

MINUTES OF THE House COMMITTEE ON Transportation

The meeting was called to order by Representative Rex Crowell at  
Chairperson

1:30 ~~am~~/p.m. on February 21, 1985 in room 519-S of the Capitol.

All members were present ~~except~~

Committee staff present:

Hank Avila, Legislative Research Department  
Fred Carman, Office of the Revisor of Statutes  
Donna Mulligan, Committee Secretary

Conferees appearing before the committee:

Representative Jessie Branson  
Mr. Robert Morrissey, Federal Highway Administration  
Mr. David Tittsworth, Kansas Department of Transportation  
Mr. Bob Storey, Traffic Safety Now, Inc.  
Dr. Fredric E. Clark, Topeka  
Mr. Bill Henry, Kansas Highway Users Federation  
Mr. Dan Lykins, Kansas Head Injury Association  
Sgt. Bill Jacobs, Kansas Highway Patrol  
Ms. Gaila Hein, Kansas Congress of Parents & Teachers  
Professor Bob Smith, Kansas Engineering Society  
Mr. Tom Little, Kansas Association of Emergency Medical Services  
Mrs. Mary Turkington, Kansas Motor Carriers Association  
Mr. Paul Fleener, Kansas Farm Bureau  
Mr. Pat Barnes, Kansas Motor Car Dealers Association  
Mr. Jim Edwards, Kansas Chamber of Commerce and Industry  
Mr. Lawrence Fox, Kansas State University  
Ms. JoEllen McGranahan, Kansas Triple A  
Mr. Bill Sneed, Kansas Defense Council  
Mr. Norman Sherbert, General Motors Corporation

The meeting was called to order by Chairman Rex Crowell and it was announced the order of business for the day would be a hearing on HB-2188 concerning mandatory seat belts.

Representative Jessie Branson, sponsor of the bill, briefed the Committee on its contents. (See Attachment 1)

Mr. Robert Morrissey, Federal Highway Administration, gave favorable testimony concerning HB-2188.

Chairman Crowell asked if the Federal requirements would still be met if mail carriers were excluded at times when they are on their routes. Mr. Morrissey said he didn't know, but he would check and let the Committee know.

Mr. David Tittsworth, Kansas Department of Transportation, gave testimony in favor of HB-2188. (See Attachment 2)

Mr. Tittsworth related that at least three states have passed mandatory seat belt bills, those being New Jersey, New York, and Illinois. Several other states are considering mandatory seat belt legislation. He pointed out that if not enough states pass mandatory seat belt laws that conform to the federal regulations, the phase-in of automatic restraints will continue.

Mr. Tittsworth pointed out that KDOT supports the mitigation of damages section that is contained in section 4(b).

CONTINUATION SHEET

MINUTES OF THE House COMMITTEE ON Transportation,  
room 519-S, Statehouse, at 1:30 ~~xxx~~/p.m. on February 21, 1985

Mr. Bob Storey, representing Traffic Safety Now, Inc., gave favorable testimony concerning HB-2188. (See Attachment 3) Mr. Storey told the Committee that in Australia, before the Mandatory Seat Belt Law was passed, there was 30 percent usage. After the passage of this legislation, there was 80 percent usage with a 22 percent reduction in fatalities. He stated that in Great Britain 20 percent of the public "buckled up" before passage of a mandatory seat belt law and after passage, 80 percent "buckled up", and there was a 25 percent reduction in fatalities.

Mr. Storey said he would like to see the fine provision changed to read "a fine of \$25 including court costs." (See Attachment 4)

Dr. Fredric E. Clark was the next conferee and presented testimony in favor of HB-2188. (See Attachment 5) Dr. Clark said that in past years he has treated patients whose injuries could have been eliminated by the use of seat belts or shoulder restraints.

Mr. Bill Henry, Kansas Highway Users Federation, testified in favor of HB-2188. (See Attachment 6)

Mr. Dan Lykins, Kansas Head Injury Association, testified concerning HB-2188. (See Attachment 7) He said his organization supports the concept of the bill, but recommends the mitigation of damages be stricken from the bill. He further indicated his organization feels mandatory passive restraints are desirable.

Sgt. Bill Jacobs, Kansas Highway Patrol, testified in favor of HB-2188. (See Attachment 8) Sgt. Jacobs said that a person's chances are much better for survival and avoidance of injuries if he is restrained from being flung about the interior of a vehicle at the time of an accident, and therefore urged passage of HB-2188.

Representative Freeman asked Sgt. Jacobs if a survey has been made of the Highway Patrolmen to ascertain whether or not the use of mandatory seat belts would be enforceable. Sgt. Jacobs said there had not been an actual survey made, but stated the law would be difficult to enforce.

Ms. Gaila Hein, Kansas Congress of Parents and Teachers, testified in favor of HB-2188. (See Attachment 9) She cited figures suggesting that the usage of seat belts could prevent 90 percent of deaths and 80 percent of crippling injuries caused by traffic accidents.

Professor Bob Smith, Kansas Engineering Society, presented testimony in favor of HB-2188. (See Attachment 10)

Mr. Tom Little, Kansas Association of Emergency Medical Services, testified in favor of HB-2188. Mr. Little indicated he believes all occupants of a vehicle should fasten safety belts, not just those in the front seat.

Mrs. Mary Turkington, Kansas Motor Carriers Association, testified favorably concerning HB-2188. (See Attachment 11)

Representative Patrick asked if it is mandatory for truckers to wear seat belts. Mrs. Turkington said it is required for truckers to fasten seat belts before the truck is moved.

Mr. Paul Fleener, Kansas Farm Bureau, testified in support of HB-2188. (See Attachment 12)

Mr. Pat Barnes appeared on behalf of the Kansas Motor Car Dealers Association in support of HB-2188. (See Attachment 13) He stressed the cost to the consumer of mandatory passive restraints.

CONTINUATION SHEET

MINUTES OF THE House COMMITTEE ON Transportation

room 519-S, Statehouse, at 1:30 ~~am~~ p.m. on February 21, 1985

Mr. Jim Edwards, Kansas Chamber of Commerce and Industry, gave favorable testimony concerning HB-2188. (See Attachment 14) He pointed out that unlike passive restraints, seat belts are already in place in most vehicles and only need to be used.

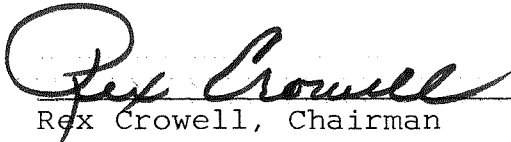
Mr. Lawrence Fox, Extension Specialist in Highway Safety, Kansas State University was the next conferee and gave favorable testimony on HB-2188. (See Attachment 15)

Ms. JoEllen McGranahan, Kansas Triple A testified in favor of HB-2188. (See Attachment 16) She stressed that a majority of the public prefers mandatory seat belts to mandatory passive restraints.

Mr. Bill Sneed, Kansas Defense Council, was the next conferee and gave favorable testimony concerning HB-2188. (See Attachment 17)

Mr. Norman Sherbert, General Motors Corporation, testified before the Committee on HB-2188 and urged its passage. Mr. Sherbert said the decision must be made to either pass a law requiring the mandatory use of seat belts, or in the future air bags would be installed in new vehicles at an added cost to consumers.

The meeting was adjourned at 3:15 p.m.

  
Rex Crowell, Chairman

GUEST LIST

COMMITTEE: Transportation

DATE: 2-21

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NAME ADDRESS COMPANY/ORGANIZATION

DAVID G. TITTSWORTH	TOPEKA	CHIEF COUNSEL KDOT
ED DESOIGNIE	TOPEKA	KDOT
RICHARD SCHLEGEL	MANHATTAN	ABATE of KS.
Jane Clouse	Topeka	FHWA
Bob Mowrissey	Topeka	FHWA
Richard Harmon	Topeka	KS Assn. Prop. Casualty
Dan Lykins	Topeka	Ks. Herd. & Range Assoc.
William W. SNEED	TOPEKA	Ks Assn. of Def. Counsel
FAT BARDES	"	Ks. Motor Car Dealers Assn.
WILLIAM JACOBS	TOPEKA	KANSAS HIGHWAY PATROL
Lawrence J. Fox	Manhattan	Kansas State U.
John Kelly	Topeka	D.D. Council
CLARE York	"	Inten - San Fred Ken
SUSAN TANNEWALD-MIRINGOFF	TOPEKA	LAW STUDENT
LOU ROSSELOT	TOPEKA	
JIM SUCCINS	"	Ks. Motor Car Dealers Assn.
Bill Clark	Topeka	Self
Jim Edward	"	KCCI
Judy Zimmerman	Jamestown	Close Up Kansas
Kenny Allen	Concordia	Close Up Kansas
Ann Halftied	Concordia	Close up KS.
Jamie Albert	Concordia	" "
Kristine Bidreau	Jamestown	" "
Sherry Perkins	Concordia	" "
John Gaster	" "	" "

GUEST LIST

# 2

COMMITTEE: Transportation

DATE: 2-21

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NAME	ADDRESS	COMPANY/ORGANIZATION
Michael A. Flyzik	Topoka	SRS/ADAS
David Finnegan	Topoka	Shawnee Heights
GREG HAUG	TOPEKA	SHAWNEE HEIGHTS
Lana Markinske	Topoka	Shawnee Heights
Sheila Hutcherson	Topoka	Shawnee Heights
Anita Holmes	Topoka	Shawnee Heights
Helen Stephens	P.V.	Ks. Engineering Society
Gaila Hein	D.P.	Ks. PTA
Lonna Casper	Shawnee Mission	Ks. PTA
Jocellen McManahan	Topoka	AAA Kansas
Tom Whitaker	Topoka	Ks Motor Carriers Assn
Mary E. Turkington	Topoka	Kansas Motor Carriers Assn
M. Wolf	Lawrence	Katolm - Sen Morris
Bob L. Smith	Manhattan	Ks. Engrg Society
Bill Henry	Topoka	Ks Engineering Society
Bob Storey	Topoka	Traffic Safety Board
BARRY COUGHLIN	KANSAS CITY	FORD MOTOR CO.
LEIGH NICHOLS	OKLA CITY	MOTOR VEHICLE MFGS.
NR SHERBERT	DENVER	GENERAL MOTOR CORP

STATE OF KANSAS

JESSIE M. BRANSON  
REPRESENTATIVE, FORTY-FOURTH DISTRICT  
800 BROADVIEW DRIVE  
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TOPEKA

HOUSE OF  
REPRESENTATIVES

COMMITTEE ASSIGNMENTS  
MEMBER: EDUCATION  
PENSIONS, INVESTMENTS AND BENEFITS  
PUBLIC HEALTH AND WELFARE

February 21, 1985

To: Representative Rex Crowell, Chairman  
and Members  
Committee on Transportation and Utilities  
From: Representative Jessie Branson  
Re: Support of HB 2188- Mandatory Safety Belt Use

*JSS 2*

Thank you Mr. Chairman and Members of the Committee.

I have been before this committee a number of times during the past four years as sponsor of the Kansas Child Passenger Safety Act, which now requires that children under four years of age be protected by being secured in an approved safety seat while riding in the front seat of a passenger car.

Today I appear again as an advocate on health and safety, but this time to ask for favorable action on Senate Bill 144.

We know the following to be facts:

- - - Motor vehicle accidents are the leading cause of death in persons between 5 and 35 years of age.
- - - In Kansas alone, 510 people were killed in motor vehicle accidents during 1984, with thousands more injured.
- - - Overall safety belt usage averages 10% nationwide. However, a recent study conducted in Kansas shows that usage is less than 10% in our state.

*2/21/85*  
*Attachment 1*

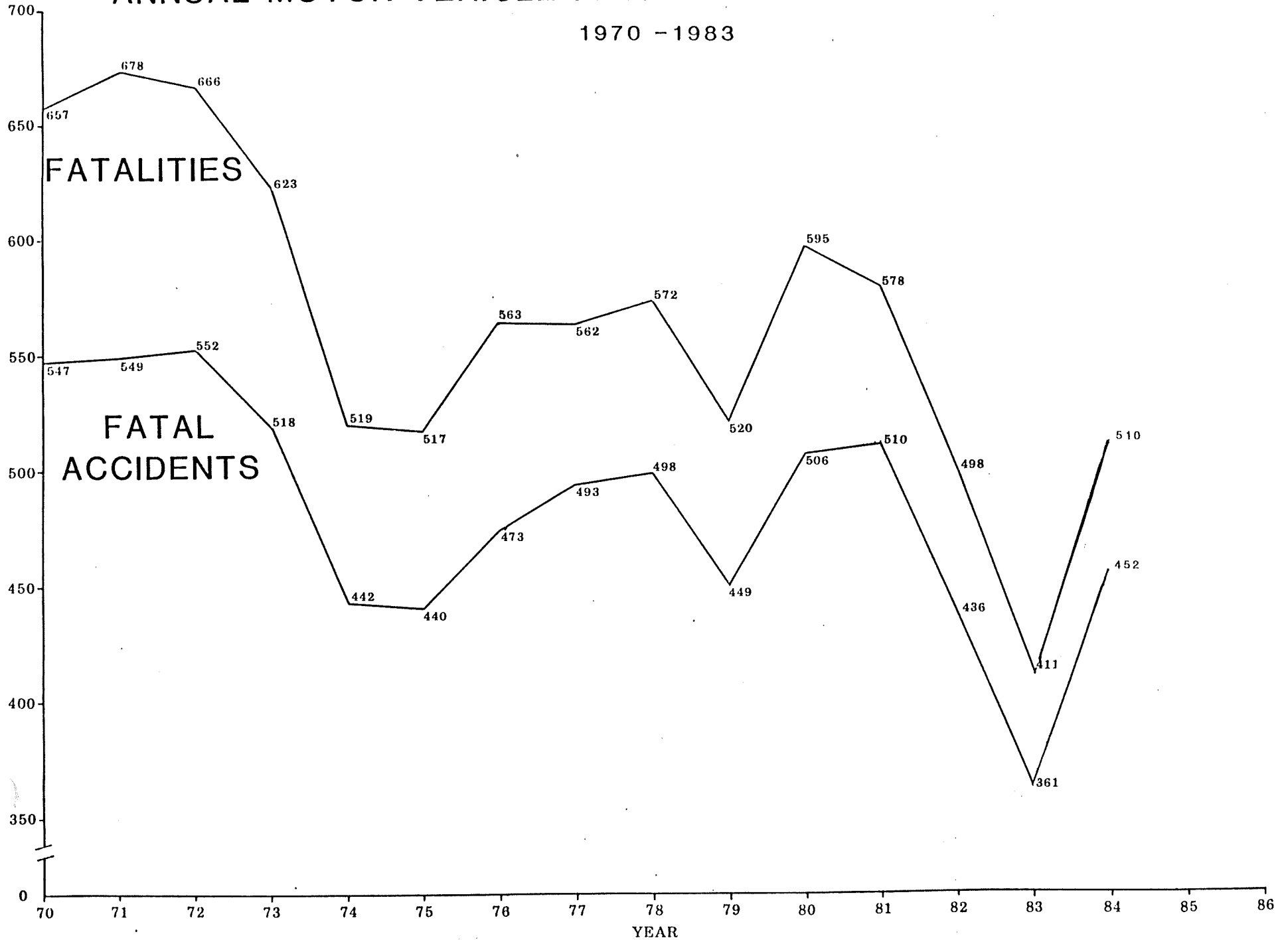
- - - 30 countries now have safety belt laws.
- - - To date, fatalities in those countries have been reduced on the average of approximately 25%, while usage varies from 40% in parts of Canada to 95% in Great Britian.
- - - Data coming out of these countries also shows that increased usage and reduction of fatalities is highly dependent upon enforcement of the law.

Mr Chairman, I would like to propose two amendments. (See balloon).

KANSAS DEPARTMENT OF TRANSPORTATION  
ACCIDENT RESEARCH AND STATISTICS

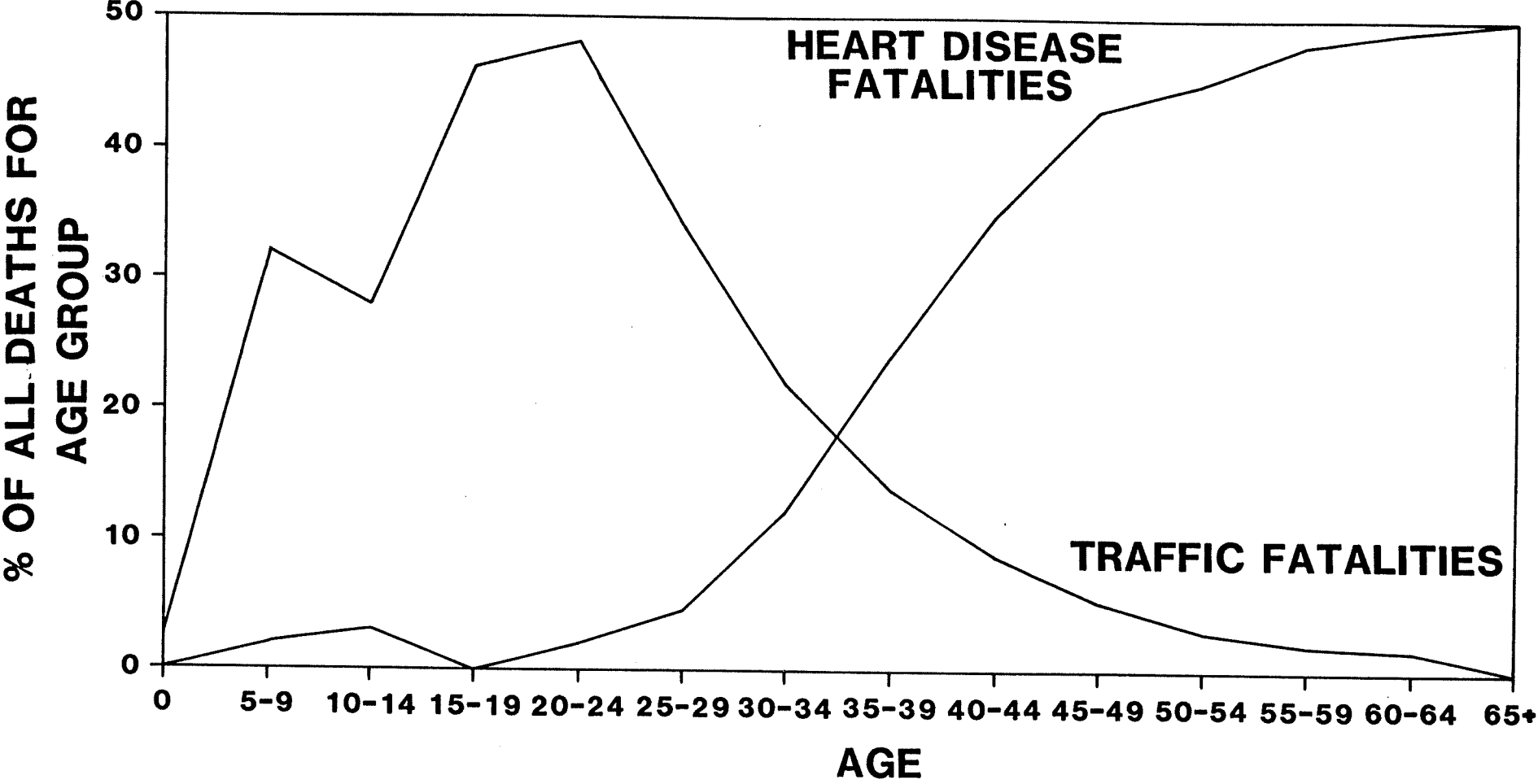
# ANNUAL MOTOR VEHICLE FATALITIES AND FATAL ACCIDENTS

1970 - 1983

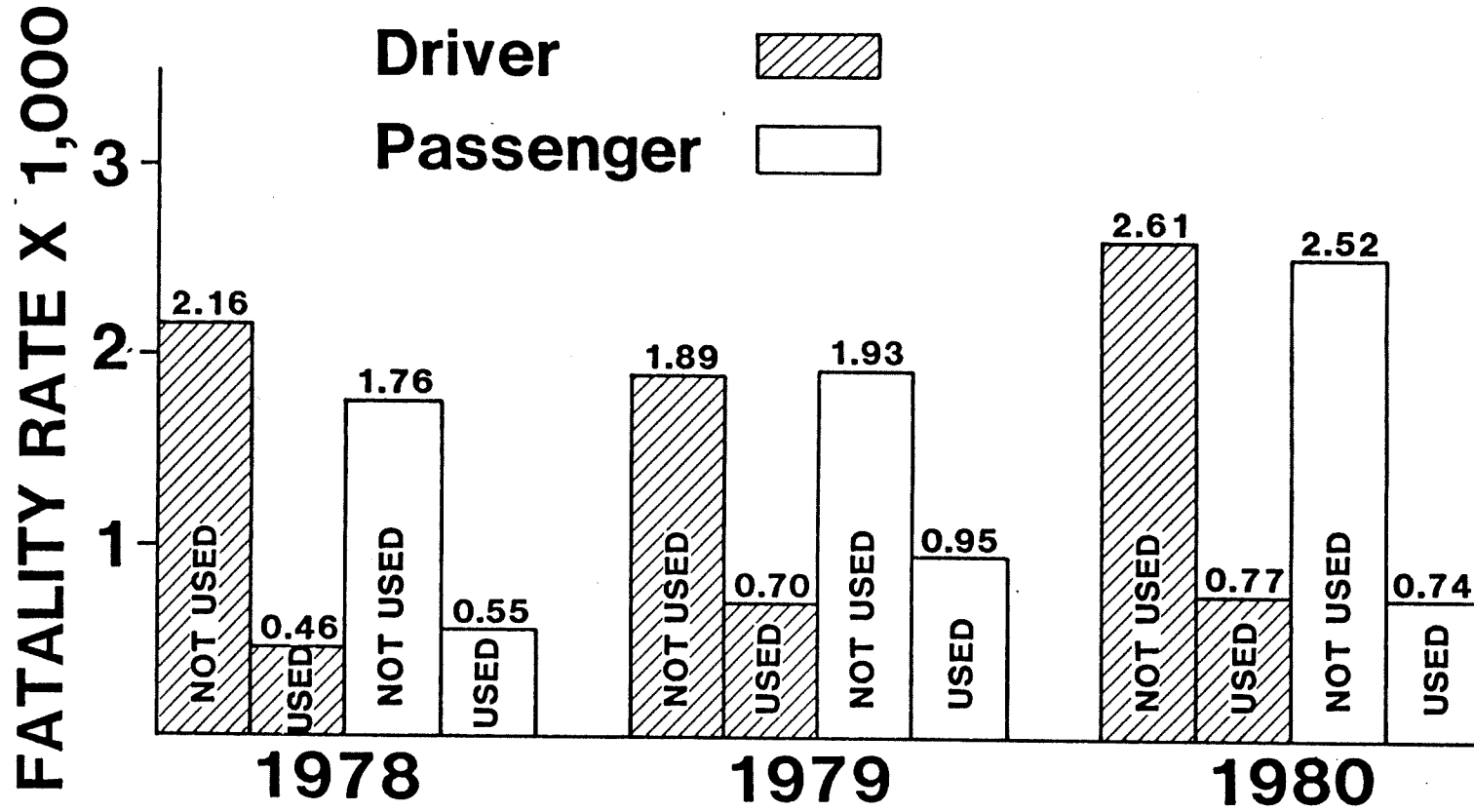




# AGE AND MAJOR CAUSES OF DEATH



# FATALITY RATE vs SEAT BELT USAGE



## HOUSE BILL No. 2188

By Committee on Transportation

2-5

0017 AN ACT concerning motor vehicles; requirement for use of  
0018 safety belts.

0019 *Be it enacted by the Legislature of the State of Kansas:*

0020 Section 1. This act may be cited as the safety belt use act.

0021 Sec. 2. As used in this act, "passenger car" means a motor  
0022 vehicle with motive power designed for carrying 10 passengers  
0023 or fewer, but does not include a motorcycle, a trailer or a vehicle  
0024 constructed either on a truck chassis or with special features for  
0025 occasional off-road operation.

0026 Sec. 3. (a) Except as provided in K.S.A. 8-1344 and 8-1345  
0027 and amendments thereto and in subsection (b), each front seat  
0028 occupant of a passenger car manufactured with safety belts in  
0029 compliance with federal motor vehicle safety standard No. 208  
0030 shall have a safety belt properly fastened about such person's  
0031 body at all times when the vehicle is in motion.

0032 (b) This section does not apply to an occupant of a passenger  
0033 car who possesses a written statement from a licensed physician  
0034 that such person is unable for medical reasons to wear a safety  
0035 belt system.

0036 (c) The secretary of transportation shall initiate an educa-  
0037 tional program designed to encourage compliance of restraint  
0038 devices in reducing the risk of harm to their users as well as to  
0039 others, and on the requirements and penalties specified in this  
0040 act.

0041 (d) The secretary shall evaluate the effectiveness of this act  
0042 and shall include a report of the findings in the annual evaluation  
0043 report on the highway safety plan that the secretary submits  
0044 under 23 U.S.C. 402.

0045 Sec. 4. (a) Persons violating subsection (a) of section 3 shall

When operating a vehicle, it is unlawful for the operator of the vehicle to fail to have a safety belt so fastened. It is also unlawful for such operator to permit any occupant of the front seat of such vehicle to have a safety belt so fastened except that, if a parent or legal guardian of an occupant under 14 years of age of the front seat is in the vehicle and such occupant under 14 years of age does not have a safety belt so fastened, the parent or legal guardian is committing an unlawful act instead of the vehicle operator. When a vehicle is being operated it is unlawful for any occupant of the front seat who is 14 years of age or older to fail to have a safety belt so fastened.

be fined not less ~~\$25~~

than \$25 and not more than \$35

0047 (b) Evidence of a violation of subsection (a) of section 3 shall  
0048 be admissible in mitigation of damages with respect to any  
0049 person who is involved in an accident while violating such  
0050 subsection and who seeks in any subsequent litigation to recover  
0051 damages for injuries resulting from the accident.

0052 Sec. 5. This act shall take effect and be in force from and  
0053 after its publication in the statute book.

# Kansas Department of Transportation

February 21, 1985

MEMORANDUM TO: HOUSE TRANSPORTATION COMMITTEE

FROM: MR. DAVID G. TITTSWORTH  
CHIEF COUNSEL

REGARDING: MANDATORY OCCUPANT PROTECTION  
H.B. 2188

## INTRODUCTION

In July, 1984, U.S. D.O.T. Secretary Elizabeth Dole issued a rule-making dealing with automatic automobile occupant protection. The rule mandates vehicle manufacturers to provide for automatic occupant protection in all vehicles by the 1990 model year unless two-thirds of the nation's population is covered by state mandatory seat belt use laws conforming with U.S. D.O.T. criteria. A great deal of legislative and interest group discussion can be expected in the coming years as a result of the rule. Two mandatory seat belt bills have been introduced in the Kansas Legislature: H.B. 2188 and S.B. 144.

## BACKGROUND

Federal Motor Vehicle Safety Standard 208, first issued in 1969, requires automatic protection of front seat passengers in crashes. The standard currently requires front seat passengers to be automatically protected in a 30 mph crash into a fixed barrier. The standard can be met in a

2/21/85  
Attach. 2

number of ways including airbags, automatic safety belts, and alternate technology means such as energy absorbing passive interiors.

The Carter administration had required front seat passive protection in all cars according to a specific time-table. However, Congress limited U.S. D.O.T. spending for implementation and enforcement of that standard. In 1981, the Reagan administration delayed the time-table and ultimately rescinded the standard altogether. The U.S. Supreme Court found that decision "arbitrary and capricious" in 1983. Secretary Dole made her rule-making in 1984.

The Secretary's rule ordered a phase-in of automatic protection so that all new 1990 models would be covered. The specific time-table is that ten percent of the 1987 models (between September 1, 1986 and August 30, 1987) must comply with the standard; twenty-five percent of the 1988 models, forty percent of the 1989 models, and one hundred percent of the 1990 models must be covered. Manufacturers would get credit of 1.5 cars for every single car complying with the standard on the drivers' side by means other than an automatic belt and having an automatic restraint of any kind on the passenger side.

The rule provides the alternative of coverage of two-thirds of the nation's population by state mandatory seat belt use laws by 1989. The laws passed by the states must meet certain criteria in order for the population of that state to count towards the two-thirds option. These are:

1. No waiver of use except for medical reasons.
2. Minimum twenty-five dollar penalty for failure to use a seat belt in vehicles equipped with such devices. Court costs can be included in the twenty-five dollar penalty.
3. Failure to wear seat belts admissible in mitigation of accident damages.
4. A program to educate the public on benefits of the law.
5. A reporting program which requires the state to submit an evaluation of the law's effectiveness.

State laws that meet these criteria are referred to as "conforming" laws.

#### LEGISLATIVE ACTION AND OPTIONS

Legislation was introduced in twenty states last year to mandate the use of seat belts. It is expected that there will be an increase in the amount of legislation introduced this year and next. Currently, New York, New Jersey and Illinois have passed mandatory use laws.

States considering the occupant restraint problem have, in general, three strategies they could pursue to enhance safety. I'll outline these below and their likely outcomes for seat belt or occupant restraint use:

1. Voluntary Action. Kansas currently pursues a program of public information and education designed to increase the use of seat belts through voluntary action. We estimate that approximately eight to ten percent of front seat occupants are using seat belts in Kansas. That is based upon national estimates checked for Kansas traffic. We estimate that with maximum effort and expenditure for public information and education, that percentage could be raised to approximately twelve percent.

2. Passage of mandatory use laws conforming to the U.S. D.O.T. rule. Immediate imposition of mandatory seat belt rules for the driver and front seat passengers combined with an enforcement and public education program could raise the usage to approximately thirty percent the first year



and could possibly reach as high as seventy to seventy-five percent in later years with intensive enforcement efforts. More likely ranges are between thirty and fifty percent. The bills currently before the Kansas Legislature conform with Safety Standard 208.

3. Passage of a non-conforming law. The third option is for the State of Kansas to adopt a mandatory seat belt use law that is not in conformity or compliance with the U.S. D.O.T. rule. The effect would be to immediately increase the use of seat belts as described above, but would also allow for the possibility of automatic restraint systems being placed in automobiles pursuant to Safety Standard 208. This option provides the immediate benefits of a mandatory use law while at the same time providing for the higher percentages of protection in the future that would come from vehicles equipped with automatic occupant restraint systems.

New Jersey has adopted a non-conforming law by insuring that the fine for non compliance (plus court costs) is kept below the \$25 dollar figure specified in the rule. The New York law was passed prior to the implementation of the rule-making and is thus in compliance. However, New York is suing U.S. D.O.T. to have their law counted as a non-complying law - a strategy discussed in New York prior to the passage of their law.

#### SAFETY EFFECTS

The impact of occupant protection is an approximate reduction of fatalities and serious injuries by fifty percent. During 1984, there were 384 fatalities from motor vehicle accidents in Kansas and an estimated 4,435 serious injuries.

The three options can be converted to reductions in fatalities and serious injuries by multiplying the gain in percent of protected front seat occupants by the fifty percent reduction in fatalities and serious injury to show the total reduction likely for each option. These are shown in the attached table. Each figure assumes that the strategy was in place throughout 1984, that enforcement was adequate, and in the case of the third option, that all cars had automatic restraints.

OPTIONS	NET GAIN	FATALITIES REDUCED	SERIOUS INJURIES REDUCED
Voluntary program w/increased emphasis, education, public information	1%	4	43
Conforming Mandatory Seat Belt Use Law:			
30 percent use	10%	39	435
40 percent use	15%	59	652
50 percent use	20%	79	869
60 percent use	25%	99	1,086
70 percent use	30%	118	1,304
Automatic Restraints Plus Belts	45%	177	1,955

TESTIMONY CONCERNING HOUSE BILL 2188  
BEFORE THE HOUSE TRANSPORTATION COMMITTEE  
PRESENTED BY BOB W. STOREY  
REPRESENTING TRAFFIC SAFETY NOW, INC.

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I want to thank the committee for providing the opportunity to Traffic Safety Now, Inc. to present this testimony in support of House Bill 2188.

First, I would like to explain who Traffic Safety Now is, and the reason for the introduction of this legislation. Traffic Safety Now is a nonprofit organization, created for the purpose of reducing highway injuries and fatalities by fostering the increased use of automotive safety belts, principally through the passage of safety-belt-use laws. Traffic Safety Now, Inc. is composed of representatives of the Motor Vehicle Manufacturers Association of the U. S., Inc., National Automobile Dealers Association, American Seat Belt Council, the National Highway Users Federation, American Association of Automotive Medicine, and others.

In addition to supporting legislation for the mandatory use of safety belts, TSN supports a variety of programs to encourage safety-belt use--such as public education efforts, continuing support for state coalitions, and task forces of like-minded citizens and organizations. Each member of this committee has been handed a booklet which contains facts concerning why legislation is needed to require the mandatory use of safety belts, not only in the state of Kansas but in each and every state in the Union. The main reason for the support of

House Bill 2188 by TSN is not necessarily to comply with the federal mandates from the Secretary of Transportation, although those, of course, are a reality, but more to demonstrate that there is a great need for safety restraints for the operators of automobiles on our roadways.

People riding in front seats of automobiles account for 92% of the passenger car deaths that occur each year in motor vehicle accidents. The fact that 20,000 persons occupying automobile front seats die each year in traffic accidents, and the leading age group killed is young adults age 15 to 24, is in itself sufficient reason for the requirement of mandatory safety-belt use. The statistics are contained in the booklet before you, which gives reasons the legislation is needed, sets out statistics on the use of safety belts, and describes how a safety-belt law can be effective. It is interesting to note that in most of the western countries there is a mandatory safety-belt law in effect, and there are indisputable statistics to support the success of these safety-belt laws. As stated in your booklet, for instance, after the mandatory safety-belt law was passed in England, usage rates increased from 20% to 95%; in Canada, from 28% to 61%; in Australia, from 30% to 80%. In those same countries, the fatalities were reduced: In England, by 25%; in Canada, by 16%; and in Australia, by 22%.

In 1972, compulsory safety-belt use went into effect in Australia. During the first two years of required use there was a 300% reduction in eye injuries, a 50% reduction in spinal injuries, and a 51% reduction in drivers admitted to the hospitals.

We do not have these types of statistics in the United States, since a mandatory safety-belt law has not been in effect in those states such as New York, New Jersey, and Illinois long enough to compile these statistics. However, by computation I don't think it is too difficult to see there is no question but that the mandatory use of safety belts will be effective in reducing injuries and fatalities.

I wish to make it clear here that the purpose of TSN is not to increase the number of arrests by law enforcement personnel of individuals driving without safety belts. It is more to get people into the habit of buckling up as soon as they climb into the front seat of an automobile. From the usage increase in the western countries, which are cited above as having mandatory safety-belt laws, you can readily see that once a mandatory law is passed, the public takes cognizance of the fact that they may be violating the law by not wearing a safety belt. And, once they start complying with the law by buckling their safety belts, as far as TSN is concerned its purpose has been served. Only a few seconds are required when you enter your automobile to reach over and snap the safety belt into the receiving buckle, and those few seconds may be very important in deterring a serious injury, or possibly a fatality, for the driver or passengers in the front seat of the automobile.

Quite frankly, I do not believe there is that much opposition from the public to a mandatory safety-belt law; and I think it will have to be implemented in this manner to achieve the effectiveness that was originally intended when the safety

belts were first installed in automobiles. The law was passed in January, 1967, which stated that safety belts were to be required in all 1968 and later passenger cars. Since that date safety-belt restraints have been placed in all cars manufactured; but because of the lack of requirements to use such safety belts, many injuries and fatalities have occurred which were not necessary, and which could have been prevented in a few seconds, doing no more than snapping the belt into place.

Hopefully, this law will, as stated above, get people into the habit of snapping their safety belts when they enter an automobile. If one or two lives are saved, or one or two serious injuries are prevented, then the passage of the legislation will be well worth the effort.

TSN recognizes that a law of this type does have enforcement problems. However, we strongly believe that the enforcement problems which may arise are overcome by the good which results from legislation of this type. Even if there may be a law enforcement problem, we still believe if the people know the law is mandatory, it will become a deterrent to not fastening safety belts. The habit will be formed, and once formed normally it will become a natural thing for people to fasten their safety belts when they enter an automobile. Once again, we are not proposing this law to the detriment of the public. TSN does not believe that once the law is passed, the battle ends there, but firmly believes there should be courses (which will be partly sponsored by TSN) to educate people on the use of safety belts. TSN advocates a strong educational effort to insure that

individuals know the reasons for the use of safety belts and the benefits therefrom.

In addition to the possible law enforcement problem, TSN recognizes that there will be strong opposition from some people on this matter. Freedom of choice has been argued throughout the years when considering this type of legislation.

I can only say in response, that to drive a vehicle in the state of Kansas is not a matter of right to an individual, but it is a privilege once the driver's license is obtained. The state has the power to, and does, regulate the use of the public roads and highways and the operation of motor vehicles on public roads, which is a responsibility of the state. I don't believe there is a question in anyone's mind that the requirement for mandatory safety belts will save many lives and substantially reduce the number of injuries. There is no question that such a requirement will protect and promote public health and the general welfare of the citizens of the state of Kansas. And, finally, I do not believe the freedom of choice exists, since it is a well-known fact that the medical expenses and loss of income from one injury in an automobile accident (which could be avoided) could be financially ruinous to that particular victim and their family. But the economic impact does not stop there. Employers face medical insurance costs, workers compensation contributions, and unemployment taxes, and less obvious costs relating to rescheduling, temporary replacements, and administrative tasks.



Further, we are in the era of rising health insurance costs, and that subject is being dealt with in various bills before this legislature in the 1985 session. It becomes the business of all citizens, and not a freedom of choice, when victims incur large medical bills which could be avoided by the use of safety belts. Those high medical costs are passed on to the other citizens through increased premiums. When this occurs, it is no longer simply a freedom of choice to an individual, but is the business of all citizens of the state of Kansas; and those citizens have the right to impose a mandatory safety-belt requirement to protect their rights, to avoid picking up the tab for higher medical costs which were not a result of their doing.

Mr. Chairman, and members of the committee, there are others to speak in support of House Bill 2188, and I do not want to take any more time speaking as a nonexpert. We have individuals who have been personally involved, in instances which will be recited to you in support of the mandatory requirement for safety-belt use in the state of Kansas.

If any members of the committee have questions to ask after the testimony is presented, there are members of TSN in the hearing room, and we would be more than happy to try to answer whatever questions are of concern.

Thank you again for the opportunity to appear in support of House Bill 2188. We ask the committee to send House Bill 2188 to the full House, with the recommendation that it be passed.

Thank you for your consideration.

Respectfully submitted,

BOB W. STOREY

AMENDMENT

Section 4

This section should be amended to read as follows:

"Sec. 4. (a) Persons violating subsection (a) of section 3 shall be fined not less than \$25, including court costs."

Also, the violation should be under the infractions section of the statutes, which would be a nonmoving violation.

### WHY LEGISLATION IS NEEDED

- \* Motor vehicle and occupant injury and death is one of the most serious public health problems in Kansas today.
- \* Evidence from more than 30 foreign countries with belt use laws strongly supports the value of requiring occupants to use their available seat belts.
- \* The ultimate goal of this legislation is to increase seat belt usage and create a life-saving habit among Kansas motorists.
- \* It is good public policy. Implementation would enhance Kansas' quality of life.
- \* Seat belt legislation that requires motorists to use available occupant restraints would substantially increase the usage rate among occupants on Kansas' highways.
- \* Seat belts are already in cars -- 98 percent of them.
- \* Because seat belts are already available, usage of seat belts can make a difference instantly, reducing highway deaths, the number of injuries and severity of the injuries.
- \* Seat belts are the most cost effective occupant protection. They protect against all forms of accidents, not just front-end collisions.

WHY LEGISLATION IS NEEDED...2

- \* Seat belts must be worn to be effective. Today, fewer than 15 percent of car occupants wear them.
  - \* Mandating seat belt use along with proper educational and enforcement programs, will have significant effect on trauma and injury.
  - \* Mandated belt use is an initiative by many citizens groups and other organizations to bring into focus and recognize that the wearing of seat belts is both prudent and reasonable.
- 
- \* It is neither fair nor reasonable that the responsible members of society who use seat belts should be required to help bear the large unnecessary and avoidable financial and emotional burden that is imposed by those who refuse to use seat belts. A seat belt law could significantly reduce these unnecessary costs.

## CRASH DYNAMICS STATISTICS

- \* The chances of you being involved in a serious automobile accident are 1 in 3 in your lifetime.
  
- \* When unbelted, it takes seven-tenths of a second to lose your life in an automobile crash. The split-second chronology of what happens when a car collides with a tree at 55 MPH is:
  - At 1/100th of a second, front end collapses.
  - At 2/100ths of a second, the hood crumbles, rises, smashes into the windshield and grill work disintegrates.
  - At 3/100ths of a second, the driver is sprung upright from his/her seat, knees pressed against the dashboard, the steering wheel bends under the driver's grip.
  - At 4/100ths of a second, the front of the driver's car is destroyed and dead still, but
  - At 5/100ths of a second, the driver's hands bend the steering column into an almost vertical position and the head and chest absorb most of the force of the impact.
  - At 6/100ths of a second, the impact rips the shoes

STATISTICS...2

off the driver's feet. The chassis bends in the middle and the driver's head is slammed into the windshield or windshield pillar.

-At 7/100ths of a second, the entire body of the car is deformed out of shape.

FACT: Every 8 hours, an unrestrained citizen dies in an automobile accident in Texas.

FACT: Every 2 minutes, an unrestrained citizen was injured, crippled or maimed in an automobile accident in Texas.

FACT: The odds of being fatally injured in an automobile accident are 2500 percent greater when ejected from the vehicle.

FACT: Ejection is nearly eliminated by using the seat belts.

CAN A SEAT BELT USE LAW BE EFFECTIVE?

- \* The experience of 30 countries says "yes," they are effective.
- \* Almost all western countries, except the U.S., now have mandatory seat belt use laws.
- \* Usage rates increased when mandatory use laws were passed:
  - England from 20 percent to 95 percent;
  - Canada from 28 percent to 61 percent;
  - Australia from 30 percent to 80 percent.
- \* Fatalities were reduced:
  - England by 25 percent;
  - Canada by 16 percent;
  - Australia by 22 percent.
- \* Compulsory seat belt use has been in effect in Australia since 1972. During the first two years of required use, there was a 300 percent reduction in eye injuries, a 50 percent reduction in spinal injuries, and a 51 percent reduction in drivers admitted to hospitals.
- \* Some people perceive enforcement a problem. However, when polls asked if people would obey a seat belt law, 89 percent said "yes." Those few who said they oppose the law said they would obey it if passed.

## THE FUTURE OF OCCUPANT PROTECTION

The National Safety Council reports that auto accidents accounted for 44,600 fatalities nationwide in 1983, and that they are the leading cause of deaths for people 44 years old and younger. The possibility of involvement in a serious accident on one of the many auto trips in your lifetime is greater than 30 percent, and the odds are 1 in 10 that you will be involved in a traffic accident this year.

Citing the need to drastically reduce vehicle occupant deaths and injuries, Transportation Secretary Elizabeth Dole on July 11, 1984, issued new federal occupant protection rules. The rules require automatic, or "passive," crash protection on a phased-in schedule for all passenger cars manufactured for sale in the United States, unless states representing two-thirds of the nation's population enact mandatory seat belt usage laws before April 1, 1989.



## Myths v. Facts

Adult motor vehicle occupants who have not yet formed the habit of buckling up oftentimes cite one or more of the following reasons, all of which are based on myths.

### Myth

Belts are needed only for long trips and high speed expressway driving.

Belts trap occupants in their vehicles, especially in cases of fire or submersion.

It is better to be thrown clear of the vehicle.

### Fact

Eighty per cent of serious and fatal injuries occur in cars traveling less than 40 miles per hour. Fatalities involving non-belted occupants have been recorded at as low as 12 mph. Conversely, there were no fatalities to belted occupants in a 28,000 vehicle study with speeds up to 60 mph. Seventy five per cent of serious and fatal injuries occur less than 25 miles from home.

Less than one-half of one per cent of all injury-producing collisions involve fire or submersion. But if fire or submersion does occur, wearing a safety belt can save a life. The unrestrained occupant will be slammed into the dashboard or windscreen and knocked unconscious, and will be unable to extricate him or herself from the burning or submerged vehicle. Belts keep occupants unhurt, alert and capable of escaping quickly. Also, an unrestrained occupant rendered unconscious will be unable to escape and may block exit paths of other occupants.

A person is about 25 times more likely to be fatally injured if ejected from the vehicle than if that person remains inside and buckled up. Ejection can result not only in landing on unforgiving pavement but also on highway appurtenances and other lethal objects, scraping along the ground or being crushed by one's own or another vehicle. One additional note. It seems illogical to spend millions of dollars on safe packaging of occupants only to have them thrown outside and not benefit from the safer vehicle interior.

Good drivers do not  
cause crashes.

Firstly, the primary purpose of the safety belt is to protect against injury after the crash, and good drivers are equally vulnerable to injury. Secondly, even good drivers cannot control the other car or driver. Thirdly, safety belts can make good drivers better drivers. A belted driver will avoid fatigue and will have more control over the vehicle in emergency situations. Fourthly, even good drivers make sudden stops on occasion. In such situations, occupants are kept in place and protected against contact with the vehicle interior or with other occupants.

Safety belts don't work  
— they hang loose or  
do not lockup when  
pulled.

Late model cars are equipped with a one piece lap-shoulder belt that has been deliberately designed to allow freedom of movement as needed. This engineering advance answers the earlier argument that belts were confining and did not allow for easy access to necessary vehicle instruments. When needed, an inertial device locks the safety belt in place and keeps the occupants from making contact with the vehicle interior or being partially or totally ejected.

Belts cause injuries.

Injuries due to belts have been reported. In these rare situations, however, the belt either was inappropriately worn or the crash was so severe that the occupants would have been seriously or fatally injured if not belted. Also, a belt-induced injury occurs to a part of the body better able to withstand the pressure exerted by the belt than by the forces of the crash. There is no evidence to suggest that, without intrusion or some other comprising factor, safety belts of themselves generate life-threatening injuries.

Occupants can brace themselves adequately in a crash.

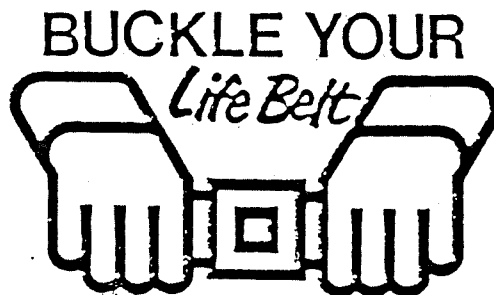
The forces involved in even a low speed crash make it impossible for anyone to avoid contact with the vehicle interior which ultimately results in injury. One out of four serious in-vehicle injuries are caused by occupants being thrown against each other. Appropriately restrained children, now required in more than one-third of the states, are at risk if struck by an unrestrained adult occupant. Restrained front seat occupants can be seriously injured if struck by unrestrained rear seat occupants.

Belted drivers take more chances.

There is no scientific evidence to support the hypothesis that drivers who use safety belts compensate for the protection of belts by driving more dangerously. In fact, several studies have shown that restrained drivers are generally more safety conscious and practice safer driving habits than those who do not use restraints.

Safety belts are the answer to motor vehicle related injury.

No panacea exists today that can offer total protection in very crash. Also, Some crashes are unsurvivable such as those between a tractor-trailer and a subcompact car, the type of restraint notwithstanding. In the vast majority of crashes, however, the effectiveness of the safety belt, when used, is unquestioned.



TRAFFIC DEATHS AND SAFETY BELT USE

	Current Situation		If Safety Belt Use Were Required And Fully Enforced (Estimated)*		
	Annual Average Deaths 1978-82	Lives Now Saved* By Belt Use Annually	Lives Saved Annually	Injuries Forestalled	Dollar Savings (\$Millions)
Alabama	995	45	250	6,600	105
Alaska	102	5	25	700	11
Arizona	929	40	230	6,200	99
Arkansas	559	25	140	3,700	59
California	5,213	230	1,290	34,700	553
Colorado	706	30	180	4,700	75
Connecticut	532	25	130	3,500	56
Delaware	128	5	30	800	13
Dist. of Col.	47	-	10	300	5
Florida	2,731	120	680	18,200	290
Georgia	1,432	60	360	9,500	152
Hawaii	179	10	45	1,200	19
Idaho	308	15	75	2,100	33
Illinois	1,946	85	480	13,000	207
Indiana	1,187	50	290	7,900	126
Iowa	603	25	150	4,000	64
Kansas	553	25	140	3,700	59
Kentucky	858	35	210	5,700	91
Louisiana	1,163	50	290	7,700	123
Maine	222	10	55	1,500	24
Maryland	732	30	180	4,900	78
Massachusetts	813	35	200	5,400	86
Michigan	1,740	75	430	11,600	185
Minnesota	814	35	200	5,400	86
Mississippi	734	30	180	4,900	78
Missouri	1,106	50	270	7,400	118
Montana	314	15	80	2,100	33
Nebraska	343	15	85	2,300	37
Nevada	320	15	80	2,100	34
New Hampshire	174	10	45	1,200	19
New Jersey	1,142	50	280	7,600	121
New Mexico	609	25	150	4,100	65
New York	2,435	110	600	16,200	258
North Carolina	1,473	65	370	9,800	156
North Dakota	155	5	40	1,000	16
Ohio	1,952	85	480	13,000	207
Oklahoma	965	40	240	6,400	102
Oregon	641	30	160	4,300	68
Pennsylvania	2,070	90	510	13,800	220
Rhode Island	116	5	30	800	13
South Carolina	847	35	210	5,600	90
South Dakota	192	10	45	1,300	20
Tennessee	1,170	50	290	7,800	124
Texas	4,319	190	1,070	28,800	458
Utah	340	15	85	2,300	36
Vermont	129	5	30	900	14
Virginia	1,006	45	250	6,700	107
Washington	930	40	230	6,200	99
West Virginia	486	20	120	3,200	51
Wisconsin	936	40	230	6,305	100
Wyoming	239	10	60	1,600	25
<b>U.S. TOTAL</b>	<b>49,635</b>	<b>2,165</b>	<b>12,290</b>	<b>330,700</b>	<b>5,268</b>

\*For passenger car occupants. Lives saved are rounded to nearest 5 for values under 100 and nearest 10 for values over 100.



## History of Federal Motor Vehicle Safety Standard (FMVSS) 208

FMVSS 208 was an early safety standard, issued by the National Highway Traffic Safety Administration (NHTSA) in 1967, establishing the requirement for safety belts in passenger cars. FMVSS 208 currently is one of 22 standards covering injury protection for cars, trucks, buses and multi-purpose vehicles.

The following dates and actions cover the major developments in FMVSS 208 since 1967:

<u>Issue Date</u>	<u>Remarks</u>
January, 1967	Seat belts required in all 1968 and later passenger cars.
June, 1969	NHTSA requested comments on inflatable occupant restraints.
May, 1970	NHTSA proposed automatic restraint systems for passenger cars.
September, 1970	NHTSA proposed that vehicles manufactured after 1/1/1972, be allowed to have either, 1) a complete passive system, 2) type 1 lap belts with warning system or 3) type 2 belts with warning system. Also proposed test criteria.
November, 1970	Final rule establishing automatic restraint systems for 1974 and later model passenger cars was adopted by NHTSA.
March, 1971	Rule establishing optional safety requirements and test criteria was adopted.
September, 1971	NHTSA proposed starter interlock option as alternative to options for full and partial automatic front seat occupant protection.
January, 1972	Rule established starter interlock option.
December, 1972	In response to law suit, court overturned the passive restraint standard. Test results were found to be not repeatable.
July, 1973	NHTSA altered the test to meet the requirements of the court's decision.

- October, 1974 Congress outlawed interlock. Subsequent NHTSA rule eliminated interlock requirements.
- June, 1976 DOT Secretary Coleman proposed new alternatives for improving crash protection and deferred passive restraint requirement one year to August 1977.
- December, 1976 NHTSA adopted final rule deferring industry-wide requirement and establishing an automatic occupant crash protection demonstration program beginning 1980 model year.
- March, 1977 DOT Secretary Adams cancelled demonstration plan and re-opened rulemaking on alternatives for automatic occupant crash protection.
- June, 1977 NHTSA established requirement of automatic restraints for passenger cars and provided for phased compliance by vehicle size beginning with 1982 model year.
- February, 1979 Legal challenges to standard failed in the Courts.
- April, 1981 NHTSA delayed from 9/1/81 to 9/1/82 the date on which large cars were to begin complying with automatic restraint requirements.
- April, 1981 NHTSA proposed four alternative amendments to automatic restraint requirements including: 1) reversal of phase in sequence -- small cars first; 2) simultaneous compliance by all cars; 3) rescission of the requirement; 4) deletion of the requirement for automatic restraints in front center seating position.
- October, 1981 NHTSA rescinded automatic restraint requirements.
- June, 1982 Rescission overturned by D.C. Court of Appeals.
- June, 1983 Supreme Court found NHTSA dropping of automatic restraint requirement was procedurally defective and returned entire issue to NHTSA via Court of Appeals for further review. The Supreme Court's decision was not for or against passive restraints but only that DOT must do a better job of justifying its action.

August, 1983

Automatic restraint requirements deferred for one year to 1985 model year pending public hearings and new rule making.

October, 1983

DOT Secretary Dole issued proposed rule seeking public comment on 14 alternative courses of action including 9 dealing with equipment options (airbag, detachable automatic belts, non-detachable automatic belts) and seating position requirements (e.g. driver only, full front, outboard occupant only, etc.). Comment also was requested on an airbag retrofit program, a demonstration program, mandatory consumer option plan, mandatory belt use laws and deletion of the automatic restraint requirement.

November 28 -  
December 6, 1983

Public hearings in Los Angeles, Kansas City, Washington.

December 19, 1983

Public comment period closes.

## FREEDOM OF CHOICE

- \* It has long been recognized that the power to regulate and control the use of the public roads and highways is primarily the exclusive responsibility of the state.
- \* The power to regulate and control the operation of motor vehicles on public roads is the responsibility of the state.
- \* Recognizing the irrefutable facts concerning the societal benefits of wearing seat belts, the legislature has a responsibility in this area to require seat belt use. Little doubt exists as to the constitutionality of such a requirement.
- \* There is no doubt that such a requirement will save lives.
- \* There is no doubt that such a requirement will substantially reduce the number of injuries.
- \* There is no doubt that such a requirement will protect and promote public health and general welfare.
- \* All the arguments of fact, when sufficiently researched, show that a belt use law is advantageous to the community.



FREEDOM OF CHOICE...2

- \* The privilege, not the right, of holding a drivers license already requires conformity with many rules which are a loss of freedom to the individual. A belt use law is, therefore, nothing new in principle.

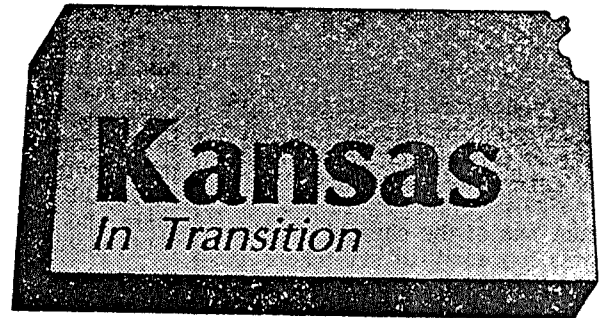
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## Kansas Needs a Seat Belt Law

**C**OMMON sense dictates auto drivers should wear seat belts. Six out of seven drivers don't. When common sense fails, it becomes necessary to create laws encouraging conduct in everyone's best interests. Kansas needs a seat belt law.

The Legislature is examining proposals to require drivers and front-seat passengers to wear seat belts, or face a \$25 fine. Such a law could save countless lives: It's estimated that more than half of all traffic fatalities could be avoided through use of seat belts. Although some people might ignore the rule, thousands who never buckled up before would begin doing so. In a recent national survey, 83 percent of those questioned said they would wear seat belts if their state passed a law requiring their use.

Seat belt laws make economic sense as well. Transportation Secretary Elizabeth Dole has said that if states pass seat belt laws covering two-thirds of the American population, the government will rescind plans to require automakers to install passive restraint systems such as airbags in all autos by 1990. Automakers would pass on to consumers the costs of such systems — any-



where from \$100 to \$1,800 — through higher auto prices.

Critics say seat belt laws infringe upon their personal freedom of choice. "If I don't wear seat belts, that's my prerogative and I'll be the only one who suffers," is the attitude. That's not true. When a person is killed or injured because he or she didn't wear a seat belt, everyone in society pays in the form of higher insurance costs, higher auto costs, greater burden on government medical aid programs, lost productivity and so on. That infringes upon the freedoms — and pocketbooks — of all Americans.

Two states, New York and New Jersey, currently have seat belt laws. Kansas also should get buckled up, and be a leader in promoting public safety.

# Seat belts saved Mandrell, kids?

## Driver who died not buckled up, police report

NASHVILLE, Tenn. (UPI) — Entertainer Barbara Mandrell, her life apparently saved by her seat belt in a head-on collision that crumpled her silver Jaguar "like an accordion," was reported in stable condition Wednesday with a broken leg and concussion.

Police said the country singer and her two children might have been killed had they not buckled their seat belts moments before the accident Tuesday night.

The other driver, not wearing a safety harness, was killed.

"There's a good possibility that

seat belts saved her life. I'd certainly put my two cents on it," Hendersonville Police Lt. John Watson said.

The popular television and recording star was reported in fair condition at Baptist Hospital in Nashville with a badly fractured right leg, a mild concussion and cuts and bruises. The injuries will keep her off the stage for six to eight months, doctors said.

Her son, Matthew Dudney, 14, was being held for observation at Hendersonville Hospital. Her daughter, Jamie, 8, was treated

and released.

Police said Mark P. White, 19, of Lebanon crossed the center line at an intersection near Blue Grass Country Club in the Mandrells' hometown of Hendersonville, Tenn., about 6:30 p.m. Tuesday and smashed the singer's 1982 Jaguar "like an accordion."

"Jamie told me that Barbara had told them just a few seconds before the accident to put on their seat belts and they did," said Jay Jackson, 49, a neighbor of the Mandrells who witnessed the accident.

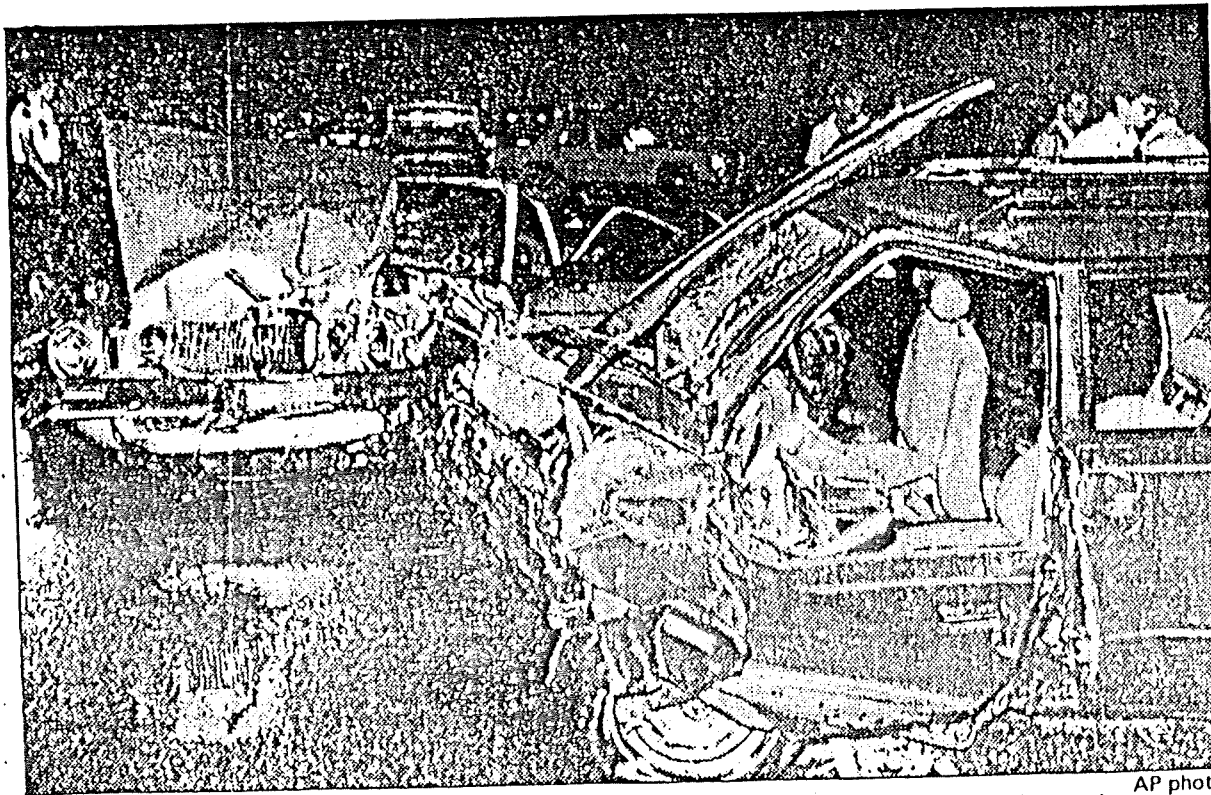
"When they took Barbara out of the car she started moaning and that made me feel good because at least she was alive," Jackson said.

Doctors removed shards of glass from Mandrell's knee Wednesday morning, but surgery on her broken leg was delayed until her neurological signs stabilized, officials said.

"Fortunately, there were no injuries to her face — not even a scratch," said Jeannie Ghent, a spokeswoman for the entertainer.

Mandrell, 35, her face covered with a sheet, was removed from the vehicle and rushed to the emergency room at Hendersonville Hospital. She was then taken to Baptist Hospital in Nashville.

"Barbara's doing fine," her sister Louise Mandrell said Wednesday. "She's awake and alert."



AP photo

Wreckage of Mandrell's car, left, and other car involved in head-on collision Tuesday.

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# Austin American-Statesman

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Editorial/Opinion: This is a page of opinion and commentary. The unsigned editorials in the left-hand column represent the opinions of the Austin American-Statesman. The signed columns contain the opinions of the authors. The letters are the opinions of our readers.

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Page C2

January 27, 1985

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## Acceptance of seat belts observed

**T**exas legislators contemplating adopting a mandatory seat belt law might wonder if such a law would be enforceable or obeyed. But if initial response to New York's new belt law is a sign, they can dismiss any concerns.

According to two surveys conducted during the past few weeks, that state's law is being overwhelmingly obeyed.

Representatives of the governor's traffic safety committee monitored 11,000 cars and reported 77 percent of the occupants were wearing safety

belts. That confirmed a public opinion poll that in which 88 percent of the 1,156 adults surveyed said they would buckle up all or most of the time.

Dr. John States, chairman of the New York State Seat Belt Coalition, predicted a large drop in the number of deaths from traffic accidents because of the new law. He said he expects that when the New Jersey and Illinois laws go into effect later this year, the public response will be similar to that in New York. That, surely, would apply to Texans as well.

TABLE 1

FRONT SEAT PASSENGER CAR FATALITIES  
WITH KNOWN SEATING POSITION

	<u>DRIVER</u>	<u>FRONT MIDDLE</u>	<u>FRONT RIGHT</u>	<u>OTHER FRONT</u>	<u>TOTAL</u>
1975	16,270	644	5,601	21	22,536
%	72.2	2.9	24.8	0.1	100
1976	16,375	602	5,714	24	22,715
%	72.1	2.7	25.1	0.1	100
1977	16,967	577	5,992	14	23,550
%	72.0	2.5	25.4	0.1	100
1978	18,224	627	6,180	16	25,047
%	72.7	2.5	24.7	0.1	100
1979	18,267	513	5,968	6	24,754
%	73.8	2.1	24.1	-	100
1980	17,966	526	6,012	9	24,513
%	73.3	2.2	24.5	-	100
1981	17,722	460	5,844	6	24,032
%	73.8	1.9	24.3	-	100
1982	15,225	373	5,202	16	20,816
%	73.1	1.8	25.0	0.1	100

SOURCE: U.S. Department of Transportation

TABLE 2

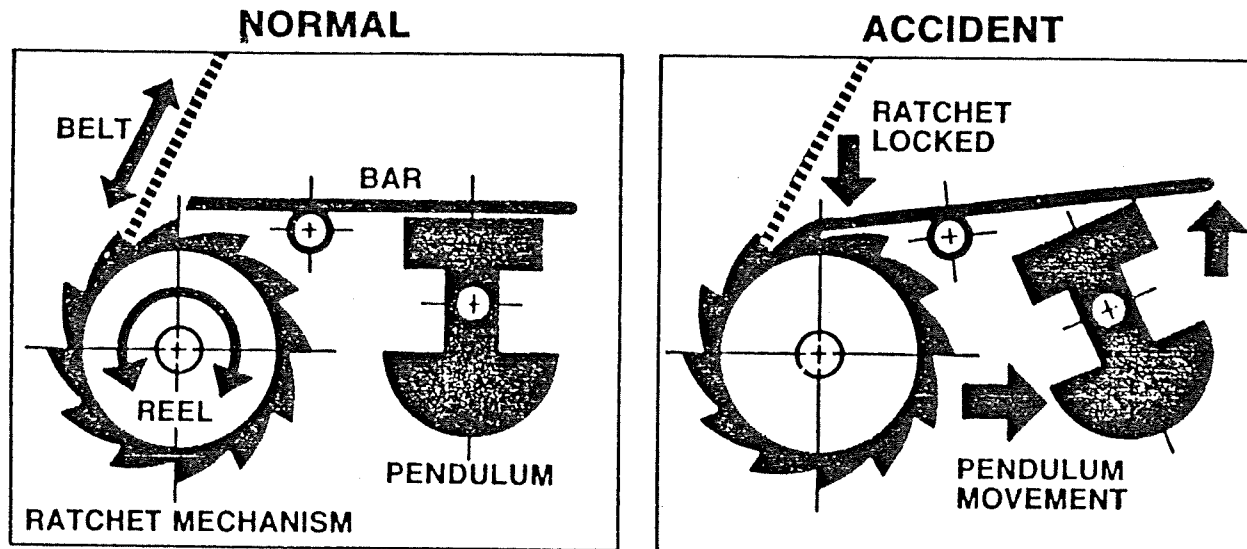
DISTRIBUTION OF FRONT SEAT PASSENGER CAR  
OCCUPANT INJURIES BY SEVERITY LEVEL  
(1982)

<u>Injury Severity</u>	<u>Driver</u>	<u>Front Middle</u>	<u>Front Right</u>	<u>Other Front</u>	<u>Total</u>
Minor	1,388,519	29,914	515,786	2,526	1,936,745
Moderate	187,660	6,467	47,417	1,604	243,148
Serious	45,627	289	16,100	0	62,016
Severe	5,592	0	2,411	0	8,003
Critical	3,233	0	728	0	3,961
<u>Percent of Minor Injuries</u>	71.7	1.5	26.6	0.2	100.0
<u>Percent of Moderate to Critical Injuries</u>	76.3	2.1	21.0	0.6	100.0

SOURCE: U.S. Department of Transportation

# How Safety Belts Work

Since the shoulder belt is designed to allow freedom under normal driving conditions, some people are skeptical that it would restrain them in a collision. However, in a collision the belt locks automatically and restrains the occupant. This graphic explains how the locking mechanism works.



*Under normal conditions, the pendulum and bar are in their rest positions. The reel, which holds the belt, is free to rotate. As the occupant leans against the belt, it "gives" or unreels.*

*Under accident conditions, such as in a collision, the pendulum tilts toward the force of the impact, causing the bar to engage the ratchet. The reel and seat belt now lock, restraining the occupant.*

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# HOW TO SAVE LIVES ON THE ROAD

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FROM: Iacocca: An Autobiography  
1984

On the whole, we Americans are good drivers. And compared to drivers in other countries, we're terrific. Although far too many people are killed each year on roads and highways, our traffic-death rate of 3.15 per 100 million vehicle miles is the lowest in the world.

I don't pretend to be an expert on driving. But I do know a few things about cars. And I want to explain why seat belts—and not air bags—are the key to reducing traffic fatalities in the United States.

For years I've been promoting a very unpopular cause: mandatory seat-belt use. In 1972, as president of Ford, I took it upon myself to write to each of the fifty governors, letting them know that our company endorsed mandatory seat-belt use and urging them to support this life-saving cause.

Twelve years later, as I'm writing these words, not one state in our entire country has yet passed such a law. Eventually we'll come to our senses. But it's taking us far too long.

The opposition to mandatory seat-belt use comes from several directions. But here, as with so many issues, the chief argument is ideological. The idea of mandating safety just goes against the grain of some people. There are many who feel it is just another example of government intervention in their civil rights.

This is especially true in the Reagan administration. Unfortunately, their old-fashioned, laissez-faire view of economics extends to safety as well.



It's hard to believe, but even in this day and age there are still a lot of people who believe that telling a guy he's got to keep from killing himself (or his neighbor) just isn't the American way. In the name of ideology, they're willing to let thousands of people die and tens of thousands more be injured. As far as I'm concerned, those people are living in the nineteenth century.

But every time I come out with a statement in favor of mandatory seat-belt use, I can count on getting a big pile of negative mail from people complaining that I'm interfering with their right to go out and kill themselves if they choose.

But am I really? You have to have a license to drive, don't you? You have to stop at a red light, don't you? You have to wear a helmet in some states if you're on a motorcycle, don't you?

Are these laws examples of undue government interference? Or are they necessary rules in a civilized society? We'd have carnage at every corner if we didn't have some running rules.

And what about some state laws that say certain people can't drive unless they're wearing their glasses? I'm one of those people. If a cop pulls me over in Pennsylvania and I'm not wearing my glasses, I get a ticket. I think it's time we added another line to the driver's license, which reads: "Not valid without a seat belt."

I'm sorry, but I can't find anything in the Constitution that tells me driving is an inherent right. That's because it's not. Driving a car is a *privilege*. And like all privileges, it comes with certain responsibilities.

Would a law mandating seat-belt use constitute undue government intervention? Of course not. When it comes to government intervention, some people think you have to be either fish or fowl—completely for it or completely against.

But as with anything else, you have to look at the circumstances. There are areas of life where the government has to act to protect society. Only in America do we allow the ideologues to prevail over the demands of safety.

What these purists seem to forget is that the damage done by not using seat belts raises our taxes, increases our insurance rates, and harms us and our loved ones. And if that's not an intrusion on my freedom, I don't know what is.

But I don't want to get into a philosophical argument about seat belts, because that's the ideologue's game. We have to consider what's practical, what works in the real world.

The plain truth is that if you're wearing a combined shoulder-and-lap-belt system, it's almost impossible to be killed under thirty

miles per hour. Among other reasons, seat belts can prevent you from being knocked unconscious in a crash, which can happen even at relatively slow speeds.

What really gets me is that even the opponents of seat belts concede that they save lives. In case anybody still needs proof of that, a famous study by the University of North Carolina surveyed traffic accidents and determined that seat belts reduced serious injuries by up to 50 percent and fatal injuries by as much as 75 percent. And in the late 1960s, a study in Sweden examined almost twenty-nine *thousand* accidents among seat-belt users and found that not a single one had resulted in death.

The National Highway Traffic Safety Administration (NHTSA) estimates that fatalities would drop *by at least 50 percent overnight* if everybody used seat belts. But at the present time, only about one person in eight buckles up.

People are always telling me that mandatory seat-belt use is an impossible dream. But I don't think most people actively oppose seat belts. They just don't bother to wear them. Surveys have shown that consumers aren't against the *idea* of seat belts. It's just that most people find them inconvenient, intrusive, and a nuisance. Which they are.

These complaints aren't new, either. In 1956, when Ford offered seat belts as an option for the first time, about 2 percent of our customers ordered them. The indifference shown by the other 98 percent cost us a lot of money.

And you should have heard the reasons people gave for not wanting them. Some people complained that the belts clashed with the color of the interior. And I'll never forget one letter that said: "They're very bulky and uncomfortable to sit on!"

Let's deal with the other arguments, too, although they're no more compelling. I've heard people say that they don't want to be belted in case their car catches fire in an accident and they can't escape. Now, it's true that something like that *could* happen. But in actual fact, fires are the cause of only one tenth of one percent of traffic fatalities.

Besides, even if you *are* caught in a fire, it's just as easy to release your seat belt as it is to open your door. And nobody has yet suggested that we drive around with our doors open.

Another argument against mandatory seat-belt use is that you might be "thrown clear" in a crash rather than trapped inside the car.

Here, too, there's a grain of truth. After all, occasionally a passenger really is thrown clear in an accident.

But it doesn't happen very often. Actually, your chances of being killed are *twenty-five times higher* if you're thrown out of the vehicle than if you remain inside and let the car protect you.

Yet another argument is that seat belts are really necessary only for highway driving. But what many people don't realize is that 80 percent of all accidents and serious injuries occur in urban areas, at speeds of less than forty miles per hour.

We've come a long way since the days when seat belts were used only in airplanes. They were developed during the early days of aviation, when one of the biggest challenges of flying was simply to remain safely in the cockpit. By around 1930, federal regulations required seat belts to be worn on all passenger planes.

Today, while commercial aircraft are far more advanced and safer than they used to be, the law still mandates that you can't fly on a plane without buckling up for takeoff and landing. That's because seat belts are even more effective on the ground than in the air. If you violate that law, the airline has the right to throw you off the flight.

Originally, seat belts in cars were used only for racing. When both Ford and Chrysler offered seat belts in their 1956 models, there were few takers. A mere eight years later, in 1964, seat belts became standard equipment on all passenger cars.

I've been on a seat-belt campaign for almost thirty years. It began back in 1955, when I was part of the marketing group at Ford that decided to offer safety devices on our 1956 models. The safety package we put together seems very primitive by today's standards, but at the time it was revolutionary. In addition to seat belts, it included safety door latches, sun visors, a deep-dish steering wheel, and crash padding on the dashboard. In our ad campaign for the 1956 models, we stressed that Ford cars were safe cars.

At the time, promoting safety in cars was a revolutionary act in Detroit—so much so that some of the top guys at GM apparently called Henry Ford and told him to stop it. In their view, our safety campaign was bad for the industry, because it conjured up images of vulnerability and even death—hardly the stuff of successful marketing. Robert McNamara, whose values were markedly different from those of his fellow auto executives at Ford and elsewhere, had decided on the safety campaign. He almost lost his job because of it.

While we were selling safety, Chevrolet, our chief competitor,

was promoting jazzy wheels and high-powered V-8 engines. Chevrolet clobbered us that year. By the next year, we had switched our strategy to "hot" cars with fast acceleration. Instead of safety, we marketed performance and racing, with far greater success.

Ever since the 1956 campaign, I've been quoted as having said that "safety doesn't sell," as though I were offering an excuse for not making safer cars. But that's a severe distortion of what I said and certainly of what I believe. After the failure of our campaign to promote safety features, I said something like: "Look, fellas, I guess safety didn't sell, even though we did our damndest to sell it!"

And we did. We spent millions of dollars and gave it everything we had, but the public didn't even stir. We developed the hardware, we advertised, promoted, and demonstrated it, and we couldn't give the stuff away. We had customers saying things like: "Sure, I'll take the car, but you'll have to take out those seat belts or I'm not interested."

When I first came to Detroit in 1956, I was a safety nut. I still am. But I learned the hard way that safety is a pretty poor marketing device, which is why the government has to get involved.

In this respect, at least, the cynics were right: if you stress safety, the customer starts to think about having an accident, which is the last thing in the world he wants to consider. He instinctively says: "Forget it. I'll never be in an accident. My neighbor might, but not me."

Although that particular campaign did not work out, I'm still proud that I was involved in the pioneering of safety devices back in 1956, when, for all I know, Ralph Nader was scooting around on a bicycle.

Despite the failure of our safety campaign in 1956, Ford continued to offer seat belts as an option each year, even when our competitors took them out because the public wasn't responding. I remember that a lot of people thought we were crazy: "Seat belts, like an airplane? But we're driving, not flying!"

But I also remember sitting in breakfast meetings where safety researchers would show us color slides of car accidents, so that we could understand exactly what happened in a crash. It was pretty horrible stuff, and I had to leave the room once with nausea. But it was also a good education. It made me realize that by far the most effective safety factor is the seat belt—provided you wear it.

Sometimes you have to scare people into getting the point. In 1982, I had lunch with the editors of *The New York Times*. I talked a

lot about seat belts, and I gave some graphic illustrations as to how important they were in preventing serious injuries and deaths.

A few days later I got a letter from Seymour Topping, the managing editor. Until our lunch together, he had been a dedicated ignorer of seat belts. But after hearing my frightening stories, he decided to buckle up.

Later that week, as he was driving home in a storm, the car in front of him skidded and blocked his lane. He braked sharply to avoid an accident, but because of the rain, his car swerved and smashed into a containment wall. Thanks to his seat belt, he walked away unharmed. Today he's a believer.

You can be a great driver, but you still should be wearing a seat belt. Nobody thinks they'll be in an accident. But 50 percent of all accidents are caused by drunk drivers. And when they hit you, you're in big trouble if you're not protected.

About ten years ago, I realized that we weren't going to have laws mandating seat-belt use in the near future. So I came up with a plan that would force drivers and passengers to buckle up. With the help of the engineers at Ford, I developed a device called Interlock, whereby the car's ignition would not operate until the driver and front seat passenger had fastened their belts. American Motors joined us in supporting Interlock, but GM and Chrysler opposed it.

After some heated controversy, the National Highway Traffic Safety Administration mandated in 1973 that all new cars had to be equipped with Interlock. But the law was a failure. The public hated Interlock and soon found ways to get around it. Many people kept their seat belts buckled—but without wearing them. And since almost any weight in the front passenger's seat could cut off the ignition, even a heavy bag of groceries could cause problems if it weren't belted up.

The popular uprising against Interlock was so great that the House of Representatives, led by Congressman Louis Wyman, a Republican from New Hampshire, soon dismantled it. In response to public pressure, Congress took about twenty minutes to outlaw Interlock. They replaced it with an eight-second buzzer that would remind passengers to buckle up.

Interlock had its problems. But I still think that it could have been perfected and that it would have saved lives. When it was thrown out by Congress, I came up with another plan: a special light on your car that would show green when you're wearing your seat belt and red when you're not. Whenever your light showed red, you would be

fined. I had in mind something similar to a radar gun, where the police don't even have to stop the offending car: they just send the driver a ticket in the mail. But in the wake of Interlock, nobody was interested.

When it comes to safety, people don't always look out for their own interests. Because so many lives are at stake here, the only solution is to have seat-belt-use legislation.

Evidently I'm not the only guy in the world who thinks this way. More than thirty countries, and five of Canada's ten provinces, already have laws on the books. In Ontario, just a few minutes from where I work, auto fatalities have dropped by 17 percent since their seat-belt-use law was passed. In France, after they enacted a similar law, the death rate in traffic accidents dropped by 25 percent.

In some places, the penalty for noncompliance is a fine. In others, you lose your insurance, and in a few cases—both. But the United States has yet to put through such legislation. The federal government generally maintains that it's up to the states, but the states have not acted. How many more people will have to die before we get smart about seat belts?

Some states now have a mandatory seat-belt-use law for children. It's time that we protected their parents as well. Nothing would be more tragic than to do only half the job—and to create a bunch of orphans in the process.

Now, I've always thought that as the home of the automobile, Michigan ought to take the lead on this issue. Whenever the question of mandatory seat-belt-use comes up before the legislature in Lansing, I either testify or publicly support it.

There are those who believe that air bags are the answer. I disagree. I've been speaking out against them since they were first developed almost twenty years ago. I sometimes have the feeling that when I die—and assuming that I go to heaven—St. Peter is going to meet me at the gate to talk to me about air bags.

Air bags were developed in the 1960s by a group of engineers at Eaton Corporation, an automotive supply company in Cleveland. In 1969, the National Highway Traffic Safety Administration decided that air bags were the best way to increase highway safety, and NHTSA began a campaign of promoting their mandatory installation in all American cars.

That same year, Congress passed a law authorizing the secretary of transportation to mandate auto safety devices. Air bags were finally

mandated in 1972, but the ruling was soon reversed by a federal court. The Ford administration dropped air bags, but the Carter people revived them. In 1977, NHTSA ordered the automakers to install "passive restraint devices"—which is generally taken to mean air bags—by 1982. The question of air bags has been tied up in the courts and in Congress ever since.

The air bag itself is made of nylon coated with neoprene, which is folded inside the hub of the steering wheel and under the glove compartment—along with about a hundred grams of sodium azide. In case of an accident, special sensors are activated that cause the sodium azide to ignite immediately and to release enough nitrogen to fill the bag. When the system works, the air bag acts as a gigantic balloon, which cushions the impact of the blow.

Air bags sound like the ideal solution, but there are problems—big problems—that their proponents usually don't discuss. For one thing, although air bags are supposed to be a form of "passive restraint"—which means the consumer doesn't have to take any action at all to activate them—they are effective *only if they're used together with seat belts*. Without seat belts, the air bag works only in head-on collisions. By themselves, air bags are of no help at all in over 50 percent of accidents or on "second" hits.

Most people are still under the mistaken impression that air bags will eliminate the need to wear seat belts. I'm afraid that we in Detroit have not been very successful in explaining this point.

Air bags can also be dangerous. There's always the possibility that the bag will not inflate when it should, or that it *will* inflate when it shouldn't. Bags *can* go off inadvertently, and when this happens, they can lead to injury and even death. A bag blowing up at the wrong time can throw back the driver and lead to an accident. Even in relatively innocuous cases, an air bag blowing up prematurely can be very expensive to fix. Besides, sodium azide isn't the kind of chemical I want to be riding around with.

Whether an air bag fails to work at the proper time or whether it works prematurely, the whole business is a paradise for product liability lawyers. Because many people see air bags as a panacea, they won't hesitate to sue the manufacturers when—as would undoubtedly happen—people get killed and maimed even in cars equipped with air bags.

To be fair, the technology is now at the point where air bags are highly reliable. Let's say they'll work in 99.99 percent of cases. If all cars were equipped with air bags, and if, as now, there were 150 million cars on the road, that means that .01 percent of the air bags

would not be reliable. And *that* means that about fifteen thousand times a year—which comes to about forty times a day—somebody's air bag would malfunction. If only 1 percent of those people sued, that would still be a pretty expensive proposition.

Air bags are one of those areas where the solution may actually be worse than the problem. After all, they're a pretty powerful piece of technology. Once when I was in Europe I picked up an English newspaper and was amazed to see a headline that read: "Yank Suggests Air Bags for Capital Punishment." I figured this was a gag, but apparently the proposal was made seriously. The guy who thought it up was a retired safety engineer in Michigan, and he was proposing that air bags would offer a humane alternative to the electric chair and to other forms of capital punishment.

In his application to the U.S. Patent Office, the inventor stated that by inflating an air bag directly under a condemned person's head, the force of twelve thousand pounds can instantly snap the guy's neck far more effectively than the hangman's noose, and so quickly as to preclude any pain whatsoever. I'm not sure I'd want one of those gizmos in *my* car.

Air bags are not the answer. And in fact, since the proposed legislation never actually specifies "air bags" but only "passive restraints," the legislation could be satisfied by passive belts—a kind of lap-and-shoulder belt that fastens automatically when the car doors are closed. These were developed by Volkswagen: you climb in underneath the shoulder harness, and the belt is fastened automatically. Belts that grab you whether you like it or not now come as optional equipment in the Rabbit.

Air bags have been offered only once by an American car manufacturer. In 1974, GM invested \$80 million in an air-bag program and tooled up to produce three hundred thousand units. They were offered as options on certain Cadillacs, Buicks, and Oldsmobiles from 1974 through 1976. But only ten thousand customers ordered them, which means that each air bag ended up costing the company \$8,000. As one GM official said at the time, "We would have been better off selling the bags and giving away the cars."

I suspect that ten years after this book is published, the government will still be debating air bags. When the crusaders get on their high horses, it's impossible to stop them. Air bags have been a red herring from the start. Barring unforeseen developments, the argument will probably continue for a long time.

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But it's not air bags that we need. What we need are laws mandating seat-belt-use. The sooner we get them, the more lives we'll save.

Until we have those laws, please do yourself and your loved ones a favor. Buckle up!

## Information from General Motors on

# RESTRAINT SYSTEMS AND FUTURE VEHICLE SAFETY

*In the next few years, people who buy GM cars will be offered a variety of restraint systems. The following responds to questions regarding the systems which GM expects to introduce to further improve the safety of its products, as well as meet new occupant protection regulations that begin with 1987 models.*

**Q. How will the new occupant protection regulation affect future cars?**

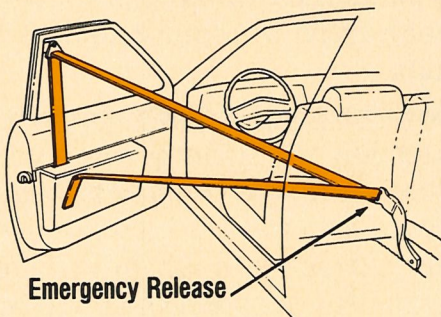
**A.** As issued by Secretary of Transportation Elizabeth Dole, the regulation requires a four year phase-in of automatic restraint systems for the driver and right front passenger. Manufacturers must install automatic restraints on 10% of their cars sold in the U.S. beginning with 1987

models, on 25% of 1988 models, on 40% of 1989 models, and on all cars thereafter. These requirements will be rescinded, however, if states representing two-thirds of the nation's population enact qualifying safety belt use laws (with a deadline of April 1, 1989).

**Q. What kind of automatic restraint systems are you considering?**

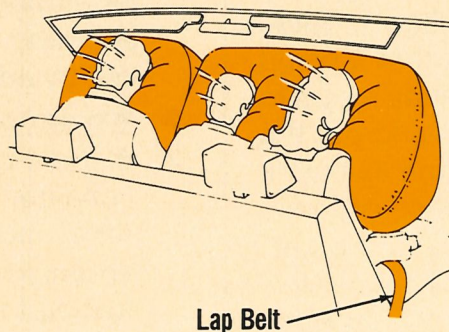
**A.** General Motors is considering a variety of approaches, with the decisions to be based on the best safety value to the customer for each particular vehicle type. Shown below are some automatic restraint system "candidates" to meet the performance requirements of the regulation.

### AUTOMATIC BELT SYSTEM



This restraint somewhat resembles the current lap/shoulder belt system, but is automatically activated by the act of entering the vehicle. Typically, opening the door causes the belt to be drawn away from a person's upper torso and waist, while closing the door causes it to wrap across one's body much in the same manner as a conventional restraint. The regulation requires that a means of releasing the belt in emergencies be built into the system.

### AIR BAG/BELT SYSTEM (FULL FRONT SEAT)



On frontal impact, this system inflates a bag from the hub of the steering wheel for the driver. If it is a full front seat system, a larger bag from the instrument panel inflates at the same time for other front seat passengers. A sensing system detects when impact is of sufficient severity, and triggers rapid inflation of the bags. A belt system will be supplied to meet the side impact and rollover protection requirements, and should be used to achieve maximum system effectiveness.

### "BUILT IN" SAFETY SYSTEM



Special materials and structure are combined which enable the instrument panel surface, steering system and other parts of the car interior to meet frontal impact unbelted performance requirements. The vehicle interior will not appear significantly different than those of today. A lap/shoulder belt will be supplied to meet the side impact and rollover protection requirements of the regulation, and should be used to achieve maximum system effectiveness.

**Q. If automatic restraints are so close to reality, why should states bother with belt use laws?**

**A.** Belt use laws will have an immediate and significant effect on vehicle safety since it would take up to 15 years to replace all the cars on the road with models that have automatic restraints. A belt use law therefore would be highly productive in immediately saving lives and reducing injuries during this transition period.

Further, no matter which system is used, safety belts must be worn to assure maximum protection, and belt use laws will help assure their use. Even air bags are less effective than lap/shoulder belts unless the accompanying seat belt is worn. And automatic belt systems that are disconnected at the emergency release are obviously ineffective.

Belt use therefore is an essential and significant aspect of all approaches for reducing deaths and injuries.

**Q. Have any states actually passed a mandatory belt use law?**

**A.** Yes. New York was the first to do so. Drivers, front seat passengers, and all rear seat passengers under age 10 are required to be restrained by seat belts or child seats as of December 1, 1984. Sponsors of the law expect that it could decrease N.Y.'s annual fatalities by up to 400 and injuries by 70,000, and cut the costs of medical expenses and lost work time by \$240 million. Because of these potential benefits, other states are currently considering belt use laws. The New Jersey legislature, for example, recently passed a belt use law.

**Q. How do other countries deal with occupant protection?**

**A.** Most industrialized countries (over 30 of them) throughout the world have mandatory belt use laws. They include Australia, Austria, Belgium, Brazil, Denmark, Finland, France, Great Britain, Greece, Ireland, Israel, Netherlands, Norway, Sweden, Switzerland and West Germany.

Most of the provinces of Canada also have passed such a law.

The chart below shows the increase in belt use in several countries and the resulting reduction in fatalities, following passage of belt use laws. Note particularly that Great Britain, the most recent country to join this group, reports that belt use has risen from 40% to 90%, and is now a popular law. Almost 500 lives were saved the first year, and injuries were down by 7,000.

Countries	% Use Rate		% Fatality Reduction
	Before Law	After Law	
Australia	30	80	22.5
Belgium	17	92	39.0
Canada	21	61	15.7
France	26	75	22.0
Great Britain	40	90	24.5
Sweden	36	79	46.0

Source: U.S. DOT Report DOT-HS-806-527-July '84

Ironically, the U.S. is a world leader in passing child restraint laws, but is a rarity among industrialized nations for not adopting legislation to require seat belt use by adults.

**Q. Why don't more people wear their belts voluntarily?**

**A.** A good question, particularly when you consider that sometime in his or her lifetime, one person in two will be injured in an accident serious enough to require towing the car. There doesn't seem to be any one answer. One of the major reasons is that they just have not established a habit. Most people in countries with belt use laws have developed the habit.

Others say they don't wear them out of fear of being trapped in a car that has gone into the water or caught fire. Yet the best way to deal with the consequences of such an extremely rare accident occurrence is to remain conscious so that escape is possible. Seat belts are the best

means of protection in these accident situations.

Some claim that belts are uncomfortable. However, people who regularly wear belts tell us that they don't find them uncomfortable. Properly adjusted, there are few complaints about ruffled dresses or suits, or an uncomfortable feeling of a belt across the chest or hips.

People also frequently forget that seat belts help keep the driver behind the wheel during a skid or other unexpected maneuver where loss of control of the vehicle would prevent the driver from steering out of danger.

Some believe that a lap/shoulder belt is ineffective simply because the shoulder belt allows them to move their upper body about rather freely. The fact is the lap/shoulder belt is designed to provide upper body freedom unless there is a collision or panic stop. When the retractor senses that the car is stopping abruptly, it locks the belt instantly to hold the occupant. (The diagram below explains.)

While all of us think that our driving skills will keep us out of an accident, even

the best driver can't predict what another driver will do, particularly if the other driver has been drinking or taking drugs. All things considered, seat belt use is the best single system defense against injury in a crash, and it is available now. But its value is non-existent if it is not worn.

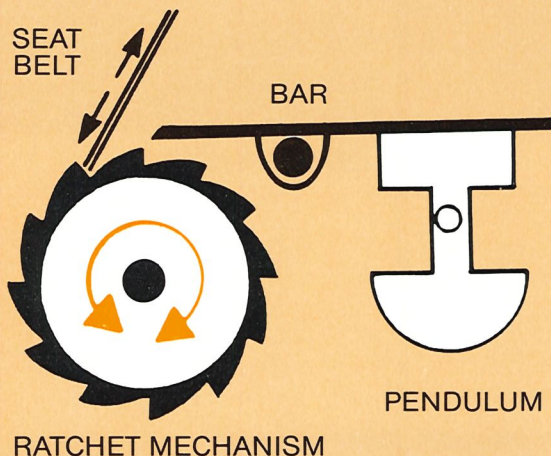
**Q. There must be more to occupant protection than restraint systems. What else is GM doing to help prevent injury in accidents?**

**A.** We have an aggressive research and development effort called the VEHICLE SAFETY IMPROVEMENT PROGRAM designed to continually upgrade the built-in safety of GM cars and to complement the manual lap/shoulder belt system. Research is taking place to further improve the capability of the steering column and steering wheel to provide increased energy absorption for improved protection in severe collisions. These improvements will be phased into new GM models of the future.

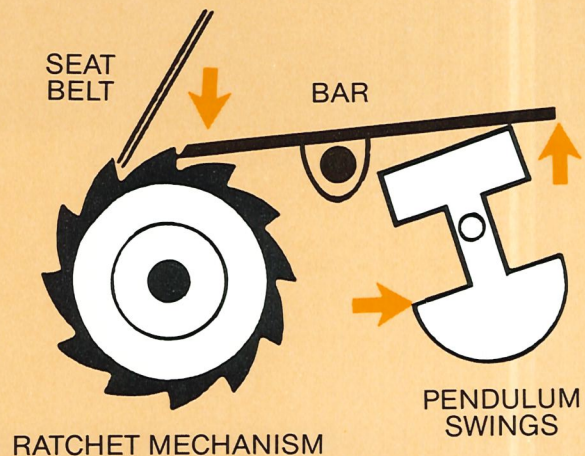
New full-size 1985 models are the first to receive a riveted pin door hinge that provides better stability to the hinge area of the door during impact.

### THE SAFETY BELT RETRACTOR: HOW IT WORKS

#### NORMAL FORWARD MOTION



#### ABRUPT STOP



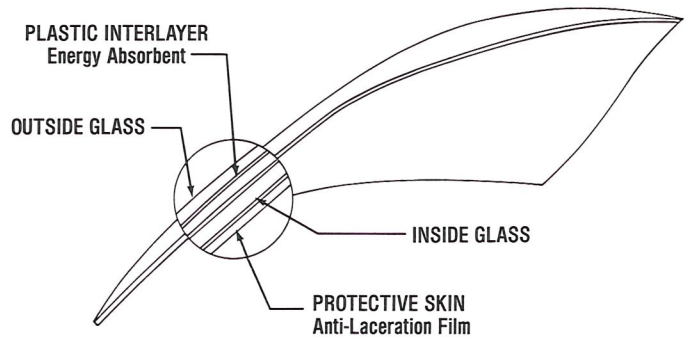


Another new feature that has begun to appear on GM cars is the Inner-Shield windshield, which has a thin plastic coating added on the inside glass surface to further protect an occupant's face from lacerations caused by broken glass (see pictures below). Inner-Shield is being installed on all 1985 Seville Elegantes, and General Motors hopes to install it on other car lines in the future as supplier production capacity increases.

Research also continues, to increase the occupant protection capabilities of the instrument panel and side door structure design.

GM cares for the well-being of the driving public, and is aggressively pursuing the above program in its desire to reduce deaths and injuries resulting from traffic accidents, by continuing to improve vehicle safety in areas beyond those required by federal standards.

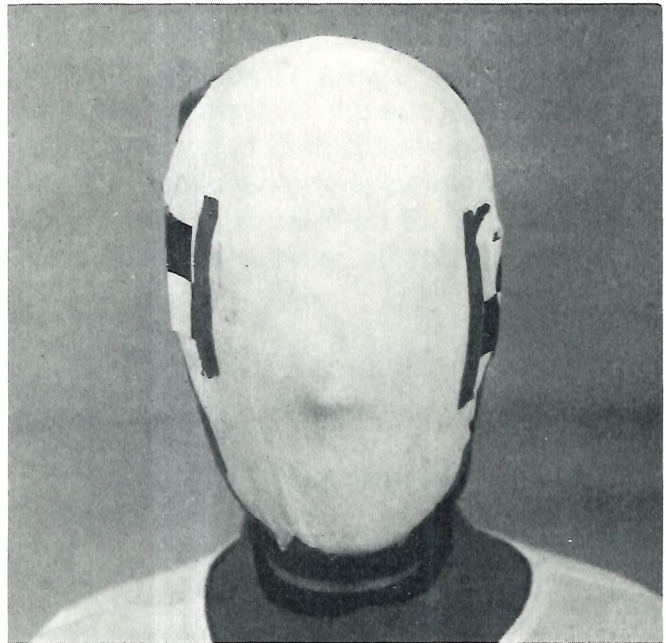
**"INNER-SHIELD" WINDSHIELD**



**Dummy heads after windshield impact—30 mph barrier simulation.**



**CONVENTIONAL WINDSHIELD**



**INNER-SHIELD**

*If you have any comments or wish further information, please write us at:  
Public Relations Staff  
11-243 General Motors Building  
Detroit, Michigan 48202*

## Proposed Amendment to House Bill No. 2188

On page 2, by striking all of line 46 and inserting "be guilty of a traffic infraction and shall be fined \$25 including court costs. Violation of this act shall not be a moving violation."

2/21/85  
Attach. 4

Testimony before the House of Representatives Committee on  
Transportation and Utilities regarding HR#2188, by Dr. Fred E. Clark.

Thank you for the opportunity to express my views regarding  
the effectiveness of seatbelts in preventing injuries to the  
face, teeth and jaws.

I know you have been privileged with a wealth of statistics  
to support the effectiveness of the use of seatbelts. I won't  
take up valuable time today to review those, however, I would  
just like to make the general statement that there is no question  
about the fact that seatbelts, including shoulder restraint,  
reduce the frequency and severity of injuries sustained in  
automobile accidents, reduces human suffering and drastically  
reduces medical care costs.

The last time a significant change occurred in highway statis-  
tics was the enactment of the 55 mph speed limit. We now have  
an opportunity to have an even greater impact with a positive  
change in these accident statistics. Forty eight (48) states  
have now inacted some form of legislation requiring mandatory  
restraints for children. Meaningful statistics are now being  
reported about the effectiveness of this new legislation. The  
Kansas City Times reports the number of young children injured  
in auto accidents has dropped dramatically since the implement-  
ation of the law requiring them to wear safety restraints in  
car travel in Missouri. Since the law took effect in January 1,  
1984, three hundred and sixty (360) children under the age of

four have been reported injured in automobile accidents on Missouri roads. This represents a twenty four per cent (24%) reduction from the four hundred and seventy one (471) children injured during the same period during 1983. The Denver Post reports that as of July 1931, there has been an eighty three per cent (83%) reduction in child traffic fatalities in the state of Colorado. There is good reason to think that adults statistics would be similarly effective by mandatory seatbelt use.

While human suffering has to be the primary concern, the economic impact cannot be ignored. The National Highway Safety Administration's office has reported some comparative costs of similar accidents. One where the driver was wearing seatbelts and one where he was not. In the first example, a male wearing a seatbelt driving at 55 mph was hit in the left front by a full sized pick-up driving 35 mph. The injury sustained was a minor whiplash and the total medical cost was fifty two dollars (\$52.00). In a similar accident, a male not wearing a seatbelt and driving at approximately 55 mph, hit in the left front by a full size car at 35 mph, sustained fractured ribs and a fractured leg. The total health care cost was forty three thousand, six hundred and ninety two dollars (\$43,692.00). In another example, a male wearing a seatbelt driving approximately 45 mph and hit loose gravel and lost control rolling down an embankment. He sustained no injuries.

In a similar accident, a female driver not wearing a seatbelt, driving at 45-50 mph, lost control, rolled down an embankment, sustained multiple injuries requiring a medical care cost of eighty six thousand, seven hundred and ninety five dollars (\$86,795.00). No reasonable person can ignore the benefits of wearing a seatbelt.

During my professional career of twenty five (25) years, I have had the opportunity to treat many victims of automobile accidents. Only in the last few years has any concern been given as to whether they were wearing seatbelts or not. I recently had an opportunity to treat a well known member of our own community for injuries he sustained in an automobile accident. He fell asleep, the car veered into the ditch and rolled over. He was not wearing a seatbelt and sustained injuries to his back and to his upper jaw, his cheekbone and the bone around his eye. This required major surgical procedures to correct the injuries to the face and jaw and approximately ten days of hospitalization. While I am not privileged to all of the cost encountered in this incident, I can only estimate that they were in excess of twenty two thousand dollars (\$22,000.00). He has recovered completely and aside from an occasional painful spasm in his back, has very little residual defect from his injuries. Since the drivers compartment of his automobile was reasonably intact, there is every possibility that he would not have sustained any injury had he been

wearing a seatbelt with a shoulder restraint.

As an Oral and Maxillofacial Surgeon, I see only some of these injuries that sustain this type of damage. By far the most frequent injury I see, involves the mouth and the teeth. Most often these do not require hospitalization but do require extensive treatment and very often, residual cosmetic defects and substantial cost. The most frequent injury I see involves the mouth, lips and teeth. I'll pass around a slide of a young man that sustained substantial injuries in a relatively minor accident when he failed to stop in time and rear ended a car. As you can see, he sustained some lacerations to his lips, tissues inside his mouth and totally displaced one tooth and fractured several others. This particular case required emergency treatment for lacerations, replacement of the tooth that was completely knocked out and several porcelain crowns to correct the teeth with the fractures. Total cost of his treatment will approach seven thousand, five hundred dollars (\$7,500.00). In addition, he will have the ongoing cost of some dental care that he would not otherwise have had. Had he been wearing a seatbelt and shoulder restraint, he would not have had any injuries.

In addition to the efforts by governmental agencies to increase the use of seatbelts, the private sector in every community has had some program to stimulate voluntary use. In Topeka,

Kansas, the incentive program was implemented by the State Department of Transportation, sponsored by the Goodyear Tire and Rubber Company and Topeka American Automobile Association. A safety belt survey was also conducted for the state by the Co-operative Extension Service at Kansas State University and members of 4-H Clubs. The survey reveals that a disappointing seven to eight per cent (7%-8%) of Topeka drivers were found to be wearing seatbelts. On June 24, the Chicago Tribune revealed the results of a survey conducted in Canada, where in provinces that had a mandatory seatbelt law, the use rate was fifty three point nine per cent (53.9%). In provinces without the law, the use rate was eleven point eight per cent (11.8%). SEAT BELTS ARE A PROVEN LIFE SAVER and only very lazy or very stupid people do not use them.

It is somewhat embarrassing that we use them so little that lawmakers are asked to make laws that are just common sense.

Respectfully submitted: (this material includes five (5) pages)

Fredric E. Clark, D.D.S., M.S.D.  
Oral and Maxillofacial Surgery  
4301 Huntoon  
Topeka, Kansas 66604

19 February 1985

TESTIMONY  
BEFORE  
THE KANSAS HOUSE COMMITTEE  
ON  
TRANSPORTATION  
BY  
ROBERTA SHARP  
MEMBER OF THE EXECUTIVE COMMITTEE  
OF THE  
KANSAS HIGHWAY USERS CONFERENCE  
AND  
PAST PRESIDENT  
OF THE  
KANSAS WOMEN HIGHWAY SAFETY LEADERS  
FEBRUARY 21, 1985

Mr. Chairman and members of the Committee, I am pleased to appear before you to support HB 2188, a bill to require front seat occupants of passenger cars to wear their safety belts.

The United States has the safest Highway Transportation System in the world. Despite this fact, between 43,000 and 50,000 people are killed in highway crashes every year. 22,000 to 27,000 of these deaths are occupants of passenger cars. If these passenger car occupants had all been wearing their safety belts, at least half would have lived.

That is an astounding effectiveness for any remedial action, and most importantly, it costs nothing. All it requires is to "Get It Together" or "Buckle-up." Not a major investment when we consider the tremendous savings to individuals and society.

As tragic as the number of deaths are, they are only part of the problem, lost productivity, medical and rehabilitation costs, and the overall societal burden must be taken into account with non fatal trauma. Almost 13,000 people are injured each day;

2/21/85  
Attach. 6



more than 4.5 million are injured each year, including about 2 million disabling injuries, or roughly 45,000,000 each decade--about a fifth of the U. S. population.

In 1975, vehicle injuries and deaths cost this nation conservatively more than \$14 billion. In 1981, this figure exceeded \$20 billion. On a per-case basis for serious injuries, the average medical payment is \$208,400. The cost of institutional care is an additional \$240,300.

Each death costs the victim's employer an average of \$120,000. When on-the-job injuries are added to deaths; road trauma directly or indirectly costs employers approximately \$1.9 billion annually.

Road related trauma as these figures indicate extract a staggering toll on our society and on its economic well being.

Yet these figures can be reduced dramatically by a single act--the enactment of a safety belt usage law. The use of safety belts--lap and shoulder--have been shown through scientific study to be 50-60% effective in reducing fatal and serious injuries. At a 70% usage rate at the 50% effectiveness level we should see a savings of approximately 8,000 lives, while at the 60% effectiveness level that savings could be as high as 9,600 lives. The average usage rate of 8 other nations (see attached) that enacted safety belt usage laws was 78.5%--with a high of 92% and a low of 61%. So the 70% usage rate after law enactment is conservative and the savings in lives could be more.

Based upon 1983 passenger car deaths of 237 in Kansas, and using the 80% usage figure and the 50% effectiveness level we could expect a savings of 95 lives in Kansas. At the 60% effectiveness level the savings of 114 lives annually would be expected.

The question now comes down to why state legislatures have not enacted safety belt usage laws?

The perennial argument against safety belt use legislation is the alleged infringement on an individual's right to choose to use a belt or not. However, there is no such unbroiled right to operate a motor vehicle.

First, operation of a motor vehicle and the associated use of the driving system, whether it be related to the driver, vehicle or environment, have always been regulated by government through driver licensing, traffic laws, limited access highways, vehicle standards, and many other requirements. The benefits of available safety belts give overriding evidence of the efficacy of requiring use as a crash avoidance control.

Second, the debate over the right to choose becomes moot when the costs to society in terms of medical, rehabilitation, unemployment and welfare services supersede the "right" of people to seriously or fatally injure themselves by not buckling up. Freedom does not include the liberty to take unreasonable risks with one's own life or the lives of others. The preponderance of evidence shows that riding unrestrained in a motor

vehicle is an unreasonable risk.

Two U. S. Supreme Court decisions upholding the constitutionality of state laws are germane to safety belt use requirements. In both the helmet and belt situation, the personal freedom issue is superseded by the costs to the public that follow preventable trauma:

"There is in the law no sanction of self-destruction, and certainly there is no right on the part of anyone to use public highways for risking or courting or seeking such self-destruction. Protection of the safety of all users of the highway even against the consequences of their own actions is a legitimate use of the police powers of the state."

Bisenius v. Karns, Wisconsin  
Supreme Court, June 1969

"While we agree with plaintiff that the act's only realistic purpose is the prevention of head injuries incurred in motorcycle mishaps, we cannot agree that the consequences of such injuries are limited to the individual who sustains the injury.... The public has an interest in minimizing the resources directly involved. From the moment of the injury, society picks the person up off the highway; delivers him to a municipal hospital and municipal doctors; provides him with unemployment compensation if, after recovery, he cannot replace his lost job; and, if the injury causes permanent disability, may assume the responsibility for his and his family's continued subsistence. We do not understand a state of mind that permits plaintiff to think that only he himself is concerned."

Simon v. Sargent, Federal District  
Court, November 1972

A safety belt use law is similar to other types of public health measures, such as compulsory immunization against communicable diseases. Road trauma is, in fact, a disease of epidemic proportions. If a rate of approximately 50,000 fatal and two billion disabling cases of cholera occurred, a national medical emergency would be declared. Motor vehicle crash injury may take a different form, but it is just as deadly. More importantly, the majority of injuries are preventable at the time of the crash.

Another issue that is raised is enforceability. Law enforcement officials traditionally have advocated safety belt usage. Endorsement of proposed safety belt legislation by enforcement officials at all governmental levels is essential. Moreover, the backing of those who must enforce a safety belt use law should reduce considerably any legislative opposition based on perceived enforcement problems. Enforcement of safety belt usage laws is normally undertaken in conjunction with the enforcement of other traffic violations. For example, other countries with a mandatory belt use law enforce safety belt use requirements when stopping motorists for other traffic violations. The lap-shoulder configuration allows officers to observe if belts are in use as they approach a motorist's vehicle.

The experiences of foreign countries that have enacted belt use laws show that attempts to evade the law usually fail. Ontario police, for example, have achieved enforcement

rates on the order of one citation for every six speeding charges. In Australia, far more objections were raised against belt use before the legislation than afterward. A consistent 10-year usage rate of about 80 percent bears this out. The most recent experienced in Great Britain of about 95 percent use three months after enactment of legislation clearly suggests that safety belt use laws, like many other statutes, are largely self-enforcing.

Thank you. I would be please to respond to your questions.

SUMMARY OF INCREASED SEAT BELT  
USE, FATALITY REDUCTION AND EFFECTIVENESS  
WITH MANDATORY USE LAWS

<u>Countries</u>	<u>% Use Rate</u>		<u>% Fatality Reduction</u>	<u>% Fatality Effectiveness*</u>
	<u>Before MUL</u>	<u>After MUL</u>		
Australia	30	80.0	22.5	39.6
Belgium	17	92.0	39.0	47.8
Canada	21	61.0	15.7	43.3
France	26	75.0	22.0	40.6
Great Britain	40	90.0	24.5	41.0
Israel	6	70.0	43.0	64.6
Sweden	36	79.0	46.0	77.0
Switzerland	<u>32</u>	<u>81.0</u>	<u>12.0</u>	<u>22.7</u>
Average	26%	78.5%	28.1%	47.1%

\* Calculated as follows:  $FE = \frac{FR}{UA - (1 - FR)(UB)}$

where: FE - Fatality Effectiveness  
FR - Fatality Reduction  
UA - Usage After the Law  
UB - Usage Before the Law

Source: Final Regulatory Impact Analysis--Amended FMVSS 208  
U.S. DOT Report DOT-HS-806-527, July 1984.

2/21/85

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# Myths and Facts About Air Cushions

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The Insurance Institute for Highway Safety is an independent, nonprofit, scientific and educational organization. It is dedicated to reducing the losses—deaths, injuries, and property damage—resulting from crashes on the nation's highways. The Institute is supported by the American Insurance Highway Safety Association, the American Insurers Highway Safety Alliance, the National Association of Independent Insurers Safety Association, and several individual insurance companies.

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Attach. 7

Air cushions, often called air bags, reduce motor vehicle crash injuries, even in the most violent kinds of crashes. That fact has been recognized for more than a decade and has been affirmed by Secretaries of Transportation during the Johnson, Nixon, Ford, Carter, and Reagan administrations. Yet myths about air cushions persist. These and the facts that set them straight are discussed below.

**Myth #1:** An air cushion is not an effective occupant restraint, because it only works in one kind of crash.

**Facts:** The air cushion is intended by design to protect against fatal and serious injury in front and front-angle crashes. Because these account for about half of all car crash deaths, air cushions are a very important aspect of total occupant protection. It is as misleading to criticize air cushions for protecting "only" in frontal crashes as it would be to attack such already-required protective features in cars as energy-absorbing steering columns and laminated windshields. Like air cushions, they protect "only" in frontal crashes.

Equally to the point, the National Highway Traffic Safety Administration has noted the following: "To argue that air cushions are a poor idea because they do not provide protection from all types of crash injuries is like arguing that polio vaccine shouldn't be used because it doesn't cure cancer."<sup>1</sup>

**Myth #2:** Air cushions have not been adequately tested.

**Facts:** The engineering skills of the U.S. automobile industry and its suppliers have made the air cushion by far the most thoroughly tested (prior to widespread use) vehicle safety technology ever developed. The concept of an air cushion was outlined as early as 1941, and patents began to be issued in the 1950s. Since the 1960s, the experience of air cushion-equipped cars in numerous controlled tests and on the road has demonstrated the effectiveness and reliability of these restraints.

The most extensive, real-world demonstration that air cushions are lifesavers began in the

mid-1970s when General Motors, Ford, and Volvo sold or leased more than 12,000 air cushion-equipped cars. As of July 1983, these cars had traveled about a billion miles, and there had been 267 crashes severe enough to deploy the cushions. The Insurance Institute for Highway Safety analyzed data from most of these crashes, finding that in severe frontal impacts both air cushion-protected occupants and those with lap/shoulder belts experienced substantial reductions in injury severity, compared to unrestrained occupants.<sup>2</sup>

More recent information about the performance of air cushions involves thousands of Mercedes-Benz cars in Europe. The company reports that dozens of these cars have been in crashes severe enough for the air cushions to deploy. As of early 1983, only eight minor injuries had been recorded.

These examples of the real-world performance of air cushions in crashes follow many years of controlled tests. As an illustration of how air cushions function, the Insurance Institute for Highway Safety crash tested two 1975 Volvos — one equipped with air cushions, the other without. Photographs taken at parallel moments during the two tests show how the cushions intervened to buffer the test dummies and prevent harm (see photos, p. 6). In the Volvo without air cushions, the test dummies violently impacted the steering wheel, instrument panel, and windshield.<sup>3</sup>

As early as 1977, General Motors president Edward N. Cole said of air cushions, "Another test would prove nothing."<sup>4</sup> Then, after further tests GM in 1980 described the cushions as having a "highly acceptable" level of reliability.<sup>5</sup> In 1981, a GM spokesperson said of air cushions, "We can



demonstrate that we can produce a highly effective device."<sup>6</sup>

Mercedes-Benz, the first automaker to market air cushions in the United States in almost a decade, called the cushions with lap belts "the best safety system in the world."<sup>7</sup> More recently, a German aerospace company said "there is technically no practical alternative to the air cushion system."<sup>8</sup>

**Myth #3: Because deaths and injuries occur when vehicles crash, the best way to reduce the losses is to prevent the crashes in the first place by teaching and encouraging drivers to operate their vehicles more safely.**

**Facts:** In a crash, vehicle damage is the result of the "first collision"; deaths and injuries occur in a "second" or "human collision". That is, a crashing vehicle stops abruptly, but unrestrained occupants keep moving forward at the speed the vehicle was traveling just before it crashed. The second collision, the one that causes human injury, occurs when the moving occupants are ejected or slam into each other or the vehicle's interior.<sup>9</sup>

Much human damage can be prevented by stopping crashes in the first place — i.e., by preventing the first collision. However, many crashes will occur anyway. The damage in these crashes need not involve serious injury to human occupants if they are properly protected. Air cushions diffuse the potentially harmful forces of the second collision by serving as pillows between occupants and the objects they otherwise would hit.

Common sense tells us that, given a choice, we would rather have our faces and bodies hit something soft, gently contoured, and energy-absorbing — like an air cushion — than sharp, protruding, edged, or hard structures such as those inside a car.

There is strong language in the National Traffic and Motor Vehicle Safety Act of 1966 and its legislative history stressing the importance of dealing with the problem of damage to occupants in the second collision instead of focusing exclusively on preventing the first collision. The Act directs the U.S. Department of Transportation to establish

standards that ensure the performance of motor vehicles "in such a manner that the public is protected against unreasonable risk ... of death or injury to the persons in the event accidents do occur."<sup>10</sup>

Furthermore, the Senate Commerce Committee's report on the Act states that "for too many years, the public's proper concern over the safe driving habits and capacity of the driver (the 'nut behind the wheel') was permitted to overshadow the role of the car itself. The second collision — the impact of the individual within the vehicle against the steering wheel, dashboard, windshield, etc. — has been largely neglected. The committee was greatly impressed by the critical distinction between the causes of the accident itself and the causes of the resulting death or injury."<sup>11</sup>

Finally, the 6th Circuit Court of Appeals said this: "The idea is to assume that when the car stops dead, the passengers don't."<sup>12</sup>

**Myth #4: Occupants have to use seat belts in order for air cushions to be effective. Because the lap/shoulder belts already in cars provide crash protection superior to air cushions, the cushions are unnecessary.**

**Facts:** An occupant using a seat belt with an air cushion gets the best occupant protection available in any kind of crash. Especially in high-speed crashes, occupants with belts *and* cushions are better protected than occupants using only a lap/shoulder belt. For the majority of vehicle occupants who do not use seat belts at all, air cushions alone provide crash protection vastly superior to no restraint at all.

Belt use rates are very low — only 10-15 percent of drivers. On the other hand, air cushions, because they work automatically, are "in use" virtually 100 percent of the time. The protection offered by air cushions thus is far greater than that of seat belts, simply because so many more occupants are being protected.

In crashes at high speeds, seat belts (even when worn) often do not prevent occupants from impacting hostile structures in the vehicle's interior.

Air cushions, on the other hand, fill the entire space between a car occupant and the dashboard or steering wheel, thus spreading crash forces as gently as possible over a wide body area — as if the occupant were going into a very large pillow.

**Myth # 5: It makes more sense to encourage or require occupants to use seat belts than to require air cushions in all cars. The belts are already in virtually all cars. The benefits of increased belt use thus would be immediate, while it would take a decade or so for air cushions to filter through the entire U.S. car fleet.**

**Facts:** It is doubtful that seat belt use can be increased significantly by encouraging people to buckle up. The indisputable record of many years' attempts by both government and private organizations to increase belt use through campaigns of persuasion, often carried out at a cost of millions of dollars, has been one of repeated, dismal failure.<sup>14</sup>

There have been proposals to make seat belt use compulsory in more than half of the state legislatures during the past decade. Despite hearings, only two states had such laws as of November 1984 — New Jersey and New York. After signing the seat belt law in New York, the governor urged the U.S. Department of Transportation to pursue "accelerated development and implementation" of passive restraint systems "in all automobiles to give the greatest protection possible to the largest possible numbers of people."<sup>15</sup>

Although campaigns to increase seat belt use have been largely unsuccessful, efforts to get people to buckle up should continue along with the installation of automatic restraints such as air cushions. The two approaches are complementary, not competitive. The aim of both is to maximize the number of people who are restrained in motor vehicle crashes.

**Myth # 6: Car buyers do not want air cushions.**

**Facts:** This myth is based almost exclusively on the alleged failure of buyers to purchase air

cushion-equipped cars when they were offered by General Motors during the 1974-76 model years. In fact, the cushions were offered only on large, luxury cars during a time of acute gasoline shortage.

In addition, according to separate investigations by *The Wall Street Journal* and the National Highway Traffic Safety Administration,<sup>16,17</sup> GM failed to promote the air cushions that were offered for sale. *WSJ* reported that "the company and its dealers actively discouraged sales." Dealers "did little to make buyers aware of it [the air cushion] and often sought to pour cold water on any interest that customers showed." Thus, air cushions were not given a fair chance in the marketplace.

During the last decade, more than a dozen public opinion polls have indicated that air cushions would be popular items if they were enthusiastically marketed.<sup>18</sup> For example, a 1971 General Motors study found that, when given a choice between automatic belts or air cushions, GM customers preferred the air cushions by 56 to 44 percent. The study concluded that the air cushion was preferred "because it afforded equal protection but was judged far superior in all areas of style and convenience."<sup>19</sup> Another GM study released in 1979 found that customers preferred air cushions even if their cost were said to be four times that of the most popular style of automatic belt.<sup>20</sup>

By a vote of 46 to 37 percent, a public sample interviewed by Gallup in 1977 endorsed air cushions in all new cars. Young adults (18 to 29 years old) voted 65 to 27 percent in favor of air cushions. Women of all ages endorsed air cushions by a substantial margin, 51 to 27 percent.<sup>21</sup>

In 1980, *The New York Times* commissioned Market Opinion Research of Detroit to poll drivers and automobile dealers about vehicle safety. This question was asked: "Would you favor or oppose requiring car manufacturers to equip all new cars with air safety cushions?" Nearly half said they wanted air cushions to be required. Drivers under 35 years old, who have high injury and death rates on the highways, were overwhelmingly in favor of air cushions, 63 percent to only 21 percent opposed.<sup>22</sup>

A more recent poll conducted for the Insurance Institute for Highway Safety indicated 90 percent of car buyers believing that automatic crash protection should be required on new cars as standard or optional equipment. Only four percent of the respondents said the availability of automatic restraints should be left up to motor vehicle manufacturers.<sup>23</sup>

**Myth #7: Instead of protecting people, air cushions are themselves hazardous. They explode on deployment. They cause injuries such as shattered eardrums.**

**Facts:** In 1976, Transportation Secretary Coleman listed these and other alleged hazards of air cushions and then dismissed them with this: "The public record generally confirms that none of these constitutes a significant risk .... In laboratory tests and field experience to date, there has been no indication of hearing or eye damage associated with air cushion deployment."<sup>24</sup>

There have been no complaints from survivors of crashes in air cushion-equipped cars about injury to the ear from the inflating cushion. Most have told crash investigators that they did not hear the air cushion inflation over the noise of the crash itself. Test inflations of air cushion systems in closed automobiles with 91 live volunteers and lab tests with primates produced no hearing deterioration.<sup>25</sup>

Nothing about air cushion deployment constitutes an explosion. Without burning or exploding, the substance that triggers inflation produces the harmless nitrogen that fills the cushions. (See myth #8 for further information about the substance that triggers air cushion inflation.)

**Myth #8: The sodium azide that inflates air cushions is hazardous.**

**Facts:** Without burning or exploding, sodium azide triggers air cushion inflation by producing the harmless nitrogen that fills the cushions. (Seventy-eight percent of the air we breathe every day is nitrogen.)

The facts about sodium azide are these: It is used as a sterilizer in medical laboratories. It is a non-persistent substance which, when exposed to the environment, harmlessly degrades in a matter of weeks. In its application as an air cushion gas generator, it is sealed in a metal canister and thus is considerably less accessible than the gasoline in a car's fuel tank or the acid in the battery.

Neither in normal driving nor in crashes — nor in disposal — does the sodium azide in air cushion systems present a hazard. This has been widely recognized for years by everyone from automakers and air cushion developers to policymakers in the federal government. For example, in 1976 Secretary of Transportation Coleman said "there is no indication that the use of sodium azide will constitute a health or safety hazard either in the production of air cushion systems or in the use of vehicles equipped with such systems. In vehicles, it would be sealed until activated and then burned upon activation; and manufacturers would be required to comply with federal hazardous materials regulations."<sup>26</sup>

Chemists at Talley Industries and Canadian Industries, two companies with extensive experience with sodium azide, emphasize its stability. Tests have shown that it will not ignite even when exposed to shock waves, detonation primers, electric current, or heat up to 500 degrees Fahrenheit.<sup>27</sup>

The issue of disposal of vehicles with sodium azide also has been widely studied. A comprehensive report compiled for the Motor Vehicle Manufacturers Association concluded that "the handling hazards of sodium azide are well understood for the manufacturing and disposal phase" and that "the consumer will for all practical purposes never be exposed to the hermetically sealed chemicals during the life of an automobile."<sup>28</sup> This conclusion has been confirmed by at least two additional studies.<sup>29,30</sup>

In summary, General Motors has said the following: "There is nothing which indicates that sodium azide is a concern on such a large scale that it should be the go or no-go decision in air cushions, if air cushions are otherwise desirable."<sup>31</sup>

**Myth #9: Air cushions can inflate inadvertently in the absence of a crash, causing the driver to lose control of the vehicle.**

**Facts:** Air cushions do not inflate when cars go over bumps or potholes in the road, nor when front bumpers come into contact with something at very low speeds, such as when pulling into a parking space. The cushions are designed to inflate only in a frontal impact equivalent to hitting a solid wall at about 12 mph or greater speed.

A sudden stop will not cause inadvertent air cushion deployment. The maximum force generated by the braking system in decelerating a car is only about one-tenth that necessary to activate air cushions. In Allstate Insurance Company's own air cushion testing program, cars were subjected to high-speed, rough-road testing (including sudden stops from 50 mph), a 5 mph barrier impact, and a 45 mph ramp jump which broke the chassis of the car. None of the air cushions in these cars inflated.<sup>32</sup>

Mercedes-Benz, which has been offering air cushions for sale in Europe for several years and in the United States for two model years, has said its tests prove that the cushions do not deploy unintentionally — "not on the worst rally tracks in the world, not after using full brakes at highest speeds," the company said.<sup>33</sup>

In any case, air cushions are designed to ensure that vehicle control would not be lost in the remote event of an inadvertent deployment. General Motors inflated air cushions without warning as 40 test subjects were driving on straightaways and turns at speeds up to 45 mph. (In fact, the drivers did not even know that the cars had air cushions.) Each time the cushion was inflated, it partially but only temporarily obscured the driver's line of vision. GM reported that "without exception, the subject retained control of the automobile."<sup>34</sup>

**Myth #10: Air cushions represent a threat to children in crashes, especially children who are "out of position" — e.g., standing up or riding on an adult's lap.**

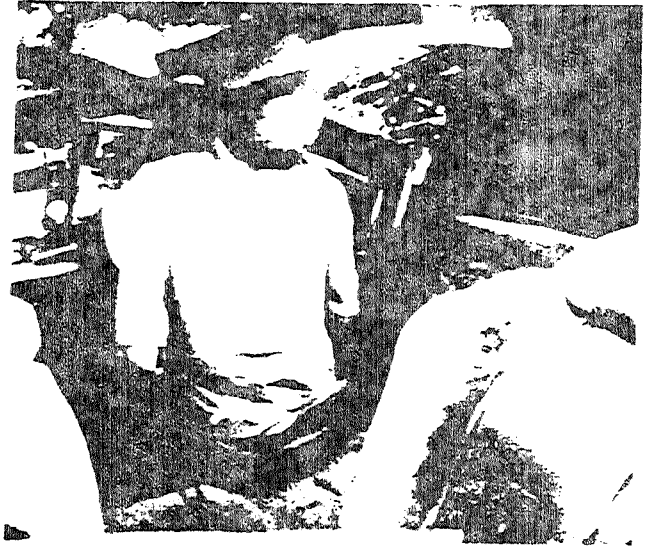
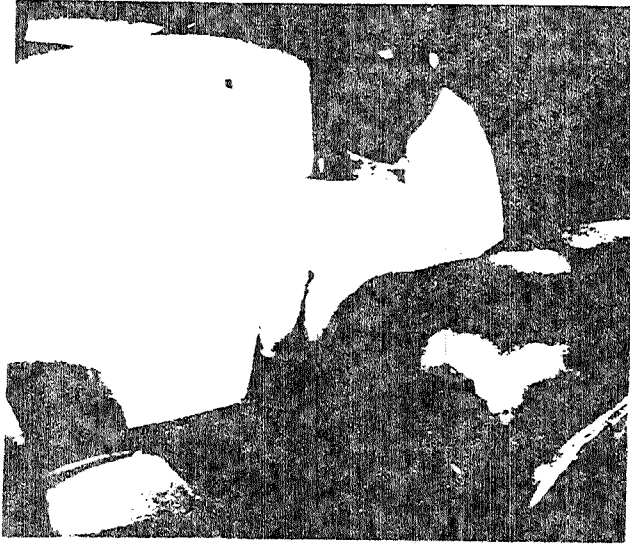
**Facts:** Despite references to Volvo tests in which pigs, allegedly representing out-of-position children, were killed during air cushion inflations, Volvo of America said in 1974 that "it has yet to be established that there is any predictable degree of correlation between results obtained with pigs and the effects on real children." Volvo concluded that although "industry, the populace, and government all have a responsibility to find solutions to the problem of child safety in automobile crashes," the "emotionality" of the out-of-position child issue should not "overshadow the potential that such systems have for preventing fatalities and injuries in a much larger segment of the American population."<sup>35</sup>

An observational study of more than 4,500 child passengers in automobiles indicated only three percent traveling in front-seat positions in which they would be contacted by an air cushion early in its deployment — e.g., children sitting or kneeling on the front-seat floor.<sup>36</sup> And, research suggests that even children in these positions can be protected by air cushions. Nissan Company has developed and tested with satisfactory results a bi-level air cushion system for protection of the standing child.<sup>37</sup>

General Motors used dummies to test whether air cushions would protect a child standing on the front floor or seat. The inflating cushion pushed the dummy back into the seat from its standing position and allowed it to go through the experimental crash without sustaining damage beyond the limits of human tolerance.<sup>38</sup> In 1979, GM announced it had solved supposed problems involving air cushions and hazards to out-of-position children.<sup>39</sup> More recently, a GM representative said about the issue, "I'd say we got it resolved."<sup>40</sup>

**Myth #11: Air cushions are feasible only in large cars.**

**Facts:** Present day air cushion technology vastly outpaces the modest, barrier crash performance criteria set forth during the 1960s, when General Motors put air cushions in some of its large cars.



*The Insurance Institute for Highway Safety crash tested two 1975 Oldsmobile sedans — one equipped with air cushions, the other without. These photos, taken at parallel moments during the tests, show the protection afforded the occupant in the car with air cushions, compared to the violent smashing of the unrestrained occupant into the windshield, dashboard, and steering column.*

The U.S. Department of Transportation's Research Safety Vehicle program has demonstrated that many practical safety technologies — including air cushions — could be incorporated into the design and production of attractive, fuel-efficient, and reasonably priced small cars.<sup>41</sup>

Honda and other manufacturers of small cars are actively developing air cushion systems.<sup>42</sup>

**Myth #12: If a car hits more than one object in a crash, the air cushions will have deflated after the first impact. They will not protect occupants in a second or subsequent impact.**

**Facts:** Air cushions are designed to remain inflated long enough to protect front-seat occupants in crashes, even those involving multiple impacts. If the first impact is a glancing blow not calling for air cushion inflation, the cushions

remain available to protect in a subsequent severe frontal strike.<sup>43</sup> In actual crashes of air cushion-equipped cars, the cushions have protected occupants in subsequent as well as initial impacts.

General Motors has conducted tests of air cushions in multiple impacts. In reporting on these tests, the GM Safety Research and Development Lab said "both the driver's and the passenger's air cushions remained deployed for both collisions, and satisfactory occupant restraint was accomplished."<sup>44</sup>

**Myth #13: Air cushions are prohibitively expensive. They would add thousands of dollars to the price of a new car.**

**Facts:** As early as 1976, Secretary of Transportation Coleman said automatic restraints could be provided to new car buyers "at a reasonable

cost."<sup>45</sup> The latest estimates of the cost of air cushions in volume production prove Coleman's point.

The U.S. Department of Transportation has said that full front-seat air cushion systems would cost \$320 in 1983 dollars.<sup>46</sup> Even less expensive air cushion systems are being developed for cars of the future.

In contrast, the cost of not providing automatic restraints such as air cushions is staggering. Virtually every economic analysis has concluded that the benefits of these restraints would far outweigh their costs. Professor William Nordhaus of Yale University, for example, has concluded that the net economic benefit to society of automatic restraints — including air cushions — would be \$2.4 billion per year and \$33 billion over time.<sup>47</sup>

**Myth #14: Air cushions are expensive and troublesome to maintain and repair. If they are not properly maintained, they will not work in a crash. After a crash, the cushions are expensive and troublesome to repair or replace.**

**Facts:** Air cushions require virtually no maintenance or repair. They have no moving parts. There is nothing about them to wear out. Consequently,

an air cushion would work for the life of a car. Of the 228 crashes in which air cushions had deployed as of July 1979, about 40 had traveled more than 40,000 miles. The highest mileage vehicle with a deployment had traveled almost 115,000 miles at the time of the crash. In every case, the air cushions inflated in the crashes severe enough to require deployment.<sup>48</sup>

After crashes severe enough to deflate air cushions, many cars are totaled, non-repairable wrecks. For cars not totaled, the air cushion of course should be repaired or replaced by a competent mechanic — just as should brakes, steering assemblies, lights, and any other safety-related component. All car repairs cost money and take time, but few involve repairing a system that may well have saved lives or prevented crippling injuries in the crash that wrecked the car.

Air cushion replacement — when required in cars that can be repaired after crashes — is modular, like replacing headlights or batteries. The cost of replacement is covered by insurance, so it does not burden the individual consumer.

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*Citations begin on page 8.*

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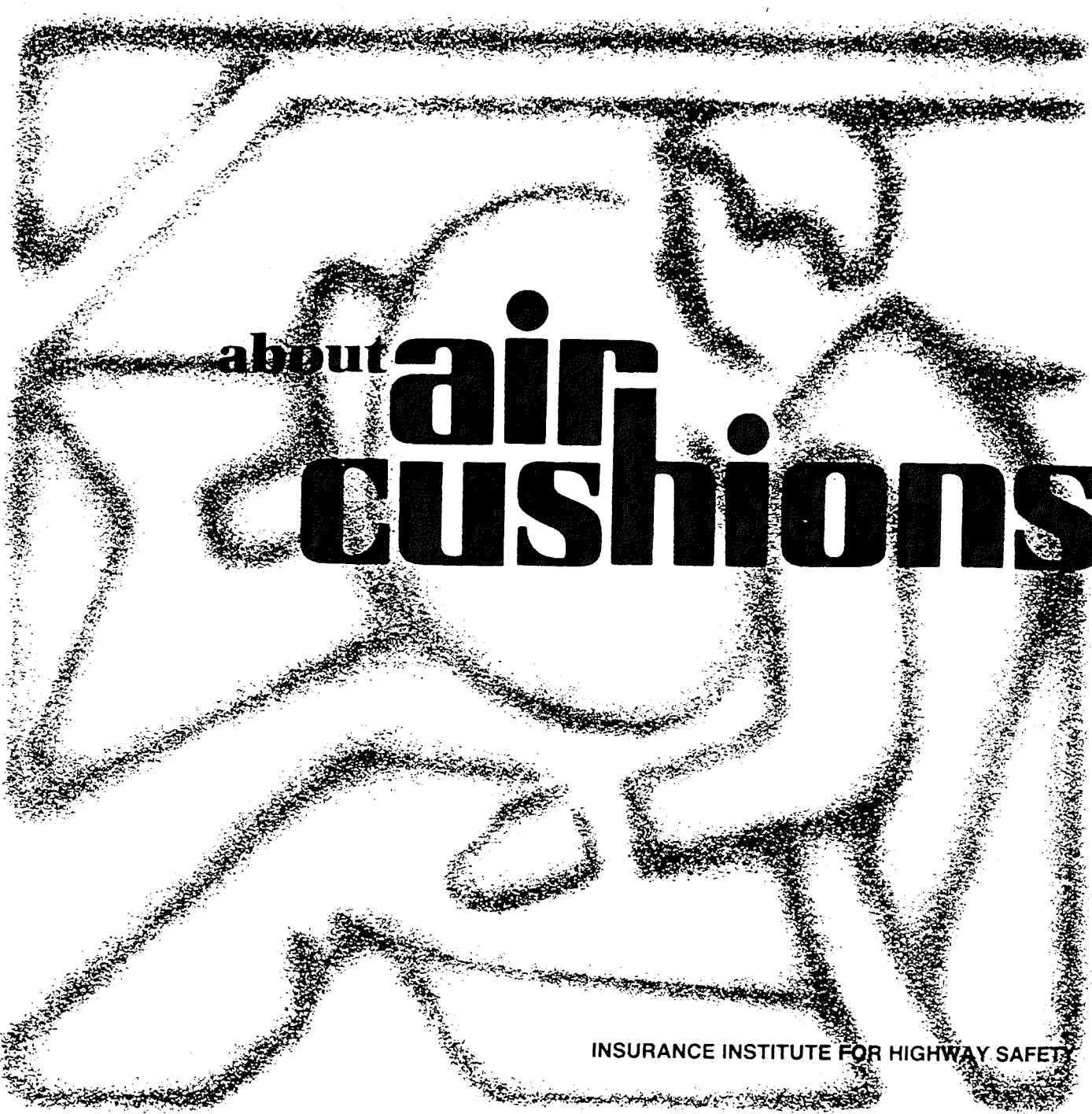
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**about air cushions**

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

- 
- 1 • **Automatic Protection  
—READY NOW**
  - 3 • **How They Work**
  - 4 • **Air Cushions  
Save Lives . . .**
  - 5 • **. . . Crash Survivors  
Tell How**
  - 8 • **The Cost**
  - 10 • **Air Cushions  
And Seat Belts:  
HOW THEY COMPARE**
  - 12 • **BELT USE LAWS:  
Air Cushion Complement**
  - 13 • **Drivers, Car Buyers  
Favor Air Cushions**

Editor: Anne Fleming  
2nd edition © 1985 Insurance Institute for Highway Safety  
Watergate 600, Washington, DC 20037 202-333-0770

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## **Automatic Protection—READY NOW**

Vehicle crash cushions—often called “air bags”—are superior lifesavers in the deadliest kinds of crashes.

For the majority of vehicle occupants who do not use conventional seat belts, air cushions provide crash protection vastly superior to no restraint. An occupant using a seat belt with an air cushion gets the best occupant protection available in any kind of crash. Especially in high-speed crashes, occupants with cushions *and* belts are better protected than occupants using only a lap/shoulder belt. The importance of air cushions has been proven over the years in studies showing that about 55 percent of all deaths and major injuries involve frontal and front-angle crashes—the kinds of crash in which air cushions work best.

Completely out of the way and out of sight until they are deployed in crashes, air cushion systems work in frontal crashes by inflating to keep occupants from slamming into steering wheels, instrument panels, windshields, and windshield frames.

Best of all, *air cushions work automatically*. Other automatic or “passive” occupant protection devices long have been in place and saving lives in motor vehicle crashes. Like these other passive measures—such as energy-absorbing steering columns and laminated windshields—air cushions will save thousands of lives annually when they are in most vehicles on the road.

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After years of unavailability, air cushions are available again in the United States. (They were offered for sale in some General Motors cars during the mid 1970s.) The prospect is improving for wider availability. Mercedes-Benz offers driver air cushions in selected models. And one American automaker, Ford Motor Company, is equipping fleet cars with driver-side air cushion systems.

The Supreme Court, finding the air cushion "an effective and cost-beneficial lifesaving technology," instructed the U.S. Department of Transportation in 1983 to require automatic restraints—air cushions or automatic seat belts—in all new cars or provide sound justification for not doing so. The Department now has ruled that some 1987 model cars—and all 1990 models—must have automatic restraints unless seat belt use laws are passed in a substantial number of states.

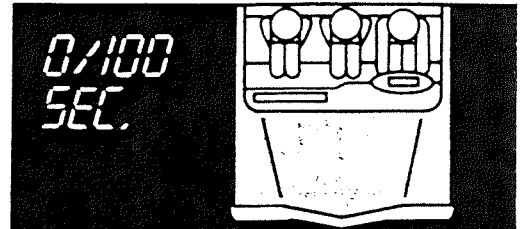
This special publication looks at air cushion safety systems—how they work, how they have performed in tests and more than 10 years of real-world driving, and how they compare with other kinds of occupant restraints.

## How They Work

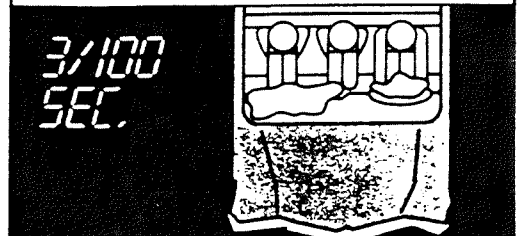
The components of an air cushion and the mechanics of its operation are simple. In a frontal or front-angle crash with an impact equivalent to hitting a wall at 12 mph or more (the speed above which almost all injuries occur), crash sensors trigger an inflator. Nitrogen gas then fills the fabric pillows to cushion the front-seat occupants.

The violence of virtually all crashes is over in 1/8th of a second or less. Peak inflation of an air cushion occurs in less than 1/25th of a second—faster than the blink of an eye. Even as the cushion is inflating, some of its air is being released through the fabric to further the cushioning effect.

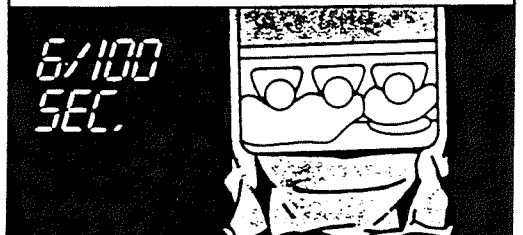
The air cushion system works during the “second” collision. In a frontal crash, the crashing vehicle is stopped abruptly by another vehicle or a fixed object. But the unrestrained occupants continue moving forward at the same speed that the vehicle was traveling just before the crash began. The “second” or “human” collision—the one in which people are injured or killed—occurs when the moving occupants slam into the abruptly stopped or nearly stopped vehicle’s hard interior surfaces, or are ejected



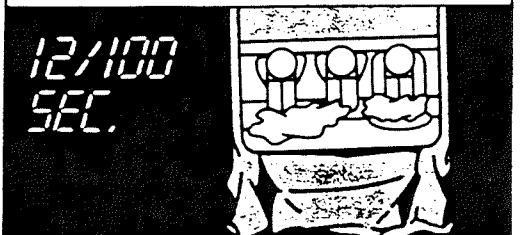
*Air cushions are ready to inflate—but only in serious frontal crashes.*



*On impact, air cushions fill instantly . . .*



*. . . to cushion occupants.*



*The cushions then deflate rapidly as the crash ends.*

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and hit an equally unforgiving outside surface.

The air cushion diffuses the potentially harmful forces of the human col-

**Air cushions work in multiple crashes.**

While air cushions reach peak inflation and begin to deflate quickly (see illustration, page 3), they are designed to remain inflated long enough to protect occupants in multiple collisions. That is, in a crash in which an air cushion-equipped vehicle hits another vehicle or object, bounces off, and then is involved in a second or third impact, the cushions are designed to protect the front-seat occupants throughout the crash sequence. Actual crashes of cushion-equipped cars have involved such sequences, and the occupants were protected in subsequent as well as initial impacts.

In reporting on tests involving air cushion-equipped cars in crashes with more than one impact, the General Motors Safety Research and Development Lab said, "both the driver's and the passenger's air bags remained deployed for both collisions and satisfactory occupant restraint was accomplished."

lision by serving as a pillow between the occupants and the vehicle's interior.

Common sense tells us that, given a choice, we would rather have our faces and bodies hit something soft, gently contoured, and energy-absorbing—like an air cushion—than sharp, protruding, edged, or hard structures like those across the front of a car's interior.

The concept of an air-filled buffer to protect people in crashes was outlined as early as 1941, and patents for air cushions began to be issued in the 1950s. Extensive tests during the 1960s and 1970s—including controlled crashes and extensive on-the-road use—brought air cushions to an advanced "second generation," ready for full scale application. Now, even simpler and far less expensive generations of air cushions are being planned and developed for the cars of the future.

## **Air Cushions Save Lives . . .**

The engineering skills of the U.S. automobile industry and its suppliers have made the air cushion system by far the most effective and thoroughly tested safety technology ever developed. If all cars on the road today were

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equipped with air cushions, thousands of additional lives could be saved—9,000 every year according to a U.S. Department of Transportation study—and more than 50,000 major injuries could be avoided.

The most extensive, real-world demonstration that air cushions are lifesavers began in the mid 1970s when Ford, General Motors, and Volvo sold or leased more than 12,000 cushion-equipped cars. As of July 1983, these cars had traveled about one billion miles. There had been 267 frontal and front-angle crashes severe enough to deploy the cushions. The Insurance Institute for Highway Safety analyzed injury data from most of these crashes, finding that the air cushion-protected occupants experienced substantial reductions in injury severity, compared to unrestrained occupants.

**Air cushions protect children.**

Detailed investigations of real-world crashes indicate that children have been protected by air cushions. In fact, the cushions protect virtually *all* occupants in the front seat because they extend wall to wall—steering wheel to passenger door.

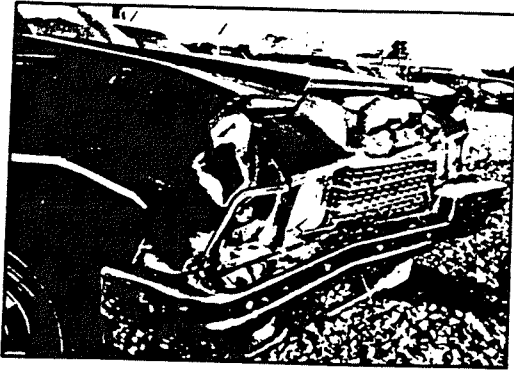
More recent information involves thousands of air cushion-equipped Mercedes-Benz cars on the roads in Europe. The company reports that dozens of these cars have been in crashes severe enough for the cushions to deploy. No deaths and only eight minor injuries occurred during the first year of availability.

This real-world performance of air cushions follows thousands of pre-production tests (see page 9) by automakers, insurers, air cushion suppliers, and independent research organizations. After years of such tests, General Motors in 1981 described air cushions as having a “highly acceptable” level of reliability. More recently, a German aerospace company said “there is technically no practical alternative to the air bag system.”

## **. . . Crash Survivors Tell How**

*“We just hit head on. . . . And the impact speed was about 24 miles an hour. I did not have any safety belts on at the time. I felt [myself] going into the air bag—it felt like going into a soft feather pillow or something like this. The other car was totaled out and the people did have injuries from it, but I*





*did not sustain any serious injuries at all. . . . That's the reason I do rely very heavily on the air bag."*

—Russ Parrish

Crashed September 1973  
Winston County, Alabama

**The gas that inflates air cushions is harmless.**

Nitrogen, which comprises 78 percent of the air we breathe, is the gas that inflates the cushions. The solid chemical, sodium azide, generates the nitrogen in the process of burning rapidly. Not in normal driving, nor in crashes, nor in disposal does the sodium azide present a safety hazard. In fact, there is no contact between the occupants and the sodium azide. There is only contact with the nitrogen generated by the sodium azide.

*"I knew I was headed head on for a collision with the biggest city transport bus that was available. . . . The bus was going about 20-25 miles an hour, and I estimated that I was traveling about the same speed when we collided head on. I had a car with air bags, but I was not wearing my belt.*



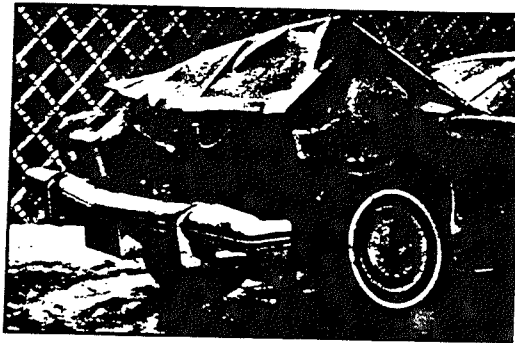
*"I recall very well within seconds after the crash seeing what had happened. The air bag filled in front of the steering wheel and it was lying on my lap. I could see I was alive. I could see that I had no broken bones. To my surprise I did not have a headache. I did not have a whiplash injury. I was able to walk.*

*"The air bag had certainly done something that I had never realized was possible with any piece of safety equipment."*

—Arnold Arms, M.D.

Crashed October 1975  
Kansas City, Kansas

*"This car came right into me just head on, and there was absolutely nothing I could do to avoid the collision. The speed of impact was approximately 35 to 38 miles an hour, and I would only imagine that the oncoming car was going about the same speed, so it had to be about a 60 to 70 mile an hour collision.*



*"The air bags immediately were deployed. I recall absolutely nothing about the impact, of course. My windshield shattered and within a few seconds after that I was immediately sitting upright looking around to see what really had taken place. And I was perfectly all right. Nothing happened to me. I was fully mobile and able to go back to work within an hour after the crash.*

*"I'm totally sold on the system, no question in my mind about it. I feel that if the air bag were made standard on the automobile, it just would relieve*

*many families of heartbreak and traumatic experiences."*

—Kenneth Gnaster  
Crashed February 1974  
Schiller Park, Illinois

**Air cushions do not inflate inadvertently.**

Air cushions do not inflate when cars go over violent bumps or potholes in the road or when bumpers hit other bumpers or posts at low speeds. Nor do air cushions inflate when automobiles brake suddenly, as in a panic stop. The cushions are designed to inflate only in frontal impacts equivalent to hitting a solid wall at 12 mph or higher speed. (Most collisions with fender and other property damage occur at lower speeds, but most injuries occur in crashes at higher speeds. Air cushions are designed to protect occupants in the higher-speed crashes.)

In any case, control of the car would not be lost in the highly unlikely event of an inadvertent air cushion deployment. General Motors inflated air cushions without warning as test subjects drove on straightaways and turns at speeds up to 45 mph. GM reported that "without exception, the subject retained control of the automobile."

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## The Cost

As early as 1976, the U.S. Secretary of Transportation said automatic restraints could be provided to new car buyers "at a reasonable cost." The latest estimates of air cushion costs prove this point. Full front-seat cushion systems would cost \$320 (1983 dollars), the U.S. Department of Transportation estimates.

In contrast, the cost of not providing automatic restraints such as air cushions is staggering. Virtually every economic analysis has concluded that the benefits of these restraints would far outweigh their costs. A Yale professor has said the net economic benefit to society of automatic restraints—including air cushions—would be \$2.4 billion per year.

**Replacing air cushions after a crash is a routine job—if it needs to be done at all.**

After a crash severe enough to deploy air cushions, most cars are non-repairable. For cars that can be repaired, the cushions also should be repaired or replaced—just like brakes, lights, and other safety-related components. The cost of air cushion replacement would be covered by insurance.

The enormous death and injury reduction benefits of air cushions also enable auto insurance price reductions. Numerous companies give 30 percent premium reductions on personal injury coverage for occupants of cars equipped with air cushion systems. Some companies extend the discounts to cars with automatic seat belts as well.

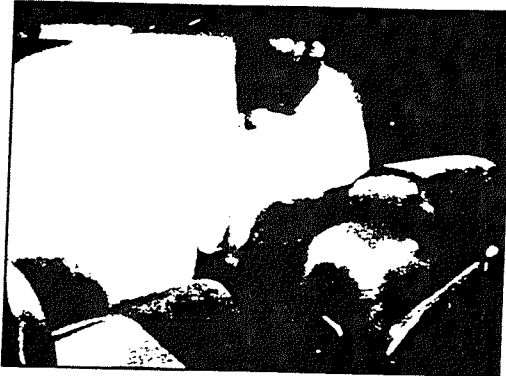
**Air cushions are even more essential in small cars than in larger vehicles.**

Small cars crash more often than large ones, and the occupants of small cars die and are severely injured in crashes—including frontal crashes—more often than are occupants of large cars. The life-saving potential of air cushions thus is especially important in small cars.

The U.S. Department of Transportation's Research Safety Vehicle program has demonstrated that many practical safety technologies—including air cushions—could be incorporated into the design and production of attractive, fuel-efficient, and reasonably priced small cars. In addition, several manufacturers of small cars currently are developing air cushions for future sale in their vehicles.

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*Oldsmobile with air cushions ...*



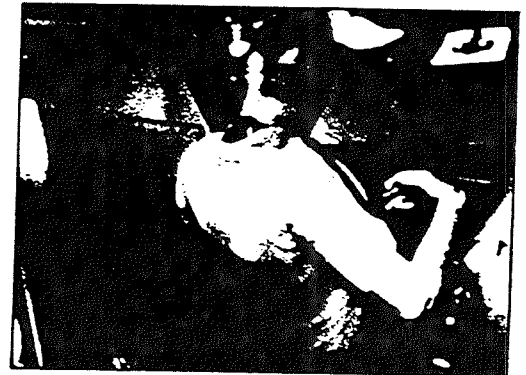
*... and without*



The Insurance Institute for Highway Safety crash tested 1975 Volvos and Oldsmobiles—some with air cushions, others without. These photos, taken at parallel moments during the tests, show how air cushions provide a buffer between people and potential harm in a crash.



*Volvo with air cushions ...*



*... and without*

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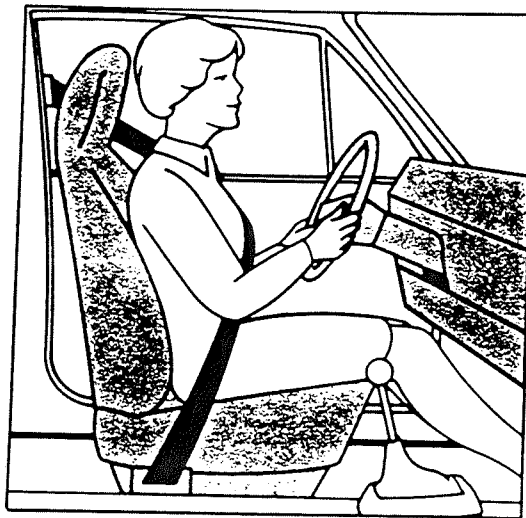
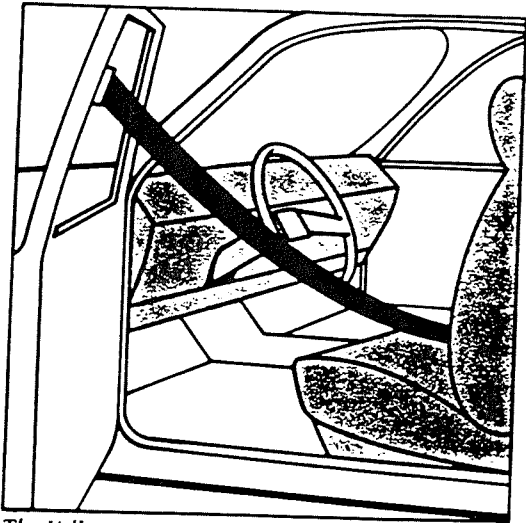
## **Air Cushions And Seat Belts: HOW THEY COMPARE**

Three kinds of restraint systems—manual seat belts, automatic seat belts, and air cushions—substantially reduce the likelihood of crash injuries *when they are used*. The key to saving lives and reducing injuries is increasing restraint use and manufacturing vehicles that maintain their structural integrity in crashes.

Manual seat belts provide crash protection vastly superior to no restraint at all. The principal drawback is the fatal one of nonuse by the vast major-

ity of occupants. Studies show that belt use rates are highest for daytime expressway driving, but even then use is fewer than 2 out of 10 drivers and lower among passengers. At night and for young drivers and others who are more likely to be in crashes, belt use rates are lower still. On the average, 85-90 percent of all drivers—that's up to 9 out of 10—are unrestrained.

The indisputable record of many years' attempts by both government and private organizations, including insurers, to increase voluntary belt use through campaigns of persuasion, often costing millions of dollars, has been one of repeated, dismal failure.

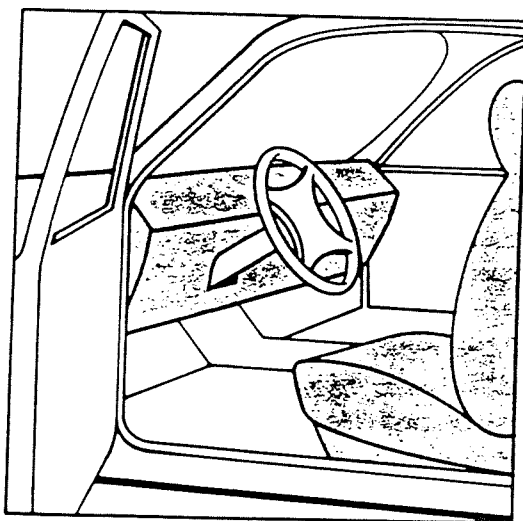


*The Volkswagen Rabbit's automatic seat belt system is attached to the car door and wraps itself around the vehicle occupant when the door closes. No reaching or buckling is required.*

**Air cushions are reliable for years; they require no maintenance.**

Air cushions have no moving parts. There is nothing about them to wear out. Their key parts are hermetically sealed against climatic degradation. Consequently, they work for the life of the car.

Of the 228 cars in which air cushions had deployed as of July 1979, about 40 had traveled more than 40,000 miles. The highest mileage vehicle with a deployment had traveled almost 115,000 miles at the time of the crash. In every case, the air cushions worked as designed.



*Driver air cushions are stored in the steering wheel—out of sight and out of the way.*

An alternative to the manual belt system is the automatic seat belt, which positions itself around an occupant as the car door closes. No buckling action by the occupant is required. The automatic feature gives this belt a potential for higher use rates, compared to those for manual belts. For example, the use rate in Volkswagen Rabbits with automatic belts is about 80 percent, compared to 35 percent in cars of the same type equipped with conventional manual lap/shoulder belts.

Air cushions have a use rate of virtually 100 percent. They do not require occupants to reach for and buckle shoulder harnesses, or to buckle manual lap belts, or to do anything at all. They work automatically, only when needed, like fuses and sprinkler systems. And, unlike both manual and automatic belts, air cushions are so unobtrusive and convenient that there is no incentive to disconnect them. So air cushions are always ready to protect people in frontal crashes.

Even if the use rates of shoulder belts and air cushions were nearly equal, the cushions would offer some advantages. No kind of belt protects occupants' necks, heads, and faces from the flying glass and debris generated in crashes. The air cushion does.

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## **BELT USE LAWS: Air Cushion Complement**

Seat belt use laws in more than 30 countries throughout the world have resulted in widely varying use rate increases, depending on public accep-

**Air cushions protect occupants with or without seat belts.**

Air cushions are designed to protect front-seat occupants *without* belts in frontal crashes at least up to 30 mph into the wall. More than 90 percent of the occupants in crashes of air cushion-equipped cars were not using their lap belts. Yet the reduction in average injury severity in serious frontal crashes was about 64 percent for these occupants, compared to unrestrained occupants.

An air cushion system plus a lap belt provides the best possible occupant crash protection, with the lap belt protecting the occupant principally in rollover and ejection crashes.

tance and enforcement. New York and New Jersey are the first states in this country to pass such laws.

In Canada, use rates of about 50 percent prevail under belt use laws. With intense enforcement, rates of 80 percent have been achieved. But there is a catch: Deaths and injuries have *not* declined accordingly, because the laws have succeeded in getting mainly drivers who are at low risk of crashing to use belts while others continue to drive without restraints. The same is true in Great Britain and Australia: Death and injury reductions under seat belt laws have not been as great as anticipated.

These findings are important because the U.S. Department of Transportation has ruled that all new 1990 model cars must have automatic restraints unless state legislatures covering two-thirds of the national population enact and enforce belt use laws by 1989.

The point is that belt use laws work to some extent—if they are enforced. Such laws complement and are compatible with air cushions as means of saving lives in cars. We need both.

## Drivers, Car Buyers Favor Air Cushions

Probably because they are so unobtrusive, air cushions have an impressive marketplace potential. After several years of successful air cushion marketing in Europe, for example, Mercedes-Benz now is offering these restraints on some of its cars for sale in the United States.

In addition, more than a dozen public opinion polls have focused on motor vehicle safety, especially occupant crash protection, and their results show enthusiasm for air cushions. For example:

- General Motors' studies in 1971 and 1979 found that when given a choice between automatic belts or air cushions, GM customers said they preferred the cushions, 56 to 44 percent. The 1971 study concluded that the air cushion was preferred "because it afforded equal protection, but was judged far superior in all areas of style and convenience."

- By a vote of 46 to 37 percent, a public sample interviewed by Gallup

in 1977 endorsed air cushions in all new cars. Young adults 18 to 29 years old voted 65 to 27 percent in favor of air cushions. Women of all ages endorsed air cushions by the substantial margin of 51 to 27 percent.

- In 1980, *The New York Times* commissioned Market Opinion Research of Detroit to poll drivers and automobile dealers about vehicle safety. This question was asked: "Would you favor or oppose requiring car manufacturers to equip all new cars with air safety bags?" Nearly half said they wanted air cushions to be required. Drivers younger than 35, who have high injury and death rates on the highways, were overwhelmingly in favor of air cushions, 63 percent to 21 percent.

- A 1983 poll for the Insurance Institute for Highway Safety indicated 90 percent of car buyers believe that automatic crash protection should be required on new cars as standard or optional equipment. Only four percent of the respondents said the availability of automatic restraints should be left up to motor vehicle manufacturers.

About Air Cushions is published by the Insurance Institute for Highway Safety (IIHS). For further information, including films, contact IIHS at Watergate 600, Washington, DC 20037.



SUMMARY OF TESTIMONY

BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION

HOUSE BILL 2188

Presented by the Kansas Highway Patrol  
(Sergeant William A. Jacobs)

February 21, 1985

APPEARED IN SUPPORT

The Patrol appears in support of House Bill 2188. Our support is based upon the safety aspect associated with the use of safety belts. National authorities in the field of highway safety have estimated that as many as 50% of the fatalities and injuries resulting from motor vehicle accidents where safety belts could have been used, would have been prevented by the use of the belt. It is very difficult to examine cases where traffic fatalities have occurred and definitely say that a belt would have prevented death, but it only stands to reason that if a person is restrained from being flung about the interior of a vehicle or out of a vehicle, chances of survival would be much greater.

The Patrol would however, take this opportunity to point out a matter of concern to us. That matter pertains to the enforcement of a law of this type. We feel that a law of this nature would be very difficult to enforce because it is a violation that is not readily seen in plain view. If a person drives too fast or drives past a stop sign without stopping, these are violations, as most violations of traffic laws, that are easily detected by some sort of traffic enforcement device or the naked eye. The non-use of a safety belt is hidden from view inside of a vehicle and other violations are not involved to constitute probable cause for stopping a vehicle such as you would have in a case involving a drinking driver.

Difficulties could arise in the fact that some older vehicles had lap belts only or a lap belt separate from the shoulder harness and only the lap belt is worn. Another common example would be if an officer stops a vehicle, approaches the driver and observes that the belt is not fastened

2/21/85  
Attach. 8

brings this to the attention of the driver and the driver says "while you were getting out of your patrol car, I took my belt off so I could get my driver's license out of my wallet because I knew you would want to see it." That statement would be difficult to refute.

These examples are not intended to make light of our support for safety measures such as those provided by laws of this nature, but only to make you aware of our concerns and problems within the enforcement area of those provisions.

We respectfully ask that you consider these concerns in your deliberation concerning the provisions of this bill.

# Kansas Congress of Parents and Teachers

Branch of the National Congress  
STATE OFFICE, 1829 S. W. GAGE BLVD.  
TOPEKA, KS 66604  
913-273-2281

March 21, 1985

Mr. Chairman and members of the committee,

I am Gaila Hein, 1st Vice President and Legislative Chairman for the Kansas Congress of Parents and Teachers.

As an officer of Kansas PTA we are speaking for a membership of 60,000 representing all areas of the state, rural and urban: and all walks of life - parents, teachers, students, grandparents, senior citizens, school administrators, child care specialists, policemen, doctors and others who care about children and youth.

On their behalf, I want to thank you for passing more effective child restraint legislation last year, however, as this related to infants and children under five, we wish to be on record as supporting required seat belt use for all occupants of motor vehicles.

A resolution was passed at our State Convention in 1982, and at our National Convention in 1983, that the PTA would disseminate information regarding child restraint and safety belt usage and we would promote legislative action to strengthen the existing laws.

The following statistics are the reason for the overall concern of parents:

1. The number 1 killer andcrippler of children is motor vehicle accidents.
2. Everyone of us can expect to be in an auto crash once every 10 years.
3. For 1 out of 20 of us, it will be a serious crash.
4. For 1 out of every 60 born today, it will be fatal.
5. Studies show that the dramatic effectiveness of seat belt usage could prevent 90% of the deaths and 80% of the crippling injuries of traffic accidents.
6. Seat belt usage could reduce health costs significantly.

It takes about three seconds to buckle a seat belt. Only this week we observed, at a busy intersection in Overland Park, that out of 30 cars we counted three using seat belts. Cars have been equipped with lap and shoulder safety belts since the late 1960s and properly used, they can protect auto occupants in an accident. To make it work, there must be a commitment to doing everything possible to encourage to use of safety belts. The Kansas PTA is asking you to make every effort to see that the safety belt use act becomes a law, there is no countermeasure that has the potential return for so little monetary outlay as safety belt usage.

Thank you for allowing us to speak to this issue.

2/21/85  
Attach. 9

Testimony Before the Kansas House Transportation  
Committee in Support of H.B. 2188

February 21, 1985

by

Dr. Bob L. Smith, P.E., Professor of Civil Engineering, Kansas State  
University, representing the Kansas Engineering Society

The Kansas Engineering Society urges you to pass S.B. 144 "The  
Mandatory Seat Belt Law" for the following reasons:

1. The Highway Users Federation has estimated annual savings in  
lives, injuries prevented and dollar savings if seat belt usage was required  
and enforced would be:

	<u>Lives Saved</u> <u>Annually</u>	<u>Injuries</u> <u>Prevented</u>	<u>Dollar</u> <u>Savings</u> <u>\$ Millions</u>
Kansas	140	3,700	59

(based on 80% seat belt usage, average annual Kansas deaths  
and injuries 1978-1982, injuries costed at \$7,000 each,  
fatalities at \$240,000 each)

This is the best safety bargain we could possibly buy. The costs of  
the program are minimal: almost all cars have seat belts; the enforcement  
costs would be almost negligible; motorist education costs may vary from  
none to substantial.

2. Seat belts assist the vehicle occupants in all types of accidents.

(a) Frontal; side hits; rear-ending

They also will make any air bag installations more  
effective by preventing "submarining" on frontal hits and  
keeping the front seat occupants "on line" with air bags in  
quartering frontal hits. Air bags are of little assistance in  
side hits.

(b) Seat belts will keep the occupant "in the car" thus  
substantially safer.

(c) A rather subtle point in support of seat belt usage is  
that the driver's control of the vehicle can be substantially  
increased if the driver is belted. Imagine skidding in a  
curved path so the unbelted driver is hurled to the passenger  
side of the automobile. The driver can't even reach the brake  
pedal, let alone steer the car to avoid a tree, a ditch, a  
truck. The belted driver stays right behind the wheel and  
brake pedal.

2/21/85  
Attach. 10

3. Accident costs are a social problem. I and many of my colleagues lean to a minimum of meddling in citizen's activities by government. But significant portions of the cost of accidents are being borne by government for those persons unable to pay those costs associated with the accidents they have. Those accident costs are also reflected in my automobile insurance premiums I pay. I therefore, have to conclude that government has a significant enough monetary stake in this matter to be justified in passing mandatory seat belt legislation.

4. Finally, we believe the mandatory use of seat belts should be tried before embarking on an enormously expensive mandatory installation of air bags in cars. We believe automobile manufacturers should continue to be encouraged to develop air bag technology and eventually to have air bags as an option which car buyers can purchase if they desire.

STATEMENT  
By The  
KANSAS MOTOR CARRIERS ASSOCIATION

-----  
Supporting House Bill 2188 requiring  
the use of seat belts.  
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Presented to the House Transportation Committee,  
Rep. Rex Crowell, Chairman; Statehouse, Topeka,  
Thursday, February 21, 1985.  
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MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I am Mary Turkington, Executive Director of the Kansas Motor Carriers Association with offices in Topeka. I appear here this afternoon on behalf of the members of our Association and the highway transportation industry. We support House Bill 2188 which would require the use of seat belts.

Attached to this statement is a copy of the resolution our Association adopted at its annual membership meeting held as a part of our convention on September 28, 1984.

The resolution points out the safety benefits that our industry sincerely believes will result from the consistent use of seat belts.

The federal Department of Transportation rules under section 392.16 and 393.93 require the driver seat of trucks and truck-tractors to be equipped with seat belt assemblies and, if so equipped, prohibits the vehicle to be driven unless the driver has properly restrained himself with the seat belt assembly.

If you have young people in your family who now are beginning to drive a car, adoption of this legislation, we believe, will afford a discipline to those young drivers that well might save their life and the lives of those riding in the vehicles they operate.

We would request favorable consideration of House Bill 2188.

#####

2/21/85  
Attach. 11

RESOLUTION

SAFETY BELT USE LEGISLATION

WHEREAS, the effectiveness of safety belts in reducing deaths and injury severity in motor vehicle crashes has been documented in numerous studies, and

WHEREAS, in jurisdictions where mandatory safety belt laws have been in effect, there has been a significant reduction in injuries, deaths and economic losses, and

WHEREAS, the U.S. Secretary of Transportation has mandated that either two-thirds of the citizens of this nation live in states with safety belt use laws or all passenger cars will be equipped with air bags be it therefore,

RESOLVED, that the Kansas Motor Carriers Association strongly supports a state safety belt use law as a rule of the road in Kansas to reduce human suffering and impairments due to passenger cars crashes.

Adopted September 28, 1984  
Annual Membership Meeting  
Kansas Motor Carriers Association

#####

Statement to:  
HOUSE TRANSPORTATION COMMITTEE

RE: H.B. 2188 - Requiring the Use of Safety Belts  
February 21, 1985  
Topeka, Kansas

Presented by:  
Paul E. Fleener, Director  
Public Affairs Division  
Kansas Farm Bureau

Mr. Chairman and members of the Committee:

We appreciate the opportunity to make a very brief statement regarding the policy position of the farmers and ranchers who are members of Farm Bureau regarding the topic of automobile safety in general, and more specifically in connection with the use of safety belts in motor vehicles.

Our policy development procedure gives numerous opportunities for individual farmers to express themselves on items of importance. The topic of safety belt use in vehicles was discussed by our members last fall. They responded to questions relating to whether or not we should have a policy position and if so what that position should be. I should also point out to you that in the discussion of the topic there was vehement opposition to the "federal blackmail" which would require state legislation on safety belts. But I hasten to add there is no question in the minds of our people on the safety factor of using restraints and belts and other safety equipment.

At our annual meeting in Wichita last December our delegates adopted the following policy position regarding safety belts:

2/21/85  
Attach. 12



### **Automobile Safety**

We deplore the blackmail tactics of the federal government to bring about seat belt use laws. We should have a seat belt use law in Kansas, not because the federal government requires it, and not because our highway funds and user taxes are held hostage, but because the use of seat belts saves lives.

There is a nationwide drive, of course, for legislation to require our people to buckle up. One would think the use of safety belts would be almost automatic given the statistical information on the savings and the safety passengers who use them as opposed to those who do not. But here we are today discussing legislation which our people support because it makes good sense to help people understand the safety features of using belts in motor vehicles.

Recently our organization announced the new safety belt promotional program. Appended to this statement is a brief view of that program. Our Safety Director for Farm Bureau provided us with this additional information which we are pleased to share with you and the other members of this committee.

Thank you for this opportunity.



## **Kansas Farm Bureau, Inc.**

2321 Anderson Avenue, Manhattan, Kansas 66502 / (913) 537-2261

On February 13, Kansas Farm Bureau announced a new safety belt promotional campaign. Briefly the program consists of:

1. Producing radio, television and news stories stressing the value and importance of safety belt use.
2. Making available brochures, posters, films and formal presentations by staff members at no cost to schools, civic clubs, church groups etc.
3. One of our service companies is providing a free \$10,000 life insurance benefit to those insured who are killed while wearing a safety belt.

BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION  
REGARDING MANDATORY USE OF SEAT BELTS

Mr. Chairman and members of the Committee; we appreciate the time you have given us this morning to discuss with you the mandatory seat belt use law and our reasons as to why we think it should be enacted into law in the State of Kansas.

First of all, I will tell you that the Kansas Motor Car Dealers Association does support the enactment of the bill which you have before you this morning as we feel it is good public policy for a variety of reasons. I'm sure you have already heard and will continue to hear why this law should be enacted. Many will point out the multitude of statistics dealing with the number of lives that can be saved, not only in Kansas, but nationwide, as well as the number of severe injuries which could be prevented by the use of the already existing seat belt systems in all present-day vehicles. Other reasons given for passing seat belt laws may include the cost savings for medical insurers and individual citizens, as well as Local, State and Federal Governments in the form of Workers' Compensation, Disability income and the like.

KMCDA would like to take a little bit different approach this morning in the few minutes which we have to talk about the costs which the consumer could incur and, in fact, will incur if the United States Department of Transportation option is not met by the various states. You may be well aware that the option is 2/3 of the population of the U.S. must be covered by mandatory

2/21/85  
Attach. 13

seat belt use laws by 1987. The alternative to that would, of course, be the passive restraint requirements. We would first like to point out what a passive restraint is.

Passive restraints are not necessarily "air bags". We understand the common conception of a passive restraint as an air bag and, in fact, that is the most common type of passive restraint, but a passive restraint can be other things. Passive restraints can be automatic seat belts which some manufacturers have experimented with. Volkswagen, in particular, comes to mind in this field. It has a motorized belt and shoulder harness apparatus that automatically comes into place when a person enters the front seat of the vehicle and the door is shut. Passive restraints go past that to the point of General Motors' current development of what they call a "Friendly Interior", that being a basically soft interior which is very shock absorbent and does not stand fast when it is impacted by a moving object such as a human body. So you see a restraint is not something that necessarily holds you back in a collision, such as an air bag or lap/shoulder belt combination.

Frankly, passive restraints are not inexpensive and their expense will be passed on to the ultimate consumer of a motor vehicle. Expenses associated with the existing manual

belts is a fraction of the passive restraint cost. Manual belts are already in place and have been since 1964 when it was required that a seat belt alone be installed in all new motor vehicles. They've been available since the 1940's as options on motor vehicles. Since 1964, the addition of the required shoulder harness has brought us to where we are today.

Most recent manufacturer estimates of passive restraint costs are quite high. General Motors estimates the cost of installation of air bags to be approximately \$1,100 per vehicle. Ford Motor Company estimates air bags for the driver and front seat passenger to be over \$825 and Chrysler estimates them to be somewhere between \$600 and \$800. As far as the passive belt or the motorized belt system which we eluded to earlier, estimates run from General Motors of approximately \$70 to \$100; Ford's estimate is roughly \$150; and Toyota is up to \$350. We would point out that the motorized belts or the passive belt systems seem to only be a good option in the smaller compact vehicles while in larger vehicles air bags would probably be installed in lieu of the passive belt system. Volkswagen recently offered a \$75 option for a belt and knee bolster combination. Mercedes offers a driver-only air bag and front passenger belt retractor as an \$880 option. So, as you can see, these are not inexpensive

items to put onto a vehicle and, of course, if they are installed the customer is going to be the one who pays for the installation either as an option or mandatory equipment.

Additionally, replacement costs of an air bag are estimated by manufacturers at 2-3 times the original cost. So if you took General Motors' estimate of \$1,100 for their cost to install an air bag, the installation by a dealer or by a repair facility after an air bag has been expended would be somewhere from \$2,200 to \$3,300.

This brings us to our next point, what happens when an air bag goes off? First of all air bags (and we will use that as a broad generality because it would be the most common type of passive restraint) will go off on a frontal impact of approximately 12 miles an hour or greater. The bag will inflate in a matter of 100ths of a second and immediately start to deflate as the occupant falls into or travels into the air bag. Of course, there is always the possibility the air bag will deploy when there is not a frontal impact of 12 miles per hour or greater and it could deploy with an impact at a slower speed or simply without warning. The system would be electrical and any flaw in the electrical system, of course, could create a short which would cause the bag to dispense. Secondly, there's the problem

of the defective system which no one would know about since there is no way to really test the future functioning of an air bag system. Even in an impact of 12 mph or greater it is possible that an air bag would not expand when it was supposed to. An air bag going off without an impact could create many more problems and could be a contributing factor to an accident which would lead to injury because the air bag that was supposed to protect the driver and the front seat occupant would not be there to do so. You could imagine what the multiplier effect would be if a bag deployed and caused an accident involving a second or third vehicle.

It is our feeling that a substantial number of consumers will not accept passive restraint devices. During 1974-1976 G.M. offered air bags as a \$300 option to full size or certain full size Oldsmobiles, Buicks and Cadillacs. Only 10,000 air bag units were sold with these vehicles and that represented only 3% of General Motors' production capacity. Consumer lack of acceptance is further reflected in the success of the ignition interlock experience that we all saw during 1974 and a couple of years thereafter. The interlock system was where the car could not be started until the driver and front passenger had buckled their seat belts. There were as many ways to get around that as

there were cars on the road. G.M. has offered passive belts in 1978-1980 model Chevettes in the Chevrolet line and despite sales incentives and national merchandising only 13,000 out of the 415,000 sold at that time had the passive restraint systems.

Our next concern dealing with the air bag passive restraint is the liability which a repair shop could have if they had to work on a vehicle equipped with air bags or replace an air bag system in a vehicle. This would not only be franchise dealers but would possibly include service stations and any other type of repair facility you could think of as well as the "shadetree mechanic". We feel that a severe liability exposure would be put upon these repair facilities, which in turn, would raise insurance rates to the dealers and to the repair facilities which in turn, would raise their cost of doing business which would be reflected in higher repair bills for all types of repairs for the consuming public.

Special safety rules apply to the transporting, handling, storage and scrapping of air bag devices. Technicians would have to be specially trained; again, more expense. For example, take a vehicle that was wrecked in such a manner that its air bag deployed. A dealership would repair the vehicle and in so doing would also be required to reinstall the air bag



system. The first problem is that there is no way to test the system. The only way you can test to see if it is properly installed and working is in a 12 mph collision which will discharge the system. The first problem is left unanswered, that is, now that we have replaced the system does it work? To carry this one step further, lets say the customer, after having the vehicle repaired, is driving down the road and the air bag goes off without a collision. Who do you think the consumer is first going back to? Naturally, he will go back to the person who installed the bag that went off inadvertantly. Converse to that is the consumer who, after having the bag refitted, is involved in an accident and the bag does not go off. Who do you think that customer or his survivors will go back to? Again, they are going to go back to the person who installed the air bag that did not work properly. This person will be the repair shop and the repair shop will find itself in the middle of what will probably be a very massive lawsuit, one that could be quite costly not only to the dealership but to the insurance company who carries the insurance on that dealership. By now you can see the problem and how things begin to multiply after a point. We don't feel that liability should be placed on dealers or repair facilities and they should not be subjected to that possible

liability. The only way they can protect themselves from that possible liability is to carry higher insurance or refuse to work on that type of vehicle, both of which, in the long run, could cause an increased cost of doing business to a dealership which would naturally be passed on to the consumer who uses the dealership or repair facility.

We make one other point concerning the cost to the consumer. Considering the high initial cost of the air bag itself and the liability to which the automobile insurance companies would be exposed by having to pay for the replacement of the systems, it would seem apparent that higher insurance premiums for autos would be in the offing. The initial cost alone could place the total cost of the car into a higher insurance premium category and although data is not available for underwriting purposes, we're sure that insurance companies would probably take a hard look at the estimated cost of repair and add that, some way, into a possible increase in insurance premiums.

Finally, it will take some 13 years to get virtually every vehicle on the roads of the U.S. covered by some type of passive restraint system if the passive restraint mandate is allowed to go into law. Seat belts and shoulder harness systems for front seat occupants and seat belt systems for rear seat

occupants are already in virtually every car in the country today with the exceptions being those that are older than 1964 and vehicles would be exempt from the passive restraint rule such as large trucks. Why wait 13 years to afford protection to the citizens of Kansas and of the United States when it is available today through a mandatory seat belt use law? Finally, air bags or passive restraints alone are not the answer. Air bags are effective under certain conditions, frontal crashes, and they do assist in saving lives and preventing injuries but they are much more effective when the lap and shoulder belt systems are used.

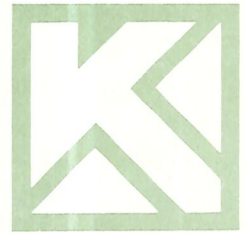
The system currently in almost every vehicle on the road today provides a tremendous amount of protection when properly used. The only way to make sure these systems are used and at the same time save consumers and government a tremendous amount of money is to mandate use of seat belts in motor vehicles on the roads of Kansas.

Thank you.

# LEGISLATIVE TESTIMONY

## Kansas Chamber of Commerce and Industry

500 First National Tower One Townsite Plaza Topeka, KS 66603-3460 (913) 357-6321



A consolidation of the  
Kansas State Chamber  
of Commerce,  
Associated Industries  
of Kansas,  
Kansas Retail Council

HB 2188

February 21, 1985

### KANSAS CHAMBER OF COMMERCE AND INDUSTRY

Testimony Before the

### HOUSE TRANSPORTATION COMMITTEE

Mr. Chairman and Members of the Committee:

I am Jim Edwards, Director of Public Affairs for the Kansas Chamber of Commerce and Industry. I appreciate the opportunity to appear before you today to express our support of HB 2188, a bill which would require the use of a seat belt by all front-seat passengers in an automobile.

The Kansas Chamber of Commerce and Industry (KCCI) is a statewide organization dedicated to the promotion of economic growth and job creation within Kansas, and to the protection and support of the private competitive enterprise system.

KCCI is comprised of more than 3,000 businesses plus 215 local and regional chambers of commerce and trade organizations which represent over 161,000 business men and women. The organization represents both large and small employers in Kansas, with 55% of KCCI's members having less than 25 employees, and 86% having less than 100 employees.

The KCCI Board of Directors establishes policies through the work of hundreds of the organization's members who make up its various committees. These policies are the guiding principles of the organization and translate into views such as those expressed here.

2/21/85  
Attach. 14

Every year in the United States, approximately 50,000 persons are killed on our streets and highways. About 75% of those killed were either killed in, or as a result of being ejected from, a vehicle. In addressing this problem, the U.S. Department of Transportation issued a Standard which requires that any auto manufactured in the U.S. after September 1, 1989, be equipped with a passive restraint system for front seat passengers. However, should states representing 2/3 of the total U.S. population pass mandatory seat belt laws the U.S. Department of Transportation would accept this as an acceptable alternative to the passive restraint Standard.

While the Kansas Chamber of Commerce and Industry is generally opposed to: 1) Federal mandates which force actions by state legislatures, and 2) state laws which affect individual freedom of choice, the passage of HB 2188 would have a significant impact on the health, welfare, and economics of the citizens of Kansas. An example of the significant impact that can be attributed to seat belt legislation would be Ontario, Canada. After enactment of legislation in 1976, this Canadian province saw the number of hospitalized accident victims decrease by 22% and the cost of treating highway accident victims decrease by 30%. In addition, the province itself saved \$1 million in hospital costs during the first 3 months the law was in force.

With this in mind, KCCI urges you to support this piece of legislation. After all, the U.S. public has already paid more than \$14 million for seat belts in vehicles on the road today. Using them will cost nothing more.

I appreciate the opportunity to appear before you today and would be happy to answer questions you might have.

WHAT TO EXPECT IF HOUSE BILL No. 2188 BECOMES LAW

LAWRENCE J. FOX, Ph.D.  
Extension Specialist  
Highway Safety

Cooperative Extension Service  
Kansas State University

February 21, 1985

2/21/85  
Attach. 15

## CONTENTS

	<u>Page</u>
INCREASES IN SAFETY BELT USAGE AFTER LEGISLATION . . . . .	1
THE BRITISH EXPERIENCE. . . . .	2
EFFECTIVENESS OF CANADIAN MANDATORY SEAT BELT LAWS (Abstract). . . . .	3
RELATIONSHIP OF SAFETY BELT USAGE TO REDUCTIONS IN HUMAN CASUALTIES AND ECONOMIC COSTS. . . . .	4
KANSAS PASSENGER VEHICLE CASUALTIES: 1977-1984 . . . . .	5
KANSAS SAFETY BELT USAGE AND EXTENT OF PERSONAL INJURIES: 1981-1983. . . . .	6
ESTIMATED COSTS OF 1985 PASSENGER VEHICLE OCCUPANT CASUALTIES WITHIN STATE OF KANSAS. . . . .	7
WHAT HAPPENS IF HOUSE BILL No. 2188 BECOMES A LAW? . . . . .	8-9

### Background Information

Economic Costs to Society of Motor Vehicle Crashes. . . . .	10
Societal Costs Associated with Annual Incidence of Cancer, Coronary Heart Disease, Stroke, and Motor Vehicle Injuries. . . . .	11
Direct and Indirect Cost Comparisons	
(1) Off-Job Rollovers. . . . .	12
(2) Off-Job Frontal Crashes. . . . .	12
(3) On-Job Rollovers. . . . .	13
(4) On-Job Frontal Crashes. . . . .	13
Motor Vehicle Crashes in the United States. . . . .	14
Motor Vehicle Occupants in the United States. . . . .	14-15
The Safety Belt: How It Works. . . . .	16

INCREASES IN SAFETY BELT USAGE AFTER LEGISLATION

<u>Nation</u>	<u>Usage Before Law</u>	<u>Usage After Law</u>
Australia	19 - 25%	64 - 83%
New Zealand	30 - 33%	87 - 91%
France	26%	80%
Sweden	40%	78 - 85%
Denmark	24%	61 - 81%
Switzerland	35 - 49%	87 - 95%
West Germany	39%	54%
Canada (Ontario)	4 - 32%	25 - 64%
(Quebec)	23 - 31%	42 - 57%
Israel	6%	70 - 83%
Great Britain	35%	90 - 95%

Table above from "Patterns of Safety Belt Use  
Following Wearing Laws"  
Hakkert, A. S.  
Accident Analysis and Prevention  
Vol 13, 1981; pages 65 - 81.



## THE BRITISH EXPERIENCE

Great Britain, after six futile attempts, finally passed a safety belt law for front seat occupants on the seventh attempt, on February 1, 1983. Prior to this legislation, safety belt usage was measured at 35% (front seat occupants of passenger cars, only); through October of 1984 the usage rate is reported holding between 90% and 95%.

The fine is heavy--50 pounds--although it was only levied 100 times in the first 20 months, and usually in conjunction with other offenses. The general consensus is that this was law "whose time had come."

Casualty reductions are down by 25% (injuries and fatalities combined).

SOURCE: Jim Hedlund  
Mathematics Analysis Division  
National Highway Traffic Safety Administration  
(Personal phone conversation February 20, 1985.)

To appear in Accident Analysis and Prevention 16, 5, 1984

The Effectiveness of the Canadian Mandatory  
Seat Belt Use Laws

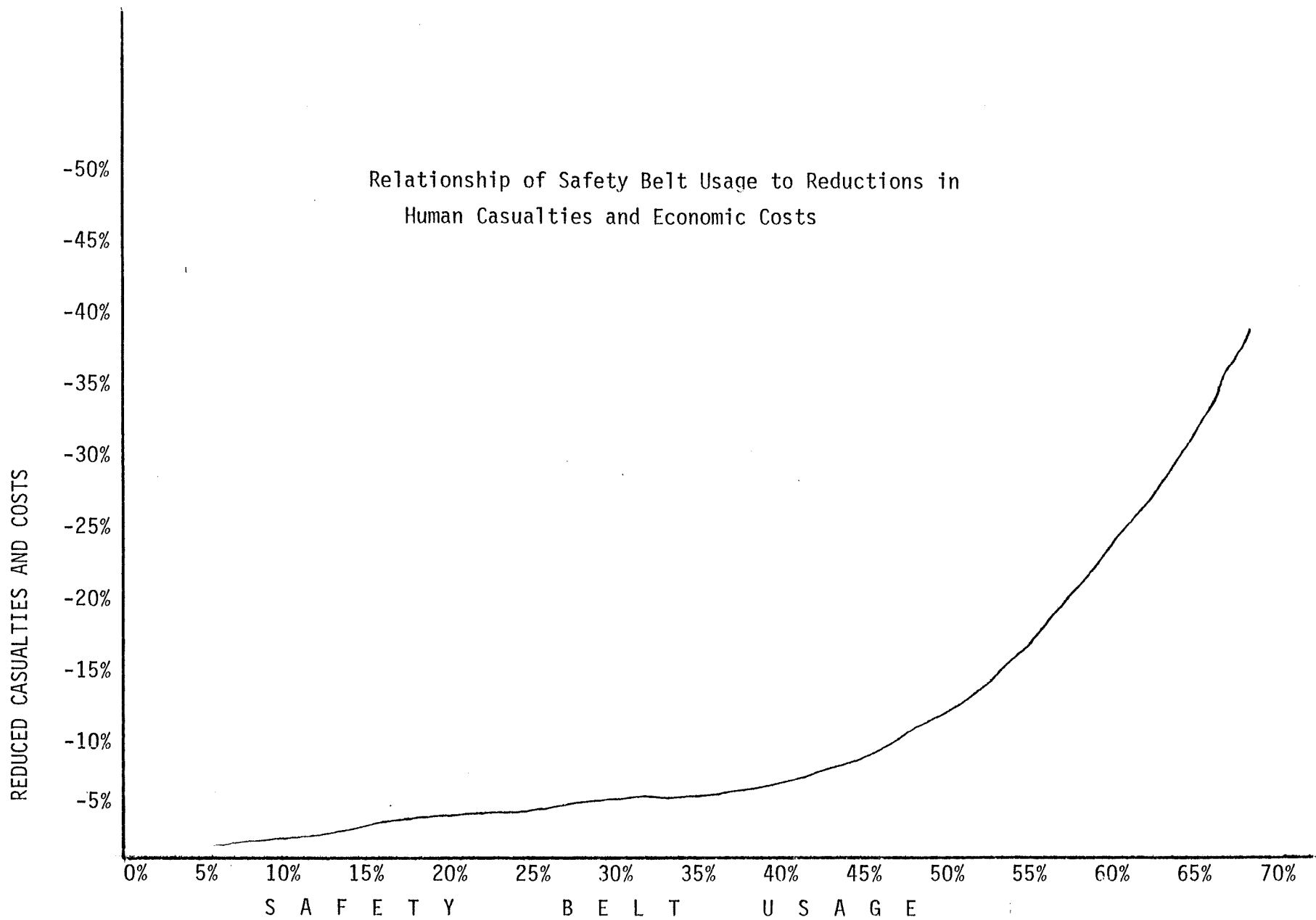
Brian A. Jonah and John J. Lawson

Road Safety Directorate, Transport Canada, Place de Ville,  
Ottawa, Canada, K1A 0N5

Abstract

The impact of four provincial mandatory seat belt use laws passed in 1976 and 1977 on seat belt use and on motor vehicle occupant casualties is examined. Subsequent to the passage of the laws, belt use typically increased from 20% to the 70% level dropping to around 50% over the next several years. Ontario exhibited a clear drop in the fatality and injury rates in the years following the introduction of the law. Quebec experienced little reduction in casualties. The changes in casualties for British Columbia and Saskatchewan were mixed with the former showing a drop only in the fatality rate subsequent to the seat belt law, while the latter experienced a reduction only in the injury rate. The provinces without seat belt use laws also enjoyed some reduction in occupant casualty rates. The changes in occupant casualties in the legislated provinces were also examined relative to the changes in non-occupant casualties and relative to the unlegislated provinces. It was concluded that three provinces experienced some reductions as a result of legislation but not as much as anticipated. It is speculated that the impact of the seat belt use laws fell short of expectations because it was mainly the safe drivers who buckled up in response to the laws.

Relationship of Safety Belt Usage to Reductions in  
Human Casualties and Economic Costs



# KANSAS PASSENGER VEHICLE CASUALTIES

1977 - 1984

<u>Year</u>	<u>Killed</u>	<u>Injured</u>	<u>Total</u>
1977	447	32,221	32,668
1978	465	32,422	32,887
1979	421	31,628	32,049
1980	477	30,393	30,870
1981	447	30,569	31,016
1982	398	27,344	27,742
1983	336	26,945	27,281
1984	*413	*28,282	*28,695

Data above reflect passenger vehicle occupants only.

\*Projected from incomplete 1984 data. Complete data for 1984 will be available in April, 1985.

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With the single exception of projections calculated for 1984, all data in table above are from Kansas Department of Transportation "Standard Summary of Motor Vehicle Accidents."

SAFETY BELT USAGE AND EXTENT OF PERSONAL INJURY  
1981 - 1983

PASSENGER CAR OCCUPANTS NOT USING SAFETY BELTS			PICK-UP TRUCK OCCUPANTS NOT USING SAFETY BELTS			TOTAL OCCUPANTS NOT USING SAFETY BELTS		
	Fatality	592 (0.22%)		186 (0.27%)		778 (0.23%)		
	*Incapacitating Injury	7,786 (2.91%)		1,991 (2.86%)		9,777 (2.90%)		
**	Non-Incapacitating Injury	22,673 (8.46%)		5,148 (7.40%)		27,821 (8.24%)		
	+Possible Injury	21,783 (8.13%)		4,386 (6.30%)		26,169 (7.75%)		
	No Injury	215,144 (80.28%)		57,885 (83.17%)		273,029 (80.88%)		
	<u>Total Occupants</u>	<u>267,978 (100.0%)</u>		<u>69,596 (100.0%)</u>		<u>337,574 (100.0%)</u>		
PASSENGER CAR OCCUPANTS WITH SAFETY BELTS USED			PICK-UP TRUCK OCCUPANTS WITH SAFETY BELTS USED			TOTAL OCCUPANTS WITH SAFETY BELTS USED		
	Fatality	33 (0.10%)		3 (0.06%)		36 (0.09%)		
	*Incapacitating Injury	430 (1.30%)		61 (1.15%)		491 (1.28%)		
**	Non-Incapacitating Injury	1,854 (5.59%)		229 (4.30%)		2,083 (5.41%)		
	+Possible Injury	2,702 (8.14%)		341 (6.40%)		3,043 (7.90%)		
	No Injury	28,157 (84.87%)		4,690 (88.10%)		32,847 (85.32%)		
	<u>Total Occupants</u>	<u>33,176 (100.0%)</u>		<u>5,324 (100.0%)</u>		<u>38,500 (100.0%)</u>		

Data above are from Kansas Department of Transportation, for 1981, 1982 and 1983, combined.

The data reflect only those motor vehicle accidents which were reported.

If safety belts were not installed in the vehicle, they are included in "Occupants Not Using Safety Belts."

It could not be determined whether an additional 65,808 were or were not wearing safety belts. These occupants are not included in the data above.

- \* "Incapacitating Injury" is defined as visible signs of injury (bleeding, distorted member, or being carried from the scene of the accident.
- \*\* "Non-Incapacitating Injury" is defined to include bruises, abrasions, swelling, limping.
- + "Possible Injury" is defined as complaint of pain but with no visible signs of injury.

ESTIMATED COST OF 1985 PASSENGER VEHICLE  
OCCUPANT CASUALTIES WITHIN STATE OF KANSAS

<u>Type of Injury*</u>	<u>Number+</u>	<u>Average Direct Cost of Injury*</u>	<u>Total Direct Costs</u>
Death	300	\$31,862	\$9,558,600
Critical Injury	34	\$120,980	\$4,113,320
Severe Injury	188	\$30,798	\$5,790,024
Serious Injury	1,074	\$8,693	\$9,336,282
Moderate Injury	2,428	\$4,037	\$9,801,836
Minor Injury	17,576	\$2,178	\$38,280,528
<b>Totals</b>	<b>21,600</b>	<b>\$3,559</b>	<b>\$76,880,590</b>

\*Type of Injury follows "Accident Injury Severity" categories as defined by National Highway Traffic Safety Administration.

\*Average Direct Cost of Injury from "Economic Costs to Society of Motor Vehicle Accidents" (N.H.T.S.A., 1983).

+Injury frequencies are computed based upon (a) distribution of injuries across United States, compiled by National Highway Traffic Safety Administration, and (b) projected injuries and fatalities based upon Kansas Department of Transportation data from 1977 - 1983.

NOTE: Projected number of fatalities and injuries are the responsibility of Dr. Lawrence J. Fox, and do not reflect official estimates of any agency.

WHAT HAPPENS IF HOUSE BILL No. 2188 BECOMES A LAW?

1. Within one year following passage of this bill, we would expect to see safety belt use for front seat passenger vehicles rise to between 60% and 65%.
2. When belt use reaches the 65% level, we would expect to see a reduction in passenger vehicle occupant casualties between 18% and 23%.
3. With consistent enforcement of this law, and with a continued effort to educate the public concerning the benefits of safety belts, we would expect to see the usage rate climb to 75% to 80% within a three-year period. When this happens, the casualty rate could be expected to be reduced between 30% and 38%.
4. The relationship between safety belt usage and casualty reductions is not a "one-to-one" relationship. Up to the 50% level of belt use, we might expect to reduce casualties by (for example) 15% or so. After a certain point, however, that ratio is reversed, and we begin to realize increasingly larger benefits for every percent gain in the safety belt use.
5. Reduced casualty rates for passenger vehicle occupants will result in roughly the following savings in direct costs alone, using direct costs recommended by the National Highway Traffic Safety Administration. Data are for 1985 projected casualties.

<u>Reduction in Casualty Rates of:</u>	<u>Direct Cost Savings</u>
-2%	\$1,537,612
-4%	\$3,075,224
-6%	\$4,612,836
-8%	\$6,150,448
-10%	\$7,688,060
-12%	\$9,225,672
-14%	\$10,763,284
-16%	\$12,300,896
-18%	\$13,838,507
-20%	\$15,376,118
-22%	\$16,913,730
-24%	\$18,451,342
-26%	\$19,988,954
-28%	\$21,526,566
-30%	\$23,064,177

(continued)

6. In Canada, safety belt use increased from a general level of 20% to around 70% within months after the new legislation became effective. When drivers became convinced that the new law was not going to be consistently enforced, safety belt use dropped to the 40% - 50% level. These changes suggest the following four types of drivers:
  - (a) those who wear safety belts regardless of the law;
  - (b) those who wear safety belts merely because it is the law;
  - (c) those who wear safety belts to avoid apprehension; and
  - (d) drivers who refuse to wear safety belts regardless of legislation and enforcement.
  
7. The Canadian experience suggests that the seat belt laws may have resulted in safe drivers (low risk takers) wearing their belts more than the unsafe drivers, resulting in a somewhat reduced effectiveness of these laws. Another contributing factor may have been improper use of safety belts (belt twisted, too loose, worn under arm, etc.).



BACKGROUND INFORMATION

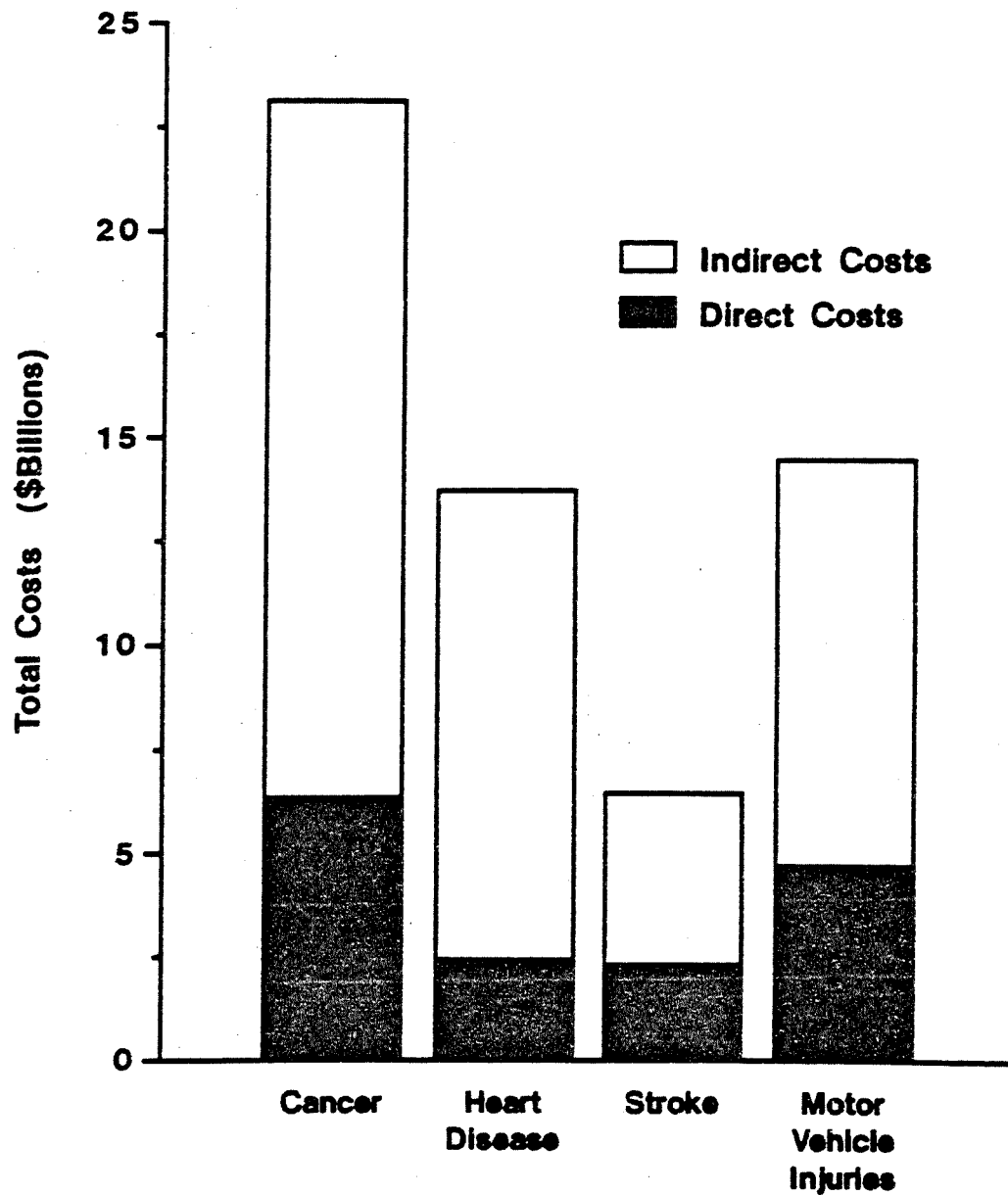
ECONOMIC COSTS TO SOCIETY OF MOTOR VEHICLE ACCIDENTS

<u>Type of Injury</u>	<u>Direct Costs</u>	<u>Indirect Costs</u>	<u>Total Costs</u>
Deaths	\$31,862	\$236,865	\$268,727
Critical	\$120,980	\$69,030	\$190,010
Severe	\$30,798	\$12,931	\$43,729
Serious	\$8,693	\$1,567	\$10,260
Moderate	\$4,037	\$555	\$4,592
Minor	\$2,178	\$98	\$2,276

SOURCE: "Economic Costs to Society of Motor Vehicle Accidents"  
 U. S. Department of Transportation  
 National Highway Traffic Safety Administration  
 1983

Direct costs include all medical treatment, insurance  
 administrative costs and property damage.

Indirect costs include "foregone earnings" (income lost  
 due to the injury or fatality.)



Source: Reprinted with permission of the publisher, from *The Incidence and Economic Costs of Major Health Impairments* by H.S. Hartunian, C.N. Smart, and M.S. Thompson (Lexington, Mass.: Lexington Books, 1981).

**Figure 2-5. Societal Costs Associated with the Annual Incidence of Cancer, Coronary Heart Disease, Stroke, and Motor Vehicle Injuries, 1975**

# DIRECT & INDIRECT COST Comparisons

## COMPARISON 1—OFF-JOB ROLLOVER

**NOTE:** Both examples involve the same employee of the same company driving the same vehicle in similar crashes six months apart. In the first crash he was not wearing his safety belt, but in the second he was wearing it.

### SAFETY BELT OFF

*Driver:* Male  
Press operator

*Vehicle:* 1978 Datsun pickup

*Accident:* Driving 45 mph  
Lost control of vehicle  
Rolled over guardrail

*Injuries:* Fractured vertebrae, multiple  
cuts/bruises, severe neck strain

*Time off Work:* 29 days

*Employer Costs:*

Medical/Hospital	\$1,300**
Salary Continuation	2,320
Indirect Estimate	<u>3,620</u>
Direct + Indirect	\$5,940

\*\*Medical/Hospital expenses were paid by the outside insurance carrier.

### SAFETY BELT ON

*Driver:* Male  
Press operator

*Vehicle:* 1978 Datsun pickup

*Accident:* Driving 45 mph  
Lost control of vehicle  
Rolled down embankment

*Injuries:* Bruised and shaken\*

*Time off Work:* 1 day

*Employer Costs:*

Medical/Hospital	\$ 0
Salary Continuation	80
Indirect Estimate	<u>80</u>
Direct + Indirect	\$160

\*State Police remarked that the safety belt saved driver's life.

## COMPARISON 2—OFF-JOB FRONTAL CRASHES

### SAFETY BELT OFF

*Driver:* Male  
Design engineer

*Vehicle:* Two-door compact

*Accident:* Driving 30 mph  
Lost control and struck  
utility pole

*Injuries:* Broken ribs, broken finger,  
cuts, bruises

*Time off Work:* 12 days

*Employer Costs:*

Medical/Hospital	\$1,577.00
Salary Continuation	2,070.27
Indirect Estimate	<u>3,647.27</u>
Direct + Indirect	\$7,294.54

### SAFETY BELT ON

*Driver:* Male  
Design engineer

*Vehicle:* Two-door compact

*Accident:* Driving 25 mph  
Lost control and struck  
utility pole

*Injuries:* None

*Time off Work:* None

*Employer Costs:*

Medical/Hospital	\$ 0
Salary Continuation	0
Indirect Estimate	<u>0</u>
Direct + Indirect	\$ 0

## COMPARISON 3—ON-JOB ROLLOVERS

### SAFETY BELT OFF

*Driver:* Female  
District Sales Agent

*Vehicle:* Compact car

*Accident:* Driving 45-50 mph  
Lost control of vehicle  
Rolled down embankment.  
Driver ejected.\*

*Injuries:* Extensive multiple injuries  
ruptured spleen, fractured pelvis,  
displaced pubic ramis, head injuries

*Time off Work:* Has not returned\*\*

*Employer Costs:*

Medical/Hospital	\$27,669.75
Rehabilitation	877.92
Salary Continuation	14,849.92
Indirect Estimate	<u>43,397.59</u>
Direct + Indirect	\$86,795.18***

### SAFETY BELT ON

*Driver:* Male  
Engineering Specialist

*Vehicle:* Compact car

*Accident:* Driving 45 mph  
Hit loose gravel.  
Lost control of vehicle.  
Rolled down embankment.

*Injuries:* None

*Time off Work:* None

*Employer Costs:*

Medical/Hospital	\$ 0
Rehabilitation	0
Salary Continuation	0
Indirect Estimate	<u>0</u>
Direct + Indirect	\$ 0

\*Ejection increases risk of injury dramatically.

\*\*Employee has been off the job since March of 1979. It is projected that she will be permanently disabled and unable to perform her job again.

\*\*\*Figures encompass payments up to March 1981. Further costs are anticipated by the employer.

## COMPARISON 4—ON-JOB FRONTAL CRASHES

### SAFETY BELT OFF

*Driver:* Male  
Meter reader

*Vehicle:* Mid-sized car

*Accident:* Driving 55 mph  
Hit in left front by full-sized  
car at 35 mph.

*Injuries:* Fractured ribs and fractured leg.

*Time off Work:* Six months

*Employer Costs:*

Medical/Hospital	\$ 8,364.65
Partial Permanent Disability	8,672.40
Salary Continuation	4,809.24
Indirect Estimate	<u>21,846.29</u>
Direct + Indirect	\$43,692.58

### SAFETY BELT ON

*Driver:* Male  
Assistant survey chief

*Vehicle:* Mid-sized car

*Accident:* Driving 55 mph  
Hit in left front by full-sized  
pick-up at 35 mph.

*Injuries:* Minor whiplash

*Time off Work:* None

*Employer Costs:*

Medical/Hospital	\$25.85
Partial Permanent Disability	0
Salary Continuation	0
Indirect Estimate	<u>25.85</u>
Direct + Indirect	\$51.70

## MOTOR VEHICLE CRASHES IN THE UNITED STATES

- a. Motor vehicle crashes are the leading cause of death for Americans ages 1 through 34.
- b. For Americans ages 5 through 29, over 20% of all deaths are caused by motor vehicles.
- c. From age 16 through 22, motor vehicle crashes account for 40% of all deaths.
- d. Motor vehicle crashes are the leading cause of work-related injury deaths.
- e. In recent years, motor vehicle crashes have caused between 45,000 to 53,000 deaths each year. In addition, they produce from 4 to 5 million injuries each year. One-half million injuries require hospital admission, with patients in the hospital for an average of 9 days.
- f. Motor vehicle death rates range from 37 per 100,000 in the most rural areas down to 14 per 100,000 in cities of 1 million or more populations.

SOURCE: *The Injury Fact Book*  
Susan P. Baker, Brian O'Neill, and Ronald S. Karpf  
Insurance Institute for Highway Safety  
Lexington Books,  
D.C. Heath and Company  
Lexington, Massachusetts, 1984

## MOTOR VEHICLE OCCUPANTS IN THE UNITED STATES

- a. In recent years, nearly 70% of all traffic-related deaths are to occupants of passenger vehicles.
- b. For males age 15 through 19, one of every three deaths from all causes results from motor vehicle occupant injuries.
- c. In a crash, lap/shoulder belts reduce your chances of death by about 50%.
- d. Air bags offer improved protection for everyone, including those individuals who use safety belts.
- e. Motor vehicle occupant death rates peak at the 16 - 19 age group, for both males and females.
- f. Males account for:  
70% of all passenger vehicle miles driven.  
70% of all drivers involved in crashes.  
82% of all drivers involved in fatal crashes.
- g. Passenger vehicle fatalities are most common in summer, least common during the winter months. January through May is lower, in terms of passenger vehicle fatalities per month, than the period June through December.
- h. Time of day is an important factor. A full 37% of passenger vehicle occupant fatalities occur between 10 p.m. and 3:59 a.m., although only 17% of all crashes occur during these hours.

- i. Less than 40% of all passenger vehicle occupant deaths occur during the day (between 6 a.m. and 5:59 p.m.), although more than 60% of all reported crashes (and three-fourths of all passenger miles driven) are during the day.
- j. There is a substantial variation in deaths for passenger vehicle occupants by day of the week, with most deaths during the weekend. This day-to-day variation, however, is mostly a result of nighttime crashes. One-third of all fatal crashes occur between 6 p.m. and 5:59 a.m. on Friday and Saturday nights.
- k. Motor vehicle occupant fatalities are about evenly divided between single-vehicle crashes and multiple-vehicle crashes. Single-vehicle crashes, however, have a higher death rate.
- l. About 10% of all motor vehicle occupants in "tow-away" crashes are involved in "rollover" accidents. Rollovers have over twice the death rate of non-rollover passenger vehicles involved in accidents, primarily because of ejection from the vehicle. About 8% of rollover occupants are ejected from vehicles, compared to 0.4% of occupants in non-rollover vehicles. When ejected from the vehicle, an individual is 25 times more likely to be killed than when remaining inside the vehicle. Thus, the ability of the vehicle to keep you inside is extremely important.
- m. In tow-away crashes, motor vehicle occupant death rates increase from 5 per 1,000 for full-size cars to 15 per 1,000 for the smallest cars, compacts, etc.
- n. Since the mid-1960's, the declining trend in motor vehicle occupant death rates, based upon annual miles traveled, can be attributed to:
  - (a) federal standards for state and local highway safety programs;
  - (b) federal standards for motor vehicles.
- o. The gas shortages and subsequent 55 mph speed limit in 1974 caused a dramatic decline in motor vehicle occupant deaths, by virtue of:
  - (a) less driving;
  - (b) reduced speeds;
  - (c) more uniform speeds.
- p. The death rate for motor vehicle occupants dropped a full 26% between 1968 and 1979.

SOURCE: *The Injury Fact Book*  
 Susan P. Baker, Brian O'Neill, and Ronald S. Karpf  
 Insurance Institute for Highway Safety  
 Lexington Books,  
 D.C. Heath and Company  
 Lexington, Massachusetts, 1984

# The Myths and the Facts

**Myth: "I don't need safety belts because I'm a good driver. I have excellent reactions."**

**Fact:** No matter how good a driver you are, you can't control the other car. When another car comes at you, it may be the result of mechanical failure and there's no way to protect yourself against someone else's poor judgment and bad driving.

**Myth: "I don't want to be trapped in by a safety belt. It's better to be thrown free in an accident."**

**Fact:** Being thrown free is 25 times more dangerous; . . . 25 times more lethal. If you're wearing your belt you're far more likely to be conscious after an accident . . . to free yourself and help your passengers. Safety belts can keep you from:

- plunging through the windshield
- being thrown out the door and hurtled through the air
- scraping along the ground
- being crushed by your own car

In almost any collision, you're better off being held inside the car by safety belts.

**Myth: "If I wear a safety belt, I might be trapped in a burning or submerged car!"**

**Fact:** Less than one-half of one percent of all injury producing collisions involve fire or submersion. But if fire or submersion does occur, wearing a safety belt can save your life. If you're involved in a crash without your safety belt, you might be stunned or knocked unconscious by striking the interior of the car. Then your chances of getting out of a burning or submerged car would be far less. You're better off wearing a safety belt at all times in a car. With safety belts, you're more likely to be unhurt, alert, and capable of escaping quickly.

**Myth: "I don't need it. In case of an accident, I can brace myself with my hands."**

**Fact:** At 35 miles per hour, the force of impact on you and your passengers is brutal. There's no way your arms and legs can brace you against that kind of collision. The speed and force are just too great.

**Myth: "Most people would be offended if I asked them to put on a safety belt in my car."**

**Fact:** Polls show that the overwhelming majority of passengers would willingly put their own belts on if only you, the driver, would ask them.

**Myth: "I just don't believe it will ever happen to me."**

**Fact:** Everyone of us can expect to be in a crash once every ten years. For one out of 20 of us, it'll be a serious crash. For one out of every 60 children born today, it will be fatal.

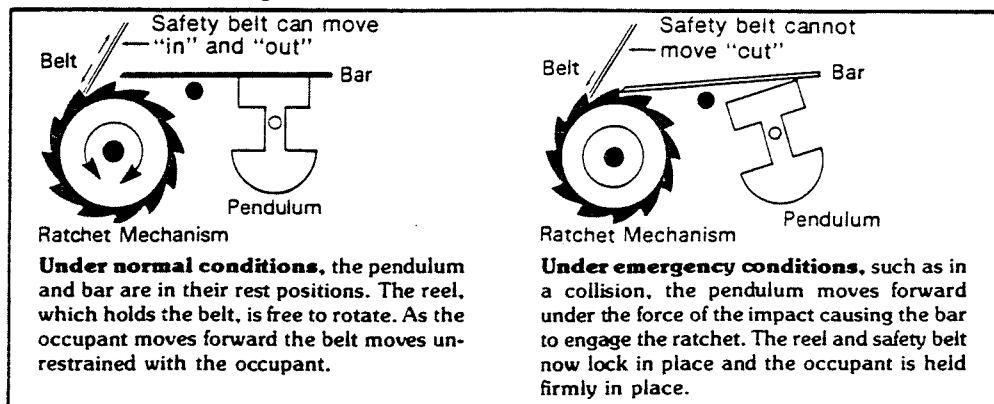
**Myth: "Well, I only need to wear them when I have to go on long trips, or at high speeds."**

**Fact:** Eighty percent of deaths and serious injuries occur in cars traveling under 40 miles per hour and 75 percent of deaths or injuries occur less than 25 miles from your home.

**Myth: "I can touch my head to the dashboard when I'm wearing my safety belt so there's no way it can help me in a car accident."**

**Fact:** Safety belts were designed to allow you to move freely in your car. They were also designed with a latching device that locks the safety belt in place if your car should come to a sudden halt. This latching device keeps you from hitting the inside of the car or being ejected. It's there when you need it.

# The Safety Belt: How It Works



**Under normal conditions**, the pendulum and bar are in their rest positions. The reel, which holds the belt, is free to rotate. As the occupant moves forward the belt moves unrestrained with the occupant.

**Under emergency conditions**, such as in a collision, the pendulum moves forward under the force of the impact causing the bar to engage the ratchet. The reel and safety belt now lock in place and the occupant is held firmly in place.

## The Facts

- Approximately 45,000 fatalities caused by motor vehicle accidents annually.
- Leading cause of death among people age 1 to 38.
- Equivalent to a large jet airplane crashing every day.
- Number 1 cause of on-the-job fatalities.
- Costs the average employer nearly \$120,000 per employee death.
- Two and one half times greater than all fatalities caused by accidents in the home.
- Ten times greater than fatalities caused by all other forms of transportation.

### Safety Belts Make a Difference

- Approximately 30,000 passengers of cars, light trucks or vans (equipped with safety belts) die each year in crashes of these vehicles.
- About 50 percent (15,000) of these people could be saved if they wore safety belts.
- Safety belts cut your chances of being killed or seriously injured in a crash by about 50 to 55 percent.
- On any single vehicular trip the chance of an accident is very low; but the possibility of a serious accident on one of the many trips in your lifetime is better than 30 percent. (What percent of your friends have never been in an accident? Ask around . . . the percentage will be low.)
- Three out of four crashes happen within 25 miles of home.
- A common cause of death and injury to children in automobiles is being crushed by adults who are not wearing safety belts. In fact, one out of four serious injuries to passengers is caused by occupants being thrown into each other.
- Drivers wearing safety belts have more control over their car in emergency situations and are therefore more likely to avoid an accident.

## How Effective are Safety Belts?

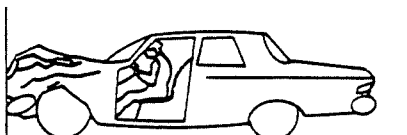
Most people accept the fact that wearing safety belts offers protection in a crash, but too few bother to find out exactly how much protection they can expect. If they asked, they would probably be surprised by the answer. While researchers may differ by a few percentage points either way, average figures coming out of safety belt studies look like this:

- Safety belts cut the number of serious injuries received by about 55 percent.
- Safety belts cut fatalities by about 50 percent. To put these figures in other words, wearing a safety belt more than cuts in half your chance of being hurt seriously in a crash. Serious injuries received in crashes often involve the head or spinal-cord. In fact, in the U.S., auto accidents are the number one cause of epilepsy (from head injury) and paraplegia (from damage to the spinal cord). The restraining action of safety belts—especially shoulder belts—helps explain why they so drastically reduce the likelihood of being seriously hurt. One important note: These improved chances of escaping injury or death thanks to safety belts hold true *regardless of speed*. Whether you're going 5 mph or 75 mph, you're a lot better off using belts.

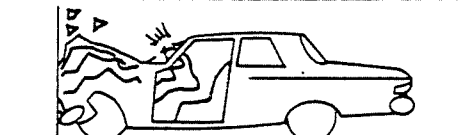
Safety belts help occupants in six ways:

1. There is the "ride down" benefit, in which the belt begins to stop the wearer as the car is stopping.
2. The belt keeps the *head and face* of the wearer from striking objects like the wheel rim, windshield, interior post, or dashboard.
3. The belt *spreads the stopping force* widely across the strong parts of the body.
4. Belts *prevent vehicle occupants from colliding with each other*.
5. Belts help the driver to *maintain vehicle control*, thus decreasing the possibility of an additional collision.
6. Belts keep occupants from being ejected out of the car.

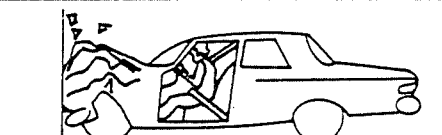
## The Human Collision



Within 1/10 of a second, the car has come to a stop, but the person is still moving forward.



1/50 of a second after the car has stopped, the unbelted person slams into the dashboard or windshield. This is the human collision.



With effective safety belts, the person will stop before hitting the steering wheel, dash or windshield.

The car has come to a complete stop within one tenth of a second. However, the unbelted driver is still moving along inside the car at 30 mph. It will take the driver about one-fiftieth of a second more to hit something—say the windshield or the steering wheel. That's the human collision. It happens about 0.02 seconds after the **first collision**, and belts can make a big difference in determining how serious that **second collision**

is. A lot of people think they are strong enough to brace themselves in a crash. They aren't. At just 30 mph you'd be thrown toward the dash with the same force as if you'd jumped head first off a three-story building. No one's arms are anywhere near strong enough to "catch" himself and break a three-story fall. Safety belts are, though. And that's why people need them, even in a low-speed crash.





**AUTOMOBILE  
CLUB OF KANSAS**

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 717 KANSAS 66603 / 913-232-7220

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67846  
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HUTCHINSON   
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67501  
316/663-2169

PITTSBURG   
410 N. BROADWAY  
66762  
316/231-8790

SALINA   
157 NORTH 9TH  
67401  
913/827-3505

WICHITA   
3340 EAST CENTRAL  
67208  
316/685-5241

I am JoEllen McGranahan, Director of Safety and Public Affairs for AAA Auto Club of Kansas. I am pleased to appear before you in support of House Bill Number 2188, the mandatory safety belt use law.

A national survey of the general public just completed by AAA showed the general public prefers safety belt use laws by a wide margin over automatic safety devices. When asked whether they prefer mandatory safety belt use laws or purchasing automatic safety devices, fully 67 percent preferred safety belt use laws.

A summary of the survey is attached to your copies of my testimony and I will leave a copy of the full survey with the committee.

Thirty-four nations with mandatory safety belt laws already have achieved significant decreases in serious injuries and fatalities. In many countries safety belt usage rates have doubled and reductions in fatalities range to nearly 20 percent.

Studies indicate that the average age of the American public's automobiles on the road in 1983 was 7.4 years. People are keeping their cars longer. Many people buy used cars which are 3-5 years old. It will be many, many years down the road before most Americans are driving cars equipped with passive restraints. In the meantime, thousands will lose their lives and countless others will suffer serious injuries. Why not make use of the safety belts most people have now?

Thank you for your consideration.

2/21/85  
Attach. 16

## AAA POLICY ON USE OF SAFETY BELTS

The American Automobile Association recommends the use of safety belts by all motorists and passengers at all times and the use of approved child restraints for infants and small children. Such systems have proved to be an effective means of reducing death and the severity of injuries in accidents.

AAA supports legislation or regulations which would mandate use of safety belts and approved child restraint systems by all occupants of passenger cars, vans, pickups and trucks, provided the legislation includes at least the following:

1. There should be a reasonable fine established, certainly no higher than that imposed for the ordinary traffic infraction.
2. Violation of the law should not be a part of a state's point system nor have any relation to suspension or revocation of a driver's license.
3. Exemption should be made for certain persons who cannot or should not use safety belts.
4. Exemption should be made for in-use vehicles that at the time of manufacture did not contain safety belt systems.

Where such legislation or regulations are enacted, states should also determine whether violations should be considered when assessing liability for damages in civil actions arising out of motor vehicle accidents, or for imposing surcharges on auto insurance premiums.

AAA also recognizes that compliance with mandatory belt use legislation requires continuing enforcement and public support. Also essential are information programs that increase public understanding of the safety benefits belt use provides to vehicle occupants in traffic crashes or other emergency situations.

(New policy) AUTOMATIC PASSENGER PROTECTION

AAA recognizes the need for additional passenger protection and supports the development and installation of reliable automatic restraint systems which should be made available as soon as possible.

12/6/84

**PUBLIC AFFAIRS SURVEY**  
**MANDATORY SAFETY BELT USE LAWS VERSUS**  
**PURCHASE OF AUTOMATIC SAFETY DEVICES**

**Prepared By:**  
**AAA Marketing**  
**November 1984**

## Introduction

In order to represent the opinions of AAA members to the federal government, the Public Affairs Department of AAA Headquarters sought to determine public preference for mandatory safety belt use laws versus required purchase of automatic safety devices. To achieve this goal, Valley Forge Information Service was contracted to conduct a national survey during November, 1984. Valley Forge is a reputable, full service marketing research company with special expertise in the gathering of economic, social and market data.

The methodology employed was a shared-cost telephone screener. Under this method, a questionnaire is constructed using questions from a number of various clients of the research firm. Consumers are then contacted and questioned via telephone.

In total, 503 male heads of household and 502 female heads of household participated in the survey, thus representing a total sample of 1005 respondents. Participants in the survey were selected by a national probability sampling. This generates a sample that is representative of the United States on population characteristics. A national probability sample is a stratified sampling method, typically performed by subdividing the U.S. into contiguous units of approximately equal population. These units are then individually sampled; in total, they comprise a sample of the entire country.

The following question was posed to all participants in the survey:

"The federal government has issued a ruling which gives motorists the option of mandatory safety belt use laws or the purchase of automatic safety devices, such as airbags, in new cars. Given the choice between mandatory safety belt use versus the purchase of automatic safety devices, such as airbags, which do you prefer?"

An analysis of consumers' response to this question follows.

## Survey Results

When asked whether they prefer mandatory safety belt use laws or purchasing automatic safety devices, a vast majority of all respondents preferred safety belt use laws: fully 67% chose this option, compared to only 27% who chose the purchase of automatic safety devices (Table 1). Females were somewhat more inclined to opt for safety belt use laws, with 71% of female respondents choosing this option compared to 63% of male respondents (Table 2). Older respondents also showed a greater tendency to prefer safety belt use: 71% of respondents age 55 and older preferred safety belts whereas approximately 65% of respondents under age 35 and 67% of those age 35-54 indicated this preference (Table 3). Unemployed respondents were slightly more likely to choose safety belts, probably due to their heightened sensitivity of increased cost associated with automatic safety devices. Sixty-nine percent of unemployed respondents chose safety belts, whereas only 66% of full- and part-time employed respondents did so (Table 4). With respect to geographic region, respondents in the central United States showed the greatest preference for safety belts, with 72% of respondents residing in this area choosing this option (Table 5). Sixty-seven percent of respondents in both the South and West regions preferred safety belts. A greater proportion of respondents in the East chose automatic safety devices than for any other region, however the majority still preferred safety belt use laws- 60% for safety belts and 34% for automatic safety devices.

Most demographic factors did not influence a person's preference for safety belts versus automatic safety devices. Presence of children had no effect upon preference decisions- 66% of respondents with children opted for safety belts, which closely parallels the 67% obtained from the total sample (Table 6). Education of respondents also did not appear to influence decisions. Sixty-six percent of respondents with an education of high school or less chose safety belts, as did 67% of respondents with some college education and 69% of respondents who had graduated college (Table 7). Marital status had only a very slight influence. Married respondents were somewhat more likely to prefer safety belts: 69% of married respondents opted for this choice versus 65% of unmarried respondents (Table 8). Household income also had little effect. Middle income respondents who earned \$25,000 to \$49,999 had the strongest preference for safety belts, 70%, however, this was only slightly higher than for other income groups: 67% of respondents with incomes below \$25,000 and 66% of respondents with incomes of \$50,000 and over also preferred safety belt use laws over automatic safety devices.

In summary, approximately two out of three respondents preferred to have mandatory safety belt laws rather than purchasing automatic safety devices. Whereas a few demographic influences appeared to exist in preference choice, no demographic variable significantly altered the overall result.

TABLE 1  
Overall Preference

	<u>Total Respondents</u> (N=1005)
Safety belts	67%
Automatic safety devices	27%
Don't know	6%

TABLE 2  
Sex

	<u>Male</u> (N=503)	<u>Female</u> (N=502)
Safety belts	63%	71%
Automatic safety devices	30%	23%
Don't know	6%	6%

TABLE 3  
Age

	<u>Under 35</u> (N=346)	<u>35-54</u> (N=352)	<u>55 and over</u> (N=293)
Safety belts	67%	65%	71%
Automatic safety devices	30%	30%	19%
Don't know	3%	5%	10%

TABLE 4  
Employment

	<u>Full- Time</u> (N=541)	<u>Part- Time</u> (N=80)	<u>Not Employed</u> (N=379)
Safety belts	66%	66%	69%
Automatic safety devices	29%	29%	23%
Don't know	5%	5%	8%



TABLE 5  
Geographic Region

	<u>East</u> (N=175)	<u>South</u> (N=337)	<u>Central</u> (N=314)	<u>West</u> (N=179)
Safety belts	60%	67%	72%	67%
Automatic safety devices	34%	26%	22%	29%
Don't know	6%	7%	6%	5%

TABLE 6  
Presence of Children

	<u>Have Children</u> (N=421)
Safety belts	66%
Automatic safety devices	30%
Don't know	4%

TABLE 7  
Education

	<u>High School or Less</u> (N=565)	<u>Some College</u> (N=194)	<u>College Graduate</u> (N=236)
Safety belts	66%	67%	69%
Automatic safety devices	26%	30%	26%
Don't know	8%	4%	5%

TABLE 8  
Marital Status

	<u>Married</u> (N=641)	<u>Not Married</u> (N=352)
Safety belts	69%	65%
Automatic safety devices	26%	28%
Don't know	5%	7%

TABLE 9  
Income

	<u>Under</u> <u>\$25,000</u> (N=438)	<u>\$25,000-</u> <u>\$49,999</u> (N=226)	<u>\$50,000</u> <u>and Over</u> (N=68)
Safety belts	67%	70%	66%
Automatic safety devices	27%	28%	28%
Don't know	6%	3%	6%

## Analysis of Preference Groups

A demographic analysis of those who chose safety belt use laws versus those who preferred to purchase automatic safety devices revealed only minor differences between the two groups (Table 10). While respondents who preferred safety belts were fairly evenly distributed across all age groupings, those who preferred automatic safety devices were typically under age 54, with significantly fewer respondents age 55 and over choosing this option. Differences between the two groups could also be detected with regard to income. Of all respondents choosing safety belts, more than half (56%) had household incomes below \$25,000. Only 44% of respondents choosing automatic safety devices fell into this lower income bracket. The number of middle income respondents also differed between the two groups. Almost one-third (31%) of all respondents who chose automatic safety devices earned incomes of \$25,000 to \$49,999, compared to only 19% of those who chose safety belt use laws. However, there was a larger preponderance of upper income respondents in the safety belt preference group: 24% of those who chose safety belts had household incomes of \$50,000 or more, compared to only 7% of those who preferred automatic safety devices. The sex distribution across the two preference groups also varied. The majority of those who chose safety belts were women—fully 53% were women while 47% were male. Conversely, the majority of those who chose automatic safety devices were men, comprising 57% of all automatic safety device respondents compared to 43% who were women. The geographic distribution of the two groups also exhibited slight differences. A greater proportion of respondents choosing automatic safety devices resided in the eastern region of the U.S.—22% compared to 16% of safety belt respondents. The proportion of central region respondents was higher for the safety belt preference group, with 33% of these respondents residing in this region whereas only 26% of the automatic safety device preference group resided in this same region. No significant differences existed between the two groups in terms of South and West regional distributions. Marital status, employment status, and education of respondents were not significantly different between the two groups.

Some of the demographic differences noted between the two groups may potentially be linked to the increased cost associated with automatic safety devices. For example, the automatic safety device preference group was comprised of significantly fewer respondents age 55 and older than the safety belt preference group. Cross tabulation analysis revealed that older respondents are less likely to earn

incomes of \$25,000 or more.\* Only 23% of all respondents age 55 and over earn this income, compared to 39% of respondents under age 35 and 46% of respondents age 35-54. Therefore, since a large proportion of older respondents may not have the financial resources to support the purchase of automatic safety devices, these respondents may be more likely to choose the least costly alternative. The same situation may hold true with respect to sex. Cross tabulation analysis indicated that men generally earn higher incomes than women: 45% of male respondents earn \$25,000 or more compared to only 28% of female respondents. Thus, a greater proportion of men may be able to bear the cost of automatic safety devices. As indicated previously, more men than women did opt for this choice, while women strongly preferred the less expensive use of safety belts.

Although there is some evidence to support the hypothesis that cost may have an influence upon preference choice, there is not a strong relationship between these two factors. Were cost the most important influence on choice, a large number of high-income respondents could be expected to opt for automatic safety devices since they are more likely to be able to afford this alternative. However, only 7% of respondents in the automatic safety device preference group earned incomes of \$50,000 or more, while high-income respondents comprised 24% of the safety belt preference group. This is exactly the opposite of what would be expected if the cost-choice relationship existed. Thus, while cost may sway opinions of some demographic groups, it cannot be stated with certainty that this is the most important selection criterion across all demographic groups.

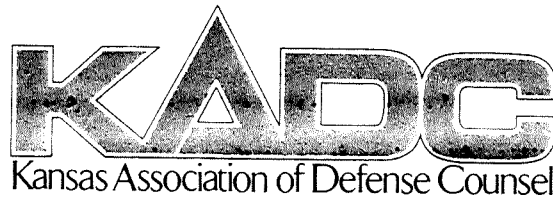
\*Cross tabulation is a simple form of associative data analysis in which variables are cross classified. It results in a count of the number of responses that fall into each of the possible categories of the cross classification. For example, given the hypothetical table shown below, entry 60 in the upper left means that 60 males responded yes to a particular question; entry 67 in the upper right indicates that 67 females answered yes to the same question. The total figures represent the overall number of males and females as well as the overall number of yes and no responses to the question. The table can be used to identify possible relationships, or associations, between row and column variables, e.g., if a yes response is associated with gender.

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Yes	60	67	127
No	8	5	13
Total	68	72	140

Overall, there do not appear to be strong demographic differences between those who prefer safety belts and those who prefer automatic safety devices. There is some evidence that respondent income may affect choice since automatic safety devices are a more costly alternative, however the influence does not appear to be strong and cost is certainly not the only factor affecting preference. Because deviations between the two preference groups are only slight, demographic factors do not appear to be good predictors of preference.

TABLE 10  
Analysis of Preference Groups

	Prefer Safety Belt <u>Laws</u> (N=676)	Prefer Automatic Safety <u>Devices</u> (N=268)
<b>Age:</b>		
Less than 35	34%	39%
35-54	34%	40%
55 and over	31%	21%
<b>Income:</b>		
Less than \$25,000	56%	44%
\$25,000 to \$49,999	19%	31%
\$50,000 and over	24%	7%
<b>Marital Status:</b>		
Married	65%	63%
Not Married	34%	36%
<b>Employment:</b>		
Full-time	53%	59%
Part-time	8%	9%
Not employed	39%	33%
<b>Education:</b>		
High school or less	56%	55%
Some college	19%	22%
College graduate	24%	23%
<b>Sex:</b>		
Male	47%	57%
Female	53%	43%
<b>Geographic Region:</b>		
East	16%	22%
South	33%	33%
Central	33%	26%
West	18%	19%



POSITION PAPER OF THE KANSAS ASSOCIATION OF DEFENSE COUNSEL  
ON THE PROPOSED MANDATORY SAFETY BELT LAW  
(1985)

For more than a decade lap and shoulder belts have been required equipment in all American cars but their usage has been optional. The time has come to make safety belts as mandatory as a driver's license.

The Kansas Association of Defense Counsel has proposed that a mandatory safety belt law be adopted in Kansas. The KADC believes a law is necessary in light of the mounting evidence of protection seat belts offer. Consider:

It is estimated that 30% of lives taken annually in traffic accidents could have been saved by wearing safety belts.

More Americans between the ages of 1 and 24 die as a result of motor vehicle injuries than any other cause.

70% of deaths and injuries occur at speeds of 40 miles per hour or less and no more than five miles from home.

There has been a decrease of 40% in fatalities in countries where seat belts are mandatory.

The cost to taxpayers of state-supported institutions providing police, ambulance, emergency room and rehabilitation services and survivor payments for the disabled could be greatly reduced.

2/21/85  
Attach. 17

Medical costs, lost work time, and potential liability for damages should you be sued by a non-seat belt wearing driver would be reduced.\*

The KADC thinks that merely asking or expecting the motoring public to buckle up is not enough. The organization believes a mandatory safety belt law will not only educate the public but will finally provide the incentive needed under threat of a fine.

The proposed bill requires that an operator of a motor vehicle be restrained with a safety belt at all times. The bill also requires persons over the age of 5 sitting in the front seat to be restrained by a safety belt or, if they are 4 years or under, by a specially designed child seat. Violators would be fined. The bill also provides that evidence of non-usage of a belt could be introduced in a lawsuit as part of your defense. In other words, if another driver sued you for his accident injuries, you could produce testimony at trial as to how that driver's injuries might have been reduced had he been wearing a safety belt.

Thus far three states have passed mandatory seat belt laws. Another ten states, plus Kansas, have seat belt laws under consideration. Thirty foreign countries have enacted such laws.

The only argument raised against a mandatory safety belt law is that it rings of yet another government intrusion into our personal freedoms and liberties. By the same analogy, drivers should have the freedom to operate their cars after dark without headlights or to drive at any desired speed



through school zones.

Requiring drivers and passengers to buckle up serves to accomplish the societal interest in safety recognized years ago when safety belts became standard equipment. Interestingly, the public thinks nothing of buckling up safety belts on airline flights, even though the potential of reducing death and injuries is much greater by wearing a belt in traveling our streets and highways than our flight paths.

Statistics on the impact of safety belt usage offer mute testimony supporting the new law. It is estimated that use of safety belts could save 12,000-14,000 lives annually. The public could save \$5.2 billion in expenditures annually if four out of five drivers and passengers used safety belts. Motor vehicle crash injuries produce more new cases of quadriplegia (paralysis below the neck) and paraplegia (paralysis below the waist) than all other causes combined. In major automobile injury cases, 50% of the victims suffer brain damages, and 40% sustain spinal cord injuries.

The KADC is aware of efforts to require air bags be installed in new vehicles. However, because air bags are costly and face an uncertain future, and because today's vehicles are already equipped with belts, the KADC believes it is time to put the weight of the law behind the wearing of the belts. Our safety will not wait.

Let us all learn from the lives saved and injuries reduced since child restraints became mandatory three years ago.

Wearing a safety belt costs us nothing but the time it

takes to fasten the buckle. Yet it gives us the peace of mind that should an accident occur, we have an outstanding chance of survival. If a mandatory safety belt law nudges us into compliance, our freedoms and liberties will be enhanced, not lost.

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\* Statistical sources provided upon request