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DOT HS-805 490

EFFECTIVENESS OF SAFETY BELT USAGE LAWS

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Washington, D.C. 20006

Contract No. DOT HS-9-02104
Contract Amt. $96,629

May 1980

FINAL REPORT

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Prepared For

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Washington, D.C. 20590

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Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT-HS-805 490		

4. Title and Subtitle	5. Report Date
EFFECTIVENESS OF SAFETY BELT USAGE LAWS	MAY 1980
	6. Performing Organization Code
7. Author(s) Franklin G. Fisher, Jr., Ph.D.	8. Performing Organization Report No.
9. Performing Organization Name and Address Peat, Marwick, Mitchell & Co. 1990 K Street, N.W. Washington, D.C. 20006	10. Work Unit No. (TRAIS)
	11. Contract or Grant No. DOT-HS-9-02104
12. Sponsoring Agency Name and Address Department of Transportation NHTSA Washington, D.C.	13. Type of Report and Period Covered Final Report March 1979 - May 1980
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This study involved the collection of data from a target group of 21 countries around the world. These countries were contacted or visited to collect the necessary data.

A case study was written for each country visited. These case studies, which are quite extensive where data were available, form the bulk of the report. Specific issues were identified by DOT with regard to the seat belt laws that have been enacted. These issues have been discussed for each country where data were available.

It was apparent from the data collected that a major issue concerning the enactment of compulsory seat belt usage legislation has to do with the culture and phychological characteristics of the people within the country of interest. It was also found that one's expressed or observed attitude about seat belt usage and mandatory seat belt laws did not correlate with one's behavior regarding the wearing of seat belts.

The main factors that influence the frequency with which a person wears his/her seat belt are the level of enforcement applied by the police, the natural propensity for the person to be law abiding and/or the person's personal perspective regarding his/her safety.

17. Key Words	18. Distribution Statement
Safety Belt Usage Laws, Safety Belts, Seat Belt Laws, Effectiveness of Belt Usage Laws	This document is available to the U.S. public through the National Technical Information Service, Springfield VA 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED	300	

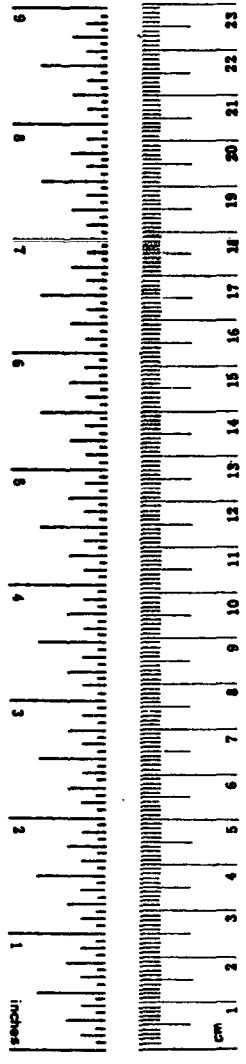
Form DOT F 1700.7 (8-72) Reproduction of form and completed page is authorized

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

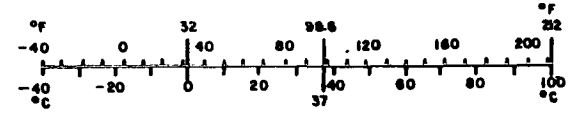
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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I. INTRODUCTION

GENERAL

This document constitutes Peat, Marwick, Mitchell & Co.'s (PMM&Co.) final report for the study "Effectiveness of Safety Belt Usage Laws," performed for the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA), under Contract DOT-HS-9-02104. The report presents a detailed account of data collected from the countries specified in the Statement of Work which have enacted mandatory seat belt legislation. It includes an analysis and interpretation of these data in keeping with criteria set forth by NHTSA.

The fundamental task of the study involved developing a data collection plan or plan of work to acquire and evaluate the following types of information:

- background and history of how the applicable laws came to be adopted;
- specifications of the law;
- techniques used to implement the law; and
- effectiveness of the law with respect to belt usage, reduction in injuries and fatalities, and changes in attitudes.

After the data were collected they were reviewed and are reported herein in a manner that highlights the experience of various countries with seat belt legislation. Thus the report should be useful to a wide variety of people who are concerned about seat belt laws and seat belt utilization.

STUDY PURPOSE

The purpose of the study is to obtain up-to-date information about the status and effectiveness of safety belt usage laws in countries that have adopted such laws, in order to provide information to support the consideration of adopting such laws in the United States.

STUDY SCOPE

The Statement of Work identified 18 countries with seat belt laws from which data were to be obtained. Subsequent to award of the contract, three

additional countries were added to the list. Key individuals and organizations were contacted in each country to obtain desired data. Data were also obtained from publications of professional organizations, technical journals, and other identified sources. Personal interviews were conducted with individuals believed to have a significant amount of critical information. PMM&Co. foreign offices were used to collect the bulk of the information. However, personnel from the Washington, D.C., office did make visits to certain key countries to conduct personal interviews.

ORGANIZATION OF REPORT

In addition to this introduction, the report includes four other sections. Section II is an Executive Summary, which presents an overview of the entire study. It is intended to stand alone. Section III provides an in-depth technical discussion of all aspects of the study. Section IV contains case studies of the countries surveyed in this project.

Section V presents general findings that have been deduced from the information received from each country. The findings correspond to specific factors identified by NHTSA. Also, findings have been presented that are unique to a particular country or group of countries, if such findings appear to have universal significance.

II. EXECUTIVE SUMMARY

OVERVIEW OF HOW STUDY WAS CONDUCTED

This chapter presents the summary discussion of Peat, Marwick, Mitchell & Co.'s (PMM&Co.) final report for the study "Effectiveness of Safety Belt Usage Laws," performed for the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA), under Contract DOT-HS-9-02104. It provides the reader with an overview of all activity that occurred on the study.

The fundamental task of the study was to collect and evaluate data from various countries around the world which have enacted mandatory seat belt usage legislation. The data pertained to the following areas:

- background and history of how the applicable laws came to be adopted;
- specifications of the laws;
- techniques used to implement the laws; and
- effectiveness of the laws with respect to belt usage, reduction in injuries and fatalities, and changes in attitudes.

The Statement of Work identified 18 countries with seat belt laws from which data were to be obtained. Subsequent to award of the contract, three additional countries were added to the list. Key individuals and organizations were contacted in each country to obtain the desired data. Data were also obtained from publications of professional organizations, technical journals and other identified sources. Personal interviews were conducted with individuals believed to have a significant amount of relevant information. PMM&Co. foreign offices were used to collect the bulk of the information. However, personnel from the Washington, D.C., office did make visits to certain key countries to conduct personal interviews.

TECHNICAL APPROACH

The basic technology required for performing this study included survey research, research methodology, evaluation research, and data analysis. Equally important for this study were the logistics involved in collecting data from different countries around the world. Therefore, PMM&Co.'s technical

approach encompassed both the technical aspects of survey and evaluation research and the complex logistical considerations that had to be resolved.

The approach consisted of the following steps:

- study definition;
- development of data collection plan;
- development of list of countries/jurisdictions to be contacted;
- initiation of contact with PMM&Co. foreign offices;
- preliminary assessment of quantity and quality of available data;
- data acquisition;
- evaluation of collected data and information; and
- preparation of final report and briefing.

The first four steps fall logically under Task 1 and are thus discussed as part of that task. The next four steps are discussed under Task II.

Task 1 - Preliminary Discussion Preparation, and Presentation of the Data Collection Plan

This task included all of the initial start-up activities for the study as well as the data collection plan -- the first deliverable for the contract. The sections that follow present a discussion of the activities that occurred in connection with this task.

Study Definition

The first month of the study was the study definition phase of the contract. A preliminary discussion meeting was held with the NHTSA Contract Technical Manager (CTM) one week after award of the contract. No significant changes were made to the study approach as proposed. However, the following major agreements and suggestions were made:

- Add Austria to the list of countries.
- Make maximum use of PMM&Co. foreign offices.

- Principal Investigator should visit a few of the countries and conduct interviews.

- Do not visit Japan if there does not seem to be a reasonable amount of data.

- Emphasize why the law works in some countries but not in others; consider cultural factors.

- Find out how data evaluating the effectiveness of the laws in the various countries were produced--accident reports, medical reports, etc.

- Do not visit Australia because a considerable amount of data from that country is already available here in the United States.

Data Collection Plan

The data collection plan was included as an integral part of the Plan of Work, which was submitted as an official contract deliverable. A prime requisite of NHTSA was that PMM&Co. foreign offices were to be involved in the study to the maximum extent possible. In order to involve as many foreign offices as possible and still exercise maximum control, the study was structured into two phases. Phase I involved initial data collection activities. Each foreign office was provided a small budget for contacting identified organizations and/or people and instructed to send acquired data to either the Paris office (in the case of European countries) or the Washington, D.C., office. This allowed a determination of which countries should be treated with a larger data collection effort based on data collected during Phase I. Phase II involved personal visits to selected countries by the Principal Investigator (PI) or extended data collection by the local office in the respective countries. Phase II was only initiated after an assessment of the quantity and quality of data collected during Phase I.

Phases I and II are discussed in the subsections that follow.

Phase I--Initial Data Collection Activities

A number of general activities had to be completed before any data could be collected. These activities were as follows:

1. A responsibility matrix was developed which describes how maximum participation by PMM&Co. foreign offices would be effected. PMM&Co.'s continental office which is located in Paris was given key responsibility for all countries located in

Europe. For those countries not on the Continent of Europe, the Washington, D.C., office assumed key responsibility as well as program responsibility.

2. An information package was developed that could be sent to each office assisting in the study. The information package contained the following:

   - A brief technical overview explaining the purpose of the study and other general information of interest.

   - A data collection checklist which provided criteria by subject heading for all data that were to be collected.

   - A partial list of people to be contacted in each country. These people were identified by contacting embassies of the target countries, searching references in collected articles, discussing the subject with the president of the American Safety Belt Council, personal knowledge, and telephone conversations with PMM&Co. foreign office personnel.

3. Each PMM&Co. local office was directed to make contact with the people identified in the data package sent to them and with other people that were known to have knowledge of and/or involvement with various aspects of the seat belt law. The identified people were to be contacted by telephone and through personal interviews where necessary.

Initial Data Collection

The local offices were directed to obtain copies of relevant materials from the people contacted and forward copies of all materials to either the Paris or Washington, D.C., office.

Twenty-one countries were identified to be contacted. Eighteen of these countries were named in the Statement of Work, and three countries--Austria, Denmark and the United Kingdom--were added by PMM&Co. The scenario used for collecting initial data, evaluating those data, and determining which countries warranted additional data collection effort has been listed below, using the European countries as an example:

1. The PMM&Co. Continental office in Paris made written and telephone contact with each local office for which they had key responsibility. An information package was sent to each local office.

2. Each country acquired the desired information and transmitted it to the Paris office. The Paris office made an assessment of the information and forwarded the information to the PI in the Washington, D.C., office.

3. The PI reviewed the information and discussed it by phone with the Paris office.

4. Based on the assessment of the collected data by the Paris office and the PI, and on input from the various local offices, the Paris office made recommendations to countries where additional data collection effort was warranted.

5. After a review of the Paris office's recommendation, local offices were directed to set up a tentative schedule for visits by the PI.

6. The PI visited the Paris office, finalized the interview schedule, and made arrangements to conduct the personal interviews.

The initial data collection effort led to a recommendation that the PI make personal visits to France, Sweden, West Germany, and Switzerland.

The same procedure was used to determine the need for visits to Canada, Australia, New Zealand, Israel, Puerto Rico, and Japan. For various reasons, it was decided that outside Europe the PI would only visit Canada. Some personal interviews were conducted in New Zealand by a business acquaintance of PMM&Co., who was traveling to New Zealand on other business.

Puerto Rico was visited by a PMM&Co. employee in conjunction with another project, even though this territory did not have much information that was not already available to DOT.

Neither Israel nor Japan were visited because of the minimal amount of useful data that could be expected from those countries contrasted with the expense of traveling there.

The United Kingdom (UK) was visited though it was not identified in the original Statement of Work. An extensive amount of work on seat belts and seat belt laws has been done in the U.K. even though there is no seat belt law. Several attempts in Parliament to enact a law have been defeated. (The trip to the U.K. was made by a PMM&Co. employee who was traveling there on other business.)

Phase II--Scheduling of Personal Interviews

The personal interviews conducted by the PI were scheduled by the local offices in the countries visited. In Europe, the local offices set up the interviews and coordinated the schedule with a person in the Paris office who had been designated to coordinate all European offices' activities. The visit to Canada was coordinated by the PMM&Co. Toronto office. The interviews in Puerto Rico and the United Kingdom were coordinated and scheduled by the two PMM&Co. employees who visited those countries on other business.

Task 2 - Obtaining Information

This task involved the actual acquisition of the desired data--both the written literature and the information acquired during the personal interviews. The individual offices made a preliminary assessment of the amount of data available in each country and/or an assessment of the number of people available for interviewing who had a significant amount of useful information. This information was communicated either to PMM&Co.'s Paris office or their Washington, D.C., office, where a decision was made regarding the merit of visiting a particular country.

Personal Interviews

Though expensive to implement, the personal interviews provided the most useful data in ample quantity. Even though a data checklist had been sent to each local office, it was found that the information obtained by these offices quite often did not contain specific information of interest for this study. In some countries very little information of the specific type sought had been published. Also, foreign office personnel, though able to speak English, often could not make a word-for-word translation of the criteria on the data checklist. Through personal interviews, many of these problems were avoided.

In order to enhance the effectiveness of the personal interviews, several steps were taken. These are discussed in the paragraphs that follow.

Interview Guides

Interview guides were used rather than structured questionnaires in order to permit a free exchange of information between the interviewer and the subject. The guides were intended for use in a nondirective manner but kept the discussion focused on the desired areas of interest.

Interview guides were developed for each type of organization which was considered likely to have useful information. The same subject areas were

covered in each guide, but the specific inquiries were tailored to fit the organization being contacted. The guides were developed for the following categories:

- Government Ministries or Departments responsible for highway safety;
- Parliamentary or Legislative Committees involved in the passage of seat belt legislation;
- Government, University, or Private Research Organizations concerned with highway safety;
- Police and Traffic Law Enforcement Agencies responsible for enforcing road traffic laws;
- Motorist Organizations open to the general public and Professional Societies, Trade Organizations, and Special Interest Groups concerned with automobile design, highway safety, and related legislation;
- Medical Associations concerned with treatment of highway accidents; and
- Insurance Associations concerned with accident prevention and automobile insurance.

Interview Teams

Experience on past research studies has shown that two persons can conduct much more comprehensive interviews than one person when an open-structured, free-flowing interview technique is used. For this reason, it was decided that this process would be desirable for the seat belt study. However, because of the expense of transporting two people from the U.S. to the European countries it was decided that the second member of the team would be a PMM&Co. English speaking employee from the respective European offices. Moreover, it was known that a translator would be required for most of the interviews.

Use of Data Checklist

The data checklist discussed earlier was also used during the personal interviews. All interviewees had been contacted prior to the interview and informed of the specific type of information that was desired, such as documented research, analyses, statistics, reports, unpublished papers, and

such. Unfortunately many of the interviewees had prepared excerpts from official reports and would not provide a complete report. The data checklist was used during the interviews to ensure that a specific on-the-spot request was made for all desired information.

Evaluation of Collected Data and Information

Much of the written information required translation. To save expense, translators were hired in the U.S. Even then it was necessary to have the information translated to only a minimum level for understanding the material involved.

Unfortunately, it was found that the documents did not always discuss the specific information desired, even though they had been provided in direct response to a specific request during the interviews. Most of the published information concerns the effectiveness of seat belts and not the effectiveness of the seat belt laws or other issues of interest for the study.

It had been theorized early in the study that the collected documents would be evaluated and categorized according to their usefulness. However, after receiving the information and finding that much of it did not discuss specific points of interest, all documents containing any useful information were referenced by footnotes in the case studies for each country. These documents are the only ones that received a minimal level of translation.

Presentation of Collected Data

The format used to present the collected data is the case study format. A case study was prepared for each country identified for the study. These case studies are summarized in a subsequent section of this Executive Summary and are presented in full in the main body of the report.

HIGHLIGHTS OF SEAT BELT USAGE LAWS

As indicated earlier, data were collected from many countries around the world. Table 1 compares the data in a manner which highlights those issues that are of concern to DOT. As might be expected, it was not possible to provide complete information for each country identified. Although there are many voids in the table, most of these voids reflect not the researcher's inability to acquire information in that area but the failure of that country to take action on a specific issue.

Table 1 was based on: (1) a table included in the RFP initially issued by DOT for the study; (2) a table included in a booklet entitled "Use and Effects

TABLE I

HIGHLIGHTS OF SAFETY BELT USAGE AROUND THE WORLD

COUNTRY	EFFECTIVE DATE OF LAW	MANDATORY FITTING/TYPE OF BELT						PENALTY		ENFORCEMENT *	PUBLIC INFORMATION PROGRAM	BELT USAGE BEFORE LAW EFFECTIVE	BELT USAGE AFTER LAW EFFECTIVE	OCCUPANT FATALITY REDUCTION	OCCUPANT INJURY REDUCITON
		TYPE OF CAR	IN NEW CARS SINCE	IN ALL CARS SINCE	IN FRONT SEATS	IN ALL SEATS	TYPE OF BELT	FINE U.S. $	IMPRISONMENT						
CZECHOSLOVAKIA	1-1-69							MAX $10							
JAPAN	12-1-71	IN CARS WITH BELTS FITTED	4-1-69				3-POINT BELT IN FRONT SEAT, LAP-BELT IN BACK SEAT	NONE		0	NONE		AUG 1975 8%		
AUSTRALIA (ALL STATES)	1-1-72	PASSENGER CARS, STATION WAGONS	FRONT SEATS 1-1-69 REAR SEATS 1971	REGISTERED SINCE OCT 1964		YES	3-POINT BELT	VARIES BY PROVINCE MAX $258	VARIES BY PROVINCE MAX 6 MOS.	1	YES	1971 25-75%	1972-1978 73-87%	1972-1974 20-25%	1972-1974 20%
NEW ZEALAND	6-1-72	PASSENGER CARS, VANS	1-1-65	1-1-75	YES			MAX $200 AVER. $6-$10		1	YES	MAY 1972 39.5%	1972-1975 66.5-68.7%		
FRANCE[2]	7-1-73	PASSENGER CARS, VANS,	4-1-70	1-1-78	YES		3-POINT BELT	MAX $21		1	YES	PRIOR TO JULY 1973 20-25%	MAY 1979 HIGHWAYS 85%, COUNTRY ROADS 70-79% NIGHT IN CITIES 50% DAY AND NIGHT IN BUILT-UP AREAS 35%	1975 22%	1975 32%
PUERTO RICO	1-1-74	PASSENGER CARS	1965 MODEL YEAR AND SUBSEQUENT		YES	1965 MODEL YEAR AND SUBSEQUENT	LAP AND SHOULDER	$10-$25		0,1	YES	JULY 1973 5%	MAY 1977 14.3%	MAY 1977 15%	
SPAIN	4-22-74							$15		0	YES				
SWEDEN	1-1-75	ALL CARS WHERE BELTS ARE FITTED	1969		1969-MODELS	1970-MODELS	3-POINT REEL BELT	$23.50		1	YES	1974: CITY STREETS 22% RURAL ROADS 50%	1975: CITY STREETS 75%, RURAL ROADS 87%		
BELGIUM	6-1-75	PASSENGER CARS, STATION WAGONS	6-15-68		YES		3-POINT BELT	$18-$107	1 DAY-1 MONTH	1	YES	17%	87%	25%	25%
LUXEMBOURG	6-1-75	PASSENGER CARS, STATION WAGONS	1-1-73	1978	YES		EEC RULES	$7			YES				
NETHERLANDS	6-1-75	PASSENGER CARS	1-1-71		YES		3-POINT BELT	UP TO $120				1974: 11% URBAN, 24% RURAL AREAS	JULY 1976: 58% URBAN 75% RURAL AREAS		
FINLAND	7-1-75	PASSENGER CARS	1-1-71		YES		3-POINT BELT	YES	MAX.[1] 3 MONTHS	0,1	YES	JUNE 1975: HIGHWAYS ON WEEKDAYS 30% HIGHWAYS ON SUNDAYS 40% EXIT ROADS AT PEAK HOUR 23%, AND URBAN TRAFFIC 9%	DEC. 1975 HIGHWAYS ON WEEKDAYS 68%. HIGHWAYS ON SUNDAYS 71%, EXIT ROADS AT PEAK HOUR 71% AND URBAN TRAFFIC 53%		
NORWAY	9-1-75	PASSENGER CARS, VANS	1-1-71				VARIOUS TYPES	NONE $36—PROPOSED		0	YES	1973: AVER. USAGE RATE 12.1%—BUILT UP AREAS, 35%— —OUTSIDE BUILT UP AREAS (SOUTHERN NORWAY ONLY)	1977: AVER. USAGE RATE 29.8%—BUILT UP AREAS. 63.2% —OUTSIDE BUILT UP AREAS (SOUTHERN NORWAY ONLY)		
ISRAEL	7-1-75	PASSENGER CARS, VANS		4-1-67	YES		3-POINT BELT	$110		3	YES	JUNE 1975 8%	AUG. 1975 80% JULY 1976 80%		
SWITZERLAND	1-1-76; REPEALED 10-5-77	PASSENGER CARS, VANS	1-1-71 1-1-76		YES		3-POINT BELT	$14		1	YES	1975: CITY STREETS 19% HIGHWAYS 35% EXPRESSWAYS 42%	1977 CITY STREETS 75% HIGHWAYS 81% EXPRESSWAYS 88%	12%	9-14%
WEST GERMANY	1-1-76	PASSENGER CARS, VANS	1-1-74	1-1-78 (REGISTERED AFTER 4-1-70)	YES		3-POINT BELT	NONE		0,3	YES	AUG. 1975: AUTOBAHNS 48% COUNTRY ROADS 30% CITY STREETS 15%	MAR 1976: AUTOBAHNS 70% COUNTRY ROADS 58% CITY STREETS 34%		
DENMARK	1-1-78	PASSENGER CARS, VANS	7-1-69		YES		3-POINT BELT	$15		1	YES (LIMITED)		75%	18%	30%
USSR	1-1-76							$1.50		1	NONE				
AUSTRIA	7-15-76	PASSENGER CARS, VANS BELOW 3,500 KGS	1968		YES		3-POINT BELT	NONE		0	YES		25%—URBAN AREAS: 50% COUNTRY ROADS: 60% HIGHWAYS		
CANADA ONTARIO QUEBEC SASKATCHEWAN BRITISH COLUMBIA	1-1-75 8-15-76 7-1-77 10-1-77	ALL CARS PASSENGER CARS			YES		3-POINT	VARIES BY PROVINCE MAX.$200	VARIES BY PROVINCE MAX. 60 DAYS	1		VARIED BY BY PROVINCE 17%-29.3%	VARIED BY PROVINCE 76.8%-79.5%	18.3%	19.4%

* 0 = Essentially None
1 = When Motorist Stopped for Another Purpose
2 = Strict (When Observed not Wearing Belt)
3 = Only Requested to Buckle Up by Officer

of Seat Belts in 21 Countries," by Karen Berard-Anderson of the Institute of Transport Economics in Norway; and (3) information collected from the various countries contacted for this study.

SUMMARY OF MAJOR FINDINGS

The case study of each country was reviewed to determine any salient factors that either are unique to the country of interest or contribute valuable knowledge concerning the major issues associated with seat belt laws as identified by DOT. These factors have been couched as findings and are summarized in this section. The findings are as follows:

- Countries that have enacted seat belt laws seem to have evolved to a state where mandatory seat belt legislation was considered acceptable by the majority of the public prior to actual enactment. Where this is not the case the law has either been repealed, has no penalty associated with it, or is not rigorously enforced by the police.

- Seat belt laws enacted by various countries usually pertain to the driver and front seat passenger only. Also, the laws are generally applicable only to passenger cars and vans.

- Most countries with seat belt laws have penalties associated with the legislation. In some cases the amount of the fine has a substantive upper limit ($200 to $300). However, where statistics are available it has been shown that the average fine is usually less than $10. Some countries have penalties for noncompliance which include imprisonment.

- All countries allow exemptions from the seat-belt legislation. Exemption generally applies to passengers of particular age or size, passengers with certain medical conditions, and drivers of commercial vehicles.

- All countries studied have regulations regarding the installation of seat belts in both new and old cars. Most countries specify that the three point inertial retractor type belt be installed.

- Public information and education programs have been utilized to some extent by all countries that have enacted seat belt legislation. However, it was found that while these programs may be of value in changing the attitude of motorists concerning the safety and effectiveness of seat belts, they do not result in any appreciable behaviorial change regarding the wearing of seat belts.

- In almost all countries it was found that the seat belt law was not enforced independently of other traffic infractions. It is almost always enforced only as an ancillary action in connection with some other traffic violation.

- Enforcement of seat belt laws appears to be essential to a high seat belt usage rate. In several countries it was determined that the usage rate was directly related to the level of enforcement, with high usage rates usually associated with stringent enforcement. However, in some cases it did appear that the people's cultural propensities for being highly law abiding obviated the need for stringent enforcement.

- In several countries with seat belt laws, it was found that the courts have ruled that insurance compensation should be reduced for accident victims who were not wearing seat belts at the time of the accident. In order to support such a ruling, it is necessary to have the accident investigated by experts who must then testify that the injuries sustained would have been less if the victim had been wearing a seat belt. The amount of reduced compensation has been set as high as 50 percent in several countries.

- Studies in virtually all countries revealed that the seat belt usage rate rises from 200 to 300 percent immediately after the seat belt law becomes effective. The rate subsequently drops as much as 10 to 20 percentage points and then rises to some plateau, depending on the amount of attention and enforcement provided by government officials.

- The results of attitudinal studies in the countries with seat belt laws reveal that 60 to 80 percent of people interviewed prior to enactment of the law indicated that they were in favor of mandatory seat belt usage. However, the usage rate was so much lower that it bore no relationship to the results of the attitudinal studies.

  Seat belt literature revealed that there is no documented way to predict a person's seat belt wearing behavior on the basis of his or her attitude towards compulsory seat belt use.

- Several countries have reported a 15 to 30 percent reduction in fatalities and injuries following passage of the seat belt law. Unfortunately many countries enacted other safety legislation

at the same time the seat belt laws became effective, thereby obscuring the decline in fatalities due to the seat belt law.

Researchers from several countries indicated that the change in fatalities and injuries that could be attributed to the seat belt law was less than had been expected.

- In a few countries researchers attempted to quantify the cost/benefit associated with the seat belt law. While that information does provide some insight into the costs and benefits associated with the law, there are not sufficient data with the necessary backup research to provide conclusive answers in this area.

- In many countries drivers are held responsible for ensuring that passengers in his/her vehicle wear seat belts when the vehicle is in motion.

- Most countries that enacted seat belt legislation expended considerable effort to publicize the law prior to its enactment. After the law became effective, countries provided a grace period of at least one month before they began to enforce it.

- Most countries do not conduct elaborate research programs prior to enactment of seat belt legislation. Safety officials in most countries, convinced that wearing seat belts will save lives, do not feel that additional research is necessary to justify the enactment of legislation in their country.

- As a corollary to the preceding finding, countries considering enactment of seat belt legislation used the research of nations such as Sweden, Switzerland and Australia, who pioneered studies concerning seat belt effectiveness and seat belt usage laws.

SUMMARY DISCUSSION OF EACH COUNTRY CONTACTED

Presented here are summary discussions of each country identified for the study where data were obtainable. These summaries are based on the detailed case studies presented in the main body of the report. Information in the summaries is presented for the most part in the same order as it is found in the corresponding detailed case studies. Some case studies are more comprehensive than others because more information was available on some countries than on others. This fact has been reflected in the summaries as well.

Australia

Data from Australia came both from personal interviews with government officials and from literature searches. The collected data revealed that in Australia concern for seat belt specifications date back to 1955. In September 1960 a select committee of Parliament recommended that seat belts of an approved quality should be installed in all motor vehicles.

The first incidence of compulsory installation and wearing of seat belts took place the same year but prior to the committee's recommendation. The Snow Mountains Authority (SMA), which was responsible for construction of a large hydroelectric system, installed seat belts in more than 3,000 seats in 78 different vehicle models, including tractors, cranes, and snow vehicles, and required that the belts be used whenever the vehicles were in motion. The penalty for noncompliance was immediate dismissal. The program instituted by SMA was very thorough regarding belt specifications, investigation of alternative configurations, evaluation of the results regarding accidents, etc. The program's effectiveness was widely publicized, and the contractor's employees were encouraged to install belts in their personal vehicles.

In the State of Victoria, there were several years of concentrated lobbying for compulsory seat belt wearing legislation. Many organizations backed the legislation. Finally on November 17, 1970, the Victorian government accepted the recommendation by a Parliamentary Joint Select Committee on Road Safety to require vehicle occupants to wear seat belts. Thus Victoria became the first to enact state seat belt legislation. The success of the Victorian legislation prompted other states and territories to introduce similar legislation. By 1972, compulsory wearing of seat belts applied throughout Australia.

In all of the states and territories, the laws apply generally to all car occupants for whom seat belts are available. The penalty for noncompliance varies from state to state and ranges from $6 Australian and one demerit in Queensland, to $200 Australian or six months imprisonment in Northern Territory, to $300 Australian in South Australia. (Note: One U.S. dollar is equivalent to 1.161 Australian dollars.[1]) Exceptions to the laws vary from state to state but generally they pertain to medical exemptions, age exemptions, exemptions related to the service being performed by the vehicle occupants, and special exemptions granted for individual cases. Each state has different rules regarding the type of belts that must be fitted in vehicles, but since 1976 all states have required belts with inertial retractors in front seats of automobiles.

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[1]As of May 1980

Throughout the 1960s, numerous publicity campaigns were conducted by various organizations lobbying for the installation and wearing of seat belts. Pamphlets, leaflets, and posters were distributed to millions; other campaigns were conducted through the use of radio, television, and press advertisements. Publicity was geared toward creating positive public attitudes toward seat belts. A 1962 poll of public opinion of just over 1,000 persons throughout Australia found only one percent who viewed seat belts as among the top three most important road countermeasures. By contrast, a 1970 survey in New South Wales found that 75 percent of the respondents rated seat belts as "very important" or "important," including nearly two-thirds of those who never wore belts. Although the publicity campaigns brought about radical changes in public attitudes as well as small increases in voluntary installations of seat belts, little change occurred in belt usage rates.

Most states did not begin enforcing the law until one month after it became effective in order to allow the public time to learn about and adjust to the legislation. As with other countries, it is apparent that enforcement presents something of a problem in Australia with regard to the level of enforcement and the uniformity of enforcement from jurisdiction to jurisdiction. One study performed about 18 months after the last state in Australia enacted a seat belt law estimated that seat belt offenses comprised less than 2 percent of all traffic offenses. This study also found that the level of enforcement varied widely among states.

One interviewee indicated that there have been cases where the court reduced insurance compensation because the injured person had not been wearing seat belts. Such rulings are not a matter of law in Australia; rather, it is left up to individual judges. There have been cases where insurance compensation was reduced as much as 50 percent.

Studies in Australia on seat belt wearing rates indicate that the legislation has an immediate effect on wearing rates in all states. Data show that the wearing rates in various states jumped from a level of 25 to 35 percent prior to legislation to a level of 75 to 94 percent immediately after enactment of legislation. The data also show a drop-off in usage rate after the initial upsurge, an observation that can be made from viewing data from other countries that enacted seat belt laws.

Studies were also conducted to ascertain the attitudes of the public towards seat belts and seat belt laws. One study in particular was designed to elicit from respondents the motivational basis for seat belt use according to the primary and secondary reasons given. It was found that for some regular wearers, the law was the only motivating force; for others it was the main but not only reason. For some it was only a secondary or reinforcing factor, and for others it was not a factor at all.

A considerable amount of work has been done in Australia to determine if the law has brought about a reduction in fatalities and injuries. Most of the material obtained from Australia did not document the research in a manner that demonstrates the relationship between the seat belt law and reductions in deaths and injuries. However, the studies do indicate that the number of vehicle occupants being killed is 20 percent below figures which, over any given period, might confidently have been expected had not seat belt legislation been enacted.

Austria

Little information was available from Austria. The primary means of collecting data in Austria was through telephone conversations between Austrian officials and PMM&Co.'s office in Vienna. A brief write-up by the Vienna office discussed the main points of interest regarding the law.

The seat belt law was promoted by several national agencies, including two national organizations of vehicle drivers, the Board of Traffic Security, and the government. These organizations sponsored advertising programs regarding seat belt usage. The law went into effect on July 15, 1976; it requires that drivers and front seat passengers in passenger cars or cars weighing less than 3,500 kilograms must wear seat belts when belts have been installed in the vehicle. There is no penalty for noncompliance. The only legal effect of the law pertains to insurance compensation, which is reduced up to 50 percent if a person injured or killed in an accident was not wearing a seat belt. Exemptions to the law pertain to a person's size or physical handicaps, and to persons who are providing certain services.

To encourage people to wear seat belts, various organizations tried all types of gimmicks, such as a contest to select a champion for being the fastest person to enter a car and fasten the seat belt. There is, however, no enforcement of the law since there is no penalty for not wearing a seat belt.

The seat belt usage rate increased immediately after enactment of the law. The average usage rate rose to 25 percent in urban areas, 50 percent on roads outside urban areas, and 60 percent on highways. The latest statistics compiled in October 1978 showed that the usage rate had decreased to 20 percent on urban streets, 30 percent on roads outside urban areas, and 50 percent on highways.

Belgium

Data were collected in Belgium through literature searches and through telephone interviews with Belgium officials. The drive for a seat belt law was sponsored by the High Council for Road Safety and by the government. By 1971, automobile safety was becoming a serious concern in Belgium. Statistics showed that the number of fatal automobile accidents was increasing. The government decided that important measures had to be taken to protect the driver and occupants of motor vehicles. Many different safety measures were considered, including the use of seat belts.

The law went into effect by royal decree on June 1, 1975. It requires that drivers and front seat passengers of passenger cars and station wagons wear seat belts. The fine for not wearing a seat belt can vary from 500 Belgian francs to 3,000 francs (approximately $18 to $107 U.S.). A driver/passenger can be imprisoned for one day to one month for refusing to wear a seat belt after being asked to do so by a police officer. There are exceptions to the law. They pertain mostly to exemptions related to age and size, medical exemptions, and exemptions related to the service being performed by the driver. Since June 1, 1975, all new vehicles must be equipped with safety belts. The type of belt installed in the vehicle is left up the owner, though the three-point inertial belt is reported to be the most popular.

Several publicity campaigns were conducted in order to educate the public on the necessity for and effectiveness of wearing seat belts. The campaigns were conducted via radio, television, newspaper, magazines, posters, and brochures. According to one article the campaigns brought about a slight rise in belt usage, but usage returned to the initial wearing rates after the campaigns ended.

The law is enforced in conjunction with other traffic offenses. Vehicle occupants are also reminded to wear belts when random checks are made for general traffic safety consideration. For the most part, the police will not stop a vehicle just because a driver or passenger is not wearing a seat belt.

There have been several test cases in the courts regarding seat belt usage violations where bodily and property damage occurred. Compensation paid by insurance companies can be reduced if it can be proven that injuries would have been less severe had a seat belt been worn at the time of the accident.

No studies on seat belt usage were obtained. However, one document indicated that the overall wearing rate just prior to enactment of the law was approximately 17 percent for drivers. After passage of the law, the belt

usage rate climbed to approximately 87 percent. However, the initial jump in usage was followed by a slow decline in usage, as has been experienced in other countries.

A study conducted approximately six months after belt use became mandatory attempted to ascertain the reactions to mandatory belt usage and whether Belgians would continue to wear belts if it were no longer mandatory. The results of the study indicated that 88 percent of those interviewed indicated that they wear seat belts. The second part of the survey asked, "If it were not obligatory to wear seat belts, would you continue to manifest your same behavior?" The results were as follows: 56 percent said yes, 37 percent said no, and 7 percent were unsure. Of those who indicated that they always, very often, or fairly often wore their belts before the law was passed, 90 percent said they would continue to wear belts.

Other legal measures introduced with the seat belt law preclude one from determining accurately the reduction in deaths and accidents resulting from the law. However, in the years following introduction of the seat belt law, fatalities and injuries for drivers and passengers were reduced by 25 percent, and by 15 percent for other road user categories.

Canada

In Canada, a number of organizations, both inside and outside the government, were interviewed regarding the seat belt study. According to government officials, two factors created a climate whereby seat belt laws were enacted by several Canadian provinces. These factors are:

- The provinces that have adopted seat belt laws are those that have a Government Medical Insurance Program, thereby making it easier for the public to recognize the direct impact of traffic injuries and deaths on their insurance premiums.

- A provincial official in Ottawa, the first province to enact seat belt legislation, announced in a Throne speech (equivalent to a State of the State speech made by a state governor in the U.S.) that Ontario was moving toward the enactment of a seat belt law. Because of the power of the Ontario Provincial Government, the public went along with the thrust towards adoption of a seat belt law.

According to an official of the Canadian Federal Government, in those provinces having governmental medical insurance, the insurance pays for all doctor and hospitalization bills. The premiums for said insurance are very low because the government pays half. The public realizes that 50 percent of all insurance costs are borne directly by them. Therefore, the public willingly went along with the enactment of a seat belt law in order to minimize the expenses that would be passed on to them. According to the official, this factor played a key role in bringing about adoption of laws.

An official from the Provincial Government of Ontario stated that the adoption of the law in Ottawa "was not a logical or rational process." The official continued by saying, "The law dropped out of the sky--there was no particular interest in the law. We had developed educational material and disseminated it to the public in the late 1960s and early 1970s, but it had not generated much public interest." According to the interviewee, the person making the Throne Speech referenced earlier was himself interested in having a seat belt law, and once he caused the public to move in its thinking about the law (this was brought about by statements in the Throne Speech), the Ontario government was able to get the law passed because it has power.

As indicated earlier, the seat belt legislation in Canada has been enacted on a province-by-province basis rather than on a national basis. There are four provinces that have enacted seat belt laws: Ontario, Quebec, Saskatchewan,

and British Columbia. In general, the laws enacted by the four provinces are quite similar. One point of interest regarding the laws is that they make the driver responsible for seeing that passengers comply with the laws. The penalty for noncompliance ranges from $5 to $200, and it is possible in one province for a person to be imprisoned for noncompliance. There are certain exceptions to the laws and they vary from province to province, but they relate mostly to medical exemptions or exemptions for drivers providing special services. In all of Canada, the law requires three-point inertia reel belts in front outboard positions of cars. The law also requires buzzer-light warning systems for front outboard belts.

Many formal steps were taken to implement the laws in the four provinces that have laws. Public Information and Education Programs were conducted by the Canadian Federal Government as well as by provincial governments. In both cases, the programs resulted in an increase in favorability of public opinion toward seat belt usage and an increase in the public's knowledge regarding seat belt usage, but very little increase in the wearing rate of seat belts.

The seat belt law is enforced in conjunction with enforcement of other traffic infractions and varies from province to province. In general, though, the law is not rigorously enforced in any of the provinces. Statistics from Ontario indicate that citations for speeding exceed citations for driving without seat belts 80:1, and citations for drunken driving exceed citations for driving without seat belts 4 to 5:1.

In several instances courts have reduced insurance compensation to accident victims who were not wearing seat belts. According to one interviewee, however, the court rulings are independent of the seat belt law. Several such rulings were handed down in British Columbia prior to enactment of the law. Such rulings have been made in New Brunswick, though the province has no seat belt law. The interviewee indicated that the wording used in the cases is that wearing of a seat belt is "deemed to be the action of a reasonably prudent member of society."

Belt use and the effectiveness of the seat belt laws vary from province to province. The most extensively documented analysis of seat belt use has been done by the Ministry of Transportation in Ottawa. According to surveys, the usage rate in Ottawa before announcement of seat belt legislation was 17 percent. Two months after the legislation became effective and one month after enforcement began, belt use in Ottawa reached 76.8 percent. Similar data were obtained for Saskatchewan, where the usage rate prior to enactment of the law was 29.6 percent for drivers, jumped to 66.9 percent when the law became effective, and was up to 82 percent four months after the law became

effective. There are indications that the usage rate dropped somewhat after its initial surge.

Many public opinion surveys have been conducted in Canada. While these surveys provide useful information regarding the specific subject being studied (i.e., demographic variables, personality characteristics, attitudes, etc.) as they relate to seat belt use, it is still unclear whether this information could reliably predict seat belt usage.

The most fertile source of data on the subject of reduction of deaths and injuries related to the seat belt laws was a study performed by Janace Pierce of the Ontario Ministry of Transportation. Pierce attempted to determine the joint and separate effects of the seat belt and speed limit legislation. (Unfortunately, speed limits on expressways and some provincial highways were lowered on the same date that enforcement of the seat belt law began.) Pierce looked at annual fatality and injury rates based on miles traveled, both for vehicle occupants and for other accident victims. A main premise of her study was: While death and injury rates for vehicle occupants will be affected by both increased belt use and lowered travel speeds, changes in belt use will impact only the rates for vehicle occupants and not the rates for other accident victims.

After an extensive statistical analysis of the collected data, Pierce made the following conclusions:

> It seems reasonable to conclude from these statistics that both seat belts and speed limits had an important impact on nonfatal injury rates. The fact that the fatality rates have remained low for the three years rather than "regressing toward the mean" suggests that there may have been some positive impact on fatalities as well. Unfortunately, whatever the impact on fatalities may be, it was far less than would have been expected as a result of just the increase in seat belt use.

Pierce also examined the combined effect of the seat belt legislation and speed limit reduction on the number and cost of motor vehicle accident injuries. Comparisons were made between 1975 and 1976 data from six hospital centers representing various regions of the Province of Ontario. Overall statistics for the province were also examined. The major findings of the study provided information relative to the decrease in number of persons killed, decrease in number of persons injured, decrease in the cost of active treatment care for hospitalized victims, etc.

Denmark

Denmark provided only a small number of documents from the Ministry of Justice, the Ministry of Health, and universities. According to these documents, the Danish initiated belt usage studies in 1971 at 17 selected counting points on motorways, urban streets, and rural roads considered to be representative of the country. It was found that it is not possible to increase the frequency of belt usage over 25 percent by public information and education alone. This factor, plus the successful experience of Australia and New Zealand with seat belt legislation, and the fact that Denmark belongs to the Nordic Road Safety Council which recommended that the Scandinavian countries enact seat belt legislation, influenced Denmark to enact a seat belt law.

Parliament enacted the seat belt law on June 10, 1975; it became effective on January 1, 1976. The law applies to any occupant of a front seat where a belt is fitted--whether or not the fitting was mandatory. The law pertains both to passenger cars and vans. The penalty for noncompliance is approximately $16 U.S. There are certain exceptions to the law. They pertain mainly to medical exemptions, exemptions related to body size, and exemptions related to the service being provided by the driver. Three-point belts with inertial retractors are required in all passenger vehicles in which they can be fitted. In vehicles that cannot accommodate three-point belts, lap belts are permissible.

A limited public information and education program was implemented in early 1976 to explain the new law to Danish motorists. No other indications of public information programs being conducted were found.

The seat belt law was not enforced the first three months after enactment. When police did begin enforcing the law, they only did so in conjunction with other violations.

No studies of seat belt usage were received from Denmark. However, a study concerning fatal lesions of car occupants indicated that seat belt use surpassed 50 percent in the period after passage of the law but before enforcement was begun. According to the document, seat belt use later jumped to 75 percent.

Several studies were received that discussed the reduction of deaths and injuries resulting from the seat belt law. One study showed a decrease of 18 percent in the casualty ratio and an even more pronounced decrease of 30 percent in incapacity days for front seat occupants following enactment of the law. In another study, researchers comparing data from before and after passage of the law found an initial decline in the number of casualties, but

the effect vanished in the second year of enforcement in spite of a maintained improvement in seat belt use. The researchers stated that the vanishing effect could not be explained by a rising traffic activity or by increasing numbers of accidents. They concluded that breaking down the material leads to the assumption that high risk groups, such as young drivers and nighttime drivers, had been substantially less influenced by the law and therefore constituted the problem.

Finland

It was not possible to obtain any information directly from Finland. Three documents concerning Finland's law were obtained from other sources: a document from the Finnish Embassy, a document written in Norway, and a document written in the United States. None of these contained much useful information.

The seat belt law became effective July 1, 1975. The law requires the wearing of belts for drivers and front seat passengers, aged 15 years or more, in passenger cars that are fitted with seat belts. One document indicated that there is a fine for noncompliance plus a maximun penalty of three months in jail if a person refuses to wear a seat belt after being told to do so by an officer. The document did not specify the amount of the fine.

There are certain exceptions to the law. They pertain to age exemptions, medical exemptions, and exemptions associated with the services being provided by the vehicle driver. Mandatory fitting of three-point belts has been required since January 1, 1971.

According to an unpublished document written in the United States and given limited distribution in Finland some public information and education programs were conducted in Finland. The document also quoted the Finnish Police as saying that very little enforcement occurs in Finland, although the police have the authority to tell motorists to use their seat belts.

The belt usage rates just before the law came into effect were 8 percent in urban areas and 31 percent in rural areas. In 1976 the corresponding figures were 38 percent and 66 percent.

France

Several people in top level government positions in France were interviewed for the study. A noted French physician and a noted private consultant who have done research on the effectiveness of seat belts were also interviewed.

In France, the seat belt law was precipitated by two factors: (1) the high number of traffic accidents and injuries; and (2) recommendations by certain French physicians that the government institute a seat belt law. Research and statistics regarding Australia's experience with seat belt laws and seat belt effectiveness studies conducted by Volvo in Sweden were used as a basis for France's decision to enact a seat belt law.

The law became effective in July 1973; it requires that seat belts be worn at all times outside of cities and built-up areas. However, belts are only required to be worn between 10:00 p.m. and 6:00 a.m. within cities The penalty for noncompliance is approximately $13 to $21 U.S. Certain people are exempt from the law depending on their age, size, medical status, and occupation.

Public information programs were used extensively as a means of gaining support for the law. However, these programs were found to be effective only while being conducted. Some type of enforcement is needed to sustain compliance at a high rate. Enforcement is provided by various police organizations and therefore is not consistent from one jurisdiction to another.

Certain judges have ruled that motorists share in the responsibility for injuries if a seat belt is not worn and therefore insurance compensation should be reduced. The amount of insurance compensation reduction reportedly ranges from 20 to 30 percent. Certain insurance policies also reportedly have provisions that persons wearing seat belts will receive greater compensation benefits if they are injured in an accident.

The responses of the people interviewed were mixed regarding the effectiveness of the seat belt law. Government officials cited a level of seat belt usage that private researchers believed was too high. According to ONSER, a government organization responsible for road security, the usage rate in early 1979 was as follows: highways--95 percent; country roads--70 to 79 percent; night in cities--50 percent; and day and night in cities--35 percent.

The French government conducted several studies to determine the attitude of motorists towards seat belts. Prior to enactment of the law, 70 to

The Netherlands

Four Dutch government officials were contacted by PMM&Co.'s office in the Hague. Two documents were received concerning the seat belt law, neither of which had much useful information. Consequently, there is very little to report concerning The Netherlands.

The seat belt law became effective on June 1, 1975. It requires the driver and the front seat passenger next to the door on the passenger side to wear belts tightly encircling their bodies when riding in passenger vehicles. A penalty of up to $120 may be assessed for noncompliance. There are a number of exceptions to the law. They mostly pertain to drivers meeting certain medical or physical criteria, drivers performing certain services, and drivers of vehicles which have special exemptions from the law. Three-point belts have been required equipment in passenger cars and vans since January 1, 1971.

Not enough information was available from The Netherlands to support a discussion of the issues established by DOT. The only information found relevant to any of the issue areas pertained to seat belt usage. The seat belt usage rate prior to enactment of the law was 11 percent in urban areas and 24 percent in rural areas. After the law become effective, the rates increased to 58 percent and 75 percent, respectively.

New Zealand

Most of the data collected for New Zealand were from literature searches augmented by personal interviews. According to the collected information, New Zealand, in its attempt to reduce road accidents and casualties, had become increasingly aware that there was a need for greater emphasis on both vehicle and environmental standards. Seat belts were considered a simple and relatively inexpensive method of minimizing the injuries resulting from vehicle accidents.

In New Zealand, the mandatory seat belt law became effective on June 1, 1972. The law requires that seat belts be worn by drivers and front seat passengers of light vehicles registered after January 1, 1965. The law applies to persons 15 years of age of older. The penalty for noncompliance is a maximum of $200. However, people from the Ministry of Transport indicated that the average fine as of May 1978 was $8 to $10. There are several exceptions to the law and they fall into two areas: (1) exemptions for particular types of vehicles, and (2) exemptions for people, mostly related to the purpose for which the vehicle is being driven. All cars first registered after July 1, 1972 must be fitted with a three-point retractable belt.

Public information and education programs were conducted in New Zealand, but no documented information was found on their effectiveness. According to the limited amount of available data, it appears that the police enforce the law, but since the average fine for noncompliance is $8 to $10 and the law allows a fine up to $200, enforcement is apparently not rigid.

Seat belt usage has been studied in New Zealand since 1967. The usage rate immediately before the seat belt legislation became effective was 33 percent. The usage rate jumped to 86.6 percent immediately after the law came into effect. Seat belt use has been found to be higher in the rural areas than in urban areas, as has been the case in other countries. In some instances the difference between wearing rates is 15 or more percentage points. The latest data from New Zealand shows that the usage rate dropped after the initial jump and later started to increase again. The overall rate has remained in excess of 80 percent, according to the latest information received.

Attitudinal studies were conducted in New Zealand before and after the enactment of the seat belt law. In a survey conducted prior to enactment of the law a sample of people were asked if they thought seat belt use should be compulsory for the drivers and front seat passenger of moving vehicles; 64.5 percent were in favor, 35.3 percent were opposed, and 0.2 percent had no opinion.

Supposedly some reduction in deaths and injuries has resulted from adoption of the seat belt law. However, the author of the paper reporting the reduction cautioned against a literal use of the information in his report because of confounding influences that could not be controlled in his analysis.

Norway

A number of Norwegian organizations were contacted for this study and provided considerable amount of useful information. According to the documents obtained, two factors motivated the passage of a seat belt law in Norway. One factor was the publication of a study by Volvo concerning the analysis of 28,000 automobile accidents. This study did much to demonstrate the effectiveness of seat belts. The second factor concerned the actions of the Nordic Road Safety Council. This council is composed of members from the Scandinavian countries: Sweden, Norway, Finland, and Denmark. These countries requested the council to look into the problems associated with mandatory seat belt legislation. Complying with their request, the council investigated the subject and issued a report recommending the adoption of compulsory seat belt legislation.

In Norway, the seat belt law took effect September 1, 1975. The wearing of seat belts is compulsory for drivers and front seat passengers (in passenger vehicles and vans) who are more than 4 feet tall and more than 15 years of age. As initially passed, the act did not carry a penalty for noncompliance although it was planned that penalties would be assessed after a period of one and one-half years. If fines are assessed, the fine would be 200 Norwegian Kroner (approximately $36 U.S.). The authorities have left the question up to the drivers; they can prevent the enforcement of penalties by voluntarily using seat belts at an acceptably high usage rate. There are exceptions to the law. They pertain mostly to medical exemptions, exemptions for special services being provided by the driver, and exemptions related to a few special driving circumstances. Seat belts have been required in passenger cars and vans since January 1, 1971. As of the publication date of the documents received from Norway, various types of belts were being evaluated to arrive at a comfortable standard.

There were a limited number of public information and education programs conducted in Norway. However, there is no documentation of the effects of the programs. There is essentially no enforcement of the law in Norway. The law was passed as the result of a compromise between the Ministry of Justice and Parliament. Parliament was reluctant to pass a seat belt law. Therefore, the law was passed with the stipulation that no penalty would be attached.

Belt usage studies conducted in Norway indicate that use is greater in rural areas than in urban areas. Belt use was rather low prior to passage of the law, increased markedly immediately after passage of the law, declined after the initial high increase, and has vacillated back and forth since with

the general trend being upward. In November 1977 (the latest data available), the usage rate was around 63 percent for rural areas and 32 percent for urban areas.

Attitudinal studies were conducted. In a series of interviews, drivers were asked their reasons for wearing or not wearing seat belts, their attitudes toward compulsory use of seat belts with or without penalties, and so forth. The results indicated that the majority of drivers interviewed have positive attitudes toward seat belt use and toward the seat belt law and its ramifications. Though only an average of 50 percent of the drivers used their seat belts, a 1977 survey showed that approximately 87 percent of them favored compulsory seat belt legislation. Approximately 40 percent of the drivers questioned supported the use of a penalty for not wearing belts, and more than 80 percent thought that a fine would increase belt usage.

No definitive data were found regarding reduction of deaths and injuries as a result of the law. However, the chief of staff at a central hospital, in an interview with the Norwegian Automobile Association, indicated that over 90 persons could have been saved in 1977 if 100 percent of all drivers and passengers had used safety belts. The interviewee did not indicate how he arrived at those figures.

Puerto Rico

An interview was conducted with the Office of Traffic Commissioner in Puerto Rico in order to supplement the information that was already available at DOT concerning the seat belt law there. In Puerto Rico, the seat belt law did not result from alarming statistics on automobile deaths and injuries, as was the case with many countries. Rather, it developed from a professional concern by members of the Traffic Safety Commission and the Department of Transportation and Public Works. The data used as a basis for promoting acceptance of the law were compiled from studies in the United States, European countries, and Australia.

The law became effective in January 1974; it requires that all drivers and passengers wear seat belts when the vehicle is equipped with belts. The penalty for noncompliance is $10 to $25 dollars. There are certain exceptions to the law. Most pertain to medical exemptions, exemptions related to the size of the person, and exemptions related to the service being performed by the driver. Also, several groups of vehicles are exempted from the law.

Public information and education programs were conducted by several different organizations. However, there was no documentation of these programs. A chronology of events associated with conducting public information and education programs shows that a number of important steps were taken.

The law was initially enforced rather rigorously. However, after about three years, enforcement began to drop off so markedly that it was necessary for the Traffic Safety Commission to send several letters to the Superintendent of Police requesting a pledge for stronger police enforcement.

Seat belt usage surveys were conducted from July 1973 to May 1978. The usage rate data indicate that there was a direct correlation between usage rate and the amount of police enforcement. However, the highest usage rate ever attained was 34 percent, according to the information received. The collected data did not provide information on how the usage rate studies were conducted.

Attitudinal studies were conducted in Puerto Rico. Just after passage of the law, one household survey indicated that 80 percent of the people surveyed were in favor of the law. Several other small surveys indicated that the majority of the people were in favor of the law or at least in favor of wearing seat belts. However, as indicated earlier, the highest usage rate ever attained was 34 percent.

Information received from Puerto Rico indicated that the seat belt law brought about a net reduction in fatalities of 23 percent. However, there were no data presented to back up this claim.

Spain

PMM&Co. contacted an extensive number of Spanish government officials and officials from private organizations. However, practically no information was obtained, thus there is not much useful information to report on Spain.

The seat belt law became effective April 22, 1974. The law applies on highways but not within urban limits, and for cars but not for trucks. Seat belts are required to be installed in front seats of passenger cars only.

Prior to enactment of the law an extensive two-month campaign was conducted utilizing television, radio, newspapers, street and highway signs, and brochures. The campaign continued for a short time after the law was enacted, then was toned down to a point where now the only remaining vestiges of the campaign are signs on highways reminding vehicle occupants that belt use is mandatory.

The seat belt law is not enforced to any great extent. During a four-month period in 1978, only 56 people were fined for not wearing seat belts, while approximately 1,000,000 traffic tickets for all traffic violations are issued every quarter.

Sweden

PMM&Co. conducted interviews in Sweden with representatives from the Road Safety Office and the Ministry of Communications. It was apparent from talking to the officials and from personal observations that Sweden has very stringent traffic safety laws. The Swedish people seem acculturated to complying with these laws, and it seems that the belt usage rate in Sweden, the highest of any country contacted for the study, stems more from the people's respect for laws in general than it does from enforcement of this particular law.

The Swedish Government was motivated to pass mandatory seat belt legislation because approximately 1,200 people per year were being killed in accidents, and attempts to reduce this figure were to no avail. The law became effective in January 1975; it carries a penalty of approximately $23.50 for noncompliance. There are a number of exemptions to the law, mostly related to the size of the person, physical handicaps, or the purpose for which the vehicle is being used. Seat belts are required in both front and back seats of automobiles; the roller type belt is required in all vehicles built since 1975.

No extraordinary steps were necessary to implement the law because of the wide news media coverage given to the evolving seat belt legislation. The Swedish Government promoted the new law via news releases, signs on buses, and other low profile techniques, but they did not conduct large scale campaigns to encourage belt usage. The government did, however, conduct several focused campaigns aimed at specific groups. The change in seat belt use was measured as a function of the focused campaigns. The change in usage ranged from 8.9 percent to 20.4 percent for the various campaigns.

According to the interviewees, because the Swedish public has a favorable attitude towards mandatory seat belt legislation it is not necessary to have rigorous enforcement beyond normal law enforcement procedures. The police are not required to make special efforts to enforce the law. According to one interviewee, the police are lax in reporting violations. Police report only about 20,000 non-usage violations per year, and they could easily report ten times that number. Despite the fact that enforcement is lax in Sweden, the seat belt wearing rate is reportedly near 90 percent on rural roads and approximately 75 percent on city streets.

Many attitudinal studies were conducted in Sweden. Most of the studies were aimed at small groups and examined situational factors, contextual factors, and basic beliefs as they relate to seat belt use. Some of the findings from the attitudinal studies have relevance for current international concern with mandatory seat belt usage.

One research team attempted to quantify the reduction in deaths and injuries resulting from the law. They obtained completed information from 458 of 469 accidents, involving 1,366 persons. The data were analyzed for several variables; however, because there were certain critical factors that couldn't be controlled, the real injury-reducing potential of seat belts could not be determined.

Switzerland

PMM&Co. interviewed several people with both government and non-government organizations in Switzerland. According to these people, the seat belt law evolved from a concern for the number of people being killed in automobile accidents each year. Research done by Australia, Sweden, and the University of Zurich was used as background for Switzerland's law. The law was implemented by ordinance rather than by parliamentary vote. As a result, a person who was fined for not wearing a seat belt appealed to the Swiss courts. The appeal went all the way up to the Supreme Court, which ruled that "the existing laws do not authorize the Swiss Government to implement the mandatory use of seat belts". Consequently, Switzerland's law has been repealed.

The law went into effect in January 1976; it required that seat belts had to be worn in front seats of passenger cars and vans at all times. It also required that children under 12 years of age must ride in the back seat of automobiles. The penalty for noncompliance while the law was in effect was $14 U.S. There were exceptions to the law, mostly pertaining to drivers providing special services and people with medical exemptions.

The seat belt law was never formally implemented in Switzerland. There was resistance to the law from the very beginning, both from government and police officials as well as from the general public in certain parts of Switzerland. Reportedly, various police agencies enforced the law in accordance with the wishes of the citizens in their jurisdiction. Ironically, this resulted in stricter enforcement in areas where the voluntary compliance rate was highest and lax or no enforcement in areas where the wearing rate was lowest.

Some public information and education programs were conducted to encourage the use of seat belts, but the Swiss government does not have any information on the effectiveness of the programs. Based on the reported seat belt wearing rate prior to enactment of the law, the media campaigns were no more effective in Switzerland than in other countries.

According to Swiss officials, the police didn't make any special effort to enforce the seat belt law. The law was enforced in conjunction with other traffic violations but was left up to the discretion of the police within the various states and cities. One interviewee stated that the various police jurisdictions enforced the law in accordance with the attitudes of the people regarding the law. The officials stated that enforcement of the seat belt law, when it was in effect, varied according to the three major ethnic regions within Switzerland: German, French, and Italian. The enforcement rate was highest

in the German speaking region and was lowest in the French speaking and Italian speaking regions.

Two of the people interviewed had participated in court cases in Switzerland, and they indicated that insurance companies can reduce one's compensation up to 10 percent if it is proved that the injury sustained would not have been as great if seat belts had been worn. According to the interviewees, there have been about six cases where the courts ruled that insurance compensation could be reduced.

A dramatic change in the seat belt usage rate occurred after enactment of the law despite the reported opposition to the legislation. Data provided by the Swiss government show that the combined average usage rate on various roadways changed as follows: city streets--from 15 to 78 percent, highways--from 35 to 85 percent; and expressways--from 42 to 92 percent. (Note: the combined average is calculated by finding the grand mean of the mean wearing rates in the German, French, and Italian speaking regions in Switzerland.) The overall usage rate declined at least 30 percentage points on all road facilities after repeal of the law.

The Swiss did not conduct any public opinion surveys in conjunction with their law. However, because of the process they used for enacting the law, they did solicit opinion about the law from certain interested parties.

Several studies have been conducted to determine if a reduction in deaths or injuries occurred as a result of the law. One study at a state hospital determined that there was a 12 percent decrease in deaths from accidents during the time the law was in effect. A study at the University of Zurich determined that during the time the law was in effect there was an increase in injuries of the following types: broken collar bones, broken breast bones, broken ribs, and internal injuries. A government study on the other hand, determined that the rate of decline in severity of accidents was 9 to 14 percent.

Two professors at the University of Zurich have conducted a cost/benefits analysis of reintroducing the seat belt law in Switzerland. Their preliminary results indicate that $42 million U.S. dollars in benefits could be realized by reintroducing the law.

United Kingdom

The United Kingdom (U.K.) does not have a seat belt law. However, because of the many attempts that have been made to enact a law in the U.K. and because of the research that has been done in connection with introducing seat belt legislation, it was believed that surveying the U.K. experience regarding seat belt legislation would be beneficial.

The installation of seat belts in front seats of cars and light vans has been required by law in the U.K. since 1965 and 1967, respectively. Belts are not required in the rear seats of any vehicles. The current wearing rate averages around 30 percent for drivers and passengers. Usage varies according to the type of road: wearing rates in motorways (freeways), for example, are generally higher than on urban streets. A succession of national publicity campaigns has been conducted in an attempt to encourage more people to wear seat belts. The results have been mixed. The most noticeable impact was a significant increase in wearing rates during one particularly intensive campaign, with usage falling off again as soon as the campaign ended.

Since 1973, eight separate bills have been introduced in Parliament to make wearing of seat belts mandatory. While they have differed somewhat in format and emphasis, all eight bills have been relatively simple enabling instruments, designed to permit the Minister responsible to formulate more detailed regulations. The various bills that have been proposed have addressed such issues as the vehicles covered, type of belt to be worn, exemptions, enforcement procedures, and penalties.

Strong positions regarding the impending bills have been taken pro and con by the media, special interest groups, and professional organizations. Supporters of the legislation have argued that compulsory seat belt wearing is the only way in which usage rates can be significantly increased and accidents reduced. It has been estimated that mandatory usage legislation would increase the average wearing rate from roughly 30 percent to 80 percent, resulting in a reduction of over 1,000 deaths and 10,000 serious injuries per year. Proponents of mandatory usage also argue that society has the responsibility and the right to protect its members from negligent acts that harm both themselves and others.

Opponents of the legislation, however, have argued that it is wrong in principle to make an offense, particularly a criminal offense, out of an action whose ill consequences fall only (or mainly) on the perpetrator and not on any third party. The proposed legislation is viewed as a serious trespass on the freedom of the individual to take a risk when only his or her own safety is at stake. While recognizing the fact that innocent third parties are

frequently involved in road accidents, opponents of mandatory usage laws argue that a driver's wearing or not wearing a seat belt was likely to have little or no effect on the consequences of an accident for others. Opponents have also argued that there would be serious problems of enforcement, largely based on the difficulties of determining whether the occupants of a car were wearing seat belts without actually stopping the vehicle.

Exemptions to the law and the penalty for noncompliance have been the subjects of considerable debate. The major organizations which have official reasons to be concerned about seat belt legislation have taken sides in the issue, and there are important organizations on both sides. It appears that there is substantial support for the law in the House of Commons. Opinion in the House of Lords appears to be less favorable.

Attempts to legislate for compulsory seat belt wearing appears to have failed, primarily because the government has not given high priority to allocating time for debate on the bills.

West Germany

Representatives from a number of different organizations in West Germany were interviewed for this study. According to the interviewees, Germany had a severe traffic fatalities problem that led to the enactment of the mandatory seat belt law. In the late 1960s fatalities resulting from automobile accidents averaged between 16,000 and 17,000 per year. In 1970 the figures jumped dramatically to approximately 20,000 per year. This prompted the Minister of Transport to request studies on the problem, which eventually led to the enactment of a seat belt law.

The law became effective in January 1976. The law is quite similar to seat belt laws in other countries, except that there is no penalty for noncompliance. There are certain exemptions from the law, principally related to a person's size, medical condition, or for drivers of certain special vehicles. Also there are specific requirements regarding seat belt hardware--beginning January 1, 1974, all new passenger cars and vans had to be fitted with three-point retractable safety belts on front seats.

Since there is no penalty for not wearing belts, the German government has not set up any specific programs for implementing the seat belt law. Several public information and education programs were conducted and, while most people surveyed in conjunction with these programs were aware of the advertisements, the programs were not effective in altering the behavior of the public at a significantly high or sustained level regarding increased usage.

Likewise, because there is no penalty associated with the law, the German Government has not attempted, to enforce the law. On the other hand, several courts at various levels have ruled that a person not wearing a seat belt and injured in an accident should not receive full compensation for the injuries sustained. According to one interviewee, the highest reduction in compensation in any case was 50 percent.

It was not possible to find much documented information on the effectiveness of the law in West Germany. It was apparent from the interviews that the German Government, convinced of the efficiency of seat belts for saving lives and reducing certain types of injuries, and inspired by the success of mandatory legislation in Australia, decided that a seat belt law would be beneficial for saving lives in Germany.

Even though the law was not enforced, studies conducted by the Federal Institute for Streets indicate a significant increase in seat belt usage after the seat belt law was enacted. The change in seat belt usage for various road facilities was reported as follows: from 14 to 47 percent on city streets;

from 30 to 64 percent on country roads; and from 48 to 77 percent on the Autobahn. It appears that the German public, with a natural inclination to be law abiding, made the change with a minimal amount of pressure from the Government.

Some surveys of public attitudes were conducted by the Federal Institute for Streets prior to enactment of the law. The majority of the people surveyed (80 percent) indicated that they were not opposed to mandatory seat belt usage. On the other hand, the German public is strongly opposed to the imposition of fines for noncompliance. A private consultant (Gerhard Bliersbach) has conducted several studies concerning the psychological factors associated with the public's attitude toward seat belts. In an interview, Bliersbach said: "Psychologically, I found that driving has to do with some youthful psychological set. This youthful attitude allows one to disavow the danger involved in driving--people don't want to recognize this. The basic fear of and the main hindrance to wearing seat belts is that [people] will be trapped in their cars by the belt."

A government official expressed a similar viewpoint in an interview. He stated, "The main reason for not wearing belts is associated with the psychology of buckling up, which is a tacit admission that it is in fact dangerous to drive automobiles. On the other hand, the rate of wearing belts is much higher on the autobahn because people admit to themselves that fast driving is dangerous".

The German Government has not sponsored any studies to determine the effectiveness of the law in reducing injuries and fatalities because there is no penalty for noncompliance.

III. TECHNICAL APPROACH AND DETAILED TASK DISCUSSION

INTRODUCTION

This section discusses PMM&Co.'s overall technical strategy and the two tasks identified in the Statement of Work. The basic technology required for performing this study included survey research, research methodology, evaluation research, and data analysis. Equally important for this study was the logistical consideration involved in collecting data from different countries around the world. Therefore, PMM&Co.'s technical approach encompassed both the technical aspects of survey and evaluation research, and the complex logistical considerations that had to be resolved.

The approach consisted of the following steps:

- study definition;
- development of data collection plan;
- development of list of countries/jurisdictions to be contacted;
- initiation of contact with PMM&Co. foreign offices;
- preliminary assessment of quantity and quality of available data;
- data acquisition;
- evaluation of collected data and information; and
- preparation of final report and briefing.

The first four steps fall logically under Task 1 and are thus discussed as part of that task. The next four steps are discussed under Task II.

TASK I - PRELIMINARY DISCUSSION AND PREPARATION AND PRESENTATION OF THE DATA COLLECTION PLAN

This task included all of the initial start-up activities for the study as well as the data collection plan -- the first deliverable for the contract. The subsections that follow present a detailed discussion of all the activities that occurred in connection with this task.

Study Definition

The first month of the study constituted the study definition phase of the contract. It involved many activities essential to properly starting the study. A preliminary discussion meeting was held with the NHTSA Contract Technical Manager (CTM) one week after award of the contract. No significant changes were made to the study approach as proposed, nor did any major issues, constraints, or points of contention arise with respect to the study. However, the following agreements and/or suggestions were made:

- Add Austria to the list of countries.
- Make maximum use of PMM&Co. foreign offices.
- Compile all collected data by country and submit to DOT.
- Include travel plans in Plan of Work.
- Principal Investigator should visit a few of the countries and conduct interviews.
- Do not visit Japan if there does not seem to be a reasonable amount of data.
- Emphasize why the law works in some countries but not in others; consider cultural factors.
- Find out how data evaluating the effectiveness of the laws in the various countries were produced--accident reports, medical reports, etc.
- Do not visit Australia because a considerable amount of data from that country is already available here in the United States.

Data Collection Plan

The data collection plan was included as an integral part of the Plan of Work, which was submitted as an official contract deliverable. Therefore, rather than discussing the plan, this section discusses the specific activities resulting from the plan. A prime requisite of NHTSA was that PMM&Co.'s foreign offices were to be involved in the study to the maximum extent possible. In order to involve as many foreign offices as possible and still exercise maximum control, the study was structured into two phases. Phase I involved initial data collection activities. Each foreign office was provided a

small budget for contacting identified organizations and/or people and instructed to send acquired data to either the Paris office (in the case of European countries) or the Washington, D.C., office. This allowed a determination of of which countries should be treated with a larger data collection effort based on data collected during Phase I. Phase II involved personal visits to selected countries by the Principal Investigator (PI) or extended data collection by the local office in the respective countries. Phase II was only initiated after an assessment of the quantity and quality of data collected during Phase I.

Phases I and II are discussed in detail in the subsections that follow.

Phase I--Initial Data Collection Activities

There were a number of general activities that had to be completed before any data could be collected. These activities were as follows:

1. A responsibility matrix was developed which describes how maximum participation by PMM&Co. foreign offices would be affected. Appendix A depicts this matrix. It can be seen in Part 1 of Appendix A that PMM&Co.'s Continental office which is located in Paris has key responsibility for all countries located in Europe. Also it can be seen how maximum use of PMM&Co.'s foreign offices was made by assigning local office responsibility for the designated European countries.

   Part 2 of Appendix A shows how those countries not on the continent of Europe would be assigned to the responsibility of a local office. For these countries, it can be seen that the Washington, D.C., office had key responsibility as well as program responsibility.

2. An information package was developed that could be sent to each office that would assist in the study. The information package contained the following:

   - A brief technical overview of the study that gave the purpose of the study and other general information of interest. A copy of this document appears in Appendix B.

   - A data collection checklist which provided criteria by subject heading for all data that were to be collected. A copy of the checklist can be seen in Appendix C.

- A partial list of people to be contacted in each country. These people were identified by contacting embassies of the target countries, searching references in collected articles, discussing the subject with the president of the American Safety Belt Council, personal knowledge and telephone conversations with PMM&Co. foreign office personnel. A list of people identified in this manner for each country (where it was possible to develop such) is included in Appendix D.

3. Each PMM&Co. local office was directed to make contact with the people identified in the respective data package and with other people that were known to have knowledge of and/or involvement with various aspects of the seat belt law. The identified people were to be contacted by telephone and through personal interviews where necessary.

Initial Data Collection

The local offices were directed to obtain copies of relevant materials from the people contacted and forward copies of all materials to either the Paris or Washington, D.C., office.

Twenty-one countries were identified to be contacted. Eighteen of these countries were identified in the Statement of Work, and three countries--Austria, Denmark and the United Kingdom--were added by PMM&Co. The scenario used for collecting initial data, evaluating those data, and determining which countries warranted additional data collection effort has been listed below using the European countries as an example:

1. The PMM&Co. Continental office in Paris made written and telephone contact with each local office for which they had key responsibility. An information package was sent to each local office.

2. Each country acquired the desired information and transmitted it to the Paris office. The Paris office made an assessment of the information and forwarded the information to the PI in the Washington, D.C., office.

3. The PI reviewed the information and held telephone conservations with the Paris office concerning the information.

4. Based on the assessment of the collected data by the Paris office and the PI, and on input from the various local offices, the Paris office made recommendations to countries were additional data collection effort was warranted.

5. After a review of the Paris office's recommendation, local offices were directed to set up a tentative schedule for visits by the PI.

6. The PI visited the Paris office, finalized the interview schedule, and made arrangements to conduct the personal interviews.

The initial data collection effort led to a recommendation that the PI make personal visits to France, Sweden, West Germany, and Switzerland. Appendix E lists the names of persons interviewed in each of the countries visited.

The same procedure was used to determine the need for visits to Canada, Australia, New Zealand, Israel, Puerto Rico, and Japan. For various reasons, it was decided that outside Europe the PI would only visit Canada. Large quantities of information on Australia and New Zealand are readily available in the U.S. (Note: Some personal interviews were conducted in New Zealand by a business acquaintance of PMM&Co., who was traveling to New Zealand on other business.)

Puerto Rico was visited by a PMM&Co. employee in conjunction with another project, even though this territory was not expected to have much information beyond that already available to DOT.

Neither Israel nor Japan were visited, namely because of the minimal amount of useful data that could be expected from those countries contrasted with the expense of traveling there.

The United Kingdon (UK) was visited even though it was not identified in the original Statement of Work. An extensive amount of work on seat belts and seat belt laws has been done in the U.K. even though there is no seat belt law. Several attempts in Parliament to enact a law have been defeated. (The trip to the U.K. was made by a PMM&Co. employee who was traveling there on other business.)

Phase II--Scheduling of Personal Interviews

The personal interviews conducted by the PI were scheduled by the local offices in the countries visited. In Europe, the local offices set up the interviews and coordinated the schedule with a person in the Paris office who had

been designated to coordinate all European offices' activities. This person arranged the overall schedule for the PI.

The visit to Canada was coordinated by the PMM&Co. Toronto office. This office developed the interview schedule and coordinated it directly with the PI.

The interviews in Puerto Rico and the United Kingdom were coordinated and scheduled by the two PMM&Co. employees who visited those countries on other business.

TASK II-OBTAINING INFORMATION

This task involved the actual acquisition of the desired data--both the written literature and the information acquired during the personal interviews. The individual offices made a preliminary assessment of the amount of data available in each country and/or an assessment of the number of people available for interviewing who had a significant amount of useful information. This information was communicated either to PMM&Co.'s Paris office or their Washington, D.C., office, where a decision was made regarding the merit of visiting a particular country.

Personal Interviews

Though expensive to implement, the personal interviews provided the most useful data in ample quantity. Even though a data checklist had been sent to each local office, it was found that the information obtained by these offices quite often did not contain specific information of interest for this study. In some countries very little information of the specific type sought had been published. Also, foreign office personnel, though able to speak English, often could not make a word-for-word translation of the criteria on the data checklist. Through personal interviews, many of these problems were avoided.

In order to enhance the effectiveness of the personal interviews, several steps were taken. These are discussed in the paragraphs that follow.

Interview Guides

Interview guides were used rather than structured questionnaires in order to permit a free exchange of information between the interviewer and the subject. The guides were intended for use in a nondirective manner but kept the discussion focused on the desired areas of interest. The technique has been found to be effective where high-level personnel are being interviewed.

Interview guides were developed for each type of organization which was considered likely to have useful information. The same subject areas were covered in each guide, but the specific inquiries were tailored to fit the organization being contacted. Copies of the guides are included as Appendix F. The guides were developed for the following categories:

- Government Ministries or Departments responsible for highway safety;

- Parliamentary or Legislative Committees involved in the passage of seat belt legislation;

- Governmental, University, or Private Research Organizations concerned with highway safety;

- Police and Traffic Law Enforcement Agencies responsible for enforcing road traffic laws;

- Motorist Organizations open to the general public and Professional Societies, Trade Organizations, and Special Interest Groups concerned with automobile design, highway safety, and related legislation;

- Medical Associations concerned with treatment of highway accidents; and

- Insurance Associations concerned with accident prevention and automobile insurance.

Interview Teams

Experience on past research studies has shown that two persons can conduct much more comprehensive interviews than one person when an open-structured, free-flowing interview technique is used. For this reason, it was decided that this process would be desirable for the seat belt study. However, because of the expense of transporting two people from the U.S. to the European countries it was decided that the second member of the team would be a PMM&Co. English speaking employee from the respective European offices. Moreover, it was known that a translator would be required for most of the interviews.

The PMM&Co. local offices supplying a team member for the interviews were as follows:

- France--Paris office;

- Sweden--Stockholm office;
- West Germany--Frankfurt office; and
- Switzerland--Geneva office.

The teaming arrangement was found to be absolutely essential in most of the interviews. Most of the interviewees could not or would not venture to speak English. In those situations where the interviewees did speak English, they were quite willing to engage in in-depth discussion regarding the desired information.

The local office team member in each country was familiarized with the interview guide data checklist so that they could be of maximum assistance to the PI.

Use of Data Checklist

The data checklist discussed earlier was also used during the personal interviews. All interviewees had been contacted prior to the interview and informed of the specific type of information that was desired, such as documented research, analyses, statistics, reports, unpublished papers, and such. Unfortunately many of the interviewees had prepared excerpts from official reports and would not provide a complete report. The data checklist was used during the interviews to ensure that a specific on-the-spot request was made for all desired information.

Evaluation of Collected Data and Information

Much of the written information required translation. To save expense, translators were hired in the U.S. Even then it was necessary to have the information translated to only a minimum level for understanding the material involved. (Note: it would have been prohibitively expensive to have the information translated in Europe because of translation costs and because the PI found it necessary to contact each translator several times to glean all useful information from the documents.)

Unfortunately, it was found that the documents did not always discuss the specific information desired, even though they had been provided in direct response to a specific request during the interviews. Most of the published information concerns the effectiveness of seat belts and not the effectiveness of the seat belt laws or other issues of interest for the study.

It had been theorized early in the study that the collected documents would be evaluated and categorized according to their usefulness. However, after receiving the information and finding that much of it did not discuss specific points of interest, all documents containing any useful information were referenced by footnotes in the case studies for each country. These documents are the only ones that received a minimal level of translation.

IV. CASE STUDIES

DETAILED DISCUSSION OF EACH COUNTRY VISITED

Case studies which provide detailed information concerning issues related to seat belt laws were prepared for each country visited. Countries in this category are as follows:

- Canada;
- France;
- New Zealand;
- Puerto Rico;
- Sweden;
- Switzerland;
- United Kingdom; and
- West Germany.

A significant amount of useful information was acquired for each of these countries. Even though it appears that considerable effort regarding the seat belt law was expended in Puerto Rico, there was a minimal amount of documented research obtainable there that is of interest for this study. The United Kingdom has done a considerable amount of research on seat belts and has done much work in connection with attempts to enact a seat belt law. Much of the information and experience of the United Kingdom was useful in that it provided critical insight into the issues associated with enacting seat belt legislation. Unfortunately, much of the information and many of the studies available do not meet the specific requirements that were set forth for this study. Because of the special circumstances associated with Puerto Rico and the United Kingdom, the case studies for these countries have been presented in summary form.

All of the other case studies have been presented in the following format:

- Introduction.
- Background and History.

- Specification of the Law:
    - Penalty for Noncompliance; and
    - Exceptions to the Law.
- Seat Belt Hardware Requirements.
- Implementation of the Law:
    - Public Information and Education Programs;
    - Enforcement of the Law; and
    - Court Decisions Regarding Insurance Compensation.
- Effectiveness of the Seat Belt Law:
    - Belt Usage;
    - Attitudinal Studies;
    - Reduction in Deaths and Injuries; and
    - Costs/Benefits Associated with the Law.

Discussions of seat belt usage and legislation for the countries visited appear on the following pages.

CANADA

INTRODUCTION

The primary method of data collection in Canada was by interviews with representatives of the Canadian Government and representatives of other organizations identified as having relevant information concerning Canada's experience with mandatory seat belt use. The organizations represented by the interviewer were as follows: Transport Canada, Ontario Ministry of Transport, Traffic Injury Research Foundation, and the Royal Canadian Mounted Police. A number of printed reports were also collected and reviewed. Certain of the reports were collected during Phase I, and the remainder of the reports were obtained from respondents during the interviews. Most of the reports pertain directly to the areas that are of particular concern to DOT. It is apparent from the data collected that Canada's approach to conducting research in support of policy requests is quite similar in many instances to the overall research approach utilized by the U.S. Department of Transportation. For this reason, there are many documents collected in Canada that directly address DOT's questions regarding the experience of other countries with mandatory seat belt use laws.

BACKGROUND AND HISTORY

According to government officials there are two factors that promoted a climate in Canada whereby seat belt laws were enacted by several Canadian provinces. The factors are:

- The provinces that have adopted seat belt laws are those that have a Government Medical Insurance Program, thereby making it easier for the public to recognize the direct impact of traffic injuries and deaths on their insurance premiums.

- A provincial official in Ottawa, the first province to enact seat belt legislation, announced in a Throne speech (equivalent to a State of the State speech made by a state governor in the U.S.) that Ontario was moving toward the enactment of a seat belt law. Because of the power of the Ontario Provincial Government, the public went along with the thrust towards adoption of a seat belt law.

According to an official of the Canadian Federal Government, in those provinces having government medical insurance, the insurance pays for all doctor

and hospitalization bills. The premiums for said insurance are very low because the government pays half. The public realizes that 50 percent of all insurance costs are borne directly by them. Therefore, the public willingly went along with the enactment of a seat belt law in order to minimize the expenses that would be passed on to them. According to the official, this factor was key in adoption of laws in the provinces having them.

An official from the Provincial Government of Ontario stated that the adoption of the law in Ottawa "was not a logical or rational process." The official continued by saying, "The law dropped out of the sky--there was no particular interest in the law. We had developed educational material and disseminated it to the public in the late 1960s and early 1970s, but it had not generated much public interest." According to the interviewee, the person making the Throne Speech referenced earlier was himself interested in having a seat belt law, and once he caused the public to move in its thinking about the law (this was brought about by statements in the Throne Speech), the Ontario government was able to get the law passed because it has lots of power. The interviewee indicated, "At one point the government tried to back away from its position favoring the law, and it received lots of flack from news media, so the government went ahead and passed the law almost immediately." According to the interviewee, after the Throne Speech by the Ontario government, an interministerial committee was formed, and this committee published a report recommending enactment of a seat belt law. The interministerial committee used the Australian experience as a basis for their recommendation.

Subsequent to adoption of the seat belt law in Ontario, several other provinces have adopted seat belt legislation, namely: Quebec, Saskatchewan, and British Columbia. According to a Canadian Government official, Nova Scotia passed a seat belt law but the Premier would not sign it. Also, he said, "Newfoundland is on the brink of passing a seat belt law."

According to one Canadian official there was a considerable amount of activity in the early 1970s concerning the use of seat belts. Transport Canada was conducting various studies on a province-by-province basis to determine the seat belt wearing rate and the public's attitude towards seat belt legislation. Also, various public information and education programs were conducted in an attempt to change the motorists' attitudes and seat belt usage behavior. These factors and others are discussed in the paragraphs that follow.

SPECIFICATION OF THE LAW

As indicated earlier, the seat belt legislation in Canada has been enacted on a province-by-province basis rather than on a national basis. The dates

that the legislation became effective in each province that has enacted a law are as follows:

Ontario	1 January 1976
Quebec	15 August 1976
Saskatchewan	1 July 1977
British Columbia	1 October 1977

In general, the laws enacted by the various provinces are quite similar. An unpublished table was provided by Transport Canada comparing the various aspects of the laws enacted by the four provinces listed above. This table has been included in this report as Table 2, and it contains the specifications for the various laws now in force.

Penalty for NonCompliance

See Table 2.

Exceptions to the Law

See Table 2.

SEAT BELT HARDWARE REQUIREMENTS

According to a Transport Canada official, "Canada pretty much followed the United States regarding seat belt hardware requirements." In 1968, the law required that seat belt anchorages be installed in all vehicles built during that and subsequent years. On January 1, 1971, the law required that vehicles of that and subsequent years must have both lap and detachable shoulder belts installed on front outboard positions and lap belts in all other positions. On January 1, 1972, retractor and buzzer-light warning systems were required for front outboard lap belts. On January 1, 1974, the law required that vehicles of that and subsequent years must be equipped with three-point inertia reel belts in front outboard positions (one buckle, lap and shoulder permanently attached)(Ontario Ministry of Transport, undated). According to a Transport Canada official, the Province of Ontario received many complaints regarding integrated belts being uncomfortable until the law for Ontario was amended effective February 27, 1976 to remove the requirement for wearing shoulder belts. As the law now stands, shoulder belts are required to be worn only when the car was manufactured on or before January 1, 1974. That is the date when inseparable three-point belts became required equipment under the Motor Vehicle Safety Act of Canada (J.A. Pierce et al., 1976).

TABLE 2

SEAT BELT LEGISLATION, CANADA

HIGHWAY TRAFFIC ACT/MOTOR VEHICLE ACT PROVISIONS	QUEBEC	ONTARIO	MANITOBA	SASKATCHEWAN	BRITISH COL
Definition	System conceived to retain a person in his/her seat (56(a)(1))	"device or assembly composed of straps, webbing etc., that restrains the movement of a person in order to prevent or mitigate injury to the person and excludes a pelvic restraint or an upper torso restraint or both of them. (63(a)(1))	"...any strap, webbing or similar device designed to secure the driver or a passenger in a motor vehicle in order to reduce the possibility of injury or to reduce the injuries in any accident (...) and includes all necessary buckles and other fasteners and all hardware designed for use in connection with or the installation of the seat belt." (49(1))	Same as Ontario (132A(1))	Same as Ontario (206(2))
Prohibiton against removal of seat belts.	No person shall have his/her seat belt assembly removed, rendered partly or wholly or modified as to reduce its effectiveness (56b)	No person shall drive on a highway in a motor vehicle in which seat belt assembly has been removed, rendered partly or wholly inoperative or modified as to reduce its effectiveness. (63a(2))	Same as Ontario (49(3))	Same as Ontario (132 A (2))	Same as Ontario (206 (3))
Use of Seat Belt by driver	No person can drive a motor vehicle in which the seat belt for the driver has been removed or modified (56 (c))	Every driver shall wear the complete seat assembly in a properly adjusted and securely fastened way (63a (3))	- - - - -	Same as Ontario with the additional provision that if the seat belt assembly comprises a pelvic restraint and torso restraint not joined, drivers are required to wear only the pelvic restraint (132a (3)	Same as Saskatche (206 (4),(8))
Use of Seat Belt by Passenger	No person can drive a motor vehicle in which the seat belt for the passenger at the front of the vehicle has been removed or modified. (56(c))	Every passenger shall wear the complete assembly in a properly adjusted and securely fastened way. (63a(4))	- - - - -	Same as Ontario with the provisions that the passenger is in the front seat and is required to wear only the pelvic restraint if the seat belt assembly comprises a disjointed torso and pelvic restraint. (132a (4))	Same as Ontario with the provisic that only the pel vic restraint may be worn if there a disjointed uppe torso and pelvic restrain (206(4),

TABLE 2 (Continued)

VEHICLE ACT PROVISIONS	QUEBEC	ONTARIO	MANITOBA	SASKATCHEWAN	BRITISH COLUMBIA
Exemptions to the use of seat belts by drivers and passengers.	a) driving in reverse; b) person holding a legal certificate signed by a qualified medical practitioner stating: i) person unable to wear seat belt for medical reasons for a stated period of time ii) person unable to wear belt because of build, size or other characteristics; c) person is 5 yrs. old or less; d) person weighs less than 50 lbs. (56g)	a) driving in reverse; b) person holding a legal certificate signed by a qualified practitioner stating: i) person unable to wear seat belt for medical reasons for a stated period of time: ii) person unable to wear seat belt because of build size or characteristics; c) because of person's work where one must re-enter vehicle at frequent intervals and does not drive more than 40 kms/hr. d) under the age of 16. (63a(5))	- - - - -	Same as Ontario (132 (a)(5))	Same as Ontario (206(5))
Driver to ensure passenger uses seat belt assembly.	a) same as Ontario with the provision that the passenger is seated in the front of the vehicle and is between 5 & 16Yrs. (56i) b) driver to ensure child of 5 yrs. & less occupying child seating & restraint system (56j)	No person shall drive a motor vehicle in which there is a passenger between the ages of 2 and 16 years old not wearing a seat belt (63(a)(b))	- - - - -	Same as Québec (132 A(6))	Same as Ontario with the provision that the passenger is aged between 6 & 10 yrs. (206(6))
Exemption to previous provision.	a) police cars to be used as transportation for persons in police custody; (56K) b) vehicles imported or manufactuered prior to January 1, 1974. (56L)	a) passenger is holder of a legal certifiacte signed by a qualified practitioner stating: i) person unable to wear seat belt for medical reasons for a stated period of time; ii) person unable to wear seat belt because of build size or other characteristics; b) because of person's work where one must re-enter vehicle at frequent	- - - - -	Same as Ontario (132a)(7))	Same as (a) & (b) of Ontario(206(7))

TABLE 2 (Continued)

HIGHWAY TRAFFIC ACT/MOTOR VEHICLE ACT PROVISIONS	SEAT BELT LEGISLATION				
	QUEBEC	ONTARIO	MANITOBA	SASKATCHEWAN	BRITISH COLUMBIA
Provincial regulations: reference to exemptions. Cont...		c) person in custody of police exempt of wearing complete seat belt assembly; d) employee of the Post Office exempt from wearing complete seat belt assembly; e) taxi cabs exempt from removal of car seat assemblies; f) taxi drivers exempt from wearing complete seat belt assembly; g) taxi driver exempt from not driving while passenger under 5 yrs. old or weighing less than 50 lbs. is not wearing a seat belt. h)i) drivers & passengers of vehicles manufacturered or imported in Canada prior to January 1/74 exempt from wearing upper torso restraint components; ii) driver exempt from provision of not driving while passengers between 2 and 16 yrs. of age not wearing upper torso restraing components (34/76)		d) a passenger in a vehicle not equipped with dual controls operated by a learner. (291/77).	
Penalty.	General: any contravention against article 56 is liable for a fine of $5 to $10 plus fees; any default of payment entails a 48 hrs. imprisonment (66) Particular: any contravention against 56b, 56c) paragraph a) a 56m) is liable for a fine of not less than $50 & not more than $100 plus fees; (66a)	General: any person who contravenes any provisions or regulations of Act is guilty of an offence and on summary conviction, where a penalty for the contravention is not otherwise provided for, is liable to a fine of not less than $20 & not more than $100. (152).	General: any person who violates, continuous, or disobeys or refuses, omits, neglects or fails to observe, or obey or comply with any provisions or regulations of Act is guilty or an offence and liable, on summary conviction to a fine of not more than $100 and to suspension of licence for a term of not more than 30 days. (213(1))	General: a person guilty of a violation of any provision or regulation of set is liable on summary conviction: a) 1st Offence: fine of not more than $100; default of payment is liable of imprisonment term of not less than 7 days but not more than 30 days.	Particular: Any person who contravenes section 206 commits an offence and is liable to a fine of not more than $100.

TABLE 2 (Continued)

HIGHWAY TRAFFIC ACT/MOTOR VEHICLE ACT PROVISIONS	QUEBEC	SEAT BELT LEGISLATION ONTARIO	MANITOBA	SASKATCHEWAN	BRITISH COLUMBIA
Exemption to previous provision. Cont...		intervals and does not drive more than 40 kms/hr. c) a child occupying a child seating & restraint system (63a) (7)).			
Power of Lt-Governor in council to make regulations.	Lt-Governor in council may make regulations pertaining to: a) the removal & modification of seat belts for certain vehicles; b) the use of seat belts by rear seat passengers in a passenger vehicle; c) the use of seat belts by drivers of certain vehicles except passenger vehicles; d) the determination of all other exemptions other than the ones provided; e) the prescription of installation & use of child seating & restraint system in passenger vehicles; f) the establishment of norms relating to the installation of such restraint systems. (56m)	Lt-Governor in council make make regulations pertaining to: a) child seating and restraint systems; b) the provision of exemption from any of the provisions of any type or class of motor vehicles and drivers or passengers. (63a) (8))	- - - - -	Same as Ontario (132 A(10))	Lt-Governor in council may make regulations pertaining to: a) the use of child seating and restraint systems & prescribing the specifications for them; b) the definition of the age of a child for the purpose of child seating & restraint systems, c) provision of exemption from any of the provisions of any type or class of motor vehicles and drivers and passengers. (206(q))
Provincial regulations: reference to exemptions	- - - - -	a) police cars exempt from removal of car seat assemblies; b) police officers exempt from wearing complete seat belt assembly and from driving while passenger between the age of 2 & 16 is not wearing a seat belt while exercising duty of transporting a person in his custody;	- - - - -	a) driver of a public transportation vehicle; b) police officers on duty transporting a person in his custody and if person represents a danger to the personal safety of the police officer; c) traffic officers or other persons conducting driver examinations while vehicle not equipped with dual controls;	same as (a), (b), (c), (e), (f) of Ontario & the exemption of taxi drivers when there is a passenger between the ages of 6 & 16. (o.c. 3103/77)

TABLE 2 (Continued)

HIGHWAY TRAFFIC ACT/MOTOR VEHICLE ACT PROVISIONS	SEAT BELT LEGISLATION				
	QUEBEC	ONTARIO	MANITOBA	SASKATCHEWAN	BRITISH COLUMBIA
Penalty. Cont....	Any contravention against 56d, 56e, 56i, or 56j or paragraphs b to f of 56m is liable for a fine of not less than $10 and not more than $20 plus fees. (66b)			b) 2nd Offence: fine of not less than $20 or more than 200; default of payment is liable of imprisonment of not less than 14 days or more than 60 days. (239)	
Others (Miscellaneous)	No passenger between the ages of 5 and 16 can be liable as to the provision for correct use of seat belt. (56H).	Owner when driver of vehicle liable for penalties provided for any contravention under Act or regulations. (147(i))	No manufacturer or dealer to sell motor vehicle of a make or model of 1968 or any subsequent year unless equipped with at least 2 seat belts in the front and 2 seat belts in the back seats (49(2))	No person shall install or use or sell or keep for sale, for use in a vehicle any seat belt assembly that does not conform to the standards and specifications prescribed by provincial board. (132A) (8))	

SOURCE: Unpublished Report by Transportation Canada.

IMPLEMENTATION OF THE LAW

Many formal steps have been taken to implement the laws in the four provinces which have laws. In some instances these steps have been extensively documented, and in other instances there is very little documentation regarding measures taken to implement the law.

However, steps taken to implement the law have not been taken to the same extent in all four provinces. Ontario, the first province to enact a law, has been very active in taking specific measures to implement their law, and these measures have been extensively documented. Saskatchewan has also taken specific measures that have been documented. No specific documentation was received from Quebec or British Columbia regarding activities associated with their seat belt laws. However, at the national level, Transport Canada did have certain information concerning all provinces that have seat belt laws. The paragraphs that follow discuss the means taken to implement the laws in the various provinces.

Public Information and Education Program

Public Information and Education Programs (PI&E) were conducted by the Canadian Federal Government as well as by provincial governments. One of the PI&E programs conducted by Transport Canada was particularly revealing. This program is discussed below in an excerpt of the Executive Summary section of Transport Canada's report on the program (Transport Canada, 1977).

Summary Discussion of a PI&E Program by Transport Canada

From January to March of 1976, a seat belt education campaign was conducted. The primary goals of the campaign were to dispel certain negative myths surrounding the use of seat belts, and to promote a better understanding of their functions in a car crash. The campaign consisted of three television commercials, namely, "egg," "pumpkin," and "coconut"; two print ads; and three radio commercials.

Two telephone surveys, each comprising approximately 4,000 respondents, were performed - one immediately prior to the presentation of the campaign, and the other immediately after. A smaller sample, consisting of 800 respondents, was also surveyed about five months after the conclusion of the campaign.

The evaluation indicated that 85 percent of the population recognized at least one part of the campaign. The television commercials were the most easily recalled elements. There were significant attitude changes from pre-campaign to post-campaign, and the attitudes which did change were specific

to the campaign element viewed, read, or heard. The most successful element was the "pumpkin" commercial which produced a significant decrease in the number of people who believed that it is better to be "thrown clear" in a car crash. Reported seat belt use increased only in Ontario, where the introduction of compulsory seat belt legislation coincided with the campaign.

The limited evaluation of the long-term effectiveness of the campaign produced mixed results. The recognition of the television and radio commercials remained high five months after the conclusion of the campaign. Moreover, attitude changes observed immediately after the campaign remained significant (Transport Canada, 1977).

PI&E Programs Conducted by Provincial Governments

As indicated earlier, PI&E programs were also conducted at the provincial level. Discussions with provincial government representatives revealed that the PI&E programs had approximately the same results as the PI&E program reported by Transport Canada. The programs revealed an increase in favorability of public opinion towards seat belt usage and an increase in the public's knowledge regarding seat belt usage, but very little increase in the wearing rate of seat belts. These findings were provided by interviewees from both the Province of Ontario and the Province of Saskatchewan.

Enforcement of the Law

According to one official at Transport Canada, enforcement of the seat belt law is generally done in conjunction with enforcement of other traffic infractions, and varies from province to province. One interviewee stated that Saskatchewan is probably the most rigorous in enforcing the seat belt law and Quebec is probably the least rigorous. It must be kept in mind that enforcement of the seat belt law goes hand-in-hand with enforcement of other traffic laws. According to one interviewee, the Province of Prince Edward made arrests for impaired driving (driving under the influence of alcohol or drugs) at the rate of 1,800 per 100,000 population. At the same time, the Province of Quebec made arrests for impaired driving of 400 per 100,000 population.

An interviewee indicated that the police in the Province of Ontario complain that it is difficult for them to observe whether or not a person is wearing a seat belt since the laws do not require wearing the shoulder belt.

Discussions were held with the Royal Canadian Mounted Police (RCMP), a federally-contracted police force. They presently are responsible for law enforcement in all provinces except Ontario and Quebec. According to an interviewee at RCMP, there is no difference in the way they enforce the seat belt law in British Columbia and Saskatchewan. However, RCMP does not

compile statistics on the number of seat belt law infractions. Also, it does not attempt to determine the seat belt usage compliance rate. Because of these latter two factors, there was no readily available evidence to verify the level of enforcement in British Columbia and Saskatchewan.

According to officials from the Ministry of Transport in Ontario, the seat belt law is not enforced very rigorously. According to one interviewee, there was no immediate attempt to enforce the law after its adoption. The interviewee went on to say that the wearing rate jumped from around 17 percent to approximately 65 percent after passage of the law, but because of lax enforcement the wearing rate declined to around 50 percent about a year after the law was passed. In the summer of 1977, the province increased enforcement practices for one year and the wearing rate went back up to around 65 percent.

One interviewee in the Province of Ontario made the following statement: "In general, we have not enforced the law adequately." The interviewee went on to say that a comparison of various enforcement practices reveals the following:

one year after enactment of the seat belt law	10,000 citations for driving without seat belts 800,000 citations for speeding 40 - 50,000 citations for drunken driving

These statistics imply that the seat belt law is not enforced in a rigorous manner.

Court Decisions Regarding Insurance Compensation

It was reported by two of the interviewees that there have been several instances where courts have reduced insurance compensation to injury victims when said victims were not wearing seat belts. According to one interviewee who has been involved in several of these cases in a official capacity, court rulings reducing insurance compensation have occurred in three provinces: British Columbia, Saskatchewan, and New Brunswick. According to the interviewee, the court rulings are independent of the seat belt law. In fact, the interviewee stated that the first court ruling on the subject occurred in British Columbia, where there have been several rulings prior to enactment of the seat belt law. Moreover, court rulings reducing insurance compensation have been made in New Brunswick, and this province has no seat belt law.

The interviewee indicated that the wording used in the cases is that wearing of a seat belt is "deemed to be the action of a reasonably prudent member of

society." Expert witnesses are called to testify regarding the possible reduction in the extent of injury that would have occurred had the victim been wearing seat belts. The reduced amount of insurance compensation has been set as high as 25 percent, according to one interviewee.

Because Canada has compulsory automobile insurance, a person involved in litigation regarding a motor vehicle accident is always represented by an insurance company. Therefore, the immediate impact of a court decision is incident upon the insurance companies and is only passed on to consumers through increased rates where appropriate. There is no apparent inequity here regarding the socioeconomic status of victims, since everyone must have insurance and is covered by his or her own company for medical expenses.

EFFECTIVENESS OF THE SEAT BELT LAW

Since the effectiveness of the seat belt law is a direct function of the seat belt usage rate, and since the usage rate is highly influenced by enforcement practices, it is apparent that the effectiveness of the law will likely vary from province to province in accordance with each province's specific enforcement practices. These factors will be discussed in the sections that follow.

There has been a large number of studies and reports published in Canada regarding the effectiveness of the seat belt laws as measured by such parameters as belt usage, public attitudes, and reduction in death and injuries. These parameters will also be discussed.

Belt Usage

According to interviewees at Transport Canada, seat belt usage varies from province to province. According to one interviewee, federal surveys for determining seat belt usage have been active intervention type surveys. Observers are posted on islands or curbs, and an active inquiry is made when the vehicle stops for traffic control devices.

The most extensively documented analysis of seat belt use in Canada has been done by the Ministry of Transportation of Ottawa. Of particular interest are the belt usage studies that were performed just prior to enactment of the law and those performed immediately after enactment, thus providing a basis for comparison. In one such study, surveys were carried out in March and October 1975 as part of the evaluation of an education program in Ontario.

Both of those surveys, which were completed before the announcement of the seat belt legislation, showed driver belt use (that is, lap and shoulder or lap only) at just over 17 percent on a province-wide basis. Two months after

the legislation became effective (one month after enforcement began), belt use in Ontario had reached 76.8 percent on a province-wide basis. (Pierce, et al., 1976). Figure 1 depicts this information. Surveys were conducted in January and February 1976 in the central region around Toronto in order to measure the short-term effects of the legislation. Before legislation, belt use at 12 central region sites was 23 percent. During January, when the law was in effect but not being enforced, the use rate climbed to 62 percent. After enforcement began, belt use increased again to just above 80 percent (Pierce, et al., 1976). This information can also be seen in Figure 1.

The Ontario Ministry of Transportation uses two methods for determining belt use. Descriptions of the two methods are as follows:

- Roadside Belt Use Survey-- Cars are stopped as they travel down the street or highway. The type of belt installed in the driver's seat and belt use of the driver and all passengers are actually observed. The driver is interviewed with respect to year of car, trip length, and belt use reminders (Pierce et al., 1976).

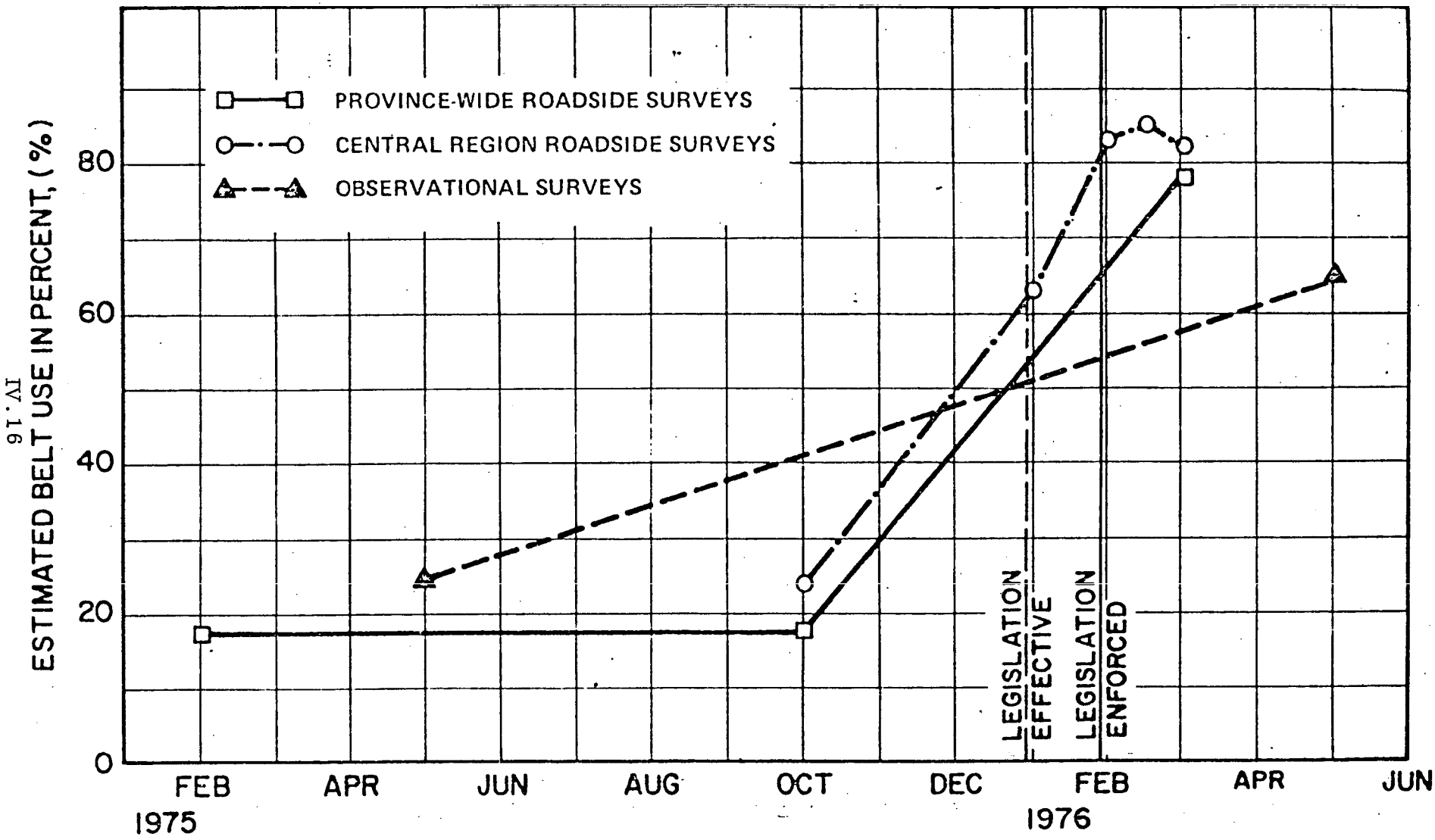
- Observational Belt Use Survey --This is a more commonly used, but less accurate method of measuring belt use. Observers stand at the side of the road in a location where cars stop or slow down. When a car stops in front of them they look inside the car to establish belt use. ...The observers were instructed to clarify unknown belt use by approaching stopped cars and, if necessary, asking the driver whenever possible. Driver's belt use, estimated age, sex, and vehicle plate number were recorded in our observational surveys (Pierce, et al., 1976).

Roadside belt use surveys were conducted to determine the belt use data discussed in the preceding paragraph. Twelve specific sites in the central region of Ontario (in and around Toronto) were chosen for collection of the data. The 12 sites were a subset of 52 sites that had been used for province-wide surveys.

The Ontario Ministry of Transportation conducted several province-wide roadside surveys. The October 1975 study established driver compliancy at 17.2 percent and passenger compliancy at 11.5 percent. Four subsequent province-wide surveys were carried out in March 1976 (driver belt use: 76.8 percent, passenger belt use: 58.5 percent); November 1976 (driver belt use: 50.0 percent, passenger belt use: 33.0 percent); May 1977 (driver belt use: 48.9 percent, passenger belt use: 32.1 percent); and May 1978 (driver belt use: 64.4 percent, passenger belt use: 47.0 percent). Drivers were significantly more compliant than passengers in all regions of Ontario. The survey

FIGURE 1

TRENDS IN BELT USE, CANADA
(Lap Only or Lap & Shoulder) in Ontario Relative to Enactment of Seat Belt Legislation, Based on Surveys in 1975 and Early 1976.



SOURCE: Pierce, J.A., et al.,October 1976.

also showed that female belt use was significantly higher than male belt use (81.8 percent versus 74.9 percent) and that drivers over 40 represented the most compliant age group in the Province (StatistiSearch, 1979).

Other findings that were made by StatisiSearch were as follows:

- Female drivers had higher wearing rates than male drivers for all age categories, except the 36-40 age category. The most compliant drivers in Ontario were females, aged 21-25. Male drivers, under 21, represented the least compliant age by sex subgroup in Ontario.

- Provincial drivers had significantly higher wearing rates for trips of greater than three miles in length and longer than 14 minutes in duration.

- Drivers were significantly more compliant in automobiles equipped with "automatic three-point systems and automatic lap and manual shoulder configurations" (sic) than drivers operating cars featuring other systems. Drivers of newer model cars, 1974-1976, had significantly higher wearing rates than drivers of older model cars, 1973 and older.

- Adult passengers were considerably more compliant than both child and baby passengers. The wearing rates of adult, child, and baby passengers were significantly lower in the North. The analysis of passenger belt use under driver status constraints indicated that a strong relationship existed between driver belt use and passenger belt use. Front seat passengers were significantly more compliant than rear seat passengers. Adult and child passengers were considerably more compliant in front seats while baby passengers had significantly higher wearing rates in the rear of the automobile. (StatistiSearch, 1979).

A report was obtained which discusses seat belt usage surveys conducted in Saskatchewan. The report did not give the methodology utilized for conducting the studies; however, implications are that the studies were conducted in a manner similar to those conducted in Ontario. The surveys were conducted in May, July, and October, 1977, and May, 1978. Table 3 presents the results of the seat belt usage surveys in Saskatchewan (Shields, 1978).

TABLE 3

RATE OF SEAT BELT LAW COMPLIANCE, CANADA

Month	Drivers	All Front Seat Occupants
May, 1977*	29.6%	29.3%
July, 1977	66.9%	64.6%
October, 1977	82.0%	79.5%
May, 1978	68.0%	66.7%

* Pre-Legislative Levels

* SOURCE: Shields, 1978.

Attitudinal Studies

Several attitudinal studies have been sponsored by Transport Canada. These studies were precipitated by findings of seat belt surveys in the early seventies which revealed that only about 12 percent of Canadians used their seat belts. Transport Canada therefore contracted several studies to research psychologists in hopes of gaining insight into the attitudes and motivations underlying seat belt behavior. Dr. Ruth Heron of Transport Canada conducted a review of three particular attitudinal studies that had been performed in order to gain a better understanding of psychological factors related to seat belt wearing (Transport Canada, 1975). The abstract from Dr. Heron's report provides an informative overview of the three studies. It has been excerpted for inclusion here, as follows:

> A review of three studies found reported seat belt usage to be associated with presence of a warning system, good seat belt design, higher education and occupational status, ownership of late model cars, attendance at driving school, and tendency to derive information about seat belts from driving schools and from newspapers. An economic explanation encompassing all variables is to the effect that the less well educated driver, having a lower occupational status and therefore less income, owns an older car equipped with an uncomfortable seat belt; at the same time he is less inclined to expose himself to or to absorb accurate seat belt information. Additional evidence, suggesting that the user is safety and risk conscious while the nonuser reports discomfort and noneffectiveness, supports the above interpretation.
>
> Habit, strongly implicated as an important factor with respect to both usage and nonusage, is seen by the reviewer as post-decisional and, therefore, relevant to maintaining, rather than to bringing about, the desired behaviour change. The data on seat belt legislation suggest that most individuals are favourable towards compulsory seat belt usage and that, of those who are not habitually wearing belts now, most would increase usage under a law. Opposition is estimated at only about 14% to 15%. (Transport Canada, 1975).

The three studies reviewed by Heron were performed by teams from three universities. All three studies were performed specifically for Transport Canada and are unpublished. The first study was performed by C.K. Knapper, A.J. Cropley, and R.J. Moore of the University of Saskatchewan. According to Heron, they used a three-stage funnelling technique to develop hypotheses about seat belt usage and to arrive at a sample of 55 seat belt attitude questions.

The technique used by Knapper, et al., was described by Heron as follows:

> In the Pre-pilot Stage an unsystematic forum on car safety with experts and opinion leaders generated a large domain of ideas and attitudes towards seat belts. Refined and organized, this information formed the content of a structured Pilot-Stage interview with a subsample of Regina residents, thereby producing a bank of data on attitudes, demographic variables, and personality characteristics. The Survey Stage was undertaken only after these data had been thoroughly screened, analyzed by multivariate techniques, classified, and collated into instruments. Personality variables, found to be unrelated to seat belt usage, were excluded from the interview schedule. Four areas emerged as relevant: (a) driving experience and personal background, (b) attitudes towards seat belts, (c) self-descriptions, and (d) attitudes towards seat belt users. A structured interview, using instruments incorporating these areas, was then conducted at the homes of 465 of 535 randomly selected Regina citizens within an age range of 16 to 87 years (Transport Canada, 1975).

The second study reviewed by Heron was conducted by W.E. Bragg of the University of Toronto. Heron described Bragg's methodology as follows:

> Bragg's sample consisted of 687 of 1,000 drivers randomly selected from the Ontario drivers' file and mailed a questionnaire containing several categories of items pertaining to seat belts. The 10 seat belt attitude items on this instrument were selected from an original 25 items pretested in a pilot study. In respect of the final selection, most of the 45 inter-item correlations were below .50, and the item-total correlations were higher than any of the relevant inter-item correlations; therefore, the attitude items appear to represent different elements of some common domain. Also on the questionnaire were items relating to driving experience, personal background, seat belt design, warning systems, and mandatory seat belt usage, as well as to perceived evaluations by others of users and non-users, and perceived attitudes of others towards seat belts. (Transport Canada, 1975).

The third study Heron reviewed was conducted by T. Hanna of the Memorial University of Newfoundland. Heron described Hanna's methodology as follows:

> Hanna's sample comprised two groups of licensed drivers, designated users and nonusers, who were matched on the variables of age and sex; however, seat belt usage had been reported by the former as 90 percent or better and by the latter as 30 percent or less. Data were examined for a total of 284 respondents. Each group comprised 142 respondents (88 males and 54 females), 46 from Kingston and 48 from each of Toronto and Ottawa. The main instrument was a 44-item questionnaire containing demographic, design, and attitudinal items, these being developed intuitively with the aid of seat belt and general safety literature, and pretested on a sample of Memorial University students. In addition, half the respondents received the Catell 16 PF (a personality inventory); the remainder received seven personality scales designed to measure amount of internal control, social desirability, anxiety, and rigidity, and tendency toward risk-taking, sensation-seeking, and repression. (Transport Canada, 1975).

Heron compared the results of the three studies along five variables: demographic variables; warning systems and design; attitudes toward seat belts; user stereotypes and personality variables; and seat belt legislation. Excerpts from Heron's discussion of these variables are presented in the paragraphs that follow:

- Demographic Variables -- No relationship between seat belt usage and any of the variables, age, sex, or marital status, was found in any of the three investigations. Although Bragg found no relationship whatsoever between usage and involvement in an accident (whether self, friend, or relative, wearing or not wearing a belt, was injured or uninjured), Knapper et al.'s factor analysis produced a minor factor implying association, albeit weak, between these two variables. Concordant with this outcome, significantly more of Hannah' users than nonusers cited accident involvement as a reason for wearing belts; however, since the proportions involved were small, the relationship (if it does indeed exist) may have little psychological importance. Neither Bragg nor Hannah found a relationship between usage and number of years of driving. Data obtained by Knapper et al., showing rural/urban residence and usage to be unrelated, are discrepant with those for the Bragg study, showing usage to

be more associated with urban than with rural centers. The disagreement may be due to differences in the investigators' definitions, in regional characteristics, or in sample content.

- Warning Systems and Design -- Some consistency among the studies with respect to warning systems, evidence being produced in each case to the effect that the presence of a buzzer or other reminder increases usage. While Hannah's analysis showed that the proportion of users reporting influence by a reminder was only 25 percent, it may be remembered that "users" in this study are defined as drivers who wear belts at least 90 percent of the time and may, therefore, no longer need a warning system.

  In keeping with Knapper et al.'s discovery of a relationship between availability of a shoulder strap and consistent highway use, Bragg reported that good design features such as three-point systems and retractors appeared to increase wearing of belts, especially shoulder harnesses. In Hannah's study, a greater proportion of users than of nonusers reported usage to be influenced by comfort and easy wearability; however, 84.5 percent of the same group did not mention these features. On the other hand, greater proportions of nonusers cited inconvenience, limitation of movement, and discomfort as reasons for nonuse. Since nonusers own the older more poorly equipped cars, their complaints may have some validity. In sum, all three studies suggest that good design features increase use of seat belts.

- Attitudes Towards Seat Belts -- Respondents in the Bragg study produced a linear relationship between usage and attitudes, a result with which Hannah's findings are roughly correspondent. Knapper et al., however, found seat belt attitudes to be favorable, regardless of the level of usage. The discrepancy here may be due to sampling differences and/or to social desirability factors. In this respect, it will be remembered that both Bragg's and Hannah's respondents were licensed Ontario drivers, whereas the Knapper et al. sample was representative of the entire Regina population above fifteen years of age. As well, the interviewing procedure used in the Regina study may have encouraged a greater tendency to produce socially desirable responses than did the mailed questionnaires used in the two Ontario investigations.

Knapper et al. and Hannah are in agreement with attitude analysis outcomes implying that wearing or not wearing a belt is strongly associated with habit, the impetus for users deriving from a sense of safety consciousness, and for nonusers from factors of discomfort and inconvenience. Bragg's results are not incompatible with this picture. One group of his users appeared to perceive accident injury as low because they are cautious and wear belts; a second group ... appeared to wear belts to avoid injury they perceive as highly likely to occur. The two user subgroups, however, may merely be transmitting safety conscious attitudes in different ways.

- User Stereotypes and Personality Variables -- Knapper et al. asked respondents to rate users on a large set of bipolar adjectival scales. Bragg's respondents were asked to give ratings on a smaller set of similar scales in terms of their perceptions of most other people's views of users. In that users were favorably rated in both studies, the results are in agreement. However, in addition to a variety of socially desirable qualities and a sense of safety, some of Knapper et al.'s subjects saw users as being defensive, careful, cautious, even timid. In the Bragg study, respondents felt others would judge users to be more sensible, disciplined, and intelligent, better adjusted, and better drivers than nonusers, and nonusers to be calmer and more adventurous than users. Among Bragg's users, only those who perceived injury-accident as low rated themselves high on caution. These outcomes contrast with Hannah's findings with personality scales to the effect that users are more imaginative, experimenting, liberal, analytical, and free-thinking than nonusers, and that nonusers are more practical, careful, conservative, and rigid than users. The lack of overlap in these results is likely a function of the differences in both the approach and the instruments used.

- Seat Belt Legislation -- To some extent, Bragg and Hannah report similar outcomes with respect to a compulsory seat belt law: larger proportions of users than of nonusers were in favor of such a law, while larger proportions of nonusers were opposed to the law. In each case, approximately 60 percent of nonusers (those wearing belts approximately a third of the time now) reported that they would obey although, in the Bragg study, this percentage was associated with a qualifying range of 66 percent to 100 percent of the time. Of those not wearing belts 100 percent of the time now, 32 percent would increase usage to this extent under a seat belt law. With respect to noncompliance, the figures from the two studies are more difficult

to compare. Of Hannah's nonusers, almost 40 percent reported they would not comply. However, since "nonusers" in this case refers to drivers presently wearing seat belts 30 percent of the time or less, noncompliance is likely more accurately interpreted as refusal to increase usage. Among a similarly defined subset of Bragg's sample, 85 percent stated that they would increase usage under a law, and 26 percent of the group indicated total compliance. Only about 9 percent of the same group indicated total noncompliance, most of these consisting of individuals who never wear seat belts now.

In 1975, Heron initiated a study entitled "Attitudes of Canadians Towards Legislation Requiring Mandatory Use of Seat Belts." The study was undertaken in order to provide a clearer picture of not only the extent of support for seat belt legislation, but also the nature of the opposition. The prevailing approach to increasing seat belt use in the early seventies was to increase voluntary use by improving the comfort and convenience of the relevant safety device and by expanding education programs (Transport Canada, 1976).

Transport Canada had agreed with federal and provincial road safety representatives that it would take the lead in developing and testing materials for a seat belt education program, which would be available to the provinces for use either in their own campaigns or in a federal/provincial cooperative endeavor. Although previous surveys had shown that approximately 60 percent of Ontario's licensed drivers were in favor of a seat belt law, relevant information for other provinces was nonexistent (Transport Canada, 1976). According to Heron's study, the program was planned and designed so that its first administration would precede the onset of national exposure of the tested seat belt campaign materials in December 1975, and so that subsequent administrations could be undertaken, when and if needed, to provide comparison measures (Heron, Transport Canada, 1976).

Heron's study provides significant insight into the social psychology of attitudes towards seat belts. The executive summary from Heron's report has been excerpted and included here in its entirety:

> A telephone survey of 4,107 Canadians, approximately 400 in each of the 10 provinces, was carried out in the fall of 1975 to determine the extent of acceptance of legislation which would make the wearing of seat belts compulsory. In all provinces except Nova Scotia, the majority of citizens reported that, given the opportunity, they would vote for the introduction of such a law. Ratings on a seven-point scale provided similar evidence of Canadians' general favorability towards mandatory seat belt usage. Table 4 shows relevant figures.

TABLE 4

PROVINCIAL PROPORTIONS FOR AND AGAINST A SEAT BELT LAW, ALONG WITH FAVORABILITY[a] MEANS, CANADA

	% For	M Favourability	N
Nfld.	.91	5.00	386
N.S.	.45	3.08	403
P.E.I.	.59	3.79	404
N.B.	.73	4.39	393
P.Q.	.77	4.55	448
Ont.	.64	3.87	420
Man.	.61	3.83	400
Sask.	.66	3.90	421
Alta.	.69	4.13	375
B.C.	.70	4.14	454

[a]On a scale from 0 to 6, a high number indicates high favourability.

SOURCE: Transport Canada, 1976.

TABLE 5

PUBLIC OPINION OF SEAT BELT LEGISLATION*, CANADA

*(Total Sample Size)

	APRIL '77 (1033)*			NOVEMBER '77 (1008)*			APRIL '78 (1041)*			AUGUST '78 (1024)*		
	FAV.	OP.	NO. OP.	FAV.	OP.	NO. OP.	FAV.	OP.	NO. OP.	FAV.	OP.	NO. OP.
BY SEX												
Male	49.7	42.3	8.0	53.3	43.7	3.0	63.0	34.5	2.5	71.9	24.5	3.5
Female	59.1	33.3	7.7	69.1	27.3	3.6	66.7	30.6	2.7	78.6	18.7	2.7
BY EDUCATION												
Less than High School	39.6	49.0	11.4	43.5	48.7	7.7	57.2	39.1	3.8	71.5	24.9	3.6
Some High School	51.1	40.5	8.3	59.6	38.6	1.8	62.6	34.2	3.2	70.5	26.3	3.2
High School Grad	61.7	32.4	5.9	67.1	31.0	2.0	65.7	33.3	1.0	76.7	19.7	3.6
Some Coll./Univ.	71.0	24.3	4.7	74.5	23.4	2.1	80.1	18.0	1.9	84.0	14.4	1.7
BY AGE												
18 - 29	61.7	34.0	4.3	65.6	32.4	2.0	66.0	32.6	1.4	74.8	23.4	1.8
30 - 44	57.1	36.0	6.9	64.1	34.8	1.1	67.7	31.1	1.2	80.1	18.1	1.8
45 - 54	42.2	48.1	9.6	56.7	38.7	4.7	65.0	32.6	2.4	72.8	23.1	4.1
55 plus	51.7	37.3	11.0	52.9	40.9	6.2	62.1	33.1	4.8	70.8	23.6	5.5
BY INCOME												
Under $10M	47.0	43.9	9.1	50.2	42.2	7.6	62.0	33.1	4.8	68.5	26.5	5.0
$10M to $14.9M	57.7	34.7	7.5	61.9	37.7	0.5	66.4	31.5	2.1	76.0	22.4	1.6
$15M to $19.9M	61.1	35.4	3.5	68.4	28.7	2.9	69.4	29.5	1.2	71.8	25.4	2.8
$20M and Over	61.4	33.7	4.8	64.1	34.3	1.6	66.9	32.0	1.0	77.7	20.6	1.6
BY OCCUPATION												
Prof. Exec.	70.3	24.1	5.5	70.8	26.5	2.7	75.9	23.5	0.6	78.9	18.3	2.8
Sales/Cler.	59.8	34.3	5.9	62.5	35.7	1.8	66.6	32.6	0.8	84.4	11.5	4.1
Labour	53.8	39.9	6.3	61.3	37.0	1.7	56.4	40.9	2.7	74.5	23.4	2.1
Farmer	44.6	45.3	10.1	55.3	42.7	1.9	67.2	31.3	1.5	68.9	28.3	2.8
Stud't./Retired	54.1	36.2	9.7	54.2	37.4	8.4	61.2	33.0	5.8	73.0	22.2	4.9
CITY SIZE												
Regina	59.3	31.4	9.3	65.1	32.6	2.3	61.3	36.1	2.6	79.7	16.5	3.8
Saskatoon	65.6	28.6	5.6	65.4	29.6	4.9	65.2	32.3	2.5	82.1	14.3	3.6
1M to 100M	51.0	43.6	5.4	58.9	35.1	6.1	63.4	33.7	2.9	77.4	19.5	3.1
Under 1M	50.1	40.5	9.4	58.0	40.4	1.6	66.8	30.7	2.5	69.6	27.7	2.7
TOTAL INTERVIEWED	54.3	37.9	7.8	60.6	36.1	3.3	64.9	32.5	2.6	75.1	21.8	3.1

QUESTION - Are you in favor or opposed to legislation which requires the wearing of seat belts in motor vehicles?

KEY - FAV. = yes, favor OP. = no, oppose NO. OP. = Don't Know/No Opinion

SOURCE: Shields, 1978.

Loss of freedom of choice and fear that seat belts are dangerous were the first and second most frequently cited of four possible reasons for objecting to a seat belt law. (In contrast, discomfort and inconvenience are the factors most frequently associated with opposition to seat belt use.) Respondents selecting these two categories had greater representation in the groups against than in those for the law, while the converse is true for respondents selecting reasons based on discomfort and nuisance of belts.

Demographic variables lacked power to differentiate groups for and against the law. In all provinces, the two best discriminators were present seat belt usage (Wear), and intended usage under a seat belt law (Obedience), the latter being dominant. Individuals clustered differently within the two criterion groups on the basis of their responses to the Obedience, Wear, and Reasons variables. Some speculative interpretations are advanced for this differential segmentation (Transport Canada, 1976).

A report was obtained that discusses four Gallup-type polls carried out by an independent survey service in the Province of Saskatchewan to monitor public reaction to the law. The surveys took place during April 1977, November 1977, April 1978, and August 1978. Samples of approximately 1,000 persons were involved (Shiels, 1978). The results of the survey are listed in Table 5. The table shows the differences in opinion by respondents according to certain demographic variables: sex, education, age, income, occupation, and city size. The report did not analyze the findings with respect to pre-passage of the law or post-passage of the law, nor did it attempt to determine the relationship between the opinion of the respondents and their belt usage behavior.

Reduction of Deaths and Injuries

The most fertile source of data on this subject was the Province of Ontario. Unfortunately, speed limits on expressways and some provincial highways were lowered on 1 February 1976, the same date that enforcement of the seat belt law began. Janace Pierce of the Ontario Ministry of Transportation performed a study in which she attempted to determine the joint and separate effects of the seat belt and speed limit legislation (Pierce, unpublished paper). She looked at annual fatality and injury rates based on miles traveled, both for vehicle occupants and for other accident victims. A main premise of her study was: While death and injury rates for vehicle occupants will be affected by both increased belt use and lowered travel speeds, changes in belt use will impact only the rates for vehicle occupants and not the rates for other accident victims (Pierce, unpublished paper).

Figure 2 shows the fatality rates (deaths per 100 million vehicle miles of travel) from 1967 through 1978 for vehicle occupants and other accident victims for Ontario. Least squares were used on rates for 1967 to 1975 to create straight line predictions of rates for 1976 to 1978. Fatality rates for vehicle occupants were down 11.8 percent from the predicted rate for 1976, down 18.3 percent from the 1977 predicted rate and down 16.8 percent from the 1978 predicted rate. None of the reductions were statistically significant, using a 5 percent significance level. Rates for other accident fatalities showed an initial drop in 1976 of 9.1 percent, but the rate was only 0.5 percent below the value predicted for 1977 and 10.9 percent above the predicted rate for 1978 (Pierce, 1979).

Figure 3 shows a similar graph for nonfatal injury rates per million vehicle miles of travel. Again, least squares were used on rates for 1967 to1975 to create straight line predictions of rates for 1976 to 1978. Nonfatal rates for vehicle occupants were down 19.4 percent from the predicted rate for 1976, down 8.4 percent from the 1977 predicted rate, and down 11.0 percent from the 1978 predicted rate. The reductions in 1976 (-19.4 percent) and 1978 (-11.0 percent) are statistically significant at the 5 percent level or better. For other accident victims, injury rates were found up 0.6 percent in 1976, up 0.5 percent in 1977 and down 4.9 percent in 1978. None of these differences is statistically significant (Pierce, 1979).

Pierce made the following summary statement regarding the above discussed statistics:

> It seems reasonable to conclude from these statistics that both seat belts and speed limits had an important impact on nonfatal injury rates. The fact that the fatality rates have remained low for the three years rather than "regressing toward the mean" suggests that there may have been some positive impact on fatalities as well. Unfortunately, whatever the impact on fatalities may be, it was far less than would have been expected as a result of just the increase in seat belt use (Pierce, 1979).

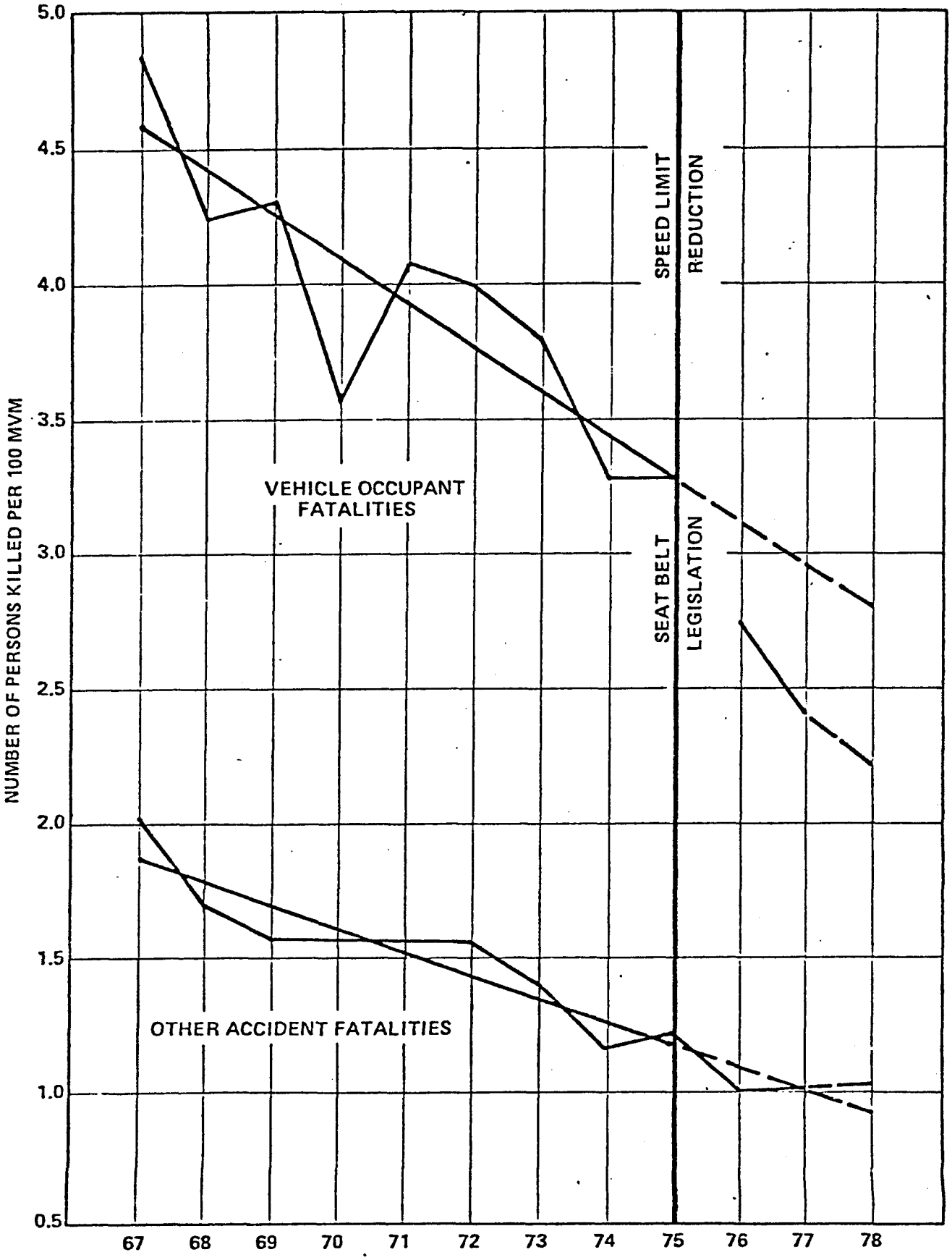
Cost/Benefits Associated With the Law

Pierce also examined the combined effect of the seat belt legislation and speed limit reduction on the number and cost of motor vehicle accident injuries. Comparisons were made between 1975 and 1976 data from six hospital centers representing various regions of the Province of Ontario. Overall statistics for the province were also examined (Pierce, 1979). The major findings of the study expresseed as provincial totals were as follows:

- Number of persons killed in motor vehicle accidents decreased by 16.1 percent, down from 1800 to 1511.

FIGURE 2

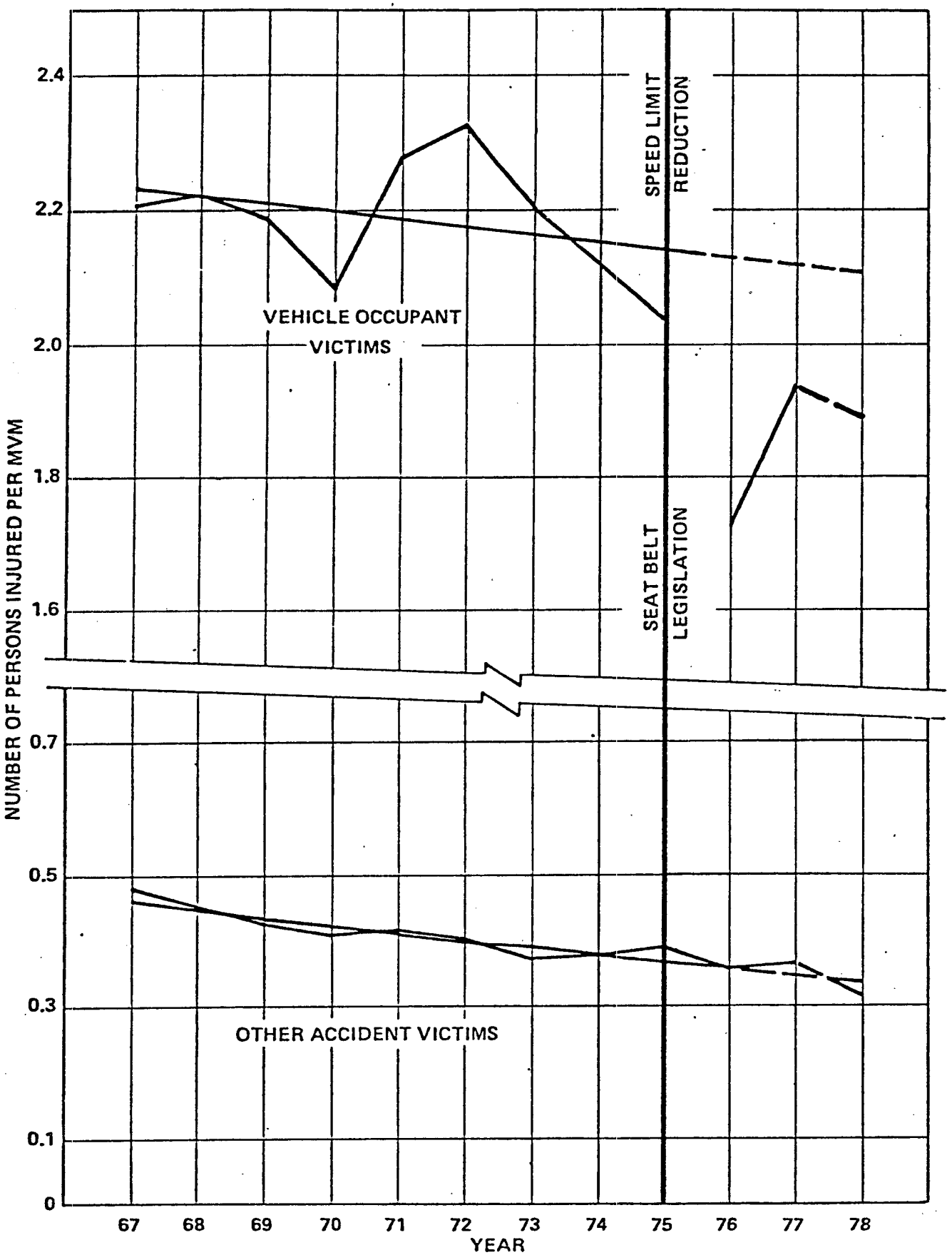
FATALITY RATES IN ONTARIO
(Deaths per 100 million vehicle miles of travel)*



* SOURCE: Pierce, 1979.

FIGURE 3

NON FATAL INJURY RATES IN ONTARIO
(Injuries per million vehicle miles of travel)*



* SOURCE: Pierce, 1979.

- Number of persons injured (hospitalized and non-hospitalized victims) decreased by 13.7 percent, down from 97,034 to 83,736.

- Number of hospitalized victims (inpatients and outpatients) decreased by 16.1 percent, down from 53,923 to 45,242.

- Number of inpatient victims decreased by 21.6 percent, down from 11,018 to 8,635.

- Number of outpatient victims decreased by 14.7 percent, down from 42,905 to 36,607.

- Cost of active treatment care for hospitalized victims (inpatients and outpatients) declined by 10.7 percent, down from approximately $18,280,000 to $16,332,000.

- Hospital inpatient care accounted for the largest amount of expenditure of approximately $14,506,000 and $13,078,000 in 1975 and 1976. This amounts to a reduction of 9.8 percent.

- Medical fees accounted for the second largest amount of expenditure of approximately $2,856,000 and $2,476,000 in 1975 and 1976.

- Overall reduction in the severity of hospitalized injuries was observed. The minor injuries declined by 13.0 percent, moderate to maximum injuries were reduced by 14.5 percent.

- Number of acute hospital patient-days generated by the victims declined from 127,423 to 111,088, a reduction of 12.8 percent.

- Average length of acute hospital stay for the inpatient victims increased from 11.6 days to 12.9 days.

- Average cost of active treatment care per hospitalized victim increased by 6.5 percent, up from $339 to $361, chiefly on account of increased length of hospital stay.

- In 1976, the average cost of active treatment for victims who reported use of seat belts was $228. "Inside the vehicle" victims who reproted otherwise incurred an average cost of

active treatment of $419. Other victims, such as pedestrians and cyclists (which include bicyclist, moped, and motorcycle driver and passenger) incurred an average cost of $693 and $498, respectively. (Pierce, 1979).

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FRANCE

INTRODUCTION

The primary method of data collection in France was by interviews with representatives of the French Government and a representative of a French hospital. The organizations represented by the interviewees were as follows: Inter-Ministerial Committee for Highway Safety; Organisme National de Securite Routiere (ONSER) and the French Orthopedic Hospital in Paris.

A number of printed reports were also collected and reviewed. Certain of the reports were collected during Phase I, and the remainder of the reports were obtained from respondents during the interviews. All of the reports were written in French and therefore had to be translated. The reports were translated only to the depth required to determine whether they contained specific information, pertaining to seat belts, that is of direct interest to DOT. Unfortuantely, many of the documents did not contain such information. As with other countries contacted, the research information most readily available and that which reflects the highest quality work, is that information pertaining to the effectiveness of seat belts. The discussion that follows synthesizes the information of interest found in the printed documents and collected during the interviews.

BACKGROUND AND HISTORY

According to the government official interviewed, there were two factors which precipitated passage of the seat belt law: (1) the high number of traffic injuries and fatalities, and (2) the fact that certain French physicians recommended that the government institute seat belt laws. It was indicated that physicians have a high amount of credibility in France and that the French public tends to believe what physicians say about the benefits of wearing seat belts.

When asked what research was used as a basis for instituting mandatory seat belt laws, the interviewees indicated that they went to Australia to find out about the law there . They were aware of Australia's announced success with seat belt usage laws, and therefore they use Australia's experience (research and statistics) as the background research for France's law. They also used seat belt effectiveness studies conducted by Volvo of Sweden as a basis for specifying the type of seat belt that must be installed in cars.

According to the government officials, attempts to reduce highway accidents and deaths in France date back to 1958. The early attempts mainly dealt with the imposition of temporary speed limits or speed limits for

special occasions. The government also sponsored several national public information campaigns via television, radio, and the press. Despite all efforts, the accident rate continued to rise, and in 1971 and 1972 it jumped to an alarming rate. The interviewees indicated that 16,900 traffic deaths occurred in 1972, creating grave governmental concern. As a result, a permanent Road Safety Interministerial Committee and a position known as the Delegate for Road Safety were established by the Prime Minister in office at that time. The person appointed to the position of Delegate defined three priorities for reducing highway accidents and fatalities. These were as follows:

- establishment of speed limits;
- wearing of seat belts; and
- abstinence from alcohol when driving.

In June 1973, after preparing the public, through public information programs, for impending highway safety legislation, the Delegate for Road Safety proposed to the Prime Minister the investigation of a general speed limit and the compulsory wearing of seat belts.

SPECIFICATIONS OF THE LAW

The mandatory seat belt usage law became effective on July 1, 1973. The law requires that seat belts be worn in front seats of passenger cars and vans at all times outside towns and conurbations. In towns, belts must be worn between 10:00 pm and 6:00 am in front seats of passenger cars and vans.

Penalty for Noncompliance

The penalty for noncompliance is presently set at 55 to 110 French francs (approximately $13 to $21 U.S.). The range in the amount of the penalty allows for lesser penalties for first time offenders and higher penalties for repeat offenders. The penalty for noncompliance was not instituted until October 1973. In the first month after passage of the law, there was an 80 percent compliance rate on major roads. However, by October 1973, compliance dropped to approximately 50 percent and therefore penalties were instituted (Gerondeau, 1975).

Exceptions to the Law

The law allows exemptions to the following persons:

- taxi drivers;
- children under 12 years of age;
- people with a physician's certification;
- pregnant women; and
- people shorter than approximately 110 cm.

SEAT BELT HARDWARE REQUIREMENTS

Beginning in April 1970, three-point belts were required for front window seats of private passenger cars manufactured subsequent to that date. Also, the legislation required either a lap belt or a three-point belt for the middle front seat. For other seats, facing forward, except folding seats, the 1970 legislation required that lap belts had to be installed. On 26 January 1975, a law went into effect that required three-point seat belts on all cars manufactured between 1 September 1967 and 1 April 1970, except for certain cars that were authorized to have two-point belts. Since 1 October 1978, three-point belts, automatically retractable or with emergency locking devices, were required on the front window seats of all private passenger cars.

IMPLEMENTATION OF THE LAW

The seat belt law in France appears to have been implemented in an evolutionary manner. Government officials were aware of the technical considerations associated with seat belt usage and other mechanisms for reducing injuries and deaths (such as speed limits), but it took time for officials to reach a point where they were willing to come forth and push for the necessary legislation. The French public also had to evolve to a point where they would accept the imposition of seat belt laws. The section that follows describes how this process occurred.

Public Information and Education Programs

As mentioned earlier, public information programs were used extensively to prepare the public for impending seat belt legislation. It must be noted, however, that the public information programs were dealing with a broad

range of issues, not only seat belts. French officials interviewed for the study indicated that the news media gave extensive and daily coverage of the debates in Parliament concerning the seat belt law just prior to its passage. Also, according to Mr. Gerondeau in an article published in Traffic Engineering and Control, the Delegate for Road Safety was personally involved in more than 50 televised appearances (news items, debates, interviews, etc.) and in hundreds of radio talks concerning methods for reducing traffic injuries and deaths (Gerondeau, 1975). Gerondeau stated.

> The success of the 'personalized' information technique was carried out in conjunction with more traditional publicity campaigns on TV, radio, in the press and on posters. Following the example of other countries, these campaigns dealt with three principal themes each year. Thanks to the availability of free airtime on TV and national radio, asked for by the Prime Minister, these themes have a large impact and have undoubtedly modified public opinion on all subjects dealt with: safetly belts, speed limit, alcohol, safety for children, etc. (Gerondeau, 1975).

While several French officials indicated in interviews that the public information campaigns were instrumental in preparing the public for acceptance of the seat belt law, they did not produce any significant increase in the wearing rate. Unfortunately, none of the officials contacted in France were able to provide copies of any research reports on the methodology use or effectiveness achieved from the public information and education campaigns.

Enforcement of the Law

According to the officials interviewed, enforcement of the law is provided by various police organizations. Inside cities, the law is enforced by the respective city police organizations. Outside cities, the law is enforced by the Gendarmerie Nationale. The interviewees indicated that policemen don't take specific steps to enforce the seat belt law--they check seat belts in conjunction with other traffic violations. On national toll roads, the police sometimes check to see if seat belts are being worn when a person stops to pay the toll.

According to one government official, enforcement of the seat belt law is by no means consistent. He indicated that enforcement on the motorways is more strict than enforcement on highways and city streets. The interviewee indicated that police with jurisdiction over city streets are lax in their enforcement because seat belt usage rates at night on city streets is only about 30 percent. (The seat belt usage rates quoted by the government official is somewhat questionable because the rate is determined by individual police organizations as opposed to a research team.)

In the initial stage after enactment of the law, the public responded favorably and 80 percent complied with the law when driving on major roads. However, by October 1973 (three months later) the compliance rate had dropped to 50 percent. According to Gerondeau, the decline occurred "notably because of the lack of penalties, since the police force had received instructions not to be severe" (Gerondeau, 1975). As a result, from October 1973 onward, penalties were assessed for noncompliance. "Because of these controls and the institution of fresh information campaigns, which always seem necessary on this subject, the use of seat belts has progressively risen to a level nearing 80 percent on major roads." (Gerondeau, 1975).

Court Decisions Regarding Insurance Compensation--Impacts on Implementation

The interviewees indicated that certain judges have ruled that motorists share in the responsibility for injuries if a seat belt is not worn, and therefore the compensation should be reduced. According to the interviewees, the share of the expenses is in the range of 20 to 30 percent. An attempt was made to acquire more information concerning the court decisions, but the people contacted were not able to provide the desired information.

According to the interviewees, insurance rates have not increased as much as would have been expected if the seat belt law had not been enacted. On the other hand, the interviewees also indicated that insurance rates in France are highly controlled by the Insurance Commissioner. Nevertheless, it was stated that some insurance policies have provisions written into them stating that persons wearing seat belts will receive greater compensation benefits if injured in an accident. It is up to the police investigating the accident to determine if the victim(s) were wearing seat belts. It was also stated that insurance rates in France are partially determined by the insuree's accident record. The rate can go down as much as 40 percent over an 8 year period. Likewise, the rate can rise 20 percent a year for each accident incurred. The interviewee indicated that this system encourages people to not report accidents where there is only material damage and therefore accident rates taken from surveys are unrealistically low.

EFFECTIVENESS OF THE SEAT BELT LAW

The responses of the people interviewed were mixed regarding the effectiveness of the seat belt law. Government officials cited one level of seat belt usage, for example, that was disputed by a researcher who has done extensive research on the effectiveness of seat belts. The effectiveness of the law for most countries seems to be directly related to the extent of enforcement of the law. Since several people indicated that enforcement is rather lax,

it can be expected that the effectiveness of the law is not as high as one would anticipate. These issues and others are discussed in the paragraphs that follow.

Belt Usage

Several usage rate figures were cited by various officials; however, the rates given are suspect for two reasons: (1) no published research reports were provided to substantiate the wearing rate figures; and (2) the statistics quoted are often compiled by the separate police forces and there is no way to determine with certainty the accuracy of the wearing rates reported by policemen.

ONSER, for example, provided the interviewer with a report published in May 1979 that presents the "latest" usage rates based on both responses to survey questionnaires and direct observations. (The report does not specify how the observations were made.) The rates presented in the report are as follows:

- highways - 95 percent;
- country roads - 88 percent (from survey response) and 70-79 percent (from observations);
- night, in cities - 50 percent; and
- day and night in cities-35 percent (ONSER, May 1979).

While the above figures are consistent with what government officials related in the personal interviews, a nongovernment researcher stated that the usage rate figures and the figures for the reduction of injuries and fatalities published by the Inter-Ministerial Committee for Highway Safety are somewhat questionable. According to the researcher, a private individual in France has performed an independent analysis of the figure released by the government and has demonstrated that while the law has been positive in reducing injuries and fatalities, the actual numbers are less impressive than those released by the government. Two interviewees mentioned this to the researchers but provided no data.

Change in Usage Since Enactment of Law

Interviewees were asked about the change in seat belt usage pre- and post-enactment of the law. There was a consensus that the wearing rate prior to the law was 20 to 25 percent. While the actual figures for usage rates

may be open to question, all interviews plus written data that have been reviewed indicate that the wearing rate is different for the different type of roadway facilities.

According to an article by Gerondeau, referenced earlier, the wearing rate jumped to 80 percent on major roads immediately after passage of the law, declined when the public perceived no enforcement activity, and climbed back to 80 percent and higher on major roads after enforcement activity was instituted. As indicated earlier, the study team was not provided any data to verify the usage rates.

Attitudinal Studies

The government officials interviewed as well as the literature that was reviewed indicated that between 70 and 80 percent of the French motorists were convinced of the effectiveness of seat belts prior to enactment of the law. (No reports were available to indicate how the attitudes were measured.) Even though the motoring public were highly in favor of seat belt use, the officials interviewed indicated that actual seat belt usage was running at a rate between 20-25 percent.

ONSER conducted a study in the spring of 1977 to determine the attitudes of drivers regarding seat belts. The study resulted in the following findings:

- 75 percent of the drivers surveyed believe in the effectiveness of safety belts;
- 7 percent believe that seat belts are not effective at all;
- 12 percent believe that seat belts are somewhat effective; and
- 6 percent have no opinion.

Additional analysis of the survey data indicated that 76 percent of those who responded in a positive manner towards seat belts were in the 45 to 55 age range; only 69 percent of the respondents under 25 years of age responded in a positive manner; and 37 percent of the respondents expressed a fear that seat belts would not open after an accident (ONSER, 1979).

The survey also investigated the respondents' reported use of seat belts. Forty-eight percent of all respondents indicated that they never use belts for short distances. One hundred persons who had indicated that they wear their seat belts were asked why they wear them; 21 percent indicated that they wear their belts because the law requires it and 21 percent said they wear their belts through habit. The report did not indicate why the remaining 58 percent wear their belts, though safety must certainly be a consideration.

Five percent of all respondents refused to wear their seat belts at all, some for medical reasons (ONSER, 1979).

France was part of a 15-country study of factors influencing the number and the severity of road accidents, conducted by a French organization named the International Drivers' Behavior Research Association (IDBRA). The data were collected by mailed questionnaires. According to IDBRA, "The samples, aiming to be representative of the driver population, were drawn in various ways: from electors' lists; public or private card indexes, etc." There were two questions of particular interest for this report. The first question asked: How often do you wear your seat belt? The responses were as follows:

- Always--45.4 percent;
- Most of the time--42.2 percent;
- Occasionally--10.3 percent; and
- Never--1 percent.

The report did not account for the other 1.1 percent. The second question of interest to this study asked: How would you classify the protection provided by seat belts? The responses were as follows:

- Very effective--24.7 percent;
- Fairly effective--59 percent;
- Fairly ineffective--12.6 percent; and
- Very ineffective--1.8 percent.

The report did not account for the remaining 1.9 percent (IDBRA, 1978).

Reduction of Deaths and Injuries

The officials interviewed at the Road Safety Inter-Ministerial Committee, the organization charged with the responsibility of administering the seat belt law, made the following statement regarding the reduction of deaths and injuries resulting from the law: "Since speed limit laws and the seat belt law came at the same time, it is not possible to separate out which has the greatest effect on reducing injuries and deaths." However, ONSER published a document in 1974 which indicated that there was a decrease in deaths between July and December 1973 on country roads where the seat belt law and speed limits became effective on 1 July 1973. ONSER attributed this decrease

38 percent to speed limits, 33 percent to safety belts, and 29 percent to a combination of the two. The same document then indicated that seat belt wearing alone on the highways, where the seat belt law became effective on 1 July 1973 but the speed limit law was not yet in effect, did not decrease the death rate per kilometer traveled. In fact, the death rate continued to increase. But from 1 December 1973 until 1 April 1974, when the speed limit was reduced as well, the death rate decreased 57 percent on the highways (ONSER, 1974).

The report provided to the study team by ONSER was a summary report for public release, and it did not indicate how the death rate figures were determined. However, the inteviewees indicated that the police "count the number of people who die and are injured with and without seat belts--they then make comparisons between people killed and injured versus those who would be expected to be killed or injured." Since there appears to be no way to verify the death figures, they should be viewed with caution. As indicated earlier, one nongovernmental employee who does research on accident fatalities indicated that there is evidence that the government figures on fatality reduction have been intentionally inflated to enhance the government's position. There was no way for the study team to verify this without conducting independent research on the subject.

No research was found that comprehensively addresses the effect of the seat belt law. Most of the research to which the study team was referred addresses the effectiveness of safety belts in reducing injuries and fatalities in various types of accident situations. Since France has two or three renowned research pathologists, a considerable amount of seat belt research found in France has to do with postmortem examinations to determine the type and extent of injuries sustained to various parts of the body as a result of various accident situations.

Costs/Benefits Associated with the Law

None of the information collected in France discussed cost/benefits in a quantified manner.

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NEW ZEALAND

INTRODUCTION

The primary means for collecting data in New Zealand was through literature searches conducted by the PMM&Co.'s Washington, D.C., and Sydney, Australia, offices and through direct telephone contacts with New Zealand officials made by PMM&Co.'s office in Sydney. A secondary means involved informal discussion between a professor from the University of Pennsylvania and New Zealand officials. The professor, who is a personal acquaintance of certain PMM&Co. employees and a native of New Zealand, conducted four personal interviews for PMM&Co. in August 1979 while vacationing in New Zealand. (The professor is a previous employee of the Ministry of Transport of New Zealand.) The primary source for all the collected data was the Ministry of Transport and the Automobile Association. New Zealand is a relatively small country, and the amount of data available was somewhat limited. The people interviewed at the Ministry of Transport were questioned about the lack of information that PMM&Co. had found regarding specific areas of interest for this report. The officials indicated that not much had been done in New Zealand beyond what was in the reports that had been acquired by PMM&Co. However, New Zealand has a very close relationship with Australia, and not surprisingly, their seat belt laws have been strongly influenced by Australia's experience.

New Zealand's movement toward seat belt legislation paralleled Australia's to some extent, and New Zealand became the second country to enact mandatory seat belt legislation.

BACKGROUND AND HISTORY

According to a report by J. B. Toomath and C. G. Laurenson of the Ministry of Transport, New Zealand, in its attempt to reduce road accidents and the resulting casualties, had become increasingly aware in the late 1960s that there was a need for greater emphasis on both vehicle and environmental standards. Seat belts were considered a simple and relatively cheap method of improving car occupant packaging to minimize the injuries resulting from vehicle accidents (Toomath and Laurenson, 1976). Australia was in the process of moving towards mandatory seat belt legislation at the same time as New Zealand. Therefore, New Zealand reviewed studies from Australia, particularly studies from the Australian States of New South Wales and Victoria. It is apparent from the limited amount of literature obtained that studies performed by Volvo in Sweden and the Road Research Laboratory in England were also reviewed by New Zealand officials while they were in the process of formulating seat belt legislation.

SPECIFICATION OF THE LAW

The mandatory seat belt law became effective on 1 June 1972. The law requires that seat belts be worn by drivers and front seat passengers of light vehicles registered after 1 June 1965. It also applies to rear seat passengers in vehicles where belts have been installed. Though originally applicable to persons 15 years of age or older, the law was revised in 1978 to apply to persons 8 years old and older.

Penalty for Noncompliance

The penalty for noncompliance is a maximum of $200, but a study by Toomath and Laurenson indicated that the average fine was around $8 (Toomath and Laurenson, 1976). Telephone interviews conducted for this study with people from the Ministry indicate that the average fine as of May 1978 was from $8 to $10.

Exceptions

The law allows two categories of exemptions. The exemptions from the law for New Zealand are very involved and, therefore, they have been included in detail in the subheadings that follow.

Exemption of Vehicles from Requirements

(The source for this information is the paper written by Toomath and Laurenson.)

(a) All motor vehicles (not being second-hand vehicles) for the time being operated with trade plates;

Provided that nothing in this paragraph shall apply with respect to any motor vehicle being operated over a distance exceeding 30 kilometres;

(b) All motor vehicles specifically exempted by the Secretary for Transport, or by any employee of the Ministry of Transport to whom the Secretary has delegated this power of exemption pursuant to section 9 of the Ministry of Transport Act 1968;

(c) All motor vehicles of the type known as "Benford 1200 Dumpers";

(d) All Wessex lightweight motor trucks models numbers 252s, 255, 259, 332 and 333;

(e) All motor vehicles of a tare weight of more than 2,000 kg, first registered on or after the 1st day of January 1965 and before the 1st day of July 1972; and

(f) All motor vehicles of the types known as Aveling-Barford 100 Dumper and Wrigley Dumper.

Exemption of Persons from Requirement

(a) Any person who, when required to do so by a constable or traffic officer, produces to that constable or traffic officer a certificate from a registered medical practitioner stating that the wearing of a seat belt by that person is impracticable or undesirable for medical reasons. It shall be a sufficient compliance with this paragraph if the person concerned produces such a medical certificate, within 7 days after having been so required to produce it, at a place specified by the constable or traffic officer.

(b) The driver of any taxicab while plying for hire.

(c) The driver of and any passenger in any Post Office vehicle engaged for the time being in any area that is subject to a 30 miles per hour or a 50 kilometres per hour speed limit in street posting-box clearances, parcel deliveries, or postman's deliveries by motor vehicle, provided in each case the motor vehicle is not travelling at a speed in excess of 30 kilometres per hour.

(d) The driver of and any passenger in any Post Office or other vehicle engaged for the time being in rural mail deliveries or any Post Office or other vehicle engaged for the time being in newspaper deliveries to individual subscribers in rural areas, provided the motor vehicle is not travelling at a speed in excess of 70 kilometres per hour.

(e) The driver of and any passenger in a vehicle engaged for the time being in parcel deliveries, courier services, or household deliveries or collections, provided the driver is employed for that purpose and the motor vehicle is not travelling at a speed in excess of 30 kilometres per hour.

(f) The driver of any motor vehicle who, being a person employed or self-employed in servicing or repairing motor vehicles, is for the time being engaged in the servicing or repair of the vehicle in the course of his employment and is driving that vehicle in an area within a radius of 30 kilometres of the garage, workshop, or other premises where the vehicle is being serviced or repaired, and is driving it only for the purpose of road testing the vehicle or delivering it to another garage, workshop, or other premises for further servicing or repair.

(g) The driver of any motor vehicle who if wearing an approved seat belt could not reasonably operate effectively any of the following items of vehicle equipment:

(i) foot brake or hand brake;

(ii) headlight dipping switch;

(iii) direction-indicator control;

(iv) horn;

(v) windscreen-wiper control;

(vi) choke; and

(vii) driver's sun visor.

(h) The driver of and any passenger in a motor vehicle used for the time being in the chemical spraying of footpaths, banks, or road shoulders or verges, providing the vehicle is not travelling at a speed exceeding 30 kilometres per hour.

(i) The driver of and any passenger in a motor vehicle for the time being used in transporting meter readers engaged in their employment as such, provided the vehicle is not travelling at a speed exceeding:

(i) 30 kilometres per hour if in an area that is subject to a speed limit of 30 miles an hour or 50 kilometres per hour; or

(ii) 70 kilometres per hour in any other area.

SEAT BELT HARDWARE REQUIREMENTS

All cars first registered beginning 1 January 1965 had to have "approved" belts fitted, but they could include either single lap or diagonal types. All cars first registered after 1 July 1972 had to be fitted with a combination or retractable type belt (a single lap or diagonal type could not be fitted). Beginning 1 January 1975 the requirement to fit combination or retractable belts was backdated to cars first registered from 1 January 1955 (if no belts had already been voluntarily fitted--and they could have been of single lap or diagonal type) (Toomath and Laurenson, 1976).

IMPLEMENTATION OF THE LAW

As indicated earlier, only a limited amount of information was obtainable from New Zealand, and unfortunately the documents received did not contain much information on implementation of the law except for enforcement aspects. The paragraphs that follow discuss the information that was available.

Public Information and Education Programs

It was not possible to obtain any documents that discuss public information and education programs even though it is known that these kinds of programs were conducted in New Zealand. One Ministry of Transport official did indicate that a major program was conducted for a full month prior to the law's coming into effect, and the usage rate remained unchanged at around 30 percent.

Enforcement of the Law

Toomath and Laurenson discussed enforcement of the seat belt law in their report, which included a table that provides information on seat belt offenses (see Table 6). The information for 1972 covers only the last three months of the year because there was no enforcement of the law for the first three months (Toomath and Laurenson, 1976). The table shows a developing trend regarding the level of enforcement of the law; however, no recent data were available to provide additional information on the subject. A high level law enforcement official indicated in a personal interview that the police believe that seat belts reduce injuries, and therefore they suggest and enforce the law.

Court Decisions Regarding Insurance Compensation

No information concerning this subject was found in any of the documents obtained from New Zealand.

EFFECTIVENESS OF THE SEAT BELT LAW

The transportation officials interviewed all support the seat belt law and consider it an effective means of saving lives and reducing injuries. The amount of quantitative data concerning the effectiveness of the law is limited but those data which are available indicate that the law has produced a positive effect.

TABLE 6

SEAT BELT OFFENCES, NEW ZEALAND

	T.O.Ns*	Convictions	% Convictions	Fines	Average Fines
Last 3 months 1972	-	99	-	$ 816	$ 8.24
1973	3,568	1,144	32%	$ 8,603	$ 7.52
1974	5,044	2,907	57%	$21,653	$ 7.45
1975	12,942	FIGURES NOT YET AVAILABLE			

*Traffic Offence Notices.

SOURCE: Toomath and Laurenson, 1976.

Belt Usage

According to Toomath and Laurenson, seat belt usage has been checked in New Zealand since 1967, and the data indicated a steady increase. However, in 1972 (immediately prior to the legislation's coming into effect) the usage rate by occupants where belts were available was only about 33 percent. One month after the legislation came into force, a check showed that the usage rate had more than doubled (Toomath and Laurenson, 1976). The trend in seat belt usage can be seen in Table 7. According to Toomath and Laurenson, "The percentages quoted in this table are derived from aggregating the results of a series of checks conducted throughout the country. In most cases about 300 vehicles were checked both in urban and rural areas. The checks were generally carried out between the hours of 10 a.m. and 5 p.m. No attempt has so far been made to determine the variation of wearing rates by time of day and day of week."

The authors went on to say, "Seat belt usage by drivers checked in rural areas has been consistently higher than in urban areas. In August 1971, 33 percent of rural drivers checked were wearing their belts where these were available. This increased to over 50 percent prior to the law and to 90 percent when the law was introduced. The equivalent figures for urban areas were approximately 30 percent, 33 percent, and 85 percent" (Toomath and Laurenson, 1976).

Attitudinal Studies

A number of surveys of attitudes about the use of seat belts have been conducted in New Zealand (Toomath, 1977). According to Toomath:

> In May 1971 a sample of 410 people in Auckland (New Zealand's largest city) were asked the question "Do you think it should be made compulsory for the driver and front seat passenger to wear a safety belt at all times when the car is moving?" 64.5 percent were in favor, 35.3 percent opposed and 0.2 percent had no opinion. Females were more strongly in favor (73.3 percent) as were the over 40 year old age group (65.7 percent).

Toomath also discussed the results of a survey in November 1974 which collected information from 500 respondents throughout New Zealand. Those respondents who indicated that they had used a belt on each of their last short and long trips were asked the main reason for wearing the belt.

TABLE 7

SEAT BELT USAGE DATA, NEW ZEALAND

Date	% Vehicles fitted with belts			% worn by driver (of total of vehicles fitted)									% worn by driver (of total of vehicles checked)								
				Urban			Rural			Total			Urban			Rural			Total		
	Pre 1965	Post 1965	Total	Pre	Post	Total	Pre	Post	Total	Pre	Post	Total	Pre	Post	Total	Pre	Post	Total	Pre	Post	Total
April 62			0.9																		
June 62			1.7																		
Nov. 62			4.6																		
Mar. 63			6.2																		
Sept. 63			9.2																		
Mar. 64			13.3																		
Mar. 65			15.8																		
May 67			33.0									16.7									5.7
Dec. 67			37.9									21.5									8.2
Aug. 71			67.8			29.7			33.2			31.6			18.7			23.3			22.2
May 72	27.4	99.2	72.4	32.9	33.3	33.2	49.1	52.5	51.8	40.5	39.3	39.5	7.7	33.0	24.2	16.6	51.7	36.9	11.1	38.9	28.5
June 72*	22.8	99.5	71.5	81.6	84.9	84.5	78.2	92.4	90.5	80.3	87.3	86.6	16.8	84.6	59.5	22.0	92.0	66.7	18.4	87.0	61.8
May 74*	30.7	99.4	86.0	65.5	78.4	77.3	80.0	92.8	92.1	70.0	83.7	82.8	20.8	78.0	65.7	23.0	92.0	80.0	21.5	83.3	71.1
June 74*	31.3	99.7	86.2	65.5	78.0	75.6	87.4	93.4	92.6	70.7	84.0	83.1	20.7	77.7	65.8	24.8	93.2	80.7	22.2	83.8	71.6
Nov. 74*	56.3	99.6	90.8	59.5	86.7	82.6	58.8	85.5	82.4	59.2	86.1	82.7	34.7	86.3	72.5	31.7	85.1	72.0	33.3	85.8	75.1
May 75*	86.4	100	97.5	83.7	87.2	86.7	87.0	91.6	90.9	85.4	89.4	88.7	73.5	87.2	84.9	74.1	91.6	88.3	73.8	89.4	86.5

*Checks made after wearing of seat belts became compulsory on 1 June 1972.

SOURCE: Toomath and Laurenson, 1976.

The results were as follows:

	Short Trips %	Long Trips %
I feel safer	39	49
Legally required	36	28
Habit	24	20
Other	1	4
N =	(354)	(381)

Those who indicated that they did not wear their belts were asked the main reason for not wearing them. The results are show below:

	Short Trips %	Long Trips %
Seat belts are inconvenient/ a nuisance	21	11
I forgot to wear it	18	15
Seat belts are unnecessary	14	25
Seat belts are uncomfortable	9	22
Seat belts restrict movement too much	8	15
Only a short trip	10	
Seat belts are difficult to put on/adjust	6	
Other	14	12
N =	(66)	(28)

REDUCTION IN DEATHS AND INJURIES

Mr. Toomath's paper which was presented at the Sixth International Conference of the International Association for Accident and Traffic Medicine, discusses the change in deaths and injuries resulting from the seat belt law. Even though his analysis indicates that there has been a reduction in death and injuries, it is not possible to determine how much of the reduction was attributable to the seat belt law. Influences from other variables were a problem. (The paper looked at fatality statistics for periods of two years before and two years after the enactment of seat belt legislation. A period of two years was chosen in order to provide a reasonable sample size. However, this resulted in influences from the new 50 MPH speed law change and other changes affecting accident rates such as a decrease in fuel consumption and changes in traffic patterns.) Also, there were voids in the data such as the lack of knowledge in some cases regarding whether or not the accident victim was wearing a seat belt. Because of such problems in data, Toomath stated that the results reported in his paper must be used with caution. However, the analysis did show that some positive results have occurred (Toomath 1977).

In discussions with Ministry of Transport officials regarding the study for which this report is written, one official indicated that he is disappointed that the observed reduction in fatalities and injuries is not really as great as the observed seat belt usage rates would indicate. The official presumes that accident prone drivers are less likely to wear belts than the average driver. He also indicated that the Ministry of Transport's surveys of belt usage are made during daylight hours, whereas more than half of the fatal accidents occur at night (especially after the bars close on Saturday night). Seat belt usage during night hours is thus unknown. The official also indicated that the quality of the accident statistics is only "average." In addition, he stated that all injury accidents must by law be reported to the police who fill out the report forms. Independent checks of hospital emergency rooms indicate that about 30 percent of all injury accidents are unreported, according to the official who was interviewed.

Costs/Benefits Associated With the Law

None of the information received from New Zealand discussed cost/benefits in a quantified manner.

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PUERTO RICO

INTRODUCTION

The primary means for collecting data in Puerto Rico was through personal interviews and a limited literature search by personnel in PMM&Co.'s Washington, D.C., office. Much of the literature concerning the seat belt law was already available to the U.S. Department of Transportation, thereby making it unnecessary to do an extensive literature search.

Very little additional information was available on the seat belt law in Puerto Rico. Also, the researchers were informed that only one organization, the Traffic Safety Commission, had any pertinent information on the law. This proved to be true because all inquiries made to other organizations ended in a referral to the Traffic Safety Commission. The person interviewed at the Commission was asked to provide literature on the various points of interest concerning the law. The information provided by him was the same information already available at DOT.

As a result of the above factors, the case study of Puerto Rico is brief.

BACKGROUND AND HISTORY

The interviewee indicated that the first initiatives for safety belt laws were taken by the Traffic Safety Commission and the Department of Transportation and Public Works. He went on to say that the initiatives were nonpolitical and, moreover, were not based on any recent statistics on automobile injuries or deaths in Puerto Rico. The data used as a basis for promoting acceptance of the law were compiled from studies in the United States, European countries, and Australia. The interviewee indicated that a team of experts from Puerto Rico went to Australia and conducted a two-week comprehensive review of Australia's seat belt program to gain background information.

An action plan for implementation of the law was designed by the Department of Transportation and Public Works in 1973. This plan specified three basic needs:

- the need to realize the required interagency efforts for the implementation and enforcement of the law;

- the need to conduct a study and the necessary surveys on the prevailing situation, and at the same time develop an educational and public information campaign in order to orient the people properly; and

- the need to establish an action plan that would include all the necessary work areas to permit the accomplishment of all required activities for the implementation of the law.

To address these needs, two working committees representing the participating government agencies were named: the Implementation Committee and the Evaluation Committee. The Implementation Committee was divided into the following working subcommittees:

- Regulation Subcommittee;

- Education and Public Information Subcommittee; and

- Enforcement and Adjudication Subcommittee.

The Evaluation Committee was divided into two working subcommittees as follows:

- Surveys Subcommittee; and

- Data Gathering Subcommittee.

A plan of action and schedule for all activities associated with the then impending law was then established (Action Plan, 1973).

While the plan represented a well thought out approach for implementing the impending law, no documents were obtainable.

SPECIFICATION OF THE LAW

The seat belt law was approved by the legislation on May 30, 1973, and The Secretary of the Department of Transportation and Public Works promulgated a seat belt regulation that became effective January 1, 1974. The law sets forth two clauses:

- It shall be the duty of every driver of a motor vehicle traveling upon public highways, which shall be equipped with safety belts in accordance with Section 6-306 of this act, to fasten it around his body and to buckle up said safety belts.

- Every person who travels as passenger in a motor vehicle, which vehicle should be equipped with safety belts in accordance with Section 6-306 of this act, and whose safety belts are available for use, shall be likewise, bound to fasten it around his body and to buckle up said safety belts while the vehicle is being driven upon the public highways (Action Plan, 1973).

Penalty for Noncompliance

The specific requirement for penalizing noncompliance with the law is as follows:

> Every person who violates the provisions of this Section, shall be guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine of not less than ten (10) dollars nor more than twenty-five (25) dollars (Action Plan, 1973).

Exceptions to the Law

A significant number of exemptions were granted in the regulation promulgated by the Secretary of the Department of Transportation and Public Works. The exemptions granted have been excerpted from regulation and presented below:

- Drivers and passengers affected by physical, medical and psychiatric ailments, so certified by a physician duly authorized to practice medicine in Puerto Rico; those whose condition or handicap is clearly evident, or those possessing a certificate or an endorsement to their driver's license, issued to such effects by a state, federal or foreign government authority.

- Minors under eight (8) years of age and/or whose height is less than 55 inches.

- Drivers or operators with occupational reasons, during such hours in which they are carrying out functions inherent to their occupation that motivate the exemption, and while the motor vehicle they use to perform said duties is in motion, claiming the benefit of the procedure established in Article VII herein below.

- Drivers who are constantly stopping their vehicles and getting off, or delivering or loading merchandise, provided, that the speed of the vehicle between stops does not exceed 15 miles per hour, during such hours of the day and/or night in which they are engaged in said duties.

- Drivers shall be exempted from using the shoulder strap whenever it might interfere with the operation of the vehicle or while the vehicle is in reverse motion.

- Those persons unable to fasten and buckle up the seat belts because of their size, physical deformity or extreme obesity (Seat Belt Regulation, undated).

There also were several groups of vehicles exempted from the regulation, as follows:

- All motor vehicle models built prior to 1965 were exempted from installation of any type of safety belt.

- All motor vehicle models from 1965 through 1967, inclusive, were exempted from the installation of safety belts on the back seat.

- Safety belts are not required to be installed on commercial vehicles, heavy-motor vehicles, buses, tractors or propellers of a model prior to 1971, and the models from 1971 are not required to have safety belts installed on the seat or seats in back of the driver (Seat Belt Regulation, undated).

SEAT BELT HARDWARE REQUIREMENTS

A law specifying the requirements for installation of seat belts was passed at the same time as the seat belt usage law. The specific requirements of that law have been excerpted, as follows:

- Every automobile, model 1965 onward, shall be equipped at least with two safety belts adjustable on the lap to be used in the front seat.

- Every automobile, model 1968 onward, shall be equipped with safety belts adjustable on the lap, for each passenger for which the belt has been designed. This requirement shall not be applicable to Police vehicles. It shall also be equipped, at least with two safety belts adjustable on the lap and over the shoulders, to be used in the front seat.

- Every commercial vehicle, heavy motor vehicle, bus and tractor, or propeller 1971 model onward, or locally assembled after January 1, 1971, shall be equipped with safety belts adjustable on the lap and over the shoulders, to be used in the front seat.

- Every automobile, commercial vehicle, heavy motor vehicle, bus and tractor, or propeller (sic) locally manufactured with components and new parts or of parts and accessories from other vehicles, shall be equipped with safety belts as required in subsections (b) and (c).

- The Secretary is hereby authorized to exempt from the requirements required by subsections (a), (b), (c), and (d), by regulations to such effect, certain types of motor vehicles or positions for passengers within said vehicles, when by their nature a certain type of safety belt cannot be used.

- No person shall install, distribute, have for sale, offer for sale neither shall sell any type of safety belts for use in motor vehicles unless same are in accordance with the minimum standards and specifications approved by the Secretary.

- It shall be the duty of every owner of a motor vehicle, which shall be equipped with safety belts in accordance with this section, to maintain said belts and their installation in good conditions so that they can be used by the passengers (Action Plan, 1973).

IMPLEMENTATION OF THE LAW

As indicated earlier, the Action Plan specified the steps to be taken to implement the law, though no reports were obtainable on what actual steps were taken. Asked about implementation of the law in Puerto Rico, the interviewee commented that the most effective means of implementation were through education first and enforcement second. He stated that there were three types of organizations that conducted education campaigns in Puerto Rico: (1) traffic safety educators gave talks in driver programs; (2) health educators spoke at schools; and (3) police officials gave talks at various meetings. The interviewee pointed out that Puerto Rico's safety belt campaign dated back to 1964.

Public Information and Education Programs

Public Information and Education (PI&E) Programs were carried out on both a formal and an informal basis by the news media, private interest groups, and various government agencies. This activity was documented in a report on hearings before a House of Representatives Subcommittee regarding safety belt usage (House of Representatives Hearings, 1978). The report did not provide detailed information on the PI&E programs; however, it did provide enough information to allow development of a chronology of important events associated with PI&E activity. This chronology is as follows:

- In April 1973, the major newspapers in Puerto Rico began to publish informative articles on the benefits of seat belts, the individual's responsibility in preventing accidents and injuries, and the benefits of wearing seat belts.

- In July 1973, the Civic Crusade for Traffic Safety, a nongovernment organization, publicly announced the commencement of an educational campaign for seat belt usage.

- In October 1973, a major newspaper urged citizens to participate in upcoming public hearings regarding the establishment of a workable regulation on the use of seat belts.

- In November 1973, public hearings were initiated in the eleven most important cities on the island.

- In November 1973, the Puerto Rico Traffic Safety Commission contracted with a publicity agency to conduct an education campaign. The campaign centered on advising the public of the law which would become effective in January 1974 and emphasized that the intent of the law was to save lives.

- In November 1973, almost one million flyers bearing a seat belt safety message were distributed to drivers through a series of police roadblocks.

- In December 1973, one hundred thousand Christmas cards bearing messages on safety belt usage were distributed among elementary grade students in the public school system. Through these cards, children requested their parents to wear safety belts.

- In February 1974, the Traffic Safety Commission conducted a safety belt orientation program in the largest shopping center of the San Juan metropolitan area. The program, a one-week exhibit with continuous conferences and presentations, was estimated to reach more than 50,000 people.

- In May 1975, the Traffic Safety Commission, having designed its own educational campaign, initiated mass media coverage.

- In January 1975, the police force was reported continuing its educational activity in order to increase belt usage.

Enforcement of the Law

The report on the hearings before the House subcommittee also provided information on the enforcement activity associated with the law. Here again details were provided concerning the testimony before the House subcommittee. However, there was sufficient information to develop a chronology of enforcement activity associated with the law. The chronology is as follows:

- In July 1973, the police academy curriculum was changed to incorporate laws on seat belts.

- In January 1974, the Superintendent of Police publicly reaffirmed that there would be a "reasonable" period of time before enforcement of the seat belt law, subsequent to the law's becoming effective.

- In February 1974, the Superintendent of Police announced that on 12 noon of February 23, the police would start issuing citations for non-usage of seat belts.

- In May 1974, it was determined that for the period 22 February to 23 May, the police had issued 6,308 citations, of which 4,572 were for failure to use seat belts and 1,736 were for failure to install them.

- In October 1974, the law was amended to provide for an educational period and decriminalization. The amendment specified that no violator would be penalized until he committed a third violation.

- In December 1974, it was determined that during the first two months after amendment of the law, the police issued 11,450 tickets for nonuse and 1,517 tickets for noninstallation of seat belts.

- In January 1976, concern was expressed relative to a possible downturn in police enforcement activity, due to the fact that it was an election year.

- In February 1976, a decrease in police ticketing activity was noticed, and a decrease in seat belt use was reported.

- In July 1976, the Traffic Safety Commission wrote an official letter to the Superintendent of Police complaining about the drop-off in the issuance of tickets for failure to use seat belts. In the month of July, only 275 tickets were issued.

- In August 1976, it was determined that only 8,509 tickets had been issued up to that month, representing a decrease of 43 percent compared to the same period the year before (15,125).

- In December 1976, it was found that there was still a small but steady decrease in enforcement of the seat belt law.

- The downturn in enforcement continued throughout 1977. The last entry on the subject in the hearings' report was another letter from the Commission to the Superintendent of Police requesting a pledge for stronger police enforcement.

Court Decisions Regarding Insurance Compensation

No information was found on this subject.

EFFECTIVENESS OF THE SEAT BELT LAW

None of the documents obtained from Puerto Rico provide detailed information on the effectiveness of the law in terms of belt usage, attitudinal studies, reduction of death and injuries, and costs/benefits associated with the law.

The interviewee from the Traffic Safety Commission was asked about the effectiveness of the seat belt law. He indicated that a survey taken prior to the extensive educational campaign and enforcement program showed a belt usage rate of 4 percent. He further indicated that for a short period of intensive enforcement and education, the usage rate peaked at about 35 percent. The educational activities lasted about two to three months and cost approximately $100,000. The interviewee stated that once the educational campaign ended, enforcement became lax and the usage rate dropped to 10 percent. According to the interviewee, the usage rate in May 1979 was 6 percent.

The report on the hearings before the House referenced earlier also provided chronological information (without details) relating to the effectiveness of the seat belt law. The paragraphs that follow report this information.

Belt Usage

Belt usage in Puerto Rico apparently was correlated directly with the amount of police enforcement. According to the report from the hearings before the House subcommittee, seat belt usage surveys were taken throughout the period July 1973 to May 1977. These surveys reportedly were taken by both government agencies and nongovernment agencies; however, the report contained no specific information on how the surveys were conducted. Based

on the data in the report, a graph has been drawn (see Figure 4) which represents the usage by month from July 1973 through May 1977. (House of Representatives Hearings, 1978). This graph appeared in the hearings report but was not of reproducible quality.)

Attitudinal Studies

The hearings' report presents the results of several surveys that were conducted to determine people's attitudes and opinions towards seat belt use and the seat belt law. As before, no specifics were provided as to how the surveys were conducted. The chronology of results from the surveys are as follows:

- In July 1973, a household survey of 339 persons indicated that 80 percent were in favor of the law, 12 percent were against the law, and 8 percent had no opinion.

- In November 1973, 176 persons were interviewed at public hearings on the law. Of these, 60 percent were in favor of the law, 27 percent were partially in favor (suggested amendments to the proposed law), and 13 percent were against the regulation.

- In February 1974, the Traffic Safety Commission conducted an orientation program at a large shopping center, and people were questioned about safety belts and the law. In response to one question, 65 percent reported that belts were a good safety measure, 27 percent reported that belts were no good, and 3 percent were not sure. (The other 5 percent were not reported). In response to another question, 60 percent reported being in favor of compulsory use, 37 percent were against, and 3 percent were not sure.

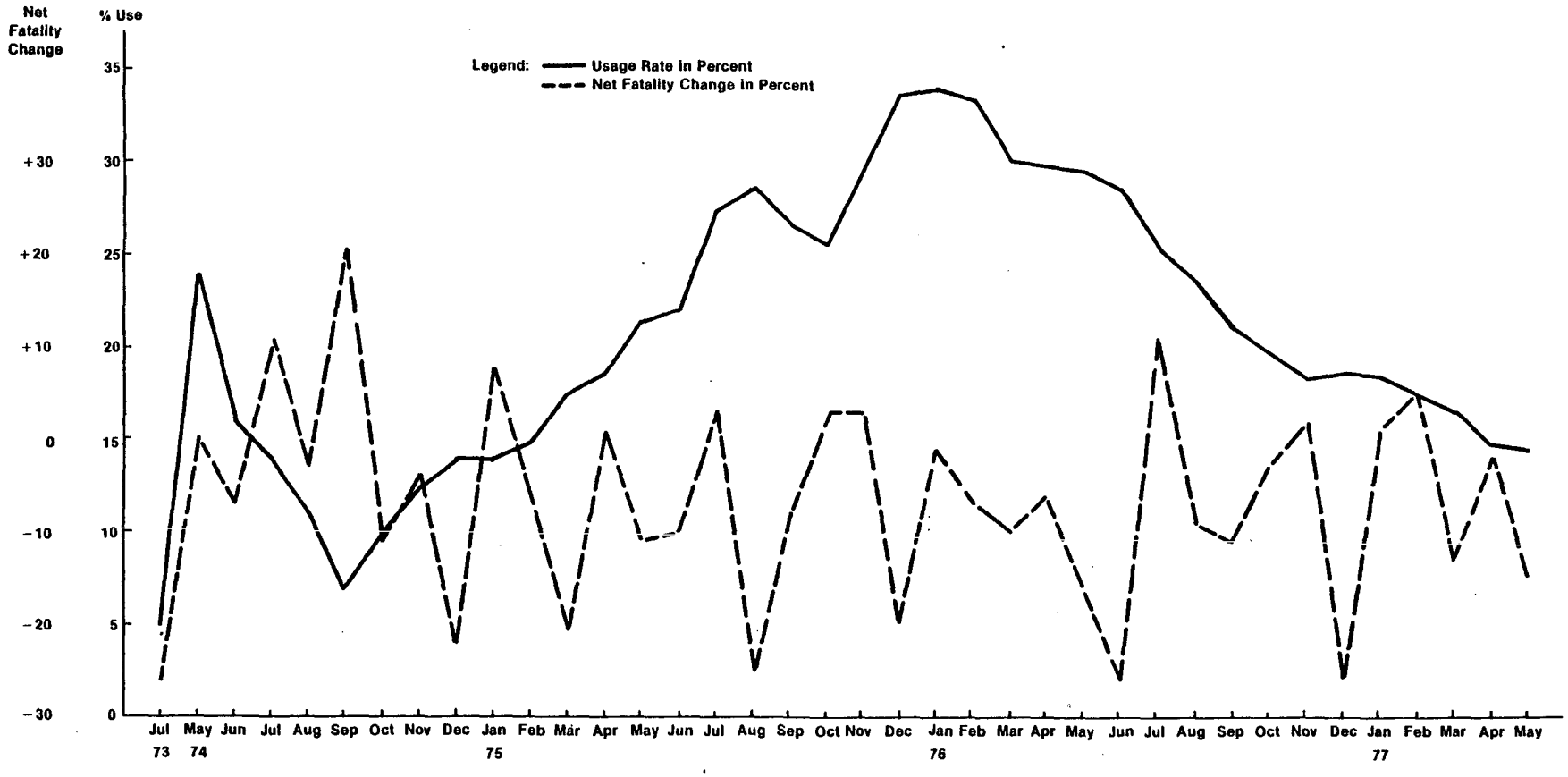
- In March 1974, Phillip Morris of Puerto Rico and the San Juan Sports Club jointly performed a bumper sticker campaign for belt usage. A small survey of 70 people was conducted. Of those interviewed, 63 percent reported that they use belts and 37 percent reported that they did not.

Reduction in Deaths and Injuries

The report on the hearings before the House of Representatives provided certain information on the net change in fatalities resulting from increased belt usage. No backup information was provided to show how these changes were determined; however, the information contained in the report has been plotted on Figure 4 to show the reported relationship between belt usage rate and the associated percent of change in fatalities (House of Representatives Hearings, 1978). (This information was presented in the report but was not of reproducible quality.)

FIGURE 4:

BELT USAGE RATE VERSUS NET FATALITY CHANGE, PUERTO RICO



Source: House of Representatives Hearings, 1978.

Costs/Benefits Associated with the Law

No information was found concerning the costs/benefits associated with the law.

REFERENCES

Puerto Rican Department of Transportation and Public Works. Action Plan for Implementation of Laws #55 and # 56 Related to Mandatory Usage and Installation of Seat Belts. August 1973

Puerto Rican Department of Transportation and Public Works. · Regulation for the Installation and Use of Safety Belts. Santurce, Puerto Rico, undated.

House of Representative Hearings, 1978.

SWEDEN

INTRODUCTION

Interviews were conducted in Sweden with three people, two representatives from the Borlange branch office of the Road Safety Office and a representative from the Ministry of Communications located in Stockholm.

It was found that most of the research conducted in Sweden regarding automobile safety research is done by the Road Safety Office, the two Swedish automobile manufacturers, and a certain amount by universities. It was not possible to schedule interviews with the automobile manufacturers or university researchers, but we were able to obtain several documents published by Volvo and Saab.

The reported belt usage rate in Sweden is one of the highest of any country contacted for the study. However, it appears that this high usage rate stems more from the people's respect for the law than it does from enforcement procedures. Sweden in general has very stringent traffic safety laws, and the public seems acculturated to complying with these laws. One interviewee indicated, "In Sweden, we feel that a traffic death is not just the victim's problem, but also society's problem." The corollary to this thought is that an individual does not have the right to kill him/herself.

BACKGROUND AND HISTORY

The figures for motor vehicle accident fatalities in Sweden had remained rather stable over a number of years. From the middle sixties up until the passage of mandatory safety belt usage legislation, the number of people killed per year was approximately 1200 $\pm$ 10 percent (Swedish Road Safety Office, December 1978). In the meantime, seat belt usage was evolving in Sweden just as in other countries around the world.

Legislation requiring the installation of seat belts in automobiles was passed, but according to the Road Safety Office, statistics showed that most people were not wearing their belts and accident fatalities and injuries remained at a high level.

The mandatory safety belt usage law was passed in an attempt to reduce the number of injuries and deaths. The government sponsored the safety belt law and the Parliament passed it. According to the interviewees there is continuing strong parliamentary support for the law. Many individual members of Parliament have tried to encourage support to revoke the law, but Parliament has stood strong in its support of the law.

SPECIFICATIONS OF THE LAW

The mandatory safety belt usage law became effective 1 January 1975. Under the Act, all drivers and front-seat passengers at least 150 centimeters tall and over the age of 15 must use seat belts in those private cars, trucks, and buses where belts have been installed.

Penalty for Noncompliance

The penalty for receiving a citation for violating the seat belt law is 100 Swedish kronor (SKr)--approximately $23.50 depending upon the prevailing exchange rate. One interviewee indicated that the law implies that it should be considered carelessness if a person does not use his/her seat belt. This has implications regarding the awarding of damages resulting from accidents, but there was no evidence found to indicate that such a situation has ever developed.

Exemptions

The law allows exemptions for the following:

- persons less than 150 cm. tall;
- children under 15;
- persons sitting in a vehicle that is stationary, reversing, or within a parking area, a multistory car park, a petrol station, a workshop perimeter or schedule;
- persons travelling by taxi, either as a passenger or a driver; and
- persons with a physical handicap, granted with a doctor's certification of exemption.

SEAT BELT HARDWARE REQUIREMENTS

The regulations concerning the installation of seat belts in private cars are as follows:

- From 1969 year model onwards installation of seat belts in the front of private cars is compulsory (SRSO regulation F9-1968, "Regulation on safety belts").

- From 1970 year model onwards installation of seat belts for all seats in private cars is compulsory (SRSO regulation F9-1968, "Regulation on safety belts").

- From 1974 year model onwards installation of roller belts in the front seat of private cars is compulsory.

- From 1975 year model onwards installation of roller belts for all seats in private cars is compulsory. However, the middle seat in the back is for the time being exempted from this regulation.

Discussions with Swedish officials revealed the following factors regarding seat belt hardware. Volvo and Saab, the two major automobile manufacturers in Sweden, installed seat belts in their cars long before the laws requiring belts were passed. Cars made in countries foreign to Sweden were the main ones affected by the law. Cars that are brought into Sweden from outside must be equipped with approved belts before they can be registered. This applies to all cars made subsequent to 1969. Air bags and passive seat belts have not been accepted as approved devices. A VW Rabbit sold in Sweden must have a three-point inertial belt installed before it can be registered. Special dispensation is given to certain imported sports cars that cannot be fitted with approved belts.

The law pertains to private cars, trucks, and buses.

IMPLEMENTATION OF THE LAW

The Swedish Government did not take any extraordinary steps to implement the seat belt usage law after it was enacted. According to interviewees they have not conducted any large scale campaigns to encourage belt usage. They did promote the new law via news releases, signs on buses and other low profile techniques. It appears that the Swedish public was generally aware of the evolving status of impending legislation and when mandatory belt usage became a law, people quickly began to comply. According to Swedish officials, the public information campaigns conducted in the years immediately preceding passage of the law made the motoring public keenly aware of the imminent passage of the law.

PUBLIC INFORMATION AND EDUCATION PROGRAMS (PI&E)

In Sweden, the PI&E programs were conducted in conjunction with seat belt usage studies in order to determine if the PI&E programs were having a

positive effect on the seat belt usage rate. Because of this, the seat belt usage studies that were conducted in conjunction with the PI&E programs have been discussed in this section of the case study.

Public Information/Belt Usage Studies

From 1971 to 1974, the Department of Traffic Safety carried out a number of campaigns to increase the use of safety belts. Also, campaigns were organized by insurance companies, well known leaders of public advocacy groups, school authorities, and others. These campaigns entailed the use of newspaper articles, radio and television information programs, and radio and television spot announcements. (The campaigns were discussed in a report by Edvardsson and Degermark of the Road Safety Office). Two types of studies were conducted to determine the results of the campaigns: (1) "representative studies where the statistical selection of time and place of observation was based on knowledge of the total traffic flow on the roads in question"; and (2) "nonrepresentative studies where times and observation points were chosen at random." The results from both of these studies showed a definite increase in the use of safety belts (Edvardsson and Degermark, 1976).

According to the representative studies, the usage frequency on weekdays in 1974 was: 34.2 percent (± 2.5) on national truck roads; 28.5 percent (± 6.3) on country through-roads; and 27.6 percent (± 2.6) on primary country roads. Corresponding figures from 1971 were 21 percent (± 2.1) and 17.8 percent (±4.0); primary country roads were not included in the 1971 observations. The results from the nonrepresentative observations showed a usage rate of 35.6 percent in October 1974 compard to 15.2 percent in March 1971 (Edvardsson and Degermark, 1976).

According to Edvardsson and Degermark, the series of campaigns organized by insurance companies and other private organizations were carried out with the specific aim of increasing the use of seat belts. In the first campaign, it was assumed that usage would increase if statements were made about road accidents and their consequences and about the beneficial effect of seat belts. However, other studies (Dobson, 1970) indicate that such arguments are effective only if a person feels that there is a risk of being involved in an accident him/herself. Most people do not feel that they will be involved in an accident. Some researchers, including Blomgren, 1961; Dolison, 1970; and Nasbitt, 1962 have advanced the theory that "scare" propaganda can have an effect opposite to that desired. With regard to seat belts, the association between belt and accident could create uneasiness or anxiety and result in the belt's being avoided (Agrell & Johansson, 1972).

In the campaigns conducted by the Road Safety Office, the above results were borne in mind. Instead of frightening people into using the belt, there was an attempt to make its use part of the routine of driving. To emphasize

the importance of the belt as part of the vehicle's equipment and also to avoid any possible negative associations between belt and accident, the term "car belt" was used instead of "safety belt" (Edvardsson and Degermark, 1976). The campaigns were adapted to small groups and led by pesons known to those groups, as this was found to be the most effective approach.

As indicated earlier, the Road Safety Office took available research into account in drawing up their campaigns. An example is Bandura's theory of modelling, that is, that learning can take place by direct observation of line models who are of importance to the observer (Agrell & Johansson, 1972). Supported by this and other theories, interest was directed to a great extent to organizations, companies, authorities, and other small groups. These were urged to arrange activities of their own, led by people known within the groups (Edvardsson and Degermark, 1976).

In its first campaign, the Road Safety Office directed its materials toward private companies to get belt users to influence nonusers. The campaign material included an information film and a "company package" with material and types for activities within the firm. In addition, fact sheets and information material directed toward the police were produced as a supplement to previously produced educational material (Edvardsson and Degermark, 1976).

In the second campaign, one of the efforts was a focus on schools. An imaginary figure called "The Belt Man" was introduced. His task was to remind motorists about the seat belt, but "being short of time" he needed the help of the pupils. To prove they were "The Belt Man's" assistants they were given identity cards and "Belt Man" badges. In each group an attempt was made to reach opinion makers, who could argue for using the belt and thereby influence other members of the group. (Edvardsson and Degermark, 1976).

The greatest effort was expended in the third campaign. It was primarily aimed at organizations and companies, but greater emphasis was placed on rewards. A gilt pin, for example, was given to those promising to use the belt. The campaign made use of radio, television, and the press. It also incorporated what was called the "Bingo War," in that bingo cards, on which it was possible to win cars, TV sets and other capitol goods, were given to people using the belt. The drawing took place on TV. (Edvardsson and Degermark, 1976).

The fourth campaign was similar to the first and second, while the fifth and sixth dealt with injuries in urban traffic as well as previously produced material. Women were focused on to a greater extent in the later studies, as a number of studies (Fhaner & Hane, 1971) indicated that women tend to accept use of seat belts more than men and it was thus hoped that the women would influence the men. (Edvardsson and Degermark, 1976).

As indicated earlier, the Road Safety Office carried out seat belt usage investigations during the period that public information campaigns were being conducted. Three representative studies and ten nonrepresentatve studies were conducted. In the three representative studies, the observations were made along stretches of road, 50 to 100 km. long, outside built-up areas. These stretches were in turn divided into sections, with one observation point to each section. Each time observations were made, they were carried out at every one of the points along a stretch of road. In the first two studies, carried out in 1971 and 1972, observations were made on national truck roads, county through-roads, and other county roads. Observations were made in a total of 58 areas (stretches of road), 32 of them on the national truck road network and 26 on county through-roads and other county roads. There were six observation points along each stretch of road. In the third study, carried out in 1974, the category "other county roads" was left out completely and "primary county roads" was added. In all, there were observations in 80 areas, 32 on national truck roads, 16 on county through-roads, and 32 on primary county roads (Edvardsson and Degermark, 1976).

The results of the representative studies indicate greatest use of the seat belt with respect to all categories. Table 8 depicts the data compiled from the observations. The table shows that the largest increase in belt usage between 1972 and 1974, 8.9 percent $\pm$ 2.2, occurred on national truck roads during weekend traffic (Edvardsson and Degermark, 1976).

Originally, 67 observation points throughout the country were selected for the nonrepresentative studies. It was expected that there would be variations in belt use depending on the type of traffic conditions. As the total amount of traffic for the different type roads was not known and the choice of points was constrained by the availability of observers, the number of points for each traffic condition was chosen arbitrarily. To make observation easier, points were selected, when possible, where motorists were forced to slow down, for example at traffic lights and cross-roads (Edvardsson and Degermark, 1976).

The results of the nonrepresentative studies indicate that there was an increase in belt usage for all persons and types of roads. Figure 5 summarizes the belt usage rate data. The belt usage rate climbed from 15.2 percent in March 1971, the month that the first public information campaign was conducted by the Road Safety Office, to a high of 35.6 percent in October 1974, approximately eight months after the sixth public information campaign conducted by the Road Safety Office (Edvardsson and Degermark, 1976).

Enforcement of Seat Belt Usage Law

According to the interviewees, since Sweden had extensive information on the favorable attitude of the public towards mandatory seat belt legislation,

TABLE 8

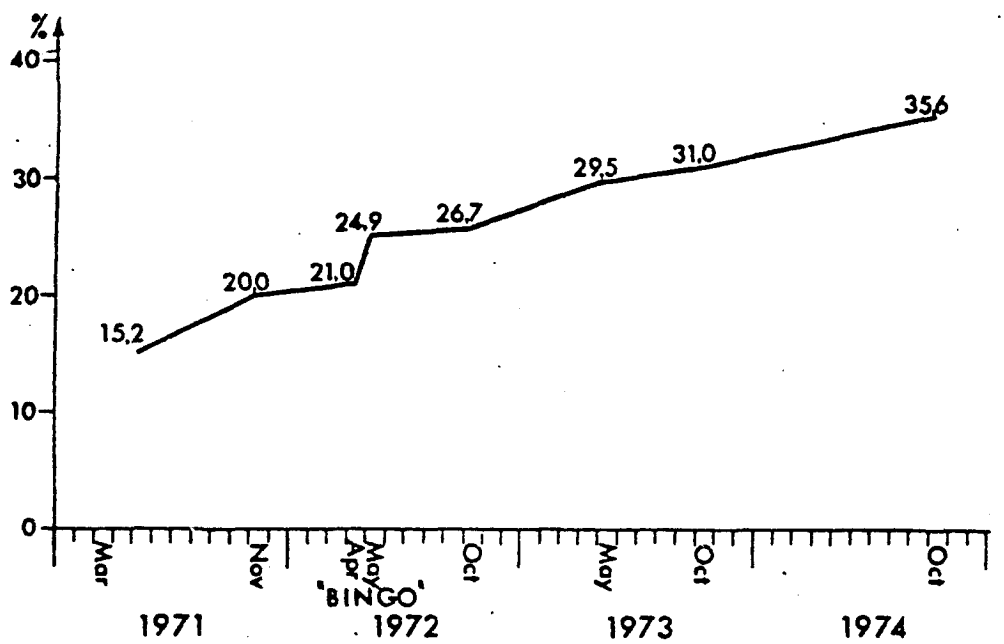
BELT UTILIZATION (%) FOR ALL PERSONS IN THE FRONT SEAT OF PRIVATE CARS, INCLUDING SINGLE DRIVERS, SWEDEN

Year	National trunk roads		County through-roads		Other county roads		Primary county roads	
	Weekday traffic	Weekend traffic	Weekday traffic	Weekend traffic	Weekday traffic	Weekend traffic	Weekday traffic	Weekend traffic
1971	21.0 ±2.1	21.6 ±1.7	17.8 ±4.0	17.8 ±3.3	10.6 ±2.5	11.1 ±2.7		
1972	28.1 ±2.8	28.1 ±3.0	20.4 ±4.2	20.9 ±5.1	17.3 ±4.1	18.7 ±6.2		
1974	34.2 ±2.5	37.0 ±3.9	28.5 ±6.3	28.3 ±8.0			27.6 ±2.6	31.6 ±3.4
Diff. 74-72	6.1 ±4.0	8.9 ±2.2	8.1 ±6.5	7.1 ±7.6	72-71 6.8 ±5.7	72-71 7.6 ±6.8		

SOURCE: Edvardsson and Degermark, 1976.

FIGURE 5

CHANGES IN THE USE OF SEAT BELTS 1971-1974 FOR ALL PERSONS AND TYPES OF ROADS, SWEDEN



SOURCE: Edvardsson and Degermark, 1976.

government officials did not feel that rigorous enforcement beyond normal law enforcement procedures, would be necessary. The police are not required to make special efforts to enforce the law. There is just one police organization responsible for all city and rural roads in Sweden. Therefore, the officials interviewed believe it would be relatively easy to affect the enforcement behavior of policemen if necessary.

According to one interviewee, the police are lax in reporting non-seat belt usage. "Police report only about 20,000 non-usage violations per year, and they could easily report ten times that number." The Road Safety Office has made attempts to instill more interest in policemen regarding seat belt usage violations. However, the police indicate that they have too many other duties to which they must attend.

There are no special mesures taken to enforce the seat belt usage law. Enforcement of the seat belt usage law is done in conjunction with routine speed control, drunk driving, and driving licensing enforcement procedures. The perception of those interviewed is that enforcement is the same throughout the country since one police organization is responsible for it.

Court Decisions Regarding Insurance Compensation

No information was found concerning the subject. None of the interviewees indicated an awareness of court decisions that reduced insurance compensation.

EFFECTIVENESS OF THE LAW

Because no special implementation techniques were necessary to encourage use of seat belts, the Swedish Government has not attempted to evaluate the effectiveness of any operative techniques. However, there has been a marked increase in the seat belt wearing rate subsequent to enactment of the law. The seat belt wearing behavior of Swedish motorists is also reflected in their attitudes. These will be discussed in the sections that follow.

Belt Usage

A number of nonrepresentative studies have been conducted subsequent to passage of the law. The first study was conducted February 25-27, 1975. The aim of the study was to determine the effects of the new law. The study was conducted in the same manner as previous nonrepresentative studies. The observations were made at the same points, weekdays, and times as before. The results of the study revealed a wearing rate similar to the rate prior to passage of the law (Edvardsson and Degermark, 1976).

Subsequent studies have revealed a sharp rise in the wearing rate as compared to the rate prior to passage of the law. In a document written by Tingvall on July 20, 1978, the following table was presented (Tingvall, 1978).

Road Type*	Belt Usage Rate Week 10/1976	Week 19/1977	Week 22/1978
1.	75.4	76.1	76.0
2.	80.5	76.1	86.2
3.	78.1	81.1	84.5
4.	84.6	76.5	85.5
5.	76.1	85.9	81.5
6.	87.4	87.8	90.7

Figure 6 presents a graph of the change in seat belt usage rate from 1965 to 1978. The data on which this graph is based was collected in the nonrepresentative studies discussed in the Background and History section of this report. The data in the figure represent a compilation of data from several studies.

Road Types:

1. Traffic in central parts of cities except Stockholm, Gothenburg, and Malmo.

2. Traffic into cities. These observation points lie outside the actual densely populated areas and generally not closer than 3 kilometers outside the cities.

3. Traffic into cities, and generally not closer than 5 kilometers from the cities. This type of traffic is considered "remote traffic."

4. Traffic from cities which has been observed. See point 3.

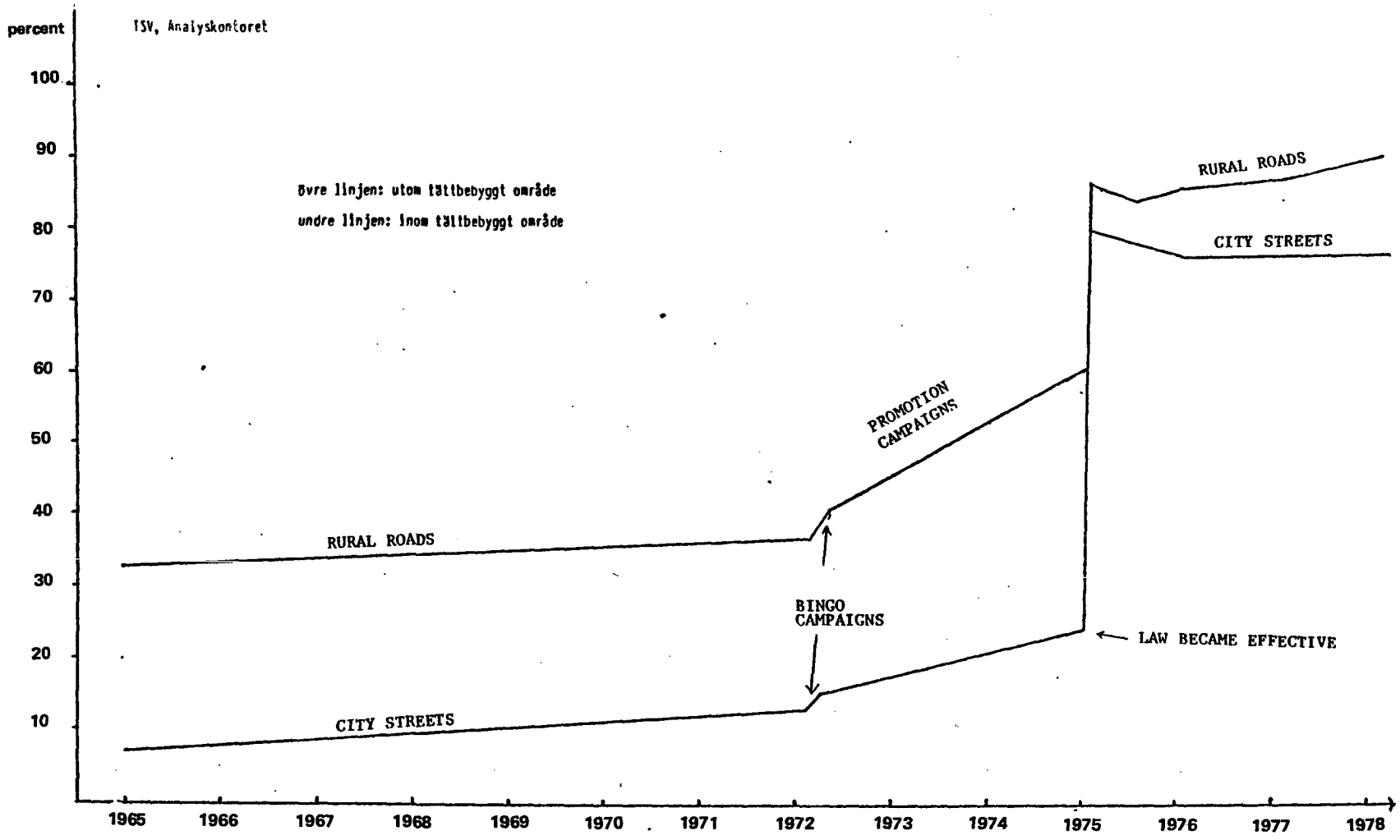
5. Traffic in central parts of Stockholm, Gothenburg and Malmo should be characterized as "business trips" and should not be considered as regular city traffic.

6. Traffic outside of central parts of Stockholm, Gothenburg and Malmo. This consists of trips to and from work.

SOURCE: Edvardsson and Hans, 1975

FIGURE 6

SEAT BELT WEARING RATE IN SWEDEN



Source: Interviewee in Road Safety Office

(This data was based on 100,000 observations in about 60 locations -- this type of study is performed annually.)

In another document, Tingvall discussed the results of a study of the use of seat belts as a function of age and sex. The results are as seen below (Tingvall, 7 July 1978).

MALE DRIVERS
(Percentage Figures are Approximate)

Age	<25 yrs.	26-45 yrs.	46-65 yrs.	>, 66 yrs.
Percent Using Belts	69.1%	82.2%	83.5%	80%

FEMALE DRIVERS
(Percentage Figures are Approximate)

Age	<25 yrs.	26-45 yrs.	46-65 yrs.	> 66 yrs.
Percent Using Belts	75.7%	86.8%	81.3%	100.00

According to the above information, women in Sweden tend to wear seat belts at a higher rate than men in all age groups except the group 46-65 yrs.

Attitudinal Studies

Attitudinal studies were conducted over an extended period of time by various organizations. In studies carried out by the Road Safety Office, the lowest percentage of interviewees who declared themselves positive towards compulsory use of seat belts was 50 percent. In one study by the Swedish Public Opinion Research Institute, 86 percent of interviewees declared themselves in favor of compulsory use of seat belts. Despite these declarations, belt use observation data indicates that the usage rate at the time the attitudinal studies were being conducted was considerably less than 50 percent. According to Fhaner and Hane of the Road Safety Office, a positive attitude towards the seat belt does not necessarily mean the belt is being used (Fhaner and Hane, 1971).

Fhaner and Hane have conducted several small studies dealing with attitudes and other psychosocial factors related to seat belt wearing. Some of the findings from the studies have relevance for current international concern with mandatory seat belt usage. The studies performed by Fhaner and Hane are listed below with appropriate annotations:

- Seat Belts: The Importance of Situational Factors -- In one study of car owners, it was determined that the major difference was found to be between city and highway situations, with only small variations within each environment. Point estimates of variance showed that the major proportion of the reported behavior variation was due to individual variation. A hypothetical model was presented that accounted for the results in terms of two latest variables, disposition for belt use and difficulty of situation. In a second study, belt use was observed among a group of motorists who regularly passed an observation point in the morning. The motorists were identified and asked to answer a questionnaire that included some items from the first study. The results of the cross-validation supported the model. The correspondence between reported and observed belt use was relatively high, $r = .73$ in this nonrandom sample, and despite a tendency to overestimate usage, it was concluded that verbal reports could be used as indicators of seat belt use (Fhaner and Hane, April 1972).

- Seat Belts: Contextual Factors and Bias of Reported Use -- It was hypothesized that if the observed discrepancy between reported and observed seat belt usage was due to a social desirability response set, the discrepancy should be reduced if the respondents were told that their belt use had been observed. The observation factor was investigated together with survey sponsorship and interviewee sex in a study using 2x3x2 factorial design. Two hundred fifty seven drivers who had been observed in moving traffic were randomized into twelve groups and were subjected to a telephone interview concerning their belt use habits and opinion on a belt use law. The interviewers, male for one half of the groups and female for the other half, introduced themselves as working either with the National Road Safety Office, with a University department, or as a student in a traffic education class. Half of the subjects were told that they had been observed when driving and that the focus of interest was on the method of observation. Two parallel methods of analysis of variance was performed on the total sample and on the subsample having a pro-belt attitude, as indicated by a favorable opinion on a belt usage law. It was concluded that the three factors had no effects on reported use or on opinion on a usage law. It was tentatively suggested that a social desirability response set was not very important for reports on belt usage or attitude (Fhaner and Hane, August 1972).

- Seat Belts: Relations Among Belief, Attitude, and Use -- On the basis of a model of attitude to seat belt use, a questionnaire was constructed tapping beliefs that seemed relevant for seat belt usage. A sample of car owners was drawn from the vehicle register, and 368 persons answered the mailed questionnaires and the follow-up inquiries by telephone concerning their belt use habits.

  A factor analysis yielded a belief pattern that was interpreted in terms of five factors, labeled "discomfort," "worry," "risk," "effect," and "inconvenience." The model appeared useful since an independent measure of the attitude (A_o) could well be predicted from a linear combination of individual factor scores. Two factors, "discomfort" and "effect," yielded near optimal predictions ($r = .804$). The correlation between A_o and reported use was .555, or about the same as the multiple correlation between the belief factors and reported use. Again, the "discomfort" - "effect" combination gave near optimal predictions.

  The generality of the belief pattern was demonstrated by a validation study of a sample ($N = 105$) for which a series of at least five observations was obtained, presumably when driving to work. The predictive power of the two-factor belief instrument was further shown, since predictions of reported use based on the regression equation obtained in the first study correlated .610 with actual reports. The sample was divided into "users" and "non-users" on the basis of observations, and a discriminatory analysis was performed, yielding the value $r_{pbis} = .378$.

  On the basis of the obtained relationships, a model of seat belt use was suggested, in which conceptions about discomfort of belt usage and of effects of belts in an accident were regarded as determinants of usage (Fhaner and Hane, February 1973).

- Seat Belts: Changing Usage by Changing Beliefs -- Seat belt information was designed on the basis of a model of seat belt use, where a linear combination of beliefs about discomfort (D) when wearing a belt, and beliefs about injury-reducing effects (E) of belts were regarded as determinants of "disposition of belt use". Workers and employees of a large steel company, having been observed as consistent non-users during four weeks, took part in the alleged information testing. The belt information groups ($N = 85$) had more favorable post-test beliefs than the control groups. The belief effects were paralleled by behavior effects. The strongest effects were obtained for the unpretested belt information group where almost 45 percent of the subjects were observed as users,

that is, they had a belt on at least once during the 14 week post-treatment period.

The usage effects decreased over time, but seemed to increase again after the belief follow-up. The users had the highest D+E pretest scores as well as post-test scores, but there seemed to be no interaction betwen initial values and information. The belief effects were on the same level at the follow-up three months after the treatment.

The results were taken as tentative support of the proposed model. The nature of the relations between usage and each of the two factors were discussed, as well as a multiplicative weighting of D and E (Fhaner and Hane, September 1973).

The police force is favorable towards the law, according to the people interviewed. It was reported that there has been no perceptible change in their attitudes before and after passage of the law.

Reduction in Death and Injuries

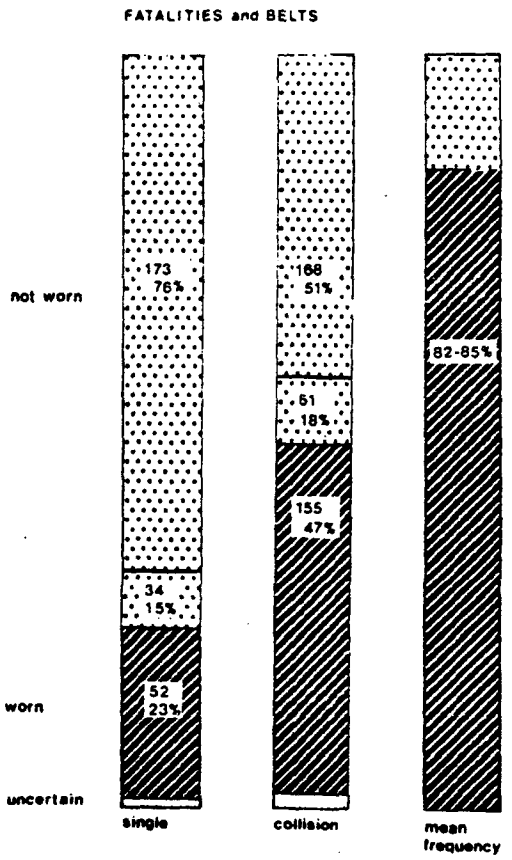
Voigt and Krantz, both of the Department of Forensic Medicine of the University of Lund in Sweden, conducted a study specifically to evaluate the effect of the mandatory seat belt legislation. All fatalities from passenger car accidents occurring in 1975 were investigated. Complete information was obtained for 458 of 469 accidents. In these 458 accidents, 1,366 persons were involved and by December 1975, 560 of them had died (Voigt and Krantz, 1977).

The data were divided into two groups: (1) single vehicle accidents, and (2) multiple vehicle accidents (collisions). In single accidents 228 persons were killed; 179 of them were drivers, 55 front seat passengers and 34 rear seat passengers. In collisions 332 persons were killed; 189 of them were drivers, 82 front seat passengers, and 61 rear seat passengers. Regarding the use of seat belts in single accidents, 52 of the fatally injured persons wore belts, 173 did not use belts (including all 34 rear seat passengers), and in three cases it was not possible to decide if the belts were worn or not. In collisions 155 persons wore belts and 168 did not use belts, including all 61 rear seat passengers, and in nine cases it remained unknown if the belts were worn or not (Voigt and Krantz, 1977).

According to the authors, these numbers take on additional meaning when compared with the mean frequency of belt usage in the country. Seat belt usage studies performed in 1975 revealed that mean frequency for seat belt wearing was 82-85 percent. Figure 7 presents the fatalities and belt wearing frequency data presented by Voigt and Krantz.

FIGURE 7

DISTRIBUTION OF FATALITIES IN SINGLE ACCIDENTS AND COLLISIONS BY WEARERS AND NON-WEARERS OF SEAT BELTS AND MEAN FREQUENCY OF SEAT BELT WEARING ON SWEDISH ROADS.



SOURCE: Voigt and Krantz, 1977.

According to the authors, the data presented in the exhibit demonstrate the protective effect of seat belts. The extent of this effect is, however, dependent on, among other factors, the number of accidents that did not result in fatal injuries because of belt usage and which were not included in the study. Another operative factor is the possible overrepresentation of traditionally accident-prone groups among nonusers in general and especially in the single accident category. The injury-reducing effects of seat belt wearing as indicated in Figure 7 rest on the assumption that users and nonusers considered as groups have the same tendency to be involved in fatal accidents. According to Berard-Anderson, in his review of Voigt and Krantz's work, the assumption on which Figure 7 rests is probably not true, and therefore the real injury-reducing potential of seat belts cannot be definitely quantified from this study (Berard-Andersen, 1978).

No studies were found that document the true effectiveness of the adopted seat belt law in terms of the number of lives that have been saved or the number of people experiencing reduced severity of injuries because of adoption of the law.

Costs/Benefits Associated with the Law

It was not possible to obtain any quantifiable information on the costs/benefits of the law. There are many reports in Sweden that demonstrate the effectiveness of seat belts in saving lives, and since the law has resulted in a very high belt usage rate, the costs of the benefits accrued does not seem to be of great concern.

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SWITZERLAND

INTRODUCTION

The primary method of data collection in Switzerland was by interviews with representatives of the Swiss Government, and with other organizations identified as having relevant information. Such organizations included the Accident Prevention Section of the Federal Police Department, the Automobile Club of Switzerland, and the Institute for Forensic Medicine at the University of Zurich.

A number of printed reports were also collected and reviewed. Certain of the reports were collected during Phase I, and the remainder were obtained from respondents during the personal interviews. All of the reports were written in French and therefore had to be translated into English. The reports were translated only to the depth required to determine if they contained specific information pertaining to seat belts, of specific interest to DOT. Unfortunately, most of the documents collected in Switzerland did not contain information of specific interest to DOT. As with other countries contacted, the research information most readily and abundantly available and that which reflects the highest quality work, is that information pertaining to the effectiveness of seat belts, not the seat belt law. The discussion that follows synthesizes the information of interest found in the printed documents and collected during the personal interviews.

BACKGROUND AND HISTORY

According to those persons interviewed, the seat belt law evolved from a concern for the number of people being killed in automobile accidents each year. The interviewees indicated that research done by Australia, Sweden, and at the University of Zurich was used as the background research for Switzerland's law. (The studies mentioned pertain to seat belt effectiveness studies.) The government also consulted with professional groups, associations of garage owners, automobile clubs, and the Swiss Bureau for Accident Prevention in order to determine if a seat belt law should be instituted. As a result of the research reviewed and discussion with various Swiss organizations, the Swiss government implemented by ordinance the mandatory use of seat belts.

Interviewees from the Federal Police Department indicated that public information campaigns regarding the wearing of seat belts were conducted via television films, spot announcements on TV, new releases to newspapers, and billboards at border crossings and other strategic locations. The interviewees indicated that the programs are still being carried out but that the

only information on the effects of the campaigns was that they did not succeed in inducing motorists to use their seat belts at an acceptably high rate.

Opposition to the seat belt law in French speaking Switzerland began to surface immediately after enactment of the seat belt law. The criticism was against the mandatory usage law and not the effectiveness of seat belts. On July 7, 1977, a petition with 96,000 signatures, opposing the law, was presented to the government. During this time period, the rate of wearing seat belts dropped drastically. In the meantime, several suits against the law were filed with the courts (Swiss Bureau for Accident Prevention, 1977).

On September 2, 1977, the Supreme Court of Switzerland accepted the appeal of a person fined for not wearing his seat belt. The court issued a decision stating that "the existing laws do not authorize the Swiss Government to implement the mandatory use of seat belts." This was reconfirmed by a second decision of the Supreme Court on October 5, 1977, stating that the ordinance was contrary to the constitution (Government Report to Congress, 1979). Consequently, Switzerland is the only country contacted for the study which has repealed its seat belt law.

A considerable amount of discussion took place with the interviewees regarding the desire of the Swiss Government to enact a new seat belt law. However, the government plans to enact the new law through a process known as a legislative referendum. Under the process, the bill will be submitted to at least one of the houses in Parliament (according to one interviewee, the bill might be submitted to both houses). Once the bill has been passed by Parliament, there will be a three-month period in which to collect 50,000 signatures of people in support of the bill. When the required number of signatures has been collected, the bill will be placed on a ballot and must be approved by a simple majority of the voters in order to become law. The interviewees stated that all of the political parties comprising the Parliament are in favor of enacting a new law, but it is unknown how the states and the public will respond to attempts to enact a new seat belt law.

SPECIFICATIONS OF THE LAW

The mandatory seat belt usage law became effective on January 1, 1976. The law required that seat belts had to be worn in front seats of passenger cars and vans at all times. The law also requires that children under 12 years of age must ride in the back seat of automobiles.

Penalty for Noncompliance

The penalty for noncompliance when the law was in effect was SF 23 (approximately 14 U.S. dollars, depending upon the exchange rate).

Exceptions

The law allowed exemptions for the following:

- children up to age 12;
- cab drivers;
- back seat passengers;
- firemen, policemen and ambulance attendants when acting in an emergency situation;
- deliverymen (providing they drive slower than 25 km/hr; and
- people with medical certificates specifying an exemption.

SEAT BELT HARDWARE REQUIREMENTS

Beginning January 1, 1971, all front seats of new cars sold in Switzerland had to be equipped with seat belts. As of January 1, 1976, all vehicles in Switzerland (except those manufactured before January 1, 1971), must be equipped with seat belts anchored in three places: Two on the floor for the lap belt and one for the shoulder belt. (Belts must be anchored at points indicated by the vehicle manufacturor.) This arrangement is required for the driver and passenger occupying the front seat of the vehicle. If there is a place for a third passenger in the front seat (middle) a lap belt is required.

IMPLEMENTATION OF THE LAW

Based on information provided by the interviewees, the seat belt law in Switzerland was never formally implemented. There was resistance to the law from the very beginning, both from government and police officials in certain parts of Switzerland as well as from the general public in certain parts of the country. The various police agencies enforced the law in accordance with the wishes of the citizens in their jurisdiction. Ironically, this resulted in stricter enforcement in areas where the voluntary compliance rate was highest and lax or no enforcement in areas where the wearing rate was lowest. The same techniques used in other countries to implement the seat belt law were evident in Switzerland, but the techniques weren't applied at a high level of intensity.

Public Information and Education Programs

As indicated earlier, public information and education programs were conducted through all forms of the media: radio, television, newspapers, and billboards. However, a government official stated that there was no information available on the effectiveness of the media campaigns. Based on the reported seat belt wearing rate prior to enactment of the law, the media campaigns were no more effective in Switzerland than in other countries.

The researchers were provided copies of certain of the media advertisements that were utilized. This information, which is written in German and French, does not contain any unusually innovative information and therefore was not translated verbatim for inclusion in this report.

Enforcement of the Law

According to Swiss officials, the police didn't make any special effort to enforce the seat belt law. The law was enforced in conjunction with other traffic violations but was left up to the discretion of the police within the various states and cities. One interviewee stated that the various police jurisdictions enforced the law in accordance with the attitudes of the people regarding the law. The officials stated that enforcement of the seat belt law, when it was in effect, varied according to the three major ethnic regions within Switzerland: German, French, and Italian. The enforcement rate was highest in the German speaking region and was lowest in the French speaking and Italian speaking regions. One interviewee stated that police in the French region were specifically instructed not to enforce the seat belt law. In fact, a government official said that it was known that the now defunct law would not be enforced to any great extent in certain states if reenacted. He stated that laws in Switzerland are almost aways carried out by the states, and the states can interpret the law in accordance with their own parochial interests. States cannot pass a law in opposition to a federal law, but they can exercise discretion in enforcing laws. (The government officials interviewed did not know of any statistics that had been compiled on the rate of enforcement in the various regions of Switzerland.)

The official indicated that the German speaking region of Switzerland tends to show more respect for laws in general, and therefore it was not surprising that the seat belt law was enforced there. The French and Italian speaking regions are more jealous of their personal freedom and tend to oppose laws more readily.

Court Decisions Regarding Insurance Compensation

Two of the people interviewed had participated in court cases in Switzerland and they indicated that insurance companies can reduce one's compensation

up to 10 percent if it is proved that the injury sustained would not have been as great if belts had been worn. According to the interviewees, there have been about six cases where the courts ruled that insurance compensation could be reduced.

Even though the courts in Switzerland have reduced the compensation in certain cases where accident victims were not wearing seat belts, all of the people interviewed in Switzerland, except for the two who have testified in accident cases, were against reducing compensation for accident victims not wearing seat belts. The reasons given for their opposition were as follows:

- Reducing compensation by insurance companies will not significantly affect the seat belt usage rate;

- It would be unfair to people who are not intellectually or financially able to engage in a court fight against insurance companies;

- Since improperly adjusted seat belts, even though worn, will permit injuries that could otherwise be avoided, it is not fair to reduce one's compensation solely on the basis of whether or not a seat belt was being worn -- the adjustment of the belt would have to be considered; and

- If insurance companies can reduce compensation payments because of seat belts not being worn, that will be a foot in the door to come up with other reasons for not paying claims.

EFFECTIVENESS OF THE SEAT BELT LAW

As can be deduced from the preceding discussion, the overall effectiveness of the law in Switzerland, while it was in effect, is somewhat questionable because of the divided feeling about the law in the various parts of the country. Because of these divided feelings and because of the fact that the law was contested in the courts soon after being enacted, there is not much data on such factors as belt usage, attitudinal changes, reduction in injuries and death. It appears that the political climate never settled down long enough to conduct serious research. Several documents were found that provide information on belt usage rates; however, all of the information in the documents seems to emanate from the same source. Moreover, the document provided to the study team as the primary source doesn't give any details of how the studies were conducted in order to generate the statistics that were provided. The paragraphs that follow discuss these factors with focus on specific topics.

Belt Usage

Three different documents were obtained that provide statistics on seat belt usage before, during and after the enactment of the seat belt law. However, it appears that these statistics all originated from the same source since the numbers are the same for the various categories even though the tables presenting the information are arranged differently. Table 9 for this case study has been constructed from a table presented in a document with identification number 79.001--- a report from the Swiss Government to Parliament (Government Report to Parliament, 1979). Several factors of interest can be observed from Table 9. These factors are as follows:

- The belt usage was very high immediately after enactment of the law. It varied between 87 and 96 percent, depending on the area of the country and the type of road facility being observed.

- The usage rate began to decline shortly (two to three months) after passage of the law, and the downward trend continued for the next two years (a slight increase occurred on city streets and expressways between May 1978 and September 1978, but there was no known explanation for the increase).

- The belt usage rate varies according to road facility, with the highest usage occurring on expressways, the next highest on highways, and the lowest on city streets.

- The belt usage rate varies markedly by ethnic region with the German region exhibiting the highest usage rate, the French region exhibiting the next highest, and the Italian region exhibiting the lowest usage rate.

The government report also contained a table that provides comparative information on the wearing rate of seat belts for the two years prior to enactment of the law in addition to the information presented in Table 9. Table 10 has been constructed from the government report and presents the comparative information just discussed (Government Report to Parliament, 1979).

Attitudinal Studies

According to the government officials interviewed, the Swiss Government used a process known as the consultation process when they enacted the law. The steps in the consultation process are as follows: data and statistics concerning the problem of interest are collected; opinions are solicited from interested parties; recommended legislation is written; and information

TABLE 9

PERCENTAGE OF DRIVERS USING SEAT BELTS IN AUTOMOBILES EQUIPPED WITH SEAT BELTS, 1976, 1977 AND 1978, SWITZERLAND

Community Location and Region	1976			1977		1978		
	Feb	May	Nov	May	Sept	Feb	May	Sept
Expressways:								
German	96	94	94	93	83	64	67	72
French	93	87	81	75	47	51	49	42
Italian	—	—	87	72	62	36	42	45
Combined Averages for Expressways	95	92	90	88	74	60	62	64
Rural Roads								
German	92	90	90	89	69	52	57	52
French	91	84	69	67	45	41	37	33
Italian	—	70	68	31	30	23	11	17
Combined Averages for Rural Roads	92	85	83	81	62	48	50	46
City Streets:								
German	90	89	89	86	57	41	39	42
French	87	70	58	45	20	13	10	10
Italian	—	63	48	37	19	3	5	8
Combined Averages for City Streets	89	78	78	75	47	33	31	33

SOURCE: Swiss Government Report to Parliament, January 17, 1979.

TABLE 10

TRENDS IN SEAT BELT USE RATE 1974-1978, SWITZERLAND (NUMBER GIVEN IN PERCENTAGES)

	1974	1975	1976	1977	1978
City Streets	15	19	78	75	31
Highways	33	35	85	81	50
Expressways	38	42	92	88	62
	Seat Belt Use Not Required		Seat Belt Use Required		Seat Belt Use Not Required and No Sanctions
SWISS BUREAU OF ACCIDENT PREVENTION					

SOURCE: Swiss Government Report to Parliament, January 17, 1979.

is published and distributed to people all over the country. This approach was utilized as opposed to traditional opinion surveys or attitudinal studies.

The Automobile Club of Switzerland (ACS) was one of the organizations consulted for an opinion on the seat belt law before it was enacted as an ordinance. The ACS recommended that "the law be made on a legal basis." A "legal basis": would have required a legislative referendum or a constitutional referendum. However, the government enacted the law as an ordinance instead. The ACS indicated that they have been contacted for their opinion regarding the new movement to enact another seat belt law. The ACS has declined to comment on the new effort being made by the government.

Reduction of Deaths and Injuries

There have been many studies conducted in Switzerland regarding the reduction of death and injuries as a result of wearing seat belts, but these studies usually deal with the effectiveness of seat belts rather than the effectiveness of the seat belt law. However, Dr. Hell of the State Hospital at Basel conducted a study in 1977 to determine if there had been a change in injuries and deaths as a result of the seat belt law. He looked at accidents in 1972, 1973, and 1975 and compared the results with accidents which occurred in 1976. According to Hell, there was a 12 percent drop in deaths of auto occupants in 1976 when the law was in effect as compared to 1975 which was prior to enactment of the law. Hell compiled his data from police accident reports. The police were given special forms to fill out concerning the use of seat belts manifested by the accident victims.

Dr. Walz of the University of Zurich published a paper in 1976 which discusses the change in types of injuries that people sustained as a result of the seat belt law. According to Walz, there was an increase in injuries of the following types: broken collar bones, broken breast bones, broken ribs, and internal injuries (Walz, 1976). Walz is a pathologist, and most of his work concerns postmortem examinations of people killed in accidents. However, in the specific paper referenced, he did not specify how he collected his data.

The Swiss Bureau for Accident Prevention has also performed studies to determine the reduction in injuries and deaths that could be attributed to the mandatory usage law while it was in force. According to one interviewee, the Bureau compiled statistics that showed that the rate of reducing the severity of accidents was different from region to region within Switzerland. The interviewer stated that severity declined as much as 9 to 14 percent during the period that the law was in effect and had increased approximately 22 percent since the law was repealed. Unfortunately, the interviewee did not have any formal reports indicating how the data were collected or any other research particulars. However, an interviewee from a private automobile

association indicated that "the Bureau for Accident Prevention tends to bias its statistics by implying that unaccountable injuries and fatalities are attributed to not wearing seat belts when this may or may not be the case." The interviewee went on to say that generally the Bureau is biased because they take positions that will perpetuate their existence. (The Swiss Bureau for Accident Prevention is a nonprofit organization that is highly supported by the Swiss Government. The Bureau performs safety research of all types.)

Cost/Benefits Associated With the Law

Dr. Walz and Dr. Niederer of the University of Zurich have conducted a cost/benefits analysis of reintroducing the seat belt law in Switzerland. The study had not been released at the time that the two professors were interviewed; however, their preliminary results indicate that 70 x 10^6 Swiss franks per year (42 million U.S. dollars) in benefits could be realized by reintroducing the law. Since the report had not been released to the public, there are no details available on what factors were involved in the calculations. When the report is released, it can be acquired from Mr. Anton Buhler of the Federal Police Department in Berne, Switzerland.

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UNITED KINGDOM

INTRODUCTION

A succession of attempts has been made in recent years to enact mandatory seat belt usage laws in the United Kingdom. While none of these efforts has been successful, a brief review of their history and of the major arguments made for and against the legislation offers an interesting perspective on the prospects for similar action in the United States.

In reviewing the United Kingdom experience, information was developed from three major sources: published reports; telephone interviews; and a limited number of personal interviews. Of particular value were the records of pertinent parliamentary debates; a series of reports issued by the Transport and Road Research Laboratory; and telephone and personal interviews conducted with representatives of the Department of Transport, the police, the medical and insurance professions, and national motoring organizations.

BACKGROUND

Installation of seat belts in the front seat of cars and light vans has been required by law in the United Kingdom since 1965 and 1967, respectively. The annual road worthiness test required of all vehicles over three years old includes a check on the adequacy of the seat belt installation. Belts are not required in the rear of any vehicles.

While installation of seat belts has been required by law for 15 years, the U.K. does not currently have any laws requiring that belts be worn. Current wearing rates average around 30 percent of all drivers and passengers. Usage varies somewhat according to the type of road; wearing rates on motorways (freeways), for example, are generally higher than on urban streets. A succession of national publicity campaigns has been conducted in an attempt to encourage more people to wear their seat belts. The results have been mixed. The most noticeable impact was a significant increase in wearing rates during one particularly intensive campaign, with usage falling off again as soon as the campaign ended.

Since 1973, eight separate bills to make wearing of seat belts mandatory have been introduced in Parliament. While they have differed somewhat in format and emphasis, all eight bills have been relatively simple enabling instruments, designed to permit the Minister responsible to formulate more detailed regulations.

Table 11 summarizes the history of these efforts. They have failed for a variety of reasons, most often related to the relatively low priority accorded to them by the government in power and their consequent failure to pass the various stages of the parliamentary process within the time required.[1]

NATURE OF PROPOSED LEGISLATION

As noted earlier, the various bills which have been proposed have all been designed to permit the Minister to formulate detailed regulations, including regulations specifying:

- what types of vehicles the regulations will apply to;
- the type of belt to be worn and the standard(s) for installation;
- the exemptions, if any, to be permitted; and
- enforcement procedures and penalties, if any.

These and similar issues would be dealt with in the regulations or "statutory instruments" developed by the Minister. In all instances it was understood that the regulations would apply only to vehicles for which the installation of belts was required by law.

Compulsory use of seat belts is both supported and opposed in the U.K. by members of all three major political parties. In the most recent debates on the subject in the House of Commons, the supporters of compulsory use won with a substantial majority. In these debates, there was a "free-vote"

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[1] A bill may be introduced in either the House of Commons or the House of Lords. In the former case, it must pass through a first and second reading before the entire House, an examination in Committee and subsequent Report to the House and a final Third Reading, debate and vote again by the entire House. If a bill passes the Commons, it then passes to the House of Lords to undergo a similar process. The Lords have only delaying powers and the right to propose amendments. Amendments are then considered by the House of Commons, who may accept or reject the Lords' suggestions. The bill becomes an Act after the Royal Assent, a formality. A bill is "lost" if it fails to pass all of its stages by the end of the parliamentary session in which it was introduced. This is normally one year in duration, though it may be cut short if there is an election. Table 11 includes a more detailed description of this process.

TABLE 11

SUMMARY OF U.K. LEGISLATIVE ATTEMPTS TO MAKE SEAT BELT WEARING COMPULSORY

Year	Legislative Measure	Progress
1973-74	Road Traffic Bill (seat belt legislation was only one subject covered)	Passed second reading but General Election intervened.
1974	Road Traffic Bill	Part relating to seat belts removed by House of Lords.
1974-75	Road Traffic (Seat Belts) Bill	Ran out of time. Second reading not completed.
1975-76	Road Traffic (Seat Belts) Bill	Passed second reading (249 votes to 139). Ran out of time during report stage.
1977	Road Traffic (Seat Belts) Bill, Private Peers Bill (Lord Avebury)	Failed second reading in House of Lords by 2 votes.
	Road Traffic (Seat Belts) (No.2) Bill Private Peers Bill (Lord Wigg) Compulsory wearing on motorways only	Failed second reading in House of Lords.
1979	Road Traffic (Seat Belts) Bill	Passed second reading (244 votes to 147) General Election intervened.
1979-80	Road Traffic (Seat Belts) Bill Private Member's Bill introduced in House of Commons	Passed second reading but ran out of time due to assignment of low priority by Government.

NOTES:

Please see attached list.

TABLE 11 (Continued)

PROCESS FOR PARLIAMENTARY BILLS

A bill can be introduced in either the House of Commons or the House of Lords. For a Bill starting in the Commons the stages are:

First Reading	-	the bill is formally introduced, no debate or vote required
Second Reading	-	a debate on the general principle, usually a vote required
Committee	-	a detailed examination in committee, with amendments normally being made
Report	-	a debate in the whole house on whether to accept the amendments or return the Bill to committee for further consideration
Third Reading	-	a final debate and vote on the amended Bill

The Bill then passes to the Lords to undergo a similar procedure there. When the Lords have passed the Bill, the Commons may consider whether to accept Lords amendments. The Lords have only delayed powers. The Bill becomes an Act after the Royal Assent, a formality.

A Bill is lost if it has not passed all its stages when the parliamentary session ends. The session is normally one year, though it may be cut short if there is an election.

A Bill may delegate to a Minister the power to make regulations (statutory instruments) on detailed points. These regulations then have the force of law. A number of procedures exist for bringing statutory instruments into force, with the procedure being specified in the original Bill. These include:

- the affirmative procedure. The Minister proposes the legislation to the House and it only becomes law if there is an affirmative vote

- the negative procedure. The Minister notifies the House of the legislation, which becomes law unless there is a negative vote.

The affirmative procedure gives more opportunity to oppose the detailed regulations.

in which members were not under pressure to follow party policy. Four of the attempts to legislate for compulsory use were government-sponsored, with the first version of the 1979 bill being introduced by the then Labor Secretary of State for Transport. The most recent bill was introduced as a private member's measure without official support from the new Tory government.

MAJOR ISSUES RAISED IN DEBATE

The subject of compulsory seat belt legislation has been the topic of extensive debate both within Parliament and elsewhere. Strong positions have been taken pro and con by the media, special interest groups, and professional organizations.

Supporters of the legislation have argued that compulsory seat belt wearing is the only way in which usage rates can be significantly increased and accidents reduced. It has been estimated that mandatory usage legislation would increase the average wearing rate from roughly 30 percent at present to 80 percent or higher, resulting in a reduction of over 1,000 deaths and 10,000 serious injuries per year. This, in turn, would reduce the cost to society of providing the necessary medical treatment and subsequent public assistance to the victims of traffic accidents and their families.

Proponents of the concept of mandatory usage also argued that society has the responsibility and the right to protect its members from negligent acts which harm both themselves and others, even when such acts primarily jeopardize the individual's own safety. They cited various precedents in British law--primarily the "Factories Act"--which are designed to protect the individual from his or her own actions.

Opponents of the legislation, however, have argued that it is wrong in principle to make an offense, particularly a criminal offense, out of an action whose ill consequences fall only (or mainly) on the perpetrator and not on any third party. The legislation was viewed as a serious trespass on the freedom of the individual to take a risk when only his or her own safety was at stake. While recognizing the fact that innocent third parties are frequently involved in road accidents, opponents of mandatory usage laws argued that a driver's wearing or not wearing a seat belt was likely to have little or no effect on the consequences of an accident for others. It was argued strongly that the violation of the principle of individual freedom of choice implicit in mandatory usage legislation was not justified by the potential benefits either to the individual or to society, and that such a violation represented a more serious threat to society than did the problems of road safety and traffic deaths.

Opponents have also argued that there would be serious problems of enforcement, largely based on the difficulties of determining whether the occupants of a car were wearing seat belts without actually stopping the vehicle. Considerable concern was expressed by one member (the current Tory Minister of Transport) about the negative impact that such enforcement would have on already strained community and police relations. It was again argued, strongly, that the problems involved and potential damage to current relations between the police and the community were not justified by the benefits which would accrue in terms of reduced deaths and injuries.

The questions of penalties and exemptions have also been discussed in connection with the problem of enforcement. Penalty proposals have ranged from no penalty to a relatively stiff fine accompanied by stringent enforcement. Opponents of the legislation have expressed concern over the costs involved and over the effect of less than 100 percent enforcement on public attitudes. It was argued that a law that was unpopular and difficult to enforce would tend to throw all laws into public disrepute. Persons arguing both for and against penalties have cited the experience of other countries. The Magistrates Association favored a fixed penalty similar to that used for parking fines, but in the most recent parliamentary debate there was no strong support for this. The 1979 bill proposes that cases be dealt with in the Magistrates Court with a maximum penalty of £50.

Exemptions have also been the subject of much debate. It has been generally agreed that they would include:

- drivers of emergency vehicles (police cars, fire engines, ambulances);
- persons driving a vehicle in reverse;
- persons with a medical certificate of exemption; and
- delivery vehicles making frequent stops.

Under the proposals of the 1979 bill, persons for whom it is advisable on medical grounds not to wear a seat belt would have to obtain an exemption certificate from a doctor. If the person was not carrying his certificate when a policeman stopped him, he would have to present the certificate at a police station within five days. (The same procedure is used for driving licenses and other documents.) The medical profession (probably through the Medical Commission for the Prevention of Accidents) would advise on medical grounds for exemptions and would circulate guidance to medical practitioners. The decision on granting a certificate would be at the doctor's discretion. No details of medical exemptions have been published, though the Medical Commission has done some work on the question.

As noted above, drivers of emergency vehicles and persons driving a car in reverse would generally be exempt, though there has not been final agreement on this issue. It has also been agreed that taxi cab drivers and drivers of delivery vehicles making frequent stops should be exempt. However, attempts to define exempted vehicles caused problems when the 1979 bill reached the report stage. These problems were exploited by members who wished to be obstructive.

At one stage, the Department of Transport favored exempting children from seat belt wearing, but in 1979 it was suggested that children should be encouraged to sit in the rear seats and, when in front seats, should not be exempt.

Some opponents have expressed concern over the possibility--generally admitted to be rare--that injuries could be made more serious in certain circumstances as a result of seat belts being worn. The examples usually cited are when a car catches fire or plunges into a body of water, trapping the occupants inside their belts. It is generally accepted, however, that this is an extremely unlikely situation with no empirical evidence to indicate that wearing of seat belts in such circumstances increases the already extremely high risk of injury.

Opponents of the legislation have also objected to the legal form of the proposals and the parliamentary process being followed. They have argued that Parliament was being asked to approve a vague bill which would leave many important details to be settled in the subsequent draft of the regulations, with members having little or no opportunity to scrutinize the resultant statutory instruments. This concern is particularly strong in cases where the "negative procedures"[1] is followed, and the power to legislate is partly removed from Parliament. The recent series of seat belt bills have been only some of a relatively large number of measures of this type that have been proposed giving Ministers wide powers to formulate and issue regulations. Many members of Parliament have objected strongly to this procedure in principle.

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1 Several different procedures exist for bringing such statutory instruments into force, including:

- the "affirmative procedure," wherein the Minister responsible for developing the regulations proposes them in detail to the House and they become law only if there is an affirmative vote; and

- the "negative procedure," in which the Minister simply notifies the House of the legislation, which then becomes law unless there is a negative vote.

Finally, it should be noted that in the most recent debates the issues of the effectiveness of seat belts in preventing or reducing injuries has not been a serious issue of discussion. It has been generally accepted by all parties that use of seat belts significantly reduces injuries. The opposition to the legislation has rather focused on what are considered to be the much broader and more important principles involved concerning violation of individual freedom of choice and the legislative process.

ATTITUDES OF OUTSIDE ORGANIZATIONS

The issue of mandatory seat belt usage has received considerable outside attention. In general, the media have been supportive of the concept. Attitudes of professional and special interest organizations have varied somewhat.

Motoring Organizations

The Automobile Association (AA) and the Royal Automobile Club (RAC) provide members with a patrol service to assist with breakdowns and a range of other services (legal advice, vehicle inspection, etc.). They also make representations to the government on policy matters.

The AA, the larger of the two, favors compulsory seat belt legislation and circulated a brief to members of Parliament before the recent debate. The brief quotes the results of attitude surveys conducted by the AA and by Market Opinion Research International. The RAC opposes compulsory seat belt legislation on the grounds that it would be an infringement of individual liberty, that there would be enforcement problems, and that compulsion would reduce the incentive to improve seat belts.

The Institute of Advanced Motorists, a body which seeks to improve driving standards, supports compulsory seat belt wearing.

Medical Organizations

Both the British Medical Association and the Royal College of Surgeons have declared that they strongly favor compulsory seat belt legislation.

The Medical Commission on Accident Prevention has advised the Department of Transport on medical exemptions to seat belt laws. The Commission was established by the BMA and a number of the Royal Colleges.

Law Enforcement Bodies

The Magistrates Association is generally opposed to compulsion, partly because it believes there would be enforcement problems. If there is to be compulsion the Association favors a fixed penalty procedure.

The Police Federation favors compulsion and believes that enforcement will not involve any great problems.

Other Organizations

The Royal Society for the Prevention of Accidents has lobbied strongly in favor of compulsory seat belt legislation.

Insurance Issues

The British Insurance Association, while having no official position, has assembled considerable amounts of material on the subject.

A decision of the Court of Appeals in 1975 held that not wearing a seat belt could constitute contributory negligence. Damages to an unbelted accident victim should be reduced by 25 percent if there was evidence that wearing a seat belt would have entirely prevented the injury. Damages should be reduced by 15 percent if wearing a belt would have reduced the seriousness of in injury.

It is not clear whether this legal point is widely understood by the public or whether it has influenced people to wear seat belts more frequently.

WHY THE LEGISLATION HAS FAILED

The principle of compulsory seat belt wearing has had substantial support in three second reading debates in the House of Commons. Opinion in the House of Lords appears to be less favorable. Two private peers bills have failed, but it is questionable whether the Lords would strongly oppose a government bill with wide support in all parties. The proposed legislation has not aroused much public interest. Lobby organizations are divided but tend to favor the legislation.

The attempts to legislate for compulsory seat belt wearing have failed primarily because the government has not given high priority to the bills, particularly in allocating time for debate. It is difficult to determine the underlying reasons for this. Possibly the first 1979 bill was not a serious attempt to enact legislation, but rather a way of filling parliamentary time when the government was in difficulties. At the time of the second reading debate, it had become most certain that a general election would be called before the bill could complete its passage. In the case of the most recent bill, the major reason for its failure was a combination of concern over the issues of individual freedom, the parliamentary process alluded to earlier, and the fact that the measure, as a private members bill, was allocated only low priority by the government.

Parliamentary procedures make it possible for obstructive opponents of the legislation to waste time and effectively talk out the proposals (unless the government gives the matter high priority). Opponents may have been helped by the general vagueness of the government proposals on detailed points. Certain of the legislative proposals have not been very carefully prepared.

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WEST GERMANY

INTRODUCTION

The primary method of data collection in West Germany was by interviews with representatives of the German government, private organizations, and a private traffic safety consultant. The organizations represented by the interviewers and the cities in which the interviews took place were:

- German Association of Third Party, Accident, Motor Vehicle, and Legal Protection Insurers (Insurance Association), Munich;
- German Automobile Club, Munich;
- Federal Institute of Streets, Koln;
- Ministry of Transportation, Bonn;
- Social Democratic Party, Bonn; and
- Free Democratic Party, Bonn.

A number of printed reports were also collected and reviewed. Certain of the reports were collected prior to the interviews, and other reports were obtained from the respondents during the interviews. All but one of the reports collected, both those collected in Phase I of the study and those collected during the personal interviews, were written in German. The reports were translated, not in detail, but to the depth required to determine if they contained specific information, pertinent to the seat belt law, that is of direct interest to DOT. Unfortunately, many of the documents did not contain information of specific interest to DOT. The discussion that follows synthesizes the information of interest found in the printed documents and collected during the interviews.

BACKGROUND AND HISTORY

According to information received from interviewees, the seat belt law in Germany evolved from a concern by various groups for the number of fatalities occurring each year. There was no particular person or group of people who could be cited as spearheading a drive for the law. However, a number of organizations and people favored a seat belt law based on their knowledge of the effectiveness of seat belts.

It was stated by an interviewee that immediately prior to 1970, the number of fatalities associated with automobile accidents averaged between 16,000 and 17,000 a year. In 1970, the figures jumped dramatically to approximately 20,000 fatalities. This alarming increase prompted the Minister of Transportation to request from his staff an explanation for the sudden jump in fatalities. The explanation received was that the published fatality figures for 1968 and 1969 were apparently lower than the actual number of fatalities experienced and the fatality projections for the 1970s indicated even higher death rates in the 1970s than had been experienced in the 1960s.

The interviewee went on to say that in 1973 the same Minister of Transportation commissioned a study to investigate all causes of automobile deaths with special emphasis on alcohol, speed, and seat belt use. The study results indicated that the institution of speed limits would be the most effective means of accident reduction, especially for certain roadway geometric design considerations. This led to the imposition of speed limits, but only for rural roads. The Minister's attempt to establish speed limits for all roads resulted in his removal from office. Today there are speed limits imposed only for special locations or conditions, such as curves or rural or wet roads. (It was not possible to obtain a copy of the study commissioned by the Minister of Transportation. The interviewee indicated that the study was old and no longer considered important because of the problems associated with the attempt to institute speed limits.)

However, as a result of the above referenced study, studies performed by the Insurance Institute of Germany and by Dr. Waltz of the University of Zurich in Switzerland, the Minister of Transportation instituted a mandatory safety belt usage law. Since the law was instituted by the Minister instead of being voted onto the statutes by the Bundestag (lower house) and/or Bundesrat (upper house), it was not possible to institute fines for noncompliance; however, the law has been declared constitutional by the German courts. (The studies by the Insurance Institute of Germany and Dr. Waltz, mentioned above, investigated the effectiveness of seat belts in reducing injuries and fatalities. They did not directly deal with the effectiveness of seat belt laws. Waltz in particular is well respected and has published many articles on seat belts. However, most of his articles emanate from the perspective of forensic concerns rather than the seat belt law concerns of this study.)

SPECIFICATIONS OF THE LAW

The mandatory seat belt usage law became effective on January 1, 1976. The law requires that seat belts must be worn by front-seat occupants while the vehicle is being driven. The law presently covers only passenger cars

and vans. Although the law specifies that the seat belt must be a three-point retractable belt, it also allows for installation of an equivalent system, such as the Volkswagen automatic belt system. According to one interviewee, a member of Parliament who works for Volkswagen (it is not illegal in Germany for Parliament members to have outside income--they only have to declare who provides the income) brought a VW automobile to Parliament when the law was being written, gave various members a ride in the car, and convinced them that the law should not exclude "comparable systems." The declaring of VW's automatic belt system as comparable to the three-point retractable belt system was a political decision, according to one interviewee.

Penalty for Noncompliance

The law does not call for a fine for noncompliance. However, several interviewees indicated that, if and when the law is changed to incorporate fines, the fine probably would be 40 marks (approximately $22 U.S. at the current rate of exchange).

Exceptions

The law allows exemptions for the following:

- taxi drivers;
- rental car drivers;
- delivery vehicles;
- vehicles moving at a very slow speed (speed equivalent to walking);
- vehicles driving in reverse;
- people with medical exemptions provided by a doctor; and
- children under 12 years of age. (However, children under 12 years of age must sit in the rear seat when riding in an automobile.)

SEAT BELT HARDWARE REQUIREMENTS

Beginning January 1, 1974, all new passenger cars and vans in Germany had to be fitted with three-point retractable safety belts on the front seats.

Beginning in 1976, all cars built since 1970 had to be retrofitted with three-point retractable safety belts. Beginning May 1979, manufacturers had to install belts in the back seats of all new cars. The German Department of Transportation conducted extensive surveys in January and November of 1974 to determine the percentage of cars that had safety belts installed. They observed 14,500 passenger cars in January of 1974; 8,500 cars in November of 1974; and 1,200 cars in July and August of 1975. They found that 41 percent of the vehicles observed in January 1974, 53 percent of those observed in November 1974, and 64 percent of those observed in July and August of 1975 had belts installed.

IMPLEMENTATION OF THE LAW

Since there is no penalty associated with not wearing one's belt, the German government has not set up any specific programs for implementing the seat belt law. However, prior to adoption of the law, public information and education campaigns were conducted to increase seat belt usage.

Public Information and Evaluation Programs

The German government, as well as nongovernmental organizations supporting mandatory safety belt usage such as the Insurance Association and the German Automobile Club, used several mass media approaches to educate the public and to encourage motorists to wear seat belts. The mass media approaches included radio, television, magazines, and newspapers. While one study attempted to evaluate the effectiveness of the mass media campaigns, documents that presented detailed documentation on how the campaigns were conducted or what the specific content of the messages were, were not obtainable from the interviewees or other sources contacted.

In one survey conducted from June 1974 to September 1975 by H. Volks of the Federal Institute for Streets, an evaluation was made of the effectiveness of radio, television, newspaper, and magazine advertisements. The German researchers examined 45 radio, 39 television, and 3,540 newspaper and magazine advertisements. At the end of the media campaign, only 12 percent of drivers and 29 percent of nondrivers did not know about the advertising campaign. Most people were aware of the advertisements from television and newspapers. While beneficial in informing the public that a new law was imminent, the mass media and public information programs were not effective in altering the behavior of the public at a significantly high or sustained level regarding increased belt usage; 18 percent of the people interviewed in the 1974-75 study indicated that they were strongly influenced by the campaigns; 23 percent were less strongly influenced; 44 percent indicated that they were only slightly influenced or not influenced at all by the campaigns; and 15 percent made no response (Volks, 1978).

Enforcement of the Law

Based on what could be determined in the interviews, because of the fact that there is no penalty associated with the seat belt law, there has been no attempt on the part of the German government to enforce the law. In fact, one high level government official made this statement: "The law is a recommendation rather than a mandatory edict." Police officers, while in the process of enforcing other traffic violations, may inform vehicle occupants that the law requires them to wear their safety belts. However, if the person doesn't buckle up, the police officer can take no further action. One interviewee indicated that because of the shortgage of police officers in Germany, mandatory enforcement would pose some problems for the police regarding coverage of possible offenders. However, the feeling by all queried was that the police would willingly enforce the law if so required.

COURT DECISIONS IMPACTING IMPLEMENTATION

There have been several court decisions, from courts at various levels, that impact the implementation of seat belt laws in Germany. The courts have ruled that a person not wearing a seat belt and injured in an accident should not receive full insurance compensation for the injuries sustained. According to several people interviewed, the first incident apparently occurred when an insurance company refused to pay full compensation to an accident victim who had not been wearing a safety belt. The victim brought a suit against the insurance company in order to obtain full compensation, and the judge ruled in favor of the insurance company. The court ruled that "Auto occupants injured in accidents, who were not wearing seat belts at the time but were otherwise blameless, can be considered accessories to the accident and have their compensation reduced by insurance companies." It was not possible to obtain copies of the court proceedings, but copies of articles in newspapers, reporting on the decision, were obtained. Subsequent to the initial decision regarding reduced insurance compensation, several "lower courts" (state courts) plus a federal "high court" have made similar rulings. According to one interviewee, the highest reduction in compensation stipulated in any case was 50 percent.

The interviewees were both for and against the recent court rulings. Those in favor felt the rulings would induce motorists to wear their safety belts at a significantly higher rate. Several of them addressed an inherent drawback in these rulings that stems from the necessity of proving that not wearing a belt caused the victim to sustain avoidable injuries. The insurance companies hire lawyers and expert accident investigation witnesses to support their position that failure to wear the seat belt contributed to the

amount of injury sustained by the victim of a particular accident. The injured party therefore counters with his own lawyer and expert accident investigation witness to support his or her case and/or to disprove the findings of the insurance company's witnesses. This process is very costly for individuals, especially those belonging to the lower socioeconomic strata, and therefore constitutes an inequitable situation. Nevertheless, the interviewees felt that the inequity is justified by the greater benefit to society which will accrue if the court decisions are instrumental in increasing belt usage.

Those opposed to the recent rulings felt that expert opinion (required by the courts to determine if not wearing a belt caused excessive injury to the victim) in many cases will not represent the opinion of a true expert. Two interviewees indicated that there are only two or three people in Germany who have the true expertise to examine an accident and render a valid opinion on the extent of injury that could have been avoided by the victim's wearing a safety belt. These two or three people most likely would not be available for all of the court cases likely to ensue, and therefore the interviewees felt that many court decisions would be based on testimony from pseudo-accident-investigation experts and thus would not be technically valid. They also felt that the precedence set by the court rulings favors the economically advantaged and the insurance companies since these two groups would be able to hire "top quality" lawyers and accident investigation experts, and therefore be more likely to win favorable judgments, while economically disadvantaged people in many instances could not hire top quality experts.

EFFECTIVENESS OF SEAT BELT LAW

It was not possible to find much documented information on the effects of the law. There are available, however, many studies on the effectiveness of seat belts. It was apparent from the interviews that the German government, convinced of the efficacy of seat belts for saving lives and reducing certain types of injuries when worn properly, and inspired by the success of mandatory legislation in Australia, decided that a seat belt law would be beneficial in saving lives in Germany. However, since the law was promulgated without the inclusion of a penalty for noncompliance, and since several attempts at instituting such a penalty have met with strong resistance, the law is unenforceable. Because of this, there has been little incentive to attempt to determine the effects of the law. There were some belt usage and public attitude studies conducted and these will be discussed in the paragraphs that follow.

Belt Usage

Safety belt usage studies were conducted by the Federal Institute for Streets prior to enactment of the law to determine the rate at which people were wearing belts. Observers were stationed at service stations and they observed whether or not motorists were wearing their seat belts as they drove into the station. The usage rate varied according to the type of facility, with city streets exhibiting the lowest rate at approximately 15 percent; country roads next, with approximately 27 percent usage; and autobahn (high-speed expressways) exhibiting the largest usage rate at approximately 47 percent. The weighted average of these usage rates was 25 percent (unpublished data from the Federal Institute for Streets).

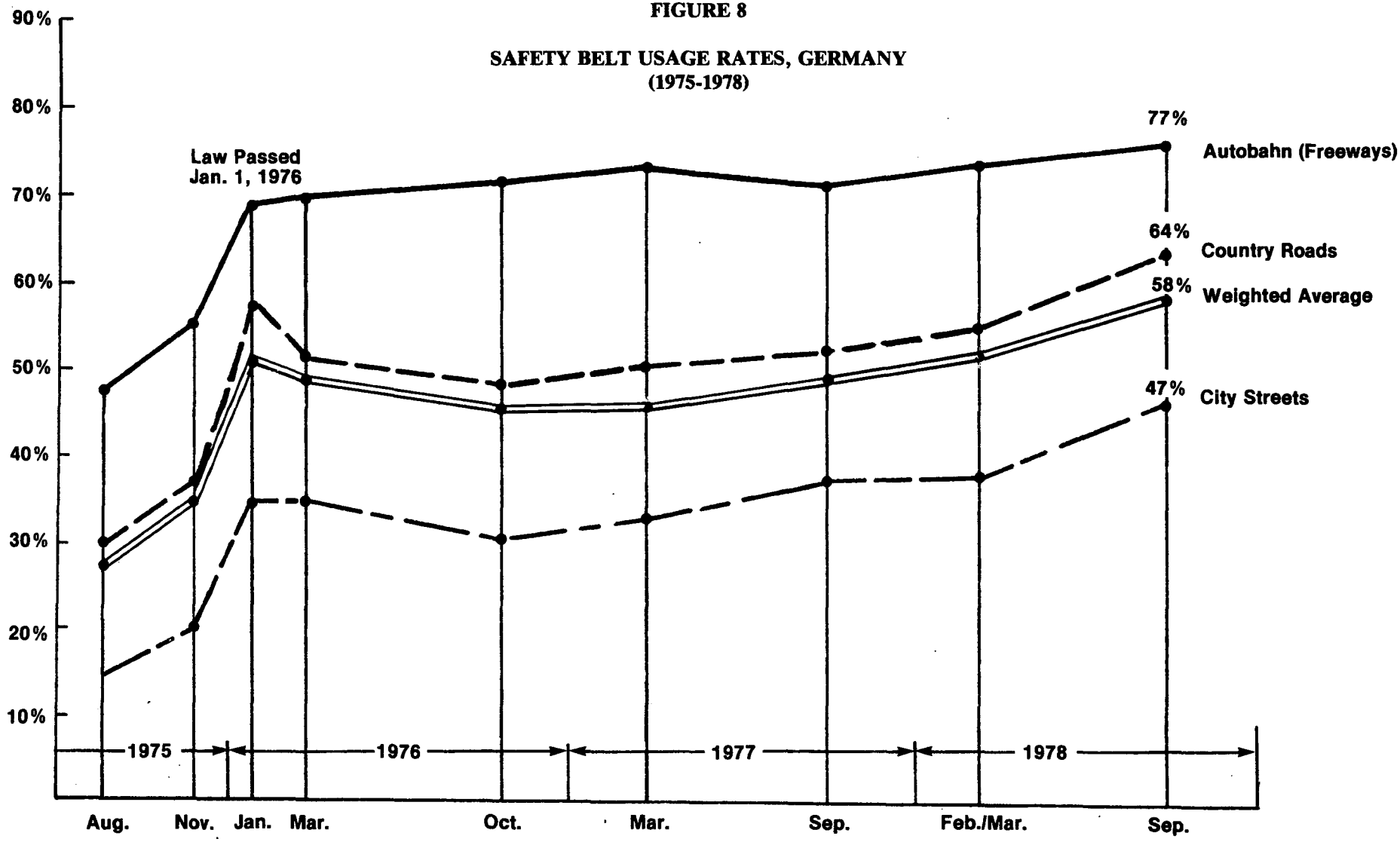
Change in Usage Since Enactment of Law

Even though there is no penalty for noncompliance in Germany, statistics compled by the Federal Institute for Streets (based on observing drivers at gasoline stations) indicate that the belt usage rate is significantly higher since passage of the law. The interviewees indicated that German people tend to be very law abiding and therefore wear seat belts at a significantly higher rate even though there is no fine for noncompliance. Figure 8 is a graph that shows the change in belt usage, by road facility type and year, just prior to and subsequent to passage of the law. The graph shows that there was a slight rise in usage between August and November 1975. This rise was attributed to the public information and education campaigns. The big change in usage rate occurred in January 1976 when the mandatory usage law went into effect. (Figure 8 was developed by the Insurance Association [HUK Verband] from unpublished data collected by the Federal Institute for Streets.)

Figure 8 indicates that belt usage on autobahns is high, relative to the usage rate on country roads and city streets. The usage rate for autobahns exhibits a rising tendency for each year, except in 1977 when it declined slightly. However, the usage rate on country roads and city streets declined immediately after the law passed and then began a rising trend. The reason for the decline in usage after the initial increase has been attributed to the public's realization that there was no penalty for not wearing belts. The reason for gradual increase since the initial decline after passage of the law is attributed to the German people's inclination to be law abiding plus their knowledge and belief that seat belts do save lives. Several respondents indicated the usage rate on autobahns is high because of the extremely high speeds driven on the autobahns and people's realization that the autobahns are therefore unsafe.

FIGURE 8

SAFETY BELT USAGE RATES, GERMANY
(1975-1978)



SOURCE: HUK VERBAND (This figure was redrawn from a hand drawn graph given to the researchers.)

Attitudinal Studies

There were some public attitude surveys conducted by the Federal Institute for Streets prior to instituting the law. However, the surveys conducted did not ask respondents whether or not they would favor the imposition of fines for noncompliance with a seat belt law; it only asked their opinion about the desirability of a seat belt law. According to an interviewee, the majority of people surveyed (80 percent) indicated that they were not opposed to mandatory safety belt usage. However, observations made at the proximate time of the attitude surveys revealed an actual wearing rate that was considerably lower. It appears that, at the cognitive level, the German public agrees with the benefits that could be gained from a seat belt law but, at the affective level, most refuse and/or avoid wearing seat belts. The seat belt wearing rate at the time the attitudinal survey was taken was an average of approximately 25 percent for all types of roads.

Change in Public Attitude

The Federal Institute for Streets attempted to determine if there has been a change in the public attitude towards wearing safety belts. It found that there is no correlation between what one says about his or her belt-wearing habits and that person's observed behavior. Observers were stationed at gasoline stations on city streets and country roads and at gasoline stations and rest stops on motorways to see if people were wearing their safety belts as they drove into the station. The vehicle drivers then were approached and asked to complete a short questionnaire about their belt-wearing behavior. The analysis indicated little correlation between what was observed and what was provided in the written responses. The government concluded that people lie about their actual behavior, so asking about it produces invalid results. (The interviewee, an employee of the Federal Institute for Streets, did not have a copy of this reported study.)

Psychological Factors Associated with Public Attitudes

Some research has been conducted regarding the psychological factors associated with the German public's attitude concerning seat belt laws. A private consultant (Gerhard Bliersbach) has conducted several studies concerning the psychological factors associated with the public's attitude towards seat belts. In an interview, Bliersbach made the following statement: "Psychologically, I found that driving has to do with some youthful, robust psychological set. This youthful attitude allows one to disavow the danger in driving. The wearing of seat belts is a constant reminder of the danger involved in driving--people don't want to recognize this. The basic fear of and main hindrance to wearing seat belts is that [people] will be trapped in their cars by the belt." A government official expressed a similar viewpoint in an interview. He stated: "The main reason for not wearing belts

is associated with the psychology of buckling-up which is a tacit admission that it is in fact dangerous to drive automobiles. On the other hand, the rate of wearing belts is much higher on the autobahn because people admit to themselves that fast driving is dangerous."

According to Bliersbach, he has conducted various studies that support his beliefs. In one such study conducted in 1972 by Hermann-Josef Berger, Gerhard Bliersbach and Ralf G. Dellen, the authors conducted 20 pilot interviews and 100 semistandardized personal interviews to obtain the respondents' opinions regarding the wearing of seat belts. The findings are based on 100 interview sessions, each involving three or four interviewees. A total of 806 licensed drivers participated in the interviews. Some of the study findings were as follows:

- Many respondents had no strong inclination to use or buy seat belts and tried to avoid talking about it;

- Many respondents feared seats belts would trap them in their cars, thus preventing their fleeing from the automobile in the event of a fire;

- Putting on seat belts is not perceived as part of the process of getting ready to drive--it is perceived as a meaningless act. Most psychological factors associated with driving are aimed at the pleasure of fast driving, acceleration, etc.;

- The respondents perceived certain technical problems with seat belts such as failure of belt buckle to open, belt induced injuries, and failure of belt to operate properly; and

- The authors of the study identified two psychological environments in which drivers operate: (1) the "living out" environment--characterized by fun associated with driving; and (2) the "cautionary" environment--characterized by emphasis on safety and the rules of the road (Berger, Bliersbach and Dellen, 1973).

Another area of findings in the study pertained to the relationship of drivers and their seat belts. The following was reported:

- Ten percent of the interviewees had entrenched opposition to seat belts, do not use them, have fear of being trapped in their car by belts, and believe that belts disrupt the "living out" feeling or fun of driving;

- Sixteen percent of the interviewees had less entrenched opposition--they do not wear their belts but are not as forcefully against seat belts as the entrenched opponents;

- Twenty-three percent of the interviewees were ambivalent;

- Thirty-two percent approved of seat belts but with some reservations; and

- Eighteen percent approved of seat belts and indicated that they use them. [Note: The usage rate as determined by observation indicated a 12 percent usage rate in rural areas.] (Berger, Bliersbach, and Dellen, 1973.)

Reduction of Death and Injuries Resulting from the Law

According to a government official, the German government has not sponsored any studies to determine the effectiveness of the safety belt law in reducing injuries and fatalities because of the fact that there is no penalty for noncompliance with the law. However, according to an unpublished paper written by Gerhard Bliersbach, the government did release a brochure about two years ago that attempted to estimate how many lives were being saved by the use of seat belts based on a comparison of wearing rates in 1975 and 1976. According to Bliersbach, the government fictitiously estimated that 1,700 lives had been saved based on an assumed reduction in fatalities of 50 percent and based on an observed wearing rate of approximately 65 percent. Bliersbach gave several reasons why he felt the government's estimate was too high. They are as follows:

- The government estimate did not take into account the fact (an assertion by Bliersbach) that drivers who are involved in accidents (high risk drivers) use seat belts much less than those who drive autos without getting into accidents.

- The effectiveness of seat belts is highly dependent on whether or not the belt is being worn properly (observed usage rates do not provide information on this factor.)

- The 50 percent reduction factor has not been demonstrated in any country that has adopted seat belt usage laws.

Costs/Benefits Associated with the Law

It was not possible to obtain any quantifiable information on the costs/benefits of the law. This is consistent with the fact that very little bona fide research regarding the seat belt law is being conducted.

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DETAILED DISCUSSION OF COUNTRIES NOT VISITED BUT WHERE INFORMATION WAS OBTAINED

Case studies were also prepared for the countries which were not visited but which did provide information on their seat belt laws. These case studies have been presented in the same format used for the countries where personal visits were made. Countries in this category are as follows:

- Australia;
- Austria;
- Belgium;
- Denmark;
- Finland;
- Luxembourg;
- Netherlands;
- Norway; and
- Spain.

Following are case studies for each of these countries.

AUSTRALIA

INTRODUCTION

The primary means for collecting data in Australia was through literature searches conducted by the PMM&Co.'s Washington, D.C., and Sydney, Australia, offices and through direct telephone contacts with identified Australian officials. The telephone contacts were made by PMM&Co.'s office in Sydney. The primary sources for the collected data included:

- Australia: Commonwealth Department of Transport, Office of Road Safety, Road Safety Research, and Road Safety Information Service; and Commonwealth Bureau of Census and Statistics.

- New South Wales: Department of Motor Transport, Traffic Accident Unit; and Government Gazette.

- South Australia: Road Traffic Board.

- Victoria: Road Safety and Traffic Authority (formerly Traffic Commission); Royal Australasian College of Surgeons, Road Trauma Committee; Department of Civil Aviation; and Executive Council, State of Victoria.

Complete citations of the individual documents can be found in the bibliography. The one reference that provides the most thorough and up-to-date coverage of the subject is "Fitting and Wearing of Seat Belts in Australia: The History of a Successful Countermeasure" (Milne, 1979). There were many other pertinent documents found, but Milne's was the latest written, and it directly addresses many of the topics of interest. Most of the reports obtained deal with the engineering aspects of seat belts and not the various aspects of interest concerning the seat belt laws.

By January 1, 1972, compulsory seat belt usage laws had become effective in all Australian states and territories, making Australia the first nation to mandate the wearing of automobile seat belts. Both direct contacts with people in several countries and the seat belt literature indicate that Australia's seat belt experience is used as a prototype by other nations who have enacted seat belt laws.

BACKGROUND AND HISTORY

In 1955, the Australian Road Safety Council requested the Australian Motor Vehicle Standards Committee (AMVSC) to report on the possibilities of

introducing built-in safety features into new vehicles. The AMVSC decided there was an immediate need for an automobile seat belt specification and, in 1958, referred the matter to the Standards Association of Australia (SSA). For more than a decade, the SAA drafting committee played a key role in developing occupant restraint standards, the first of which was approved in April 1961 (Milne, 1979).

Meanwhile, in May 1959, the Senate of the Commonwealth Parliament established a Select Committee to investigate "the best means of promoting sound road safety practices in Australia." The Committee reviewed many research efforts regarding the effectiveness of seat belts and, in its September 1960 report, recommended that: "The motor trade should install seat belts of an approved standard in all motor vehicles. Road safety authorities should give publicity to the advantages of wearing seat belts" (Milne, 1979).

During the same year, the first incidence of compulsory installation and wearing of seat belts took place in Australia, without benefit of the Select Committee's recommendations. The Snowy Mountains Authority (SMA), which was responsible for the construction of one of the largest hydroelectric systems, installed seat belts in more than 3,000 seats in 78 different vehicle models, including tractors, cranes, and over-snow vehicles, and required that the belts be used whenever the vehicles were in motion. The penalty for noncompliance was immediate dismissal (Henderson, 1975).

The unprecedented SMA program was amazing both in its thoroughness of approach and in its effectiveness. It investigated alternative belt configurations, concluding that the lap belt should not be fitted unless it was impracticable to fit a more effective type; it developed a technical specification for the belts including a dynamic test; it issued all drivers with a booklet that gave the reasons for belt installation and the advantages of the adopted designs; it met with good results--in the first 21 accidents, there was only one case in which a belt was not worn, and, "despite a number of serious vehicle accidents involving head-on collisions, vehicles running into trees and other obstacles at high speeds, and vehicles rolling down hillsides...not one serious injury to driver or passenger had occurred" within the first few years following inauguration of the program; further, the program evaluated the effects of the action, widely publicized the campaign's effectiveness, and encouraged employees and contractors to install belts in their own vehicles (Milne, 1979).

One other effort was of major importance in establishing the early climate of opinion concerning the wearing of seat belts. Analysis of police reports of about 40,000 casualty accidents that occurred in Victoria during 1963 revealed that urban drivers wearing seat belts were 30 percent less likely to be killed or injured in accidents and rural drivers, 22 percent less likely (Milne, 1979).

In Victoria, there were several years of concentrated lobbying for compulsory seat belt wearing legislation. Backers of the legislation included the Australian Medical Association, the Victorian Police Surgeon, the Royal Automobile club of Victoria, the National Safety Council, and the Royal Australasian College of Surgeons. Finally, on November 17, 1970, the Victorian government accepted the September 1969 recommendation by a Parliamentary Joint Select Committee on Road Safety to require vehicle occupants to wear seat belts. Thus, Victoria became the first State in Australia to enact seat belt legislation. The success of the Victorian legislation prompted other states and territories to introduce similar legislation. By 1972 compulsory wearing of seat belts applied throughout Australia.

SPECIFICATION OF THE LAWS

The dates that the legislation became effective in each state are shown below (Yearbook of Australia, 1973):

Jurisdiction	Effective Date
Victoria	12/22/70
New South Wales	10/1/71
Tasmania	10/13/71
South Australia	11/29/71
Western Australia	12/24/71
Australian Capital Territory	1/1/72
Northern Territory	1/1/72
Queensland	1/1/72

Table 1 summarizes the legislation in each state and territory in terms of general requirements, exemptions, and penalties. Also, information on retrofitting of cars with seat belts is provided where such data were obtainable. All laws apply generally to all car occupants for whom seat belts are available. There are exemptions that vary somewhat from state to state. Penalties also vary from state to state.

Penalty for Noncompliance

The penalty for noncompliance varies from state to state and ranges from $6 Australian and one demerit in Queensland to $200 Australian or six months imprisonment in Northern Territory to $300 Australian in South Australia. Table 1 lists the penalty for noncompliance in each of the Australian provinces (Note: One U.S. dollar is equivalent to 1.161 Australian dollars.)

TABLE 12

SEAT BELT WEARING AND RETROFITTING LEGISLATION BY STATE AND TERRITORIES IN AUSTRALIA

Basic Requirement	Exemptions						Penalty	Retrofitting Requirement
	Reversing	Medical	Min. Age	Max. Age	Local Deliveries	Other		
NEW SOUTH WALES. "No person shall, while occupying a seat position in a motor car to which a seat belt has been fitted for the seat position, drive or travel, upon a public street, in that motor car unless wearing that belt and the belt is properly adjusted and securely fastened" --Regulation under the Motor Traffic Act	X(6)	X	8(1)	69(4)	X	Taxi occupants, certificate from Commissioner of Motor Transport	$20	From April 1973 belts have to be fitted in the front seats of cars and derivatives first registered on or after 1 January 1965
VICTORIA. "A person shall not be seated in a motor car, that is in motion, in a seat for which a safety belt is provided unless he is wearing the safety belt and it is properly adjusted and securely fastened" --Motor Car Act	X(6)	X	(2)		X	Certificate from Chief Commissioner of Police	$30	From July 1971 belts have to be fitted to the front seats of all cars (first registered on or after 1 January 1951), prior to the issue of a roadworthiness certificate (which is required on change of ownership). From February 1974 belts have to be fitted in the front seats of all cars manufactured after 1 October 1964.
QUEENSLAND. "A person, when occupying in a motor vehicle a seat position to which a seat belt has been fitted, shall not drive or travel, upon a road, in such motor vehicle unless he is wearing such belt properly adjusted and securely fastened" --Regulation under the Traffic Act	X(6)	X	8		X	Certificat from Commissioner for Transport	$6 and 1 demerit point	
SOUTH AUSTRALIA. "A person shall not be seated in a motor vehicle that is in forward motion in a seat for which a seat belt is provided unless he is wearing the seat belt and it is properly adjusted and securely fastened" --Road Traffic Act	X	X	8	70(4)	X	Passenger in emergency vehicle, cerfiticate from Road Traffic Board, persons wearing child restraints	Up to $300(3)	From 1 January 1967 seat belts were required in the front seats of all new passenger vehicles.
WESTERN AUSTRALIA. "A person shall not, while occupying a seat position in a motor vehicle to which a seat belt has been fitted for that seat position, drive or travel upon a road unless he is wearing that seat belt and the seat belt is properly adjusted and securely fastened" --Road Traffic Code	X	X	5	69(4)	X		$10	
TASMANIA. "No person shall be seated in a motor vehicle that is in motion, in a seat for which a seat belt is provided, unless--(a) that person is wearing a seat belt; and (b) that seat belt is properly adjusted and securely fastened" --Regulations under the Traffic Act	X(6)	X	(7)		X	Certificate from Registrar of Motor Vehicles	$20	
AUSTRALIAN CAPITAL TERRITORY. "If at any time while a prescribed vehicle, the driving position of which is fitted with a seat belt is being driven forward, or has its engine running, on a public street, the person occupying the driving position(5) of that prescribed vehicle does not have that seat belt securely fastened around him or, having it fastened around him, does not have it appropriately adjusted, that person is guilty of an offense" --Motor Traffic Ordinance	X(6)	X	14	70(4)	X	Certificate from Registar of Motor Vehicles or from any other appropriate jurisdiction in Australia, defendant can also establish that failure to comply was not unreasonable	$20	
NORTHERN TERRITORY. "A person in a motor vehicle that is moving on a public street shall not, unless he suffers from a physical disability that makes it impracticable or undesirable for him to do so, sit in a seat for which a safety belt is provided unless he is wearing the safety belt and it is properly adjusted and securely fastened" --Traffic Ordinance	(8)	(8)	(8)		(8)	Certificate from Registar of Motor Vehicles	$200 or 6 months imprisonment(3)	

Notes:

(1) From 1 March 1977 all children under 8 riding in passenger cars and derivatives must:
--wear a suitable child restraint or adult seat belt where available
--or where none is available the child must ride in the back seat.

(2) From January 1976 children under 8 can only ride in the front seat of passenger cars and station wagons if they are properly restrained by a child restraint or safety belt.

(3) The average fine imposed is $20 or less.

(4) Passengers only.

(5) A similar requirement applies to passengers.

(6) Drivers only.

(7) From November 1977 children under 8 can only ride in the front seat of a passenger car or derivative if they are properly restrained by an approved child restraint.

(8) The Registrar of Motor Vehicles issues exemptions for medical reasons and also to persons engaged in local deliveries. In addition it is understood that police do not enforce wearing by young children or when a vehicle is reversing.

SOURCE: MILNE 1979.

Exceptions

The exceptions to the laws from the various provinces are different from state to state. Table 1 presents these exceptions in a manner that highlights similarities as well as dissimilarities.

SEAT BELT HARDWARE REQUIREMENTS

The seat belt hardware requirements were discussed in the 1973 Australian Yearbook. According to the Yearbook, "Through the endorsement of the Australian Transport Advisory Council of Australian Design Rules for Motor Vehicle Safety, the fitting of belts in passenger cars and derivatives in each state was made mandatory for new motor vehicles for front seats from 1 January 1970 and for all positions from 1 January 1971."

Different types of belts fitted to vehicles include lap, diagonal, sash, lap and sash, harness and child restraints (Yearbook of Australia, 1973). In a telephone interview, P.W. Milne of the Australian Department of Transport indicated that belts with inertial retractors were required in front seats of automobiles from 1976 on for all states in Australia.

IMPLEMENTATION OF THE LAW

Even though Australia is considered the first country to enact seat belt legislation, implementation of the laws did not occur in as spectacular a manner as one might imagine. The events of the decade prior to enactment apparently preconditioned the public in such a way that many organizations were calling for seat belt legislation before the government decided to enact a law. This atmosphere undoubtedly affected the implementation of laws. Enforcement was delayed one month after enactment of legislation in most jurisdictions to allow for public education and police warning.

Public Information and Education Programs

Throughout the 1960s, there were numerous publicity campaigns by various organizations lobbying for installation and wearing of seat belts. Pamphlets, leaflets, and posters were distributed to millions; other campaigns were conducted through the use of radio, television, and press advertisements. Proponents of these campaigns included the Australian Road Safety Council, the Life Officers' Association of Australasia, numerous business companies, and vehicle and seat belt manufacturing industries. Many governmental agencies as well as private fleets had belts installed in their vehicles (Milne, 1979).

According to Milne a joint campaign in 1961-62 between the Australian Road Safety Council and the Life Officers' Association of Australasia involved distribution of 7 million pamphlets on publicity associated with seat belt wearing. Increases in sales of seat belts were claimed by the Road Safety Council as a result of distributing the pamphlets. A further major campaign in September-December 1964 included distribution of 3 million posters and leaflets. Again, increases in sales were claimed by the Road Safety Council. Numerous business companies participated in the campaigns and many fitted belts to their fleets (Milne, 1979).

The effects of the publicity were mainly on public attitudes toward seat belts. A 1962 poll of public opinion of just over 1,000 persons throughout Australia found only one percent who viewed seat belts as among the top three most important road safety countermeasures. A 1970 survey in New South Wales found that 75 percent of the respondents rated belts as "very important" or "important," including nearly two-thirds of those who never wore belts. Although the publicity campaigns resulted in radical changes in public attitudes as well as small increases in voluntary installations of seat belts, little change occurred in belt usage rates. At least one study suggested that the resistance was due to the belief by many motorists that they were not vulnerable to death or injury under normal driving conditions. Thus, following ten years of sustained publicity and some legislation that required the installation of belts, the majority of vehicle occupants still did not have belts in their vehicles and most of those that did, did not wear them (Milne, 1979). (Unfortunately, Milne's report does not give details on how the research was conducted or evaluated and none of the other literature received from Australia discussed the public information programs from a research perspective.)

Enforcement

As mentioned earlier, enforcement of the law usually was not begun until one month after the law became effective in order to allow the public time to learn about and adjust to the law. As with other countries, it is apparent that enforcement presents somewhat of a problem in Australia with regard to the level of enforcement and the uniformity of enforcement from jurisdiction to jurisdiction. Peter Vulcan of the Department of Transport of Victoria addressed this point in a paper entitled "Australia's Safety Belt Laws: The Results of the Law" (Vulcan, 1973). His paper was written about 18 months after the last state in Australia enacted a seat belt law, and at that time he found that seat belt offenses were estimated to comprise less than 2 percent of all traffic offenses. Also he found that the level of enforcement varied widely among the various states. According to Vulcan, "In Victoria, in the first six months of 1973, 426 drivers and 38 passengers were prosecuted for noncompliance. A further 5,715 paid on-the-spot fines. During this time there was a total of 146,217 motoring fines.

Milne also reported substantial variations in the level of enforcement of seat belt wearing between states in his paper entitled "Fitting and Wearing of Seat Belts in Australia: The History of a Successful Countermeasure" (1979). According to Milne, "In New South Wales the offense of not wearing a seat belt constituted 6 percent of reported traffic offenses, involving nearly 35,000 occupants being fined in 1974. In contrast, in South Australia until recently, enforcement by the police was minimal and wearing rates decreased between 1972 and 1975. Following an intensive enforcement program over a 12-week period in mid-1976 in which over 6,000 drivers were reported for failing to wear seat belts, wearing rates increased markedly and remained high. Milne also stated, "In October 1976 in Western Australia the penalty for noncompliance was reduced from $20 to $10. This change was made because police were apparently reluctant to impose the statutory $20 fine for what they considered to be a comparatively minor offense. An analysis of the effect of lowering the penalty has shown that in Perth the lowering of the penalty did lead to the issuing of more enforcement notices rather than cautions.

While both Milne and Vulcan agree on the enforcement issue, their papers unfortunately did not provide any insight as to how the research was conducted. In a telephone interview Milne did indicate that enforcement mostly relates to vehicle drivers and front seat passengers sitting next to the door opposite the driver.

Court Decisions Regarding Insurance Compensation

None of the reports received from Australia mentioned insurance compensation as it relates to court decisions. However, in a telephone interview Milne indicated that there have been cases where the court reduced insurance compensation because the injured person had not been wearing seat belts. He indicated that is is not a matter of law in Australia; rather, it is left up to individual judges. He also indicated that there have been cases where insurance compensation was reduced as much as 50 percent. According to him, court decisions regarding compensation reduction would likely vary from state to state.

EFFECTIVENESS OF THE SEAT BELT LAW

Australia, like other countries studied in conjunction with this report, experienced very low seat belt usage rates prior to enactment of the seat belt law. Attempts had been made to increase belt usage through various means such as public information and education programs, independent support by the mass media, and individual support by various private and public organizations that are influential within the Australian society. While it appears that these early efforts influence the public to think more

positively about seat belt use and mandatory laws, these efforts did not result in any significant increases in belt use. It was only after the mandatory laws were passed that seat belt use became a primary behavior of the majority of automobile users. The paragraphs that follow discuss specifics regarding the effectiveness of the seat belt law.

Belt Usage

Several reports were found concerning seat belt usage in various states in Australia. The reports, which were published by various State Departments of Motor Transport, stress results rather than methodology. Therefore, the reports provide wearing rates for various categories of motorists but do not provide any detailed information on how the data were collected. This point was discussed with Milne, and he indicated that the level of detail found in his paper is the level of detail that would be found in most literature in Australia on the subject.

A survey by Kathleen Freedman, Rosamond Wood, and Michael Henderson of the Department of Transport of New South Wales reported on the wearing rate in that state (Freedman et al, 1974). The study was based on two surveys, one in 1970 before passage of the law and one in March 1973, 18 months after passage of the law. In March 1970, 995 people were interviewed at the Royal Easter Show, Sydney. They were asked questions on their belt use habits and attitudes. In March 1973, 18 months after enactment of the law, the survey was repeated, again at the Royal Easter Show in Sydney. This time, 1,251 people were interviewed. In both surveys, interviewers were aged 17 years and over.

Survey respondents were selected at random as they passed a particular site at the show. In both surveys, trained and experienced interviewers were used. They conducted interviews over a period of four days with both afternoon and evening sessions for all four days: Wednesday, Thursday, Good Friday, and Easter Sunday. Table 13 presents a comparison of the results from the two surveys. The table shows that 74 percent of the 1973 interviewees reported always wearing seat belts, and only 9 percent said they rarely as never wore them. Only 25 percent of the 1970 interviewees reported always wearing seat belts, and 50 percent indicated that they rarely or never wore seat belts.

Milne also discussed wearing rates in his paper (1979). He states, "In all states the legislation had an immediate effect on wearing rates. Generally, during the first month, police were instructed to educate and caution motorists rather than prosecute for noncompliance. Even during this period, wearing rates rose substantially, for example, from 25 percent to around 50 percent in Melbourne. At the end of this period, with the initiation of

TABLE 13

SEAT BELT WEARING FREQUENCY BY YEAR, AUSTRALIA

YEAR	N	SEAT BELT WEARING FREQUENCY (% of N)				
		ALWAYS	MOSTLY	OCCASIONALLY	RARELY	NEVER
1970 ('BEFORE')	995	25	13	14	11	38
		38			48	
1973 ('AFTER')	1251	74	13	4	2	7
		87			9	

2x4 table analysed.*

Association found significant ($p<.001$).

*Dotted lines indicate the structure of the contingency table analysed. For a two-dimensional table of size r x c, association between the two marginal variables was tested, using X2 tests on (r-1) x (c-1) degrees of freedom.

SOURCE: Freedman et al., 1974.

enforcement, wearing rates rose to over 75 percent and...have generally remained high." Milne went on to say that wearing rates tend to be lower in rural areas than in urban areas. He states, "Unfortunately, there is little recent data for some cities and for rural areas in most states." Table 14, adopted from Milne's paper, indicates wearing rates for certain cities and rural areas.

Milne was questioned by telephone about methodology for collecting seat belt usage information. He indicated that in a city like Melbourne, for example, six sites are chosen on roadways with median strips. Teams of observers are placed at traffic lights where they approach stopped cars, question the driver, and observe whether the driver and passengers are wearing seat belts. According to Milne, one observer surveys passengers in the back seat and the other observer surveys the front seat occupants. People who are wearing belts are asked to lean forward and backward so that the adjustment of their belts can be determined.

Attitudinal Studies

Most of the information on the attitude of Australians toward seat belts and toward the seat belt law that was obtainable for this study was written by the New South Wales Department of Motor Transport. While this information was developed in one state, it nevertheless provides some insight into the attitudes of Australians in general.

Attitudes Towards Seat Belts

Freedman's 1973 survey at the Royal Easter Show looked at the attitudes of the survey respondents in addition to belt usage. The survey was designed to elicit from respondents the motivational basis for seat belt use according to the primary and secondary reasons given. Freedman stated, "For some regular wearers, the law was the only motivating force; for others it was the main but not only one. For some it was only a secondary or reinforcing factor, and for others it was not a factor at all" (Freedman et al., 1974). According to Freedman, the most frequently given reason for wearing seat belts were as follows:

- Safety: 75 percent (men), 71 percent (women). Example responses: "I value my life"; "don't want my head to go smashing through the windscreen"; "the speed I drive, I need them."

- The law: 43 percent (men), 49 percent (women). Examples: "because I have to"; "I don't want to pay $20"; "I'd probably get booked if I didn't"; "it's illegal not to."

TABLE 14

SEAT BELT WEARING RATES - DRIVER ONLY, AUSTRALIA

Location	Type of belt	Wearing(a) rate %
Melbourne		
May 1971 . . .	Lap-sash	75
February 1972 . .	"	79
February 1973 . .	"	82
May 1973 . . .	"	83
February 1974 . .	"	91
February 1975 . .	"	89
December 1975 . .	"	85
February 1976 . .	"	93
December 1976 . .	"	85
February 1977 . .	"	93
February 1978 . .	"	92
March 1978 . . .	"	84
July 1978 . . .	"	85
Rural Victorian cities		
May 1971 . . .	"	60
February 1972 . .	"	73
February 1973 . .	"	76
February 1974 . .	"	85
February 1975 . .	"	86
February 1976 . .	"	83
February 1977 . .	"	84
February 1978 . .	"	87
Sydney		
August 1970 . . .	All	19
April 1971 . . .	"	30
June 1971 . . .	"	32
September 1971 . .	"	50
October 1971 . . .	"	60
November 1971 . .	"	76
February 1972 . .	"	75
June-July 1972 . .	Lap-sash	86 (incl. LHF)
December 1972 . .	All	89
February-March 1973 .	"	94
November-December 1973 .	"	91
May 1974 . . .	Lap-sash	85
October 1974 . . .	"	83 (incl. LHF)
November 1975 . .	All	94
November 1976 . .	Lap-sash	84 (incl. LHF)

TABLE 14 (Continued)

Location	Type of belt	Wearing(a) rate %
Brisbane		
May 1974 . . .	"	84
Adelaide(b)		
October 1971 . . .	All	37
October 1972 . . .	"	81
May 1973 . . .	Lap-sash	65
October 1973 . . .	All	78
October 1974 . . .	"	72
October 1975 . . .	"	70
October 1976 . . .	"	90
December 1977 . .	"	91
March 1978 . . .	Lap-sash	84
July 1978 . . .	"	82
Perth		
May 1974 . . .	"	86
March 1978 . . .	"	87
July 1978 . . .	"	87
Hobart		
May 1973 . . .	"	69
Newcastle		
May 1974 . . .	"	84
Wollongong		
May 1974 . . .	"	81
Canberra		
December 1975 . .	"	83
December 1976 . .	"	84
March 1978 . . .	"	83

(a) For ease of presentation, these data refer to the driver only. Driver wearing rates are known to be higher than those of other occupants.
(b) More detailed information for Adelaide is set out in Table 2.
SOURCE: Milne 1979

- Habit: 15 percent (men), 14 percent (women). Examples: "force of habit"; "just got used to it"; "put it on without thinking."

- Emotional security: 10 percent (men), 17 percent (women). Examples: "I feel secure with one on"; "when I can't wear them I feel vulnerable"; "makes you feel confident you're safe."

- Physical comfort: 10 percent (men), 6 percent (women). Examples: "it holds you upright"; "lessens fatigue"; "you can relax without shifting around."

- Pressure from others: one percent (men), 6 percent (women). Examples: "because the driver insists"; "the children remind us to"; "my husband makes me."

Of the men and women who wore seat belts regularly:

- 12 percent (men) and 11 percent (women) gave "the law" as their ONLY reason for wearing seat belts.

- 19 percent (men) and 23 percent (women) gave "the law" as their MAIN reason (but not the only one) for wearing seat belts. (Safety was by far the most frequently given 'secondary' reason for this group).

- 13 percent (men) and 17 percent (women) gave "the law" as a secondary or 'reinforcing' reason for wearing seat belts. (Safety was by far the most frequently given 'main' reason for this group).

- 55 percent (men) and 49 percent (women) made no mention of "the law" as an influence but gave other reasons (mainly safety) for wearing seat belts.

Freedman and her associates also looked at the reasons given for not wearing seat belts. It is important to analyze the reasons given for not wearing belts in order to understand both the positive and negative factors for the belt usage rate. The analysis of this group is presented in the following paragraphs.

- Low Frequency wearers. In the 1973, 162 people were low frequency wearers, that is, reported wearing seat belts only occasionally, rarely, or never. Of these, 40 percent said that a seat belt was usually available to them. By not wearing an

available seat belt, they are the people who are actually breaking the law. This represents a very small proportion (5 percent) of the total sample.

A seat belt was not usually available to 60 percent of low frequency wearers. In fact the most frequently given single reason for not wearing seat belts was that they were 'not fitted' to the car or seating position normally used (58 percent). Of these people, some were in favour of seat belts, some were clearly opposed to them, and some expressed no opinion.

Specifically, 24 percent of low frequency wearers said that although a seat belt was not usually available to them, they believed in them, and would wear one if fitted. Seven percent said that a seat belt was not available and that they had no intention of getting or wearing one because they did not like them or believe in them.

Twenty-seven percent said that seat belts were not available and did not express any desire or lack of desire to wear one. "Seat belts are not fitted because they don't have to be" was a typical response here.

Other reasons for not wearing seat belts were:

- Seat belts are inconvenient/uncomfortable (14 percent of low frequency wearers);
- Seat belts are potentially dangerous (8 percent of low frequency wearers);
- Careful drivers don't need seat belts (7 percent of low frequency wearers);
- Seat belts are unnecessary, not as good as made out to be (7 percent of low frequency wearers); and
- The restraint causes emotional discomfort (4 percent of low frequency wearers).

Among low frequency wearers in the 1970 survey, similar numbers of persons gave the same reasons for not wearing seat belts. However the big difference is that now people expressing these negative attitudes toward seat belts represent a very small proportion of the total sample. They formed a large proportion of the 1970 'before' sample.

- Mostly Wearers. In the 1973 survey, 167 people said that they mostly wore seat belts. The most frequently given reasons for not always wearing seat belts were:

  - Seat belts are not always necessary for short (or very short) trips (29 percent of 'mostly' wearers);

  - Seat belts are sometimes not available (19 percent of 'mostly' wearers); and

  - Occasionally forgets to put it on (12 percent of 'mostly' wearers) (Freedman et al., 1974).

Attitudes Towards the Law

Freedman and her associates also looked at the attitudes of the respondents to the law itself. The following information was reported regarding what was said about the seat belt law.

Respondents in the 1973 survey were asked: "Are you in favour of the law making it compusory to wear seat belts?" Of the 1251 people interviewed, 79 percent were in favour of the law, 16 percent were opposed to it and 4 percent were undecided (Table 15).

As expected, the higher the reported wearing frequency, the greater the acceptance of the law making them compulsory. But even among those who rarely or never wore seat belts, about 50 percent were in favour of the law (Freedman et al., 1974).

REDUCTION OF DEATHS AND INJURIES

A considerable amount of work has been done in Australia on the reduction of deaths and injuries. However, most of this work involved analyzing the effectiveness of seat belts rather than the effectiveness of the seat belt law. On the other hand, there are numerous references in the Australian literature to the reduction in deaths and injuries resulting from wearing seat belts, but said references seldom document research evidence that demonstrates the relationship between the seat belt law and reductions in deaths and injuries.

Michael Henderson and Kathleen Freedman wrote a paper in 1974 entitled, "The Effect of Mandatory Seat Belt Use in New South Wales, Australia" in which they did look at the effect of the seat belt law on deaths and injuries (Henderson and Freedman, 1974). According to this study, the number of motor vehicle occupants who were killed in traffic crashes in New South Wales

TABLE 15

ATTITUDE TO LAW BY SEAT BELT WEARING FREQUENCY, AUSTRALIA

WEARING FREQUENCY	N	ATTITUDE TO LAW (% of N)		
		IN FAVOUR	AGAINST	UNDECIDED
ALWAYS	922	84	11	5
MOSTLY	167	76	18	6
OCCASIONALLY	54	65	28	7
RARELY/NEVER	108	49	44	7
TOTAL	1251	79	16	5

Table not analysed

SOURCE: Freedman et al., 1974.

during the year 1972, the first full year of the legislation, was 701. This figure was 18.5 percent lower than the 860 vehicle occupants killed in 1971. Henderson and Freedman looked at the data to determine if the occupants killed in 1972 reflected a significant deviation from previously well-established trends. Figure 9, taken from their paper, shows how the annual number of occupant fatalities had fluctuated from year to year since 1961. It also shows a regression line, representing occupant deaths against time, which was fitted to the figures for 1961 to 1971. Referring to the figure, Henderson and Freedman noted: "The fit of this line is not impeccable, but it is probably the only justifiable model. It provides a prediction that the number of vehicle occupant deaths in 1972 could have been expected to be 939, with a 95 percent confidence limit of ±143, that is, between 796 and 1082. The observed number of occupant deaths in 1972, therefore, at 701, was 25 percent below the number which might have been predicted from the previous ten-year trend. The observed figure was also from 12 percent to 35 percent below figures representing, at the 95 percent confidence level, extremes of fluctuation from year to year. For all the earlier years examined, the observed number of occupant deaths would be within these confidence limits."

Also shown in Figure 9 is the number of deaths for 1973 (787). The authors indicated that the 1973 figure was within expected limits, given that the seat belt legislation was responsible for the significant drop in 1972. The higher death rate for 1973 is reflective of the increased mobility from year to year but indicates that the increased seat belt wearing rate resulting from the law is effective in reducing occupant deaths. In summarizing their analysis, the authors state, "The number of road users being killed as the occupants of motor vehicles is now and looks like it is continuing to be, some 20 percent below figures which, over any given period, might confidently have been expected had not this legislation been brought into effect."

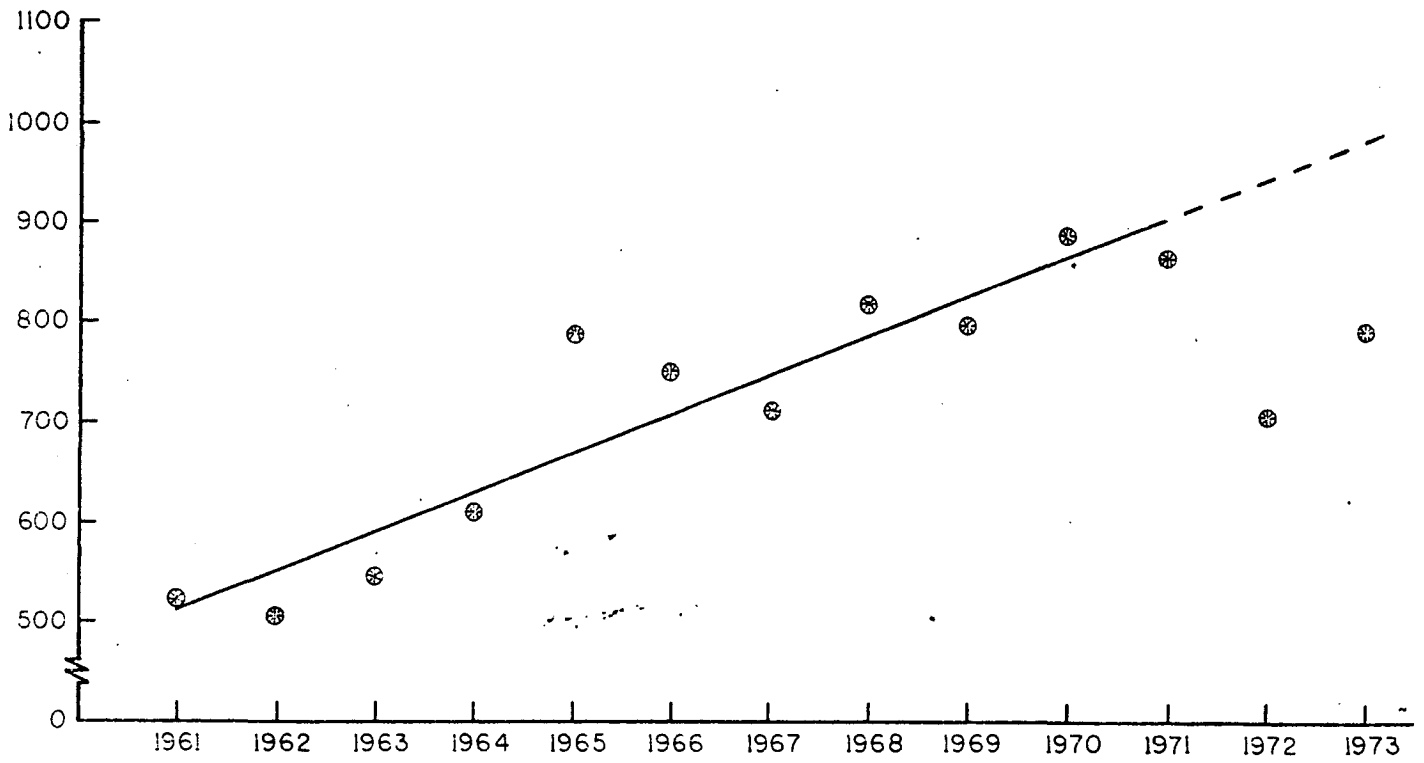
Milne discussed the effect of the law on casualties in his paper. He states, "In absolute terms the number of traffic accident fatalities in Australia have been contained below the record level of 3798 in 1970, in each of the seven succeeding years despite increases of over 1.5 million in population and 2 million in motor vehicles. Over the same period, consumption of motor spirit increased by 67 percent and the number of licenses on issue by over 30 percent... over the years 1971 to 1977, some 4200 more people would have been killed had the trend from 1960 to 1970 continued" (Milne, 1979).

Cost/Benefits Associated With the Law

None of the data received from Australia discussed cost/benefits in a quantified manner. In a telephone interview, Milne indicated that no one

FIGURE 9

FATALITIES, NEW SOUTH WALES, 1961-1973



Fatalities, drivers and passengers, years 1961-1973, New South Wales, showing gradual upwards trend broken in 1972 and the start of a new, lower, trend.

SOURCE: Henderson and Freedman, 1974.

had attempted to quantify the value of the seat belt law. He also indicated that no one really doubts the value of the law in saving lives. It has been proven to be of great benefit but the cost associated with attaining these benefits have not been quantified.

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AUSTRIA

INTRODUCTION

The primary means of collecting data in Austria was through telephone conversations between Austrian officials and PMM&Co.'s office in Vienna. There was a dearth of information available from Austria. The only useful information obtained was a brief write-up by the Vienna office of PMM&Co. discussing the main points of interest regarding the law. Therefore, the format used for most of the case studies has not been rigorously followed here. Only those headings which appear in the report written by the Vienna office have been utilized.

BACKGROUND AND HISTORY

The seat belt law was promoted by several national agencies including two national organizations of vehicle drivers, the Board of Traffic Security, and the government. These organizations sponsored advertising programs regarding seat belt usage. The means for conducting the advertisement programs were mainly television spots and wall posters. The purpose of the advertisements was to increase public acceptance of safety belt usage legislation.

SPECIFICATIONS OF THE LAW

The law went into effect on 15 July 1976. The law requires that drivers and front seat passengers in passenger cars or vans weighing less than 3,500 kilograms must wear seat belts when belts have been installed in the vehicle.

Penalty for Noncompliance

There is no penalty for noncompliance. The only legal effect of the law pertains to insurance compensation, which is reduced up to one-half if a person is injured or killed in an accident and wasn't wearing a seat belt.

Exceptions to the Law

The following persons are granted exemptions from the law:

- children and short people who would be in danger of strangulation from wearing a seat belt;
- persons with physical handicaps;

- persons in first-aid cars, police cars, and similar types of cars acting in an emergency;
- taxi drivers (protection against dangerous passengers); and
- driving instructors (allows instructor to avoid accidents without being impaired).

SEAT BELT HARDWARE REQUIREMENTS

All cars registered since 1968 must be equipped with seat belts. The most popular seat belt is the three-point retractable harness, but it is not required by law.

IMPLEMENTATION OF THE LAW

Various organizations tried all types of gimmicks to encourage people to wear seat belts, such as a contest to select a champion for being the fastest person to enter a car and fasten the seat belt. This was done to demonstrate the very short time required to fasten life-saving seat belts.

Enforcement of the Law

There is no enforcement of the law since there is no penalty for not wearing a seat belt.

EFFECTIVENESS OF THE SEAT BELT LAW

According to the report submitted by the Vienna office, the seat belt usage rate increased immediately after enactment of the law. The average usage rate rose to 25 percent in urban areas, 50 percent on roads outside of urban areas, and 60 percent on highways. The latest seat belt usage statistics were compiled in October 1978, and they showed that the usage rate had decreased to 20 percent on urban streets, 30 percent on roads outside of urban areas, and 50 percent on highways.

The Vienna office report indicates that the general attitude towards seat belts is negative and is not likely to change as long as there are some drawbacks to wearing seat belts and as long as motorists feel that seat belts reduce their personal freedom.

Supposedly, after the law was enacted, there was a decrease in the number of injuries and deaths compared to an increase in the number of accidents. No data were obtained to substantiate the assertion.

As indicated earlier, insurance compensation is reduced if a person is injured or killed in an accident and was not wearing a seat belt. This appears to be a normal legal procedure that the courts must follow rather than making a decision on a case-by-case basis.

BELGIUM

INTRODUCTION

The primary menas for collecting data in Belgium was through literature searches conducted by PMM&Co.'s Brussels office. Telephone contacts with Belgium officials were also made by the Brussels office. The primary organizations from which data were obtained were a nonprofit organziation for highway studies and a national police organization.

A large quantity of information was received from Belgium. All of the information was written in French, the language of Belgium, thus making it necessary to have the information translated. Much of the information was received in the form of excerpts from larger documents, and therefore could not be properly documented. The documents were translated only to the degree required to determine whether they contained specific information regarding the seat belt law which is of direct interest for this study., As with many other countries, it was found that much of the information relates to seat belts rather than to seat belt usage legislation and therefore was not of interest for this study.

PMM&Co. staff in Brussels interviewed Belgium officials and wrote a report covering many of the factors of specific interest for this report. While this information was not documented to the extent desirable, it was very pertinent and was the only information available on certain factors, in many instances.

BACKGROUND AND HISTORY

The drive to get a seat belt law passed in Belgium was sponsored by Le Conseil Superieur de la Securite Routiere (The High Council for Road Safety) and by the government. By 1971, automobile safety was becoming a serious concern in Belgium. Statistics showed that the number of fatal automobile accidents was increasing. The government decided that important measures had to be taken to protect the driver and occupants of motor vehicles. Many different safety measures were considered, including the use of seat belt.

For many years Belgium officials responsible for road safety had been convinced of and impressed by the effectiveness of seat belts. Between 1971 and 1975 Belgium officials conducted several safety campaigns to convince the public that using the safety belt was in their interest. Prior to enactment of the seat belt law, the campaigns focused on informing the public about the impending law.

At the same time that the safety campaigns were being conducted, studies were made to determine the public's response to the campaigns. The studies looked at the public's response before, during, and after the publicity campaigns. It was concluded from the studies that the public, despite being convinced of the effectiveness of seat belts, did not alter their seat belt wearing behavior to a great extent. Therefore, the government decided to enact mandatory seat belt legislation.

SPECIFICATION OF THE LAW

The law went into effect by royal decree on 1 June 1975. The law requires the driver and front seat passenger of passenger cars and station wagons to wear seat belts.

Penalty for Noncompliance

The fine for not wearing a seat belt can vary from 500 Belgium francs to 3,000 francs (approximately $18 to $107 U.S.). According to Berard-Andersen, a driver/passenger can be imprisoned for one day to one month for refusing to wear a belt after being asked to do so by the police (Berard-Andersen, 1978).

Exceptions to the Law

The following persons have been granted exemptions to the law:

- drivers while in the process of driving in reverse;
- taxi drivers, only when carrying a passenger;
- delivery men traveling short distances between stops;
- drivers and passengers shorter than 150 centimeters in height;
- children under 12 years of age;
- pregnant women possessing a medical certificate (The certificate must indicate the expiration date.); and
- drivers and passengers in possession of an exemption certificate issued by the Minister of Communications.

SEAT HARDWARE REQUIREMENTS

All vehicles built since 15 June 1968 must be equipped with anchor points for seat belts. There are a variety of seat belts that can be adopted for use in vehicles marketed after June 1968, and any of these are allowable. However, as of 1 June 1975 all new vehicles must be equipped with safety belts. The type of belt installed in the vehicle is left up to the owner, though the three-point inertial belt is reported to be the most popular.

IMPLEMENTATION OF THE LAW

Based on indications in the literature received from Belgium, quite a number of specific actions were taken to implement the law. However, there was not much specific information in the literature received which provides details on the steps taken to implement the law. The information that was available in the literature has been presented in the paragraphs that follow.

Public Information and Education Program

According to information received by PMM&Co.'s Brussels office, several publicity campaigns were conducted in order to educate the public on the necessity for and effectiveness of wearing seat belts. Their campaigns were conducted via radio, television, newspapers, magazines, posters, and brochures. Unfortunately, no documents were obtained that discuss the details of the PI&E programs.

According to an article by Fonds d'Etudes Pour La Securite Routiere, (Association for Highway Safety Studies), the PI&E campaigns brought about a slight rise in belt usage, but usage returned to the initial wearing rates after the campaigns were discontinued (Fonds d' Etudes Pour La Securite Routiere, 2 January 1973). Table 16 shows the change in seat belt wearing rates on three types of roads before, at the end of, and after the PI&E campaign. This information was collected by interviews (Fonds d'Etudes Pour La Securite Routiere, 2 January 1973). No details were provided on how the study was conducted.

Enforcement of the Law

The law is enforced in conjunction with other traffic offenses. Vehicle occupants are also reminded to wear their seat belts when random checks are made for general traffic safety considerations. For the most part, the police will not stop a vehicle just because a driver or passenger is not wearing a seat belt. Enforcement of the law is not very strict and is largely left up to the discretion of the officer involved.

TABLE 16

SEAT BELT UTILIZATION, BELGIUM

	HIGHWAYS			RURAL ROADS			CITY STREETS		
Responses	1*	2*	3*	1	2	3	1	2	3
Very Often	56.9	68.5	58.5	38	50.5%	46.4%	10.6%	25.4%	12.9%
Often	9.7	9.5	11	20.5	18	14.8	9.8	11.5	11.3
Rarely	4.9	1.5	2.7	4.4	5.5	7.4	12.2	13.6	17.4
Other (under certain conditions)	2.4	1.5	4.7	3.3	3.5	3.5	4.1	2	3.5
No Seat Belts	21.1	15	21.1	28.7	19.5	26.9	55.3	44	52.6
No Response	4	3	2.3	4.9	3	0.8	8.1	3.5	2.7

*1 = Before the Campaign
2 = At the End of the Campaign
3 = After the Campaign

SOURCE: Fonds d'Etudes Pour La Securite Routiere, January 1973.

Court Decisions Regarding Insurance Compensation

There have been several test cases in the courts regarding seat belt usage violations where bodily and property damage occurred. Compensation paid by insurance companies can be and is reduced if it can be proven that injuries would have been less severe had a seat belt been worn at the time of the accident.

EFFECTIVENESS OF THE LAW

A limited amount of information was obtained that indicates that the law in Belgium has proven to be effective. While the information was in summary form and does not indicate how the studies were performed, it does appear that the law has been rather effective.

Belt Usage

The overall wearing rate just prior to enactment of the law was approximately 17 percent for drivers--this included all vehicles in all types of driving situations. After passage of the law, the belt usage rate climbed to approximately 87 percent. However, the initial jump in seat belt usage was followed by a slow decline in the usage rate much the same as has been experienced by other countries (Berard-Andersen, 1978). (There was no information in the documents that described how the belt usage figures were obtained.)

Attitudinal Studies

The Fonds d'Etudes Pour La Securite Routiere conducted a survey approximately six months after belt use became mandatory to find out: (1) reactions to mandatory belt usage, and (2) if Belgians would continue to wear belts if it were no longer mandatory. The results of the study indicated that 88 percent of those interviewed indicated that they wear seat belts. Respondents were asked their reasons for wearing or not wearing belts. The answers checked by the two groups were as follows:

	Answers Checked:	
Those in favor of the law:	Yes	No
. get used to it quickly	62%	38%
. feel safer	53%	47%
. feel more reassured	52%	48%
. feel secure in the seat	49%	51%

Those against the law:	Answers Checked: Yes	No
. difficult to move	54%	46%
. lack of freedom	47%	53%
. feel locked to the seat	31%	69%
. feel uncomfortable	30%	70%
. cannot help thinking of how to get it off quickly in case of danger	30%	70%
. hard to put on	24%	76%

The second part of the survey asked: "If it weren't obligatory to wear seat belts, would you continue to manifest your same behavior?" The results were as follows: 56 percent said yes, 37 percent said no, and 7 percent were unsure. Of those who indicated that they always, very often, or fairly often wore their belts before the law was passed, 90 percent said they would continue to wear belts. Among those who indicated that they rarely wore belts before the law, 67 percent said they would continue to wear belts. Among those who never wore their belts before the law took effect, 35 percent would continue. Of this latter group, more than half would use belts always and about one-third would wear belts only under certain conditions (Fonds d'Etudes Pour La Securite Routiere, 22 March 1976.

Reduction of Deaths and Injuries

Regarding reduction of deaths and injuries, Berard-Andersen made the following statement relative to Belgium: "Other legal measures were introduced together with mandatory use of seat belts and the effect is therefore difficult to appraise exactly. However, in the years following introduction of the seat belt law, fatalities and injuries for drivers and passengers were reduced by 25 percent and by 15 percent for other road user categories" (Berard-Andersen, 1978).

In November 1978, a newspaper article reported that doctors in Belgium were in favor of seat belt usage because of a reduction in certain types of injuries (especially facial injuries) resulting from the wearing of seat belts. (The article did not quantify the reduction of injuries attributable to the seat belt law.)

Costs/Benefits Associated with the Law

None of the information collected in Belgium discussed cost/benefits associated with the law.

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DENMARK

INTRODUCTION

Data on Denmark were collected by PMM&Co.'s Copenhagen office, which conducted a literature search and made telephone contacts with local officials. The primary organizations from which data were obtained were: the Ministry of Justice, the Ministry of Health, and universities.

There was only a small number of documents received from Denmark, and these documents were mainly in the form of excerpts from larger documents; therefore, references to the material couldn't be properly documented. All of the documents recieved were written in Danish except for those reports presented at the Sixth International Conference of the International Association for Accident and Traffic Medicine. It was, therefore, necessary to have the documents translated into English. The documents were translated only to the depth required to determine if they contained specific information regarding seat belt legislation that is of direct interest for this study. It was found that most of the documents obtained discussed various factors related to seat belts rather than to seat belt legislation. The information that follows represents that which was available on the topics of interest.

BACKGROUND AND HISTORY

Belt usage studies were initiated in 1971 at 17 selected counting points on motorways, urban streets, and rural roads considered to be respresentative of the country. The Danish found that it was not possible by means of public information and education alone to raise the frequency of belt usage over 25 percent (Dalgaard, 1977). According to Charles Pulley, who interviewed several Danish officials, information campaigns would raise the voluntary usage rate to 40 percent for a short period of time, and the usage rate would drop back to 25 percent as soon as the public campaigns relaxed (Pulley, undated).

The Danish officials were influenced by the successful experiences of Australia and New Zealand with seat belt legislation. Also, Denmark belongs to the Nordic Road Safety Council and, as such, they were participants in the Council's study of seat belt legislation and were recipients of the Council's recommendations that the Scandinavian countries enact seat belt legislation. According to both Dalgaard and Pulley, introduction of the law was preceded by ardent public discussion. Pulley also indicated that a public opinion poll in the fall of 1974, prior to the debate in Parliament about the seat belt use law showed that 56 percent of Danish motorists favored the law (Pulley, undated).

The seat belt legislation was supported by the Ministry of Justice. Also, various Parliament members were convinced that the law was necessary because voluntary efforts had not worked. The law as it was finally passed in Parliament was written by a traffic safety committee of the Parliament (Pulley, undated).

SPECIFICATION OF THE LAW

The seat belt law was enacted by Parliament on 10 June 1975 and became effective on 1 January 1976. The law applies to any occupant of a front seat, where a belt is fitted--whether or not the fitting was mandatory. The law pertains both to passenger cars and vans.

Penalty for Noncompliance

The penalty for noncompliance is 100 Danish kroner (16 U.S. dollars).

Exceptions

There are a number of exemptions granted under the law. They are as follows:

- persons with affidavits from physicians;
- tradespeople who drive at low speeds and who have to get in and out of the car during a trip, and where the distance between each stop does not exceed 500 meters;
- mail drivers in densely populated areas in connection with delivery of mail and emptying of mailboxes;
- drivers in densely populated areas in connection with delivery of newspapers;
- police and military police cruising for the purpose of checking areas, and in connection with carrying apprehended persons who may cause danger to the police during the drive;
- persons under 15 years of age;
- persons under 150 centimeters (5 feet) tall;
- drivers who are backing up or driving in a parking lot, service station, repair place, or similar places; and

- military personnel driving at low speeds in test areas (Justitsministeriet, 1975).

REQUIREMENTS FOR HARDWARE

Presently three-point belts with inertia retractors are required in Denmark unless they can't be fitted in the vehicles. (In such cases, lap belts are permissible.) It was not possible to find any information on the chronology of the laws requiring seat belt installation or the evolution of various belt types that may have been required.

IMPLEMENTATION OF THE LAW

Relative to the implementation measures utilized in this report, the seat belt law has not been widely implemented in Denmark. The discussion that follows reflects this fact.

Public Information and Education (PI&E)

According to Pulley, a limited program was implemented in early 1976 to explain the new seat belt law to Danish motorists. Also, signs reminding drivers to buckle up have been placed on major roads leading out of urban areas (Pulley, undated). Pulley's report did not discuss any specifics associated with the PI&E program, and none of the other documents received from Denmark discussed PI&E programs.

Enforcement of the Law

For the first three months after the law went into effect, it was not enforced. When the police did begin enforcing the law, they only did so in connection with other violations. The Ministry of Justice decided against special enforcement, and the police are only authorized to enforce the law in conjunction with other traffic violations (Pulley, undated).

Court Decisions Regarding Insurance Compensation

There was no information in any of the documents received from Denmark which discussed the subject of insurance compensation as affected by court decisions except a one-sentence statement in an article by Ole Due of the Ministry of Justice, which made the following statement. Discussing noncompliance with the seat belt law, Due said, ". . . such an offence has no consequence for the right to compensation for damages in case of accident (Due, 1978).

EFFECTIVENESS OF THE SEAT BELT LAW

The articles and reports received from Denmark were written before enough time had elapsed to assess the effectiveness of the law. Only minimal information was found on the various measures used in this study to evaluate the effectiveness of the law. The information that was obtained is presented in the paragraphs that follow.

Belt Usage

No studies of seat belt usage were received from Denmark. However, Jorgen Dalgaard, in his study involving fatal lesions of car occupants, made the following statement concerning seat belt usage: "Following introduction of the seat belt law, which was preceded by an ardent public discussion, . . . the frequency immediately surpassed 50 percent. Although no penal measures were undertaken during the first three months of the law, it later reached 87 percent among car occupants covered by the law. As only 84 percent of cars have a seat belt fitted, the overall usage among front seat occupants was around 75 percent"(Dalgaard, 1977). Dalgaard did not discuss how the studies were conducted or who made them.

Attitudinal Studies

No information on attitudinal studies was found in the information obtained on Denmark.

Reduction of Deaths and Injuries

Several studies were found that pertain to this subject. However, these studies tended to concentrate on seat belt usage or nonusage and the resulting change in injuries to various parts of the body and/or change in fatalities since enactment of the law. The results of accident studies in Denmark have been mixed. One study by Nordentoft, et al., showed a decrease of 18 percent in the casualty ratio, and an even more pronounced decrease of 30 percent in incapacity days for front seat car occupants following enactment of the mandatory seat belt law (Nordentoft, et al., 1977). In another study by Nordentoft, he and his fellow researchers looked at accidents before and after the passage of the seat belt law. Also, they looked at studies that had been performed by others. They stated, "The seat belt mandatory act instituted on January 1, 1976 brought about an initial decline in number of casualties. This effect, however, vanishes in the second year of enforcement in spite of a maintained improvement in seat belt use from 20 percent to 72 percent according to roadside censuses. This holds true in regard to both the frequency and the severity of casualties. The vanishing effect cannot be explained by a rising traffic activity or by increasing accident numbers. Breaking down the material leads to the assumption that high risk groups, such as young drivers and

nighttime drivers, have been substantially less influenced by the law and therefore [the problem] calls for special attention. Also, further optimization of the belt/car/rider-system and of supplementary passive protective system is needed." (Nordentoft, et al., 1977.)

Although there was little data found on this subject, the above referenced study clearly indicates the situation in Denmark.

Costs/Benefits Associated With the Law

None of the information collected in Denmark discussed costs/benefits associated with the law.

REFERENCES

Dalgaard, Jorgen B. "Experiences With the New Seat Belt Law--On Fatal Lesions of Car Occupants in Denmark; A Preliminary Report, Based on Fatalities January through June 1976." Proceedings of the Sixth International Conference of the International Association for Accident and Traffic Medicine. Melbourne, Australia, January 31 to February 4, 1977.

Due, Ole. "The Danish Seat Belt Law." Proceedings of the Sixth International Conference of the International Association for Accident and Traffic Medicine. Melbourne, Australia, January 31 to February 4, 1977.

Nordentoft, E. L.; Neelsen, H. V.; Eriksen, E.; and Weelk, R. "Effect of Mandatory Seat Belt Legislation in Denmark, With Special Regard to Minor and Moderate Injury." Proceedings of the Sixth International Conference of the International Association for Accident and Traffic Medicine. Melbourne, Australia, January 31 to February 4, 1977.

Nordentoft, E.L.; Kruse, T.; Neelsen, H. V.; Weelk, R. "The Effect of Mandatory Seat Belt Legislation on Mortality and Morbidity in Denmark." Proceedings of the American Association for Automotive Medicine, 22nd Conference. Melbourne, Australia, January 31 to February 4, 1977.

FINLAND

INTRODUCTION

It was not possible to obtain any information for this study directly from Finland. One document was received from the Finnish Embassy which is a translation of the Finnish seat belt law. Also obtained were one document written in the United States and one document written in Norway, both of which contain certain information on the Finnish seat belt law. These three documents are the basis for the information reported in this section.

BACKGROUND AND HISTORY

It is known that Finland belongs to the Nordic Road Safety Council, which studied seat belt laws and recommended that the four Scandinavian countries enact seat belt legislation. It is assumed that the recommendation by the Council did have some influence on the enactment of seat belt legislation in Finland.

SPECIFICATION OF THE LAW

The seat belt law took effect on 1 July 1975. The wearing of seat belts is compulsory for drivers and front seat passengers, aged 15 years or more, in passenger cars that are fitted with seat belts.

Penalty for Noncompliance

Berard-Andersen, in his study of 21 countries with seat belt laws, indicated that Finland has a fine for noncompliance with the law, but he did not indicate the amount. However, his article states that there is a maximum penalty of three months in jail if a person refuses to wear a seat belt after being told to do so by a police officer (Berard-Andersen, 1978).

Exceptions to the Law

The following exceptions to the law have been granted (Pulley, undated):

- children under 15 years of age;
- drivers with medical exemption, requiring statement from a physician;
- taxi drivers;

- policemen who are transporting a prisoner or are in any situation where they believe belt use could cause danger or noticeable inconvenience; and

- vehicle inspectors inspecting an auto or giving a driving test.

SEAT BELT HARDWARE REQUIREMENTS

According to Berard-Andersen, mandatory fitting of three-point belts have been required since 1 January 1971 (Berard-Andersen, 1978). No other information was provided on the evolution of belt hardware requirements.

IMPLEMENTATION OF THE LAW

The information received regarding Finland's law was not sufficient to determine the extent of implementation of the law. The minimal amount of information that was found is reported in the paragraphs that follow.

Public Information and Education Programs (PI&E)

No information was found on PI&E programs that were conducted in Finland. However, according to Pulley, who interviewed Finnish officials concerning their law, some programs were conducted. Pulley interviewed the Managing Director of Lukenneturva (Central Organization of Traffic Safety), the organization that conducted the PI&E programs. According to the official, the Finnish public is reminded about the law as a part of a regular information program on traffic safety (Pulley, undated).

Enforcement of the Law

According to Pulley, safety officials and police representatives admit to very little enforcement of the seat belt law. Finnish police have the authority to tell motorists to use their safety belts. Refusal to do so can result in a citation for refusing to obey a policeman's order. During an interview with the Inspector of the Police Department of the Ministry of Interior, Pulley was told that the police are reluctant to enforce the law because they believe they are wasting their time. The Inspector also indicated that the limited enforcement that does exist occurs in conjunction with enforcement of other traffic regulations.

Court Decisions Regarding Insurance Compensation

No information was found on this subject.

EFFECTIVENESS OF THE LAW

Only a minimal amount of information was found on the effectiveness of the seat belt law in Finland. The information found was not sufficient to allow a true determination of effectiveness of the law. However, the information that was found is reported below.

Belt Usage

According to Berard-Andersen, "Just before the law came into effect, drivers' wearing rates as a percentage of all observed cars were 8 percent in urban and 31 percent in rural areas. In 1976 the corresponding figures were 38 percent and 66 percent (Berard-Andersen, 1978).

Pulley reports the following belt usage figures:

Motorists Using Seat Belts	June 1975	Dec 1975
On highways on weekdays	30%	68%
On highways on Sundays	40%	71%
On exit roads at peak hours	23%	71%
In urban traffic	9%	53%

The above figures were taken from a survey conducted by the research department of the Central Organization of Traffic Safety in Finland (Pulley, undated).

Attitudinal Studies

No information was found on this subject.

Reduction of Deaths and Injuries

Berard-Andersen's report briefly discussed this subject, as follows: "According to Finnish Insurance, 1977, 52.4 percent of persons involved in serious and fatal accidents benefited or would have benefited from use of a belt, while for 46.8 percent of the persons involved, such use would not have had any effect. Use of a belt would have contributed to a more severe accident result than nonuse in less than one percent of the cases. The protective ratio was estimated at 63:1" (Berard-Andersen, 1978). No other information was found on this subject.

Costs/Benefits Associated With the Law

No information was found on this subject.

REFERENCES

Berard-Andersen, Karen. "Use and Effects of Seat Belts in 21 Countries." Institute of Transport Economics. Oslo, Norway, 1978.

Pulley, Charles H. and Scanlon, Michael B. "Safety Belt Use Laws in Europe." American Safety Belt Council. Presented to the National Conference of Governors' Highway Safety Representation. Portland, undated.

Road Traffic Law of Finland--Translation supplied by the Embassy of Finland.

LUXEMBOURG

INTRODUCTION

The primary means of collecting data in Luxembourg was through telephone conversations between PMM&Co.'s Paris office and Luxembourg officials. The Paris office wrote a brief report on the information obtained from the telephone conversations. However, because of the paucity of useful information in the report, this case study contains only two main headings.

SPECIFICATIONS OF THE LAW

The law went into effect on June 1, 1975. It applies to drivers and front seat passengers in private and commercial passenger cars and vans.

Penalty for Noncompliance

A fine of 200 Luxembourg francs (approximately $7 U.S.) is assessable for noncompliance.

Exceptions to the Law

The following persons are granted exemptions under the law:

- delivery people inside cities making short trips and frequent stops;
- taxis that are transporting passengers;
- people that are less than 1.5 meters tall (children are required to ride in rear seats);
- people with medical certificates specifying a physical condition that precludes their wearing a seat belt; and
- pregnant women.

GENERAL INFORMATION

The seat belt law was sponsored by the Road Safety Organization (La Securite Routiere). Public information and education programs were conducted to increase public acceptance of the law. The PI&E programs were conducted via radio, television, newspapers, and posters. A survey taken after the PI&E programs were conducted indicated that 73 percent of drivers surveyed favored the use of seat belts.

Enforcement of seat belt usage is done in connection with other traffic offenses. Supposedly, there has been a decrease in the number of fatalities and a reduction in the severity of injuries from traffic accidents since the seat belt law was passed. (No reports were available that would support these assertions.)

THE NETHERLANDS

The primary means of collecting data in the Netherlands was through telephone conversations between government officials of the Netherlands and members of PMM&Co.'s office in The Hague. The office in The Hague contracted four people who had been identified as having considerable information, but essentially no useful information was received except for a document containing the seat belt law. The other document received that has some marginally useful information is a report issued by the European Conference of Ministers of Transport (ECMT). However, there is no indication of whether much of the information is based on opinion or actual research. The researchers were also referred to Karen Berard-Andersen's report which has been referenced in several of the case studies within this report.

Because of the lack of information available, this case study only covers the seat belt law and a brief amount of general information.

SPECIFICATION OF THE LAW

In the Netherlands, the seat belt law became effective on June 1, 1975. It requires the driver and the front seat passenger next to the door on the passenger side to wear belts tightly encircling their bodies when riding in passenger vehicles.

Penalty for Noncompliance

A fine of up to $120 may be assessed for noncompliance with the seat belt law.

Exceptions to the Law

There are a number of exemptions granted under the law. They are as follows:

- drivers of motorcycle combinations.
- drivers of motor vehicles which have special dispensation from the seat belt law.
- drivers of vehicles licensed in the Netherlands prior to 1 January 1971.

- drivers of motor vehicles going in reverse.
- drivers who are delivering and picking up goods at short distances.
- drivers living abroad who are driving a vehicle which:
    - has been temporarily imported into the Netherlands;
    - is not bearing a registration number as stated in article 9 of the Netherlands Traffic Act; and
    - is not equipped with seat belts to be used on the streets, as meant in the foregoing paragraph.
- drivers with physical handicaps whose driver's licenses authorize them to drive a vehicle not fittable with seat belts or who, because of their handicap, are not capable of fixing the seat belt in their vehicle by hand.
- drivers performing regular taxi service or delivering passengers for a fee as a sideline business--the drivers are exempt only when transporting passengers.
- drivers who are less than 1.50 meters tall.
- persons living abroad who are not compelled to wear seat belts in their country.

SEAT BELT HARDWARE REQUIREMENTS

Seat belts have been required equipment in passenger cars and vans since 1 January 1971. The type belt installed in vehicles is the three-point belt.

GENERAL DISCUSSION

ECMT circulated to its membership a questionnaire concerning the effects of seat belts. Replies were received from 20 countries, including the Netherlands. Some of the information from the Netherlands, though not presented in depth, is germane to this case study. Therefore, excerpts have been made from the ECMT report. These excerpts appear in unconnected form, however,

because only those of particular interest have been included. The information, taken from ECMT's report, is as follows (ECMT, 1978):

- "In the Netherlands, an extensive analysis of 22,000 accidents has shown, among other things, that the use of lap belts and three-point belts is equally effective. An explanation of this finding in the light of experience is that lap belts are worn more correctly and more tightly than three-point belts (and correct wearing of seat belts is of vital importance)."

- "In the Netherlands [special child seats for front automobile seats are] permitted, if no adequate safety device is fitted at the back seat to carry children from the age of four. This method is considered much safer than at the back seat without safety device."

- In the Netherlands, it is illegal to carry children below 12 years of age on a front seat when a rear seat is present.

Dutch officials suggested that the Berard-Andersen report on seat belt use in 21 countries should be acquired to obtain information on the Netherlands. The only information in that document regarding the Netherlands (other than a matrix showing particulars about the seat belt law in the 21 countries studied) was the following regarding seat belt wearing rates: "In 1974 the rate was 11 percent in urban areas and 24 percent in rural areas. After the law came into effect, the rates increased to 58 percent and 75 percent (July 1976)" (Berard-Andersen, 1978).

REFERENCES

Berard-Andersen, Karen. "Use and Effects of Seat Belts in 21 Countries." Institute of Transport Economics. Oslo, Norway, 1978.

Pulley, Charles H. and Scanlon, Michael B. "Safety Belt Use Laws in Europe." American Safety Belt Council. Presented to the National Conference of Governors' Highway Safety Representatives. Portland, undated.

Road Traffic Law of Finland -- Translation supplied by the Embassy of Finland.

European Conference of Ministers of Transport, Report by the Committee of Deputies on the Effects of Seat Belts, Paris, France, May 1978.

NORWAY

INTRODUCTION

The primary means for collecting data in Norway was through PMM&Co.'s Oslo office, which conducted literature searches and made telephone contacts with Norwegian officials. The primary organizations from which data were obtained were: the Institute of Transport Economics, The Royal Norwegian Automobile Club, the Nordic Road Safety Council, the Ministry of Justice, and the Ministry of Health.

Much of the information received from Norway was in the form of excerpts from larger documents, and therefore many of the references could not be properly documented. All but one of the documents received from Norway were written in Norwegian, making it necessary to have the documents translated. The documents were translated only to the degree required to determine whether they contained specific information regarding seat belt legislation that is of direct interest for this study. As with other countries, it was found that much of the information relates to seat belts rather than to mandatory seat belt usage legislation and, therefore, was not pertinent.

The above factors notwithstanding, it was possible to glean a significant amount of desired information out of the documents obtained.

BACKGROUND AND HISTORY

Two documents received from Norway provide insight into factors which motivated the passage of a seat belt law in that country. According to a memorandum from the Ministry of Communication, an interest in the use of seat belts became apparent in the 1960s. A particularly significant event regarding development of this interest was the publication of a study made by N. Bohlin of Volvo concerning the analysis of 28,000 automobile accidents. This paper did much to demonstrate the effectiveness of seat belts. (Bohlin's study also has been widely referenced in documents published by other countries investigated for this study.)

The second factor found in the Norwegian documents regarding the enactment of seat belt legislation concerned actions of the Nordic Road Safety Council. This council is composed of members from the Scandinavian countires: Sweden, Norway, Finland, and Denmark. According to the document, all of the Scandinavian countries requested that the Nordic Road Safety Council look into the problems associated with mandatory seat belt legislation. A council working group investigated the subject and issued a report to all

members of the council. In Norway, 50 organizations were sent copies. At the time of the report, 38 had responded--22 were in favor of compulsory legislation, 9 were undecided, 6 were against, and 1 suggested only compulsory installation of seat belts. As a result of the favorable response, the council recommended the adoption of compulsory seat belt legislation (Trafiksikkerheds Rad, 1973).

SPECIFICATION OF THE LAW

The seat belt law took effect 1 September 1975. The wearing of seat belts is compulsory for drivers and front seat passengers who are more than 4 feet tall and more than 15 years of age for all passenger vehicles and vans.

Penalty for Noncompliance

When the law was initially passed, it did not carry a penalty for noncompliance although it was planned that penalties would be assessed after a period of one and one-half years. A March 1979 news release by the Royal Norwegian automobile club promoting an increase in seat belt usage featured the following slogan: "Fasten the belts--avoid the penalty." The automobile club is promoting the campaign with the assistance of organizations and newspapers all over Norway. The goal is to increase seat belt usage to 75 percent which the Parliament has set as the lowest limit for not enforcing the law regarding penalties. If penalties are assessed, the fine will be 200 Norwegian kroner (approximately $36 U.S.). The authorities have left it up to the drivers; they can prevent the enforcement of penalties through voluntary use of seat belts at an acceptably high usage rate.

Exceptions to the Law

The following exemptions to the law have been granted:

- persons with affidavits from physicians;
- delivery people who drive at low speeds and who have to get in and out of the vehicle often, provided the distance between stops does not exceed 10 meters;
- taxi drivers and taxi passengers;
- motorists driving in reverse; and
- motorists driving in the area of a gasoline station or auto repair shop.

SEAT BELT HARDWARE REQUIREMENTS

Seat belts have been required in passenger cars and vans since 1 January 1971. As of the publication date of the documents received from Norway, various types of belts were being evaluated to arrive at a comfortable standard. (Berard-Andersen, 1978).

IMPLEMENTATION OF THE LAW

Since there is no penalty associated with not wearing seat belts, it is fair to say that the law has not been fully implemented in Norway. Some public information and education programs have been conducted, but there has been little or no attempt to enforce the seat belt law due to certain political considerations. However, some of the literature received indicated that there is now a movement towards authorizing penalties for noncompliance.

Public Information and Education Programs

There have been a limited number of PI&E programs conducted in Norway. However, there is no documentation on the effects of the programs. Berard-Andersen of the Institute of Transport Economics in Oslo discussed this subject in his report entitled "Use and Effects of Seat Belts in 21 countries." A quote from Mr. Berard-Andersen illustrates the point:

> For several years before introduction of the law, the Norwegian traffic safety organization "Trygg Trafikk" advocated increased use of seat belts. A short and concentrated information campaign, involving mainly advertisements in newspapers, was initiated by the Ministry of Communications and run just before the seat belt law came into force. A more comprehensive information campaign was launched when the law became effective (without a penalty for nonuse), involving all kinds of mass media. Christensen and Pedersen (1975) showed that the information about the positive effects of belt wearing had reached the population; 90 percent believed in such effects, while only 2 percent were negative. We have no survey as to the direct effect of the information, but the most intensive campaign periods (Spring 1975, Aug/Sept 1975, and Mar/Sept 1976) coincide with the reported increase of belt usage (Berard-Andersen, 1978).

Enforcement of the Law

There is essentially no enforcement of the law in Norway. The Norwegian Parliament was reluctant to pass a seat belt law, and indeed the Ministry of Justice which sponsored the law had a difficult time getting Parliament to pass it. Therefore, the law was passed with the compromise that no penalty would be stipulated. When police stop a motorist for other traffic violations, they are supposed to remind the driver the law requires belt use and hand out a pamphlet which explains the benefits of belt use. The prevailing belief is that the police do rigorously adhere to this practice (Pulley, undated).

According to Pulley, who personally interviewed Norwegian officials, police are specifically prohibited from telling motorists to buckle up and then fining them for failing to obey the order of a policeman, a practice that is allowed in Finland, another Scandinavian country where no fine exists.

Court Decisions Regarding Insurance Compensation

There was no information in any of the documents received from Norway which discussed court decisions on insurance compensation.

EFFECTIVENESS OF THE SEAT BELT LAW

As might be expected, the law in Norway has not been very effective. There have been surveys conducted to determine the belt usage rates and the attitudes of motorists towards the law, but without enforcement, the effectiveness can be expected to be low. This has been demonstrated in most of the countries which have legislation on seat belt usage.

Belt Usage

A report published by TransportoKonomisk institutt (Institute of Transport Economics) in 1978, entitled "Bruk av bilbelter og hjelmer i Norge 1973-77" (Use of Seat Belts and Crash Helmets in Norway, 1973-77), provides the most comprehensive information available in Norway regarding seat belt usage (TransportoKonomisk institutt, 1978). Table 17 and Figure 10 have been excerpted from the report. They both provide information on seat belt use in Norway. It can be seen that belt use is greater in rural areas than in urban areas, a situation that has been found in several other countries investigated for this report. Both the table and the figure indicate that the average belt use in 1977 was around 63 percent for rural areas and 29 percent for urban areas. Figure 10 also shows that belt usage was rather low prior to passage of the law, increased markedly immediately after passage of the law, declined after the initial high increase, and has vacillated back and forth since with the general trend being upward.

TABLE 17

DRIVER'S USE OF SEAT BELTS, NORWAY, COMPREHENSIVE SURVEY IN 1973, 1976, 1977, BY COUNTY

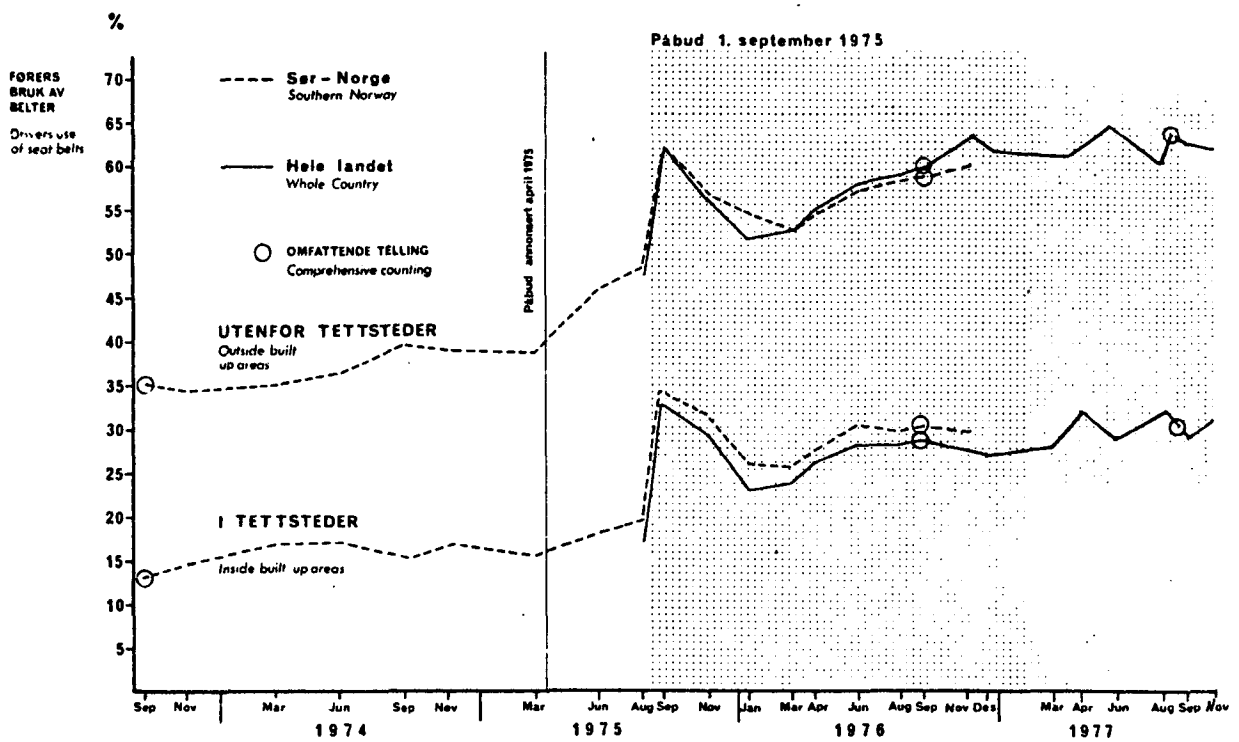
Område *County*	Beltebruk *Use of seatbelt*					
	Tettsteder *Built up areas*			Utenfor tettsteder *Outside built up areas*		
	1973	1976	1977	1973	1976	1977
Oslo/Akershus	19,5	36,5	40,2	42,4	63,0	67,6
Hedmark	8,8	24,2	21,8	36,6	60,9	69,7
Vestfold	10,2	21,8	23,1	34,0	58,3	60,9
Vest-Agder	11,4	25,4	23,9	27,9	54,3	53,9
Hordaland	15,8	34,7	34,7	31,5	53,9	58,8
Sør-Trøndelag	12,9	37,2	37,2	37,4	61,4	65,7
Troms	-	19,1	26,4	-	61,9	65,8
Gjennomsnitt	13,1[1)]	28,4	29,6	35,0[1)]	59,1	63,2

1) Bare Sør-Norge
1) Southern Norway only

SOURCE: Transporoto Konomisk Institute, 1978

FIGURE 10

DRIVER'S USE OF SEAT BELTS, 1973-1977, NORWAY



SOURCE: Transporoto Konomisk Institute, 1978.

With the introduction of the law, a wearing rate of 75 percent was regarded by Parliament as a reasonable goal. However, two years after the law was introduced, the frequency of use was far lower than the goal, particularly in urban areas. Studies made in other countries where seat belt use is compulsory (both with and without penalties) have convinced certain Norwegian officials that a goal of 75 percent cannot be obtained without introducing penalties (TransportoKonomisk institutt, 1978).

The report did not elaborate on the methodology used to conduct the belt usage studies other than to say that the surveys were carried out at a large number of sites throughout the country and that counts have also been carried out four to seven times per year at a limited number of check points in cooperation with the state Motor Vehicle Control Agencies.

Attitudinal Studies

The 1978 report by the Institute of Transport Economics also reported on a sample of drivers who were interviewed in 1975, 1976, and 1977 to determine attitudes towards the use of seat belts. Drivers were asked their reasons for wearing/not wearing seat belts, their attitudes towards compulsory use of seat belts with or without penalties, and so forth. The report presented several figures that show the responses of interviewees regarding their attitudes. Figures 11 thru 16 have been excerpted from the report and are presented here to show the results of the surveys. It is apparent that the majority of drivers interveiwed have positive attitudes towards seat belt use and towards the seat belt law and its ramifications (TransportoKonomisk institutt, 1978). Though only 50 percent of the drivers use their safety belts, the 1977 survey shows that approximately 87 percent of them were in favor of the compulsory seat belt legislation. Approximately 40 percent of the drivers questioned supported the use of a penalty for not wearing belts, and more than 80 percent thought that a fine would increase the use of the belt.

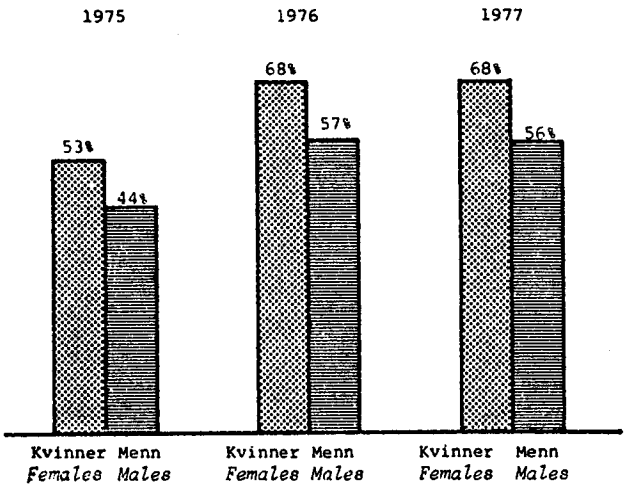
The study did not elaborate on the methodology for making the survey, so it is not possible to assess the validity of the results.

Reduction of Deaths and Injuries

There were no definitive data found in any of the documents from Norway regarding reduction of deaths and injuries. However, in an interview with the Norwegian Automobile Association, the Chief of Staff at a central hospital indicated that over 90 persons could have been saved in 1977 if 100 percent of all drivers and passengers had used safety belts, and 50 people would have been saved if 75 percent of automobile occupants used seat belts. The interviewee did not indicate how he arrived at those figures.

FIGURE 11

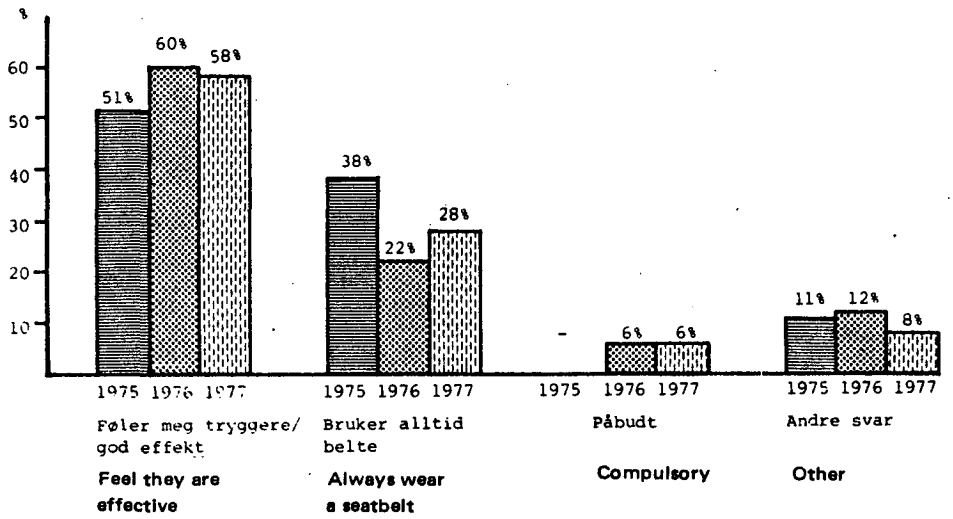
PERCENTAGE OF MALES AND FEMALES THAT USED SEAT BELTS AT THE INTERVIEW SURVEYS, NORWAY



SOURCE: Transpartokonomisk Institutt, 1978.

FIGURE 12

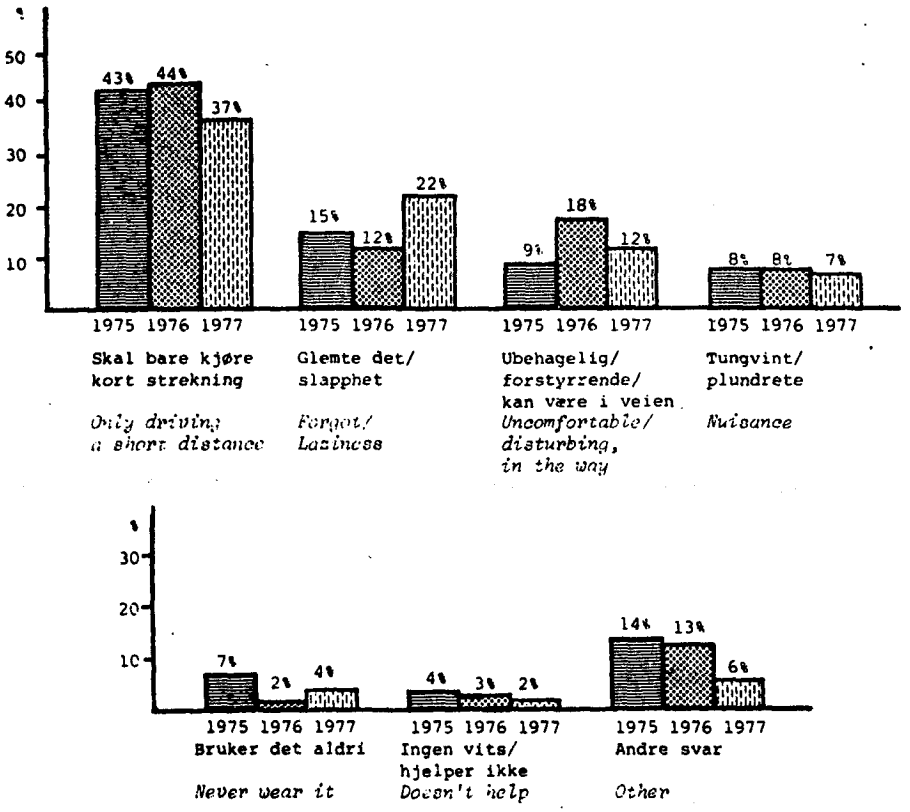
REASONS GIVEN FOR WEARING A SEAT BELT ON THIS PARTICULAR TRIP, NORWAY



SOURCE: Transpartokonomisk Institutt, 1978.

FIGURE 13

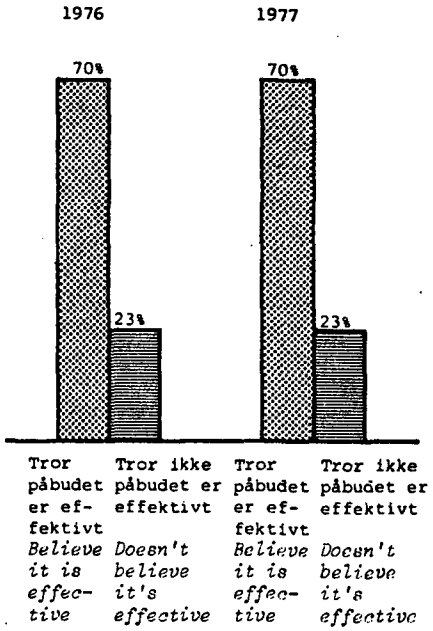
REASONS GIVEN FOR NOT WEARING A SEAT BELT ON THIS PARTICULAR TRIP, NORWAY



SOURCE: Transpartokonomisk Institutt, 1978.

FIGURE 14

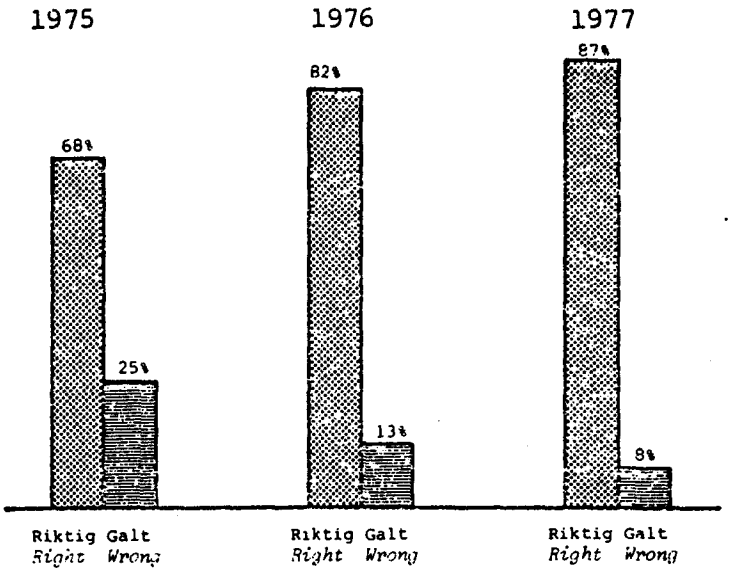
DRIVERS' BELIEFS ABOUT THE EFFECT OF THE LAW, NORWAY



SOURCE: Transportokonomisk Institutt, 1978.

FIGURE 15

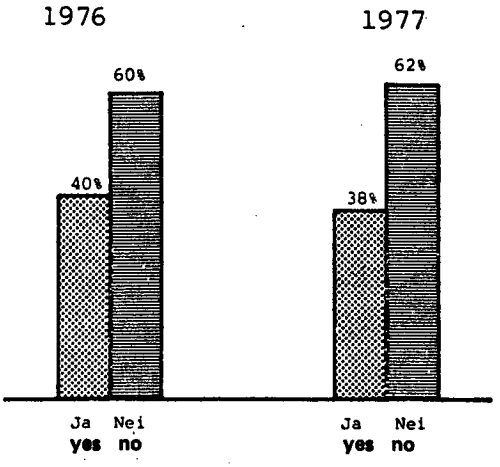
DRIVERS' OPINIONS AS TO WHETHER IT WAS RIGHT OR WRONG TO MAKE SEAT BELT WEARING COMPULSORY, NORWAY



SOURCE: Transportokonomisk Institutt, 1978.

FIGURE 16

DRIVERS' ATTITUDES AS TO WHETHER A FINE OUGHT TO BE INTRODUCED, NORWAY



SOURCE: Transpartokonomisk Institutt, 1978.

Costs/Benefits Associated with the Law

None of the information collected in Norway discussed costs/benefits associated with the law.

REFERENCES

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TransportoKonomisk institutt. Bruk av Bilbelter og hjelmer i Norge 1973-77. Oslo, Norge (Norway), 1978.

Nordisk Trafiksikkerheds Rad. Bilhelter Slutrapport Rapport 5. Stockholm Sweden, 1973.

Pulley, Charles H. "Safety Belt Use in Europe." American Safety Belt Council. Presented to National Conference of Governor's Highway Safety Representatives. Portland, undated.

SPAIN

INTRODUCTION

The primary means for collecting data in Spain was through personal contacts or telephone contacts conducted by PMM&Co.'s office in Madrid. The people or offices contacted were as follows:

- Director General of Traffic Ministry of Interior:
  - General Director; and
  - Head of Statistics Section.
- Real Automobile Club.
- specialized automobile magazines (eight magazines were contacted).
- Ministry of Industry.
- Institute of National Statistics.
- Spanish Associations of Insurance Entities (UNESPA):
  - President of Spanish Institute of Actuaries;
  - Professor of Actuarial Finance at Univ. of Madrid; and
  - Director of the Statistics Service of UNESPA.

Although a rather extensive and comprehensive list of people and organizations were contacted, practically no information was obtained. So little information was obtained that it would be farcical to attempt to follow the outline used for most other countries reported in this document. Therefore, only a short discussion has been provided on Spain.

GENERAL DISCUSSION

Spain's seat belt law became effective April 22, 1974. It is applicable on highways but not within urban limits. It is applicable for cars but not for trucks. Seat belts are only required to be installed in front seats of passenger cars.

Prior to enactment of the law, the Director General of Traffic conducted an intensive two-month campaign utilizing television, radio, newspapers, street and highway signs and brochures. During that time, car insurance companies offered a 10 percent reduction on premiums if a policyholder's car had seat belts installed.

After enactment of the law, the Director General of Traffic continued intensive seat belt campaigns. Subsequently, the campaigns were toned down considerably, and now consist only of signs on highways reminding vehicle occupants that belt use is mandatory.

The seat belt law is not enforced to any great extent. According to the Director General of Traffic, during a four month period in 1978, only 56 people were fined for not wearing seat belts while approximately 1,000,000 traffic tickets for all traffic violations are issued every quarter.

No other information on the seat belt law was obtained except some statistics on the number of people involved in accidents on highways. This information was provided in a personal conversation with a representative from the Section of Statistics of the Director General of Traffic. The information is not germane to the report.

DISCUSSION OF COUNTRIES WHERE NO INFORMATION WAS OBTAINED

There were four countries where it was not possible to get any information because: (1) PMM&Co. did not have an office in that country, or (2) PMM&Co. had an office in the country but the cost involved for acquiring what was known to be a minimal amount of information was prohibitive. Each of these countries has been listed below along with appropriate annotations.

- USSR--PMM&Co. does not have an office in the USSR. Therefore, attempts were made to obtain the desired information by other means. The Russian Embassy was contacted and asked to suggest ways to obtain the information. It was suggested that an official letter be written to Russian authorities requesting such. It was also stated that it may take several months to get the information. A letter was sent to Russia by the Paris office in August 1979, but no reply has been received.

- Czechoslovakia--The identical situation holds true for this country as for Russia. No reply has been received regarding our official request for information.

- Israel--PMM&Co. does not have an office in Israel. It was decided that it would not be cost beneficial to send a representative from the U.S. or from Europe, but it was decided to utilize the services of an acquaintance of PMM&Co. who visited Israel for several months during the summer of 1979. A letter was sent to the person; however, she was traveling around Israel and the letter did not reach her in time to do the work before her return to the U.S.

- Japan--PMM&Co. has an office in Japan which was requested to provide an estimate for doing the required work. The estimate was considered too high ($1,500 plus expenses for Phase I--all material written in Japanese) for the amount of useful information that is likely to be available in Japan. For example, it is known from various sources that the law is not enforced in Japan and that there is no penalty for noncompliance with the law. Because of this, it was decided that a letter would be sent to Japan requesting desired information but that no other effort would be taken. A letter was sent to a person who was organizing an international seat belt conference that was held in November 1979. To date, no reply has been received.

Subsequent to award of the contract for this study and after all data collection had been terminated, it was found that four other countries reportedly have newly enacted seat belt laws. According to the February 12, 1980 edition of SUDDEUTSHE ZEITUNG (South German newspaper) the four countries are:

- East Germany;
- Greece;
- Turkey; and
- Hungary.

The newspaper gave no information about particular provisions of the laws in these countries. Also, none of the other documents obtained for the study contained any information on these countries, nor did any of the persons contacted for the study mention that these countries had seat belt laws.

V. GENERAL CONCLUSIONS

This study basically consisted of a large data collection and analysis effort, and therefore it is not possible to draw conclusions that are supportable quantitatively. However, it is possible to draw conclusions based on an overwhelming amount of evidence in one direction with little or none to the contrary. This latter method has been utilized for this study and conclusions reached in this manner should remain valid until the weight of evidence suggests otherwise.

There were many findings for this study presented in the Executive Summary. While all of the findings were realistic with respect to the data collected, they are not considered conclusions either because the supporting data were not sufficient or because the scope of the findings was not broad enough. Therefore, this section has been included to elucidate those few areas where conclusions which have general applicability and the necessary supporting data could be drawn. The conclusions for the study are as follows:

- The main reason people resist wearing seat belts is to maintain their personal freedom, both physical freedom within their cars and psychological freedom regarding freedom of choice. This finding is supported by many studies that have shown that people who are convinced of the safety of seat belts and who agree that mandatory laws would be beneficial refuse to wear seat belts because they want to maintain their freedom.

- Public information and education programs, while useful for informing people and changing attitudes about seat belt laws or seat belt use, do not cause people to change their behavior regarding the wearing of seat belts. This fact was demonstrated in every country contacted.

- Police officials are reluctant to enforce laws that are not supported by the general public; therefore, in those countries where the law is unpopular the enforcement is very low.

- In order to have seat belts used at a high rate, the citizenry must have a propensity for being very law abiding and/or the law must be enforced in a stringent manner. This was found to be the case in several of the countries visited and was reported as a critical factor by several interviewees.

- The results of studies to determine persons' attitudes toward seat belt laws or seat belt usage cannot be used to predict the rate at

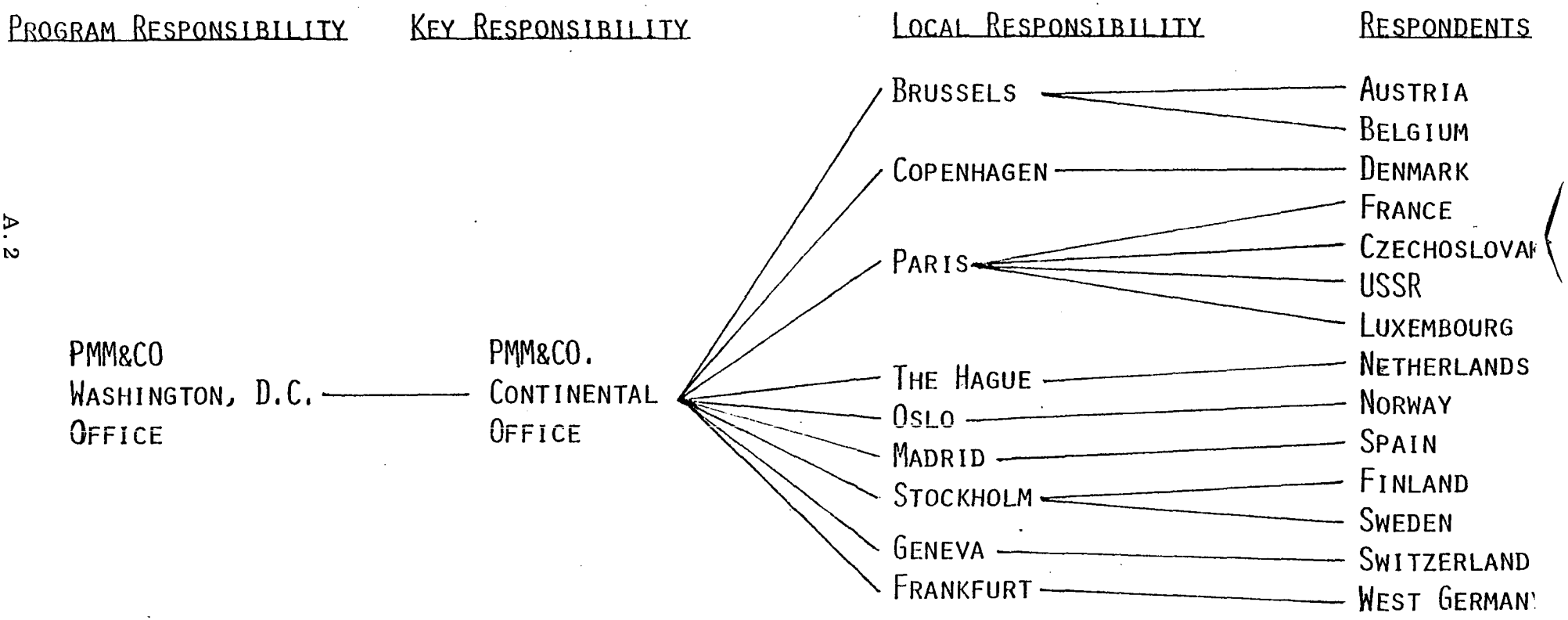
which persons will actually use their belts. Almost without exception, the attitudinal studies conducted in the various countries revealed that the majority of people surveyed were in favor of using seat belts and were, in fact, in favor of seat belt laws. However, in all cases they were found to use their belts at a significantly lower rate.

APPENDIX A

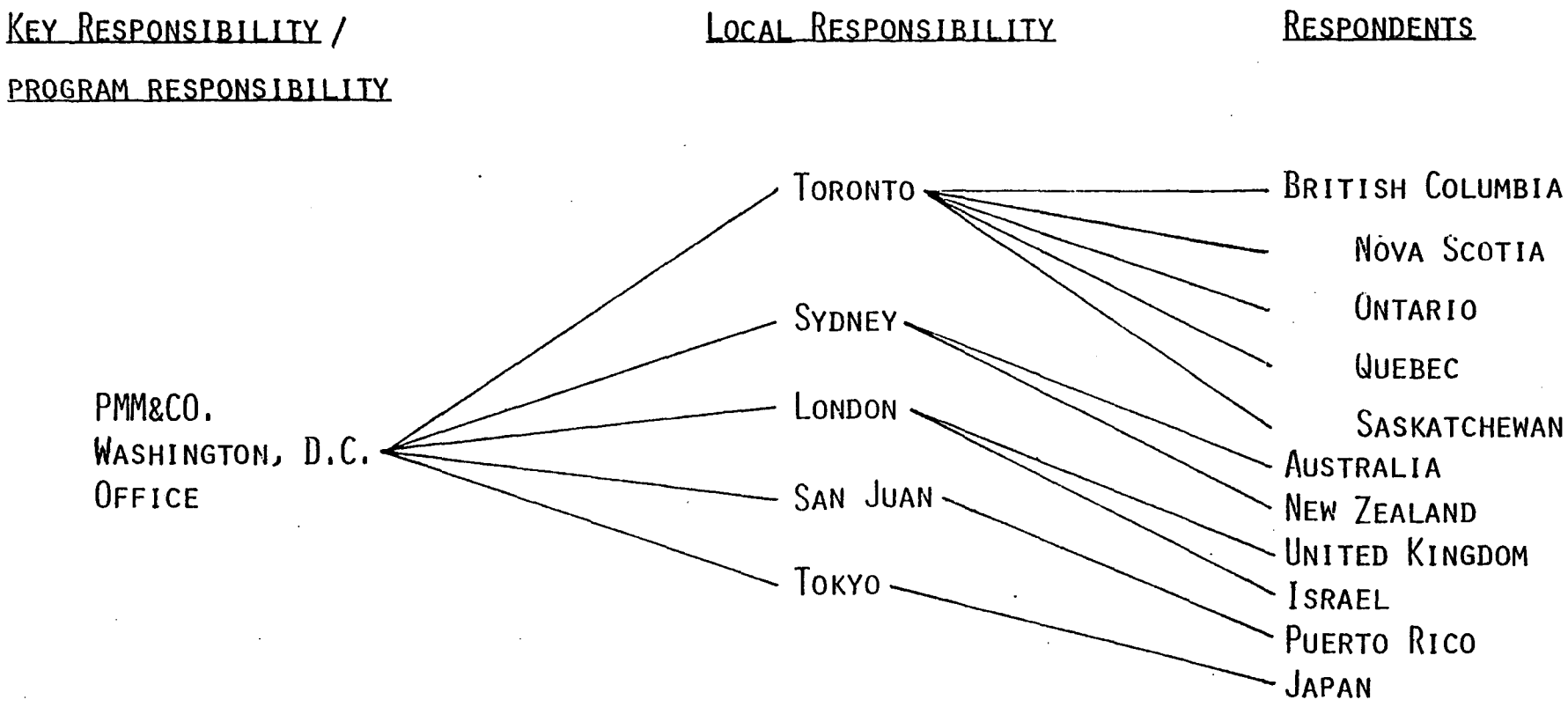
PMM&CO. OFFICE RESPONSIBILITY MATRIX

PMM&CO. OFFICE RESPONSIBILITY MATRIX

PART 1: RESPONSIBILITY MATRIX FOR COLLECTING DATA IN EUROPE



PART 2: RESPONSIBILITY MATRIX FOR COLLECTING DATA IN OTHER COUNTRIES



APPENDIX B

TECHNICAL OVERVIEW

(Excerpt from the information package submitted to each foreign office)

EFFECTIVENESS OF SAFETY BELT USAGE LAWS

TECHNICAL OVERVIEW

Approximately twenty countries around the world have adopted laws requiring safety belt usage. Because such laws have been considered for adoption in the United States, the United States Department of Transportation is interested in their effect on fatalities, injuries, and casualty reduction. Consequently, PMM&Co. has been awarded a contract to collect data relating to the effectiveness of these laws from the various countries.

The purpose of the study is to obtain up-to-date information about the status and effectiveness of safety belt usage laws, in countries which have adopted such laws, in order to provide data and information to support the consideration of adopting such laws in the United States. In order to satisfy this purpose, it will be essential to discover and surface the main features of the laws and the implementation techniques associated therewith that have led to any experienced successes. It will also be essential that the critical issues associated with public acceptability be discovered and documented in order to satisfy the stated purpose of the study.

The fundamental task of the study involves the collection and evaluation of the following types of information:

- background and history of how the applicable laws came to be adopted;
- specifications of the laws;
- techniques used to implement the laws; and
- effectiveness of implementation techniques as they relate to belt usage, reduction in injuries and fatalities, and changes in attitudes.

APPENDIX C

DATA CHECKLIST

(Excerpt from the information package submitted to each foreign office)

DATA COLLECTION CHECK LIST

The purpose of this guide is to present criteria concerning the types of data that are required for the study. Data collection personnel should use this guide to determine the specific types of data that must be acquired from each country. This guide is not intended to provide criteria for assessing the value of the information. This latter function will be performed by the Washington, D.C. project staff.

Data should be acquired from each contacted country in the following categories and subcategories:

I. Background and History

- o Acquire data on the background of the law with respect to how it came to be adopted; that is:
  - was it spearheaded by a national agency as a result of motor vehicle injuries and deaths; and/or
  - was it spearheaded by a politician in response to concerns for his/her constituency?
- o Acquire data on efforts taken to increase acceptance of the law prior its adoption; that is:
  - public information or public relations programs;
  - safety belt usage studies to determine usage rate prior to adoption of law;
  - attitude studies regarding acceptability by public of impending legislation; and
  - attitude studies regarding acceptability of law to police officials who are responsible for enforcing the law.

II. Specifications of the Law

- o Acquire copy of safety belt usage legislation to include specific requirements and exemptions; that is:
  - does law apply to passengers as well as drivers--front seat passengers as well as rear seat passengers; and

- does law exempt certain groups such as children under a certain age, handicapped persons, policemen, taxi drivers, emergency vehicles, deliverymen on short stop-and-go work routes, etc.?

- Acquire data on penalty for non-compliance; that is:

  - maximum size of fine for non-compliance;

  - loss of license for a certain period of time;

  - loss of insurance compensation for injuries resulting from non-compliance; or

  - no penalty imposed for non-compliance.

- Acquire data on safety belt hardware; that is:

  - do all new vehicles come with safety belts;

  - are belts available for purchase and installation in older model vehicles; and

  - what types of belts are installed on new vehicles, static without emergency locking retractors, three point retractable harnesses, etc.?

- Acquire data on vehicles covered by the law, i.e. passenger cars only, taxis, buses, trucks, etc.

III. Techniques Used to Implement Law

- Acquire data on specific techniques used to implement law and encourage a high compliance rate; that is:

  - public information programs such as films, radio and TV commercials;

  - distribution of brochures, posters, auto stickers, lapel pins, road signs, newspaper ads, etc.; and

  - warning notices given by police during initial stages after adoption of law.

- Acquire data on enforcement procedures and the level of enforcement; that is:

- what procedures are used for enforcement--special roadside checks by police such as at temporary road blocks, check on belt usage only in conjunction with other violations, or check on belt usage when vehicle stops for traffic controls, etc.;

- what is the level of enforcement--are police vigilant in their efforts or are they lax, are there lots of citations issued with respect to the safety belt usage rate in the country or is there a low percentage of citations issued; and

- is there consistent enforcement of the law throughout the country or does the level of enforcement vary according to police jurisdiction or the personal whims and motivation of individual policemen?

IV. Effectiveness of Implementation Techniques

o Acquire information on seat belt usage; that is:

- what has been the change in usage rate before and after adoption of the law; and

- has the change in belt usage after passage of the law remained constant or was there an initial fast increase and then a slow decrease or did it initially increase slowly and continue upward?

o Acquire information on the change in motor vehicle occupant injuries and fatalities; that is:

- has there been a reduction in the number of motor vehicle occupant injuries and fatalities since enactment of the law;

- has there been a change in the severity of injuries since enactment of the law? For example, have fatal severe, and moderate injuries decreased with a corresponding increase in light injuries;

- has there been a change in the number of auto accident victims requiring hospital care;

- has there been a reduction in the amount of time spent in hospitals by auto accident victims since enactment of the law; and

- are there indications of a change in the types of injuries that occur to auto accident occupants since enactment of the law?

o Acquire information on changes in attitude by both officials and the public; that is

  - has there been a change in attitutde as a result of the effectiveness realized with respect to reduced injuries and fatalities; and

  - has there been an increase in support for mandatory legislation as a result of reduced injuries and fatalities resulting from enactment of the law?

APPENDIX D

PRELIMINARY LIST OF PEOPLE TO CONTACT IN EACH COUNTRY

(Excerpt from the information package submitted to each foreign office)

AUSTRIA

Persons and Agencies to be Contacted

1. Kuratorium fur Verkehrssicherheit, Wien.

2. Ministerialrat Dr. Herbert Metzner, Bundesministerium Fueo Verkehr (DOT), Section 4 Karl Splatz 1, 1010 Vienna, Tel 0222-65 86 01.

3. Rektoo University Professor Dr. Otto Hittmair, Technische Universitaet Vwein, Karlstlatz 13, 1040 Vienna.

4. Polizeitraesident Dr. Karl Reidinger, Bundespolizeidirektion, Vwein, Schottenring 7-9, 1010 Vienna, Tel 0222-3131.

5. Medical Doctor Albert Krassnigg, Public Health Volksgesundheit, Sektion 2, Bundesministerium Fueo Gesuneheit Undumweltschutz, Stubenring 1, 1010 Vienna, Tel 0222 7500.

6. OEAMTC, Suhubertring 1-3, 1010 Vienna.

BELGIUM

Persons and Agencies to be Contacted

1. Monsieur le Directeur de la Securite Routiere, Ministere des Communications, Administration des transports, 12 Cantersteen, Brussels 1000, Belgium, Tel 02-5131830.

2. Ministry of the Interior.

3. M. de Casta, Directeur de Fonds d'Etudes pour la Securite Routiere, Chaussee de Hafcht 1405, 1130 Bruxelles.

4. National Safety Institute.

5. M. Cornelis, President du Groupement des Organismes de Controle Automobile, Rue de la Loi 34, 1040 Bruxelles, Belgium.

6. Federation des Producteurs d'Assurance, 40 Avenue Albert Elisabeth, Brussels 1120, Belgium, Tel 02-73335.22.

7. Le Directeur Superieur des Relations Publiques, Etat Major de la Gendarmerie, 47 Rue Fritz Toussaint, Brussels 1050, Belgium, Tel. 02-469-00.00.

8. Royal Automobile Club de Belgique, Service de la Securite Routiere, 53 Rue d'Arlon, Brussels 1040, Belgium, Tel 02-513.38.55)

9. Touring Club de Belgique, Service de la Securite Routiere, 44 Rue de la Loi, Brussels 1040, Belgium, Tel. 02-513.82.40.

CZECHOSLOVAKIA

Persons and Agencies to be Contacted

1. Czechoslovakia Federal Ministry of Transport, Na Prikope 33, 110 05 Prague 1 - Stare Mesto, Czechoslovakia.

2. Czechoslovakia Auto Club, 10 Strasmice V. Eredboli 6, Prague, Czechoslovakia, 11000.

DENMARK

Persons and Agencies to be Contacted

1. Ministry for Public Works, Frederiksholms Kanal 25, DK-1220, Copehaden K.

2. Dalgaard, J. B. - Professor of Forensic Medicine University of Aarhus - Finsensgaah 15, DK 8000 Aarhas, Denmark.

3. Danish Council of Road Safety Research, Akademivej, Building 371 DK-2800 Lyngby - Phone (02) 88 53 00

4. Institute of Forensic Medicine, University of Arhus.

5. Assurandr Societetet, Amaliegade 10, DK - 1256 Copenhagen K.

6. Sundhedssty reosen (Nat'l. Board of Health), St. Kangenagade 1, DK - 1264, Copenhagen K.

7. Danish Society for Traffic Medicine - No address.

8. Romer, C. J., World Health Organization, Scherfigsvej 8, 2100 Copenhagen, Denmark.

9. Royal Danish Auto Club, Sredenksberg Alle 4, DK-1820, Copenhagen V.

10. Danish Ministry of Justice, Deputy Director Peter Lilholt.

Articles Obtained by the Washington Office

1. Dalgaard, J. B. - "Experiences with the New Seat Belt Law on Fatal Lesions of Car Occupants in Denmark." Professor of Forensic Medicine University of Aarhus - Finsensgaah 15, DK 8000 Aarhas, Denmark

2. Dalgaard, J. B. et al.: "Rapport on sikkerhedsselens virkning, 1976."

3. Due, O.: "The Danish Seat Belt Act."

4. Nordentoft, E. L., Kruse, T., Nielsen, H. V., Weeth, R., Accident Analysis Group Odense University Hospital, Odense, Denmark - The Effect of Mandatory Seat Belt Legislation on Mortality and Morbidity in Denmark.

DENMARK

Articles Unavailable in U.S.A., Please Obtain

1. Jergensen, N. O. and Lund, H. V.: Danish Council for Road Safety Research, "Virkningen af lov om pabudt brug af sikkerhedssele" (English abstract). Report 21, p. 13, Copenhagen, 1977.

2. Moller, Lise: "Bilistuheld i Aarhus for og efter sikkerhedsseleloven."

3. Jergensen, E. H.: "Undersøgelse af sikkerhedsselelovens virkning ved analyse af data fra 15 hospitaler." - National Health Service.

FINLAND

Persons and Agencies to be Contacted

1. Northern Road Safety Council - No address.

2. Ministry of Transportation, Aleksanterinkatu 3D, 00170 Helsinki 17.

3. Tallquist, Anders. Traffic Safety Bureau, Ministry of Communications, Kaivokatu 12 A, 00100 Helsinki 10, Finland.

4. Traffic Board of Parliment, Ministry of Transportation, Kaivokatu 12A, 00100 Helsinki 10.

5. Managing Director Ilpo Krootila, Research Department of Liikenneturva, Iso RuobertinKatu 20, 00120 Helsinki 12. (Central Traffic Safety Organization).

6. Insurance Companies Traffic Safety Committee (VALT) (No Address).

7. Finnish Insurance Information Centre, LiiKenneturva, Helsinki.

8. Mr. Reijo Naulapa, Inspector of Police Department of the Ministry of the Interior, Hallituskatu 4E, 00170 Helsinki 17.

9. Autoliitto Ry (Automobile Assn), FabianiKatu 14, 00130. Helsinki 13.

Articles Unavailable in the U.S.A., Please Obtain

1. Finnish Insurance Information Centre, 1977 - "Insurance in Finland. Helsinki," 30 pp. (no. 1-1977).

FRANCE

Persons and Agencies to be Contacted

1. Delegate for Road Safety to the Prime Minister - Gerondeau, Christian, French Civil Defense Director and Road Safety Chief also Chairman of the European Conference of Ministers of Transport (ECMT), Road Safety Committee. 34, Avenue Marceau, 75008 Paris.

2. Dubarry, B. 16 Avenue Vergniaud, 78600 Maisons, Laffitte, France.

3. Committee for Road Safety, 34 Avenue Marceaa, 75006 Paris.

4. Mr. Frybourg, Director, Institute of Transportation Research, 2, avenue du General Malleret - Joinville, 94110 Arcuel.

5. Comite Interministeriel De La Securite Routiere
Tableau de Board - Annee 1975. Paris, Le Secretariat General.

6. Le Comite' Interministeriel de la Securite Routiere, Paris O.N.S.E.R.

7. Mr. Herla, Director, Francois Bertault, or Jacques Le Franc National Road Safety Agency, 2, avenue du General Malleret - Joinville, 94110 Arcueil.

8. Direction de la Circulation, ds Transport et du Commerce, Prefecture de Police, 9 Boulevard du Palais, 75195 Paris RP, Franc.

9. Chodkiewicz, J. P., Centre Neurochirurgical, Centre Hospitalier Saint-Anne, 1 Rue Cabanis, 75674 Paris, Cedex 14, France.

10. AGMS (Medical Doctor's Society) 60 Boulevard de Latour - Mabourg, 7 Paris, telephone 705 4528.

11. Automobile Club de France, Place Vendone, 1 Paris, Telephone 260-3255.

Articles Obtained by the Washington Office

1. Chodkiewicz, J.P., D. Dubarry (Paris) Ministry of Traffic Equipment Effects of Mandatory Seat Belt Legislation in France.

Articles Unavailable in the USA, Please Obtain

1. F. Hartemann, C. Thomas, J. Y. Foret-Bruno, C. Henry; G. Faverjon, C. Tarriere, M.D., Peugeot-Renault Association; C. Got, M.D., Professor, and A. Patel, M.d., Professor, Institute of Orthopaedical Research Raymond Poincare Hospital, France. "Belted or Not Belted: The Only Difference Between Two Matched Samples of 200 Car Occupants."

LUXEMBOURG

Persons and Agencies to be Contacted

1. STATEC (office of Statistics), 19-21 Boulevard Royal, Luxembourg City, Luxembourg.

2. Bley, Fr. Mr., Chief Inspector, Traffic and Road Safety, Ministry of Transportation.

3. Minister Barthel, Ministry of Transportation, 19-21 Boulevard Royal, Luxembourg City, Luxembourg Phone: (011 352) 219 21.

4. De La Police, 5 Rue Auguste Lumiere, Luxembourg City, Luxembourg.

5. La Securite' Routiere, 64 Rue Poincare, Luxembourg City, Luxembourg.

6. Association des Medecins, 29 Rue de Vianden, Luxembourg City, Luxembourg.

7. Automobile Club De Luxembourg, 13 Rue de Longway, Luxembourg City, Luxembourg, Phone: (011 352) 311031.

NETHERLANDS

Persons and Agencies to be Contacted

1. Heyster, C.L.A., Directie Verkeersveiligheid, Kanaalweg 3, The Hague.

2. Drs. C.L.A. Heijster, Road Safety Division, Ministry of Transport and Public Works (Responsible for Seat Safety Belt Usage).

3. Mr. J. H. Carstens, Secretary of the Traffic Committee of District Attorneys, Ministry of Justice.

4. Mr. G. R. Van der Berg, Secretary of Central Traffic Police Committee, Ministry of Interior.

5. Dr. R. Vos, Head of Traffic Accidents Division, Ministry of Public and Environmental Health.

Articles Unavailable in the U.S.A., Please Obtain

1. Edelman, Van Kampen - Dutch Institute for Road Safety Research (SWOV) "Lap Belts and Three Point Belts - a comparison of effectivess 1976."

2. Netherlands Delegation to Road Safety Committee of the Council of Ministers of ECMT - In 1977 this delegation did a survey of seat belt use in 18 other countries.

NORWAY

Persons and Agencies to be Contacted

1. Safe Traffic Vegdirektorate (Roads Department), P. O. Box 8109 DET, Oslo 1, Norway, Phone: 110070

2. Ansell Brunn, Ministry of Communication, P. O. Box 8010 Det, Oslo 1, Norway.

3. Blikra, G. - Bjerklundsv 91, N-1340, Bekkestua, Norway.

4. Institute of Criminology and Criminal Law, University of Oslo.

5. Royal Norwegian Council for Scientific and Industrial Research, Grenseveien 86, N-Oslo 6, Phone (472) 19 49 00.

6. Director R. N. Torgersen, Traffic Securities Secretariat, Sanfedsels Departementet, P. O. Box 8010, Oslo 1 Norway, Phone 119090.

7. Ministry of Justice, P. O. Box 8005 Det, Oslo 1, Norway.

8. Den Norske Legeforning (Medical Assn), Inkognitog 26, Oslo 2.

9. Falken Redningskorps (Auto Assn), Stabburu 1, Oslo 8.

Articles Obtained by the Washington Office

1. Berard-Anderson, K. (1978) "Use and effects of seat belts in 21 countries." Institute of Transport Economics, Oslo, 1978.

Articles Unavailable in the U.S.A., Please Obtain

1. Christensen, P., Pedersen, T. O., 1975 - Holdninger til bilbeltepabud. Oslo, Institute of Transport Economics, 1975. 27 pp. (ISBN-82-7133-122-1).

2. Christensen, P., 1976, Holdninger til bilbeltebruk - 1976. Oslo, Institute of Transport Economics, 1976. 15 pp. (ISBN 82-7133-164-7).

3. Fosser, S., 1977, Føreres bruk av bilbelter i Norge 1973-1977. Oslo, Institute of Transport Economics, 1977. 26. pp. (389 - Confidential).

SPAIN

Persons and Agencies to be Contacted

1. Direccion General De Trafico, Ministerio De La Governacion, Madrid.

2. General Director Blaz - Calzader Terrados, Spanish Traffic Center - No address.

3. Real Automobile Club, General Sajurjo 10, Madrid.

SWEDEN

Persons and Agencies to be Contacted

1. Hansson, P., Centrallasarettet, S - 30185 Halmstad, Sweden.

2. Swedish National Central Bureau of Statistics, Stockholm, 1978.

3. Swedish Road and Waterways Board, p. 143.

4. Andreasson, R., Roos, K., Karlaplan 10, S - 115 22 Stockholm, Sweden. Department of Social Medicine at Uppsala University.

5. Bohlin, N., AB Volvo S - 405 08, Gothenburg, Sweden.

6. Norin, H. Andersson, B., AB Volvo, S - 405 08, Gothenburg, Sweden.

7. Voigt, G. E., Krantz, P., 1977 Institute of Forensic Medicine, University of Lund, Lund, Sweden, 1977.

8. Andersson, A. - avd 56500 PV 3 B Volvo, 45027, Gothenburg, Sweden.

9. Institute of Social Medicine of the University of Uppsala.

10. Mr. Sven-Erik Sigfridsson, Kommanikations departmentet, Fack, S - 10320, Stockholm, Sweden.

11. Rikspolisstyrelsen, Box 1256, S - 10226, Stockholm, Sweden.

12. National Swedish Police Board (No address).

13. Swedish Assoiiation for Traffic Medicine.

14. Swedish National Board of Health: Welfare provided person-power for RSW-2.

15. Swedish Society of Medical Sciences, Section for Traffic Medicine.

16. The Royal Swedish Automobile Club, Sodra Blasieholmshamnenb, Fack, S-103-20, Stockholm 16.

17. Swedish Department of Communications.

18. National Road Safety Authority.

SWEDEN

Articles Obtained by the Washington Office

1. Andreasson, R., Roos, K., 1977 - Effects of Sweden's Seat-Belt-Law. Paper written for the VIth International Conference of the IAATM in Melbourne, Australia, 1977. Karlaplan 10, S - 115 22 Stockholm, Sweden. Department of Social Medicine at Uppsala University.

2. Bohlin, "Fifteen Years with the Three-Point Safety Belt." In Proceedings of the Sixth International Conference of the International Association for Accident and Traffic Medicine.

3. Nilsson, L. "Swedish Government and Industry Studies of Belt Usage Law Effectiveness," Saab-Scania, Sweden, 1976, and Bohlin, N. "Fifteen Years with the Three-Point Safety Belt." In Proceedings of the Sixth International Conference of the International Association for Accident and Traffic Medicine, op. cit., pp. 142-159.

4. Norin, H. Andersson, B., 1977 - The Audlt Belt - A Hazard to the Child? 1977. 7 pp. + App. AB Volvo, S - 405 08, Gothenburg, Sweden.

5. Voigt, G. E., Krantz, P., 1977 -"Fatalities in Car Occupants in Sweden in 1975 and the Effect of the Seat Belt Legislation." Institute of Forensic Medicine, University of Lund, Lund, Sweden, 1977.

6. Bohlin, N. (1967) A statistical analysis of 28,000 accident cases with emphasis on occupant restraint value. Proc. 11th Stapp Car Crash Conference. P. 20 New York: Society of Automotive Engineers, Inc. 1967.

7. Peter W. Arnberg, Child Restraint Systems In Sweden - National Swedish Road & Traffic Research Institute, S 581, 01 Linkoping, Sweden.

Articles Unavailable in the U.S.A., Please Obtain

1. Edvardsson, K. and Degermark, M., 1975 - Bilbaltesanvandningen i Sverige 1971-75, effekter av kampanjer och lagstiftning. Stockholm, Statens Trafiksakerhetsverk, 1975. 28 pp. (Info. grp PM 105, Dnr 93-759552u).

2. Statens Trafiksakerhetsverk, 1975 - Bilbaltesanvandningen i oktober 1975. Stockholm, Statens Trafiksakerhetsverk, 1975. 4 pp. (I nfo. grp PM no. 106, Dnr 93-7510436u). Fack, S-17120, Solna, Sweden.

3. Statens Trafiksakerhetsverk, 1976 - Bilbaltesanvandningen i mars 1976. Stockholm, Statens Trafiksakernetsverk, 1976. 3 pp. (Info. grp. PM no. 109, Dnr 93-768469u).

4. Bohlin, N. I., Norm, H., and Andersson, A.A. A Statistical Traffic Accident Analysis with Reference to Occupant Restraint Value and Crashworthiness of the Volvo Experiment Safety Car (VESC). A. B. Volvo, Gothenburg, Sweden, 1973.

5. Bohlin, N., Norin, H., Andersson, A., 1973 - Trafikolycksundersokningar Volvo, mars 1973. Goteborg, AB Volvo, Trafikolycksforskningen, 1973. 47 pp.

SWEDEN

6. Tolagen, A., 1977 - Trafikskadade i Ostergotland - En undersokning av skadade i trafiken i Ostergotlands lan under 1 1/2 ars tid. Linkoping University, Faculty of Medicine, 1977. 187 pp. (No. 46, ISBN 7372-130-1).

7. Nordic Road Safety Council. "Bilbelter" (English summary). Report 2. Stockhclm, 1973.

8. Journal of Traffic Medicine, 1977 - Resolutions. Journal of Traffic Medicine, Stockholm, Vol. 5, No. 1/1977, pp. 7-8.

SWITZERLAND

Persons and Agencies to be Contacted

1. Swiss Department of Transportation - Bern.

2. Amt Fur Verkehr, Bundeshaus Nord, 3001 Bern (DOT).

3. Walz, F., Gerichtl. med iz. Institut der Universitat Zurich, Postfach LH - 8028, Zurich, Switzerland.

4. Eidgenossische Polizeiabteilung, Bern.

5. Rafpael Hagenuim, Swiss Bureau of Accident Prevention Department of Justice and Police, Bern, Switzerland, 3000 and Mr. Zund for Seat Belt legislation.

6. Federation des Medecins Suisses Elfenstr. 18 30006 Bern.

7. Curt Schild, Automobile Club of Switzerland, Forchstr. 95, 8000, Zurich.

8. Swiss Bureau for Accident Prevention.

Articles Obtained by the Washington Office

1. Felix Walz, M.D., Ueli Zollinger, M.D., and Adrian Renfer, M.D., Institute of Forensic Medicine, University of Zurich, Switzerland, and Peter Niederer, Ph.D., Institute for Biomedical Engineering, University of Swiss Federal Institute of Technology, Zurich, Switzerland.

2. P. F. Niederer, Inst. for Biomedical Engineering, Swiss Federal Inst. of Technology and University of Zurich; Felix Walz, M.D.; and Ulrich Zollinger, M.D., Institute of Forensic Medicine, University of Zurich. Switzerland. Adverse Effects of Seat Belts and Causes of Belt Failures in Severe Car Accidents in Switzerland During 1976. 21st Staff Meeting.

WEST GERMANY

Persons and Agencies to be Contacted

1. Bundesfanstalt fur Strassenwesen,(Federal Instituten for Street Directions).

2. General German Automobile Club (ADAC).

3. G. Bliersbach, Classen-Kappelmann - Strasse 31, 5000 Koln 41.

4. W. Reidelbach, Daimler-Benz AG, Postfach 226, 7032 Sindelfingen.

5. K. Seidenstecher, Kennedyallee 72, 5300 Bonn-Bad, Godesburg, F.D.R.

6. Director of the Legal Department, W. Germany Ministry of Justice.

7. Federal Institute of Road Research, Cologne.

Articles Obtained by the Washington Office

1. Gg. Schmidt, D. Kallieris, R. Kappner, R. Mattern, F. Schultz, Institute of Legal Medicine, University of Heidelberg, Forensic Pathological and Biomechanical Experiences after the First Year of Mandatory Belt Wearing in the Federal Republic of Germany," Vobstrabe 2, 6900 Heidelberg, West Germany.

2. M. C. Danner, "Accident and Injury Characteristics in Side Collisions and Protection Criteria in Respect of Belted Occupants," Allianz-Versicherungs - AG.

Articles Unavailable in the U.S.A., Please Obtain

1. H.-J. Berger, G. Bliersbach, R. G. Dellen,"Fur und Wider Sicherheitsgurte," Frankfurt,Main, 1973.

2. H.-J. Berger, G. Bliersbach, R. G. Dellen,"Fahrformen und Erlebensentwicklungen bei der Teilnahme am Strassenverkehr," Cologne, 1975.

3. A. F. Williams, "Factors Associated with Seat Belt Use in Families," J.O. Safety Research, 4, 1972, 133-138.

4. H.-J. Berger, G. Bliersbach, R. G. Dellen, "Psychologische Grundlagen fur das Verhaltnis von Pkw-Fahrern zum Sicherheitsgurt. Eine quantifizierte Motivstudie. Psychologische Forschung zum Sicherheitsgurt und Umsetzung ihrer Ergebnisse Heft 2d. Schriftenreihe Unfall- und Sicherheitsforschung Strassenverkehr des Federal Institute of Road Research, Cologne, Greven & Bechtold, 1974.

WEST GERMANY

5. H.-J. Berger, G. Bliersbach, R. G. Dellen, "Uberlegungen zu einem verkehrspadagogischen Konzept. Z. f. Verkehrss., 21, 1975, 227-239.

6. Gordon W. Russel, "Seat Belts, Saints and Fear," J.O. Safety Research, 3, 1971, 80-85.

7. Rudiger Weissner, "Comparison of Advanced Belt Systems Regarding Their Effectiveness," Research and Developemnt, Volkswagenwerk AG, SAE# 780414A.

8. Auswirkungen des Sicherheitsgurtes auf die Folgen der Unfalle im Strassenverkehr. Bundesanstalt fur Strassenwesen, Cologne, 1976.

9. Status Report, Vol. 10, No. 10, May 12, 1975, p 5.

10. Psychological Problems of a Future Mandatory Belt Use. Unpublished report for the Federal Institute of Road Research, Cologne, August, 1976.

11. R. Ernst, L. Meyer, H. Volk, Begleitende Untersuchungen zur Wirsamkeit einer Aufklarungsaktion zum Sicherheitsgurt. Z.f., Verkehrss. 22, 1976, 34-35.

12. Status Report, Vol. 10, No. 11, June 18, 1975, P. 10.

13. H.-J.Berger, G. Bliersbach, R. G. Dellen, "Feldexperiment Sicherheitsgurteinbau. Verhalten von Gegnern des Sigherheitsgurtes bei Einfuhrung einer Anlegepflicht. Unveroff. Forschungsbericht fur die Bundesanstalt fur Strassenwesen, Koln, 1975.

14. Whatever happened in Puerto Rico? Kolner Informationen 1/76.

15. Unpublished Report of the DelBerg Institute for the Federal Institute of Road Research, Cologne, August 1975.

APPENDIX E

LIST OF PEOPLE INTERVIEWED, BY COUNTRY

CANADA

1. Mr. Barry Bragg, Head
   Human Systems
   Human Factors Research
   Transport Canada

2. Eric Welbourne, Head
   Vehicles
   Transport Canada

3. Terry Birch, Head
   Roads and Traffic
   Transport Canada

4. John Lawson, Head
   Systems and Data
   Transport Canada

5. Burt Milward, Head
   Traffic Services
   Royal Canadian Mounted Police

6. Reg Warren
   Traffic Injury Research Foundation

7. Larry Lanero, Manager
   Safety Coordination and Development Office
   Ontario Ministry of Transportation and Communications

8. Ms. Janace Pierce
   System Research and Development Branch
   Ontario Ministry of Transportation and Communications

FRANCE

1. Colonel Lagache
   Assistant Director
   Inter-Ministerial Committee for Highway Safety

2. M. Jacques Le Franc
   (in charge of Motor Vehicles)
   Inter-Ministerial Committee for Highway Safety

3. M. Dennis Blanchard-Defnac
   (in charge of Statistics)
   Inter-Ministerial Committee for Highway Safety

4. M. Bluet
   Evaluation Director
   Organisme National de Securite Routiere (O.N.S.E.R.)

5. M. Sisterman
   Study Director
   Organisme National de Securite Routiere

6. Professor J. P. Chodkiewicz, M.D. (Forensic Medicine)
   Centre Neurochirurgecal, Centre
   Hospitalier Sainte-Anne
   Paris, France

GERMANY

1. Ing. (grad)
   Gerhard Hutzler
   Abteilung Fahrzeugtechnik

   Allgemeiner Deutscher Automobil-Club
   BaumgartnerstraBe 53 . 800 Munchen 70
   Telefon (089) 76 76-60 32. Telex 05-29 231

2. Dipl-Ing. Michael Wrobel

   Verband Der Haftpflichtversicherer, Unfallversicherer
   Autoversicherer Und Rechtsschutzversicherer e.V.
   (Huk-Verband)
   Buro Fur Kfz-Technik

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8000 Munchen 40
Telefon 089/33 20 34

Ing-Grad. Franz Sagerer

Verband Der Haftpflichversicherer, Unfallversicherer
Autoversicherer Und Rechtsschutzversicherer e.V.
(Huk-Verband)
Buro Fur Fkz-Technik

LeopoidstraBe 20
800 Munchen 40
Telefon 089/33 20 24

Privat:
Allacher StraBe 193
8000 Munchen 50
Telefon 089/141 23 39

3. Dr. iur. Klaus Seidenstecher

(Ministry of Transportation)
Bundesveikehrsministerium
53 Bonn - Bad Godesberg
Kennedyallee 72
Telephon (02221) 862740
Telex 885700

4. Dr. Ernst
Federal Institute for Streets
Bundesanstalt Fur Strassenwesen

Bruhlerstr 1
5000 Koln 51
Koln, Germany

5. Gerhard Bliersbach
Diplom-Psychologe BDP

5000 Koln 30
Fridolinstrasse 49
Telefon (0221) 5 50 15 16

6. Krut E. Stefan
Referent Der Fraktion
Std-Bundes
Bundes Talgfraktion
Bundeshaus
5300 Bonn Germany

NEW ZEALAND

1. J. B. Toomath
Director of Research
Ministry of Transport

2. C. M. Clissold
Chief Traffic Engineer
Ministry of Transport

3. Arthur Rosburgh
Chief Traffic Superintendent
(Chief of the Highway Police)
Ministry of Transport

4. R. W. Lithgow
Secretary General
New Zealand Automobile Association

PUERTO RICO

Juan M. Aguayo
Traffic Safety Commissioner
Santurce, Puerto Rico

SWEDEN

1. Mr. Sven-Erik Sigfedsson
   Ministry of Communications

2. Mr. Claes Tingnall
   Swedish Road Safety Office

3. Mr. Ake Sundberg
   Swedish Road Safety Office

SWITZERLAND

1. Andre-Marc Arnaud

   Dr. es sc. pol
   Directeur General

   Automobile Club de Suisse
   Administration Centrale

   CH 300 Berne 13
   Wasserwarkgasse 39
   Telephone: 031 22 47 22
   Telex 32183

2. Mr. Anton Buhler
   Chef der Sektion Unfallkerhutung
   Bundesamt fur Polizeiwesen
   Berne, Switzerland

3. Mr. Hubert Schalbertter
   Sachbearbeiler in der Sektion Unfallverhutung
   (Same address as #2)

4. Mr. Baderbcher Kurt
   Chef der Sektion Technik
   (Same address as #2)

5. Dr. Med F. Waltz
   Gerichtiich-Medizinisches Institut der Universitat Zurich
   Zurichbergstr 8
   Postfach
   CH-8028 Zurich
   Switzerland

6. Dr. sc. techn P. Niederer
   Institut fur Bromedizinische Technik der Universitat und ETHZ
   Zurichbergstr 8
   Postfach
   CH-8028 Zurich
   Switzerland

UNITED KINGDOM

Personal Interviews:

Peter Harms and Adrian Hobbs
Accident Investigation Division
Transport and Road Resource Laboratory
Crossthorne
Berkshire

Leslie Gillam and Elizabeth Faulkner
Department of Transport
Marsham St.
London

Telephone and Mail Contacts

Central Government

Mr. Sherriff
Statistics Directorate
Department of Transport

Mr. Barlow
The Home Office
Department of Health and Social Security

Other Organizations

B. C. Wallis
Assistant Road Safety Official
The Automobile Association

A. Glover
Public Policy Department
The Royal Automobile Club

Secretary
The Institute for Advanced Motorists

Secretary
British Medical Association

Public Relations Department
Royal College of Surgeons

Mr. Orr
Medical Commission on Accident Prevention

Dr. Andrew Raffee
Chief Medical Officer
London Transport

Geoffrey Norman
The Magistrates Association

Press Officer
The Police Federation

British Insurance Association

Director for Road Safety
Royal Society for the Prevention of Accidents

APPENDIX F

INTERVIEW GUIDE

INTERVIEW GUIDE FOR GOVERNMENT
MINISTRIES OR DEPARTMENTS

Date: _____

Interviewee: _____ Organization: _____

Country: _____ _____

Address: _____

Interviewer: _____ _____

Country: _____ Telephone: _____

BACKGROUND AND HISTORY

1. Find out background and history of how the law came into being.

2. Determine what the forcing factors were for enacting the mandatory safety belt usage legislation.

3. Determine if there are records of legislative debates that took place prior to adoption of the law. Get copies if possible.

4. Determine if there are records of special testimony from hearings on the safety belt legislation. Get copies if possible.

5. Find out what the seat belt usage rate was prior to adoption of the law.

6. Find out what measures were taken to encourage motorists to voluntarily increase the usage of safety belts prior to adoption of the law.

7. Find out if the agency conducted or sponsored public information/public relations programs in an attempt to increase safety belt usage. Get copies of results.

8. Find out if the agency conducted or sponsored public attitude studies in an attempt to understand the public resistance to wearing safety belts.

9. Find out what other research the agency may have sponsored as background information for the mandatory safety belt usage law.

SPECIFICATION OF THE LAW

1. Find out the specific requirements of the law. Get copy of law.

2. Find out the penalty for noncompliance. Find out of penalty is considered satisfactory.

3. Find out if there are any exemptions granted by the law. If there are, find out why they were granted.

4. Determine the requirements for safety belt hardware systems for automobiles and their evolutionary development.

5. Find out if the interviewee thinks the various aspects of the law as written are satisfactory. If not, what changes should be made? Is law:

   - too strict?
   - ineffective?
   - too lax?
   - satisfactory?

6. Find out if the interviewee would advocate any changes in the law. If so, what are they?

7. Find out what organizations (public and private) the agency worked with in preparing for the mandatory safety belt usage legislation.

8. Find out the specific date the law became effective.

IMPLEMENTATION TECHNIQUES

1. Find out how public was prepared for the mandatory legislation after its adoption--public information programs, etc.

2. Determine if there is a continuing public information program to change public attitudes or if acceptability is left to enforcement.

3. Find out what the specific enforcement procedures are, how they are implemented, and if they are consistent throughout the country.

4. Find out the level of enforcement and if it is the same for all jurisdictions or if some jurisdictions are more lax than others.

5. Find out if specific measures had to be taken to maximize acceptability of the law by enforcement officials and how this was accomplished.

6. Find out if the interviewee is aware of additional ways to increase safety belt usage that are not being utilized in his/her country.

EFFECTIVENESS OF IMPLEMENTATION

1. Find out what the safety belt usage rate is subsequent to passage of the law.

2. Find out if the agency has any data concerning the reduction in injuries, types of injuries or fatalities as a result of adopting the law.

3. Find out if there has been a change in attitude of policemen, whose duty it is to enforce compliance with the law, regarding the desirability of mandatory safety belt usage legislation.

4. Find out if there has been a change in attitude of the public, since adoption of the law, regarding the desirability of mandatory safety belt usage legislation.

5. Find out if the agency has sponsored any research to determine the effectiveness of implementing the mandatory safety belt usage law.

AUXILIARY INFORMATION

1. Find out names of people in public and private organizations doing research on seat belt usage, accident injury/fatality reduction, and change in attitudes regarding seat belt usage.

2. Find out name of police jurisdictions involved in enforcement of safety belt usage laws.

3. Find out names of politicians/legislators able to speak about the political considerations that had to be resolved.

4. Find out names of other organizations which would have pertinent information such as medical associations, hospital associations, automobile associations, and other government organizations.

INTERVIEW GUIDE FOR PARLIAMENTARY
OR LEGISLATIVE COMMITTEES

Date: _____

Interviewee: _____ Organization: _____

Country: _____ _____

Address: _____

Interviewer: _____ _____

Country: _____ Telephone: _____

BACKGROUND/HISTORY

1. Find out if interviewee became involved in sponsoring or opposing the seat belt legislation.

2. Find out the extent of the involvement of the interviewee; that is: was it minimal, moderate, or extensive. What form did the involvement take?

3. Find out if any statistics or other quantifiable data were available on which the interviewee based his/her viewpoint.

4. Find out if the interviewee was aware of the public's support for, on opposition to the mandatory usage legislation.

5. Find out the essential factors that finally led to passage of the mandatory usage legislation.

6. Find out what steps were taken to get motorists to voluntarily increase seat belt usage prior to adoption of the mandatory laws.

SPECIFICATION OF THE LAW

1. Find out if the interviewee thinks the various aspects of the law, as written, are satisfactory. If not, what changes should be made? Is the law:

   - too strict?

   - ineffective?

- too lax?
- satisfactory?

2. Find out if there is continuing legislative support for the mandatory law.

3. Find out if interviewee receives from his/her constituency pro and con correspondence regarding the law. Is the prevailing opinion for or against the law?

4. Find out the specific date the law became effective.

IMPLEMENTATION TECHNIQUES

1. Find out what programs and techniques were employed to increase public acceptance of the law and thereby increase compliance.

2. Find out if enforcement officials took specific measures to maximize acceptability of the law and how this was accomplished.

3. Find out specific changes the interviewee would recommend for implementing the law if he/she were to redo the program. Why?

4. Find out what the interviewee considers the single most effective implementation aspect.

EFFECTIVENESS OF IMPLEMENTATION

1. Find out how effective the interviewee considers the law to be. Why?

2. Find out if there has been a change in attitude of motorists since enactment of the law, either for or against it.

3. Find out if there has been a change in the attitude of legislators since enactment of the law, either for or against it.

4. Find out if research has been done to determine the reduction in motor vehicle occupant injuries and fatalities--before and after enactment of the mandatory usage laws.

AUXILIARY INFORMATION

1. Find out names of people in public and private organizations doing research on seat belt usage, accident injury/fatality reduction, and change in attitudes regarding seat belt usage.

2. Find out name of police jurisdictions involved in enforcement of safety belt usage laws.

3. Find out names of other politicians/legislators able to speak about the political considerations that had to be resolved.

4. Find out names of organizations which would have pertinent information such as medical associations, hospital associations, automobile associations, and other government organizations.

INTERVIEW GUIDE FOR GOVERNMENTAL, UNIVERSITY, OR PRIVATE RESEARCH ORGANIZATIONS

Date: _____

Interviewee: _____ Organization: _____

Country: _____ _____

Address: _____

Interviewer: _____ _____

Country: _____ Telephone: _____

BACKGROUND AND HISTORY

1. Find out what research the organization has done in the following areas:

   - safety belt usage rate;
   - effectiveness of various safety belt/harness designs; and
   - injury and fatality rate as a function of seat belt usage and non-usage.

2. Find out what research the organization has done on factors affecting the usage of safety belts; such as:

   - monetary fines;
   - law enforcement;
   - active or passive designs;
   - public attitudes;
   - attitudes of law enforcement and other officials; and
   - public information/public relations programs.

3. Find out if research has been done on factors other than safety which might influence accident injury and fatality statistics; such as:

   - lowering of speed limits;

- stricter enforcement of speed limits;
- vehicle inspection programs which include safety belt inspection;
- improved vehicle crashworthiness; and
- improved braking capabilities of automobiles.

SPECIFICATION OF THE LAW

1. Find out the organization's position regarding the law:
   - Too strict?
   - Too lax?
   - Ineffective?
   - Satisfactory?
2. Find out if the organization advocates any changes in the law.
3. Determine if the organization is satisfied with the safety belt hardware systems presently installed in the nation's automobiles. If not, what changes would they recommend?
4. Find out the organization's position regarding motor vehicle occupants who may be exempted from the law. Specific areas of interest include children and passengers.

IMPLEMENTATION TECHNIQUES

1. Find out if research has been done on the various types of implementation techniques that may be employed.
2. Find out if research has been done on the level and consistency of enforcement throughout the country.
3. Find out what research has been done on changes in public attitudes since adoption of the law.
4. Find out what research has been done on public information/public relations programs since adoption of the law.

5. Find out what research has been done on the attitudes, preparation, and behavior of law enforcement officials since enactment of the law.

EFFECTIVENESS OF IMPLEMENTATION

1. Find out if research has been done on the actual effectiveness of the implementation techniques being employed.

2. Find out what research has been done to determine the reduction in injuries, types of injuries, and fatalities as a result of adopting the law.

3. Find out what research has been done on the change in the safety belt usage rate as a result of adopting the law.

4. Find out what other research may have been done related to the effectiveness of adopting mandatory safety belt usage legislation.

AUXILIARY INFORMATION

1. Find out names of other people in public and private organizations doing research on seat belt usage, accident injury/fatality reduction, and change in attitudes regarding seat belt usage.

2. Find out name of police jurisdictions involved in enforcement of safety belt usage laws.

3. Find out names of politicians/legislators able to speak about the political considerations that had to be resolved.

4. Find out names of other organizations which would have pertinent information such as medical associations, hospital associations, automobile associations, and other government organizations.

INTERVIEW GUIDE FOR POLICE AND TRAFFIC
LAW ENFORCEMENT AGENCIES

Date: _____

Interviewee: _____ Organization: _____

Country: _____ _____

Address: _____

Interviewer: _____ _____

Country: _____ Telephone: _____

BACKGROUND AND HISTORY

1. Find out what officials feel about the requirement for using safety belts.

2. Find out if officials feel that enforcement of safety belt usage is a legitimate and viable function of law enforcement organizations.

3. Find out what officials think about the safety belt hardware systems available in automobiles.

4. Find out if police associations, unions, etc. supported the passage of a mandatory safety belt usage law.

5. Find out if the officials were aware of the usage rate of safety belts prior to enactment of the law.

6. Find out if law enforcement officials were actively involved in promoting safety belt usage prior to enactment of the law.

7. Find out if the officials were officially involved in activities leading to adoption of the law.

8. Find out if law enforcement officials were aware of the public's attitude toward safety belt usage prior to enactment of the law.

SPECIFICATION OF THE LAW

1. Find out if the officials have a thorough understanding of the law as now enacted.

2. Find out what officials think about the penality for non-compliance with the law.

3. Find out what officials think about the safety belt hardware system called out by the law.

4. Find out what officials think about the exemptions from safety belt usage allowed by the adopted law.

5. Find out if law requires that accident reports contain an indication of whether or not victims were wearing safety belts.

IMPLEMENTATION TECHNIQUES

1. Find out what specifically the officials or their organizations are doing to implement the adopted law.

2. Find out the level of enforcement being provided by the official's organization, that is:

   - do officers stop motorists at random to check compliance?

   - do officers set up periodic road blocks to check compliance?

   - do officers check accident victims for compliance?

   - do officers check motorists at traffic control points for compliance?

3. Find out the consistency of enforcement throughout the country, i.e., is the level of enforcement the same in all regions of the county or is it more stringent or more lax in some areas?

4. Find out if specific performance measures have been instituted to ensure that officers are diligent in enforcing safety belt usage.

5. Find out if any specific implementation technique appears to be more effective than others.

6. Find out what changes the official would recommend to increase compliance.

EFFECTIVENESS OF IMPLEMENTATION

1. Find out if the official's organization has made any attempt to determine the rate of safety belt usage compliance since adoption of the law.

2. Find out if there has been a change in attitude of policemen, whose duty it is to enforce compliance with the law, regarding the desirability of mandatory safety belt usage legislation.

3. Find out if the official is aware of data or ongoing research concerning the reduction of injuries, types of injuries, and fatalities since adoption of the mandatory safety belt usage law.

4. Find out if there has been a change in attitude of the public, since adoption of the law, regarding the desirability of mandatory safety belt usage legislation.

AUXILIARY INFORMATION

1. Find out names of people in public and private organizations doing research on seat belt usage, accident injury/fatality reduction, and change in attitudes regarding seat belt usage.

2. Find out name of police jurisidictions involved in enforcement of safety belt usage laws.

3. Find out names of politicians/legislators able to speak about the political considerations that had to be resolved.

4. Find out names of other organizations which would have pertinent information such as medical associations, hospital associations, automobile associations, and other government organizations.

INTERVIEW GUIDE FOR MOTORISTS' ORGANIZATIONS, PROFESSIONAL SOCIETIES, TRADE ORGANIZATIONS, AND SPECIAL INTEREST GROUPS

Date: _____

Interviewee: _____ Organization: _____

Country: _____ _____

Address: _____

Interviewer: _____ _____

Country: _____ Telephone: _____

BACKGROUND AND HISTORY

1. Determine the overall purpose of the organization.

2. Find out if the organization actively supported passage of mandatory seat belt usage legislation. If not, find out why not.

3. Find out if the organization collected statistics on safety belt prior to passage of the law.

4. Find out if the organization conducted attitude studies among its membership or constituents regarding safety belt usage.

5. Find out if the organization actively promoted seat belt usage among its membership or contituents.

6. Find out if the organization was consulted by government or other officials regarding the promotion of seat belt usage by the public or regarding the promotion of public acceptability of the law.

SPECIFICATION OF THE LAW

1. Find out the organization's position regarding the law:

   . Too strict?

   . Too lax?

- Ineffective?

- Satisfactory?

2. Find out if the organization advocates any changes in the law.

3. Determine if the organization is satisfied with the safety belt hardware systems presently installed in the nation's automobiles. If not, what changes would they recommend?

IMPLEMENTATION TECHNIQUES

1. Determine the organization's involvement in informing its membership/constituents about the enacted law.

2. Find out if the organization instituted programs to encourage its membership/constituents to comply with the law.

3. Find out if the organization has any information on enforcement procedures, e.g., how they are implemented, the level of enforcement, and whether enforcement is consistent throughout the country.

4. Find out if the organization has taken steps to determine whether the attitudes of its membership/constituents have changed since adoption of the law.

EFFECTIVENESS OF IMPLEMENTATION

1. Find out if the organization is involved in any activity to determine the reduction in injuries, types of injuries, and fatalities as a result of the adopted law.

2. Determine if the organization knows where the public's attitude towards mandatory seat belt usage has changed since adoption of the law.

3. Determine if the organization knows what the change in seat belt usage is since adoption of the law.

AUXILIARY INFORMATION

1. Find out names of people in public and private organizations doing research on seat belt usage, accident injury/fatality reduction, and change in attitudes regarding seat belt usage.

2. Find out name of police jurisidictions involved in enforcement of safety belt usage laws.

3. Find out names of politicians/legislators able to speak about the political considerations that had to be resolved.

4. Find out names of other organizations which would have pertinent information such as medical associations, hospital associations, automobile associations, and other government organizations.

INTERVIEW GUIDE FOR MEDICAL ASSOCIATIONS

Date: _____

Interviewee: _____ Organization: _____

Country: _____ _____

Address: _____

Interviewer: _____ _____

Country: _____ Telephone: _____

BACKGROUND AND HISTORY

1. Find out if the organization has records of the types and severity of injuries to motor vehicle occupants prior to enactment of the mandatory safety belt usage law. Get data if possible.

2. Find out if the organization has records on the average length of bed occupancy for patients who were vehicle occupants in motor vehicle accidents. Get data if possible.

3. Find out if the organization has records that correlate injury severity, types of injury, and cause of death to whether or not the victim was wearing a safety belt. Get data if possible.

4. Find out if the organization was actively involved in supporting passage of the law. If so, in what way?

5. Find out if the organization has comparative data on the type and severity of injuries and on the incidence of fatalities resulting from similar accident situations for victims who were both wearing and not wearing safety belts. Get data if possible.

SPECIFICATIONS OF THE LAW

1. Find out the organization's position regarding the law:

   - Too strict?

   - Too lax?

- Ineffective?

- Satisfactory?

2. Find out if the organization advocates any changes in the law. If so, what are they?

3. Find out the organization's position regarding motor vehicle occupants who may be exempted from the law. Specific areas of interest include children and passengers.

IMPLEMENTATION TECHNIQUES

1. Find out if the organization has taken specific steps to ensure that data are collected to correlate changes in injury type and severity with compliance with mandatory safety belt usage. If so, what are they?

2. Find out if the organization is involved in promoting compliance with the mandatory safety belt usage law. If so, what is being done?

3. Find out if the organization was contacted by government officials or others to involve them in collecting data to support the use of safety belts as a means of reducing injuries, types of injuries, and fatalities. If so, get the particulars involved.

EFFECTIVENESS OF IMPLEMENTATION

1. Find out if the organization has data to substantiate reduction in injuries, types of injuries, and fatalities as a result of compliance with the law. If so, get cases of data.

2. Find out if the organization is aware of other organizations in their country or other countries that have data correlating the reduction in injuries, types of injuries, and deaths with the passage of mandatory safety belt usage legislation.

3. Find out if the organization has a position on the effectiveness of implementation techniques utilized by their country to increase compliance with the law. If so, what is it?

AUXILIARY INFORMATION

1. Find out names of people in public and private organizations doing research on seat belt usage, accident injury/fatality reduction, and change in attitudes regarding seat belt usage.

2. Find out name of police jurisidctions involved in enforcement of safety belt usage laws.

3. Find out names of politicians/legislators able to speak about the political considerations that had to be resolved with respect to passing the law.

4. Find out names of other organizations which would have pertinent information such as medical associations, hospital associations, auotombile associations, and other government organizations.

INTERVIEW GUIDE FOR INSURANCE ORGANIZATIONS

Date: _____

Interviewee: _____ Organization: _____

Country: _____ _____

Address: _____

Interviewer: _____ _____

Country: _____ Telephone: _____

BACKGROUND AND HISTORY

1. Find out if the organization took a position for or against enactment of mandatory seat belt legislation. If so, what was the basis for this position? If not, why not?

2. Find out if the organization or other insurance organizations compiled statistics on safety belt usage prior to the mandatory law. (If so, obtain copy of data.)

3. Find out if the organization or other insurance organizations attempted to correlate insurance rates with medical statistics regarding the rate and severity of injuries as they relate to safety belt use. If so, what were the results?

SPECIFICATION OF THE LAW

1. Find out if the organization has taken a position on the law since its enactment. If so, what is it?

2. Find out if the organization is in agreement with the law. If not, why not?

3. Find out if the interviewee would advocate any particular changes in the law. If so, what are they?

IMPLEMENTATION TECHNIQUES

1. Find out if the interviewee is aware of techniques which were employed to implement the law. If so, does he/she feel they are affective? Why?

2. Find out if the organization or other insurance organizations were consulted by government or other officials about the possible relationship of the law to insurance rates or insurance company policy positions. If so, what were the particulars.

3. Find out if the organization has taken any steps to encourage clients to comply with the mandatory usage law. If so, what are the particulars?

4. Find out if the organization has any plans for revising its rate structure as a result of reduced injuries and deaths based on the mandatory seat belt usage law. If so, what are they? If not, why not?

EFFECTIVENESS OF IMPLEMENTATION

1. Find out if the organization is aware of data regarding a reduction in vehicle occupant injuries and fatalities, as a result of the mandatory usage law. If so, get copies.

2. Find out if the organization has been in contact with national medical associations regarding a change in the severity of injuries, types of injuries, and number of injuries as a result of adopting the law. If so, what are the results? If not, find out if they feel it would be useful to make such contact.

3. Find out if the organization has been in contact with national hospital associations regarding a change in hospital bed occupancy, or a change in the types of injuries treated and their severity as a result of adopting the law. If so, what were the results? If not, find out if they feel it would be useful to make such contact.

4. Find out if the organization has been in contact with enforcement officials to obtain information on the rate of compliance with the law. If so, what were the results?

AUXILIARY INFORMATION

1. Find out names of people in public and private organizations doing research on seat belt usage, accident injury/fatality reduction, and change in attitudes regarding seat belt usage.

2. Find out name of police jurisdictions involved in enforcement of safety belt usage laws.

3. Find out names of politicians/legislators able to speak about the political considerations that had to be resolved.

4. Find out names of other organizations which would have pertinent information such as medical associations, hospital associations, automobile associations, and other government organizations.