. The revisions, effective July 1, 1972, produced two key changes.

(1) The presumptive limit for intoxicated drivers was lowered from a blood alcohol concentration level of 0.15% to 0.10%.

(2) The mandatory punitive measures, to be imposed upon conviction by the court, were also changed in July 1972. The mandatory twelve-month revocation of a driver's license was reduced to a mandatory six-month license revocation, with the judge having discretion to extend the revocation up to another six months.

The legislative statute changes summarized above are important to the interpretation of household interview responses. Care must be taken to ensure that the interview responses in the base year study are appropriately and accurately compared to any responses subsequently attained and keyed to the revised alcohol-related traffic codes.

## Statistical Analysis

The research design for this study compared the base year (pre-ASAP) survey findings and the results of the first follow-up (ASAP-era) household survey. Contrasting the information collected for those surveys provides the key mechanism for evaluating the impact of the public information and education programs operated throughout 1972 by the Fairfax ASAP. Comparisons presented in a subsequent section of the report use statistical testing techniques to analyze changes among the responses to various interview items. Only three statistical formulas are included in this research model: the chi-square, Z test and t test techniques. All calculations from each statistical analysis were first measured against the 95% confidence interval.

## Consistency of Results

The consistency of results from year to year provided an indication of survey accuracy and reliability. In most of 52 survey items, the results of the first survey were replicated in the second survey. The 31 unchanged survey items provided a strong indication that the sampling design and interview procedures were reliable.

# DISCUSSION OF RESULTS

The format for data presentation and discussion of questionnaire results in this section was established in the baseline report by Rodman. Responses are displayed on a question-by-question basis so that direct comparisons between the two surveys may be made.

## Attitudes Concerning Traffic Accidents and Drinking Drivers

TABLE 1

Which one of these do you feel causes the greatest number of automobile accidents?

| | 1971 Survey | | 1972 Survey | |
|---|---|---|---|---|
| 1) Unsafe highways or streets | 13 | (3%) | 18 | (4%) |
| 2) Failure to enforce laws | 7 | (1%) | 19 | (4%) |
| 3) Driving too fast | 107 | (21%) | 93 | (19%) |
| 4) Driving under the influence of alcohol | 147 | (29%) | 146 | (29%) |

Table 1 (continued)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 5) Disregard for traffic regulations by drivers | 142 | (28%) | 137 | (27%) |
| 6) Drivers who handle a car poorly | 72 | (15%) | 68 | (14%) |
| 7) Other replies | 9 | (2%) | 14 | (2%) |
| 8) No answer | 3 | (1%) | 5 | (1%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 7 = 8.62 ; not significant

The statistical comparison between results of the base year (1971) and 1972 surveys revealed that no significant change occurred. Public response to question 1 was not altered over time. Residents of the Fairfax ASAP region adhered to the attitude that drunken drivers and driver disregard of traffic regulations were the primary causes of automobile crashes.

The statistical analysis excluded item 8, the no response category, in order to provide the best design for detecting if a significant shift occurred. Item 8 included a data cell with less than five responses and these are universally excluded from chi-square calculations. Also due to the need for avoiding the use of data cells smaller than five, four questions were combined to form the seventh item in the tabular summary.

TABLE 2

Would you guess that more fatal accidents are caused by the many social drinkers (people that occasionally drink too much) or by the smaller number of problem drinkers (people who frequently drink a great deal)?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Social drinkers | 285 | (57%) | 216 | (43%) |
| 2) Problem drinkers | 179 | (36%) | 237 | (47%) |
| 3) Other | 18 | (4%) | 19 | (3%) |
| 4) No opinion | 18 | (3%) | 34 | (7%) |
| | 500 | (100%) | 497 | (100%) |

Z test for item 2 = 3.53; $p < .01$

A significant attitude change occurred. Since the start of ASAP counter-measure operations, a significantly greater number of Fairfax residents were able to identify the problem drinker rather than the social drinker as the main cause of alcohol-related fatal traffic accidents. In checking selected cross-tabulations of interview responses, it was noted that those subjects with less than a high school education were more accurate than any other subgroup in naming the problem drinker as the main cause. Nearly 54% of the high school incomplete group correctly indicated that the problem drinker is the major contributor to alcohol-related traffic mishaps. The corresponding norm for all residents was 47% in 1972.

A major objective of the public information and education counter-measure program has been to identify that the problem drinker causes the most alcohol-related traffic fatalities. To date the shift in attitude on this topic has been positive over time.

TABLE 3

Out of every 10 traffic deaths, how many would you say are caused by drinking drivers?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) One | 16 | (3%) | 19 | (4%) |
| 2) Two | 27 | (5%) | 26 | (5%) |
| 3) Three | 72 | (14%) | 55 | (11%) |
| 4) Four | 80 | (16%) | 66 | (13%) |
| 5) Five | 128 | (26%) | 156 | (31%) |
| 6) Six | 64 | (13%) | 58 | (12%) |
| 7) Seven | 41 | (8%) | 38 | (8%) |
| 8) Eight - Ten | 33 | (7%) | 22 | (4%) |
| 9) No opinion | 39 | (8%) | 60 | (12%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 8 = 8.78 ; not significant

A contrast of the 1972 and 1971 surveys revealed that there was not a significant change in public knowledge concerning the topic of traffic deaths. More than half of the ASAP area residents continued to correctly explain that between four and six out of ten traffic deaths are alcohol-related.[3/] A review of key cross-tabulations revealed that the respondent's education, occupation, age, and sex had no significant influence on the responses to the above question.

The statistical analysis excluded item 9, the no opinion category, to avoid having the significance of any comparison affected by year to year changes in the proportion of residents declining to respond to interviewers during various sections of the questionnaire.

## Driving While Intoxicated Penalties

TABLE 4

What is the penalty in this state for the first offense of driving while intoxicated ?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Penalty stated correctly | 41 | (8%) | 39 | (8%) |
| 2) Penalty less severe | 300 | (60%) | 290 | (58%) |
| 3) Penalty more severe | 53 | (11%) | 46 | (9%) |
| 4) No answer | 106 | (21%) | 125 | (25%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for items 1 - 3 = .25 ; not significant

Survey results show an absence of change in the ASAP public's knowledge of state law pertinent to the driving while intoxicated statutes. Six of ten continue to believe that court penalties for DWI offenders are less severe than the actual consequences of violation, one in ten think that established penalties are more severe, while a quarter declined to answer the question. Hence, less than 10% of those surveyed were able to correctly describe the penalty for DWI offenders.

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3/ The range between four and six is utilized to conform with three sources of references:
(a) U. S. Department of Transportation Publications
(b) "Crash Facts", Highway Safety Division of Virginia, 1971.
(c) Commonwealth of Virginia, Dept. of Health, State Medical Examiner's office.

TABLE 4a

What do you think should happen if a driver is convicted of driving while intoxicated? (May check more than one)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Temporary license suspension | 390 | (78%) | 346 | (69%) |
| 2) Permanent license suspension | 27 | (5%) | 25 | (5%) |
| 3) Fine | 214 | (43%) | 211 | (42%) |
| 4) Jail sentence | 36 | (7%) | 30 | (6%) |
| 5) Require medical treatment | 54 | (11%) | 97 | (19%) |
| | 721 | (144%) | 709 | (141%) |

Chi-square = 15.42 ; $p < .0$;

Survey results indicate some significant changes in the public's opinions of what penalties should be for a first time DWI conviction. When compared to the 1971 survey results, the results of the 1972 survey showed that a temporary license suspension was mentioned by 69% of the respondents compared with 78% in 1971. Another change occurred in the area of required medical treatment, with 19% of the respondents feeling this method should be required in 1972 in contrast to only 11% in 1971. No change occurred in the public's opinion concerning fines, or in the public's attitudes toward the more severe penalties of jail sentences and permanent suspensions of licenses.

These results indicated that in both surveys the public favored the relatively lenient punishments of temporary license suspensions or fines for the first DWI conviction. On the second survey it was found that an increasing number of people thought that alcohol-related traffic offenders sould be required to undergo medical treatment.

TABLE 4b

What do you think should happen to a person convicted of driving while intoxicated for the third time? (May check more than one)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Temporary license suspension | 93 | (19%) | 123 | (25%) |
| 2) Permanent license suspension | 364 | (73%) | 268 | (54%) |

Table 4b (Continued)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 3) Fine | 167 | (33%) | 142 | (28%) |
| 4) Jail sentence | 129 | (26%) | 112 | (22%) |
| 5) Require medical treatment | 133 | (27%) | 162 | (32%) |
| | 886 | (178%) | 807 | (161%) |

Chi-square = 21.18 ; $p < .01$

The results of the 1972 survey showed the presence of a measureable change in public attitudes concerning the treatment of a third-time DWI offender. Permanent license suspension was the punishment most favored by the public in both 1971 and 1972; however, the 54% of the respondents who agreed with this method in 1972 were one-third fewer than those who did so in 1971. The public's awareness of excessive drinking as a form of sickness requiring treatment appears to have risen. The 1972 survey indicated that 32% of those interviewed realized the need for required medical treatment for the three-time DWI offender, while 27% did so in 1971. Temporary license suspensions also showed an increase in the percentage of the public who favored this method as a deterrent; the 1972 figure of 25% can be contrasted to the 1971 figure of 19% who favored temporary license suspensions. The public attitudes concerning fines and jail sentences turned to slight disfavor in 1972; 28% of the public opted for fines in 1972, compared to 33% in 1971; jail sentences were favored by 26% in 1971, but by only 22% in 1972.

This question can be effectively compared to question (4a) concerning public attitudes about the treatment of first-time DWI offenders. The favored choices for first offenders in both 1971 and 1972 were temporary license suspensions and fines. For the third-time offender, the public attitudes shifted to favor permanent license suspensions and required medical treatment. Hence there was an indication of a public awareness that repeated DWI convictions point to a serious hazard for the general public as well as a serious problem for the specific individual.

TABLE 4c

What do you think occurs at present upon the first conviction of driving while intoxicated? (May check more than one)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Discretionary jail up to 12 months | 57 | (11%) | 90 | (18%) |

| Table 4c (Continued) | 1971 | | 1972 | |
|---|---|---|---|---|
| 2) Discretionary fine up to $200 | 268 | (54%) | 260 | (52%) |
| 3) Discretionary 12 months revocation | 189 | (38%) | 187 | (37%) |
| 4) Mandatory 12 months revocation | 56 | (11%) | 81 | (16%) |
| 5) Permanent license suspension | 15 | (3%) | 12 | (2%) |
| | 585 | (117%) | 630 | (125%) |

Z test for items 4 vs. 3 = 11.3 ; $p < .01$

In the interval between surveys more residents have been brought to recognize that a first time DWI conviction in Virginia precipitates a mandatory license revocation. 4/ Although a mathematically significant shift in public knowledge was recorded, it must be noted that 63% of the respondents did not select the correct penalty, even when they could check more than one answer.

The mathematical analysis was performed focusing on the correct answers — items 4 in 1971 and 3 in 1972. A Z test contrasting the correct responses for the two surveys revealed that a significant shift in public knowledge was observed. The 11% of correct answers for revocation up to 12 months from 1971 respondents increased to 37% by the time of the second survey.

TABLE 4d

Indicate which phrase accurately describes your knowledge of the offense of impaired driving.

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) I have never heard of it | 137 | (27%) | 151 | (30%) |
| 2) I have heard of it, but don't know anything about it | 104 | (21%) | 114 | (23%) |

4/ Virginia Traffic Code, Sc 18.1 - 58

Table 4d (Continued)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 3) I have some knowledge of it | 137 | (27%) | 120 | (24%) |
| 4) I have general knowledge of it | 100 | (20%) | 91 | (18%) |
| 5) I am well informed on the subject | 21 | (5%) | 24 | (5%) |
| | 499 | (100%) | 500 | (100%) |

Chi-square = 2.89 ; not significant

The Virginia driving while intoxicated statues were revised July 1, 1972, or six months prior to the second survey; the revision totally removed any provision for an impaired driving traffic offense. Given the fact that the impaired driving offense had been eliminated midway between the 1971 and 1972 household surveys, it was fascinating to observe that public knowledge of the term had not been significantly altered. In the base year survey, it was logical to find that about 50% of the participants had some knowledge of, general knowledge of, or were well informed on the subject of impaired driving. Yet when the results were very similar on the second survey, the conclusion was that both surveys revealed an unrealistically high reported knowledge of the offense.

## Blood Alcohol Concentration

TABLE 5

What do you think the term Blood Alcohol Concentration or Blood Alcohol Level means ?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Respondent's answer completely correct | 51 | (10%) | 28 | (6%) |
| 2) Respondent's answer correct | 381 | (76%) | 383 | (77%) |
| 3) Respondent's answer wrong | 62 | (12%) | 84 | (16%) |
| 4) No answer | 6 | (2%) | 5 | (1%) |

Z test value for item 1 = 2.34 ; $p < .05$

Between the base year survey and 1972 there was a statistically significant shift in the distribution of participant responses to the question on blood alcohol concentration. The Z test showed that there was a measureable shift in the number of absolutely correct responses for item 1; further, that the shift proved to be a decline in the quantity of absolutely correct answers. A secondary mathematical analysis was performed which showed that there was not a meaningful increase or decrease in the percentage of partially correct answers.

TABLE 6

The Blood Alcohol Concentration is based on a chemical test, such as a breath test, and is used to determine if a person is legally drunk or intoxicated. Which of these do you understand is the legal definition of being drunk in this state?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Any trace | 9 | (2%) | 12 | (2%) |
| 2) .05% | 83 | (16%) | 75 | (15%) |
| 3) .08% | 76 | (15%) | 70 | (14%) |
| 4) .0% | 69 | (14%) | 100 | (20%) |
| 5) .2% | 48 | (10%) | 31 | (6%) |
| 6) .5% | 58 | (11%) | 39 | (8%) |
| 7) .20% | 13 | (3%) | 14 | (3%) |
| 8) Don't know | 144 | (20%) | 159 | (32%) |
| | 500 | (100%) | 500 | (100%) |

Z test for items 6 vs. 4 = 3.9 ; $p < .01$

A shift in the distribution of answers was observable between the two surveys, but in the interim the presumptive limit for drunken drivers was altered by Virginia statutes. A Z test comparison of two correct answers — corresponding to the two time periods — identified an increase in the number of correct responses. In 1971 only 11% of the respondents identified the then established presumptive limit at 0.15% by volume. The latter survey, 1972, showed that one-fifth of the public recognized the new intoxication limits for drunken drivers was .10%. This increase in the percentage of correct responses was statistically significant.

TABLE 7

How many drinks do you think you would have to have to reach the level where you would be considered legally drunk?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) One or less | 44 | (9%) | 30 | (6%) |
| 2) Two | 72 | (14%) | 72 | (14%) |
| 3) Three | 114 | (23%) | 146 | (29%) |
| 4) Four | 68 | (14%) | 70 | ( 4%) |
| 5) Five | 44 | (9%) | 47 | (9%) |
| 6) Six | 21 | (4%) | 23 | (5%) |
| 7) Seven or eight | 21 | (4%) | 7 | (1%) |
| 8) Nine or more | 17 | (4%) | 8 | (3%) |
| 9) Don't know | 99 | (19%) | 97 | (19%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for items 1 - 8 = 17.04 ; $p < .05$

Proceeding with the assumption that those surveyed are average in size, it has been shown that two 1.5 ounce drinks will produce a BAC of less than 0.05%. A study by Borkenstein concluded that an experienced driver with a BAC of less than .05% does not have a higher accident risk potential than a non-drinking driver. 5/ Yet in both surveys only 20% of the respondents selected 2 drinks or less, thereby soundly underestimating the legally established drinking limits — perhaps 3-5 drinks depending upon body weight.

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5/ Borkenstein, R.F., et al., The Role of the Drinking Driver in Traffic Accidents, Indiana University Press, 1964.

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At the next extreme position, there were no more than 10% who definitely overestimated the correct drinking portion corresponding with 1972 intoxication levels—now lowered to .10%. About 40% were able to estimate the number of drinks needed for them to reach a BAC of .10%.

## Drinking and Intoxication

TABLE 8

Here is a list of statements about drinking and becoming intoxicated. Please read each statement and tell me if you think it is true or false.

| | True | | False | | Don't Know | |
|---|---|---|---|---|---|---|
| | 1971 | 1972 | 1971 | 1972 | 1971 | 1972 |
| a. A younger person starting to drink will get drunk faster than an older person on the same amount of liquor. (True) | (68%) 340 | (62%) 312 | (28%) 138 | (34%) 169 | (4%) 22 | (4%) 18 |
| b. A person drinking on an empty stomach will get drunk faster on the same number of drinks than a person who has just eaten something. (True) | (94%) 468 | (90%) 449 | (5%) 26 | (8%) 39 | (1%) 6 | (2%) 11 |
| c. If a person uses a "mixer", like soda water, with liquor, he can drink more without getting drunk than if he drank the liquor straight. (False) | (41%) 204 | (41%) 204 | (52%) 262 | (52%) 261 | (7%) 34 | (7%) 35 |
| d. A small person will get drunk faster than a large person on the same number of drinks. (True) | (44%) 220 | (45%) 227 | (47%) 236 | (47%) 233 | (9%) 44 | (8%) 39 |
| e. A person who has had 1 drink should not be allowed to drive an automobile. (False) | (20%) 99 | (21%) 104 | (76%) 380 | (73%) 366 | (4%) 21 | (6%) 30 |

| Table 8 (Continued | True | | False | | Don't Know | |
|---|---|---|---|---|---|---|
| | 1971 | 1972 | 1971 | 1972 | 1971 | 1972 |
| f. If a person sticks to the same kind of drink, he is less likely to get drunk than if he mixes different kinds of drinks, like beer & whiskey or gin & scotch. (False) | (49%) 243 | (45%) 225 | (45%) 227 | (47%) 233 | (6%) 30 | (8%) 41 |
| g. A person who is used to drinking can drink more and not become drunk than a person who drinks only once in a while. (False) | (64%) 320 | (54%) 268 | (31%) 154 | (40%) 200 | (5%) 26 | (6%) 3 |
| h. Alcohol is considered a drug. (True) | (N/A) | (70%) 351 | (N/A) | (23%) 116 | (N/A) | (7%) 32 |
| i. Alcohol will affect a person faster if he's under medication like a tranquilizer or anit-depressant. (True) | (92%) 460 | (90%) 451 | (3%) 14 | (4%) 19 | (5%) 26 | (6%) 29 |
| j. Strong black coffee is helpful in sobering a person up before he drives. (False) | (56%) 283 | (56%) 282 | (40%) 198 | (39%) 193 | (4%) 19 | (5%) 25 |
| k. Beer is pretty much like a soft drink as far as making a person drunk is concerned. (False) | (3%) 116 | (5%) 25 | (96%) 479 | (93%) 463 | (%) 5 | (2%) 11 |

| Question | Chi-square | |
|---|---|---|
| 8a | 4.73 | not significant |
| 8b | 4.46 | not significant |
| 8c | 0.02 | not significant |
| 8d | 0.43 | not significant |
| 8e | 1.97 | not significant |
| 8f | 2.47 | not significant |
| 8g | 11.01 | $p < .01$ |
| 8i | 1.01 | not significant |
| 8j | 0.88 | not significant |
| 8k | 4.50 | not significant |

Among the set of eleven true and false questions all but one were answered with response distributions similar to those recorded in the 1971 survey. * Those survey answers, correct answers, cross-tabulations with key variables and interpretations for the above questions are described in the report by Rodman. 6/

## Drinking-Driving Campaigns

TABLE 9

Have you read or heard of a campaign or program that would reduce alcohol-related traffic deaths ?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Yes | 236 | (47%) | 296 | (60%) |
| 2) No | 262 | (53%) | 202 | (40%) |
| | 498 | (100%) | 498 | (100%) |

There was a statistically measureable increase in public recognition of the program for reducing alcohol-related traffic deaths. A t test analysis was used to contrast the number of "yes" responses recorded for the surveys. For this and subsequent statistical examinations using the t test technique, manual calculations will be avoided by utilizing a set of tolerance tables. 7/ Tables of critical percentage deviations determined from standard t test calculations are shown in Appendix D, and were used for identifying significant changes in t values for any survey questions having one mutually exclusive correct answer. The above described t test analysis verified that there was a meaningful increase in the number of local residents who are familiar with the alcohol countermeasure programs.

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* There was a significant reduction in the percentage of respondents who mistakenly believed that an experienced drinker could drink more and not become drunk than a person who drinks only occasionally.

6/ Rodman, Reed M., op. cit.

7/ Rule, Paul F., "Tables of Statistical Significance of Survey Results," unpublished guideline procedures, Chesapeake, Virginia; The Stoneland Corporation

TABLE 10

Where did you read or hear about it? (Multiple responses occurred)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Another person | 21 | (6%) | 35 | (8%) |
| 2) Radio | 45 | (14%) | 53 | (12%) |
| 3) TV | 125 | (37%) | 149 | (33%) |
| 4) Magazine | 28 | (9%) | 41 | (9%) |
| 5) Newspaper | 83 | (25%) | 127 | (28%) |
| 6) Billboard, road signs | 5 | (2%) | 7 | (2%) |
| 7) Pamphlet, leaflet | 15 | (5%) | 9 | (2%) |
| 8) Other | 9 | (2%) | 29 | (6%) |
| | 331 | (100%) | 450 | (100%) |

Chi-square = 12.44 ; not significant

The chi-square analysis indicated the absence of a meaningful change in information sources.

TABLE 11

Do you recall what agency or organization is sponsoring the program?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) ASAP (local) | 15 | (3%) | 36 | (7%) |
| 2) Other | 77 | (15%) | 100 | (20%) |
| 3) Can't recall | 109 | (22%) | 144 | (29%) |
| 4) Not required to respond | 264 | (53%) | 204 | (41%) |
| 5) No response | 35 | (7%) | 16 | (3%) |
| | 500 | (100%) | 500 | (100%) |

Z value for item 1 - correct response = 2.9 ; $p < .0$.

There was an increase from 3% to 7% in the population segment familiar with the formal name of the program to counter drunken driving. The Z test was used to compare the change in the responses to item 1, and there the occurrence of a significant change was verified.

In summary then, there was a slight increase in the size of the resident population which could recognize ASAP sponsorship of the campaign to counter drunken driving. Since those naming ASAP have reached only 7%, perhaps the response to question 9 should be considered more pertinent than the more specific question listed above.

TABLE .2

How effective do you think each of the following methods would be in reducing the drinking driving problem?

| | 1971 | | | 1972 | | |
|---|---|---|---|---|---|---|
| | Very | Fair | Not | Very | Fair | Not |
| a. Greater police enforcement of drunk driving laws. | (52%) 257 | (40%) 200 | (8%) 41 | (55%) 275 | (40%) 198 | (5%) 26 |
| b. A large-scale public information and education campaign. | (37%) .84 | (45%) 224 | (18%) 90 | (34%) .68 | (51%) 256 | (15%) 75 |
| c. Improved treatment services for problem drinkers. | (42%) 207 | (40%) 202 | (18%) 89 | (47%) 236 | (41%) 207 | (12%) 57 |
| d. More severe penalties for convicted drunken drivers. | (58%) 287 | (30%) 147 | (12%) 62 | (62%) 310 | (29%) 143 | (9%) 45 |
| e. Having convicted drunken drivers use a pill which causes them to be sick if they drink alcohol. | (20%) 96 | (18%) 92 | (62%) 310 | (22%) 112 | (24%) 119 | (54%) 267 |
| f. Special alcohol-education courses for convicted drunken drivers | (30%) 152 | (52%) 254 | (18%) 92 | (33%) 164 | (52%) 258 | (15%) 78 |

Table 12 (Continued)

| | 1971 | | | 1972 | | |
|---|---|---|---|---|---|---|
| | Very | Fair | Not | Very | Fair | Not |
| g. Police using random road checks to find drivers who have been drinking. | (30%) 145 | (44%) 221 | (26%) 132 | (36%) 179 | (45%) 226 | (19%) 95 |
| h. A device that would prevent a drunken person from starting the car. | (52%) 258 | (22%) 111 | (26%) 129 | (56%) 280 | (23%) 113 | (21%) 107 |

| Question | Chi-square | |
|---|---|---|
| 12a | 3.98 | not significant |
| 12b | 4.22 | not significant |
| 12c | 8.97 | $p < .05$ |
| 12d | 3.64 | not significant |
| 12e | 7.89 | $p < .05$ |
| 12f | 1.64 | not significant |
| 12g | 9.65 | $p < .01$ |
| 12h | 2.97 | not significant |

Only three of the questions received responses which varied from the 1971 survey. Each of the three questions (c, e, and g) included positive shifts or an increase in the number who believe in the effectiveness of improved treatment services, pills which cause sickness when ingested with alcohol for convicted DWI offenders, and police road blocks.

From question items in the unchanged category it can be seen that the interviewed group does not believe in the effectiveness of public information campaigns or special alcohol education courses for drinking drivers. Moreover the Fairfax residents had much more confidence in the effectiveness of the following:

a. Greater police enforcement of drunk driving laws.

b. More severe penalties for convicted drunken drivers.

c. A device for preventing drunkards from starting vehicles.

## Drinking and Driving Violations

TABLE 13

About how many miles do you yourself drive in a year?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Don't drive | 36 | (7%) | 53 | (11%) |
| 2) Less than 10,000 | 188 | (38%) | 171 | (34%) |
| 3) 10,000 - 19,999 | 202 | (40%) | 178 | (36%) |
| 4) 20,000 - 29,999 | 49 | (10%) | 68 | (13%) |
| 5) 30,000 miles or more | 24 | (5%) | 29 | (6%) |
| | 499 | (100%) | 499 | (100%) |

Chi-square for items 2 - 5 = 5.56 ; not significant

Answers to the above questions indicated two minor shifts in public descriptions of their annual travel mileages. The 1972 survey included more respondents who explained that they did not drive and the high mileage—20,000 miles per year plus— sector also increased. Yet, these changes were not statistically significant.

TABLE 14

For which of the following reasons do you do most of your driving?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Personal or family affairs | 250 | (50%) | 217 | (43%) |
| 2) To and from work | 153 | (31%) | 160 | (32%) |
| 3) For work | 47 | (9%) | 60 | (12%) |
| 4) Vacations | 8 | (2%) | 9 | (2%) |
| 5) Other (non-drivers) | 42 | (8%) | 54 | (11%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 4 = 3.97 ; not significant

There was no difference in the responses to this question.

TABLE 15

In a typical week how many days do you drive ?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Every day | 260 | (52%) | 279 | (56%) |
| 2) Six days | 72 | (15%) | 44 | (9%) |
| 3) Five days | 58 | (11%) | 58 | (11%) |
| 4) Four days | 24 | (5%) | 18 | (4%) |
| 5) Three days | 26 | (5%) | 25 | (5%) |
| 6) Two days | 14 | (3%) | 15 | (3%) |
| 7) One day | 7 | (1%) | 6 | (1%) |
| 8) None in a typical week | 39 | (8%) | 55 | (11%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 7 = 8. 4 ; not significant

Throughout the time interval between the pre-ASAP and the first ASAP era surveys the daily frequency of motorist trips held constant. Even the cross-tabulations of key variables sustained a uniform trend; those employed in professional and military categories recorded the highest driving frequency while the group which has not sought education beyond high school travelled with a minimal frequency.

TABLE 16

How many tickets for driving violations have you had in the last 3 years, not counting parking violations ?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) None | 404 | (80%) | 406 | (81%) |
| 2) One | 69 | (14%) | 72 | (14%) |

Table 16 (Continued)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 3) Two | 20 | (4%) | 16 | (3%) |
| 4) Three or more | 7 | (2%) | 6 | (2%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square = 0.59 ; not significant

Application of the chi-square test to a system of collapsed cells revealed no significant change in the sector with combined response patterns since 80% reported that they had not received current traffic citations. By 1972 the corresponding number increased minutely to 8 %.

TABLE 17

In the past 3 years, how many traffic accidents, no matter how minor, have you been involved in when you were driving a car?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) One | 91 | (18%) | 99 | (20%) |
| 2) Two or more | 30 | (6%) | 31 | (6%) |
| 3) None | 340 | (68%) | 366 | (73%) |
| 4) No response | 39 | (8%) | 4 | (1%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1, 2, and 3 = .03 ; not significant

It was interesting to find that there were absolutely no changes in the public's account of traffic crash records.

An examination of cross-tabulated variables showed that one finding of the 1971 survey with respect to the above question was nullified. The base year interviews concluded that persons under 20 and over 60 were more likely to have traffic crashes. This conclusion did not stand the test of time. By 1972 it was reported that the respondents under 20 and over 60 were not more likely to be crash-involved over the last three years.

TABLE 18

In the past 3 years, how many times has your driver's license been suspended, for any reason?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Once | 8 | (2%) | 5 | (1%) |
| 2) None | 492 | (98%) | 495 | (99%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square = 0.70 ; not significant

The usefulness of the above question ought to be scrutinized carefully. Out of the 1,000 interviewed, only 13 persons admitted to prior vehicle operator's license suspensions. Perhaps this rate is unrealistic. In any event the lack of positive responses cancels the usefulness of information on this topic.

The above question should be considered for exclusion from subsequent surveys.

## Drinking Habits

TABLE 19

Drinking is an accepted part of business and social activity for many people. Do you ever drink beer, wine, or liquor such as whiskey, gin or vodka?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Yes | 416 | (83%) | 408 | (82%) |
| 2) No | 82 | (17%) | 90 | (18%) |
| | 498 | (100%) | 498 | (100%) |

Chi-square = 0.45 ; not significant

The 1972 survey results showed that there was no change in the behavior patterns of the public concerning whether they ever drank beer, wine or liquor at some time; the total for those who did drink was 82% for 1972 and 83% for 1971. Therefore, those respondents who never drink beer, wine, or liquor totaled 18% for 1972 and 17% for 1971.

A review of the cross-tabulations of key variables revealed that 100% of the divorced respondents explained that they drank alcoholic beverages. For both surveys though, the total number of divorced drinkers responding

to this question totaled a mere 23 from among the 1,000 participants.

Again looking at the cross-tabulations for both surveys, it was found that at least one-fourth of the nonwhite respondents explained that they did not consume alcoholic beverages.

Using the t test comparison, it was shown that the respondents who moved their residence twice or more in four years admitted to a significantly greater drinking frequency than those who moved only once or not at all.

TABLE 20

Have you ever drunk beer, wine or liquor?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Yes | 50 | (10%) | 47 | (9%) |
| 2) No | 32 | (6%) | 41 | (8%) |
| 3) No responses | 418 | (84%) | 412 | (83%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 2 = .99 ; not significant

The results for this question indicated no significant change occurred among the respondents who had drunk beer, wine, or liquor. In the 1971 survey, only 16%) of the 500 respondents were instructed to answer question 20, but responses were recorded for 29%. By 1972 this field interview control problem was corrected, while corresponding adjustments were made to the 1971 statistical calculations.

TABLE 2

How long ago did you last drink beer, wine, or liquor?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Less than one month | 8 | (2%) | 7 | (1%) |
| 2) 1 - 2 months | 5 | (1%) | 7 | (1%) |
| 3) 3 months to one year | 12 | (2%) | 8 | (2%) |

Table 21 (Continued)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 4) More than 1 year ago | 25 | (6%) | 24 | (5%) |
| 5) No response | 450 | (90%) | 454 | (91%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 4 = 1.06 ; not significant

Statistical analysis indicated the absence of any change.

TABLE 22

Which of these do you drink more often, beer, wine, or liquor?

| | 1971 Roadside Survey | 1972 | | 1972 | |
|---|---|---|---|---|---|
| 1) Beer | (51%) | 134 | (27%) | 155 | (31%) |
| 2) Wine | (15%) | 105 | (21%) | 113 | (23%) |
| 3) Liquor | (34%) | 204 | (41%) | 171 | (34%) |
| 4) No response | ____ | 57 | (11%) | 61 | (12%) |
| | (100%) | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 3 = 4.7 ; not significant

According to the results of the chi-square analysis there was not a significant shift in the respondents' preference for alcoholic beverages. Participants in the household survey claimed to drink liquor most often, followed by beer, and then wine, which was drunk less frequently than the others.

The above results attained from interviewing people at their residences stand in contrast to another set of interview responses to the same question reported by Smith on the pre-ASAP, 1971 roadside survey. [8/] The 1,577 motorists who were interviewed in the process of performing highway trips

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8/ Smith, Thomas J., 'Drinking Driving Patterns At Night: Baseline Roadside Survey of the Fairfax Alcohol Safety Action Project," Charlottesville, Va., Virginia Highway Research Council, April 1973, 13 pp.

then related a primary preference for beer (51%), next liquor (35%) and finally wine (14%). This contrast between the results of the household and roadside surveys on the beverage preference question is unique and can be reconciled by noting that the nighttime driving population was quite different in demographic characteristics to the general population in Fairfax.

TABLE 23

At the present time do you consider yourself to be a:

| | 1971 Roadside Survey | | 1971 | | 1972 | |
|---|---|---|---|---|---|---|
| 1) Very light drinker | (42%) | | 215 | (48%) | 255 | (58%) |
| 2) Fairly light drinker | (30%) | | 130 | (29%) | 91 | (21%) |
| 3) Moderate drinker | (26%) | | 94 | (22%) | 89 | (20%) |
| 4) Fairly heavy drinker | ( 2%) | | 7 | ( 1%) | 5 | ( 1%) |
| 5) Heavy drinker | (0%) | | 1 | ( 0%) | 1 | ( 0%) |
| | (100%) | | 447 | (100%) | 440 | (100%) |

The t test was used to verify the change in the respondents' own version of their individual drinking classifications. Significant changes to the distribution of responses were observed for the first two categories. A drastic bias associated with this type of self-appraisal question is evidenced by the lack of those selecting the last two categories of fairly heavy to heavy drinker types on both the household and roadside surveys.

TABLE 24

About how many days during this past week did you drink the number of drinks shown below? (By drink we mean a glass of wine, bottle or can of beer, or a single shot of liquor.)

| 1971 | Number of days in previous week | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Category | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 or more | 475 (95%) | 13 (3%) | 9 (2%) | 1 (0%) | 1 (0%) | 0 (0%) | 0 (0%) | 1 (0%) |
| 5 - 7 drinks | 448 (90%) | 34 (7%) | 9 (2%) | 4 (1%) | 1 (0%) | 2 (0%) | 0 (0%) | 2 (0%) |

Table 24 (Continued)

| 1971 Category | Number of days in previous week 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 3 - 4 drinks | 381 (76%) | 45 (9%) | 24 (5%) | 24 (5%) | 11 (2%) | 4 (1%) | 2 (0%) | 9 (2%) |
| 1 - 2 drinks | 221 (44%) | 77 (15%) | 71 (14%) | 41 (8%) | 29 (6%) | 19 (4%) | 9 (2%) | 33 (7%) |
| None | 140 (18%) | 21 (4%) | 31 (6%) | 24 (5%) | 40 (8%) | 58 (12%) | 77 (15%) | 109 (22%) |

| 1972 Category | Number of days in previous week 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 8 or more | 487 (98%) | 8 (2%) | 3 (0%) | 2 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 5 - 7 drinks | 471 (94%) | 17 (3%) | 5 (1%) | 4 (2%) | 1 (0%) | 1 (0%) | 0 (0%) | 1 (0%) |
| 3 - 4 drinks | 405 (81%) | 48 (10%) | 22 (4%) | 6 (1%) | 8 (2%) | 3 (0%) | 1 (0%) | 7 (0%) |
| 1 - 2 drinks | 252 (50%) | 89 (18%) | 59 (12%) | 33 (7%) | 10 (2%) | 16 (3%) | 8 (2%) | 33 (7%) |
| None | 60 (12%) | 7 (1%) | 17 (3%) | 21 (4%) | 52 (10%) | 55 (11%) | 89 (18%) | 199 (40%) |

Between the pre-ASAP and ASAP era surveys, it appears that there were minimal changes in the distribution of responses to the first four items—all pertaining to the frequency of alcohol consumption. Yet a noticeable shift was reported in the fifth item, where the no daily drinking all week sector expanded from 22% to 40%. If the change in drinking behavior was accurately reported, the average number of weekly drinks per respondent would have dropped from 6.47 to 4.58.

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TABLE 25

How often do you drive after having anything to drink?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Often | 25 | (6%) | 25 | (6%) |
| 2) Occassionally | 99 | (22%) | 69 | 15%) |
| 3) Hardly ever | 176 | (38%) | 166 | (37%) |
| 4) Never | 131 | (28%) | 147 | (33%) |
| 5) Don't Drive | 29 | (6%) | 40 | (9%) |
| | 460 | (100%) | 447 | (100%) |

Chi-square = 8.149 ; not significant.

While statistical comparisons proved that the distribution of responses to the drinking and driving question were not significantly different, there did appear to be a slight shift toward not driving after drinking. The majority (about 80% of the interview population) related that they hardly ever or never drive after drinking.

TABLE 26

How much is the most you will drink and continue to drive?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) One drink | 31 | (15%) | 5 | (5%) |
| 2) Two drinks | 49 | (23%) | 19 | (20%) |
| 3) Three drinks | 50 | (23%) | 25 | (27%) |
| 4) Four drinks | 8 | (11%) | 16 | (17%) |
| 5) Five drinks | 24 | (11%) | 9 | (10%) |
| 6) Six drinks | 10 | (5%) | 8 | (9%) |
| 7) Seven to eight drinks | 5 | (3%) | 6 | (6%) |
| 8) Nine or more drinks | 11 | (6%) | 6 | (6%) |
| | 208 | (100%) | 94 | (100%) |

Interview responses with respect to drinking patterns shifted over time when tested with the chi-square technique. In the 1971 survey, 15% reported they would consume only one drink before driving. By 1972 a mere 5% selected the one drink limit. Looking further, it was found that 39% selected four or more drinks in 1971, while 48% of the 972 respondents indicated they would consume four or more drinks and still drive. This contrast is paradoxical because the presumptive level was lowered after the 1971 survey.

A review of interviewing procedures indicated that the designed comparison had to be nullified because of the distortion introduced when 208 rather than 124 responded to questions 26 - 29 during the base year.

TABLE 27

How far do you usually drive after drinking?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Less than one mile | 40 | (19%) | 2 | (2%) |
| 2) 1 - 5 miles | 82 | (39%) | 40 | (43%) |
| 3) 6 - 10 miles | 49 | (24%) | 29 | (30%) |
| 4) 11 - 20 miles | 25 | (6%) | 13 | (14%) |
| 5) Over 20 miles | 13 | (6%) | 10 | (11%) |
| | 209 | (100%) | 94 | (100%) |

With respect to driving distances after drinking, reported patterns appeared altered between surveys. These interview responses were also distorted by faulty interviewing procedure in 1971.

TABLE 28

When you have driven after drinking, have you ever thought you really shouldn't be on the road?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Yes | 103 | (48%) | 40 | (42%) |
| 2) No | 112 | (52%) | 55 | (58%) |
| | 215 | (100%) | 95 | (100%) |

Of those people who admitted to driving after drinking, about half felt that they had driven when they were in no condition to operate a motor vehicle. The lack of a significant shift was not surprising since the question dealt only with all past actions rather than only recent ones.

TABLE 29

Have you ever refused to drive or decided not to drive because you thought you had had too much to drink ?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Yes | 126 | (25%) | 63 | (13%) |
| 2) No | 95 | (19%) | 32 | (6%) |
| 3) Not responding | 279 | (56%) | 405 | (81%) |
| | 500 | (100%) | 500 | (100%) |

Again in the first survey, this particular set of responses was contaminated by problems arising in the administration of question 25, which was designed to screen nondrinkers from further drinking/driving inquiries. Since some of those responding to this question in 1971 had never driven after drinking, significance tests across years are meaningless. In 1972, of those people who admitted to driving after drinking, two-thirds had at one time refused to drive because they felt their driving abilities impaired.

TABLE 29a

If the answer to the preceding question was Yes, was the refusal to drive because of: (Select the one most important reason of the three listed)

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Knowledge of laws | 10 | (2%) | 6 | (1%) |
| 2) Fear of arrest | 6 | (1%) | 5 | (1%) |
| 3) Fear of accident | 111 | (22%) | 53 | (11%) |
| 4) Not responding | 373 | (75%) | 436 | (87%) |
| | 500 | (100%) | 500 | (100%) |

For the above topic, no shifts of public attitude were detectable by means of statistical analysis. The majority of those interviewed refused to drive after drinking primarily because of fear of traffic crash involvement. It is surprising to find that knowledge of drunk driving laws and fear of arrest were not primary considerations in the decision. Responses to this question were independent of the following variables: age, sex, education level, occupation, race, residential mobility, and marital status.

Statistical comparisons were not listed because of potential distortionary effects introduced into questions 26 through 29.

TABLE 30a

a. If you drive after drinking too much, what do you think the chances are of your committing a moving traffic violation?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Very high | 156 | (31%) | 186 | (37%) |
| 2) High | 168 | (34%) | 136 | (27%) |
| 3) About even (50 - 50) | 83 | (17%) | 93 | (19%) |
| 4) Low | 33 | (7%) | 29 | (6%) |
| 5) Very low | 18 | (4%) | 32 | (6%) |
| 6) Don't know | 42 | (8%) | 24 | (5%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 5 = 0.40 ; $p < .05$

The distribution of interview replies to the above topic was altered for the ASAP era survey. The shift was significant and positive from the high risk to very high risk category. Those surveyed in 1972 appeared to have a higher expectation of problems with traffic violations after drinking too much.

TABLE 30b

b. If you drive after drinking too much, what are your chances of being stopped by the police?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Very high | 42 | (8%) | 64 | (13%) |
| 2) High | 101 | (20%) | 72 | (14%) |
| 3) About even (50-50) | 166 | (33%) | 168 | (34%) |
| 4) Low | 94 | (19%) | 100 | (20%) |
| 5) Very low | 63 | (13%) | 69 | (14%) |
| 6) Don't know | 34 | (7%) | 27 | (5%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 5 = 9.85 ; $p < .05$

The analysis pointed to a change in public attitude on the subject of being stopped by the police after drinking. In both surveys the groupings of those selecting probabilities were concentrated about the 50-50 risk level; only one-fourth of the respondents would commit themselves to the very low probability risk categories.

By cross section, it was shown in 1971 that the nonwhite interview participants exhibited a tendency to believe that the chances for police enforcement were high. This trend was again supported in 1972 when 42% of the nonwhite selected the high and very high probability groupings; only 26% of the white respondents chose the same categories during the second survey.

TABLE 30c

c. If you drive after drinking too much, what are your chances of being involved in an automobile accident?

| | 1971 | | 1972 | |
|---|---|---|---|---|
| 1) Very high | 109 | (22%) | 145 | (29%) |
| 2) High | 182 | (35%) | 155 | (31%) |
| 3) About even | 101 | (20%) | 115 | (23%) |

| Table 30c (Continued) | 1971 | | 1972 | |
|---|---|---|---|---|
| 4) Low | 42 | (8%) | 33 | (7%) |
| 5) Very low | 24 | (5%) | 25 | (5%) |
| 6) Don't know | 42 | (8%) | 27 | (5%) |
| | 500 | (100%) | 500 | (100%) |

Chi-square for responses 1 - 5 = 9.03 ; not significant

There was no shift in relation to the risk probability expectations of those surveyed. A trade-off was observed whereby a greater number of drivers shifted from the high to very high risk brackets but this shift was not statistically significant.

Reviewing a chain of action effect, it becomes important to relate the above question to question 29a, where the majority of drivers explained that the fear of traffic crashes was the primary consideration for refusing to drive after drinking. About 60% of those interviewed believed that their chances of becoming involved in a traffic crash after drinking too much were high or much higher than even (50-50).

## REFERENCES




1. McLuhan, Marshall, Understanding Media, , McGraw - Hill Book Co., 1964.

2. Rodman, Reed M., "Drinking - Driving Attitudes: A Survey of Fairfax County, 1971", Charlottesville, Virginia: The Virginia Highway Research Council, March 1973.

3. a) U.S. Department of Transportation Publications.
   b) "Crash Facts," Highway Safety Division of Virginia, 1971.
   c) Commonwealth of Virginia, Department of Health, State Medical Examiner's Office.

4. Virginia Traffic Code, Sc 18.1 - 58.

5. Borkenstein, R. F., et al., The Role of the Drinking Driver in Traffic Accidents, Indiana University Press, 1964.

6. Rodman, op. cit., 2

7. Rule, Paul F., "Tables of Statistical Significance of Survey Results," unpublished guideline procedures, Chesapeake, Virginia: The Stoneland Corporation.

8. "Annual Report of the Fairfax Alcohol Safety Action Project, 1972," Highway Safety Division of Virginia., pp. f1 - f91.

9. Smith, Thomas, Jr., "Drinking Driving Patterns At Night: Baseline Roadside Survey of the Fairfax Alcohol Safety Action Project," Charlottesville, Virginia, Virginia Highway Research Council, April 1973, 13 pp.

# APPENDICES

# APPENDIX A

STONELAND RESEARCH
#23-15 - HOUSEHOLD SURVEY
1-2-3-4

5-6-7

INTERVIEWER: DO NOT MARK THIS SHEET. RECORD ALL ANSWERS ON ANSWER SHEET. 8-4 9-1

1. Which one of these do you feel causes the greatest number of automobile accidents? Just read me the number. (Hand respondent card A with following answers.)

10-1 Unsafe highways or streets
2 Failure to enforce laws
3 Poor traffic laws
4 Driving too fast
5 Driving under the influence of alcohol
6 Disregard for traffic regulations by drivers
7 Disregard for traffic regulations by pedestrians
8 Drivers and pedestrians who don't know the traffic regulations
9 Something wrong with cars
0 Drivers who handle a car poorly

2. Would you guess that more fatal accidents are caused by the many social drinkers (people that occasionally drink too much) or by the smaller number of problem drinkers (people who frequently drink a great deal)?

11-1 SOCIAL DRINKERS
2 PROBLEM DRINKERS
OTHER (specify)
4 NO OPINION

3. Out of every 10 traffic deaths, how many would you say are caused by drinking drivers?

12-1 ONE
2 TWO
3 THREE
4 FOUR
5 FIVE
6 SIX
7 SEVEN
8 EIGHT
9 NINE
0 TEN
+ NO OPINION

4. What is the penalty in this state for first offense driving while intoxicated?

13-1 PENALTY STATED CORRECT
2 PENALTY LESS SEVERE
3 PENALTY MORE SEVERE THAN ACTUAL PENALTY

4a. What do you think should happen if a driver is convicted of driving while intoxicated? (may check more than one)

FIRST TIME

14-1 temporary license suspension
15-1 permanent license suspension
16-1 fine
17-1 jail sentence
18-1 require medical treatment

4b. What do you think should happen to a person convicted of driving while intoxicated for the THIRD TIME. (may check more than one)

19-1 temporary license suspension
20-1 permanent license suspension
21-1 fine
22-1 jail sentence
23-1 require medical treatment

4c. What do you think occurs at present upon the first conviction of driving while intoxicated? (may check more than one)

24-1 discretionary jail up to 12 months
25-1 discretionary fine up to $200
26-1 discretionary 12 month revocation
27-1 mandatory 12 months revocation
28-1 permanent license suspension

4d. Indicate which phrase accurately describes your knowledge of the offense of impaired driving?

29-1 I have never heard of it.
2 I have heard of it, but don't know anything about it.
3 I have some knowledge of it.
4 I have general knowledge of it.
5 I am well informed on the subject.

5. What do you think the term Blood Alcohol Concentration or Blood Alcohol Level means?

30-1 RESPONDENTS ANSWER COMPLETELY CORRECT
2 RESPONDENT'S ANSWER CORRECT
3 RESPONDENT'S ANSWER WRONG

6. The Blood Alcohol Concentration is based on a chemical test, such as a breath test, and is used to determine if a person is legally drunk or intoxicated. Which of these do you understand is the legal definition of being drunk in this state? (Hand respondent card B with following answers.)

31-1 ANY TRACE
2 .05%
3 .08%
4 .10%
5 .12%
6 .15%
7 .20%
8 DON'T KNOW

7. How many drinks do you think you would have to have to reach the level where you would be considered legally drunk?

32-1 ONE OR LESS
2 TWO
3 THREE
4 FOUR
5 FIVE
6 SIX
7 SEVEN
8 EIGHT
9 NINE
0 TEN or MORE
✦ DON'T KNOW

8. Here is a list of statements about drinking and becoming intoxicated. Please read each statement and tell me if you think it is true or false. (hand respondent card C with the following statements)

| | True | False | Don't Know |
|---|---|---|---|
| a. A younger person just starting to drink will get drunk faster than an older person on the same amount of liquor. | 33-1 | 2 | 3 |
| b. A person drinking on an empty stomach will get drunk faster on the same number of drinks than a person who has just eaten something. | 34-1 | 2 | 3 |
| c. If a person uses a "mixer", like soda water, with liquor, he can drink more without getting drunk than if he drank the liquor straight. | 35-1 | 2 | 3 |
| d. A small person will get drunk faster than a large person on the same number of drinks. | 36-1 | 2 | 3 |

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| | True | False | Don't Know |
|---|---|---|---|
| e. A person who has had one drink should not be allowed to drive an automobile. | 37-1 | 2 | 3 |
| f. If a person sticks to the same kind of drink, he is less likely to get drunk than if he mixes different kinds of drinks, like beer and whiskey or gin and scotch. | 38-1 | 2 | 3 |
| g. A person who is used to drinking can drink more and not become drunk than a person who drinks only once in a while. | 39-1 | 2 | 3 |
| h. Alcohol is considered a drug. | 40-1 | 2 | 3 |
| i. Alcohol will affect a person faster if he's under medication like a tranquilizer or antidepressant. | 41-1 | 2 | 3 |
| j. Strong black coffee is helpful in sobering a person up before he drives. | 42-1 | 2 | 3 |
| k. Beer is pretty much like a soft drink as far as making a person drunk is concerned. | 43-1 | 2 | 3 |

9. Have you read or heard of a campaign or program that would reduce alcohol-related traffic deaths?

44-1 YES
2 NO (if NO, skip to Question 12)

10. Where did you read or hear about it?

45-1 ANOTHER PERSON
46-2 RADIO
47-3 TV
48-4 MAGAZINE
49-5 NEWSPAPER
50-6 BILLBOARD, ROAD SIGNS
51-7 PAMPHLET, LEAFLET
52-8 POSTERS IN BARS, TAVERNS
53- OTHER (specify)

10a. What did the campaign or program say? PROBE: Anything else? 54-

11. Do you recall what agency or organization is sponsoring the program? 55-

56-1 ASAP (local)
OTHER (specify)
3 CAN'T RECALL

12. How effective do you think each of the following methods would be in reducing the drinking driving problem? Just give me the number on this card. (Hand respondent card D with effectiveness ratings.)

| | | |
|---|---|---|
| a. | Greater police enforcement of drunk driving laws | _____ 57- |
| b. | A large-scale public information and education campaign | _____ 58- |
| c. | Improved treatment services for problem drinkers | _____ 59- |
| d. | More severe penalties for convicted drunk drivers | _____ 60- |
| e. | Having convicted drunk drivers use a pill which causes them to be sick if they drink alcohol | _____ 61- |
| f. | Special alcohol-education courses for convicted drunk drivers | _____ 62- |
| g. | Police using random road checks to find drivers who have been drinking | _____ 63- |
| h. | A device that would prevent a drunk person from starting the car | _____ 64- |

13. About how many miles do you yourself drive in a year?

65-1 DON'T DRIVE (skip to Question 19)
2 LESS THAN 10,000
3 10,000 - 19,999
4 20,000 - 29,999
5 30,000 MILES OR MORE

(QUESTION 14 HAS BEEN DELETED)

15. In a typical week how many days do you drive?

| | | |
|---|---|---|
| 67-7 | EVERY DAY | 1-2 |
| 6 | SIX DAYS | 2-3 |
| 5 | FIVE DAYS | 3-1 |
| 4 | FOUR DAYS | 4-5 |
| 3 | THREE DAYS | 5- |
| 2 | TWO DAYS | 6- |
| 1 | ONE DAY | 7- |
| 0 | NONE IN A TYPICAL WEEK | 8-1 |
| | | 9-2 |

16. How many tickets for driving violations have you had in the last 3 years, not counting parking violations?

10-
(RECORD #)

17. In the past 3 years, how many traffic accidents, no matter how minor, have you been involved in when you were driving a car?

11-
(RECORD #)

18. In the past 3 years, how many times has your driver's license been suspended, for any reason?

12-
(RECORD #)

19. Drinking is an accepted part of business and social activity for many people. Do you ever drink beer, wine, or liquor such as whiskey, gin, or vodka?

13- 1 YES (if yes, skip to Question 22)
2 NO

20. Have you ever drunk beer, wine, or liquor?

14- 1 YES
2 NO (if no, skip to Question 30)

21. How long ago did you last drink beer, wine, or liquor?

15- 1 LESS THAN ONE MONTH
2 1-2 MONTHS
3 3 MONTHS TO 1 YEAR
4 MORE THAN 1 YEAR AGO

22. Which of these do you drink most often — beer, wine, or liquor?

16- 1 BEER
2 WINE
3 LIQUOR

23. At the present time do you consider yourself to be a:

17- 1 VERY LIGHT DRINKER
2 FAIRLY LIGHT DRINKER
3 MODERATE DRINKER
4 FAIRLY HEAVY DRINKER
5 HEAVY DRINKER

24. About how many days during this past week did you drink the number of drinks shown below? (By drink we mean a glass of wine, bottle or can of beer, or a single shot of liquor)? Just read me the number of days of each line. (Hand respondent card E with the following answers).

| | | |
|---|---|---|
| 8 OR MORE DRINKS? | 18-_____ | LINE 1 |
| 5-7 DRINKS? | 19-_____ | LINE 2 |
| 3-4 DRINKS? | 20-_____ | LINE 3 |
| 1-2 DRINKS? | 21-_____ | LINE 4 |
| NO DRINKS? | 22-_____ | LINE 5 |

INTERVIEWER: CHECK THAT DAYS TOTAL 7 DAYS

25. How often do you drive after having anything to drink? Would you say often? Would you say often, occasionally, hardly ever, or never?

23-1 OFTEN
2 OCCASIONALLY (if choice is 1 or 2 go on to following questions)
3 HARDLY EVER
4 NEVER
5 DON'T DRIVE (if choice is 3-5 skip to Question 30)

26. How much is the most you will drink and continue to drive?

24-1 ONE DRINK
2 TWO DRINKS
3 THREE DRINKS
4 FOUR DRINKS
5 FIVE DRINKS
6 SIX DRINKS
7 SEVEN DRINKS
8 EIGHT DRINKS
9 NINE DRINKS
0 TEN OR MORE DRINKS

27. How far do you usually drive after drinking?

25-1 LESS THAN ONE MILE
2 1-5 MILES
3 6-10 MILES
4 11-20 MILES
5 OVER 20 MILES

28. When you've driven after drinking have you ever thought you really shouldn't be on the road?

26-1 Yes
2 No

29. Have you ever refused to drive or decided not to drive because you thought you had had too much to drink?

27-1 Yes
2 No (IF NO, SKIP TO QUESTION 30)

29a. If the answer to Question 29 was YES, was the refusal to drive because of: (Select the <u>one</u> most important reason of the three listed.)

28-1 Knowledge of laws
2 Fear of arrest
3 Fear of accident

29b. IF "YES" ON Q. 29, what other mode of transportation did you use?

29-1 Driven by friend or relative
2 Taxi
3 Bus
4 Walked
Other ( WRITE IN "OTHER ANSWER" ABOVE Q.29b ON ANSWER SHEET)

30. The next few questions are about the chances of certain things happening to you.

a. If you drive after drinking too much, what do you think the chances are of your committing a moving traffic violation?

30-1 VERY HIGH
2 HIGH
3 ABOUT EVEN (50-50)
4 LOW
5 VERY LOW
6 DON'T KNOW

b. If you drive after drinking too much, what are your chances of being stopped by the police?

31-1 VERY HIGH
2 HIGH
3 ABOUT EVEN (50-50)
4 LOW
5 VERY LOW
6 DON'T KNOW

c. If you drive after drinking too much, what are your chances of being involved in an automobile accident?

32-1 VERY HIGH
2 HIGH
3 ABOUT EVEN (50-50)
4 LOW
5 VERY LOW
6 DON'T KNOW

d. If you drive after drinking too much, what are your chances of being involved in a serious or fatal automobile accident?

33- 1 VERY HIGH
2 HIGH
3 ABOUT EVEN (50-50)
4 LOW
5 VERY LOW
6 DON'T KNOW

Hand respondent card F ("Activation" question).

31. Please read me the number opposite any of the things listed that you have done in the last two or three years.

34-1 Presented my views to a public officeholder or legislator
35-2 Written a letter to the editor
36-3 Urged someone out of my family to get out and vote
37-4 Urged someone to get in touch with a public officeholder or legislator
38-5 Made a speech before an organized group
39-6 Been elected an officer of an organization
40-7 Run for public office
41-8 Taken an active part in a political campaign
42-9 Helped on fund raising drives
43-0 Voted in the last two elections
44-+ None

31A. Have you ever taken:

| | | |
|---|---|---|
| a. In class driver education? | 45-1 YES | 2 NO |
| b. Behind the wheel driver education? | 46-1 YES | 2 NO |

THESE NEXT QUESTIONS ARE FOR STATISTICAL PURPOSES ONLY

32. What is the highest grade in school you completed?

68-1 LESS THAN 8TH GRADE
2 8TH GRADE
3 HIGH SCHOOL - INCOMPLETE
4 HIGH SCHOOL COMPLETED
5 COLLEGE - INCOMPLETE
6 COLLEGE COMPLETED
7 GRADUATE WORK

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Hand respondent card G-1

33. Which of these best describes your status at the present time?

69- 1 EMPLOYED FULL TIME
2 EMPLOYED PART TIME
3 UNEMPLOYED
4 HOUSEWIFE
5 STUDENT
6 RETIRED

Hand respondent card G-2

34. Which occupation most nearly describes your present work?

70- 1 PROFESSIONAL, TECHNICAL, MANAGERIAL
2 CLERICAL AND SALES
3 SERVICE OCCUPATION
4 FARMING, FISHERY, FORESTRY
5 PROCESSING OCCUPATION, MACHINE TRADE, BENCH WORK
6 MILITARY
7 STRUCTURE WORK
8 RETIRED
9 HOUSEWIFE
0 STUDENT

Hand respondent card G-3

35. Within which of the following income groups do you fall?

71- 1 0-$5,000
2 $5,000-$10,000
3 $10,000-$15,000
4 $15,000-$20,000
5 $20,000 AND UP

36. Are you married, single, divorced, or widowed?

72- 1 MARRIED
2 SINGLE
3 DIVORCED
4 WIDOWED
OTHER (specify)

37. What is your religious preference?

73- 1 PROTESTANT
2 ROMAN CATHOLIC
3 JEWISH
OTHER (specify)
5 NONE

38. Race (INTERVIEWER: OBSERVE AND RECORD)

74-1 WHITE
2 BLACK
3 ORIENTAL
4 LATIN
5 AMERICAN INDIAN
OTHER (specify)

Hand respondent card H.

39. Which of these comes closest to your weight? Just give the number. (INTERVIEWER: ESTIMATE IF NECESSARY)

75-1 Less Than 100 LBS.
2 100-119 LBS.
3 120-139 LBS.
4 140-159 LBS.
5 160-179 LBS.
6 180-199 LBS.
7 200-219 LBS.
8 220-239 LBS.
9 240 LBS. OR MORE

40. During the past four years, how many times have you moved from one address to another?

76-1 ONE MOVE
2 TWO MOVES
3 THREE MOVES OR MORE
4 NO MOVE - AT SAME ADDRESS DURING PAST FOUR YEARS

41. If any moves in the past four years, how many of these moves were from one county to another?

78-1 ONE
2 TWO
3 THREE OR MORE
4 NONE
5 DON'T KNOW

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42. In what 10-year age group do you fall?

79-1 UNDER 20
2 20-29
3 30-39
4 40-49
5 50-59
6 60 OR OVER

43. Sex (INTERVIEWER: OBSERVE AND RECORD)

80-1 MALE
2 FEMALE

44. How often do you dine out, other than routine work or school lunches?

47-1 At least once per week
2 Every two to four weeks
3 Every month or so
4 Seldom or never

45. How often do you entertain small groups of friends at home?

48-1 Often
2 Seldom or never

46. Do you belong to any of the following types of organizations?

| | YES: | NO: |
|---|---|---|
| Golf, country, swim, or similar clubs | 49-1 | 2 |
| Lodges or fraternal organizations | 50-1 | 2 |
| Civic clubs (Lions, Rotary, etc.) | 51-1 | 2 |

47. How many cars are owned in your household?

52-1 None
2 One
3 Two
4 Three or more

48. Which of the following do you own?

53-1 Boat
54-2 Airplane
55-3 Camper
56-4 Vacation home

49. How many nights per month, on the average, would you say that you are away from home for purposes other than work -- include social engagements, lodge, civic, and religious activities.

57-1 None
2 One
3 Two
4 Three or Four
5 Five or six
6 Seven or eight
7 Nine or more

50a. Do you ever smoke cigarettes?

58-1 Yes
2 No (If no, skip to Question 51)

50b. IF YES on Question 50a.: How many packs per day?

59-1 Less than one
2 One
3 Two
4 More than two

51. On an average day, how much time do you spend with each of these activities?

| | Less than one hour | 1-2 hours | 3-4 hours | More than four hours |
|---|---|---|---|---|
| Watching television | 60-1 | 2 | 3 | 4 |
| Listening to radio | 61-1 | 2 | 3 | 4 |
| Reading newspapers | 62-1 | 2 | 3 | 4 |

52. How many times have you been to a movie at an indoor or drive-in theater during the past three months?

63-1 None
2 Once
3 2-3 times
4 4-5 times
5 6 or more

BASIC-6000 (2.0) BASICXX 11/06/73

```
1PRINT DATA SHOULD READ  1. TABLE NO.          2. NO. OF ROWS
2PRINT                   3. SUMS OF COLUMN 1.  4. SUM OF COLUMN 2
3PRINT                   5. INDIVIDUAL CELL ENTRY READING COLUMN DOWN
4 READ B, N, 51, 52
5 IF B=0 THEN 999
6 IF B>52THEN 998
7 MAT READ A(1,N), V(1,N)
8PRINT
10 PRINT -CALCULATION OF CHI SQUARE
20 PRINT  TABLE , B
30PRINT
50 PRINT  OBSERVED FREQUENCY
52 MAT PRINT A,V
72 MAT C=ZER(1,N)
73 MAT D=ZER(1,N)
80 Z=0
90 C(1,N-Z)=(V(1,N-Z)+A(1,N-Z))*51+52)
100 Z=Z+1
110 IF Z=N THEN 130
120 GO TO 90
130 Z=0
140 D(1,N-Z)=(V(1,N-Z)+A(1,N-Z))*52/(51+52)
150 Z=Z+1
160 IF Z=N THEN 200
170 GO TO 140
200 PRINT EXPECTED FREQUENCY
210MAT PRINT C,D
220 Z=0
230 53=0
240 53=(A(1,N-Z)-C(1,N-Z))*(A(1,N-Z)-C(1,N-Z))/C(1,N-Z)+53
241Z=Z+1
250 IF N=ZTHEN 270
260 GO TO 240
270 Z=0
28954=0
290 54=(V(1,N-Z)-D(1,N-Z))*(V(1,N-Z)-D(1,N-Z))/D(1,N-Z)+54
300 Z=Z+1
310 IF N=Z THEN 330
320 GO TO 290
330 55=53+54
360 PRINT  CHI SQUARE EQUALS , 55
389PRINT ''
390PRINT ''
391PRINT ''
392PRINT ''
393PRINT ''
394PRINT ''
395PRINT ''
396PRINT''
397PRINT''
398PRINT''
399PRINT''
400 GO TO 4
401 DATA 1,6,486,491,18,19,93,146,137,68,13,7,107,147,142,72
402 DATA 2,4,500,500,216,237,10,34,285,178,5,18
403 DATA 3,9,495,497,16,27,72,80,128,64,41,28,29,19,26,55,66,156,58,38
```

# APPENDIX C

DATA SHOULD READ 1. TABLE NO. 2. NO. OF ROWS
3. SUMS OF COLUMN 1 4. SUM OF COLUMN 2
5. INDIVIDUAL CELL ENTRY READING COLUMN DOWN

-CALCULATION OF CHI SQUARE
TABLE 1

OBSERVED FRENQUENCY

| | | | | |
|---|---|---|---|---|
| 18 | 19 | 93 | 146 | 137 |
| 68 | | | | |
| 13 | 7 | 107 | 147 | 142 |
| 72 | | | | |

EXPECTED FRENQUENCY

| | | | | |
|---|---|---|---|---|
| 15.4207 | 12.9335 | 99.4882 | 145.75 | 138.786 |
| 69.6418 | | | | |
| 15.5793 | 13.0665 | 100.512 | 147.25 | 140.214 |
| 70.3582 | | | | |

CHI SQUARE EQUALS 7.48614

-CALCULATION OF CHI SQUARE
TABLE 2

OBSERVED FRENQUENCY

| | | | |
|---|---|---|---|
| 216 | 237 | 10 | 34 |
| 285 | 178 | 5 | 18 |

EXPECTED FRENQUENCY

| | | | |
|---|---|---|---|
| 250.5 | 207.5 | 7.5 | 26 |
| 250.5 | 207.5 | 7.5 | 26 |

CHI SQUARE EQUALS 24.4807

# APPENDIX D

Tolerances are also involved in the comparison of results from different subgroups of a sample and in the comparison of results between two different samples. A difference, in other words, must be of at least a certain size to be considered statistically significant. Table II is a guide to the sampling tolerances applicable to such comparisons. The question you usually wish to answer is: "Is the difference in percentages great enough to place some confidence in the result?" Using the table, you can be reasonably confident (at least 95 times out of 100) that it is a true difference and not due to chance alone.

Table II

Approximate Sampling Tolerances for Differences Between Two Survey Percentages at or Near These Levels

| Size of Samples Compared | 10% or 90% | 20% or 80% | 30% or 70% | 40% or 60% | 50% |
|---|---|---|---|---|---|
| 1,000 and 1,000 | 4% | 4% | 5% | 5% | 6% |
| 750 | 4% | 5% | 5% | 6% | 6% |
| 500 | 4% | 5% | 6% | 7% | 7% |
| 250 | 5% | 7% | 8% | 8% | 9% |
| 100 | 8% | 10% | 12% | 13% | 13% |
| 50 | 11% | 14% | 15% | 16% | 16% |
| 750 and 750 | 4% | 5% | 6% | 6% | 6% |
| 500 | 4% | 6% | 6% | 7% | 7% |
| 250 | 5% | 7% | 8% | 9% | 9% |
| 100 | 8% | 10% | 12% | 13% | 13% |
| 50 | 11% | 14% | 15% | 16% | 16% |
| 500 and 500 | 5% | 6% | 7% | 8% | 8% |
| 250 | 5% | 8% | 8% | 9% | 9% |
| 100 | 8% | 11% | 13% | 14% | 14% |
| 50 | 11% | 15% | 16% | 19% | 19% |
| 250 and 250 | 7% | 8% | 10% | 11% | 11% |
| 100 | 9% | 12% | 13% | 14% | 14% |
| 50 | 12% | 15% | 16% | 19% | 19% |
| 100 and 100 | 10% | 14% | 16% | 17% | 17% |
| 50 | 14% | 19% | 22% | 23% | 23% |
| 50 and 50 | 15% | 20% | 23% | 24% | 24% |

(95 in 100 Confidence Level)

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