

UM-HSRI-78-40

DESIGN FOR A CHEVETTE SEAT BELT
USAGE/DEFEAT SURVEY

Arthur C. Wolfe
Kenneth L. Campbell
James O'Day

Systems Analysis Division
Highway Safety Research Institute
The University of Michigan
Ann Arbor, Michigan 48109

September 1978

Prepared under contract to the General Motors Proving Grounds,
Milford, Michigan

Technical Report Documentation Page

| | | | | | |
|--|--|--|----------------------------|---|-----------|
| 1. Report No. | | 2. Government Accession No. | | 3. Recipient's Catalog No. | |
| 4. Title and Subtitle Design for a Chevette Seat Belt Usage/Defeat Survey | | | | 5. Report Date Sept. 1978 | |
| | | | | 6. Performing Organization Code | |
| 7. Author(s) A.C. Wolfe, K.L. Campbell, J. O'Day | | | | 8. Performing Organization Report No. UM-HSRI-78-40 | |
| 9. Performing Organization Name and Address Highway Safety Research Institute The University of Michigan Ann Arbor, Michigan 48109 | | | | 10. Work Unit No. | |
| | | | | 11. Contract or Grant No. | |
| 12. Sponsoring Agency Name and Address General Motors Proving Grounds General Motors Corporation Milford, Michigan 48042 | | | | 13. Type of Report and Period Covered Final Report May 15-Sept. 15 1978 | |
| | | | | 14. Sponsoring Agency Code | |
| 15. Supplementary Notes | | | | | |
| 16. Abstract <p>The University of Michigan Highway Safety Research Institute was asked to design a survey plan for determining customer evaluation and usage of the automatic seat belt system introduced as an option on the Chevrolet Chevette in July 1978. Of particular interest is the extent to which purchasers decide to disconnect the ignition interlock system and how much drivers make use of the non-automatic lap belt.</p> <p>After reviewing a number of data collection alternatives, it is recommended that either a multi-wave mail survey or a telephone survey be carried out, supplemented by 100 in-person home interviews at which the interviewer would be able to also physically check the automatic seat belt system. The survey project would last 18 months and would include data collection about six months after purchase for a national sample of 1979 Chevette purchasers. A number of survey alternatives relating to sample size and questionnaire content are presented, and five alternative plans are specifically recommended at different cost levels, ranging from a basic mail survey of 1000 respondents for \$16,000 to a full-scale survey of 3000 owners of Chevetttes both with and without the automatic belt system for \$51,100.</p> | | | | | |
| 17. Key Words Automatic Seat Belts, Passive Restraints, Survey Design, Chevettes | | | 18. Distribution Statement | | |
| 19. Security Classif. (of this report) none | | 20. Security Classif. (of this page) none | | 21. No. of Pages 45 | 22. Price |

TABLE OF CONTENTS

| | |
|---|----|
| Executive Summary | i |
| 1. Introduction | 1 |
| 2. Review of Previous Seat Belt Surveys | 3 |
| 3. Preliminary Design Considerations | 7 |
| 4. Recommended Survey Designs | 18 |
| 5. References | 22 |
| Appendix A: Some Comparisons of Statistical Precision in Relation to Sample Size | |
| B: Survey Design Cost Matrix | |
| C: Sample Respondent Letter and Passive Chevette Questionnaire | |

EXECUTIVE SUMMARY

In July 1978 General Motors introduced an automatic seat belt option on its Chevette cars. This belt system is one possible means of meeting the planned federal standard for passive occupant protection, and naturally there is considerable interest in customer reaction to this new system in terms of who chooses to buy it and why, how many purchasers use the system as intended and how many defeat the ignition interlock system, how many drivers and right front passengers wear the shoulder belt properly, how usage rates compare with drivers of Chevettes purchased with the standard non-automatic belt system, etc.

To obtain answers to these and other questions General Motors contracted with the University of Michigan Highway Safety Research Institute to develop a cost-effective design for a sample survey. The recommended design calls for an 18-month project period beginning in January 1979. During this period monthly samples of Chevette purchasers would be sent mailback questionnaires about six months after their date of purchase. By the use of a reminder postcard and two follow-up mailings it is anticipated that at least an 80% return could be obtained from this rather special population of new Chevette purchasers. The questionnaire (illustrated in Appendix C) would be in two parts, a short part for owners to complete concerning reasons for purchasing the automatic belt system and concerning operational condition of the interlock system, and a longer part for principal drivers concerning current seat belt use and attitudes.

Within this basic design framework HSRI has recommended that General Motors choose among three specific designs representing different levels of effort and cost. The basic design would involve an effective sample of 1000 passive Chevettes (those with an automatic seat belt system) and a minimum level of questionnaire content. It would cost about \$16,000. The intermediate design would involve an effective sample of 1200 passive Chevettes and 800 active Chevettes (those with a standard non-automatic belt system) and an expanded

level of questionnaire content. It would cost about \$29,400. The full-scale design would involve an effective sample of 2000 passive Chevettes and 1000 active Chevettes, and it would have considerably more questionnaire content in the attitudinal area. It would cost about \$43,600. In addition it is recommended as desirable that a subsample of 100 passive Chevette purchasers be interviewed at home in place of 100 mail questionnaire respondents. This would permit the interviewer to physically check the operating condition of the seat belt interlock in order to validate the respondents' verbal reports. This supplementary plan would cost about \$7500, and it is recommended with either the intermediate or the full-scale design. Alternatively, if General Motors finds that it is feasible to use its Chevrolet dealer network to hand out questionnaires and to physically check the seat belt system in passive Chevettes, this might be a more cost-effective means to obtaining a larger number of validation cases.

1. INTRODUCTION

In the summer of 1978 General Motors introduced an optional automatic seat belt system on its Chevette model cars. This system includes automatic shoulder belts for the front seat driver and passenger which are designed to be kept fastened to the door and which automatically enclose an occupant when the door is closed. The system includes an emergency release mechanism at the point at which the belt is fastened to the door, but there is also an ignition interlock which prevents the car from being started if the emergency catch is released. Also included in the seat belt system are additional knee bolsters and standard non-automatic lap belts. It is presumed that this automatic seat belt system will meet the new federal standard regarding passive restraints for front seat occupants which will begin to go into effect with the 1982 model year. The automatic seat belt system is presently priced as a \$50 option, and it will continue to be available on 1979 model Chevettes. By the end of the 1979 model year it is anticipated that about 40,000 Chevettes with the automatic seat belt system will be operating on American roads and highways.

Naturally General Motors is interested in customer reaction to this new belt system. Will purchasers really use this system to protect themselves in crashes? How many will defeat the ignition interlock system, as many car owners did with the mandatory ignition interlock on 1974 cars? How many will wear their shoulder belts improperly, thus reducing their effectiveness in crashes? How many will also buckle their lap belts, a necessary action for maximum effective protection? How are Chevette purchasers and users of the automatic seat belt system different from Chevette purchasers who did not request the automatic seat belt systems? How do actual effective usage rates compare for drivers with the automatic system and for drivers with the standard

non-automatic combination lap and shoulder belt system? Are there any particular comfort and convenience problems with the automatic system which are bothersome to users of the system?

To answer these and other questions General Motors asked the University of Michigan Highway Safety Research Institute to develop a recommended sample design for a survey of Chevette drivers. The remainder of this report consists of a brief review of some past studies concerning seat belt usage; discussion of various possible choices for different aspects of a survey design; and description of three recommended designs at different cost levels. The appendices include tables of statistical precision, a sample questionnaire, and a matrix of alternative costs for four data collection methods, three levels of questionnaire content, and five overall sample sizes.

2. REVIEW OF PREVIOUS SEAT BELT SURVEYS

Of particular interest are studies having to do with usage and defeat of the automatic belt system on the Volkswagen Rabbit. This system is different from the Chevette system in that it does not include a non-automatic lap belt, and it is also different in that it is not a separate option but is part of an optional "deluxe" package which costs considerably more than the automatic belt option on the Chevette. Of greatest relevance among past studies is the 1975 Opinion Research Corporation (ORC) telephone/mail survey of early 1975 Rabbit purchasers which was sponsored by the National Highway Traffic Safety Administration (Westefeld and Phillips, 1976). In this survey 18% of the principal drivers reported that the ignition interlock on the automatic shoulder belt system had been disconnected. Reported correct wearing of the shoulder belt "almost always" was 79% for the passive owners and 50% for the active owners. Recent observation data collected by ORC in 19 cities (Nov. 1977 to April 1978) shows even less actual use--70% for 156 observed passive Rabbits and 35% for 511 active Rabbits (Ziegler, 1978). Also an analysis of the New York State Rabbit accident data for January 1975 through June 1977 showed 55% belt use in passive Rabbits and 30% belt use in active Rabbits involved in accidents (Cassidy and Cohen, 1977).

Other large-scale observation studies include ORC's 19-city survey in 1974 (Westefeld and Phillips, 1975), York University's national Canadian survey in 1975 (Stevenson *et. al.*, 1976), Robertson's 1973-74 survey at 138 sites in five areas (1975), Kirschner's 1976-77 survey in 16 cities (Stowell and Bryant, 1978), Canadian Facts' 1977 national Canadian survey (1978), and Lincorp's 1977 survey at over 200 sites in the Detroit area (Motorists Information, 1978). Of particular interest are the validation pretests mentioned in the York

University and Robertson studies, both of which reported troublesome amounts of observer error--particularly in underreporting of lap belt use (and in the York case of mis-transcribing license numbers).

Since observational studies are not likely to prove feasible in the near future for the Chevette automatic belt system, studies concerned with the validity of respondent's verbal reports concerning seat belt usage are of particular value to this project. Three such studies have been identified, all of which began by observing seat belt usage and then later obtained information on general belt usage from the driver or owner. The Waller and Barry 1967 mail questionnaire in North Carolina (1969) found a substantial overreporting of belt use. In a rather small sample (134) only 46% of the 68 who reported they always used belts on long trips had actually been using them when observed on rural roads. (Of course some of these trips may not have been regarded as "long trips" by the observed drivers). In a 1971 study National Analysts interviewed later at home 250 drivers whose seat belt usage had been observed as they entered gas stations (Marzoni, 1971). This study found a closer relationship between reported and actual use--only 3% of those observed not wearing a belt claimed that they always wear belts. Similarly, in 1974 ORC interviewed a sample of 1974 model owners by telephone and found a distribution of reported general usage fairly similar to an earlier distribution of observed usage (Westefeld and Phillips, 1975). While it seems likely that some overreporting of seat belt use will take place in questionnaires and interviews, it appears that this problem is not as extensive as many people have feared--especially if questions are carefully worded and care is taken to avoid giving the impression of researcher approval of positive responses.

In addition to these validation studies a number of large-scale interview and mail surveys have been reviewed for their methods of asking about seat belt usage and attitudes. These include the 1971 National Analysts in-person survey of 1500 American drivers (Marzoni, 1971); the 1973-74 Helsing and Comstock interview survey of 1009 Maryland drivers (1977); the 1974 Hix and Ziegler mail questionnaire of 1558 Consumers Union members (1974); the 1975 York University telephone survey of 1981 Ontario licensed drivers (Morrison and Greer-Wooton, 1975); the 1976 Yankelevich in-person survey of 1815

American drivers (1976); and the 1977 Lincorp telephone survey of Grand Rapids and Milwaukee area drivers (1977). A number of these surveys have asked about both general belt usage and specific usage on recent occasions and have found close relationships between these different approaches. It should also be mentioned that in May 1978 Hart Research completed for NHTSA a national in-person interview survey of 2016 Americans concerning belt usage and attitudes with particular regard to passive restraints (1978), but the full report from this study is not due for release until the fall of 1978.

3. PRELIMINARY DESIGN CONSIDERATIONS

Among the various aspects of survey design which must be considered in developing a complete survey plan are data collection method, sampling frame and respondent selection, questionnaire content, experimental design, survey timing and schedule, sample size, and survey costs. Each of these aspects will be addressed separately in this section of the report.

3.1 Data Collection Method

Nine data collection methods were identified as potential approaches to collecting data on Chevette seat belt usage. These are listed below with general comments on the advantages and disadvantages of each.

A. Observation of Stopped Cars at Street Corners

This is undoubtedly the most accurate method for obtaining data on seat belt use, but it would be prohibitively expensive because of the small proportion of automatic belt Chevetttes in the total vehicle population.

B. Observation of Chevetttes Coming to Chevrolet Dealers for Service

There are over 6000 Chevrolet dealers in the United States, so even at the end of the 1979 model year few dealers would be expected to average as many as one automatic belt Chevette in service per day. Thus employing a special observer to be on hand to observe seat belt use would be prohibitively expensive, and trying to develop a system by which a regular dealer employee would run outside and observe a Chevette driver before he or she parked would also not seem feasible.

C. Observation at Chevette Owner's Residence

This might be a somewhat more efficient method of deploying observers, and it could provide some useful information on belt use on home-based trips. However, it would also be very expensive (especially on days on which the Chevette was not driven), might be very difficult to carry out unobtrusively without exciting suspicion from local residents, would often not be able to observe lap belt use, and involves potentially troublesome issues of surveillance and invasion of privacy.

D. Driver Questionnaire and Physical Checking of Seat Belt System of Chevettes Coming to Chevrolet Dealers for Service

This is potentially a quite cost-effective approach to obtaining considerable useful information, if arrangements could be made with dealers to have regular employees hand out and collect the driver questionnaires and to complete a special form concerning the operational condition of the seat belt system as part of the regular servicing activity. Presumably the dealers would have to be reimbursed for their data collection activities, but these costs would be expected to be considerably cheaper than hiring special data collection staff. A major drawback with this approach is that there might be substantial bias in the particular sample of Chevettes who return to the dealer for servicing--overrepresenting cars whose owners seek frequent service and not representing cars which obtain their service other than at Chevrolet dealers. HSRI staff lack the expertise to actually evaluate the practicality and costs of this approach, but General Motors staff might want to discuss this method with relevant Chevrolet Division personnel--with the idea that it might at least be a useful supplement to the main study recommended by HSRI.

E. Single Wave Mail Questionnaire to Chevette Owners

This is undoubtedly the cheapest non-dealer approach, but it would be unlikely to obtain more than a 50% response. Thus the findings would probably be too biased to permit the generation of credible statistical estimates concerning seat belt use.

F. Multi-Wave Mail Questionnaire to Chevette Owners

This is also expected to be cheaper than telephone and in-person data collection methods, and using a survey design which includes a postcard reminder and two follow-up mailings should provide an acceptable response rate above 80% with a special population such as new Chevette owners (see Dillman, 1978). While quality of responses to a mail questionnaire may not be quite as good as in an interview situation which permits interviewer probing and clarification in interaction with the respondent, careful questionnaire construction and selection of question wording can do much to ensure high quality responses.

G. Telephone Interview at Chevette Owner's Residence

Telephone interviewing is also relatively cheap, especially for short interviews and if WATS telephone lines are available, and there are also likely to be some advantages to direct interaction

with the respondent. It would also be expected to produce at least an 80% response rate. However, based on ORC's experience in the 1975 survey of Rabbit owners the telephone numbers would be available for only about 70% of a Chevette owners sample, and the remaining 30% would still need to be contacted by mail or possibly in-person.

H. In-Person Interview at Chevette Owner's Residence

This method would be expected to yield the highest quality information from respondents, and at least an 80% response rate could be expected. It would also permit the physical checking of the operational condition of the automatic seat belt system (at least in the majority of situations in which the Chevette was home at the time of the interview). However, sending interviewers to people's homes is a very expensive approach, and it would be particularly expensive in this survey because of the expected dispersion of Chevette owners throughout the United States and the very limited potential for clustering interviews into small geographic areas to increase interviewer efficiency. This method still might be considered with a small subsample of about 100 respondents in a few large cities in order to provide data on the accuracy of respondent reports concerning seat belt system defeat by actual checking of the seat belt system following the interview.

I. In-Person Interview with Drivers and Physical Checking of Seat Belt System of Chevetttes Coming to Chevrolet Dealers for Service

This could also be an attractive approach (like method D) if regular dealer employees could carry out the interview, but it seems that this would be asking dealers for too much. There would also be problems of comparability of data due to the impracticality of training the dealer interviewers for a very infrequent task. On the other hand, hiring special interviewers to be on hand for this infrequent task would be prohibitively expensive. Of course, as mentioned in the discussion of Method D, any approach using dealers also involves an undeterminable bias in the selection of participating vehicles.

In summary only the multi-wave mail questionnaire approach and the telephone interview approach seem capable of obtaining satisfactory data from an acceptably representative national sample of Chevette users, at a reasonable cost. Unfortunately, these approaches rely entirely on respondent verbal report of seat belt system usage and defeat and do not offer any means for validating these reports. Therefore it would seem useful to supplement a mail or telephone survey with a home interview of a subsample of respondents or with a dealer questionnaire to Chevette users coming in for service, so that at least some information on validity of verbal reports concerning system defeat could be obtained.

3.2 Sampling Frame and Respondent Selection

Given the use of a mail or telephone data collection approach, the only reasonable sampling frame would be a list of Chevette purchasers and their purchase date provided by General Motors. This list could then be systematically sampled with whatever sampling fraction is appropriate to generate the desired sample size after deleting commercial and governmental purchasers.

This would provide a national random sample of private Chevette owners and their addresses. However, there remains the question as to the most appropriate person to respond concerning seat belt use in the selected Chevette. The legal owner himself (or herself) may actually not drive the Chevette much at all. Alternative respondent choices include the "principal" driver of the Chevette, all persons who drive the Chevette, a random choice among all persons who drive the Chevette, and the most recent driver of the Chevette. Obtaining data from all drivers with each driver's data weighted in relation to his/her usage of the Chevette would seem the most appropriate means to obtain seat belt use information representative of all Chevette drivers, but this approach would considerably complicate the data collection task. Also effective in representing all Chevette drivers would be to select one random Chevette driver by prescribed selection tables, either building extent of each driver's usage into the selection process or weighting the data obtained from the selected driver in relation to his/her usage. However, such selection procedures are awkward to use on the telephone, and it would be impossible to see that they were applied correctly in a mail questionnaire (which would have to be used with 30% of the sample even in a predominantly telephone survey). Selection of the "most recent" Chevette driver seems quite straightforward, but to provide unbiased data the time of contact would have to be randomized, a severe complication in telephone interviewing and an impossibility in a mail survey. Therefore, the best approach seems to be to choose the "principal" driver as the respondent but to also obtain information on usage percentages for all persons who drive the Chevette. Resulting data on seat belt use could only be generalized to the "principal drivers of

Chevettes", but information on what percentage of the total driving of the Chevette sample was by these principal drivers would also be available. Of course in many cases there probably is just one driver of the Chevette, and thus no respondent selection procedure would be needed.

However, if a respondent selection is to be made in relation to vehicle usage, some definition of usage needs to be provided. Three potential dimensions of usage seem relevant. These are distance in miles, duration in time, and quantity of distinct trips. In most cases the principal driver would be the same individual on each dimension, but for ambiguous situations a choice of the most useful definition has to be made. Since decisions about seat belt usage are usually made just once per trip at the beginning of the trip, it may seem appropriate to define the principal driver as the person who drives the most trips in the Chevette. On the other hand, most rates having to do with highway safety are compiled on a mileage basis, and it seems that the most useful overall estimates of Chevette seat belt usage would be in relation to vehicle miles traveled (VMT). Accordingly, it is recommended that principal driver be defined as the driver who puts the most miles on the Chevette.

Another respondent selection issue involves the driving time frame-- in general or on a specific predesignated day which would be randomly distributed among different respondents. If the latter approach were used, seat belt usage information could be obtained for the specific predesignated day, and these data by different days of the week could be aggregated to provide overall seat belt usage rates known to be representative by time. This approach of sampling by day of the week would seem feasible by telephone interview where calling was planned for the day after the predesignated date. Presumably who drove what trips on the designated day would still be fairly fresh in the answerer's mind, and reasonably accurate information on trip-by-trip seat belt use might be collected (although it is feared that many people would have difficulty jogging their memories sufficiently to provide accurate recall about seat belt use even on "yesterday's trips"). However, even if the telephone approach is used a substantial proportion of respondents will have to be contacted by mail, and considering the vagaries of mail delivery and the fact that no mail is delivered on Sunday it seems impractical to

attempt to use a time frame of randomly selected dates with a mail questionnaire. The added complexity to the sampling frame design seems to be too great to be worth the trouble and cost, and therefore it is recommended that the principal driver "in general" rather than on a particular day be selected as the respondent.

3.3 Questionnaire Content

Clearly the basic data to be collected in this survey concerns usage of the seat belt system--defeat of the interlock system, proper and improper wearing of the shoulder belt, and wearing of the lap belt. Also basic are the two personal items of greatest usefulness in classifying seat belt usage data--sex and age. Beyond these basic items there are many content areas of potential interest--detailed seat belt usage in different contexts, attitudes toward different comfort and convenience aspects of the seat belt system, general attitudes on safe driving and the usefulness of seat belts, and other physical and demographic items of interest such as height, weight, girth, education, occupation, marital status, income, and annual driving mileage. Obviously the more questions included the greater the respondent burden, the lower the likely completed response rate, and the higher the costs of data collection and analysis for a given sample size. On the other hand, hopefully the inclusion of additional questions permits more meaningful analysis and the generation of more useful results which are worth the additional costs. Probably 15 minutes is a maximum desirable length for this type of survey.

The most important content issue concerns how best to ask questions about seat belt usage. The most common approach is to ask general frequency of usage (always, sometimes, etc.) in general or in relation to specific types of trips (by distance, road type, or purpose). General percentage or number out of the last ten trips are two common approaches to obtaining numerical answers which can be more easily aggregated to estimate overall usage rates. Another possible approach is to ask the respondent specifically about belt use on his/her last trip, but unless time of interview or of

questionnaire completion can be controlled in a randomized way this could lead to the reported trips being unrepresentative of all the respondent's trips. One way to circumvent this problem would be to ask the respondent to report usage trip-by-trip for all trips on a given day. This approach would seem to be the best one in terms of obtaining specific rather than general usage information, but it places quite a burden on the respondent's memory to ask him/her to recall all of yesterday's trips and whether a seat belt was worn on each one. It would also be very difficult in a mail survey to ensure that the days reported about really comprised a representative sample of days and therefore of trips made by the sample of respondents.

Therefore, the recommended approach involves asking respondents to try to recall belt usage over their past ten trips. It is hoped that ten trips is a small enough number that the respondent will be able to recall some or all of them specifically, yet is a large enough number that it will be representative of a variety of vehicle usage by the respondent. In addition the recommended approach involves asking general percentage of use in three trip-length categories and whether or not the belt was used on the last trip for three different trip purposes.

3.4 Experimental Design

The major issue here is whether to collect usage data not only from a sample of Chevetttes with the automatic seat belt system (passive Chevetttes) but also from a sample of Chevetttes with the standard non-automatic combination shoulder and lap belt system (active Chevetttes). Such a control group would seem highly desirable for understanding differences among purchasers of the two systems in terms of demographic characteristics and general safety attitudes. It would also be of interest to compare the users and non-users not only within each group but between the two groups. However, there is probably less need for precision in the usage data from the active Chevettte sample than from the passive Chevettte sample, so the sample size of the active sample could be somewhat less than of the passive sample.

3.5 Survey Timing and Schedule

At issue are the questions of how soon after purchase to select and contact respondents and how long to continue the survey. If there were substantial interest in obtaining trend data in defeat and usage of the automatic seat belt system, then it would be logical to carry out the survey during a relatively short period about 9-12 months after the first purchases were made, choosing representative subsamples for each month of purchase. However, if it is considered more important to obtain usage data long enough after purchase that usage should be pretty well stabilized (say 6 months), then a long survey period utilizing new monthly samples to be contacted 6 months after purchase month would seem most logical. It also would seem desirable to sample purchasers over the entire 1979 model year because of possible differences among types of purchasers at different times in the model year. Thus the data collection period would run through February 1980, and the period for analysis and reporting would run some months beyond that. If there were also an interest in some longer term trends in usage, it might be desirable to plan a reinterview study of a subsample of respondents in 1980-81.

3.6 Sample Size

It is a truism in survey research that the larger the sample size the better, because more data cases always means higher precision in the resulting statistical estimates. Unfortunately, however, the relationship between precision of estimates and sample size is not arithmetic but geometric. In a random national sample, such as would be used for this study, a quadrupling of the sample size would be required in order to double the precision of estimates. Choice of sample size always involves a trade-off among various survey design elements such as quantity and quality of data, levels of desired precision in overall estimates and in analyses by subgroups, and costs.

As an aid to estimating levels of precision for different sample sizes four tables have been provided in Appendix A. The first table indicates the expected sampling error at the customary 95% level of confidence for various whole-sample percentages and sample sizes. For example, if in a sample of

1000 owners of passive Chevettes it is found that 20% have disconnected the interlock system, Table A shows that the chances are 95 out of 100 that the true disconnection rate for all passive Chevettes is somewhere between 17.5% and 22.5% (that is, a confidence limit of ± 2.5). If there were 2000 respondents in the sample this confidence limit would be reduced by the square root of two to ± 1.8 , and if there were 4000 respondents it would be halved to ± 1.3 .

The other three tables provide similar information for minimum statistically significant differences in comparisons of variously-proportioned subgroups of the total sample. For example in Table B, if there were 500 passive Chevette owners under age 35 and 500 passive Chevette owners over 35 (1000 in total sample) and the under 35 subgroup had a disconnection rate of 30%, the over 35 subgroup would have to have a disconnection rate above 35.8% or below 24.2% (a difference of 5.8) to be considered significantly different from the under 35 subgroup. Again if the total sample were 2000 this minimum significant difference would be reduced by the square root of two to 4.1, and if the total sample were 4000 it would be halved to 2.9. Similarly Table D shows that if one were comparing disconnection rates for 100 heavy drivers compared to 900 other drivers (total sample of 1000) and the rate was 40% in the heavy drivers, it would have to be above 50.3% or below 39.7% (a difference of 10.3) in the other drivers subgroup to be considered a statistically significant difference.

There is no simple rule for determining an optimum sample size. The precision of survey results will vary both with the relative values of the estimates and with the relative sizes of subgroups being compared, and how much error is tolerable in different survey findings becomes a rather subjective decision in relation to funds available for the survey and the values placed on particular analytical results.

3.7 Survey Costs

The major factors affecting the costs of a particular survey design are the method of data collection, the quantity of data to be collected, and the total sample size. In order to take into account the relative effects of these three variables a cost matrix has been constructed in Appendix B which

utilizes four different data collection methods, three levels of data quantity, and five variations in sample size. Thus there are 60 different cost estimates for the different combinations of these variables. These estimates include costs for a fairly simple and straightforward analysis of the data and presentation of results. Of course a more elaborate analysis would require additional funds.

As indicated in Section 3.1, only a multi-wave mail questionnaire or a telephone interview (with mail questionnaire to those for whom telephone numbers are not available) seem to be feasible data collection methods. However, a home interview with physical checking of the seat belt system is considered desirable for a subsample of passive Chevettes, so the four data collection methods presented in the matrix include the mail method and the telephone method each with and without a subsample of 100 home interviews.

In regard to data quantity three levels of content are presented. Level A would include minimal data on system defeat and belt use plus age, sex, and extent of vehicle use -- Questions 1-8, 14, and 36-37 in the sample questionnaire in Appendix C. Level B would add more detailed information on seat belt usage in different contexts and on demographic data of interest -- Questions 9-13 and 38-44 in the sample questionnaire. Level C would also include two sections on comfort and convenience attitudes toward the belt system and on general traffic safety and seat belt attitudes -- Questions 15-35 in the sample questionnaire.

In regard to sample size the minimum desirable design would be 1000 passive Chevettes. Four other potential sample sizes are presented in increments of 500. It should be noted that each of these total sample sizes could be composed of varying combinations of passive and active Chevettes without significant effects on survey costs. This is because drawing separate samples from two lists would slightly increase costs, but having somewhat fewer questions relevant to active Chevette drivers would slightly reduce costs. For example, a total sample of 2000 might be composed entirely of passive Chevettes, or it might contain 1500 passive and 500 active Chevettes, or 1200 passive and 800 active Chevettes, or 1000 passive and 1000 active Chevettes.

It will be noted in the cost matrix that the telephone and mail methods are very close in estimated costs for Content Level A. This is because telephone and interviewer costs increase directly with length of interview in the telephone method, while postage and clerical costs of mailing change very little with length of questionnaire up to 12 pages. Thus the mail method appears to be increasingly cost-effective as data quantity increases, but also to be taken into account is the difficult-to-answer question as to how much better telephone data might be in terms of completeness and accuracy.

As can also be seen in the cost matrix, costs per case tend to decrease with increased sample size due to certain fairly fixed planning, supervision, and analysis costs which would apply at all sample sizes.

4. RECOMMENDED SURVEY DESIGN

Based on the various considerations discussed in Section 3, HSRI staff have developed three recommended survey designs at different cost levels -- a basic design, an intermediate design, and a full-scale design. The common features of these three designs are presented below, followed by descriptions of the features specific to each design.

4.1 Common Design Features

It is recommended that the survey use a multi-wave mail data collection method involving a postcard reminder one week after the first mailing and two complete follow-up mailings to nonrespondents about three and six weeks after the first mailing (the second by certified mail). The questionnaire would be printed in a form small enough to permit mailing first class at the one-ounce rate.

The sample would be selected from General Motors lists of purchasers at two different times. In February 1979 a random selection would be made from Chevettes purchased between July 1978 and February 1979. This sample would then be divided into segments by month of purchase, and the July-September purchasers would be initially contacted in March, the October purchasers would be initially contacted in April, the November purchasers in May, etc., so that each group would be initially contacted about six months after date of purchase. In August or September 1979 a second sample would be drawn from the Chevettes purchased since the previous sampling, and again this sample would be divided into monthly groups by date of purchase with each group being initially contacted about six months after date of purchase. Overall an 18-month project period is envisioned -- with planning beginning in January 1979, data collection running from March 1979 through February 1980,

and analysis and report writing continuing through June 1980. Presumably an interim report concerning results of the first half of the data collection could be available about November of 1979. Table 4.1 lists the proposed schedule of survey activities by month.

As illustrated in Appendix C, the questionnaire would be in two parts. The short first part would include reasons for purchase of the seat belt system and information on defeat of the interlock system. It would be completed by the Chevette owner. The rest of the questionnaire on seat belt usage and attitudes and on personal characteristics would be completed by the principal driver of the Chevette defined in terms of total mileage driven.

4.2 A Recommended Basic Design

The minimum desirable sample size for a survey of this sort is considered to be 1250 purchasers of passive Chevetttes. At an 80% response rate this would produce an effective sample of 1000 cases. They would be asked to complete only the basic Level A questionnaire content concerning seat belt use and personal characteristics. The total survey cost is estimated at \$16,000.

4.3 A Recommended Intermediate Design

This design would have an initial sample size of 2500, three fifths from the list of passive Chevette purchasers and two fifths from the list of active Chevette purchasers. At an 80% response rate this would produce an effective sample of 1200 passive Chevette purchasers and 800 active Chevette purchasers. They would be asked to complete a Level B questionnaire with expanded content concerning seat belt use and personal characteristics. It would be desirable to obtain 100 of the passive sample cases by home in-person interview rather than by mail in order to be able to physically check the validity of the reported information on interlock defeat. The total survey cost would be \$29,400 without the home interview subsample and \$36,900 with the home interview subsample.

4.4 A Recommended Full-Scale Design

This design would have an initial sample size of 3750, two thirds from the lists of passive Chevette purchasers and one third from the list of active

Table 4.1
Proposed 18-Month Survey Schedule

| <u>Month</u> | <u>Activity</u> |
|--------------|--|
| January 1979 | Planning |
| February | Planning, July - Feb. Sampling |
| March | July - Sept. Purchases Data Collection |
| April | October Purchases Data Collection |
| May | November Purchases Data Collection |
| June | December Purchases Data Collection |
| July | January 1979 Purchases Data Collection |
| August | Feb. - Aug. Sampling, February Purchases Data Collection |
| September | March Purchases Data Collection |
| October | April Purchases Data Collection |
| November | May Purchases Data Collection, Interim Report |
| December | June Purchases Data Collection |
| January 1980 | July Purchases Data Collection |
| February | August Purchases Data Collection |
| March | Data Processing and Analysis |
| April | Data Processing and Analysis |
| May | Data Processing and Analysis |
| June | Final Report |

Chevette purchasers. At an 80% response rate this would produce an effective sample of 2000 passive Chevette purchasers and 1000 active Chevette purchasers. They would be asked to complete the full Level C questionnaire content including questions on comfort and convenience attitudes and on general traffic safety and seat belt attitudes. Again it would be desirable to include a home interview subsample of 100 respondents. The total survey cost would be \$43,600 without the home interview subsample and \$51,100 with the home interview subsample.

4.5 A Final Note

It is obvious that there are a myriad of possible designs with different costs in relation to sample size, data content, and data collection method. The three (five) designs suggested above should be considered as illustrative of three levels of effort rather than definitive recommendations. Clearly General Motors decision-makers should be free to choose other possible combinations presented in the Appendix B cost matrix or even combinations which are not in the matrix. Even within the intermediate and full-scale designs changes in the passive-active mix might be considered desirable. Also serious consideration should be given to using the telephone interview method rather than the multi-wave mail method if it is felt that the telephone method might considerably enhance the data quality. Also if General Motors finds that it is feasible to use its Chevrolet dealer network to hand out questionnaires and to physically check the reported information on interlock defeat, then this method might be a considerably more cost-effective means of collecting this information on more cases than the subsample of 100 home in-person interviews recommended above.

5. REFERENCES

- Canadian Facts Co. Limited. A Survey to Determine the Level of Use of Seat Belts by Canadian Automobile Drivers, Toronto, February 1978.
- Cassidy, Mark and Steven Cohen. Analysis of New York State Rabbit Tape, Washington: National Highway Traffic Safety Administration, Mathematical Analysis Division, October 25, 1977, Report No. NRD-31.
- Dillman, Don A. Mail and Telephone Surveys: The Total Design Method, New York: Wiley, 1978.
- Hart Research Associates. Public Attitudes Toward Passive Restraint Systems: Summary Report, Washington: National Highway Traffic Safety Administration, August 1978.
- Helsing, K.J. and G.W. Comstock. "What Kinds of People Do Not Use Seat Belts?", American Journal of Public Health 67 (11): 1043-1050 (Nov. 1977).
- Hix, R.L. Jr. and P.N. Ziegler. 1974 Safety Belt Survey: NHTSA/CU Research Project, Falls Church, Va.: McDonald Douglass Auto Company, August 1974.
- Lincorp Research, Inc. "Somebody Needs You" Test Campaign: Final Report: Vol. II, Detailed Findings and Conclusions, Detroit: Motorist Information, Inc., June 1977.
- Marzoni, Petterson Jr. Motivating Factors in the Use of Restraint Systems, Philadelphia: National Analysts, Sept. 1971.
- Morrison, Donald G. and Bryn Greer-Wootten. "Buckle-Up": To Do or Not To Do?; A Study of Reported Seat Belt Usage in Ontario, March 1975, Toronto: York University Institute for Behavioral Research, June 1975.
- Motorists Information, Inc. Michigan Safety Belt Project Report: Program Summary, Detroit, April 1978.
- Robertson, Leon S. "Safety Belt Use in Automobiles with Starter-Interlock and Buzzer-Light Reminder Systems", American Journal of Public Health 65 (12): 1319-1325 (Dec. 1975).
- Stevenson, H.M., P. Peskun, L. Mitson, and J. Tibert. Seat Belt Utilization by Canadian Automobile Drivers: Results from a National Survey, Toronto: York University Institute for Behavioral Research, June 1976.

Stowell, Carol and Joseph Bryant. Safety Belt Usage: Survey of the Traffic Population, Washington: Kirschner Associates, January 1978 (Contract DOT-HS-6-01340).

Waller, Patricia F. and Patricia Z. Barry. Seat Belts: A Comparison of Observed and Reported Use, Chapel Hill, N.C.: Highway Safety Research Center, May 1969.

Westefeld, Albert and Benjamin M. Phillips. Safety Belt Interlock System: Usage Survey, Princeton: Opinion Research Corp., May 1975.

Westefeld, Albert and Benjamin M. Phillips. Passive vs. Active Safety Belt Systems in Volkswagen Rabbits: A Comparison of Owner Use Habits and Attitudes, Princeton: Opinion Research Corp., May 1976.

Yankelovich, Skelley, and White, Inc. Driver Attitudes Toward Restraints for Greater Safety in the Operation of an Automobile: A Summary Report, New York, Sept. 1976.

Ziegler, Peter N. Personal Communication, June 1978.

APPENDIX A

SOME COMPARISONS OF STATISTICAL PRECISION
IN RELATION TO SAMPLE SIZE

Relationship of Sample Size to Statistical Precision of Results for Different Types of Analytical Questions (95% Confidence Level) Assuming Random Sampling of Chevette Users

A. Whole Sample Estimates (E.G. Overall Usage Rate)

| Percentage | Confidence Limits for Sample Sizes | | | | | |
|------------|------------------------------------|--------|--------|--------|--------|--------|
| | N=500 | N=1000 | N=1500 | N=2000 | N=3000 | N=4000 |
| 5% or 95% | ± 2.0 | ± 1.4 | ± 1.1 | ± 1.0 | ± .8 | ± .6 |
| 10% or 90% | ± 2.7 | ± 1.9 | ± 1.5 | ± 1.3 | ± 1.1 | ± .8 |
| 20% or 80% | ± 3.6 | ± 2.5 | ± 2.1 | ± 1.8 | ± 1.6 | ± 1.3 |
| 30% or 70% | ± 4.1 | ± 2.9 | ± 2.4 | ± 2.0 | ± 1.7 | ± 1.4 |
| 40% or 60% | ± 4.4 | ± 3.1 | ± 2.5 | ± 2.2 | ± 1.8 | ± 1.5 |
| 50% | ± 4.5 | ± 3.2 | ± 2.6 | ± 2.4 | ± 1.8 | ± 1.6 |

B. Comparison of Estimates for Two Equal-Sized Subgroups (E.G., Usage Rates for Men and Women, or for Passive Chevette Drivers Vs. Active Chevette Drivers)

| One Subgroup Percentage | Minimum Statistically Significant Difference for Total Sample Size | | | | | |
|-------------------------|--|--------|--------|--------|--------|--------|
| | N=500 | N=1000 | N=1500 | N=2000 | N=3000 | N=4000 |
| 5% or 95% | 3.9 | 2.8 | 2.3 | 1.9 | 1.6 | 1.4 |
| 10% or 90% | 5.4 | 3.8 | 3.1 | 2.7 | 2.2 | 1.9 |
| 20% or 80% | 7.2 | 5.1 | 4.1 | 3.8 | 2.9 | 2.5 |
| 30% or 70% | 8.2 | 5.8 | 4.7 | 4.1 | 3.3 | 2.9 |
| 40% or 60% | 8.7 | 6.2 | 5.1 | 4.4 | 3.6 | 3.1 |
| 50% | 8.9 | 6.3 | 5.2 | 4.5 | 3.7 | 3.2 |

C. Comparison of Estimates for Two Subgroups One of Which is Three Times as Large as the Other (E.G., Usage Rates for Drivers 16-24 Vs. Other Drivers)

| One Subgroup Percentage | Minimum Statistically Significant Difference for Total Sample Size | | | | | |
|----------------------------|---|--------|--------|--------|--------|--------|
| | N=500 | N=1000 | N=1500 | N=2000 | N=3000 | N=4000 |
| 5% or 95% | 4.6 | 3.2 | 2.6 | 2.3 | 1.8 | 1.6 |
| 10% or 90% | 6.4 | 4.4 | 3.5 | 3.1 | 2.5 | 2.2 |
| 20% or 80% | 8.7 | 5.8 | 4.7 | 4.1 | 3.4 | 2.9 |
| 70% or 30% | 10.0 | 6.7 | 5.4 | 4.7 | 3.9 | 3.3 |
| 60% or 40% | 10.4 | 7.2 | 5.8 | 5.1 | 4.1 | 3.6 |
| 50% | 10.8 | 7.3 | 5.9 | 5.2 | 4.2 | 3.7 |

D. Comparison of Estimates for Two Subgroups One of Which is Nine Times as Large as the Other (E.G., Usage Rates for the Largest 10% of Drivers Vs. Other Drivers)

| One Subgroup Percentage | Minimum Statistically Significant Difference for Total Sample Size | | | | | |
|----------------------------|---|--------|--------|--------|--------|--------|
| | N=500 | N=1000 | N=1500 | N=2000 | N=3000 | N=4000 |
| 5% or 95% | 6.5 | 4.6 | 3.8 | 3.3 | 2.6 | 2.3 |
| 10% or 90% | 8.9 | 6.3 | 5.2 | 4.5 | 3.6 | 3.2 |
| 20% or 80% | 11.9 | 8.4 | 6.9 | 6.0 | 4.9 | 4.2 |
| 70% or 30% | 13.7 | 9.7 | 7.9 | 6.8 | 5.6 | 4.8 |
| 60% or 40% | 14.6 | 10.3 | 8.4 | 7.3 | 6.0 | 5.2 |
| 50% | 14.9 | 10.5 | 8.6 | 7.5 | 6.1 | 5.3 |

APPENDIX B
SURVEY DESIGN COST MATRIX

Survey Design Cost Matrix
for Chevette Seat Belt Study

| Data Collection Method | Content Level* | Effective Sample Size (80% of Initial Sample) | | | | |
|-------------------------------------|----------------|--|--------|--------|--------|--------|
| | | 1000 | 1500 | 2000 | 2500 | 3000 |
| Mail | A | 16,000 | 21,400 | 26,700 | 32,100 | 37,500 |
| | B | 17,600 | 23,500 | 29,400 | 35,300 | 41,200 |
| | C | 18,800 | 25,000 | 31,200 | 37,400 | 43,600 |
| Mail and 100 In-Person | A | 23,500 | 28,900 | 34,200 | 39,600 | 45,000 |
| | B | 25,100 | 31,000 | 36,900 | 42,800 | 48,700 |
| | C | 26,300 | 32,500 | 38,700 | 44,900 | 51,100 |
| Telephone/Mail (70%/30%) | A | 16,500 | 22,200 | 27,900 | 33,600 | 39,300 |
| | B | 20,300 | 27,600 | 34,900 | 42,200 | 49,500 |
| | C | 23,800 | 32,500 | 41,200 | 49,900 | 58,600 |
| Telephone/Mail and 100 In-Person | A | 24,000 | 29,700 | 35,400 | 41,100 | 46,800 |
| | B | 27,600 | 34,900 | 42,200 | 49,500 | 56,800 |
| | C | 30,900 | 39,600 | 48,300 | 57,000 | 65,700 |

*A=Basic, Questions 1-8, 14, 36-37
 B=Expanded, Questions 1-14, 36-44
 C=Full, Questions 1-44

APPENDIX C

SAMPLE RESPONDENT LETTER AND
PASSIVE CHEVETTE QUESTIONNAIRE

SURVEY OF CHEVETTE OWNERS AND PRINCIPAL DRIVERS
CONCERNING DIFFERENT SEAT BELT SYSTEMS

A BRIEF QUESTIONNAIRE

(picture of an automatic
belt system here)

(picture of a standard
belt system here)

NOTE: This questionnaire has two parts. Part 1 on Pages 1-2 should be answered by the owner of the vehicle (either owner if it is jointly owned). Part 2 on Pages 3-10 should be answered by the person who drives the Chevette the most miles, whether this person is the owner or not.

Dear Chevette Owner:

There has been a great deal of discussion lately about seat belts and other protective devices in American automobiles. Some safety officials believe that automatic shoulder belts, such as are now an option on the Chevette, should be required in all cars sold in the United States. Others are not certain this is a desirable requirements. An important factor in this discussion is how drivers feel about the various types of seat belts after actually experiencing them in their own cars.

Since some owners of recent-model Chevettas have an automatic shoulder belt system with a separate lap belt, and other owners have a non-automatic combination lap and shoulder belt system, this provides an excellent opportunity to compare how drivers feel about these two systems. That is what this survey is about. You have been selected in a small random sample drawn from owners of both types of Chevette belt systems. While it is not required to reply, it is important to the accuracy of our survey findings that each selected owner complete the enclosed questionnaire and return it in the stamped envelope.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.

Please note that the questionnaire is in two parts--an owner part and a principal driver part. If you are the principal driver as well as the owner, please fill out both parts. If someone else drives the Chevette more miles than you do, please have him or her complete the principal driver section.

I would be most happy to answer any questions you might have about this survey. Please write or call collect (313) ___-__.

Thank you for your assistance.

Sincerely,

Survey Director

/vld
Enclosure

P.S. Our sales records indicate that you purchased a Chevette with an automatic shoulder belt designed to stay attached to the door. If your Chevette did not come with this automatic system, do not complete the enclosed questionnaire but please return this letter with an explanatory note on the back.

PART 1: OWNER'S SECTION

1. When did you take delivery of your new Chevette?

_____ MONTH _____ YEAR

2. What is the approximate current mileage (odometer reading)?

_____ MILES

3. Some recent model Chevettes have the automatic or passive shoulder belt with a separate non-automatic lap belt. Others have a one-piece combination lap and shoulder belt system which requires buckling by hand each time it is used. Why did you decide to purchase the automatic belt system?

4. The automatic shoulder belt system on your Chevette was built with an ignition interlock so that the car would start only when both shoulder belts were attached to the doors. What is your general feeling about the desirability of this ignition interlock feature?


- 1 GOOD IDEA
- 2 BAD IDEA
- 3 DOESN'T MATTER

5. Has your Chevette had any problems of malfunctions or mechanical failures with this ignition interlock system?

- 1 YES
- 2 NO (go to Q. 6 on next page)

5a. What problems have you experienced?

6. Is the ignition interlock system on your Chevette working now, or is it disconnected? (circle number)

- 1 STILL WORKING (go to Q. 7 on next page)
 - 2 DISCONNECTED
 - 3 DON'T KNOW (go to Q. 7 on next page)
- 

(if disconnected)

6a. Who disconnected it? (circle number)

- 1 DEALER
- 2 OTHER GARAGE OR MECHANIC
- 3 SOMEONE ELSE
- 4 DON'T KNOW

6b. How was it disconnected?

6c. Why was it disconnected?

PART 2: PRINCIPAL DRIVER SECTION (to be completed by person who drives the Chevette the most miles)

7. Are you also the Chevette owner?

1 YES

2 NO → Relation to owner _____

Now there are a number of questions concerning your usage of the Chevette seat belts.

8. Please try to think back over the last ten times you drove somewhere in the Chevette. On how many of those trips did you:

a. Wear your lap belt? _____ NUMBER OUT OF TEN

b. Wear your shoulder belt (over your shoulder as shown in the picture on the cover) _____ NUMBER OUT OF TEN (enter "0" if none for a-d)

c. Wear the shoulder belt in some other way? _____ NUMBER OUT OF TEN (if any, please explain how) _____

d. Unfasten your shoulder belt for some of the trip? _____ NUMBER OUT OF TEN

9. In general what percent of your driving miles in your Chevette would you say you wear the automatic shoulder belt:

a. On short trips in and around your community? _____ PERCENT

b. On mid-length trips to nearby communities? _____ PERCENT

c. On longer trips to more distant places? _____ PERCENT

10. What percent of your driving miles in your Chevette would you say you wear the non-automatic lap belt:

a. On short trips in and around your community? _____ PERCENT

b. On mid-length trips to nearby communities? _____ PERCENT

c. On longer trips to more distant places? _____ PERCENT

11. What percent of your total miles of driving in your Chevette would you say is:

a. On short trips in and around your community? _____ PERCENT

b. On mid-length trips to nearby communities? _____ PERCENT

c. On longer trips to more distant places? _____ PERCENT

(should add to 100%)

12. Now we want you to try to remember the last time you drove the Chevette on some specific types of trips.

Did you wear your shoulder and/or lap belts the last time you drove the Chevette on each of these kinds of trips (circle number):

| | <u>SHOULDER BELT</u> | <u>LAP BELT</u> |
|--|---|---|
| a. On a shopping trip? | 1 YES 2 NO 3 NO SUCH TRIP 4 CAN'T RECALL | 1 YES 2 NO 3 NO SUCH TRIP 4 CAN'T RECALL |
| b. On a trip to or from work? | 1 YES 2 NO 3 NO SUCH TRIP 4 CAN'T RECALL | 1 YES 2 NO 3 NO SUCH TRIP 4 CAN'T RECALL |
| c. On a social or recreational trip? (to a friend's, or to a restaurant, or to a movie, etc.). | 1 YES 2 NO 3 NO SUCH TRIP 4 CAN'T RECALL | 1 YES 2 NO 3 NO SUCH TRIP 4 CAN'T RECALL |

13. What percent of your miles of driving in the Chevette is on the following types of trips:

| | |
|--|--------------------------------------|
| a. Trips for shopping and other errands? | (enter "0" if none) _____ PERCENT |
| b. Trips to and from work? | _____ PERCENT |
| c. Trips made on the job as part of your work? | _____ PERCENT |
| d. Other types of trips (social, recreational, church, etc.) | _____ PERCENT |

(should add to 100%)

14. In general, would you say that the safety belts in your Chevette are:

1. QUITE COMFORTABLE TO WEAR
2. FAIRLY COMFORTABLE TO WEAR
3. SOMEWHAT UNCOMFORTABLE TO WEAR
4. VERY UNCOMFORTABLE TO WEAR

We would like your opinion on some specific points related to the comfort and convenience of the Chevette seat belts. For each item please indicate whether it is no problem at all, a minor problem, a bothersome problem, or a serious problem, when you are wearing the shoulder belt. (Circle one number for each item.) Also comments on how something is a problem and/or on what might be done to solve the problem would be appreciated.

15. When reaching for the glove compartment or controls on the dashboard?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

16. The belt resting on or rubbing across your face or neck?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

17. The belt falling off your shoulder?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

18. The belt pushing too hard against your shoulder or chest?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

19. The belt interfering with your opening the door and getting into the car?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

20. The belt interfering with your opening the door and getting out of the car?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

21. The belt rubbing too much against your chest or some other part of your body?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

22. The belt being hard on your clothing--causing wrinkles, dirt, rips, tears, etc.?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

23. The belt causing jewelry or other items to be damaged, broken, or lost?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

24. Have you had any problem using the front passenger seat to carry packages?

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

25. How much of a problem have you found the padded knee panel on the lower portion of the dashboard.

- 1 NO PROBLEM
- 2 MINOR PROBLEM
- 3 BOTHERSOME PROBLEM
- 4 SERIOUS PROBLEM

Comments: _____

Now we would like to know your opinions concerning some statements which are often made about safety matters. For each statement circle the number which indicates whether you agree strongly, agree somewhat, disagree somewhat, or disagree strongly.

26. When drivers have traffic accidents, it is usually their own fault.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

27. By the law of averages, a driver who has just had an accident is less likely to have another accident than are other drivers.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

28. There isn't much anyone can do to avoid having accidents--accidents just happen.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

29. There is about the same chance a driver will be seriously injured or killed whether wearing a seat belt or not.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

30. The national 55 mile per hour speed limit should be kept in force on all roads.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

31. In case of an accident it is generally safer to be held by a seat belt than to be thrown from the car.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 -DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

32. The government should pass a law which requires people to wear their seat belts with fines for those who don't obey.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

33. The government should require the automobile manufacturers to provide automatic seat belts in all new cars.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

34. By careful, defensive driving it is possible to avoid most accidents.

- 1 AGREE STRONGLY
- 2 AGREE SOMEWHAT
- 3 DISAGREE SOMEWHAT
- 4 DISAGREE STRONGLY

35. In your driving would you say that you tend to take more risks, fewer risks, or about the same number of risks as the average driver?

- 1 MORE RISKS THAN AVERAGE DRIVER
- 2 FEWER RISKS THAN AVERAGE DRIVER
- 3 SAME RISKS AS AVERAGE DRIVER

36. For statistical purposes would you please list your age and sex below and the age and sex of any other persons who sometimes drive the Chevette. Also please indicate the percent of miles driven by each driver and the other drivers' relation to you.

| | <u>AGE</u> | <u>SEX</u> | <u>APPROXIMATE % OF MILES DRIVEN</u> | <u>RELATION TO YOU</u> |
|------------------------|------------|------------|--|----------------------------|
| a. Yourself | _____ | _____ | _____ | _____ |
| b. First Other Driver | _____ | _____ | _____ | _____ |
| c. Second Other Driver | _____ | _____ | _____ | _____ |
| d. Third Other Driver | _____ | _____ | _____ | _____ |
| e. Fourth Other Driver | _____ | _____ | _____ | _____ |

37. As you know, a person's height, weight, and other measurements can affect the comfort of a safety belt. Please indicate your:

Height: _____ ft. _____ in.

Weight: _____ lbs.

Waist Size: _____ in.

38. What is the highest level of education you have completed?

- 1 NO FORMAL EDUCATION
- 2 SOME GRADE SCHOOL
- 3 COMPLETED GRADE SCHOOL
- 4 SOME HIGH SCHOOL
- 5 COMPLETED HIGH SCHOOL
- 6 SOME COLLEGE
- 7 COMPLETED A FOUR-YEAR COLLEGE
- 8 SOME GRADUATE WORK
- 9 COMPLETED A GRADUATE DEGREE

38a. What degree(s)? _____

39. What is your present marital status?

- 1 MARRIED
- 2 SEPARATED
- 3 DIVORCED
- 4 WIDOWED
- 5 NEVER MARRIED

40. What is your present job situation?

- 1 WORKING NOW -- OR ON STRIKE OR SICK LEAVE
- 2 TEMPORARILY LAID-OFF
- 3 UNEMPLOYED AND LOOKING FOR WORK
- 4 RETIRED OR DISABLED
- 5 A STUDENT
- 6 A HOUSEWIFE

40a. What kind of work do you do (or did you do when you were last employed)? _____

41. How many licensed drivers are living in your household?

_____ NUMBER

42. How many motor vehicles of the following types are owned or leased by members of your household? (Enter "0" if none).

Automobiles: _____ NUMBER

Vans, pickups, jeeps, or motor homes: _____ NUMBER

Motorcycles or mopeds: _____ NUMBER

43. About how many miles do you yourself drive in all motor vehicles in an average year?

- 1 UNDER 5,000
- 2 5,000 to 10,000
- 3 10,000 to 15,000
- 4 15,000 to 20,000
- 5 20,000 to 25,000
- 6 25,000 to 30,000
- 7 OVER 30,000

44. Which one of the groups below comes closest to your total household income before taxes for last year?

- 1 UNDER \$10,000
- 2 \$10,000-\$20,000
- 3 \$20,000-\$30,000
- 4 OVER \$30,000

(BACK COVER)

Is there anything else you would like to say about the seat belt system or other safety features of your Chevette?

Is there anything else you would like to say about what actions the government should or shouldn't take to provide protection for motor vehicle drivers and passengers?

Your contribution to the success of this survey is greatly appreciated. If you would like a summary of results, please print your name and address on the back of the return envelope (NOT on this questionnaire). We will see that you get this summary when the study is completed.