A SURVEY TO DETERMINE THE INFLUENCE OF THE SEAT BELT CONVINCER ON SEAT BELT USAGE BY THE GENERAL PUBLIC

A Dissertation

by

William Kent Jessee

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(Chairman of Committee)

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ABSTRACT

A Survey to Determine the Influence of the
Seat Belt Convincer on Seat Belt Usage
by the General Public. (December 1975)
William Kent Jessee, A.B. and M.A.
Eastern Kentucky University
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Traffic accidents and the deaths and serious injuries they produce have developed into a major problem plaguing our society. Various activities, both engineering and educational, have attempted to reduce the overall number of accidents. Many of these accident countermeasures have experienced some degree of success. However, the number of highway deaths and injuries is still quite large and serious. The potential of seat belts to reduce deaths and injury in an automobile crash has been well established. Since how to motivate people to use their seat belts is a major concern of traffic safety professionals, this study deals with one approach of "convincing" people of the value of seat belts and thus motivating them to use their seat belts.

The major objectives of this investigation were as follows:

1. To determine whether seat belt convincer riders are motivated to wear their seat belt more often.

2. To determine whether seat belt convincer riders are motivated to use their seat belts more often during certain types of trips.

3. To determine whether seat belt convincer riders experience an attitude change toward seat belts in general.

Three null hypotheses were tested in this study. The findings were as follows:

1. Based on seat belt usage data collected on three questionnaires, this study found that the seat belt convincer was an effective means of increasing general seat belt usage. Reported seat belt usage was measured before and after a demonstration ride on the convincer and subjects were found to use their seat belts more often after having experienced a demonstration ride. Based on this evidence the first null hypothesis was rejected.

2. Based on seat belt usage data regarding certain types of trips, this study found that the seat belt convincer was effective in promoting seat belt use during all types of trips tested. Usage rate was found to increase during some types of trips more than others. Based on this evidence the second null hypothesis was rejected.

3. Using attitude data collected on three questionnaires, this study discovered that the seat belt convincer was effective in modifying attitudes toward seat belts. It was found that generally one's favorable attitude toward the life-saving potential and importance of actual use of

the seat belt was increased after having experienced a demonstration ride on the convincer. Based on this evidence the third null hypothesis was rejected.

It was concluded that in general the seat belt convincer was an effective means of motivating people to use their seat belts. However, it was noted that these conclusions must be restricted to the limitations set forth by the overall design of the study. With this in mind the following recommendations were made:

1. The use of the seat belt convincer as a means to increase seat belt usage should be continued.
2. State and local highway safety officials not using seat belt convincers should examine the feasibility of using such a device in conjunction with ongoing safety education activities.
3. State departments of education should explore the possibility of making available a seat belt convincer for use in driver education programs.
4. State driver licensing officials should consider making available the seat belt convincer to those people seeking a driver's license.
5. Additional research should be conducted to investigate further the effectiveness of the seat belt convincer in increasing seat belt usage. Further research should include, but not be limited to:

the seat belt was increased after having experienced a demonstration ride on the convincer. Based on this evidence the third null hypothesis was rejected.

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4. State driver licensing officials should consider making available the seat belt convincer to those people seeking a driver's license.
5. Additional research should be conducted to investigate further the effectiveness of the seat belt convincer in increasing seat belt usage. Further research should include, but not be limited to:

A. Determining the overall effect produced by the convincer beyond the four-week post-demonstration ride used in this study.

B. Provide actual usage figures rather than reported usage.

DEDICATION

This study is dedicated to my father, William E. Jessee, who has continued to encourage my educational pursuits.

ACKNOWLEDGMENTS

Appreciation is extended to the Missouri Division of Highway Safety and the Missouri State Department of Education for their cooperation and support during the data collection of this study. Without the assistance of these two agencies, it would have been difficult, if not impossible, to have completed the necessary pre-analysis steps of this research.

Special appreciation is expressed to Mr. Charles D. Pardon for his time and assistance in support of this investigation. Mr. Pardon was instrumental in providing essential information and follow-up from the time the research design was formulated on through until final analysis.

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CHAPTER I

INTRODUCTION TO THE STUDY

Traffic accidents and the death and serious injury resulting thereof, are undoubtedly among the nation's largest social problems. In 1973 55,800 Americans lost their lives due to motor vehicle accidents. In that same year, another 2,000,000 victims of automobile accidents were plagued with disabling injuries (National Safety Council, 1974, p. 3). Deaths resulting from motor vehicle accidents far surpass the other principal classes of accidents (National Safety Council, 1974, p. 3).

Motor vehicle	55,800 fatalities
Work	14,200 fatalities
Home	26,000 fatalities
Public	25,000 fatalities

The motor vehicle accident problem has become the concern of various disciplines. Engineers, educators, and law enforcement personnel lead the list of professionals who are actively involved in developing accident countermeasures and methods by which to reduce damage and injury in a vehicle crash. Traffic safety is an open field to new innovations and ideas that might help to cut down on the magnitude of the motor vehicle accident problem.

Note: Citations follow the format and style used in the Journal of Industrial Teacher Education.

Statement of the Problem

Motor vehicle accidents can and should be reduced. Traffic safety should strive to develop accident countermeasures that will help to cut down on the number of accidents. However, traffic safety should also pursue methods of reducing death and personal injury in the event of an accident. Seat belts have been a design reality for years, and their effectiveness in preventing death and serious injury has been well established. The problem is to motivate the public to take advantage of the life-saving potential of safety belts. It is safe to say that only one motorist out of five wears his seat belt (National Highway Traffic Safety Administration, 1972, p. 1). Experimental and statistical evidence reveals that 40 per cent of persons killed in automobile crashes in the United States would have been saved if they had been wearing their safety belt (National Highway Traffic Safety Administration, 1973, p. 1). Proper safety belt utilization is probably the single most effective means of reducing death and injury in automobile accidents. The benefit of safety belts can only be realized when the motoring public becomes actively involved in wearing safety belts.

The basic problem of this research is to evaluate a means to promote safety belt utilization. Numerous efforts have been developed in an attempt to increase the use of safety belts. Traffic safety education and the media (especially radio and television), have delivered safety belt rationales to

approximately 90 per cent of the licensed drivers in this country (National Highway Traffic Safety Administration, 1972, p. 1). Attitude surveys indicate that these messages have been well received and that the majority of the public have positive feelings toward safety belts; yet people still do not wear them (National Highway Traffic Safety Administration, 1972, p. 17). Various warning systems and interlock systems have been developed to persuade vehicle occupants to utilize safety belts with some degree of success (NHTSA DOT HS-800-859). Interlocks and buzzers can modify seat belt usage as long as the owner does not disconnect the system. Even if a system could be designed sophisticated enough to discourage disconnection, and Congress passed legislation requiring such a device on new cars, only a small percentage of the driving public would own a new automobile. Seat belt usage is a problem that is here and that must be dealt with now.

Significance of the Problem

Safety belts have the potential of saving 10,000 to 20,000 lives and reducing approximately 2,000,000 personal injuries every year (National Highway Traffic Safety Administration, 1972, p. 4). Economically, safety belts could reduce the 33 billion dollar wage loss, cut down on the one billion dollar loss in medical expenses, and lessen the billions of dollars spent on insurance administrative costs every year. Safety belts have been shown to be perhaps the most effective of all highway safety programs (Council, 1974, p. 2). The severity of

the problem and the possible advantages of the seat belt have been established, but in order to fully realize these advantages, there must first be effective methods to motivate people into wearing seat belts.

Purpose of the Study

This research will examine the potential effectiveness of the seat belt convincer in promoting seat belt usage. The unit itself is a public information device designed to demonstrate the actual advantage offered by safety belt utilization. This device simulates an eight mile per hour automobile crash. By participating in a demonstration of the convincer, a person can actually experience an eight mile per hour crash with the protection of safety belts. The participant (rider) takes a seat in an actual automobile seat. Once properly belted in, the subject travels down a twelve foot ramp to a stopping point. Upon impact at the stopping point, the speed simulates an eight mile per hour crash. It is the purpose of this investigation to determine if a rider on the convincer will actually be motivated to use safety belts more often than prior to the demonstration.

There are several variations of the seat belt convincer being used by traffic safety professionals in several states. Generally they consist of a ramp set at a specific incline with an automobile seat attached to a sled which is mounted on the ramp. The primary difference between this type of simulation device is the speed of impact which they each

represent. Some units simulate a five mile per hour crash, and others up to twelve miles per hour. The unit used in this project simulated an eight mile per hour crash. This was accomplished by allowing the sled to travel down a twelve foot ten inch ramp at an angle of 14^{o} (see Figure 1).

The major objectives of this investigation are as follows:

1. To determine whether seat belt convincer riders are motivated to wear their seat belts more often.
2. To determine whether seat belt convincer riders are motivated to use their seat belts more during certain types of trips.
3. To determine whether seat belt convincer riders experience an attitude change toward seat belts in general.

Hypotheses

The major research hypothesis of this investigation is that participants who take a demonstration on the seat belt convincer will be influenced to wear their seat belts. This hypothesis will be tested through the following three null hypotheses:

H_o The major hypothesis under consideration is that reported seat belt use will not be affected by a demonstration on the seat belt convincer.

FIGURE 1. SEAT BELT CONVINCER

Ho_1 Seat belt usage does not vary with types of trips when the subject has ridden the seat belt convincer.

Ho_2 Riders of the seat belt convincer do not experience a general attitude change toward seat belt usage.

Assumptions

The investigation of this problem is based on the following assumptions:

1. People who attend fairs, visit shopping centers and other such places where people assemble are representative of the general public in the state of Missouri.
2. People who volunteer to participate in a demonstration ride on the seat belt convincer are representative of the general public in the state of Missouri.

Limitations

1. Findings of this research will be limited to the state of Missouri.
2. Follow-up telephone calls were held to two attempts to contact each subject.

Definition of Terms

Seat Belt Convincer - A device designed specifically to allow a person to experience a simulated eight mile per hour automobile crash into a rigid object.

Safety Belts or Seat Belts - Occupant restraining systems for motor vehicles, to include either lap belts or the conbination of a lap belt and a shoulder harness.

Participant or Rider - A person who volunteers to participate in a demonstration ride on the seat belt convincer.

Procedure Used

Data collected for investigation was obtained in conjunction with a state-wide project sponsored by the Missouri Division of Highway Safety and the Missouri State Department of Education. The project was aimed at promoting seat belt usage through the demonstration of a seat belt convincer. This project was conducted during the months of June, July and August of 1974. During these months, this device was displayed throughout Missouri at fairs, shopping centers, conferences, and other places where large groups of people assemble.

Data for research was collected only during the months of July and August. The objective of the investigation was to determine the effectiveness of the seat belt convincer in promoting seat belt usage. The measure of effectiveness was in the form of three questionnaires. One questionnaire was

administered to the subject before a demonstration ride and one after the ride. Also a random follow-up questionnaire was administered to a group of the original sample.

The total sample size consisted of 500 subjects. The only constraints which had to be met before the subjects were eligible for the study were:

1. Be of legal driving age.
2. Participate in a demonstration ride on the convincer.

The follow-up telephone questionnaire was administered to 200 subjects of the original 500. These telephone calls were made between a two and four week period of time following the demonstration ride. Two attempts were made to contact each of the 200. The second attempt was made one week following the initial attempt. When unsuccessful in the second attempt, another subject would be called from the remaining 300 original subjects.

Chapter Summary

The primary purpose of this research is based upon two distinct needs. One is to provide for a justified research problem. The second is the need to test the effectiveness of a possible countermeasure against traffic injuries and fatalities.

The major objective of this investigation was to evaluate the effectiveness of this procedure as a method of increasing public utilization of the seat belt. The method

under study was a public information device designed to simulate a low speed automobile crash. The data collection and subsequent evaluation were centered around a state-wide project displaying this device to the general public. The measurement of effectiveness was in the form of a questionnaire administered to a sample of participating riders. Responses gathered on the questionnaire provided information relative to actual seat belt usage.

In order to fully acquaint the reader with this investigation, the null hypothesis, assumptions, limitations, and terms were defined. A short description of the procedure used was also presented.

CHAPTER II

REVIEW OF RELATED LITERATURE

Numerous studies have examined the effectiveness of safety belts in preventing death and reducing injury in automobile crashes. There has also been a great deal of effort expended in trying to identify the correct seat belt usage rate for the motoring public. To a lesser degree than the aforementioned areas, researchers have completed some work in evaluating various methods of promoting safety belt usage. However, there have been no studies which have evaluated the effectiveness of the seat belt convincer in promoting seat belt usage. This chapter, then, will highlight those areas of investigation that relate to the general concept of promoting seat belt usage. That concept is to simulate an automobile crash in such a way as to demonstrate the advantage of wearing seat belts.

Effectiveness of Safety Belts

A wide variety of safety features have been developed and implemented into automobile design and features. This concern for the safety of the vehicle occupant has been especially prevalent from the early 1960's through the mid-1970's. The safety device that has shown the greatest opportunity for saving lives and reducing injury is the

safety belt (Waller, 1972, p. 43). The majority of research reports currently available describe the safety belt as having the greatest life-saving potential of any of the safety devices. Just how great this life-saving potential is, has been answered differently by individual studies.

Tourin and Garrett predicted that safety belts reduce the chances of the driver or right front seat passenger being killed or seriously injured by 35 per cent (Griffin, 1973, p. 6). This study was conducted in rural California when seat belts were options and not standard equipment. Campbell (1968, p. 7), discovered almost the same advantage when he studied similar accidents in rural North Carolina. Campbell found that safety belts were associated with a 36 per cent reduction of death or serious injury. These two studies were conducted approximately ten years apart, one when safety belts were options, the other when they were standard equipment. The similar findings would suggest some stability in the rate of savings due to safety belt usage.

Numerous other studies have discovered that safety belts can provide a substantial reduction of death and serious injury. Levine and Campbell (1971, p. 3) found that lap belts were associated with a 43 per cent reduction of death and serious injury. Kihlberg found a savings of 53.8 per cent. And the Highway Safety Foundation discovered a 65.1 per cent savings in death and serious injury (Griffin, 1973, p. 7). Studies have also identified that in high speed crashes there are 61 per cent fewer serious injuries when

the occupants are using their seat belts than when they are not (Council, 1974, p. 2).

A study by Huelke and Gikas, which was concerned only with fatal accidents, suggested a savings of 42 per cent, if the occupants had been wearing safety belts. One hundred thirty-nine accidents involving 177 fatalities were evaluated. On the basis of clinical experience, it was estimated that 74 of the 177 deaths would not have occurred if the occupants had been wearing their seat belts (Huelke and Gikas, 1966, pp. 8-9).

Several studies sponsored by the U.S. Department of Transportation concluded that as a result of wearing safety belts (National Highway Traffic Safety Administration, 1972, p. 5):

> Serious injuries were reduced 67 per cent
>
> Slight injuries were reduced 33 per cent
>
> All injuries were reduced 44 per cent

Effectiveness studies suggest a substantial savings of life and reduction of personal injury when safety belts are properly put to use. The Department of Transportation has funded research which predicted that 10,000 to 20,000 lives could be saved in one year if everyone would use his safety belt (National Highway Traffic Safety Administration, 1972, p. 4).

Few Drivers Use Safety Belts

In 1964 safety belts were included in the list of standard equipment on automobiles made in the United States (Seat Belt Accidents, 1965, p. 355). Presently all automobiles

sold in America, either manufactured domestically or in foreign countries, are required to have safety belts. The availability of safety belts and the estimates of their effectiveness could have had a major impact on highway safety. The major problem, however, has been that vehicle occupants refuse to wear their safety belts. It is generally estimated that only 25 to 30 per cent of passenger car occupants wear safety belts (Griffin and Lacey, 1974, p. 3).

The Ford Motor Company sponsored a study which suggests that usage of the lap belt only in 1969 would have saved 15,000 lives (Grush, 1972, p. 23). This investigation further identified lap belt use at 40 per cent for those occupants whose vehicles had lap belts. The shoulder harness was discovered to be used by only 4 per cent of the sample studied. Studies indicate the best active restraint system consists of the combination of the lap belt and shoulder harness (Council, 1974, p. 2). Lap belt usage is low but shoulder harness use is significantly lower. The latest design in safety belts may possibly reduce part of this problem due to the fact that new safety belts are an inseparable combination of the lap belt and shoulder harness. This should not be viewed as a cure-all for the lack of shoulder harness use, because only a certain percentage of the public will be traveling in new automobiles. The average registered life of cars in the United States is 10.3 years (Robertson, Kelley, O'Neill, Wixom, Eiswirth, Haddon, 1974, p. 1079). Considering the fact that inseparable lap and

shoulder belt assemblies were not present until 1974, it would be 1985 before lap belt users would be forced into using the shoulder harness.

Research supported by General Motors has discovered similar usage rates for occupants of vehicles that have safety belts. Cole (1970, p. 3) quotes lap belt usage at 30 per cent and shoulder belt usage at less than 5 per cent.

The majority of information regarding the use of safety belts has been obtained from questionnaires that ask drivers and vehicle occupants about their usage patterns. In several cases where observed use has been recorded, there has been a lower percentage of usage (Robertson, 1972, p. 18). A study conducted in North Carolina revealed observed usage at 32 per cent in 1967 (Campbell, Waller, and Council, 1967, p. 6). Later Council conducted a follow-up study and found observed safety belt usage at 35.8 per cent (Council, 1969, p. 1).

In view of the various measures of safety belt usage, a small percentage of highway users actually avail themselves of the protection of safety belts. It would be a safe estimate to say that only one motorist out of every five on the highway today is wearing his safety belt (National Highway Traffic Safety Administration, 1972, p. 1).

Characteristics of Safety Belt Users

A variety of behavioral patterns and personal characteristics appear when one examines safety belt users. One

researcher suggests very strongly that seat belt usage is associated with formal education (Morgan, 1967, p. 465). In this case it was found that the more formal education a person possesses, the higher the probability that this person would be an avid safety belt user. National Analysts Inc. supported research which describes a motorist who always uses safety belts as being more logical and as understanding the dynamics of accidents (National Highway Traffic Safety Administration, 1972, p. 18). These observations tend to suggest that people who have a sound education and have a basis on which to logically evaluate an automobile accident, recognize the value of safety belts.

Morgan explains a connection between safety belt users and people who plan to avoid risk (1967, p. 465). He also describes safety belt users as generally people who are receptive to new products and services. Safety belt users also tend to have an approving attitude toward modern science.

Several studies show that safety belt usage declines as automobiles get older. Council (1969, p. 2) conducted a study where it was discovered that drivers of older vehicles were less likely to be found wearing safety belts than drivers of newer cars. It was discovered that in older vehicles only 9.3 per cent of the drivers were using safety belts, while with newer cars 35.8 per cent of the drivers were observed to be using safety belts. Older cars were considered pre-1964 models. Griffin and Lacey (1974, p. 4) offer several reasons

why drivers of older vehicles do not buckle up as often as do drivers of new cars:

1. As cars increase in age, belts and belt buckles may become more difficult to operate. Therefore, reduction in belt wearing rate with advancing vehicle age may reflect the deteriorating quality of seat belts themselves.
2. Older vehicles are frequently driven around town instead of on extended highway trips. Several studies have shown that people are less likely to wear their seat belts on short trips than on long trips.
3. As vehicles become older, they are more often driven by the young. Younger drivers are relatively less likely to be wearing a belt when involved in an accident.

Effectiveness of Usage Promotion Activities

A great deal of effort has been expended on various attempts to increase safety belt usage. The media (radio and television) have presented safety belt messages to 96 per cent of the licensed drivers. Attitude surveys show that the messages have been well received and that 50 per cent of the people believe that safety belts make a contribution to highway safety (National Highway Traffic Safety Administration, 1972, p. 1). A belief in safety belts will not save lives unless the believer uses the safety belt. This appears to

be the case; public service announcements tend to create favorable attitudes toward safety belts but do little to promote actual safety belt use.

The Insurance Institute for Highway Safety (1974, p. 1) reported a study to determine the effect of television messages on safety belt use. This study also revealed that television campaigns do not have any effect on use of safety belts.

In 1972, automobiles sold in the United States were required to have a buzzer and light system to remind motorists to buckle up. The buzzer and warning light would be activated when the automobile was placed in forward gear if the driver or front outboard seat occupant had not extended the lap belt at least four inches from the stowed position. Evaluation of the effect of this device on safety belt use has shown that overall belt use in vehicles equipped with the system is not significantly different from similar cars not so equipped (Robertson and Haddon, 1974, p. 814).

Probably the most effective method for increasing safety belt use has been the starter-interlock system. In 1974 new automobiles were being sold with an interlock system that made it necessary for the driver and front seat passenger to secure the safety belts before the car would start. Various studies conducted by automobile manufacturers, the National Highway Traffic Safety Administration, and the Government Services Administration have demonstrated that the starter-

interlock system can increase safety belt usage to the 75 to 90 per cent level (Pulley, 1972, p. 138).

Safety belt usage appears to be high when the interlock system is installed. This type of behavior modification is only effective while the interlock system is operative. One study suggests that 40 per cent of the drivers with automobiles that have interlock systems have gone to the trouble of disconnecting the system rather than using the belts (Robertson, 1974, p. 9).

With the introduction of the starter-interlock system, Congress passed laws prohibiting new car dealers from disconnecting the interlock system at the customer's request. This provided a certain degree of discouragement for the new car owner who did not want the protection of the interlock system. Ironic as it may be to the safety-minded individual, Congress has now changed the law, allowing the dealer to disconnect the interlock system (National Highway Traffic Safety Administration, 1974, p. 1). It would appear that the potential effectiveness of the interlock system is lost.

Another very effective method of increasing safety belt usage is the requirement by law that motorists use safety belts. Safety belt use laws offer a low-cost way of avoiding highway deaths. Australia, New Zealand, France, and Puerto Rico have enacted safety belt use laws (Schneider, 1973, p. 1). These new laws appear to be effective in increasing safety belt usage. Australia has increased usage to 85 per cent (Harsha, 1974, p. 2). The National Highway

Traffic Safety Administration has provided financial incentive to states if they enact safety belt laws, to date however, few states are seriously considering this approach.

Chapter Summary

In this chapter a variety of specific areas relating to the use of safety belts were reviewed. Numerous studies have been conducted in the different areas which revealed very similar results. Thus, in order to establish the significance of the safety belt use problem without redundancy, only selected studies have been noted.

Almost since the introduction of the safety belt, surveys and studies have well established this type of occupant restraining system as effective in reducing death and serious injury due to automobile crashes. The potential effectiveness of safety belts is not being realized by the motoring public. Only 25 to 30 per cent of motor vehicle occupants wear safety belts. People who voluntarily wear safety belts tend to be better educated and more receptive to new ideas. Activities to promote safety belt use have ranged from a variety of public information approaches to engineering efforts in modifying behavior to compulsory usage by law. The majority of these usage promoting activities have displayed relatively little, if any, success. Those methods that have shown some success in modifying behavior do not seem to be acceptable to the American people.

CHAPTER III

DATA COLLECTION

The objective of this study was to determine the effectiveness of the seat belt convincer in promoting seat belt usage. The measure of effectiveness was limited to reported seat belt usage recorded on three questionnaires.

Each questionnaire was divided into three main categories. Each category related to a specific null hypothesis. Question No. 1 was designed to provide information necessary to test hypothesis Ho_1. Questions 2 through 7 provided data necessary to test hypothesis Ho_2. Questions 8 and 9 provided information necessary to test hypothesis Ho_3. Instructions for responding to the questionnaires were provided in written form on the pre and post test questionnaires. Verbal instructions were given for the telephone follow-up questionnaire.

The questionnaires were designed to provide data on general usage, usage during certain types of trips and general attitude toward safety belts. The data used in this research was collected through cooperation with the Missouri Division of Highway Safety and the Missouri State Department of Education. During the months of June, July and August of 1974 a state-wide project aimed at promoting seat belt usage was conducted under the sponsorship of the Division of Highway

Safety and the State Department of Education. This project involved the demonstration of the seat belt convincer. This device was placed on display throughout Missouri, at such places as local and county fairs, shopping centers, and other places with large groups of people. A public address system using a pre-recorded tape was employed to explain the purpose of the convincer and to encourage participation in the demonstration.

Anyone wishing to participate in a demonstration ride was asked to sign a register provided by the Division of Highway Safety. The register was simply a method of keeping correct count of the number of participants. In an effort to prevent injury to small children, the limit of active participation was restricted to those people who had valid driver's licenses. This requirement was enforced by having riders show their operator's license. A certain degree of leeway was allowed when a person who was obviously of licensing age but did not have a license desired a ride.

After each respondent had signed in, he or she was then directed to another table and asked to respond to a pre-test questionnaire (Appendix A). This process of signing in and going to a separate table for data collection was intended to increase the anonymity of the subjects and thus encourage truthful responses to the questionnaire. The questionnaire was completely anonymous, with the only identifying element being first names and telephone numbers. Once the questionnaire was completed, the subjects were then belted into the

convincer and experienced an eight mile per hour crash. Immediately after the demonstration, each subject returned to the table and responded to the post-test questionnaire (Appendix B). Discussion concerning seat belts was held to straightforward answers given to research subjects only when asked.

The demonstration was conducted in an informal but professional atmosphere. Personnel assisting in the project were casually dressed so as not to present an authority figure. No law enforcement or uniformed officials were associated with the demonstration.

A pilot test consisting of 100 subjects was conducted during the month of July to determine the acceptance of the questionnaire to the general public and to identify any problems that might have been built into the research methodology. No major problems were discovered and the subjects involved in this pilot test were included in the total sample of 500.

During the analysis of the collected data it was discovered that Question No. 9 had a contradiction in the wording which made interpretation difficult. To avoid any misinterpretations, Question No. 9 was omitted. Question No. 10 was then renumbered and became Question No. 9.

At two to four weeks following the demonstration ride, 200 of the total sample were contacted by telephone and administered a follow-up questionnaire (Appendix C). The 200 contacted by telephone were selected by assigning a number

to each of the 500 subjects and then randomly picking 200 numbers. Those subjects not being reached due to no answer, not at home, etc., were called one week later. If unsuccessful in contacting the subject after the second attempt, another subject was selected.

An analysis of variance with multiple groups and/or multiple trials was employed to treat the data. An F score was then calculated to test each of the hypotheses. The Newman-Keuls test for multiple comparisons was also used where three measures were involved.

Chapter Summary

The major purpose of this chapter is to provide information that would be necessary to replicate the data collection phase of this investigation. The procedure that has been outlined for data collection was conducted entirely by one researcher. This effort was employed to help control for any biases that might have been introduced by different data collectors conversing with the subjects. The same control was used during the follow-up telephone contacts. The fact that no names were being used assisted in stressing to the subjects that all data gathered was to be used exclusively for research purposes.

CHAPTER IV

ANALYSIS OF RESULTS

The results of the analysis of data are presented in this chapter. The analysis of the following is described:

1. The differences between responses to the questionnaires (pre and post means) were determined based on a one way-repeated measures design of analysis of variance on the total sample of 500 subjects. An F-ratio was calculated to determine if the difference between means was statistically significant.

2. The difference between responses to the questionnaires (pre, post, and follow-up means) was determined on 200 of the original 500 subjects. An F-ratio was calculated to determine significance.

3. Once a significant difference in responses to the questionnaires (pre, post and follow-up) had been identified it was necessary to locate where within the three measures the significance was present. The Newman-Keuls test of multiple comparison was used to locate the significance.

4. To provide a more generalized picture of the responses to pre, post, and follow-up questionnaires, the mean and standard deviations were calculated for each question at each measuring point (pre, post, and follow-up).

From the 500 subjects included in the total sample, some subjects failed to complete the entire questionnaire. In these instances the number of respondents to the different questions may be less than 500. The same situation holds true for the sub-sample of 200.

Specific questions were designed to provide information relative to each of the three hypotheses under study.

The major hypothesis of this study is that reported seat belt use will not be affected by a demonstration ride on the seat belt convincer. The following question provided the data necessary to test this hypothesis:

1. In general, how often do you use seat belts?

   Always (4) Frequently (3) Sometimes (2) Never (1)

The number in parentheses indicates the point value assigned each response.

The second hypothesis under investigation was: Seat belt usage does not vary with types of trips when the subject has ridden the seat belt convincer. The following questions provided the data necessary to test this hypothesis:

2. When you are driving in town, how often do you use seat belts?

   Always (4) Frequently (3) Sometimes (2) Never (1)

3. When you are driving on long trips how often do you use seat belts?

   Always (4) Frequently (3) Sometimes (2) Never (1)

4. When you are driving on expressways how often do you use seat belts?

Always___(4) Frequently___(3) Sometimes___(2) Never___(1)

5. When you are driving to work how often do you use seat belts?

Always___(4) Frequently___(3) Sometimes___(2) Never___(1)

6. When you are driving for pleasure how often do you use seat belts?

Always___(4) Frequently___(3) Sometimes___(2) Never___(1)

7. When you are driving on errands or business how often do you use seat belts?

Always___(4) Frequently___(3) Sometimes___(2) Never___(1)

The third hypothesis under investigation was: Riders of the seat belt convincer do not experience a general attitude change toward seat belt usage. The following questions provided the data necessary to test this hypothesis:

8. Do you require your passengers to wear seat belts?

Always___(4) Frequently___(3) Sometimes___(2) Never___(1)

9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree___(4) Agree___(3)
Disagree___(2) Strongly disagree___(1)

The original questionnaire contained ten questions. Question No. 9 was omitted due to a conflict built into the

question. No. 9 was intended to provide data relative to the third hypothesis under study.

Table 1 reports the findings concerning question No. 1 when administered to the total sample of 500 subjects.

Table 1 (Pre - Post: Question 1)

Question No. 1: In general, how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	0.9560	995.		
Trials	163.8711	1.	447.168	0.0000
Error (T)	0.3665	497.		
N = 498				
Mean	1 (Pre)		2 (Post)	
	2.5663		3.3775	

As indicated in the table, the F value was high enough to suggest a significant difference between the pre and post responses at the .01 level. Consequently, the null hypothesis stating that the seat belt convincer does not affect reported seat belt usage must be rejected.

Table 2 reports the findings concerning questions No. 2 through No. 7 when administered to the total sample of 500 subjects.

Table 2 (Pre - Post: Questions 2-7)

Question No. 2: When you are driving in town, how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.3315	995.		
Trials	249.0000	1.	528.850	0.0000
Error (T)	0.4708	497.		

N = 498

Mean	1 (Pre)	2 (Post)
	2.2871	3.2871

Question No. 3: When you are driving on long trips how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	0.9411	993.		
Trials	123.2383	1.	291.402	0.0000
Error (T)	0.4229	496.		

N = 497

Mean	1 (Pre)	2 (Post)
	2.9235	3.6278

Table 2 (continued):

Question No. 4: When you are driving on expressways how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.0398	991.		
Trials	148.6445	1.	308.695	0.0000
Error (T)	0.4815	495.		

N = 496

Mean	1 (Pre)	2 (Post)
	2.8125	3.5867

Question No. 5: When you are driving to work how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.4657	975.		
Trials	280.2539	1.	558.795	0.0000
Error (T)	0.5015	487.		

N = 488

Mean	1 (Pre)	2 (Post)
	2.1926	3.2643

Table 2 (continued):

Question No. 6: When you are driving for pleasure how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.2506	995.		
Trials	240.0820	1.	500.461	0.0000
Error (T)	0.4797	497.		

N = 498

Mean	1 (Pre)	2 (Post)
	2.3454	3.3273

Question No. 7: When you are driving on errands or business how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.3196	989.		
Trials	251.5156	1.	467.128	0.0000
Error (T)	0.5384	494.		

N = 495

Mean	1 (Pre)	2 (Post)
	2.2626	3.2707

As indicated in the table, the F value was high enough to suggest a significant difference between the pre and post responses at the .01 level. Consequently, the null hypothesis stating that seat belt usage does not vary with types

of trips when the subject has ridden the seat belt convincer must be rejected. A closer review of the change in mean scores between the pre and post responses of each question will be discussed in Chapter V.

Table 3 reports the findings concerning questions No. 8 and 9 when administered to the total sample of 500 subjects. As indicated, the F value was found to be high enough to suggest a significant difference between the pre and post responses at the .01 level. Consequently, the null hypothesis stating that riders of the seat belt convincer do not experience a general attitude change must be rejected.

The findings revealed to this point suggest the seat belt convincer does create certain changes in those who experience a demonstration ride. The major null hypotheses under study thus far have been rejected. The findings that follow will provide information that will: (1) see if the effect produced by the seat belt convincer is a lasting one; (2) determine if perhaps the results obtained may in part be a result of some type of Hawthorn effect.

The following analyses are based on data obtained by randomly selecting a sub-sample of 200 subjects from the original sample of 500. The same pre and post measurements were obtained as before, but reported here with a third measure (telephone follow-up). Again there were certain subjects who failed to answer the complete questionnaire, thus some questions will have different N values.

Table 3 (Pre - Post: Questions 8-9)

Question No. 8: Do you require your passengers to wear seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.3559	993.		
Trials	405.6602	1.	853.153	0.0000
Error (T)	0.4755	496.		

N = 497

Mean	1 (Pre)	2 (Post)
	1.9256	3.2032

Question No. 9: Seat belts have greatly reduced the number of deaths in auto crashes.

Source	Mean Square	D.F.	F Ratio	P
Total	0.3144	977.		
Trials	21.4961	1.	171.947	0.0000
Error (T)	0.1250	485.		

N = 489

Mean	1 (Pre)	2 (Post)
	3.3885	3.6851

Table 4 reports the finding concerning question No. 1 when administered to the sub-sample of 200 subjects. The telephone follow-up will also be included in this questionnaire.

Table 4 (Pre - Post - Follow-up: Question 1)

Question No. 1: In general, how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	0.9477	596.		
Trials	36.8867	2.	124.960	0.0000
Error (T)	0.2952	396.		
N = 199				
Mean	1 (Pre)	2 (Post)	3 (Follow-up)	
	2.5729	3.4322	3.0503	

As indicated in Table 4, the F value was high enough to suggest a significant difference between the three responses at the .01 level. To further identify where among the three responses the significant difference fell, the Newman-Keuls test for multiple comparisons was employed.

The following table gives the findings of the Newman-Keuls treatment.

Table 4-A

(Newman-Keuls Treatment Question No. 1)

	Pre	Follow-up	Post	
	2.5729	3.0503	3.4322	
Pre (1) 2.5729		.4774	.8593	.1617
Follow-up (3) 3.0503			.3819	.1425
Post (2) 3.4322				

.01 level df = 120

The Newman-Keuls treatment suggests that there is indeed a significant difference between each response sampling (pre, post, follow-up) at the .01 level. The null hypothesis stating that the seat belt convincer does not affect reported seat belt usage must again be rejected.

It should be noted that the follow-up telephone measurement fell below that of the post test. However, this follow-up value was still high enough to be significantly greater than the pre-test measurement.

Table 5 reports the findings concerning questions No. 2 through No. 7 when administered to the sub-sample of 200 subjects. The Newman-Keuls treatment of the data is displayed below the chart representing each question.

Table 5 (Pre - Post - Follow-up: Questions 2-7)

Question No. 2: When you are driving in town how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.3286	596.		
Trials	46.3438	2.	97.282	0.0000
Error (T)	0.4764	396.		

N = 199

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	2.3367	3.2965	2.9045

	Pre 2.3367	Follow-up 2.9045	Post 3.2965	
Pre (1) 2.3367		.5678	.9598	.2055
Follow-up (3) 2.9045			.3920	.1810
Post (2) 3.2965				

.01 level df = 120

Table 5 (continued):

Question No. 3: When you are driving on long trips how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	0.9579	596.		
Trials	29.3770	2.	72.747	0.0000
Error (T)	0.4038	396.		

N = 199

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	2.9146	3.6533	3.4673

	Pre 2.9146	Follow-up 3.4673	Post 3.6533	
Pre (1) 2.9146		.5527	.7387	.1892
Follow-up (3) 3.4673			.1860	.1667
Post (2) 3.6533				

.01 level df = 120

Table 5 (continued):

Question No. 4: When you are driving on expressways how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.0148	593.		
Trials	35.4902	2.	83.720	0.0000
Error (T)	0.4239	394.		

N = 198

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	2.8131	3.6263	3.4242

	Pre 2.8131	Follow-up 3.4242	Post 3.6263	
Pre (1) 2.8131		.6111	.8132	.1943
Follow-up (3) 3.4242			.2021	.1712
Post (2) 3.6263				

.01 level df = 120

Table 5 (continued):

Question No. 5: When you are driving to work how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.4551	584.		
Trials	57.8652	2.	123.629	0.0000
Error (T)	0.4681	388.		

N = 195

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	2.2410	3.3282	2.8462

	Pre 2.2410	Follow-up 2.8462	Post 3.3282	
Pre (1) 2.2410		.6052	1.0872	.2058
Follow-up (3) 2.8462			.4820	.1813
Post (2) 3.3282				

.01 level df = 120

Table 5 (continued):

Question No. 6: When you are driving for pleasure how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.2764	596.		
Trials	49.4941	2.	114.164	0.0000
Error (T)	0.4335	396.		

N = 199

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	2.3719	3.3668	2.9296

	Pre 2.3719	Follow-up 2.9296	Post 3.3668	
Pre (1) 2.3719		.5577	.9949	.1960
Follow-up (3) 2.9296			.4372	.1727
Post (2) 3.3668				

.01 level df = 120

Table 5 (continued):

Question No. 7: When you are driving on errands or business how often do you use seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.3361	587.		
Trials	46.5977	2.	97.983	0.0000
Error (T)	0.4756	390.		

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	2.3724	3.3418	2.7653

	Pre	Follow-up	Post	
	2.3724	2.7653	3.3418	
Pre (1) 2.3724		.3929	.9694	.2069
Follow-up (3) 2.7653			.5765	.1823
Post (2) 3.3418				

.01 level df = 120

As indicated in the table, the F values were high enough to suggest a significant difference somewhere among the pre, post, and follow-up responses at the .01 level. The subsequent Newman-Keuls treatment shows that there is a significant difference between each response sampling (pre, post, follow-up) at the .01 level for questions No. 2 through No. 7. Consequently, the null hypothesis stating that seat belt usage does not vary with types of trips when the subject has ridden the seat belt convincer must be rejected. A closer review of these findings and a comparison with those of the total sample will be discussed in Chapter V.

Table 6 reports the findings concerning questions No. 8 and 9 when administered to the sub-sample of 200 subjects. The Newman-Keuls treatment of the data is displayed below the chart representing each question. As indicated in the table, the F values were high enough to suggest a significant difference somewhere among the pre, post, and follow-up responses at the .01 level. The subsequent Newman-Keuls treatment shows that there is a significant difference between each response sampling (pre, post, follow-up) at the .01 level for questions No. 8 and 9. Consequently the null hypothesis stating that riders of the seat belt convincer do not experience a general attitude change must be rejected.

Table 7 provides two charts which display the mean responses and standard deviations for each question at each response time.

Table 6 (Pre - Post - Follow-up: Questions 8-9)

Question No. 8: Do you require your passengers to wear seat belts?

Source	Mean Square	D.F.	F Ratio	P
Total	1.3265	593.		
Trials	71.0156	2.	140.389	0.0000
Error (T)	0.5058	394.		

N = 198

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	2.0808	3.2778	2.7172

	Pre 2.0808	Follow-up 2.7172	Post 3.2778	
Pre (1) 2.0808		.6364	1.1970	.2123
Follow-up (3) 2.7172			.5606	.1870
Post (2) 3.2778				

.01 level df = 120

Table 6 (continued):

Question No. 9: Seat belts have greatly reduced the number of deaths in auto crashes.

Source	Mean Square	D.F.	F Ratio	P
Total	0.2743	590.		
Trials	5.5547	2.	37.827	0.0000
Error (T)	0.1468	392.		

N = 197

Mean	1 (Pre)	2 (Post)	3 (Follow-up)
	3.3959	3.7310	3.5431

	Pre	Follow-up	Post	
	3.3959	3.5431	3.7310	
Pre (1) 3.3959		.1472	.3351	.1146
Follow-up (3) 3.5431			.1879	.1010
Post (2) 3.7310				

.01 level df = 120

Table 7-A

Means and Standard Deviations - Total Sample 500 Respondents

Pre-Test Measurement				Post-test Measurement			
Question Number	Mean	S.D.	N	Question Number	Mean	S.D.	N
1	2.5663	0.9851	498	1	3.3775	0.7834	498
2	2.2871	1.1610	498	2	3.2871	0.9038	498
3	2.9235	1.0768	497	3	3.6278	0.6900	497
4	2.8125	1.1097	496	4	3.5867	0.7417	496
5	2.1926	1.1954	488	5	3.2643	0.9644	488
6	2.3454	1.1246	498	6	3.3273	0.8694	498
7	2.2632	1.1445	494	7	3.2692	0.9088	494
8	1.9234	0.9630	496	8	3.2016	0.9846	496
9	3.3885	0.5547	498	9	3.6851	0.5269	489

Table 7-B

Means and Standard Deviations - Sub-sample 200 Respondents

Pre-test Measurement				Post-test Measurement				Follow-up Measurement			
Ques. No.	Mean	S.D.	N	Ques. No.	Mean	S.D.	N	Ques. No.	Mean	S.D.	N
1	2.5729	1.0364	199	1	3.4322	0.7616	199	1	3.0503	0.9087	199
2	2.3367	1.2028	199	2	3.2965	0.8975	199	2	2.9045	1.1308	199
3	2.9146	1.1316	199	3	3.6533	0.7002	199	3	3.4673	0.9032	199
4	2.8131	1.1490	199	4	3.6263	0.7278	198	4	3.4242	0.9190	198
5	2.2410	1.2262	195	5	3.3282	0.9222	195	5	2.8462	1.1958	195
6	2.3719	1.1774	199	6	3.3282	0.9222	195	6	2.9296	1.0941	199
7	2.3724	1.1719	196	7	3.3418	0.8715	196	7	2.7653	1.1880	196
8	2.0808	1.0440	198	8	3.2778	0.9445	198	8	2.7172	1.1359	198
9	3.3959	0.5303	197	9	3.7310	0.4559	197	9	3.5431	0.5292	197

The graphs on the following pages display the mean responses of each question. Both the total sample of 500 with the pre and post measurement, and the sub-sample of 200 with pre, post and follow-up measurement are shown.

Chapter Summary

This chapter describes the different analyses that were conducted to test the three major hypotheses under study. Some statistical treatments were included beyond those stated in the original research proposal. These statistics were added to better describe certain findings and to answer questions that developed during the study.

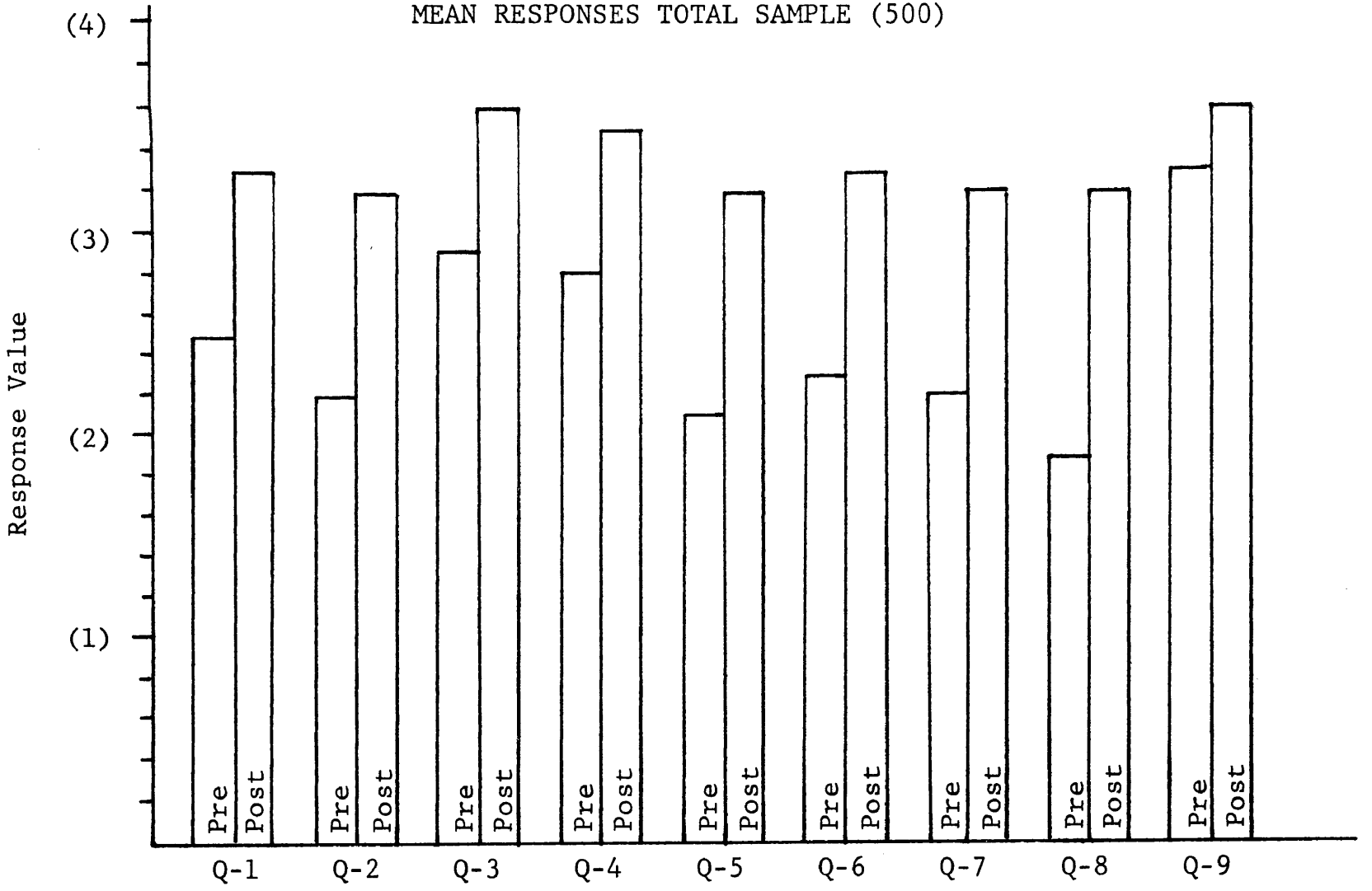
The first null hypothesis was rejected by both the pre/post and pre/post/follow-up samples. It could be inferred therefore that reported seat belt usage was affected by a demonstration ride on the seat belt convincer.

The second null hypothesis was also rejected by both pre/post and pre/post/follow-up samples. It can be assumed therefore that seat belt usage may vary with types of trips when one has experienced a demonstration ride on the seat belt convincer. The mean scores to those questions relating to types of trips and their respective standard deviations provide for some interesting findings which will be discussed in more detail in Chapter V.

The final null hypothesis being tested was also rejected by both pre/post and pre/post/follow-up samples. It can be assumed therefore that riders of the seat belt convincer

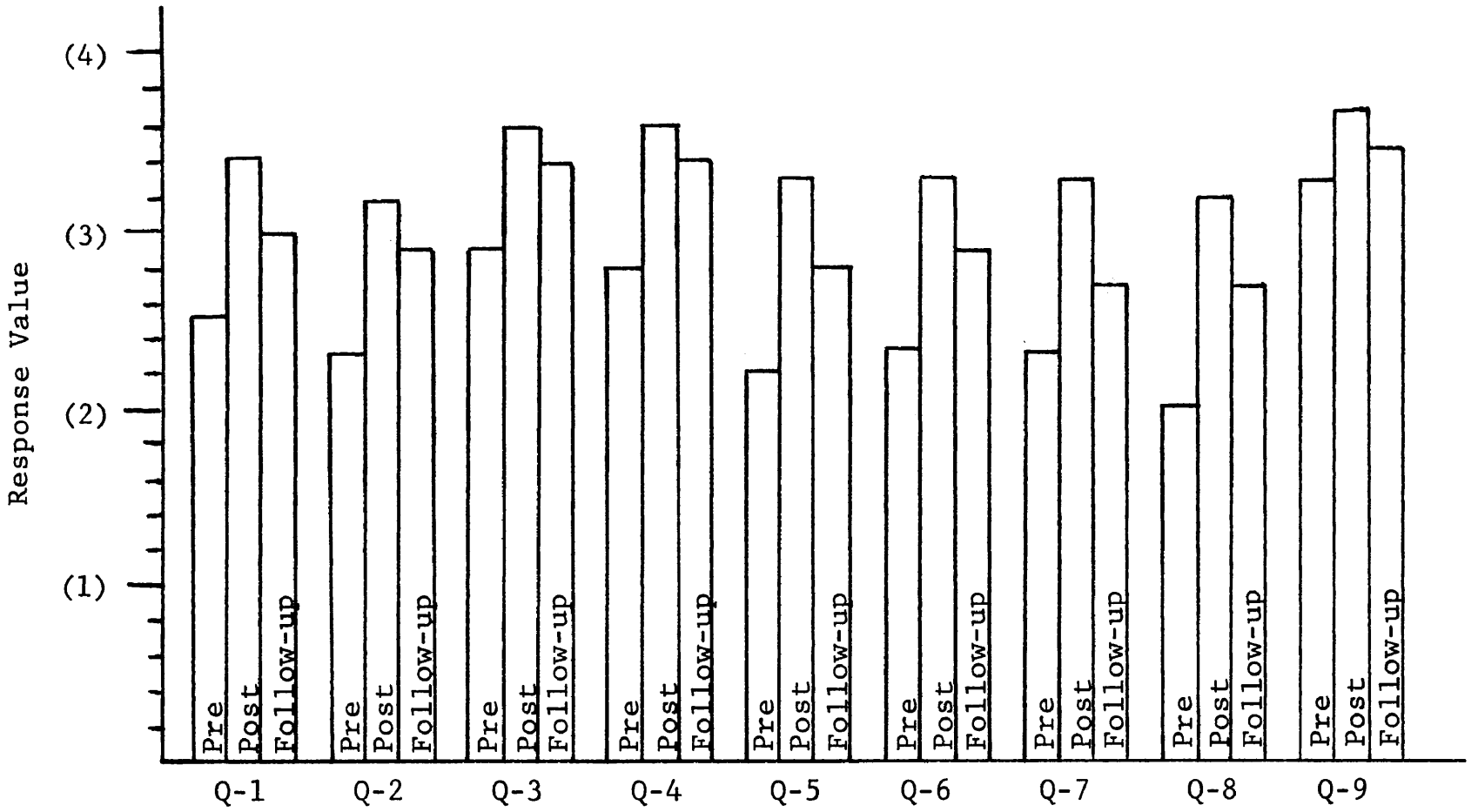
GRAPH I

MEAN RESPONSES TOTAL SAMPLE (500)



(1) Never; (2) Sometimes; (3) Frequently; (4) Always.

GRAPH II
MEAN RESPONSES SUB-SAMPLE (200)



(1) Never; (2) Sometimes; (3) Frequently; (4) Always.

may experience a general attitude change toward seat belt usage. Due to the complexities involved in assessing attitude changes, few inferences will be made based on the findings of this phase of the study.

CHAPTER V

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Review of Over-all Objectives and Purpose

This study was designed to evaluate on a short-term basis the effectiveness of the seat belt convincer. Effectiveness was determined in several categories based on reported seat belt usage. The purpose behind this type of investigation was to establish the feasibility of the seat belt convincer as a viable countermeasure to death and injury on the highway.

Findings of the Study

The major null hypothesis of the study, that reported seat belt use would not be affected by a demonstration on the seat belt convincer was tested. It was noted that after having experienced a demonstration ride on the convincer, there was a significant increase in seat belt use. This increase in regularity of seat belt use was noted in both test samples and, thus, the hypothesis was rejected.

In the sub-sample of 200 subjects where a follow-up measurement was obtained there appeared to be a reduction in seat belt use during the elapsed time from pre, post testing. A significant difference was discovered between the post test usage measurement and the subsequent follow-up measurement.

This difference suggested less safety belt usage at follow-up than at post. However, it was found that the follow-up usage score was still significantly higher than the pre-test measurement.

The second null hypothesis, that seat belt usage does not vary with types of trips when the subject has ridden the seat belt convincer, was tested. A different usage factor was identified at all measurement points (pre, post, follow-up) when a variety of driving situations was introduced. For all six types of driving, there was found to be a higher frequency of seat belt use after the subject had ridden the convincer than before. A significant difference was found in each classification and the hypothesis was rejected.

In all types of driving situations used, there was found to be a significant difference between the post measurement and that of the follow-up. This difference showed less safety belt use at time of follow-up than at post-test. The follow-up usage indication, however, was still significantly higher than that of the pre-test measurement.

The third null hypothesis, that riders of the seat belt convincer do not experience a general attitude change toward seat belt usage, was tested. A significant difference was noted in those items designed to reflect attitude when the subject had experienced a ride on the convincer. The null hypothesis as stated was rejected, and it was concluded that attitude toward seat belts was modified in favor of belt usage after a ride on the convincer.

From post-test measurement to follow-up there was a significant change in responses in the attitude category. The follow-up measurements were less favorable toward seat belt usage than they had been at post-test time. However, the follow-up measurement was still significantly higher in favor of seat belts than the measurement at pre-test.

The mean scores and standard deviations at pre, post and follow-up suggested some type of immediate effect produced by the convincer. The post-test figures provided for the highest seat belt usage and suggested that most people tested fall close to this usage figure. At follow-up, usage seemed to drop off again and likewise the standard deviations spread out again much like those of the pre-test. Therefore, it was concluded that seat belt convincer riders are most impressed by the value of safety belts immediately after the demonstration ride. This favorable impression toward seat belts tended to fall off somewhat a few weeks after having experienced the demonstration ride.

Recognizing that usage scores declined from post-test to follow-up, there was still a very positive effect when pre-test and follow-up were compared. In comparing the scores as computed on the actual questionnaires, it was obvious that follow-up figures were approximately one point higher than at pre-test time.

Conclusions of the Study

It was concluded from testing the first null hypothesis that the seat belt convincer was effective in promoting seat belt usage and, thus, a viable means of reducing highway injuries and deaths.

The results from testing hypothesis two revealed that the seat belt convincer increases seat belt usage during a variety of typical driving situations. Although all types of driving situations included in the test showed significant increases of seat belt usage after drivers had ridden the convincer, some situations were more affected than others. This information could be instrumental in determining further application of the seat belt convincer in areas where accidents of certain types of trips occur with high frequency.

From the findings of the third null hypothesis, it was concluded that attitudes toward seat belts in general was improved toward seat belt usage. This fact alone could provide incentive among vehicle operators to encourage their passengers to use safety belts.

In general, based on the hypotheses tested, the seat belt convincer was found to be an effective means of motivating vehicle occupants to use their safety belts. Also in terms of the convincer as a public information device, it was concluded to be effective in creating public awareness and discussion about the life-saving potential of safety belts. One could assume that those who only viewed the seat belt

convincer in action may also be motivated in using their safety belts more often.

Recommendations from the Study

In conjunction with the findings of the study, the following recommendations are made:

1. The use of the seat belt convincer as a means to increase seat belt usage should be continued.
2. State and local highway safety officials not using seat belt convincers should examine the feasibility of using such a device in conjunction with ongoing safety education activities.
3. State departments of education should explore the possibility of making available a seat belt convincer for use in driver education programs.
4. State driver licensing officials should consider making available the seat belt convincer to those people seeking a driver's license.
5. Additional research should be conducted to investigate further the effectiveness of the seat belt convincer in increasing seat belt usage. Further research should include, but not be limited to:
   A. Determining the overall effect produced by the convincer beyond the four-week post-demonstration ride used in this study.
   B. Provide actual usage figures rather than reported usage.

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APPENDIX A

PRE-TEST QUESTIONNAIRE

Please answer the following questions as truthfully as possible. All responses will be used for research only.

First name only_____ Telephone number_____
(Area code/Number)

1. In general, how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

2. When you are driving in town how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

3. When you are driving on long trips how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

4. When you are driving on expressways how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

5. When you are driving to work how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

6. When you are driving for pleasure how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

7. When you are driving on errands or business how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

8. Do you require your passengers to wear seat belts?

   Always___ Frequently___ Sometimes___ Never___

9. Seat belts have greatly reduced the number of deaths in auto crashes.

   Strongly agree___ Agree___ Disagree___

   Strongly disagree___

APPENDIX B

POST-TEST QUESTIONNAIRE

In light of the demonstration you just participated in;

Please answer the following questions as truthfully as possible. All responses will be used for research only.

First name only_____ Telephone number_____
(Area code/Number)

1. In general, how often will you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

2. When you are driving in town how often will you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

3. When you are driving on long trips how often will you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

4. When you are driving on expressways how often will you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

5. When you are driving to work how often will you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

6. When you are driving for pleasure how often will you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

7. When you are driving on errands or business how often will you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

8. Will you require your passengers to wear seat belts?

Always___ Frequently___ Sometimes___ Never___

9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree___ Agree___ Disagree___

Strongly disagree___

APPENDIX C

FOLLOW-UP QUESTIONNAIRE

Please answer the following questions as truthfully as possible according to how often you use your seat belt at this point in time. All responses will be used for research only.

First name only_____ Telephone number_____
(Area code/Number)

1. In general, how often do you use your seat belts?

   Always___ Frequently___ Sometimes___ Never___

2. When you are driving in town how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

3. When you are driving on long trips how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

4. When you are driving on expressways how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

5. When you are driving to work how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

6. When you are driving for pleasure how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

7. When you are driving on errands or business how often do you use seat belts?

   Always___ Frequently___ Sometimes___ Never___

8. Do you require your passengers to wear seat belts?

Always___ Frequently___ Sometimes___ Never___

9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree___ Agree___ Disagree___

Strongly disagree___

APPENDIX D

PRE-TEST QUESTIONNAIRE RESULTS
500 Respondents

Please answer the following questions as truthfully as possible. All responses will be used for research only.

First name only_____ Telephone number_____ (Area code/Number)

1. In general, how often do you use seat belts?

   Always 119 Frequently 109 Sometimes 206 Never 64

2. When you are driving in town how often do you use seat belts?

   Always 116 Frequently 64 Sometimes 146 Never 172

3. When you are driving on long trips how often do you use seat belts?

   Always 207 Frequently 107 Sometimes 121 Never 62

4. When you are driving on expressways how often do you use seat belts?

   Always 192 Frequently 94 Sometimes 133 Never 77

5. When you are driving to work how often do you use seat belts?

   Always 117 Frequently 57 Sometimes 121 Never 193

6. When you are driving for pleasure how often do you use seat belts?

   Always 117 Frequently 76 Sometimes 166 Never 139

7. When you are driving on errands or business how often do you use seat belts?

   Always 112 Frequently 61 Sometimes 160 Never 162

8. Do you require your passengers to wear seat belts?

Always 43 Frequently 77 Sometimes 170 Never 207

9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree 211 Agree 265 Disagree 13

Strongly disagree 0

APPENDIX E

POST-TEST QUESTIONNAIRE RESULTS
500 Respondents

In light of the demonstration you just participated in;

Please answer the following questions as truthfully as possible. All responses will be used for research only.

First name only_____ Telephone number_____ (Area code/Number)

1. In general, how often will you use seat belts?

   Always 271 Frequently 155 Sometimes 66 Never 6

2. When you are driving in town how often will you use seat belts?

   Always 247 Frequently 136 Sometimes 81 Never 33

3. When you are driving on long trips how often will you use seat belts?

   Always 360 Frequently 90 Sometimes 39 Never 8

4. When you are driving on expressways how often will you use seat belts?

   Always 354 Frequently 88 Sometimes 41 Never 13

5. When you are driving to work how often will you use seat belts?

   Always 270 Frequently 118 Sometimes 59 Never 41

6. When you are driving for pleasure how often will you use seat belts?

   Always 274 Frequently 134 Sometimes 67 Never 23

7. When you are driving on errands or business how often will you use seat belts?

   Always 260 Frequently 133 Sometimes 71 Never 31

8. Will you require your passengers to wear seat belts?

Always 264 Frequently 123 Sometimes 69 Never 41

9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree 329 Agree 146 Disagree 11

Strongly disagree 3

APPENDIX F

PRE-TEST QUESTIONNAIRE RESULTS
200 Respondents

Please answer the following questions as truthfully as possible. All responses will be used for research only.

First name only_____ Telephone number_____ (Area code/Number)

1. In general, how often do you use seat belts?

   Always 54 Frequently 37 Sometimes 77 Never 31

2. When you are driving in town how often do you use seat belts?

   Always 55 Frequently 22 Sometimes 55 Never 67

3. When you are driving on long trips how often do you use seat belts?

   Always 89 Frequently 35 Sometimes 45 Never 30

4. When you are driving on expressways how often do you use seat belts?

   Always 82 Frequently 30 Sometimes 52 Never 34

5. When you are driving to work how often do you use seat belts?

   Always 51 Frequently 22 Sometimes 45 Never 77

6. When you are driving for pleasure how often do you use seat belts?

   Always 53 Frequently 29 Sometimes 56 Never 61

7. When you are driving on errands or business how often do you use seat belts?

   Always 51 Frequently 25 Sometimes 59 Never 61

8. Do you require your passengers to wear seat belts?

Always 28 Frequently 32 Sometimes 66 Never 72

9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree 82 Agree 112 Disagree 3

Strongly disagree 0

APPENDIX G

POST-TEST QUESTIONNAIRE RESULTS
200 Respondents

In light of the demonstration you just participated in;

Please answer the following questions as truthfully as possible. All responses will be used for research only.

First name only_____ Telephone number_____
(Area code/Number)

1. In general, how often will you use seat belts?

   Always 114 Frequently 62 Sometimes 22 Never 1

2. When you are driving in town how often will you use seat belts?

   Always 99 Frequently 53 Sometimes 36 Never 11

3. When you are driving on long trips how often will you use seat belts?

   Always 154 Frequently 25 Sometimes 17 Never 3

4. When you are driving on expressways how often will you use seat belts?

   Always 148 Frequently 28 Sometimes 18 Never 4

5. When you are driving to work how often will you use seat belts?

   Always 114 Frequently 43 Sometimes 26 Never 12

6. When you are driving for pleasure how often will you use seat belts?

   Always 115 Frequently 52 Sometimes 22 Never 10

7. When you are driving on errands or business how often will you use seat belts?

   Always 110 Frequently 51 Sometimes 25 Never 10

8. Will you require your passengers to wear seat belts?

Always 110 Frequently 48 Sometimes 26 Never 14

9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree 142 Agree 51 Disagree 1

Strongly disagree 0

APPENDIX H

FOLLOW-UP QUESTIONNAIRE RESULTS
200 Respondents

Please answer the following questions as truthfully as possible according to how often you use your seat belt at this point in time. All responses will be used for research only.

First name only_____ Telephone number_____
(Area code/Number)

1. In general, how often do you use your seat belts?

   Always 77 Frequently 65 Sometimes 47 Never 10

2. When you are driving in town how often do you use seat belts?

   Always 85 Frequently 44 Sometimes 38 Never 32

3. When you are driving on long trips how often do you use seat belts?

   Always 137 Frequently 31 Sometimes 20 Never 11

4. When you are driving on expressways how often do you use seat belts?

   Always 131 Frequently 35 Sometimes 19 Never 13

5. When you are driving to work how often do you use seat belts?

   Always 87 Frequently 30 Sometimes 40 Never 38

6. When you are driving for pleasure how often do you use seat belts?

   Always 84 Frequently 45 Sometimes 42 Never 28

7. When you are driving on errands or business how often do you use seat belts?

   Always 80 Frequently 29 Sometimes 47 Never 40

8. Do you require your passengers to wear seat belts?

Always 72 Frequently 34 Sometimes 57 Never 35

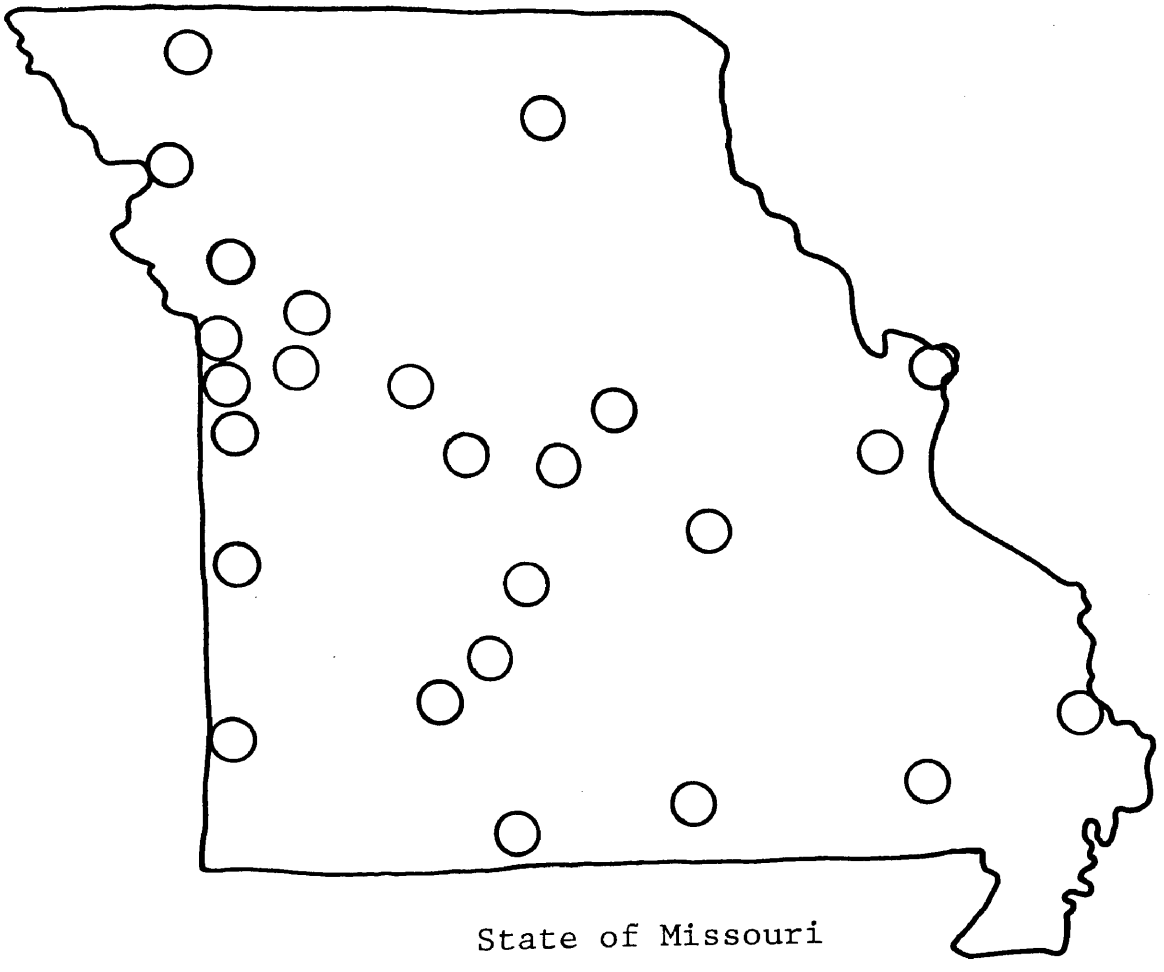
9. Seat belts have greatly reduced the number of deaths in auto crashes.

Strongly agree 116 Agree 79 Disagree 2

Strongly disagree 0

APPENDIX I

DEMONSTRATION SITES



State of Missouri

Each circle may represent more than one demonstration site in a metropolitan area.