+

University of North Carolina Highway Safety Research Center

e-archives

Hall William L., and Forrest M. Council. (1978). Increasing Child Restraint Usage Through Physician and Public Education. Project Report. Chapel Hill, NC: University of North Carolina Highway Safety Research Center.

PROJECT PROGRESS REPORT:

INCREASING CHILD RESTRAINT USAGE THROUGH PHYSICIAN AND PUBLIC EDUCATION

Prepared by

William L. Hall

Forrest M. Council

University of North Carolina
Highway Safety Research Center

November, 1978

UNC/HSRC-78/11/2

This study was funded by the North Carolina Governor's Highway Safety Program as part of project #306-78-001-001, entitled "Increasing Child Restraint Usage Through Physician and Public Education." The opinions and findings contained in this report are solely those of the authors and not necessarily those of the project's sponsor.

ABSTRACT

The second leading cause of death for children between the ages of 1 and 5 is the automobile accident. Several possible countermeasures could be employed to combat this problem. Mandatory child restraint usage laws would be one, but it is felt that the political climate in North Carolina precludes the adoption of such a strategy. While well designed child restraints which have been shown to save lives and reduce serious injuries already exist, the usage rates for these devices are low (5 percent in the accident population and 19 percent in the general driving population). The countermeasure proposed and implemented by this project is to provide information and materials to health care professionals throughout North Carolina so that they can in turn educate parents as to the need to properly restrain their children while traveling in cars. Wall posters and brochures have been developed and distributed to aid in this parent education effort.

In order to evaluate the effectiveness of this program, baseline data on child restraint usage rates were collected in two large North Carolina cities through observational surveys. These baseline data indicate that 19.3 percent of children less than age 6 are riding in child restraint devices. However, the use of inadequate and/or improperly installed or improperly used devices reduces the proportion of children being provided with a high level of protection to 5.7 percent.

The first year's efforts of the child restraint educational program supported by the Governor's Highway Safety Program and implemented by the Highway Safety Research Center have, in general, met or surpassed stated goals. Based on these first year's efforts, the following conclusions can be drawn:

(1) The enthusiasm shown by the health care professionals in the state has been even greater than anticipated.

(2) The preliminary data collection efforts have indicated some interesting findings which will be used in the Year 2 educational efforts such as, a) the usage levels for child restraint devices was higher for the observational studies than in the earlier N.C. crash data which probably reflects differences in usage rates between the crash population and the observed population due to both the type of drivers in the two groups and the time of day that the observations were made, and b) that the data indicate problems with correct usage, problems that could explicitly be addressed in the educational efforts.

(3) The first year's contacts with the medical professionals in North Carolina indicate that there is some grass roots support for a mandatory usage law. It appears that the strategy of attempting an educational campaign to build support for child restraint efforts may also be building support for future legislative actions.

TABLE OF CONTENTS

INDEX OF TABLES

ACKNOWLEDGEMENTS

The authors of this report would like to express their sincerest appreciation to those persons who have contributed their time, professional experiences, and wholehearted cooperation to the planning and implementation of this project. Guidance during the planning stage was furnished by members of the Advisory Committee: Dr. Jimmie Rhyne, Mr. Stuart Shadbolt, Ms. Gail Hines, Dr. Thomas McCutchen, Jr., Mr. Larry Parker, Dr. Jerry Bernstein, Dr. Robert Greenberg, Mr. Raymond Dean, Mr. Floyd Bass, and Mr. Dan Finch. Implementation of the project was greatly facilitated by the advice and cooperation of many individuals throughout the state including: Dr. Carolyn Cort, Dr. David Williams, Dr. Robert Senior, and Mrs. Asta Cooper.

Special thanks go to members of the HSRC staff who have supported and come to the rescue of the authors on more than one occasion. Data collection would have been impossible without the assistance of Terry Early, Tom Heins, John Ryan, Laurie Brockington, Anna Waller, Maria Atwater, Tony Bryant, and other HSRC personnel. Peggy James, Teresa Parks, and Donna Suttles proved to be invaluable in the typing and distribution of far too many letters and reports. The help extended to us in other aspects of this project by other co-workers is impossible to fully list.

We would like to give a special acknowledgement and expression of gratitude to Lauren Ogle for her design and production of the brochures and posters which have served as the focal point of this entire project.

Introduction

The problem of child injuries in motor vehicle accidents is graphically illustrated in data concerning leading causes of death for children between 0 and 15 years of age. According to the National Safety Council the second leading cause of death for children between the ages of 1 and 4 is motor vehicle accidents (Table 1). The leading cause of death is the combination of all other accidents (e.g., falls, burns, poisoning, etc.). It is of great importance to note that motor vehicle accidents kill more children than any other single type of accident and far outweigh disease-related causes of death. In fact, a child in North Carolina between the ages of 1-4 is 40-50 time more likely to die from injuries sustained in a car crash than from a combination of common childhood diseases against which we commonly immunize our children (Table 2). One reason for these large differences between the death rates of children for different causes of death is that widespread immunization of children against common childhood disease has reduced the disease death rates. In contrast, little is being done to protect children in car crashes.

There is a solution to this problem. Each year in North Carolina, between 20 and 30 children aged 5 or less die from automobile accidents. Well-designed and properly used child restraint devices (CRD's) could save the lives of from 60 percent to 80 percent of these children as well as reduce hundreds of serious injuries by the same degree. Unfortunately, these lifesaving devices are not being used. Many studies of adult seat belt usage rates from 1967-1975 in North Carolina have indicated that drivers use belts from 14-50 percent of the time depending on the crash circumstances, the observational circumstances, and the make/model of car. Restraint usage frequancies for 0-5 year old child occupants in North Carolina accidents are shown for 1974 and 1975 in Table 3.

Table 1. Leading causes of deaths for United States children aged 1-4 in 1977.

Cause of Death	Death Rate*
Other Accidents	17.0
Motor Vehicle Accidents	11.0
Congenital Anomalies	9.0
Cancer	5.0

*Deaths per 100,000 population

(Source: "Accident Facts 1978 Edition," National Safety Council)

Table 2. North Carolina death rates for preventable diseases for children aged 0-4.

Cause of Death	Death Rate*
Motor Vehicle Accidents	11.5
Congenital Rubella	0.2
Measles	0.0
Polio	0.0
Diptheria	0.0
Tetanus	0.0
Whooping Cough	0.0

*Deaths per 100,000 population, ages 0-4.

Table 3. Restraint usage for 0-5 year old occupants in North Carolina accidents.

	Restraint Use		
Year	Yes	No	Total
1974	409 (5.4%)	7191	7600
1975	348 (5.0%)	6599	6947

These figures show that even in cases where at least a belt system is available in a passenger car, the children are not restrained in 95 percent of the accidents. Even more surprising and disturbing is the fact that even in cases where the driver of a North Carolina passenger car is using a belt, the child sitting in the car with him is belted in only one-third of the cases (i.e., in two-thirds of the cases in which drivers put belts on themselves, they fail to restrain the child occupant).

In summary, analysis of North Carolina accident data indicates that a problem exists. There are several possible countermeasures which could be aimed at this problem. One of these would be a law requiring child occupants of motor vehicles to be secured by either a lap belt or an approved child restraint. However, based on other experience in North Carolina with attempts to pass seat belt laws, this countermeasure is felt to have little chance of being implemented at present, even though Tennessee has passed a mandatory child restraint law which became effective January 1, 1978. Therefore, the countermeasure which is in progress involves a cooperative educational effort among the Highway Safety Research Center, the Governor's Highway Safety Program, the Office of the Chief Medical Examiner, the Division of Health Services, the Division of Motor Vehicles and its Medical Evaluation Board, various pediatric groups across the state, and the Medical Society of North Carolina. The main thrusts of the program are pediatric education, public education, and the development of child restraint recycling programs. A possible side effect of the physician education efforts could be support for future law changes in North Carolina. In meetings during the first year of this project a number of physicians have raised questions concerning the need for a mandatory child restraint law, and indeed the Committee on Trauma of the North Carolina Medical Society has gone on record as supporting such effort.

While public education concerning general seat belt usage for adults has not been shown to be an effective program in the cases where it has been studied, the results of research aimed at education provided by pediatricians and other doctors to parents of newborn children have been mixed. Three articles appearing in the September, 1976 issue of Pediatrics concerning controlled studies of educational programs put on by pediatricians indicated that the purchase and use of a proper restraint system by parents could indeed be influenced by the pediatrician in the pre- and post-natal stages (Lieberman, et. al., 1976; Kanthor, 1976; Allen and Bergman, 1976). Usage of restraint systems in these cases was shown to increase from 60 to 90 percent. However, it must also be noted that two studies published after this project was conceived have indicated very limited effects attributable to physician-education efforts (Miller and Pless, 1977; Reisinger and Williams, 1977). While one of these studies was a questionnaire type with unusually high baseline usage rates, the other was a well controlled observational study. Even with this evidence, it is felt that the conflicting results indicated by the different studies at least show some promise for this approach.

Physician participation in such safety-related programs is often keyed to a shift from the more traditional disease-oriented bias into a total public health-oriented bias. In such an approach, deaths due to automobile accidents are presented to the doctors as being analogous to a disease for which an effective immunization (child restraints) is available. The physician must be convinced that it is their responsibility to provide such information to parents and indeed that the distribution of such information will have a benefit on the child's health. In the current project, these points are raised in either individual or small group meetings with the physicians and their staffs.

The educational campaign will not only work with doctors but also with public groups (e.g., PTA's). It is hoped that these groups, the Jaycees, and other public service organizations will become more involved in programs such as the recycling of child restraints. Recycling programs have been shown to work in other states and can greatly reduce the cost of acquiring a suitable child restraint.

Finally, there is little existing United States data concerning the exact level of benefits of child restraints -- that is, their injury reducing capabilities in actual crashes. A review of many research studies indicates that such data are sorely needed to convince the public of the efficacy of using such restraints and to aid in decisions concerning the proper design of child restraints. Because of this need, the current program concept also includes monitoring child restraint usage rates and the related injury experience in North Carolina crashes. Obviously, before such data can be developed, child restraint usage needs to be increased a significant amount. Thus, the evaluation efforts are somewhat dependent on the education efforts mentioned above. This evaluation may require the cooperation of North Carolina State Highway Patrol and some city police agencies in the collection of supplemental data. Such cooperation would have to be insured before the crash-related evaluation phase begins.

In addition to the activities described above, preliminary conversations have been held during the past year with the Governor's Highway Safety Program concerning the possibility of a much larger child safety project which would include the actual purchase and distribution of a large number of child restraints to parents. Presumably, these seats would be distributed by civic and public health or governmental agencies. These distribution programs could include either low-cost rental programs similar to the recycling programs which

now exist, or loaner programs administered by hospitals which would provide an infant carrier for transporting the newborn home and for use until the parents obtain a replacement seat. Because it will be necessary to do some preliminary planning before such a effort can be undertaken, some effort will be included in next year's project to look into the feasibility of such a effort.

Program Planning

Since this project is aimed at reaching North Carolina parents through various health care professionals, it was imperative that we seek the advice and cooperation of several representatives of the health care professions while planning the project. One of the most important and useful aspects of this project has been the formation of and meeting with an advisory committee for assistance in developing materials and in recommending appropriate physicians to contact. This nine-member advisory committee consists of representatives of the North Carolina Department of Human Resources (Maternal and Child Health and Highway Safety Branches), the North Carolina Medical Society, North Carolina Jaycettes Buckle-Up-Babes project, Office of the Chief Medical Examiner, North Carolina Memorial Hospital Pediatrics Department, the North Carolina Governor's Highway Safety Program, and pediatricians in two private group practices.

Based upon the recommendations of the advisory committee, the following materials have been developed for distribution to physicians and other interested individuals.

a) Four posters designed to attract the attention of parents and interest them in asking their doctor for further information. The four posters will be distributed to physicians in five to six month intervals providing HSRC the means to remain in regular contact with participating physicians (see Appendix A).

b) A pamphlet to be given out to individuals by physicians or their staffs. This pamphlet briefly and concisely describes why restraints should be used and what features can be found on safe models, and lists the dynamically tested models which are available for purchase (see Appendix B).

c) Shopping guides for 30 North Carolina cities listing the price ranges of approved models available at local stores (see Appendix C).

d) A coloring book designed for children which shows how animals protect their young while transporting them and how human parents should protect their children in cars. This has not yet been published.

These materials are subject to being changed and updated at any time based on the recommendations of the advisory committee.

In addition to the materials described above, other supplemental informational materials have been prepared which are designed mainly to increase the physicians' knowledge in the area of child restraints so that they can answer questions parents might ask. An eight-page monograph has been written and distributed which is basically an expanded version of the pamphlet text. It goes into more detail concerning the extent of the problem regarding children in cars, the types of restraints that are available and how they work, and the features to look for when purchasing a restraint. The physicians are also provided with illustrations of most of the dynamically tested child restraints on the market today. Materials on how to start and operate a restraint recycling program are also available upon request.

Program Implementation

One of the most critical aspects of this project has been publicizing the fact that there is an on-going child restraint program and that materials are available to those persons who feel that they can use them. Two types of publicity have been used thus far--personal contact and the printed and broadcast media.

For personal contacts, we have relied primarily on recommendations of members of the Advisory Committee concerning key persons in the state to talk with. Personal contacts with the representatives of various groups across the state resulted in invitations to attend meetings and present a short informative

talk outlining the need for the use of child restraints and how the HSRC materials can be used. Groups to which project members have presented talks include:

- Annual Meeting of the North Carolina Pediatrics Society
- Members of the Executive Committee of the North Carolina Pediatrics Society
- The Traffic Safety Committee of the North Carolina Medical Society
- The Committee on Trauma of the North Carolina Medical Society
- The Pediatrics Department of North Carolina Memorial Hospital in Chapel Hill
- The Pediatrics Department of Moses Cone Memorial Hospital in Greensboro
- Wake County Memorial Hospital, Grand Rounds Group
- Fayetteville Area Health Education Symposium
- Wake Medical Society, Traffic Safety Committee
- Durham-Chapel Hill Child Safe (child advisory) group
- Cary, N.C. Jaycettes
- Garner, N.C. Jaycettes
- Greensboro, N.C. Adoption Agency

As a result of these meetings and talks, we have been able to talk with approximately 300 physicians and 100 lay people.

In order to further disseminate information across the state concerning the value of properly used child restraints and to advertise the availability of informational materials, the project staff wrote scripts for radio public service spots and articles for several newsletters distributed within North Carolina. Radio spots included an interview aired over station WPTF in Raleigh and a 60-second public service announcement sent to the North Carolina Department of Human Resources for distribution. Short articles were written for and published in:

- "Epidermiology Notes" of the State Board of Health
- "The Child Advocate" of the Department of Administration
- "Healthwise" of Blue Cross and Blue Shield of North Carolina
- "State Line Mate" newsletter of the North Carolina Jaycettes
- "Highway Safety Highlights" of the UNC Highway Safety Research Center

In addition to the articles written by HSRC, the University of North Carolina News Bureau distributed a news release concerning child restraints and the project to most North Carolina newspapers. This release was picked up and printed by over two dozen newspapers across the state.

As a result of these talks, speeches, and media coverage, HSRC has distributed 22,000 pamphlets and 470 posters to about 100 doctor's offices, public health departments and other groups (such as Jaycettes and Lamaze classes) throughout North Carolina. As a result of the article appearing in the HSRC "Highway Safety Highlights," transportation safety groups in other states and countries have contacted us asking for samples of our posters and brochures. Some interest has been expressed by various groups in purchasing large quantities of posters and brochures for use in their own states.

When conducting research in an area such as child restraint usage where the availablility of published materials is limited, it is helpful to meet with other interested persons on a face-to-face-basis. For this reason, the HSRC Child Restraint Project Staff attended the University of Tennessee Child Passenger Safety Conference in Nashville in May, 1978. At this conference, project staff members participated in workshops concerned with public information and education, legislation, and research as related to child restraint usage. This conference was useful to the extent that it facilitated the exchange of information and ideas with members of other child restraint projects throughout the country and with manufacturers of the devices themselves.

Problems Encountered in Program Planning and Implementation

One of the main problems encountered in planning this project is the relative lack of previously published research articles in the area of promoting child restraint usage. For the most part, the special needs of young children have been ignored in the public education campaigns the promote the use of automobile seat belts. This being the case, one must make assumptions about these programs in relation to children. The basic assumption formed in this manner is that since public education campaigns have been shown to have little or no effect on seat belt usage rates for adults, there is no reason to believe that they would work in getting parents to properly restrain their children. Based on this assumption, previous studies have been centered on the efficacy of educating parents through their physicians, especially pediatricians.

At the time that this project was planned, most of the available research indicated that pediatricians could indeed exert a positive influence on parents of children and could be seen as being effective focal points of countermeasures designed to increase child restraint usage. However, since that time, other studies have been reported that indicate that physicians may not have any more influence over peoples' behavior in this area than do other safety experts. These contradictory results make it extremely difficult to plan an efficient and effective educational program.

Another relatively minor problem encountered in planning this program involved the advisory committee formed for this project. A committee of this type is generally more efficient when everyone meets at once, thus enabling constructive exchanges of ideas and feedback. Unfortunately, since we were working with physicians and other people in different cities, it was difficult to find a time and place that everyone could be in attendance. In fact, the advisory committee has never met as a whole group. Fortunately, problems

arising from this situation have been minor and, through a series of telephone calls to members not in attendance, inputs were obtained. These inputs from the committee have been most helpful in shaping program direction.

More critical problems have been encountered in this implementation of the program. During the first few months, it was felt that individuals and groups would be more receptive to the program if they were to first contact us and invite us to speak -- if they were to initiate the request. Even though the existence of the project was fairly well publicized, there were few requests for either speakers or materials. As a result of this situation, a shift in tactics was employed in which the project staff began to actively and aggressively solicit speaking invitations and requests for materials.

Another major problem encountered in implementing the program concerned the design and printing of materials to be distributed to physicians. It was felt that the child restraint pamphlets available from outside sources were either too expensive or could be improved by tailoring them more to North Carolina's problems and needs. This led to the decision to produce our own pamphlets outlining the needs for using crash-tested child restraints. The writing and re-writing of this pamphlet took longer than expected and once the final version was ready for printing, we encountered enumerable delays in having them printed and returned to us. Small quantities of pamphlets were delivered over a period of two months which led to the situation where at times there were not enough pamphlets on hand to completely fill orders for them. At this time, however, all pamphlets have been received from the printer and all orders have been completely filled.

Evaluation Methodology

With any new and experimental program of public education, it is important and imperative to evaluate the effectiveness of the program. For this purpose,

the project will utilize two types of effectiveness evaluation criterian: observations of children in cars and data contained in the North Carolina accident files. While differences in crash-related deaths and injuries are the most direct measure of benefit, because of time constraints and because there is a known relationship between child restraint usage and subsequent injuries, the additional surrogate criterion of usage in the population and usage in crashes will be utilized. The major data collection effort involves observational studies both before and after the implementation of the program to determine what proportion of children ride restrained. Several factors entered into the decision to rely on direct visual observations of child restraint usage in the field rather than other methods such as telephone or mail questionnaires. First, and most importantly, when measuring actual behavior, it is generally considered to be more reliable to observe the behavior rather than to rely on reported behavior through questionnaires. One can never be sure if the answers given to a questionnaire are an actual reflection of reality or if they are consciously or subconsciously biased by the respondent to provide a more favorable impression of themselves to the interviewer. Also, a major problem in promoting the use of child restraints is that not only must a parent be convinced to use a child restraint, it is imperative that parents be convinced to use one that is dynamically tested and to use it correctly. By observing restraints in actual use, it is possible to determine whether or not the model is one that has been dynamically tested and whether it is installed and being used properly. It would be impossible to obtain a valid measure of correct installation and usage through telephone or mail surveys.

It was decided to draw samples for observation from two fairly large and similar cities within North Carolina. The cities of Durham and Greensboro were

selected to serve this purpose since they are relatively similar in population (Durham = 110,000; Greensboro = 160,000) and type (both support several colleges and industries and both are located in the Piedmont area). In both cities, there were very few physicians already discussing car safety with parents at the beginning of the project, there were no recycling programs being conducted, and both cities are convenient to Chapel Hill but sufficiently separated to minimize the effects of a "spillover" from one city's education program to the other city.

Three different types of locations within each city were selected as sites for the observations to be made. It was felt that this would be necessary to obtain a representative sample as well as enable us to measure the direct and indirect effects of the program. Pediatricians' offices were selected to observe the restraint patterns of the population directly covered by the educational program. Both pediatricians in private practice and county health departments were used in order to cover as broad of an socio-economic range as possible. Second, shopping center parking lots were selected to gain observations of parents who did not work and transport children often during the day. Third, day care centers were selected to represent parents who work during the day. The use of these centers also facilitated data collection scheduling since there were peak periods of entering and departing vehicles over relatively short time periods. As well as representing a broad socio-economic range, the observations made at the shopping centers and day care centers will enable us to evaluate the restraint patterns of parents and children away from the doctors' office. This is seen as being important since taking a trip to the doctors' office, where a person knows he or she might be asked if they buckled up their children, may serve as a stimulus to "buckle up" when they may not do so at other times.

Letters were written to every pediatricians' office, day care center, and shopping center in both Durham and Greensboro. Actual sites for making observations consisted of those locations that granted permission for us to set up and conduct the surveys in their parking lots. Permission was received from and observations made at one shopping center, four doctor's offices, and ten day car centers in Durham and one shopping center, five doctors' offices and nine day care centers in Greensboro. Two teams of observers were set up in different sites for ten days in each city.

This basic sampling procedure was employed in order to assure that the resulting sample size would be sufficiently large to reliably reflect any changes brought about as a result of our educational campaign. North Carolina accident data showed that only about five percent of the children in North Carolina accidents are restrained in any manner. Using this figure as a baseline, it was determined that in order to validly measure changes in restraint usage from 5 to 10 percent at the .05 level of significance, at least 511 observations of children in cars would need to be made. Preliminary data analysis shows that 631 children less than 6 years of age and weighing less than 50 pounds (our target population) were observed in Durham and 507 were observed in Greensboro for a total of 1,138 children. These figures correspond very well to estimated samples required based on the above noted initial assumptions. Surprisingly, much higher usage rates were measured, based on our observations. For both cities combined, 30 percent of those children observed exiting from pediatricians' parking lots were using some type of restraint with usage rates at day care centers and shopping centers being 15 and 30 percent, respectively. Based on these usage rates and assuming similar sample sizes for follow-up observations, our sample size is sufficiently large to reliably detect an increase from 30 to 35 percent (alpha = .10, beta = .25) for both cities

combined and an increase from 30 to 40 percent (alpha = .01, beta = .25) within each city. Thus, the sample size obtained should be large enough to detect anticipated effects.

Data Collection Procedures

The actual observation procedure consisted of direct observations made in combination with (i.e., "disguised" by) a survey of the vehicle driver. This was based upon the field testing of various techniques which showed that it would be necessary to get cars to stop in order to be able to see inside the car long enough to observe the needed details. In order to get the car to stop, a large sign was placed near the exit of a parking lot which read: "Any children less than 6 in your car? Please stop for one minute survey. Free gift for your child. UNC Highway Safety Research Center." Attached to the sign were several helium filled balloons to show what the free gift was and to attract the attention of the car's occupants. Once a car stopped in response to the sign, the survey was conducted by two people. The interviewer stood at the driver's window and asked for the age and weight of all children in the car as well as their relationship to the driver. The interviewer also asked drivers how far they would be driving to the next stop and how much driving they usually did during the day with children in the car. If a child restraint was present in the car, the interviewers asked the drivers who or what convinced them to obtain and/or use one. As the interviewer was asking the questions and recording the answers, the other team member stood on the other side of the car and looked through the window and recorded information regarding types of restraints available and used, whether children were sitting, standing, kneeling, or lying down, and whether child restraints were crash-tested and properly installed and used. Car license numbers were obtained to match interviewer and observer sheets (see Appendix D). Once the questions were answered, each child in the

car was given a balloon and the drivers were thanked for their cooperation. The entire procedure lasted less than one minute, thus minimizing any traffic congestion caused by the stopped cars. By using this procedure, 1,049 complete and usable interviews were conducted and 1,138 children in our target population were observed.

Problems Encountered in Evaluation Methodology and Data Collection

Several problems were encountered in the collection of data for this evaluation. One main concern arising from these problems is related to the sampling procedure. Generally, as a sampling procedure moves away from randomness, greater threats to validity are encountered. In the case of this data collection procedure, after the cities were decided upon, the sample was almost completely self-selected, which could threaten the results with serious bias. The sites used were those for which permission to conduct the surveys was granted and only those persons stopping in response to the sign were interviewed. Unfortunately, there is little if anything that can be done to prevent this. In order to collect any data at all, it was necessary to solicit the cooperation of the doctors, day care center directors, and shopping center managers. In order to gain their cooperation, we had to promise that we would survey only those persons who voluntarily stopped in response to the sign. There is no way to determine if there are any inherent differences between those sites granting permission and those not granting permission. However, field testing of the survey method showed that there seemed to be little or no difference in regard to restraint usage between those persons stopping in response to the sign and those persons not stopping.

Other problems encountered with data collection were not as serious. It was necessary to delay data collection until the latter part of June, when enough full-time student help was available. This delay led to conducting

surveys in extreme heat for the last two weeks of the data collection period. This did not seem to have much effect on people stopping, however. Another problem was that some sites had a traffic pattern and/or low volume of traffic such that it was not cost-beneficial in terms of completed surveys. Fortunately, the survey schedule was flexible enough to be able to work around these sites by reducing the amount of time spent there and staying longer at more productive sites.

One major and apparently unavoidable problem has arisen in regard to the evaluation phase of this project. The original intent of the evaluation procedure was to use Durham as an experimental city, and Greensboro as a control. That is, an intensive effort was to be made to encourage pediatricians in Durham to discuss and encourage the use of child restraints by the parents of their patients. At the same time, there would be no active attempt to encourage Greensboro pediatricians to participate in the program. Therefore, an effective child restraint promotion campaign should have significantly increased usage rates in Durham but not affected those for Greensboro. However, the plan design had to be greatly modified. During the data collection period, we were requested to present our program and materials to a group of Greensboro pediatricians. As a result of this meeting, several Greensboro pediatricians asked to be supplied with child restraint materials and showed enough enthusiasm to preclude the use of Greensboro as a control city. This in itself did not present such a problem since the effort to gain the cooperation of Durham pediatricians had not yet begun. It was decided, out of necessity, to switch and make Greensboro the experimental city and Durham the control city. As a part of our efforts to promote our materials statewide, the child restraint staff set up a display and presented a talk at the annual meeting of the North Carolina Pediatric Society in early September. At this meeting, we were requested by several Durham pediatricians and clinics to supply them with our

materials. Of course, we had no choice or desire but to comply with these requests on ethical grounds. This has resulted in having two experimental cities and no control city, which means that there has been an inadvertant shift from a pre-test / post-test control group design with adequate controls on internal validity to a two-group pre-test / post-test design with fewer controls on internal validity. The main increase in a threat to the internal validity will be in the area of possible effects of history on the anticipated increase in usage rates (Campbell and Stanly, 1963). That is, we will not be able to say with certainty if any increases found are a result of our program or some other factor occurring between the observation periods. Hopefully, we will be able to monitor media coverage of the need to use child restraints as well as the start up of any recycling efforts in the two cities to get a handle on some of the outside factors that might have an effect on restraint usage. Another way in which this validity threat may be reduced is that for each surveyed car that had a child restraint present, the driver is asked who or what convinced them to obtain the device. Analysis of the pre-test data collected showed that only 3.8 percent of those with child restraints present stated specifically that their doctor convinced them to use one. If in fact physicians are able to convince their patients to use crash tested child restraints, the number of persons stating that their doctor convinced them should increase significantly.

A second part of the program evaluation will be through an examination of North Carolina accident data. By looking at children involved in accidents both throughout the state and in Durham and Guilford counties before and after the introduction of the child restraint project, we should be able to determine if there has been any change in the way children are protected during accidents. If this program is indeed effective in encouraging parents to properly restrain

their children, then an examination of crash data should reveal an increase in the proportion of children restrained in cars that are involved in accidents with a resultant decrease in the proportions of children killed or seriously injured.

Preliminary Analysis of HSRC Child Restraint Data

As was indicated earlier, the sample size selected for the observational survey was based on 1974 and 1975 North Carolina accident file data, which showed that children 0-5 years old were restrained in some manner only about 5 percent of the time (5.4 percent in 1974 and 5.0 percent in 1975). As can be seen in Table 4, the corresponding restraint usage figures for children in 1976 and 1977 North Carolina accidents are very similar with 4.6 percent (1976) and 5.9 percent (1977) of the children restrained in some manner. An even smaller percentage of the children were noted as being secured in child restraint devices rather than adult belts (0.19 percent in 1976 and 1.9 percent in 1977).

Analysis of the data collected through observational surveys conducted in Durham and Greensboro show that, as expected, North Carolina parents are not protecting their children in cars very well. However, usage rates for child restraints were found to be higher than was anticipated based on the data found in the North Carolina accident files. Of those children observed riding in cars in Durham and Greensboro who were aged less than six and weighing less than fifty pounds (those for whom child restraints are designed), 19.3 percent were riding in some type of child restraint, 6.7 percent of the children were restrained by adult belts, and 72.9 percent were observed to be riding in an unsafe manner (either no restraint at all, held in someone's arms, or in a flimsy infant carrier designed for home use). Usage rates are very similar for Durham and Greensboro (Table 5) but vary quite a bit among the types of sites

Table 4. Restraint usage for children 0-5 by seating position.

1976	Seating Positions					
	Front Center	Front Right	Back Left	Back Center	Back Right	Total
No Restraint	95.6% (2126)	90.3% (1431)	91.9% (1042)	95.9% (1139)	93.6% (1027)	93.6% (6765)
Adult Belts	3.2% (71)	7.6% (120)	5.0% (56)	2.6% (31)	4.6% (50)	4.5% (328)
Child Restraint	0.0% (1)	0.2% (3)	0.1% (1)	0.0% (0)	0.0% (0)	0.1% (5)
Not Present Not Stated	1.2% (26)	1.9% (30)	3.1% (35)	1.5% (18)	1.8% (20)	1.8% (129)
N	2224	1584	1134	1188	1097	7227

1977	Front Center	Front Right	Back Left	Back Center	Back Right	Total
No Restraint	91.7% (708)	91.3% (554)	93.0% (332)	94.2% (338)	92.4% (304)	92.2% (2236)
Adult Belts	2.7% (21)	5.9% (36)	3.6% (13)	3.3% (12)	4.3% (14)	4.0% (96)
Child Restraint	2.6% (2)	1.7% (10)	1.4% (5)	1.7% (6)	1.5% (5)	1.9% (46)
Not Present Not State	3.0% (23)	1.2% (7)	2.0% (7)	0.9% (3)	1.8% (6)	1.9% (46)
N	772	607	357	359	329	2424

Table 5. Restraints used by children.

	City		
	Combined Cities	Durham	Greensboro
Unsafe*	72.9% (829)	72.1% (455)	73.8% (374)
Child Restraint	19.3% (220)	19.2% (121)	19.5% (99)
Other	6.7% (75)	6.8% (43)	6.3% (32)
Missing	1.3% (14)	1.9% (12)	0.4% (2)

*No restraint, child held in lap, or home infant carrier

surveyed. Child restraints were observed to be in use in 25.2 percent of the cases at doctors' offices and for 22.7 percent of the cases at shopping centers. In contrast only 8.0 percent of the children observed at day care centers were secured in child restraints. Again, these figures are similar for both cities (Table 6). Figures for the type of child restraints being used by these children show that the majority (59.6 percent) are using the child seat with harness, with 20 percent riding in automobile infant carriers, 3.9 percent riding in child seats with shields, and only 0.4 percent using the safety harness alone. Another 11 percent of the children were observed to be riding in flimsy home infant carriers (Table 7).

Previous studies have shown that child restraint usage rates are age-related with a sharp decline in usage after age 1 (e.g., Williams, 1975). This age factor is confirmed by the North Carolina data gathered. As can be seen in Table 8, usage rates for CRD's or adult belts dropped from 48.6 percent for children aged nine months or less to only 6.9 percent for the five year olds. Thus, these data indicate for North Carolina the same sharp contrast in usage rates between the one year olds and the older children that was documented in the previously cited studies. Apparently, most parents neglect to insure their childrens' safety once they have outgrown infant carriers.

While 19.3 percent of the children were seen to be riding in child restraints, this does not mean that 19.3 percent of North Carolina's children are riding safely in cars. In order for a child restraint to be effective and safe, it must be a crash-tested model that has been properly installed and is properly used. Of the 256 child restraints (including home infant carriers) observed in cars, only 57.8 percent were judged to have been crash-tested models. Another 20.3 percent were judged to meet minimum federal government safety standards (Federal Motor Vehicles Safety Standard 213), 16 percent did

Table 6. Child restraint usage by survey site.

	Combined Cities			Durham			Greensboro		
	Unsafe*	Child Restraint	Other Restraint	Unsafe	Child Restraint	Other Restraint	Unsafe	Child Restraint	Other Restraint
Shopping Center	70.3% (90)	22.7% (29)	7.0% (9)	68.8% (22)	21.9% (7)	9.4% (3)	70.8% (68)	22.9% (22)	6.3% (6)
Day Care Center	84.6% (295)	8.0% (28)	7.4% (26)	90.2% (139)	1.9% (3)	7.8% (12)	80.0% (156)	12.8% (25)	7.2% (14)
Doctor's Office	68.7% (444)	25.2% (163)	6.2% (40)	67.9% (294)	25.6% (111)	6.5% (28)	65.9% (141)	24.3% (52)	5.6% (12)

*Unsafe = No restraint, child in lap, or home infant carrier.

Table 7. Types of child restraints used.

	Combined Cities	Durham	Greensboro
Home Infant Carrier	11.0% (28)	12.5% (18)	9.0% (10)
Auto Infant Carrier	20.0% (51)	20.8% (30)	18.9% (21)
Child Seat with Shield	3.9% (10)	4.2% (6)	3.6% (4)
Child Seat with Harness	59.6% (152)	56.3% (81)	64.0% (71)
Harness Only	0.4% (1)	0.7% (1)	0.0% (0)
Missing	5.1% (13)	5.6% (8)	4.5% (5)

Table 8. Restraints used by age of child.

	Combined Cities						Durham						Greensboro					
	<9 m	10 m-1	2	3	4	5	<9 m	10 m-1	2	3	4	5	<9 m	10 m-1	2	3	4	5
No Restraint	11.7% (20)	31.2% (59)	65.8% (98)	77.9% (166)	90.8% (207)	92.5% (161)	16.2% (17)	31.3% (30)	69.4% (50)	75.2% (82)	88.4% (122)	93.9% (93)	4.5% (3)	31.2% (29)	62.3% (48)	80.8% (84)	94.4% (85)	90.7% (68)
Child In Lap	24.6% (42)	16.4% (31)	6.0% (9)	3.8% (8)	0.0% (0)	0.0% (0)	21.9% (23)	15.6% (15)	4.2% (3)	1.8% (2)	0.0% (0)	0.0% (0)	28.8% (19)	17.2% (16)	7.8% (6)	5.8% (6)	0.0% (0)	0.0% (0)
Home Infant Carrier	15.2% (26)	0.5% (1)	0.0% (0)	0.5% (1)	0.0% (0)	0.0% (0)	17.1% (18)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	12.1% (8)	1.1% (1)	0.0% (0)	1.0% (1)	0.0% (0)	0.0% (0)
Adult Belts	1.8% (3)	6.7% (13)	9.4% (14)	8.9% (19)	5.7% (13)	5.8% (10)	1.9% (2)	7.3% (7)	5.6% (4)	11.0% (12)	7.2% (10)	5.0% (5)	1.5% (1)	6.5% (6)	13.0% (10)	6.8% (7)	3.3% (3)	6.7% (5)
Child Restraint	46.8% (8)	45.0% (85)	18.8% (28)	8.5% (18)	3.1% (7)	1.1% (2)	42.9% (45)	45.8% (44)	20.8% (15)	11.0% (12)	3.6% (5)	0.0% (0)	53.0% (35)	44.1% (41)	16.9% (13)	5.8% (6)	2.2% (2)	2.7% (2)
Other	0.0% (0)	0.0% (0)	0.0% (0)	0.5% (1)	0.4% (1)	0.6% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)	0.7% (1)	1.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
N	171	189	149	213	228	174	105	96	72	109	138	99	66	93	77	104	90	75

not meet any safety standards, and no judgement was made in 5.5 percent of the cases (Table 9). Judgments were also made regarding whether or not the child restraint devices observed were installed correctly and were being properly used. The following criteria were used for determining the proper installation and use of each seat. To be considered properly installed, both infant carriers and child seats had to be secured by an adult lap belt. In addition infant carriers had to be facing the rear of the car and child seats that were equipped with top tether straps had to have them fastened tightly. Judgments of the proper use of the child restraint device were made on the basis of whether or not the child was secured within the seat by the safety shield or harness provided with the seat. When the incidences of proper installation and use are examined, it can be seen that only 60.9 percent of the child restraints were properly installed (Table 10) and even fewer, 47.1 percent, were properly used (Table 11).

As a stricter measure of the level of protection afforded the children in the sample, the three related factors of test level, proper installation and proper usage were combined to form a single measure of level of protection. As can be seen in Table 12, only 26.4 percent of the 256 child restraint devices in use were crash-tested models that had been properly installed in the car with the child properly secured within the seat. Another 13 percent of the child restraint devices were judged to provide a marginal level of protection, and 52.8 percent of the child restraint devices and the way they were used were judged to be unsafe. When these levels of protection are expanded to the entire sample of children, the data indicate that only 5.9 percent of the children for whom judgements could be made were being provided a high level of protection with another 9.6 percent being provided marginal protection (marginally safe child restraint device usage or use of adult belts) and 84.5 percent were being offered little or no protection at all (Table 13).

Table 9. Test levels of restraints used.

	Combined Cities	Durham	Greensboro
Dynamic Testing	57.8% (148)	57.5% (84)	58.2% (64)
FMVSS 213	20.3% (52)	18.5% (27)	22.7% (25)
None	16.0% (41)	18.5% (27)	12.7% (14)
Not Ascertained	5.5% (15)	5.5% (8)	6.4% (7)

Table 10. Percentages of restraints correctly installed.*

	Combined Cities	Durham	Greensboro
Correct Installation	60.9% (156)	63.7% (93)	57.3% (63)
Incorrect Installation	29.3% (75)	26.7% (39)	32.7% (36)
Not Ascertained	9.8% (25)	9.6% (14)	10.0% (11)

*For a unit to be judged as being correctly installed, both of the following criteria must be met:

(a) Unit must be secured in the car with adult safty belts.
(b) Infant carriers must be facing to the rear or top tether straps must be used for those seats requiring them.

Table 11. Percentages of restraints correctly used.**

	Combined Cities	Durham	Greensboro
Properly Used	47.1% (121)	50.7% (74)	42.3% (47)
Improperly Used	42.4% (109)	41.1% (60)	44.1% (49)
Not Ascertained	10.5% (27)	8.2% (12)	13.5% (15)

**For a unit to be judged as being properly used, the safety shield or five-point harness must be used.

Table 12. Level of protection provided for chidren riding in CRD's.

	Combined Cities	Durham	Greensboro
Safe Usage*	26.4% (67)	25.3% (37)	27.8% (30)
Marginal Safety**	13.0% (33)	14.4% (21)	11.1% (12)
Unsafe Usage***	52.8% (134)	53.4% (78)	51.9% (56)
Not Ascertainable	7.9% (20)	6.8% (10)	9.3% (10)
Not in CRD	-- (884)	-- (485)	-- (399)

*Judged as safe if using crash tested CRD properly installed and used.

**Judged as marginal if (a) properly installed and used but only meets FMVSS 213 or (b) crash tested and properly used but not installed properly (no top tether in most cases).

***Judged as unsafe if any other combination fits.

Table 13. Level of protection provided for all children.

	Combined Cities	Durham	Greensboro
High Level* Protection	5.7% (65)	5.5% (35)	5.9% (30)
Marginal Protection**	9.2% (105)	9.7% (61)	8.7% (44)
No Protection***	81.5% (927)	80.7% (509)	82.4% (418)
Not Ascertained	3.6% (41)	4.1% (26)	3.0% (15)

*Riding in properly installed and used crash tested CRD.

**(a) Properly installed and used CRD that meets FMVSS 213, or (b) properly used crash tested CRD not installed properly (no top tether in most cases), or c) using adult belts.

***(a) No restraints at all, or (b) CRD that meets no safety standard or (c) crash tested CRD improperly installed and/or improperly used, or (d) FMVSS 213 CRD improperly installed or used.

Table 14 shows that the same inverse relationship exists between the age of child and level of protection as exists between age of child and child restraint device usage. As was seen in Table 5, 46.8 percent of the children nine months or less were riding in child restraint devices. But when the level of protection is measured, only 17.5 percent of these children have been provided with maximum protection (crash-tested child restraint device properly installed and properly used). This high level of protection rate drops to zero percent for the five year olds. The rate for children being offered no protection (either no restraint or unsafe child restraint device usage) ranges from 66.8 percent (for children aged ten months to less than two years) up to 92.2 percent (for four year olds).

One would assume that any parent or other driver who is concerned enough with safety to use his or her own safety belt would also be concerned about the safety of those children riding with them. However, as noted in earlier analysis of North Carolina crash data, this was not true for the majority of the cases. In over two-thirds of the cases where the drivers in crashes were restrained, they had failed to restrain their child passengers. Thus, even in cars where for some reason the drivers protected themselves, they were either not adequately educated, not adequately convinced of the effectiveness of child restraint devices, or not adequately informed of the risk of being involved in a crash to cause them to protect their children.

This disturbing situation does not appear to be as prevalent in the current observational data. Here, for the majority of the drivers, those who protected themselves also protected their young passengers. In Table 15 it can be seen that in 68.4 percent of the cases where the driver is restrained, the children in the car are also restrained by child restraints or adult belts. In

Table 14. Level of protection by age of child.

	Combined Cities						Durham						Greensboro					
	<9 m	10 m-1	2	3	4	5	<9 m	10 m-1	2	3	4	5	<9 m	10 m-1	2	3	4	5
No* Protection	70.2% (120)	66.8% (125)	80.0% (120)	87.0% (187)	92.2% (213)	91.0% (162)	69.5% (73)	64.9% (63)	82.4% (61)	83.8% (93)	89.4% (126)	92.1% (93)	71.2% (47)	68.9% (62)	77.6% (59)	90.4% (94)	96.7% (87)	89.6% (69)
Marginal** Protection	9.4% (16)	15.5% (29)	11.3% (17)	8.8% (19)	5.6% (13)	6.2% (11)	11.4% (12)	16.5% (16)	8.1% (6)	10.8% (12)	7.1% (10)	5.0% (5)	6.1% (14)	14.4% (13)	14.5% (11)	6.7% (7)	3.3% (3)	7.8% (6)
High Level*** Protection	17.5% (30)	11.2% (21)	6.7% (10)	1.4% (3)	0.4% (1)	0.0% (0)	15.2% (16)	11.3% (11)	6.8% (5)	1.8% (2)	0.7% (1)	0.0% (0)	21.2% (14)	11.1% (10)	6.6% (5)	1.0% (1)	0.0% (0)	0.0% (0)
Not Ascertained	2.9% (5)	6.4% (12)	2.0% (3)	2.8% (6)	1.7% (4)	2.8% (5)	3.8% (4)	7.2% (7)	2.7% (2)	3.6% (4)	2.8% (4)	3.0% (3)	1.5% (1)	5.6% (5)	1.3% (1)	1.9% (2)	0.0% (0)	2.6% (2)
N	171	187	150	215	231	178	105	97	74	111	141	101	66	90	76	104	90	77

*(a) No restraints at all, or (b) CRD that meets no safety standard, or (c) crash tested CRD improperly installed and/or improperly used, or (d) FMVSS 213 CRD improperly installed or used.

**(a) Properly installed and used CRD that meets FMVSS 213, (b) properly used crash tested CRD not installed properly (no top tether in most cases), or (c) using adult belts.

***Riding in properly installed and used crash tested CRD

Table 15. Restraint use of children by restraint use of driver ("follow-the-leader effect").

		Restraint of Driver					
		Combined Cities		Durham		Greensboro	
		No	Yes	No	Yes	No	Yes
Restraint of Child	None	79.7% (775)	28.6% (43)	80.1% (415)	34.1% (30)	79.3% (360)	27.1% (13)
	Child Restraint	16.6% (161)	39.7% (54)	16.6% (86)	36.4% (32)	16.5% (75)	45.8% (22)
	Other Restraint	3.7% (36)	28.7% (39)	3.3% (17)	29.6% (26)	4.2% (19)	27.1% (13)

similar fashion, 79.7 percent of the children are riding in an unsafe manner when the driver is not using his or her restraint system. It is still a matter of concern that in the cases where the driver is restrained, there are still at least 28.6 percent of the children who are not restrained.

The preliminary data presented above show that while North Carolina parents are making use of child restraint devices more often than expected, only about one out of every twenty children is properly restrained by safety devices appropriate to his or her age and weight. A well planned and executed program of parent education using health care professionals as educators should increase this number significantly with a subsequent reduction in the number of deaths and serious injuries to children involved in automobile accidents. The cooperation and enthusiasm shown by doctors and others contacted thus far gives us reason to be optimistic in regard to this goal.

Summary

In summary, the first year's efforts of the child restraint education program supported by the Governor's Highway Safety Program and implemented by the Highway Safety Research Center have, in general, met or surpassed the stated goals. While minor problems were encountered initially in both the development and distribution of materials through personal contacts and other publicity outlets, these problems have been overcome. Through the efforts of the project advisory committee and because of the interest shown on the part of many key doctors in the state, over 22,000 pamphlets and 470 posters have been distributed during the year. Based on these first year's efforts, the following conclusions can be drawn.

First, the enthusiasm shown by the health care professionals in the state for this project has been even greater than anticipated. Particularly

encouraging are the efforts of the North Carolina Pediatrics Society in this regard. A great deal of support has been received from both the President of the Society and from the Chairman of the Traffic Safety Committee. Because of an invitation to speak at the annual meeting of the North Carolina Pediatrics Society, the project staff was able to contact a great number of the pediatricians across the state. Indeed the President of the Society has also stressed his willingness to work even closer with the Highway Safety Research Center in the further distribution of letters which would again urge each member of his society to actually participate in the program.

Second, the preliminary data collection efforts have indicated some interesting findings which will be used in the Year 2 educational efforts. Surprisingly, the usage levels for child restraint devices was higher in the observational studies than in the earlier North Carolina crash data. Whereas approximately five to six percent of the children in crashes were indicated as being restrained, approximately 26 percent of those children observed riding in cars at observational sites in two cites were restrained either with child restraint devices or adult lap belts. While these differences could reflect actual increases in usage from the past crash data to the current year, they probably more accurately reflect differences in actual usage rates between the crash population and the observed population due to both the type of driver in the two populations and the time of day the observations were made. For example, while crash data include night-time crashes in which previous research has indicated that all restraint type usage is lower, the observational data were collected only during daytime periods at what might be considered middle to upper class observational points (i.e., pediatricians offices, day care centers and shopping centers). Even though the usage level for the CRD's was higher than originally anticipated, the data did indicate problems with correct usage,

problems that could definitely be addressed in the educational program. While 19.3 percent of the children observed were in child restraint devices, more detailed analysis of the data indicated that only 5.9 percent were being afforded a high level of protection (i.e., were properly secured to dynamically tested devices which in turn were properly secure in the vehicles). An additional 9.6 percent were being afforded some marginal level of protection, while the remaining 84.5 percent were being provided little or no protection in the car. Thus, the higher usage rates are compromised to a great extent by the fact that only one-fourth of the children whose parents had made some effort to protect them through use of CRD's were actually properly protected. Again, this is a problem which can be addressed through the pediatric education program. In the second year of the program, more emphasis will be placed on the fact that health care professionals not only need to convince parents to obtain a crash-tested child restraint, but they should also spend some time explaining to them how the restraint works and how it should be properly installed in the car.

Third, the preliminary data also indicate great differences between usage rates according to age of child. As noted in this paper, child restraint usage rates for infants are much higher than usage rates for five-year-olds. While this could result from a more educated group of infant parents, it is more likely related to a phenomenon in which once the child has outgrown the infant carrier, the parents may fail to obtain an adequate child seat or fail to use the seat they already own. This could possibly result from the fact that infants appear more vulnerable than older children. Again, this is a problem that can be addressed in the education program. Because the data indicate that the leading cause of death for the older chidren is still the motor vehicle crash, the pediatricians should be able to stress to the parents that there is a continuing need for adequate protection. It is also of interest to note that

the failure to continue protection for the older child may be a reason for at least discussing with the parent the purchase of a convertible system (i.e., an infant carrier which converts to a child seat without a parent having to purchase a different system).

Finally, the first year's contacts with the medical professionals in North Carolina indicate that there is some grass roots support for a mandatory usage law. It appears that the strategy of attempting an educational campaign to build support for child restraint efforts may also be building support for future legislative actions. Many of the physicians have asked about the possibility of a mandatory child restraint law in North Carolina and indicated that they would be in favor of such a law if the educational campaign is not effective.

A final issue which has been raised in the first year's efforts are the problems associated with increasing child restraint usage among the lower socio-economic sectors of the population. Because the project has concentrated on pediatricians to some extent in the first year, there is a need to concentrate the second year's efforts more on county health clinics, well-baby clinics, and other outlets for this group of parents and patients. However, it may still be the case, just as with other safety devices in cars, this particular sector of the population may continue to use child restraints less than other sectors. In an attempt to make some headway in this problem area, the feasibility study planned for the Year 2 efforts will examine the possibility of the actual purchase of child restraint devices for distribution to these lower socio-economic sectors.

As indicated in the original plan, the Year 2 efforts in this project will concentrate on continuing to distribute materials and to establish face-to-face contacts with health care professionals across the state. In addition, the

evaluation of the effects of the program, both in terms of observational studies and in terms of accident based studies, will be carried out. Based on the results to date, it is hoped that the program will prove to be as successful during the second year as it was during the first year.

References

"Accident Facts 1978 Edition." Chicago: National Safety Council, 1978.

Allen, D.B., and Bergman, A.B. "Social Learning Approaches to Health Education: Utilization of Infant Auto Restraint Devices." Pediatrics, Vol. 58, No. 3, September, 1976, pp. 323-328.

Campbell, D.T., and Stanley, J.C. Experimental and Quasi-Experimental Design for Research. Chicago: Rand McNally, 1963.

Kanthor, H.A. "Car Safety for Infants: Effectiveness of Prenatal Counseling." Pediatrics, Vol. 58, No. 3, September, 1976, pp. 320-322.

Lieberman, H.M., Emmet, W.L., and Coolson, A.H. "Pediatric Automotive Restraints, Pediatricians, and the Academy." Pediatrics, Vol. 58, No. 3, September, 1976, pp. 316-319.

Miller, J.R. and Pless, I.B. "Child Automobile Restraints: Evaluation of Health Education." Pediatrics, Vol. 59, No. 6, June, 1977, pp. 907-911.

Reisinger, K.S. and Williams, A.F. "Evaluation of Three Educational Programs Designed to Increase the Crash Protection of Infants in Cars." Washington, D.C.: Insurance Institute for Highway Safety, October, 1977.

Williams, A.F. "Observed Restraint Use of Children in Automobiles." Washington, D.C.: Insurance Institute for Highway Safety, May, 1975.

APPENDIX A

Wall Posters

your best "baby sitter"

North Carolina motor vehicle accidents kill more children than any disease.

Child restraints could save 70 of every 100 children who die in crashes.

It's your child's life. But it's your decision.

Ask your doctor for information.

Distributed in the interest of highway safety by:
the University of North Carolina Highway Safety Research Center and the Governor's Highway Safety Program.

a great "kidnapper"

CHILD RESTRAINTS - Solution for Two Problems

-makes you a safer driver by reducing distractions

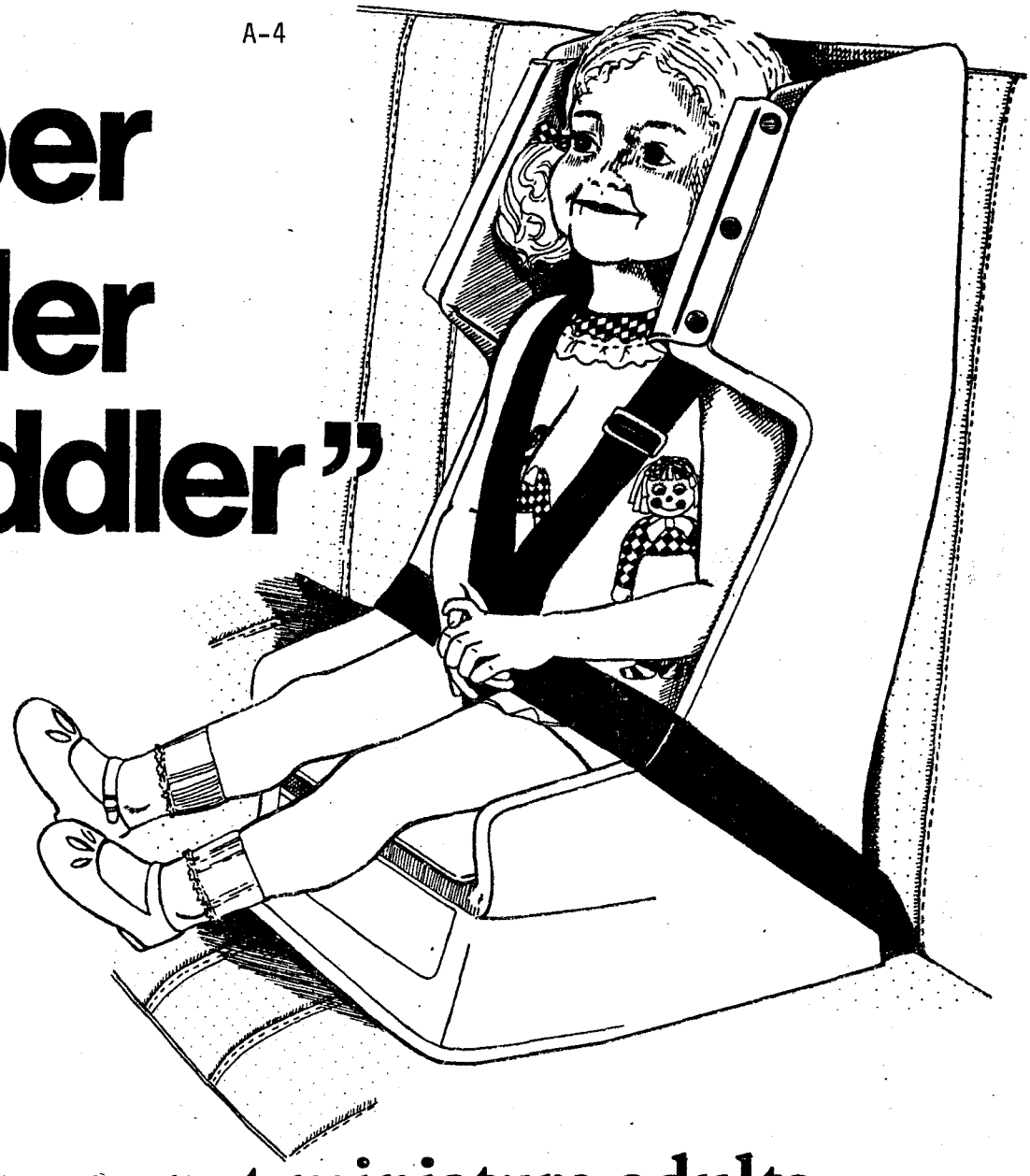
-makes your children safer riders by protecting them in crashes and sudden stops

When your car stops — your child doesn't. What he hits is your decision.

Ask your doctor for information.

Distributed in the interest of highway safety by:
the University of North Carolina Highway Safety Research Center and the Governor's Highway Safety Program.

a super "toddler coddler"



Children are not miniature adults.

-Their bodies are different. They need their own special restraint systems.

-Their minds are different. They can not make their own safety choices.

It's your child's life. But it's your decision.

Ask your doctor for information.

Distributed in the interest of highway safety by:
the University of North Carolina Highway Safety Research Center and the Governor's Highway Safety Program.

A-5

don't "clown around" with safety

It's not funny when your child doesn't ride in a restraint or rides in a poorly designed one.

Well-designed child restraints tell you they have been crash-tested. They cost more because they are worth more.

When your car stops — your child doesn't. What he hits is your decision.

Ask your doctor for information.

Distributed in the interest of highway safety by:
the University of North Carolina Highway Safety Research Center and the Governor's Highway Safety Program.

APPENDIX B

Child Restraint Pamphlet

POINTS TO REMEMBER

1. Be sure that the restraint you buy has been **crash-tested.** *(Crash-tested restraints list that information on the box or in the descriptive literature.)*

2. Be sure to buy a restraint that will fit your car seats and belts. *(Some belt systems in small cars are too short for the larger restraints.)*

3. If your restraint includes a tether strap, **it must be used** or the restraint loses much of its effectiveness. Some crash-tested devices do not require a tether.

4. Remember, your child may like his restraint better if it allows him to see out the windows.

5. The protection provided by all restraints can be increased by installing them **in the rear seat.**

Prepared by
the University of North Carolina
Highway Safety Research Center
and the North Carolina
Governor's Highway Safety Program.

It's your child's life...

But it's your d[illegible]n.

~~C-3~~

B-3

Like most parents, you recognize everyday threats to your baby's life. You protect your child from sharp objects and poisons around the home and immunize him against childhood diseases. However, do you realize that more North Carolina children are killed in motor vehicle accidents than by any other single cause? In fact, your children are 40 to 50 times more likely to die from auto accidents than from rubella, diptheria, polio, measles, tetanus and whooping cough. Yet 95 percent of the young North Carolina children who are in car crashes have not been buckled up by their parents.

As easy as it is to take your child to the doctor for immunizations, it is that simple to buy a crash-tested child restraint. As easy as it is to place poisons and sharp objects out of baby's reach, it is that simple to form the habit of safely placing your child in a car restraint. Everyday trips are everyday dangers that require everyday precautions.

When traveling by car a child restraint is

"your best baby sitter."

At least 70 out of every 100 children who die in automobile crashes could survive if their parents would make the effort to secure them in crash-tested restraints.

It's your child's life... But it's your decision.

When your car stops - your child doesn't.

What he hits is your decision.

In a crash, the car stops very suddenly, but the occupants within the car continue moving until something stops them. Restrained occupants are safely stopped by belts, but unrestrained occupants are thrown against the windshield or dashboard, or even out of the car. And this same sequence can also occur in non-crash situations, such as emergency stops.

The most effective way to safely secure a child in a car is to have him ride in a crash-tested restraint device. The belts that come in cars are better than no protection at all, but children's bodies are not yet developed enough to be adequately protected by adult belt systems. Children need their own restraint systems—ones that are designed specifically for them. And since they aren't old enough to make their own safety decisions, the only people who can decide to protect them are parents and other adults.

In addition to protecting children, child restraints have another safety benefit. Recent scientific studies show that children behave much better if they ride in a child restraint than if they are allowed to roam free in the car. When children behave better, drivers have fewer distractions to take their attention off of driving.

Take the time to teach your child to ride the right way. It can be worth it to both of you.

Children are not miniature adults.

Their minds are different.
They cannot make their own safety decisions.

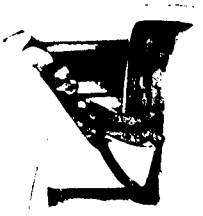
Their bodies are different.
They need their own special restraint systems.

~~C-4~~

B-4

3 Main Types of Child Restraints

Infant Carrier



Infants (less than about 15 pounds) require a carrier which is a tub-shaped bed that cradles the child in a semi-erect position. Infant carriers are designed to face the rear of the car and must be secured to the seat by the adult belts already in the car. For very small infants, it may be more comfortable to roll up small blankets or towels and place them inside the carrier at the sides of the infant's body.

Child Seats

For children who weigh more than 15 pounds and can sit up by themselves, there are two types of child seats. The shield type consists of a seat with an impact shield (a padded and slightly flexible surface) that comes up close to the child's stomach and then bends away from his face and chest. The harness type secures the child to the restraint with several harnesses. Both the shield and harness restraints must be secured to the car seat by the adult seat belts already in the car. Some child seats also include a top tether strap that must be secured to a rear seat belt or the window shelf behind the rear seat.

Safety Harness

This type of restraint, also for the larger child, uses a harness without the protective car seat. It must be installed in the center of the rear seat and is anchored to the rear seat belt and window shelf behind the rear seat. This type of restraint provides less protection in a crash than the child seats but is preferable to no restraint at all for a child who refuses to sit in a child seat.

Don't Clown Around with Safety

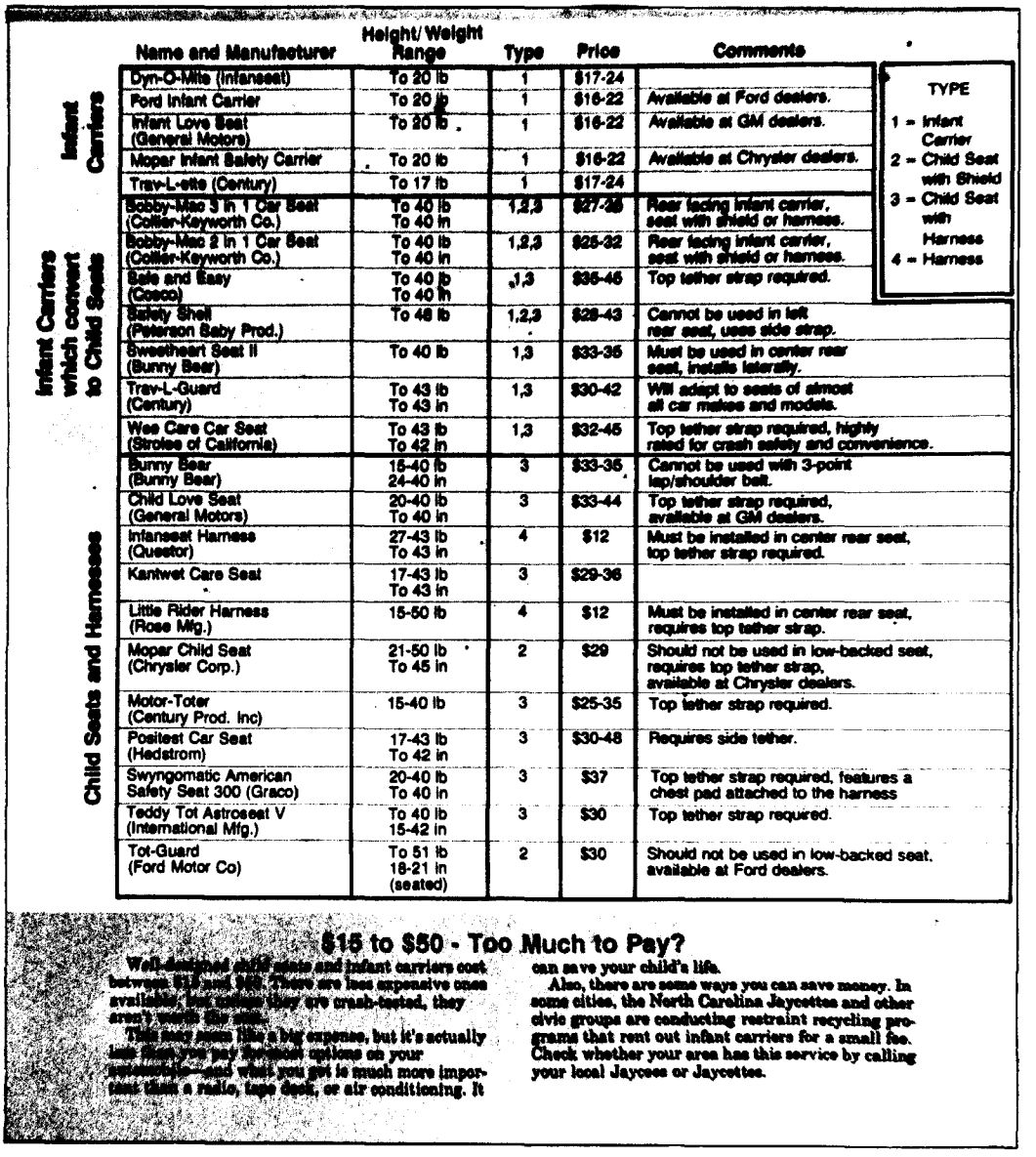
Unless a child restraint says it has been crash-tested (dynamically-tested means the same thing), it can't really protect your child.

As of May 1978, the existing Federal Standard for child restraints does not require crash-testing and does not assure adequate protection in the event of a crash. (A revision to this Standard, recently proposed by the U.S. Department of Transportation, would require such crash-testing.) All of the devices at left have been crash-tested by various safety research organizations and provide a high level of protection. In addition, new child restraint models may soon be marketed because of the revised standard. Again, the better ones will be those which have passed crash-test requirements.

Before selecting a particular model for your child, be sure that it will properly fit into your car and that it is adaptable to your particular seat belt system. Some models require the use of seat belts longer than those supplied with some car models. Before using a child restraint which has been given to you or bought at a garage sale, be sure that it is one of the crash-tested models. Often these "hand-me-downs" are older devices which are inadequate to protect your child in a crash.

For more information, ask your doctor or contact:

the University of North Carolina Highway Safety Research Center Chapel Hill, N.C. 27514 (919 933-2202)



	Name and Manufacturer	Height/Weight Range	Type	Price	Comments
Infant Carriers	Dyn-O-Mite (Infanseat)	To 20 lb	1	$17-24	
	Ford Infant Carrier	To 20 lb	1	$16-22	Available at Ford dealers.
	Infant Love Seat (General Motors)	To 20 lb	1	$16-22	Available at GM dealers.
	Mopar Infant Safety Carrier	To 20 lb	1	$16-22	Available at Chrysler dealers.
	Trav-L-ette (Century)	To 17 lb	1	$17-24	
Infant Carriers which convert to Child Seats	Bobby-Mac 3 in 1 Car Seat (Collier-Keyworth Co.)	To 40 lb To 40 in	1,2,3	$27-38	Rear facing infant carrier, seat with shield or harness.
	Bobby-Mac 2 in 1 Car Seat (Collier-Keyworth Co.)	To 40 lb To 40 in	1,2,3	$25-32	Rear facing infant carrier, seat with shield or harness.
	Safe and Easy (Cosco)	To 40 lb To 40 in	1,3	$36-46	Top tether strap required.
	Safety Shell (Peterson Baby Prod.)	To 48 lb	1,2,3	$28-43	Cannot be used in left rear seat, uses side strap.
	Sweetheart Seat II (Bunny Bear)	To 40 lb	1,3	$33-36	Must be used in center rear seat, installs laterally.
	Trav-L-Guard (Century)	To 43 lb To 43 in	1,3	$30-42	Will adapt to seats of almost all car makes and models.
	Wee Care Car Seat (Strolee of California)	To 43 lb To 42 in	1,3	$32-45	Top tether strap required, highly rated for crash safety and convenience.
Child Seats and Harnesses	Bunny Bear (Bunny Bear)	15-40 lb 24-40 in	3	$33-36	Cannot be used with 3-point lap/shoulder belt.
	Child Love Seat (General Motors)	20-40 lb To 40 in	3	$33-44	Top tether strap required, available at GM dealers.
	Infanseat Harness (Questor)	27-43 lb To 43 in	4	$12	Must be installed in center rear seat, top tether strap required.
	Kantwet Care Seat	17-43 lb To 43 in	3	$29-36	
	Little Rider Harness (Rose Mfg.)	15-50 lb	4	$12	Must be installed in center rear seat, requires top tether strap.
	Mopar Child Seat (Chrysler Corp.)	21-50 lb To 45 in	2	$29	Should not be used in low-backed seat, requires top tether strap, available at Chrysler dealers.
	Motor-Toter (Century Prod. Inc)	15-40 lb	3	$25-35	Top tether strap required.
	Positest Car Seat (Hedstrom)	17-43 lb To 42 in	3	$30-48	Requires side tether.
	Swyngomatic American Safety Seat 300 (Graco)	20-40 lb To 40 in	3	$37	Top tether strap required, features a chest pad attached to the harness
	Teddy Tot Astroseat V (International Mfg.)	To 40 lb 15-42 in	3	$30	Top tether strap required.
	Tot-Guard (Ford Motor Co)	To 51 lb 18-21 in (seated)	2	$30	Should not be used in low-backed seat, available at Ford dealers.

TYPE
1 = Infant Carrier
2 = Child Seat with Shield
3 = Child Seat with Harness
4 = Harness

$15 to $50 - Too Much to Pay?

Well-designed child seats and infant carriers cost between $15 and $50. There are less expensive ones available, but unless they are crash-tested, they aren't worth the cost.

This may seem like a big expense, but it's actually less than you pay for special options on your automobile — and what you get is much more important than a radio, tape deck, or air conditioning. It can save your child's life.

Also, there are some ways you can save money. In some cities, the North Carolina Jaycettes and other civic groups are conducting restraint recycling programs that rent out infant carriers for a small fee. Check whether your area has this service by calling your local Jaycees or Jaycettes.

APPENDIX C

Shopping Guides

Shopping guides have been prepared for the following North Carolina cities:

Albemarle
Asheville
Boone
Charlotte
Chapel Hill
Clinton
Durham
Elizabeth City
Fayetteville
Franklin
Goldsboro
Greensboro
Greenville
Henderson
Hickory
Jacksonville
Kinston
Lumberton
Mount Airy
New Bern
Raleigh
Roanoke Rapids
Rocky Mount
Salisbury
Sanford
Shelby
Winston-Salem
Wilkesboro
Wilmington
Wilson

INFANT CARRIERS AND CHILD RESTRAINTS AVAILABLE IN CHARLOTTE.*

Product Name	Retail Outlet	Price Range
Bobby Mac by Collier-Keyworth	Richway Sears	$26.88-$27.99
Care Seat by Kantwet/Questor	Belk	$39.00
Dyn-O-Mite by Infanseat	Collins Co. Sears	$19.99-$25.00
Ford Infant Carrier by Ford Motor Co.	Harrelson Ford	$25.00
Love Seat (Infant) by General Motors	Gowen Oldsmobile Ivey's	$22.00-$22.50
Love Seat (Toddler) by General Motors	Gowen Oldsmobile Ivey's	$40.00-$44.00
Safety Shell by Peterson	Collins Co.	$26.00
Teddy Tot Astroseat by International Mfg.	Woolco	$19.99
Tot Guard by Ford Motor Co.	Harrelson Ford	$37.75
Wee Care by Strolee	Belk Ivey's Sears	$37.99-$42.00

*The cost and availability information presented is a result of representations made to the UNC Highway Safety Research Center in a recent survey and are subject to change. The devices listed are recommended as the result of crash tests conducted by other research agencies which have been publicly reported. Other devices by the same or other manufacturers are not currently recommended either because they have not been crash tested or performed poorly in crash tests. Other models of crash tested restraints may be available from other retail outlets in your area but were not located during our survey. If you find another model, be sure that it has been crash tested. This list may be updated at any time.

APPENDIX D

Data Collection Forms

~~F-2~~ D-2

INTERVIEWER

DATE:____/____/____

CITY: ☐(1)Greensboro ☐(2)Durham
LOCATION TYPE: ☐(1)Shopping Center ☐(2)Day Care Center ☐(3)Doctor's Office
LOCATION NAME: _____

INTERVIEWER: _____

****

CODES

RELATIONSHIP TO DRIVER:
(1)Son/Daughter
(2)Grandchild
(3)Niece/Nephew
(4)Sibling
(5)Other Relative
(6)Friend
(7)Other
(8)Don't Know
(9)Not Ascertained

#OCCUPANTS
(0)Position Not Occupied
(1)One Person Present
(2)Two Persons Present
(9)Not Applicable, Position Not Present

****

1. Would you please tell me the age and weight of (the/each) child riding with you and how (he/she/they) (is/are) related to you?

DRIVER | 1	CENTER FRONT | 2	RIGHT FRONT | 3
Age:_____ Sex: ☐(1)F ☐(2)M Race: ☐(1)W ☐(2)B ☐(3)Oth If Child in Lap: Age:_____ Weight:_____ Relat:_____	# Occupants_____ Age:_____/_____ Weight:_____/_____ Relat:_____/_____	# Occupants_____ Age:_____/_____ Weight:_____/_____ Relat:_____/_____
LEFT REAR | 4	**CENTER REAR | 5**	**RIGHT REAR | 6**
# Occupants_____ Age:_____/_____ Weight:_____/_____ Relat:_____/_____	# Occupants_____ Age:_____/_____ Weight:_____/_____ Relat:_____/_____	# Occupants_____ Age:_____/_____ Weight:_____/_____ Relat:_____/_____
OTHER POSITIONS | 7		
☐(1)SW Luggage ☐(2)Pick-Up ☐(3)Van ☐(4)Other = _____		
Age:_____ Age:_____ Age:_____ Age:_____ Age:_____ Weight:_____ Weight:_____ Weight:_____ Weight:_____ Weight:_____ Relat:_____ Relat:_____ Relat:_____ Relat:_____ Relat:_____		

2. About how far will you be driving to your next stop? ☐

3. About how much driving do you do during the day with children in your car? ☐

(1)<1/2 mi. (6)>25 mi.
(2)1/2-1 mi. (8)DK
(3)1 1/2-5 mi. (9)NA
(4)5 1/2-10 mi.
(5)10 1/2-25 mi.

4. (ASK QUESTION ONLY IF CHILD RESTRAINT PRESENT IN THE CAR) I notice that you have a child restraint in your car. Could you tell me who or what convinced you to use one?

END INTERVIEW----BE SURE TO THANK SUBJECT FOR HIS/HER HELP!!!

CAR LICENSE NUMBER_____ STATE_____

INTERVIEWERS INSTRUCTIONS

A. The target population for this survey is children aged 0-4 and/or less than 40 lbs. in weight. We are requesting drivers to stop if they have children less than 6 years old riding with them in order to catch 5 year olds who may weigh less than 40 lbs.

B. CITY: Check the box corresponding to the city in which the interview is being conducted.

C. DATE: Fill in the date that the inteview is conducted with appropriate numerals for month/day/year.

D. LOCATION TYPE: Check one box corresponding to the location of the parking lot in which the interview is being conducted.

E. LOCATION NAME: Fill in the name of the business/office where the parking lot is located.

F. INTERVIEWER: Fill in your name or initials so that if any questions are raised concerning information on the sheets, the coders will know who to ask.

G. # OCCUPANTS: Use numbers "1" and "2" to indicate how many people are in a seat. "0" means that a particular seating position is present in the car but that no one is sitting there. "9" should be used to indicate that a seating position is not present. EXAMPLE--- in the case of front bucket seats, code "# Occupants" for the CENTER FRONT position as being a "9".

RELATIONSHIP TO DRIVER: In order to facilitate keypunching directly from these forms, numbers will be used to indicate the relationship of each child occupant to the driver. If a child occupant is the son or daughter of the driver, then a "1" should be entered for "Relat" in the appropriate seating position. The same procedure should be followed for other types of relationships. "8" (Don't Know) should be recorded if the driver indicates that he/she does not know the relationship and "9" (Not Ascertained) should be used if the interviewer fails to ask for and/or mark the answer.

H. QUESTION 1: Ask the driver of the car for information regarding the age and weight of each child and their relationship(s) to the driver. Record this information for each child in their appropriate seating positions. It is extremely important to obtain as exact information as possible on age and weight of the children. For adults in the car, record approximate ages and omit weight and relationship. Before preceding to the next question, be sure to mark all necessary answers. For DRIVER, fill in approximate age and check boxes corresponding to the appropriate sex and race of the driver based on observation, NOT by asking for this information. If a child is riding in the driver's lap, record age, weight, and relationship in the spaces provided.

Two columns of blanks are provided for seating positions 2-6. These are provided in order to record information on two people occupying the same seat, particularly an adult holding a child in his/her lap. For each seat, enter codes for the single/adult occupant in the first (left) column of

blanks. Fill in codes for the second/child occupant in the other (right) column. For seats with a single occupant, the second (right) column should be left blank.

It is probable that there will be some people riding in the luggage area of a station wagon or van. Position 7 has been provided to record information on occupants of positions other than the conventional 1-6 positions. If there are no occupants of positions other than 1-6, ignore position 7 and leave everything there blank. In the event that position 7 is occupied, check the box corresponding to what type of seat it is (Station Wagon, luggage area, pick-up, van, or other). If "other" is checked, note what type of vehicle it is in the blank following the "equals" sign. Fill in Age, Weight, and Relationship for each child in the area and only the approximate age of any adult seated there. Space has been provided for up to five persons in this area. In the event that there are more than five persons seated in position 7, record this information in the same format either at the bottom or on the back of the page with a note to the coders telling them to look there.

I. QUESTION 2: Ask the driver how far he/she will be driving to his/her next stop. When answered, refer to the codes directly to the right of questions 2 and 3 and determine which category the answer falls into. Try to get the driver to give an answer in miles so that the correct category can be selected. If the driver first says that he/she does not know, probe at least once to try to get them to give an approximate distance. The answer should be coded as "8" (DK=Don't Know) if the driver continues to be unable to give an answer. The answer should be coded as "9" (NA=Not Ascertainable) if the driver gives an answer which will not fit any of the given categories or if the interviewer fails to ask the question. The number corresponding to the appropriate category should be written in the box immediately following Question 2.

J. QUESTION 3: Refer to the directions to Question 2 directly above. Place the proper category number in the box immediately following Question 3.

K. QUESTION 4: Be sure to ask this question ONLY if there is a child restraint present in the car and ask it even if it is not being used. Record the answer verbatim in the space provided. Continue the answer on the bottom of the page or on the back if needed.

L. END INTERVIEW: After recording the answer to Question 4, if asked, thank the driver for stopping and present gift(s) to the child(ren) in the car.

M. CAR LICENSE NUMBER: AS THE CAR IS LEAVING, NOTE AND RECORD THE LICENSE NUMBER AND STATE. THIS NUMBER IS EXTREMELY IMPORTANT SINCE THE INTERVIEWER'S AND OBSERVER'S SHEETS WILL BE MATCHED UP BY USING THIS NUMBER!!!

OBSERVER

CAR LICENSE NUMBER_____ STATE_____

OBSERVER_____

****

CODES

RESTRAINT CODES:		POSTURE CODES:	TYPE OF CR:
(0)None	(4)Child Restraint	(1)Sitting	(1)Infant Carrier
(1)Lap Belt Only	(5)Child in Lap	(2)Standing	(2)Child Seat,Shield
(2)Shoulder and Lap	(9)Not Ascertained	(3)Kneeling	(3)Child Seat,Harness
(3)Shoulder Only		(4)Lying Down	(4)Harness Only
		(9)Not Ascertained	(9)Not Ascertained

****

DRIVER 1	CENTER FRONT 2	RIGHT FRONT 3
R Avail:_____ R Used:_____ If Child In Lap: R Avail:_____ R Used:_____ Posture:_____	R Avail:_____/_____ R Used:_____/_____ Posture:_____/_____ If CR In Seat: Type:_____ Test: ☐(1)Crash ☐(2)213 ☐(3)None ☐(9)NA Inst: ☐(1)Y ☐(2)N ☐(9)NA Use: ☐(1)Y ☐(2)N ☐(9)NA	R Avail:_____/_____ R Used:_____/_____ Posture:_____/_____ If CR In Seat: Type:_____ Test: ☐(1)Crash ☐(2)213 ☐(3)None ☐(9)NA Inst: ☐(1)Y ☐(2)N ☐(9)NA USE: ☐(1)Y ☐(2)N ☐(9)NA
LEFT REAR 4	**CENTER REAR 5**	**RIGHT REAR 6**
R Avail:_____/_____ R Used:_____/_____ Posture:_____/_____ If CR In Seat: Type:_____ Test: ☐(1)Crash ☐(2)213 ☐(3)None ☐(9)NA Inst: ☐(1)Y ☐(2)N ☐(9)NA Use: ☐(1)Y ☐(2)N ☐(9)NA	R Avail:_____/_____ R Used:_____/_____ Posture:_____/_____ If CR In Seat: Type:_____ Test: ☐(1)Crash ☐(2)213 ☐(3)None ☐(9)NA Inst: ☐(1)Y ☐(2)N ☐(9)NA Use: ☐(1)Y ☐(2)N ☐(9)NA	R Avail:_____/_____ R Used:_____/_____ Posture:_____/_____ If CR In Seat: Type:_____ Test: ☐(1)Crash ☐(2)213 ☐(3)None ☐(9)NA Inst: ☐(1)Y ☐(2)N ☐(9)NA Use: ☐(1)Y ☐(2)N ☐(9)NA

OTHER POSITIONS 7

☐(1)SW Luggage ☐(2)Pick-Up ☐(3)Van ☐(4)Other = _____

R Avail:_____ R Used:_____ Posture:_____	R Avail:_____ R Used:_____ Posture:_____	R Avail:_____ R Used:_____ Posture:_____	R Avail:_____ R Used:_____ Posture:_____	R Avail:_____ R Used:_____ Posture:_____

OBSERVER INSTRUCTIONS

A. CAR LICENSE NUMBER: As soon as the car stops, note and record the license number and state. THIS NUMBER IS EXTREMELY IMPORTANT SINCE THE INTERVIEWER'S AND OBSERVER'S SHEETS WILL BE MATCHED UP BY USING THIS NUMBER.

B. OBSERVER: Fill in your name or initials so that if any questions are raised concerning information on the sheets, the coders will know who to ask.

C. CODES: In order to facilitate keypunching directly from these forms, numbers will be used to indicate restraint availability and usage, posture, and type of child restraints used. RESTRAINT CODES are to be used for coding both "R Avail" and "R Used".

D. OBSERVATIONS: Observations concerning the restraint usage of occupants are the most important aspect of this survey. Be careful that your observations are correct and complete and that they are recorded accurately.

Once the car has stopped and the license number has been recorded, make observations as to how each occupant is riding and how they are restrained. DRIVER...Record what type of restraint is available to the driver and what type he/she is using, if any, by entering the appropriate code numbers in the blanks provided for this purpose. If there is a child riding in the driver's lap, record restraint availability and usage directly below that of the driver. Also record the posture of the child.

POSITIONS 2-6...Two columns of blanks are provided for seating positions 2-6. This is in order to record information on two people occupying the same seat, particularly a child riding in an adult's lap. For each seat, enter codes for the single/adult occupant in the first (left) column of blanks. Fill in codes for the child in the second (right) column. For seats with single occupants, the second (right) column should be left blank. The blanks should be filled in with the "RESTRAINT CODES" and "POSTURE CODES" numbers listed on the sheet. The code "9" (Not Ascertained) should be used if you are unsure as to the type of restraint available/used or to the posture of the children.

For each occupant, record the code number for the type of restraint that is installed in the seat that they are sitting in. The only exception to this rule is in the case of a child sitting in one position with an unused child restraint in another position. In this case, for the position in which the child is sitting, mark R Avail as "4" (Child Restraint) followed by the number of the seating position in which the unused CR is located while separating them by a dash ("-"). Be sure to record the information concerning type of CR and its approval, installation and use in the position where it is located (use should be coded as "9" - Not Applicable in this case). In the event of more than one unrestrained child present in the car with an unused child restraint available, the unused CR should be considered as being available to the child for which the CR is most approrpiate (e.g., infant carrier for infant). If it is appropriate for all chidren involved, consider it available for the youngest child.

If there is a child restraint in any of the #2-6 positions, fill in the code number for "TYPE OF CR" in the appropriate blank. For each CRD in the car, three sets of check boxes need to be marked. "TEST" refers to the level of testing that the seat has passed. Check "Crash" if it is a crash tested model, "213" if it meets Federal Motor Vehicle Safety Standard 213, and "None" if it is a pre-FMVSS 213 model. If you are unable to ascertain which category it fits in, check the box marked "NA" (Not Ascertained). Also mark whether or not each seat is properly installed ("Inst") and properly used ("Use"). "NA" (Not Ascertained) should be checked if unsure. Use the following guidelines for determining the proper installation and use of each seat...

Proper installation:

a. Infant carriers must be facing to the rear or child seats with top tether straps must have them fastened tightly.

b. Unit must be secured in the car with adult safety belts.

Note: Both criteria must be met to be considered properly installed.

Proper use:

a. Shield or harness must be used.

b. Adult safety belt must not be fastened so that it contacts the child.

Note: Both criteria must be met before marking that the CRD is properly used. POSITION 7: If there are any occupants of a station wagon luggage area, rear of pick-up truck, van without seats of other area not designed to carry passengers, fill in the requested information on restraint availability and usage and posture. If no such situation exists, leave the entire area blank.