

## FINAL REPORT

HIGHWAY SAFETY ATTITUDES OF VIRGINIANS  
Results of the 1977 Highway Safety Public Opinion Poll

by

Cheryl Lynn  
Research Analyst

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(The opinions, findings, and conclusions expressed in this  
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## ABSTRACT

In October 1977, the Highway Safety Division of Virginia sponsored a statewide public opinion poll conducted by the Virginia Highway and Transportation Research Council. From the first through the twenty-second of October, approximately 1,700 randomly selected Virginia families were called and a member of each household over 16 years old was asked his or her opinion on various highway safety issues. This report presents the findings of the survey on the topics of (1) right turn on red, (2) left turn on red, (3) the 55 mph speed limit, (4) alcohol countermeasures and the minimum legal drinking age, (5) driver licensing, (6) active and passive restraints, (7) periodic motor vehicle inspection, and (8) motorcycle helmet legislation.



## SUMMARY OF FINDINGS

The findings of the 1977 highway safety public opinion poll are as follows:

1. The majority of Virginians polled knew that right turns on red are allowed in Virginia, and over 71% knew all the conditions necessary to make a right turn on red (coming to a complete stop, checking that the way is completely clear). Over 90% approved of general permissive RTOR and 85% had experienced no difficulty in using RTOR. It appears that none of the problems anticipated before passage of RTOR have aroused much public concern.
2. The majority of Virginians did not know that a left turn is permitted at a red light, much less under what conditions this is possible (from a one-way street onto a one-way street, as long as the way is clear). Most of the correct responses came from persons living in large cities in which there are places where this left turning procedure is possible. About 64% of the respondents approved of LTOR, which is fewer than had approved of RTOR.
3. A majority of Virginians (79%) were in favor of the 55 mph speed limit. This agreement may have something to do with the fact that Virginia has the lowest rate of violations of the speed limit in the country. About 67% would approve of a plan to raise speed limits to 60 mph on interstate roads only.
4. Regarding the treatment of drunken drivers, 56% of the respondents felt that an alcohol program like VASAP (Virginia Alcohol Safety Action Program) would benefit a drunken driver more than the traditional penalties of fine, jail, or loss of license, while 32% preferred these traditional sanctions.

The majority of Virginians (51%) felt that the legal drinking age for beer in Virginia should be 18 years, while 30% felt that 21 is more appropriate. About 41% felt that the minimum drinking age for wine should be 18 years, while 39% preferred 21 years. In relation to hard liquor, only 19% of Virginians felt that the drinking age should be 18, while a majority (59%) preferred 21 years.

5. The majority of Virginians (53%) felt that the minimum age for driving should be set at 16 years. About 26% felt that the driving age should be 18 years, and about 9% felt that the minimum age should be 17 years. The vast majority felt that persons under 18 should be required to complete a driver education course before getting a license. It has been proposed by the National Highway Traffic Safety Administration (NHTSA) that all drivers re-take a knowledge test of rules of the road every four years when they renew their licenses. Virginians were about evenly split on this question, with 48% favoring the plan and 51% not in favor.
6. Only 38% of Virginians favored mandatory seat belt legislation (most of the comments on this question involved enforcement and the right of privacy). About 50% agreed with the Secretary of Transportation's decision to require auto manufacturers to equip new cars with airbags, while 38% did not favor this action. However, 62% said that they would buy airbags for their next new car, if they cost less than \$200.
7. The majority of Virginians felt that proper vehicle inspection increases safety on the highway and approved of the current inspection system as a whole. Considerably fewer believed, however, that the inspection itself is efficient in detecting defects (many respondents mentioned specific inspection service stations in answering this question). A majority also preferred both a six-month inspection for new cars (58.3%) and a six-month inspection for all cars (71.6%).
8. In relation to mandatory motorcycle helmet legislation, over 90% of all respondents felt that motorcyclists should be required by law to wear helmets. Respondents were then asked if they would classify themselves as motorcyclists. Of those motorcyclists questioned, 81% were also in favor of the helmet laws.

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# HIGHWAY SAFETY ATTITUDES OF VIRGINIANS

2235

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## INTRODUCTION

It is a widely accepted fact that the field of highway safety has undergone tremendous change since the enactment of the Highway Safety Act of 1966 and the creation of the Highway Safety Division of Virginia in 1968. This change has occurred both in terms of understanding safety problems and in the political climate of the field. The importance of political considerations and, in particular, public opinion has increased as highway safety countermeasures have become increasingly comprehensive. Indeed, the furtherance of safety programs has now become as much an issue in public relations as a subject of research. It is no longer enough to show that a countermeasure saves lives and averts injuries to ensure its continuation. For instance, much sought-after motorcycle helmet legislation has been repealed in several states and is currently threatened in others, even though the benefits from mandatory helmet usage have been demonstrated. It is clear today that in order to survive, a countermeasure must not only "work", but it must also generate favorable public opinion. Thus, in order to defend programs which have been implemented in Virginia and to institute new programs as they are developed, a method for assessing public sentiment toward highway safety must be developed. This report represents a systematic and statistically accurate attempt to measure the highway safety attitudes of Virginians.

## PURPOSE

The purposes of this report are twofold. In terms of the present, it was the objective of this study to assess current public opinion and to make this information available to highway safety personnel and others who are interested in highway safety matters. In terms of the future, it is hoped that results of the poll may be compared with results of subsequent polls to assess changes in attitudes over time which could have an impact on public support of safety programs.

## METHOD

Subject Population

The population from which the sample was drawn included all persons over the age of 16 years residing in Virginia whose households were listed in at least one current Virginia telephone book. Of these persons, a sample of approximately 1,700 were interviewed. Approximately half of the sample were male and the other half female.

Instrumentation

The standard questionnaire developed for use in this study covered such highway safety topics as right turn on red, left turn on red, 55 mph speed limit, alcohol and driving, driver licensing, seat belts and airbags, periodic motor vehicle inspection, and motorcycle helmet legislation. The questionnaire also covered demographic characteristics of the respondents and a measure of their safety/vehicle consciousness (the number of items of safety equipment they could spontaneously name). A copy of this questionnaire appears in Appendix A.

Sampling Plan

In order to draw a sample from the population of households whose telephones were listed in Virginia directories, a comprehensive list of these directories had to be compiled. Directories were solicited and received from the 25 telephone companies in operation in Virginia, which included the 3 large companies — C & P, Centel, and Continental — and 22 smaller, independent companies. Those directories carrying duplicate or non-Virginia listings were discarded, leaving 68 directories containing approximately 2.5 million mutually exclusive Virginia listings. A list of these directories and information concerning their entries appear in Appendix B.

The appropriate sample size for the survey was then determined as shown in Appendix C. Since there are two intended purposes to the survey — to determine the general opinions of Virginians concerning highway safety issues and to detect changes in these opinions from year to year — the sample size was calculated by two methods, with each method corresponding with one of these objectives. The larger of the two calculations was then selected as the appropriate sample size. Also, since an estimate of the standard deviation was not available, the maximum possible standard deviation was used in the calculations. These steps

were taken to ensure the selection of the largest, and thereby most conservative, sample size. It was determined that 1,685 interviews were necessary to estimate accurately the opinions of the population within one-tenth of a point on a four-point scale and to detect a year-to-year difference as small as two-tenths of a point at the 99 percent level of confidence.\*

Households to be sampled were randomly selected from the directories, with business, toll free, and other nonresidential numbers being excluded. The number of interviews to be completed in each area was determined in proportion to its contribution to the total number of telephone listings; i.e., if 10 percent of the Virginia listings appeared in the Metropolitan Richmond telephone book, then 10 percent of the sample would be selected from that directory.

### Interviewer Quality

Prospective interviewers were screened before being hired to determine the extent of their interviewing skills. After being briefed on the purpose and procedures for the survey, the applicant was asked to complete a role playing exercise using a subset of questions from the final questionnaire. The applicant was given time to review this mini-questionnaire and ask questions. Each applicant then practiced the questionnaire with the person conducting the screening and received counseling on his or her technique. Finally, the applicant simulated a telephone interview by calling another staff member and delivering the questionnaire. Each applicant was then rated on interviewing skill and style by both the person conducting the screening and the staff member who was interviewed, using a standard rating sheet. After all the screenings were completed, those persons with the highest scores were given first opportunity to accept jobs (and usually received the most hours of work). This hiring procedure ensured that the most articulate, poised and skillful applicants were hired. In this survey, a total of 16 of the 43 applicants were employed as interviewers.

Those persons selected then received three hours of additional training on interviewing skills, using the full questionnaire. Their interviewing techniques were monitored at random throughout the survey to make sure that survey procedures were being followed.

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\*After distributing the sample among the various localities proportionately, and after rounding up all fractions of persons, the final minimum sample size was 1,730 persons.

### Interview Procedure

Using the standard questionnaire, telephone interviews were conducted between 12 noon and 4 p.m. and between 5 p.m. and 9 p.m., Monday through Saturday, and between 1 p.m. and 8 p.m. on Sunday. Interviewers did not work consecutive shifts and were encouraged not to work more than three consecutive days, since the resulting fatigue tended to reduce both the efficiency and the quality of the interviews.

Since the sample was stratified by sex and age, interviewers received feedback on a daily basis concerning the fulfillment of these quotas. In this way, attempts to fill quotas were dispersed across the entire period rather than occurring during the final stages of the project. Data were coded onto forms for keypunching as shown in Appendix D. The forms were checked after each shift for accuracy.

### LIMITATIONS

The sample used in this study represents the population of all households in Virginia whose telephones were listed in the most current Virginia telephone directories available at the time of the survey. It should be noted that no attempt was made to contact households without telephones or households whose phone numbers were not listed, and thus these two groups are not represented in the following results.

### RESULTS

The results of the public opinion poll fall into eight major categories based on the topic involved. The categories are (1) right turn on red, (2) left turn on red, (3) the 55 mph speed limit, (4) the legal drinking age and alcohol countermeasures, (5) driver licensing, (6) active and passive restraints, (7) periodic motor vehicle inspection, and (8) motorcycle helmet legislation. The overall findings for each of these categories will be presented and target groups for future public information campaigns (those persons negative on safety aspects) will be identified based on general demographic characteristics. It should be remembered that the questions asked on each topic are not meant to be all inclusive, and that each question deals with information specifically needed by highway safety personnel.

### Right Turn on Red

The general permissive rule of right turn on red, under which RTOR is allowed at all intersections as long as no sign prohibiting the maneuver is present, was approved by Virginia's General Assembly in early 1976 and became effective in January 1977. During the period of time just before general permissive RTOR became effective in the state, the Highway Safety Division of Virginia staged a public information campaign to alert drivers to the upcoming rule changes. In order to determine the impact of this campaign on both knowledge of RTOR and on attitudes toward the maneuver the respondents were asked several questions on the subject.

The first question dealt with the respondent's knowledge of RTOR, with responses being judged completely correct, partially correct or incorrect based upon previously assigned criteria.\* As shown in Table 1, over 88% of the respondents could give a partially or completely correct definition of RTOR. Over 41% could give a completely correct definition indicating that they not only knew that a right turn was appropriate at a red light, but also that they knew the conditions under which an RTOR maneuver was allowed; i.e. that a driver must come to a complete stop, check to see that the way is clear and check that no sign prohibiting the maneuver is present. Only 11.5% gave an incorrect response or stated that they did not know the answer. This high level of knowledge attests to the success of the public information efforts in relation to RTOR.

Respondents were also asked if they approved of the practice of RTOR, and if they had experienced any difficulties in making RTOR maneuvers. Of the respondents, 90.2% approved of RTOR, while 7.3% did not approve. Again, this strong positive reaction to RTOR indicates the success in the public eye of both the legislation itself and of campaigns promoting it. Only 14.8% of the respondents had had some sort of difficulty in making RTOR maneuvers, with most of these difficulties having involved being delayed behind a vehicle which could have made an RTOR maneuver but did not (see Table 1).

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\*"Completely correct" meant that the respondent not only knew that the drivers can turn right at a red light, but also that the driver must make a complete stop, check that the way is clear, and check that there is no sign prohibiting RTOR. "Partially correct" meant that the respondent knew only that a right turn on red is allowed.

TABLE 1  
Results of Questions Dealing With  
RIGHT TURN ON RED

| Response  | Frequency (%) |
|---|---------------|
| Definition of "Right Turn on Red"               |               |
| Completely correct                              | 41.4          |
| Partially correct                               | 47.1          |
| Incorrect/don't know                            | 11.5          |
| Approval of current right turn on red practice  |               |
| Yes   | 90.2          |
| No  | 7.3           |
| No answer                                       | 2.5           |
| Experienced difficulties with right turn on red |               |
| No  | 85.2          |
| Yes   |               |
| Too many prohibitive signs                      | 2.2           |
| Stopped cars where RTOR possible                | 4.4           |
| Conflicts with left turning vehicles            | 2.9           |
| Pedestrian problems                             | 1.2           |
| Other   | 3.4           |

#### RTOR Target Groups

In relation to knowledge of RTOR, it was found that older persons who had not taken either behind the wheel or classroom driver education were significantly less likely to know about RTOR than were persons who had taken training. Also, persons with low safety/vehicle consciousness (as measured by the number of items of safety equipment they could spontaneously name) were less likely to be aware of RTOR. In relation to attitude toward the new law, the key factors were how much driving the respondents did and how safety/vehicle conscious they were. Persons

who drove few miles per year were more negative toward RTOR than others, and persons with less safety/vehicle consciousness were also more negative. Also, persons who had experienced difficulties with RTOR were more likely to disapprove of the practice. On the whole, persons who drive a lot (who presumably use RTOR more) and who are aware of their vehicles are much more positive concerning the RTOR maneuver. These drivers who will use the maneuver are the most meaningful target group, and since they already have a high awareness of RTOR, no further public information campaigns should be necessary.

#### Left Turn on Red

To make Virginia's traffic laws more in compliance with the uniform vehicle code, the General Assembly approved left turn on red in 1977, to be effective in July of that year. Although this left less time for the Highway Safety Division to make the public aware of LTOR than was given to the previous RTOR campaign, the Division made an effort to disseminate information on LTOR. Since there were relatively few intersections where LTOR maneuvers were permitted, it was felt that drivers would be more likely to learn about LTOR from campaign materials than from observing LTOR maneuvers. In order to test the impact of the LTOR campaign, several questions in the survey addressed this topic.

As with RTOR, respondents were asked to define left turn on red and to indicate whether they approved of this new driving procedure. Since situations in which left turn on red is permitted are far less frequent than those where RTOR is allowed, and since the law had been in effect only three months at the time of the survey, it was expected that fewer persons would know about LTOR than knew about RTOR. In fact, only 32% of the respondents could give a completely or partially correct definition for LTOR, based upon a prearranged set of criteria,\* and only 19% could give the completely correct response (see Table 2). In spite of this initial lack of knowledge (interviewers were instructed to give the respondent the correct answer before proceeding), 63.9% of the respondents approved of the idea of LTOR, while 25.3% did not approve and 10.8% were undecided.

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\*"Completely correct" meant that the respondent knew not only that a left turn on red is permitted, but knew under what conditions it is permitted — from a one-way street onto a one-way street as long as the way is clear.

TABLE 2  
Results of Questions Dealing With  
LEFT TURN ON RED

| Response                            | Frequency<br>(%) |
|-------------------------------------|------------------|
| Definition of left turn on red      |                  |
| Completely correct                  | 19.0             |
| Partially correct                   | 13.4             |
| Incorrect/don't know                | 67.6             |
| Approval of left turn on red policy |                  |
| Yes                                 | 63.9             |
| No                                  | 25.3             |
| Undecided                           | 10.8             |

#### LTOR Target Groups

Non-drivers and persons who did not drive many miles per year were significantly less knowledgeable about LTOR, as were persons who had never taken classroom drivers education. Also persons living in rural areas where LTOR maneuvers were not appropriate were less likely to know about the practice than persons living in urban areas.

In relation to attitude, older drivers with many years of driving experience were less likely to approve of LTOR than new drivers. This is perhaps a reflection of natural differences in age groups, since personal experience of LTOR was probably involved in extremely few of the responses.

On the surface, the low level of knowledge of LTOR among Virginians would indicate the need for increased public information. However, since the opportunity to use LTOR is rare, additional campaigns may not yield a return commensurate with the costs involved and thus may not be warranted.

55 MPH Speed Limit

The 55 mph speed limit has been a source of some controversy since its reintroduction in 1973. It is generally accepted that the reduction in the speed limit from 70 to 55 mph, in the context of the larger energy crisis, had something to do with the reduction in fatalities experienced in Virginia. For this reason, proponents of the lowered limit have urged that it be maintained as a safety measure and various public information campaigns have been instituted to increase compliance with the law. However, other groups, including some governor's representatives for highway safety, have urged that the speed limit be raised to 60 mph on interstate roads which have been designed for higher speeds. While raising the speed limit would currently result in a state's losing federal aid highway funds, it is possible that the federal mandate of the 55 mph speed limit could one day be rescinded and an increase in speed limit allowed. In relation to this possibility, respondents were asked if they felt that the 55 mph speed limit should be maintained and if they would support the proposed increase to 60 mph on interstate roads only.

A substantial majority of respondents (79.1%) felt that the speed limit should remain at 55 mph. About 20.2% felt that the limit should not be 55 mph (see Table 3). However, 67.5% also stated that they would approve of raising the speed limit to 60 mph on interstate roads only, while 30.9% stated that they would not approve of this change.

TABLE 3

Results of Questions Dealing With the  
55 MPH SPEED LIMIT

| Response   | Frequency (%) |
|--|---------------|
| Approval of retaining the 55 mph speed limit                     |               |
| Approved   | 79.1          |
| Disapproved  | 20.2          |
| Undecided  | 0.7           |
| Approval of raising the limit to 60 mph on interstate roads only |               |
| Approved   | 67.5          |
| Disapproved  | 30.9          |
| Undecided  | 1.6           |

55 MPH Target Groups

In relation to the 55 mph speed limit issue, drivers were significantly less likely than non-drivers to support the lowered speed limit. Young drivers who had not been driving very long (but who drove more miles per year than the norm) and who exhibited higher than usual vehicle consciousness were also negative on maintaining the 55 mph limit. Finally, persons who had taken both types of driver education were less likely to support the 55 mph speed limit than persons who had not, an anomaly which could indicate the need for increased instruction in the impact of higher speeds or the need for a speed/energy unit to be incorporated as part of the course. It would also be possible to design a general interest advertising campaign to reach this group of young drivers on the consequences of increased speeds in relation to traffic accidents.

Drinking Age and Alcohol Countermeasures

In 1975, the General Assembly lowered the legal drinking age for beer in Virginia to 18 years, with the age for wine and liquor being left at 21 years. There is some evidence in Virginia and in other states that lowering the drinking age has had deleterious effects upon accident involvement rates for young people. Since the empirical evidence suggests that the drinking age should be incrementally raised to former levels, items concerning the minimum drinking age were addressed by respondents. Additionally, questions were included concerning a safety program which has been supported by the General Assembly and numerous state agencies in recent years, the local Virginia Alcohol Safety Action Programs (VASAP's). Respondents were asked which approach would benefit a drunken driver more — the traditional sanctions of fine, jail or loss of license, or the treatment approach embodied in the VASAP's.

In relation to the minimum drinking age for beer in Virginia, just over half the respondents felt that 18 years was the appropriate drinking age, with 30% favoring 21 years (see Table 4). About 41.1% of the respondents felt that 18 years was also the appropriate drinking age for wine, while almost as many respondents (38.9%) favored 21 years. The largest percentage of respondents (59.3%) felt that the legal drinking age for liquor should be 21 years, while 18.9% favored 18 years and 10.4% favored some age over 21 years. Thus, public opinion would seem to favor maintaining the legal drinking ages for beer and liquor at 18 and 21 years, respectively, and perhaps lowering the drinking age for wine to 18 years as well. Obviously, since the initial reduction in the drinking age resulted in increased crash rates for young people, this course of action would not be beneficial in terms of highway safety. A public information campaign promoting a proposed increase in the legal

drinking age and pointing out the detrimental effects of lowering drinking requirements should be instituted, if a move to incrementally raise the drinking age is planned for the future.

In relation to the approach preferred for convicted drunken drivers, a slight majority of respondents (55.9%) favored the VASAP treatment approach over the traditional penalties, while 31.9% favored the traditional punishments of fine, jail or loss of license (see Table 4). It should be noted that 12.2% of the respondents were undecided about which approach was more effective. This level of indecision was unusually high for the survey. This group of undecideds should be considered as a target group for VASAP public information.

TABLE 4  
Results of Questions Dealing With  
ALCOHOL AND DRINKING

| Response  | Frequency (%) |      |        |
|---|---------------|------|--------|
| Minimum Drinking Age for. . .                         | Beer          | Wine | Liquor |
| Under 18  | 2.9           | 2.0  | 0.7    |
| 18  | 51.0          | 41.1 | 18.9   |
| 19-20   | 5.0           | 5.2  | 4.6    |
| 21  | 30.3          | 38.9 | 59.3   |
| Over 21   | 5.8           | 7.1  | 10.4   |
| Undecided   | 5.1           | 5.7  | 6.1    |
| Preference for Treatment of Convicted Drunken Drivers | Frequency (%) |      |        |
| Traditional penalites (fine, jail, loss of license)   | 31.9          |      |        |
| Alcohol treatment program                             | 55.9          |      |        |
| Undecided   | 12.2          |      |        |

### Drinking Age and Alcohol Countermeasures Target Groups

In relation to the minimum drinking ages in Virginia, younger drivers with few years of experience were significantly more likely to give an age less than 19 years for the minimum ages for drinking beer, wine and liquor than were older drivers. For persons 16 to 21 years of age, there was a positive correlation between the respondents' ages and their opinion on all three minimum drinking ages.

Interestingly enough, in relation to the treatment of drunken drivers, persons who preferred the traditional sanctions were no different demographically from those preferring the VASAP approach. Persons who were undecided differed from the norm in terms of age, but in no consistent manner. These findings would indicate that future campaigns to promote the VASAP concept should be aimed at the general public.

### Driver Licensing

In recent years, considerable introspection on the part of persons involved in driver licensing has resulted in the reconsideration of old, established programs and innovation in relation to new programs. For instance, the benefits of the standard course of driver education have been reconsidered in a rather unfavorable light, while new programs, such as reexamination of drivers on knowledge of the rules of the road, have been proposed. For this reason, questions concerning both standard practices and proposed driver licensing programs were included in the survey.

Respondents were first asked what they felt should be the minimum driving age in Virginia (see Table 5). Slightly over half (53.4%) felt that 16 years was the appropriate age to begin driving, while 26.6% felt that the minimum driving age should be set at 18. When asked if persons under 18 years should be required to take driver education before being issued a license, an overwhelming majority (90.2%) replied affirmatively, while 7.2% disagreed with this practice. Finally, respondents were questioned concerning periodic driver reexamination and asked if they felt that all drivers should be required to retake the knowledge portion of the driving test every four years. The answers to this question were split just about in half, with 47.5% of the respondents favoring reexamination and 50.7% not supporting the program.

TABLE 5  
Results of Questions Dealing with  
DRIVER LICENSING

| Response  | Frequency (%) |
|---|---------------|
| Minimum driving age in Virginia                                   |               |
| Under 16  | 3.6           |
| 16  | 53.4          |
| 17  | 8.7           |
| 18  | 26.6          |
| Over 18   | 3.3           |
| Undecided   | 4.4           |
| Approval of mandatory driver education for persons under 18 years |               |
| Approved  | 90.2          |
| Disapproved   | 7.2           |
| Undecided   | 2.6           |
| Reexamination on driver knowledge every 4 years                   |               |
| Approved  | 47.5          |
| Disapproved   | 50.7          |
| Undecided   | 1.9           |

#### Driver Licensing Target Groups

In relation to requiring persons under 18 years of age to take drivers education prior to licensing, persons who were not drivers and drivers who had not taken either type of drivers education in school were least likely to support this program. This is probably the group which is least likely to have been affected by driver education and which could achieve some sort of minimal contact with the program through the dissemination of public information materials. On the question of whether drivers should be reexamined every four years, highly experienced,

older drivers who had not taken driver education were more negative than younger drivers who had taken training, perhaps because of the threatening nature of reexamination to drivers who have not recently been exposed to the testing situation.

### Seat Belts and Air Bags

The topic of active and passive restraint systems is one of the most promoted in highway safety, perhaps because of the enormous life saving potential of these systems. Since 1963, there has been a precedent of governmental intervention in the matter, at least in mandating installation of safety equipment if not its usage, which has not always been met with a favorable response from industry or the public. Most recently, the secretary of transportation has mandated installation of passive restraints (air bags or automatic seat belts) in all new cars by 1983, an act which has been fought by automobile manufacturers. In light of the controversy in this area, respondents were asked if they favored mandatory seat belt usage legislation, if they supported mandatory installation of passive restraints in new cars, and if they would purchase air bags as an option in their next new car provided they cost less than \$200. The responses to the questions reflect the radical differences of opinion throughout the general public and involve more disagreement among respondents than the answers given to any other set of questions.

The least popular action in relation to restraints is the passage of mandatory safety belt usage laws on the state level, with only 37.8% favoring the course of action and 57.6% against it (see Table 6). Respondents were somewhat more favorable in relation to mandated installation of air bags and automatic seat belts. About 49.9% supported the secretary of transportation's action, while 38.1% did not favor it, and 12% were undecided.\* Again, this unusually large group of persons who are undecided could be reached through public information efforts.

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\*It should be noted here that there was a widespread lack of knowledge concerning what air bags and automatic seat belts were, and among those that knew about these devices, there were considerable misgivings about them. It is strongly recommended that public information efforts in relation to air bags and air bag usage be instituted well in advance of the 1983 deadline to ensure an understanding of these devices and their acceptance by the public.

TABLE 6  
Results of Questions Dealing with  
SAFETY BELTS AND AIR BAGS

| Response   | Frequency (%) |
|--|---------------|
| Approval of mandatory seat belt usage legislation  |               |
| Approved   | 37.8          |
| Disapproved  | 57.6          |
| Undecided  | 4.6           |
| Approval of mandatory installation of air bags and automatic safety belts by manufacturers |               |
| Approved   | 49.9          |
| Disapproved  | 38.1          |
| Undecided  | 12.0          |
| Willingness to buy air bags as an option provided they cost less than \$200                |               |
| Willing to buy   | 61.9          |
| Not willing to buy   | 28.8          |
| Undecided  | 9.3           |

In spite of the low level of support for the installation of passive restraints, the majority of respondents stated that they would purchase air bags in their next new car if they cost less than \$200. Thus, there were somewhat more positive sentiments in relation to voluntary purchase of air bags than in relation to their mandated installation.

#### Restraint System Target Groups

In relation to seat belt usage legislation, drivers were more negative than nondrivers. Other than this, no particular demographic group was any less likely to favor seat belt legislation than any other group. This is not true in relation to

mandated installation of passive restraints. Older drivers having considerable experience, both in the number of years they had been driving and in the number of miles per year they drove, were more negative toward this issue than others, as were drivers who had not taken driver education. The group of drivers who were undecided on this issue were likely to be older persons who were not drivers. It is possible that a campaign to dispel myths surrounding airbags and to acquaint the public with their use and benefits could influence both the negative and undecided respondents.

### Periodic Motor Vehicle Inspection

Several changes have been made in the periodic motor vehicle inspection program (PMVI) in the last several years, based in part on other measures of public opinion. In 1976, the General Assembly passed legislation allowing new cars to be inspected only once during their first year of operation rather than twice (previously, a semiannual inspection was required for all vehicles regardless of age). There has been some interest in applying this annual inspection requirement to all vehicles in Virginia, not just to new cars. In order to determine the opinions of Virginians on this issue, five items concerning PMVI were included in the survey questionnaire. Respondents were first asked whether they approved of the current system of inspecting vehicles at six-month intervals. To ascertain public confidence in PMVI, respondents were asked if they felt that having vehicles inspected increased safety on the roadway and if they felt that Virginia's inspection system was efficient in detecting defects. Finally, the respondents were asked whether they preferred a six-month or an annual inspection for new vehicles and for all vehicles.

A substantial majority of the respondents (85.3%) approved of the current PMVI program (see Table 7). Over 93% also felt that inspection itself, if done properly, would result in increased safety. However, only 68.9% of the respondents felt that Virginia's inspection system was effective in detecting defects. A common practice among respondents taking issue with the efficiency of Virginia's program was to offer a personal experience as justification for their feelings. Finally, a large percentage of subjects (58.3%) preferred the current semiannual inspection for new cars over an annual inspection, and a larger percentage (71.6%) preferred semiannual inspection for all cars.

TABLE 7

Results of Questions Dealing with  
PERIODIC MOTOR VEHICLE INSPECTION

| Response   |          | Frequency (%) |
|--|----------|---------------|
| Approve of semiannual inspection                                 |          |               |
| Approve  |          | 85.3          |
| Disapprove   |          | 14.2          |
| Undecided  |          | 0.5           |
| Agreement - Proper inspection increases safety                   |          |               |
| Agree  |          | 93.1          |
| Disagree   |          | 5.5           |
| Undecided  |          | 1.4           |
| Agreement - the current system is efficient in detecting defects |          |               |
| Agree  |          | 68.9          |
| Disagree   |          | 23.4          |
| Undecided  |          | 8.8           |
| Preference of annual vs. semiannual inspection for. . .          | New Cars | All Cars      |
| Annual   | 39.7     | 26.8          |
| Semiannual   | 58.3     | 71.6          |
| Undecided  | 2.0      | 1.6           |

PMVI Target Groups

Drivers in the middle age groups, who put substantial mileage on their vehicles (and who are more vehicle/safety conscious) are likely to be critical of the current inspection system, as are those who have taken driver education. Thus drivers who

are more likely to be exposed to the inspection program are also more likely to be critical. (perhaps some sort of literature distributed at the actual time of inspection, or some sort of procedure involving the motorist would best reach these individuals.) This is essentially the same group who prefer an annual inspection over a semiannual inspection for all cars, although persons preferring annual inspections are significantly less safety/vehicle conscious than the norm. Drivers with high safety consciousness make up the group which is skeptical about the effects of inspection, even if properly performed, and which least believes that inspection is effective in detecting defects. It was also noted that persons who believed that periodic inspection increase roadway safety were significantly more likely to back a semiannual inspection rather than an annual one.

### Motorcycle Helmet Legislation

Until late 1975, the secretary of transportation had the power to sanction states for noncompliance with safety standards set by the National Highway Traffic Safety Administration (NHTSA). However, when the secretary began proceedings against several of the larger states for noncompliance with the mandatory motorcycle helmet law standard, Congress rescinded the secretary's sanctioning power. Since then, 25 states have repealed or reduced their mandatory motorcycle helmet laws, in spite of the fact that the use of helmets while riding has been conclusively proven to be beneficial in terms of reducing fatalities and serious injuries. Since it was thought possible that the General Assembly would consider the repeal of Virginia's mandatory motorcycle helmet use legislation, items on helmet use were included in the survey.

The results were extremely favorable toward the mandatory helmet laws. Overall, 90.6% of the respondents felt that motorcyclists should be required by law to wear their helmets (see Table 8). Respondents were then asked if they themselves were motorcyclists. Of those persons classifying themselves as motorcyclists, 81% favored the mandatory motorcycle helmet laws.

TABLE 8

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Results of Questions Dealing With  
MOTORCYCLE HELMET LEGISLATION

| Response   | Frequency (%) |              |       |
|--|---------------|--------------|-------|
|  | Motorcyclists | Non-Cyclists | Total |
| Approval of the mandatory motorcycle helmet laws |               |              |       |
| Approved   | 81.0          | 91.6         | 90.6  |
| Disapproved                                      | 18.5          | 6.1          | 7.5   |
| Undecided  | 0.5           | 2.0          | 1.9   |

#### Helmet Law Target Groups

Drivers in the middle age groups who drove many miles per year and who had taken in-class drivers education were less likely to favor the motorcycle helmet laws than other drivers. This finding would indicate that perhaps the subject is not being adequately covered in classroom driver education, or at least was not covered when respondents in this age group took the course. Some efforts could be made to reach this middle age group with helmet law information, as well as to reach the small group of motorcyclists who do not approve of the helmet laws.

#### CONCLUSIONS AND RECOMMENDATIONS

In general, attitudes toward highway safety in the Commonwealth are very favorable, due in large part to the excellent mobilization of public opinion for safety by the Highway Safety Division. However, this survey has pointed up several needs in relation to public information efforts as discussed below.

1. In relation to the 55 mph speed limit, a unit on energy conservation and the consequences of increased speeds should be introduced into the driver education curriculum to influence young drivers who are negative toward the lowered speed limit.

2. There is a need for the dissemination of information in relation to the increased crash rates among young people resulting from decreases in drinking age, since Virginians tend to approve of the lowered age for beer as well as a lowered age for wine (from the current 21 years to 18 years). A campaign on drinking age would be especially important if a legislative program is envisioned which would incrementally raise the drinking age sometime in the future. Information on the consequences of the lowered drinking age should also be directed at young drivers, who are operating under increased risk.
3. There is also a need for more attitudinal information on the VASAP approach to drunken driving, since 32% of the respondents still preferred the traditional penalties and 12% were undecided. This information should be directed at the general population, since no one target group is more negative toward VASAP than any other.
4. There is considerable dissension in relation to mandatory safety belt usage and air bag installation. There is also considerable misconception concerning the use of air bags and the safety hazards involved in their use. Some sort of campaign to dispel myths about air bags should be instituted well in advance of the deadline for their installation in all new cars to condition the public to accept them.
5. Persons who are most likely to be exposed to the vehicle inspection procedure (drivers who put high mileage on their vehicles) are most likely to be negative toward the current system and toward the efficiency of inspection. This is also the group which prefers annual inspection over semiannual for all cars. This group of citizens would perhaps be most amenable to information concerning both inspection and the considerable effort at quality control expended by the Department of State Police, if this material were distributed at the actual time of inspection.

## ACKNOWLEDGEMENTS

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APPENDIX A  
 SURVEY QUESTIONNAIRE  
 PUBLIC OPINION SURVEY  
 1977

Good (Morning/Afternoon/Evening). My Name is \_\_\_\_\_.  
 We are conducting a brief traffic survey for the Virginia Highway  
 Research Council. May I speak with some one in your household  
 (MALE, FEMALE AS NEED TO FILL QUOTA) who is 16 years of age or  
 older.

I's like to ask you a few questions concerning your views  
 on highway safety. Your answers will be very valuable and will  
 remain strictly confidential. They will be used for statistical  
 purposes only.

1. First, do you drive?
  - 1..... Yes
  - 2..... No (Skip to question 4)
  - 3..... Refused
  
2. How many years have you been driving?
  - 1..... Less than 1 year
  - 2..... 1-2 years
  - 3..... 3-4 years
  - 4..... 5-9 years
  - 5..... 10-14 years
  - 6..... 15-19 years
  - 7..... Over 19 years
  - 8..... Don't know
  - 9..... Refused.
  
3. How many miles a year do you drive?
  - 1..... Less than 5,000
  - 2..... 5,000 - 9,999
  - 3..... 10,000 - 19,999
  - 4..... 20,000 - 39,999
  - 5..... 40,000 or more
  - 6..... Don't know
  - 7..... Refused
  
4. Do you believe that persons under 18 should be required  
 to complete a course in driver education before being  
 issued a driver's license?
  - 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused

5. What do you believe the minimum driving age should be in Virginia?

- 1..... 14 years or less
- 2..... 15 years
- 3..... 16 years
- 4..... 17 years
- 5..... 18 years
- 6..... 19 years
- 7..... 20 years
- 8..... 21 years
- 9..... Over 21 years
- 10..... Undecided
- 11..... No opinion
- 12..... Refused

6. The General Assembly has established legal drinking ages in Virginia for beer, wine and liquor. What do you believe should be the legal drinking age for beer in Virginia?

- 1..... Under 16 years
- 2..... 16 years
- 3..... 17 years
- 4..... 18 years
- 5..... 19 years
- 6..... 20 years
- 7..... 21 years
- 8..... Over 21 years
- 9..... Undecided
- 10..... No opinion
- 11..... Refused

6B. What do you believe should be the legal drinking age for wine in Virginia?

- 1..... Under 16 years
- 2..... 16 years
- 3..... 17 years
- 4..... 18 years
- 5..... 19 years
- 6..... 20 years
- 7..... 21 years
- 8..... Over 21 years
- 9..... Undecided
- 10..... No opinion
- 11..... Refused

7. What do you believe should be the legal drinking age for liquor, such as bourbon, gin or vodka?

- 1..... Under 16 years
- 2..... 16 years
- 3..... 17 years
- 4..... 18 years
- 5..... 19 years

## Question 7 continued

7.     6..... 20 years  
       7..... 21 years  
       8..... Over 21 years  
       9..... Undecided  
       10..... No opinion  
       11..... Refused
8.     In Virginia, the traditional penalties for drunken driving have been a fine, jail or loss of license. In the last several years, a program has been started which allows convicted drunken drivers to attend an alcohol education or alcohol treatment program instead of undergoing the traditional penalties. Which do you think would benefit a convicted drunken driver more — attending an alcohol treatment program or undergoing the traditional penalties of fine, jail or loss of license?
- 1..... Traditional penalties  
       2..... Alcohol education or treatment program  
       3..... Undecided  
       4..... No opinion  
       5..... Refused
9.     Do you think that all drivers should be required to take a written test of the rules of the road every 4 years when they renew their licenses?
- 1..... Yes  
       2..... No  
       3..... Undecided  
       4..... No opinion  
       5..... Refused
10.    Currently in Virginia, every motor vehicle must be inspected for defects once every six months to make sure that it is in safe mechanical condition. Do you agree with this practice?
- 1..... Yes  
       2..... No  
       3..... Undecided  
       4..... No opinion  
       5..... Refused
11.    Do you feel that having vehicles properly inspected increases safety on the roadway?
- 1..... Yes  
       2..... No  
       3..... Undecided  
       4..... No opinion  
       5..... Refused

12. Do you feel that the inspection system as it currently operates is efficient in detecting defects in motor vehicles?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
13. Legislation has recently been passed to allow new cars to be inspected only once during their first year of operation and twice yearly thereafter. Do you think that new cars should be inspected twice during their first year of operation or only once?
- 1..... Twice
  - 2..... Once
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
14. Would you prefer a six-month or a yearly inspection for all cars?
- 1..... Six months
  - 2..... Yearly
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
15. The 55 mph maximum speed limit has been in effect since 1973. Do you feel the maximum speed limit should remain at 55 mph?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
16. Would you approve of a plan to increase the speed limit to 60 mph on interstate roads only?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
17. Can you tell me what the term "right-turn-on-red" means?
- 1..... Completely correct
  - 2..... Conceptually correct
  - 3..... Incorrect
  - 4..... Don't know
  - 5..... Refused

18. The current "right-turn-on-red" rules allow you to make a right turn after making a complete stop at the red light, as long as there is no sign prohibiting it and as long as the way is clear. Do you approve of "right-turn-on-red" as it is currently practiced?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
19. Have you experienced any difficulty with "right-turn-on-red"?
- 1..... Yes
  - 2..... No (Skip to 21)
  - 3..... Don't know
  - 4..... Refused
20. What sort of problems have you encountered?
- 1..... Too many prohibitive signs
  - 2..... Conflicts with pedestrian traffic
  - 3..... Difficulty as a pedestrian
  - 4..... Stopped cars where RTOR possible
  - 5..... Conflicts with RTOR vehicles (cross-traffic)
  - 6..... Other
  - 7..... No specific problem
  - 8..... Refused
21. What does the term "left-turn-on-red" mean?
- 1..... Completely correct
  - 2..... Conceptually correct
  - 3..... Incorrect
  - 4..... Don't know
  - 5..... Refused
- Probe: Under what conditions can you make a "left-turn-on-red"?
22. You can make a left turn at a red light as long as you are turning from a one-way street onto a one-way street, and as long as the way is completely clear. Do you approve of the policy of "left-turn-on-red"?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused

23. Virginia law currently requires that all motorcyclists wear a helmet while they are riding. Do you agree that motorcyclists should be required to wear helmets?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
- 23B. Would you classify yourself as a motorcyclist?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... Refused
24. In 1963, the federal government began requiring that all new cars be equipped with safety belts. Now, even though almost all cars have belts, few people use them. Do you feel that the Virginia General Assembly should pass a law requiring the use of safety belts?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
25. In light of the fact that safety belts often go unused, scientists have developed airbags and automatic safety belts which work automatically without the driver or passenger having to "buckle up". Do you feel that the government should require auto manufacturers to equip all new cars with airbags or automatic safety belts?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused
26. Would you be willing to have airbags or automatic safety belts installed in your next new car, if they cost less than \$200?
- 1..... Yes
  - 2..... No
  - 3..... Undecided
  - 4..... No opinion
  - 5..... Refused





APPENDIX B

VIRGINIA TELEPHONE DIRECTORIES AND RELATED INFORMATION

| <u>Area Name</u>   | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|--|------------------|-----------------------|------------------------------------|----------------------|
| 1. ABINGDON<br>Damascus<br>Glade Spring<br>Konnarock<br>Meadowview   | 7                | 152                   | 11096                              | 9                    |
| 2. ACCOMACK<br>Chincoteague<br>Eastville<br>Exmore<br>Onancock<br>Parksley<br>Tangier Island<br>Temperance | 111              | 174                   | 19314                              | 16                   |
| 3. ALTAVISTA (in-<br>cluding<br>GRETNA)<br>Hurt  | 18               | 152                   | 2736                               | 3                    |
| 4. AMELIA  | 14               | 154                   | 2156                               | 2                    |
| 5. AMHERST<br>Allwood<br>Appomattox<br>Gladstone<br>Sweet Briar<br>Pamplin                                 | 44               | 152                   | 6688                               | 6                    |
| 6. BEVERDAM-<br>GUMTREE<br>Ashland<br>Bumpass<br>Doswell<br>Hewlett<br>Rockville<br>Ruther Glen            | 12               | 152                   | 1824                               | 2                    |

| Area Name   | No. Pages   | No. Names/Page | Approximate No. of Listings | No. in Sample |
|---|-------------|----------------|-----------------------------|---------------|
| 7. BEDFORD<br>Stone Mountain  | 46          | 174            | 8004                        | 7             |
| 8. BLACKSTONE<br>Burkeville<br>Crewe  | 35          | 152            | 5320                        | 5             |
| 9. BLUEFIELD<br>Branwell<br>Maybeury  | 61.25 (324) | 170            | 10413                       | 9             |
| 10. BOWLING GREEN<br>Callao<br>Colonial Beach<br>Dahlgren<br>Dawn<br>Deltaville<br>Doswell<br>Farnham<br>Gloucester<br>Hague<br>Hanover<br>Hayes<br>Heathesville<br>Irvington<br>Kilmarnock<br>King George<br>King William<br>King & Queen<br>Ladysmith<br>Lively<br>Matthews<br>Montross<br>Old Church<br>Port Royal<br>Reedville<br>Saluda<br>Tappanhannock<br>Warsaw | 161         | 276            | 44436                       | 35            |
| 11. BRISTOL   | 106.5 (270) | 94             | 10008                       | 8             |

| <u>Area Name</u>   | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|--|------------------|-----------------------|------------------------------------|----------------------|
| 12. BROOKNEAL<br>Gladys<br>Rustburg<br>Volens (Nathalie) (Dup. Don't Use)                                    | 29               | 152                   | 4408                               | 4                    |
| 13. BUCHANAN   | 9                | 174                   | 1566                               | 2                    |
| 14. BURKES GARDEN  | 1                | 83                    | 83                                 | 1                    |
| 15. CHANCELLOR<br>Brokenburg<br>Fredericksburg<br>Hartwood<br>Spotsylvania<br>Stafford                       | 27               | 150                   | 4050                               | 4                    |
| 16. CHARLOTTESVILLE<br>Crozet<br>Fork Union<br>Palmyra<br>Schuyler<br>Scottsville<br>Standardsville          | 168              | 273                   | 45864                              | 37                   |
| 17. CHASE CITY<br>Barnesville<br>Boydton<br>Charlotte C. House<br>Clarkesville<br>Drakes Branch<br>Keysville | 60               | 150                   | 9000                               | 8                    |
| 18. CLIFTON FORGE<br>Covington<br>Potts Creek<br>White Sulfer<br>Springs                                     | 43               | 282                   | 12126                              | 10                   |

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| <u>Area Name</u>   | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|--|------------------|-----------------------|------------------------------------|----------------------|
| 19. CLINCHO<br>Clintwood<br>Dante<br>Davenport<br>Haysi<br>St. Paul  | 54               | 174                   | 9396                               | 8                    |
| 20. CLINCHPORT<br>Duffield<br>Dungannon<br>Ft. Blackmore<br>Mickelsville<br>Williams Mill  | 26               | 148                   | 3834                               | 4                    |
| 21. CULPEPER<br>Criglersville<br>Buckner<br>Gordonsville<br>Louisa<br>Madison<br>Mineral<br>Orange<br>Unionville<br>Bumpass<br>Washington (Dup.) | 128              | 174                   | 22272                              | 18                   |
| 22. DANVILLE<br>Bachelors Hall<br>Whitemell<br>Chatham<br>Clover   | 80               | 530                   | 42400                              | 34                   |
| 23. DEERFIELD  | 312              | -                     | 254                                | 1                    |
| 24. EMPORIA<br>Alberta<br>Jarratt<br>Lawrenceville<br>South Brunswick<br>Stony Creek   | 70               | 152                   | 10640                              | 9                    |

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| <u>Area Name</u>   | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|--|------------------|-----------------------|------------------------------------|----------------------|
| 25. FARMVILLE<br>Hampton-Sydney<br>Prospect<br>Arvonnia<br>Buckingham<br>Dillwyn   | 56               | 152                   | 8512                               | 7                    |
| 26. FLOYD<br>Ballard<br>Locust Grove<br>Willis<br>Alum Ridge   | 28               | 152                   | 4256                               | 4                    |
| 27. FRANKLIN<br>Boydkins<br>Capron<br>Courtland<br>Holland   | 60               | 152                   | 9120                               | 8                    |
| 28. FREDERICKSBURG<br>Brokenburg<br>Hartwood<br>Spotsylvania<br>Stafford (Dup. Don't Use)<br>Chancellor (Dup. Don't Use)   | 108              | 174                   | 18792                              | 15                   |
| 29. FRONT ROYAL<br>Amisville<br>Bentonville<br>Chester Gap<br>Flint Hill<br>Huntly<br>Linden<br>Middletown<br>Riverton<br>Sperryville (Dup. Don't Use)<br>Washington | 53               | 152                   | 8056                               | 7                    |

| <u>Area Name</u>            | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|-----------------------------|------------------|-----------------------|------------------------------------|----------------------|
| 30. GALAX                   | 104              | 152                   | 15808                              | 13                   |
| Comers Rock                 |                  |                       |                                    |                      |
| Elk Creek                   |                  |                       |                                    |                      |
| Fries                       |                  |                       |                                    |                      |
| Independence                |                  |                       |                                    |                      |
| Mouth of Wilson             |                  |                       |                                    |                      |
| Hillsville                  |                  |                       |                                    |                      |
| Kana                        |                  |                       |                                    |                      |
| Laurel Fork                 |                  |                       |                                    |                      |
| Sylvatus                    |                  |                       |                                    |                      |
| 31. GATE CITY               | 23               | 152                   | 3496                               | 3                    |
| 32. GILES COUNTY            | 38               | 87                    | 3306                               | 3                    |
| Narrows                     |                  |                       |                                    |                      |
| Pearlburg                   |                  |                       |                                    |                      |
| Newport                     |                  |                       |                                    |                      |
| Pembroke                    |                  |                       |                                    |                      |
| 33. GRETNA                  | 32               | 152                   | 4864                               | 4                    |
| Hurt                        |                  |                       |                                    |                      |
| Renan                       |                  |                       |                                    |                      |
| Sandy Level                 |                  |                       |                                    |                      |
| Altavista (Dup. Don't Use)  |                  |                       |                                    |                      |
| 34. HARRISONBURG            | 99               | 279                   | 27621                              | 22                   |
| Broadway -                  |                  |                       |                                    |                      |
| Timberville                 |                  |                       |                                    |                      |
| Dayton                      |                  |                       |                                    |                      |
| Edom                        |                  |                       |                                    |                      |
| Elkton                      |                  |                       |                                    |                      |
| Grottoes                    |                  |                       |                                    |                      |
| Bridgewater                 |                  |                       |                                    |                      |
| Hinton                      |                  |                       |                                    |                      |
| Keezeltown                  |                  |                       |                                    |                      |
| McGaheysville               |                  |                       |                                    |                      |
| Weyers Cave                 |                  |                       |                                    |                      |
| Bergton                     |                  |                       |                                    |                      |
| New Hope (Dup. Don't Use)   |                  |                       |                                    |                      |
| New Market (Dup. Don't Use) |                  |                       |                                    |                      |
| Mt. Solon (Dup. Don't Use)  |                  |                       |                                    |                      |
| Shenandoah (Dup. Don't Use) |                  |                       |                                    |                      |

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| <u>Area Name</u>   | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|--|------------------|-----------------------|------------------------------------|----------------------|
| 35. KENBRIDGE<br>Victoria  | 24               | 152                   | 3648                               | 3                    |
| 36. LEE COUNTY<br>Jonesville<br>Lee<br>Pennington Gap<br>St. Charles   | 42               | 174                   | 7308                               | 6                    |
| 37. LEXINGTON<br>Brownsburg<br>Buena Vista<br>Glasgow<br>Natural Bridge  | 65               | 152                   | 9880                               | 8                    |
| 38. LOUDON-FAUQUIER<br>Bluemont<br>Calverton<br>Hamilton<br>Hillsboro<br>Leesburg<br>Lovettsville<br>Marshall<br>Middleburg<br>Purcellville<br>Remington<br>The Plains<br>Upperville<br>Warrenton<br>Waterford | 135              | 174                   | 23490                              | 19                   |
| 39. LOVINGSTON<br>Piney River  | 20               | 174                   | 3480                               | 3                    |
| 40. LURAY<br>Shenandoah<br>Rileyville<br>Stanley   | 42               | 152                   | 6384                               | 6                    |

| <u>Area Name</u>  | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|---|------------------|-----------------------|------------------------------------|----------------------|
| 41. LYNCHBURG<br>Big Island   | 108              | 530                   | 57240                              | 46                   |
| 42. MARION<br>Chilhowie<br>Rich Valley<br>Saltville<br>Sugar Grove  | 73               | 152                   | 11096                              | 9                    |
| 43. MARTINSVILLE<br>Ararat<br>Axton<br>Bassett<br>Collinsville<br>Fieldale<br>Meadows of Dan<br>Ridgeway<br>Spencer<br>Stuart<br>Woolwine | 104              | 276                   | 28704                              | 23                   |
| 44. MCDOWELL<br>McClung<br>Mountain Grove<br>Williamsville<br>Monterey<br>Bluegrass<br>Hot Springs<br>Warm Springs<br>Healing Springs     | 20               | 152                   | 3040                               | 3                    |
| 45. MILL GAP  | 1                | 77                    | 77                                 | 1                    |
| 46. MONTGOMERY CO.<br>Blacksburg<br>Christiansburg<br>Radford<br>Shawsville   | 192              | 174                   | 33408                              | 27                   |

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|---|------------------|-----------------------|------------------------------------|----------------------|
| 47. MT. SOLON<br>Moscow<br>Parnassus  | 5                | 148                   | 740                                | 1                    |
| 48. NEW CASTLE<br>Newport<br>Paint Bank<br>Oriskany<br>Pembroke (Dup. Don't Use)  | 12               | 154                   | 1848                               | 2                    |
| 49. NORTHERN VA.  | 727              | 557                   | 404939                             | 319                  |
| 50. NORTON<br>Coeburn<br>Big Stone Gap<br>Appalachia<br>Pound<br>Wise             | 92               | 174                   | 16008                              | 13                   |
| 51. PENINSULA<br>Hampton<br>Newport News<br>Poquoson<br>Seaford<br>Yorktown       | 234              | 530                   | 124020                             | 8                    |
| 52. PETERSBURG<br>Colonial Heights<br>Hopewell<br>Chester<br>Dinwiddie<br>McKenny | 166              | 530                   | 87980                              | 70                   |
| 53. PRINCESS ANNE<br>Pungo<br>Knotts Island<br>Shipps                             | 35               | 273                   | 9555                               | 8                    |

| <u>Area Name</u>             | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|------------------------------|------------------|-----------------------|------------------------------------|----------------------|
| 54. PRINCE WILLIAM<br>COUNTY | 271              | 276                   | 59892                              | 48                   |
| Aldie                        |                  |                       |                                    |                      |
| Arcola                       |                  |                       |                                    |                      |
| Brentsville                  |                  |                       |                                    |                      |
| Bristow                      |                  |                       |                                    |                      |
| Catharpin                    |                  |                       |                                    |                      |
| Dale City                    |                  |                       |                                    |                      |
| Dulles                       |                  |                       |                                    |                      |
| Dumfries                     |                  |                       |                                    |                      |
| Garrisonville                |                  |                       |                                    |                      |
| Haymarket                    |                  |                       |                                    |                      |
| Hoadly                       |                  |                       |                                    |                      |
| Independent Hill             |                  |                       |                                    |                      |
| Lake Jackson                 |                  |                       |                                    |                      |
| Lorton                       |                  |                       |                                    |                      |
| Manassas                     |                  |                       |                                    |                      |
| Nokesville                   |                  |                       |                                    |                      |
| Quantico                     |                  |                       |                                    |                      |
| Stafford                     |                  |                       |                                    |                      |
| Triangle                     |                  |                       |                                    |                      |
| Dumfries                     |                  |                       |                                    |                      |
| Woodbridge                   |                  |                       |                                    |                      |
| Occoquan                     |                  |                       |                                    |                      |
| 55. RAPHINE                  | 8                | 154                   | 1232                               | 1                    |
| 56. GREATER RICHMOND         | 544              | 530                   | 288320                             | 228                  |
| Ashland                      |                  |                       |                                    |                      |
| Bethia                       |                  |                       |                                    |                      |
| Bonair                       |                  |                       |                                    |                      |
| Chester                      |                  |                       |                                    |                      |
| Ellerson                     |                  |                       |                                    |                      |
| Fine Creek Mills             |                  |                       |                                    |                      |
| Glendale                     |                  |                       |                                    |                      |
| Highland Springs             |                  |                       |                                    |                      |
| Manakin                      |                  |                       |                                    |                      |
| Mechanicsville               |                  |                       |                                    |                      |
| Midlothian                   |                  |                       |                                    |                      |
| Moseley                      |                  |                       |                                    |                      |
| Rockville                    |                  |                       |                                    |                      |
| Sabot                        |                  |                       |                                    |                      |

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|-----------------------------|------------------|-----------------------|------------------------------------|----------------------|
| GREATER RICHMOND<br>(Con't) |                  |                       |                                    |                      |
| Sandston                    |                  |                       |                                    |                      |
| Seven Pines                 |                  |                       |                                    |                      |
| Skinquarter                 |                  |                       |                                    |                      |
| Varina                      |                  |                       |                                    |                      |
| Cartersville                |                  |                       |                                    |                      |
| Charles City                |                  |                       |                                    |                      |
| Cumberland                  |                  |                       |                                    |                      |
| Fife                        |                  |                       |                                    |                      |
| Goochland                   |                  |                       |                                    |                      |
| Old Church (Dup. Don't Use) |                  |                       |                                    |                      |
| Powhatan                    |                  |                       |                                    |                      |
| Providence Forge            |                  |                       |                                    |                      |
| Quinton                     |                  |                       |                                    |                      |
| 57. ROANOKE                 | 234              | 530                   | 124020                             | 98                   |
| Salem                       |                  |                       |                                    |                      |
| Vinton                      |                  |                       |                                    |                      |
| Troutville (Dup. Don't Use) |                  |                       |                                    |                      |
| Bent Mt.                    |                  |                       |                                    |                      |
| Montvale                    |                  |                       |                                    |                      |
| 58. ROCKY MOUNT             | 62               | 152                   | 9424                               | 8                    |
| Boones Mill                 |                  |                       |                                    |                      |
| Burnt Chimney               |                  |                       |                                    |                      |
| Ferrum                      |                  |                       |                                    |                      |
| Union Hall                  |                  |                       |                                    |                      |
| Callaway                    |                  |                       |                                    |                      |
| Glade Hill                  |                  |                       |                                    |                      |
| Hardy                       |                  |                       |                                    |                      |
| Moneta                      |                  |                       |                                    |                      |
| Penhook                     |                  |                       |                                    |                      |
| Redwood/Wirtz               |                  |                       |                                    |                      |
| 59. RUSSELL COUNTY          | 35               | 174                   | 6090                               | 5                    |
| Honaker                     |                  |                       |                                    |                      |
| Lebanon                     |                  |                       |                                    |                      |

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| <u>Area Name</u>   | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|--|------------------|-----------------------|------------------------------------|----------------------|
| 60. SHENANDOAH<br>Mt. Jackson<br>New Market<br>Toms Brook<br>Strasburg<br>Woodstock<br>Basye<br>Bergton  | 82               | 152                   | 12008                              | 10                   |
| 61. SMITHVILLE<br>Chuckatuck<br>Claremont<br>Crittenden<br>Dendron<br>Ivor<br>Surry<br>Walefield<br>Windsor  | 67               | 151                   | 10117                              | 8                    |
| 62. SOUTH BOSTON<br>Halifax<br>Alton<br>Cluster Springs<br>Crystal Hill<br>Ingram<br>Lennig<br>Mayo<br>Nathalie (Volens)<br>Turbeville<br>Vernon Hill<br>Virgilina | 38               | 276                   | 10488                              | 9                    |
| 63. South Hill<br>Beechwood<br>Blackridge<br>Broadax<br>LaCrosse   | 38               | 150                   | 5700                               | 5                    |

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| <u>Area Name</u>   | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|--|------------------|-----------------------|------------------------------------|----------------------|
| 64. STAUNTON<br>Craigsville<br>Greenwood<br>Stuarts Draft<br>New Hope<br>(Hotchkiss,<br>Augusta Springs)<br>Bells Valley<br>Fordwick<br>Goshen<br>Millsboro<br>North Mt. | 118              | 174                   | 20532                              | 17                   |
| 65. SUFFOLK<br>Whaleysville<br>Holland (Dup. Don't Use)<br>Chuckatuck (Dup. Don't Use)   | 66               | 174                   | 11484                              | 9                    |
| 66. TROUTVILLE (Dup.<br>Don't Use)<br>Eaglerock<br>Fincastle   | 12               | 300                   | 3600                               | 3                    |
| 67. VA. BEACH<br>Portsmouth<br>Chesapeake<br>Norfolk   | 573              | 530                   | 303690                             | 140                  |
| 68. WAVERLY  | 9                | 174                   | 1566                               | 2                    |
| 69. WAYNESBORO   | 43               | 282                   | 12126                              | 10                   |
| 70. WILLIAMSBURG<br>Toano  | 78               | 174                   | 13572                              | 11                   |
| 71. WINCHESTER   | 129              | 174                   | 22446                              | 18                   |

| <u>Area Name</u> | <u>No. Pages</u> | <u>No. Names/Page</u> | <u>Approximate No. of Listings</u> | <u>No. in Sample</u> |
|------------------|------------------|-----------------------|------------------------------------|----------------------|
| 72. WYTHEVILLE   | 66               | 152                   | 10032                              | 8                    |
| *Austinville-    |                  |                       |                                    |                      |
| Ivanhoe          |                  |                       |                                    |                      |
| Bland            |                  |                       |                                    |                      |
| Ceres            |                  |                       |                                    |                      |
| Cripple Crrek    |                  |                       |                                    |                      |
| Max Meadows      |                  |                       |                                    |                      |
| Rural Retreat    |                  |                       |                                    |                      |
| TOTAL            |                  |                       | <u>2139359</u>                     |                      |

## APPENDIX C

## SAMPLE SIZE DETERMINATION

Alpha Level = .01 (2.58) Beta Level = .80 (1.29)  
 Maximum Standard Deviation (on a 4-point scale) = 1.50  
 Maximum Allowable Sampling Error = .1  
 Minimum Detectable Difference = .2  
 (Two Tailed Test)

---

Sample Size for Estimation Only:

$$N = \left( \frac{Z_{1-\alpha} \cdot Sd}{E} \right)^2$$

$$N = \left( \frac{2.58 (1.50)}{.1} \right)^2$$

$$N = 1498$$

Sample Size for Significance Testing:

$$N = \frac{(Z_{1-\alpha} + Z_{1-\beta})^2 (Sd_1^2 + Sd_2^2)}{(\bar{X}_1 - \bar{X}_2)^2}$$

$$N = \frac{(2.58 + 1.29)^2 (2.25 + 2.25)}{(.2)^2}$$

$$N = 1685$$





INTERVIEW NO.  TELEPHONE NO.  DATE  SEX: M F

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |
|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |

|    |    |    |    |    |    |    |        |   |   |   |   |   |   |   |   |   |   |   |   |
|----|----|----|----|----|----|----|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 24 | 25 | 26 | 27 | 28 | 29 | ← 30 → |   |   |   |   |   |   |   |   |   |   |   |   |
|    |    |    |    |    |    |    | A      | B | C | D | E | F | G | H | I | J | K | L | M |

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|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |
|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |

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|----|----|----|----|----|----|----|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 24 | 25 | 26 | 27 | 28 | 29 | ← 30 → |   |   |   |   |   |   |   |   |   |   |   |   |
|    |    |    |    |    |    |    | A      | B | C | D | E | F | G | H | I | J | K | L | M |

INTERVIEW NO.  TELEPHONE NO.  DATE  SEX: M F

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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |
|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |

|    |    |    |    |    |    |    |        |   |   |   |   |   |   |   |   |   |   |   |   |
|----|----|----|----|----|----|----|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 24 | 25 | 26 | 27 | 28 | 29 | ← 30 → |   |   |   |   |   |   |   |   |   |   |   |   |
|    |    |    |    |    |    |    | A      | B | C | D | E | F | G | H | I | J | K | L | M |