

Air Bag Fight Looms In Congress

As the Congress returns from its Labor Day recess it faces a legislative attempt, already successful in the House of Representatives, that would outlaw the Department of Transportation's ignition interlock belt standard on grounds of obtrusiveness and unpopularity, yet would seriously frustrate introduction of unobtrusive air bag restraint systems as a more effective alternative.

The articles in this issue of *Status Report* cover specific aspects of the history and current debate over the future of interlocks and passive restraints. Here, in general, is the legislative situation:

During a House debate on August 12 over the proposed Motor Vehicle and School Bus Safety Act of 1974, Rep. Louis Wyman (R-N.H.) offered the following amendment:

"(2) (A) Effective with respect to motor vehicles manufactured after the date of enactment of this paragraph, Federal motor vehicle safety standards may not (except as otherwise provided in subparagraph (B)), require that any such vehicle be equipped (i) with a safety belt interlock system, (ii) with any warning device other than a warning light designed to indicate that safety belts are not fastened, or (iii) with any occupant restraint system other than integrated lap and shoulder safety belts for front outboard occupants and lap belts for other occupants.

"(B) Effective with respect to passenger cars manufactured on or after August 15, 1976, Federal motor vehicle safety standards shall require that each motor vehicle manufacturer offer purchasers the option of purchasing either (i) passenger motor vehicles which are equipped with passive restraint systems which meet standards prescribed under this section or (ii) passenger motor vehicles equipped with integrated lap and shoulder belts for front outboard occupants and lap belts for other occupants."

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Ignition Interlock: Ford's Better Idea

Auto makers, not the Department of Transportation or the auto safety movement, were responsible for conceiving the ignition interlock belt system and midwifing it into being. As an examination of the interlock's history shows, auto manufacturers – chief among them Ford Motor Co. – exerted a stream of public and private pressure in their successful campaign to delay the introduction of air bags by forcing introduction of the interlock approach instead.

The February 21 issue of *Status Report* (Vol. 9, No. 4) published a chronology of the air bag's development and a history of DOT's proposal to require air bag type passive restraints in new cars. That was a story of very slow progress accompanied by extensive laboratory research, field testing and regulatory debate.

Here, in contrast, is a chronology of the interlock's conception and delivery – the story of a skimpily researched, little tested approach that was pushed into being at the insistence of auto makers over the objections of the federal agency created by the Congress to promote vehicle and highway safety.

- May 7, 1970 DOT issues first proposal to require air bag type passive restraints in cars manufactured on or after Jan. 1, 1973.
- July 27, 1970 Peugeot, commenting on the passive restraint proposal, says, "We feel that active systems, but such that the vehicle cannot be effectively used, should be admitted with the same status as passive methods." Renault, in a July 30, 1970 letter, endorses the same view.
- July 31, 1970 American Safety Belt Council, the safety belt manufacturer trade association, in comments on the passive restraint proposal, reports that it has provided DOT with belt systems with an "electro-mechanical interlock between the seat belt system and the car starting system," for testing in a fleet of government cars.
- Aug. 3, 1970 Ford writes DOT that it is "developing an ignition interlock system that will require front seat occupants to connect the lap belts before the engine will start." Ford urges that a national program be started to increase belt usage and says that the "ultimate program could then offer an alternative to the customer of selecting either belt restraints or passive restraints at his own option."
- Irvin Industries, a safety belt manufacturer, writes DOT that "the government can achieve the quantum jump in safety belt usage, and death and injury reduction, it is seeking by mandating the adoption of ignition interlock systems in all cars until air bags are fully developed and proven."
- November, 1970 Ford sponsors nationwide television ads attacking air bags and pushing ignition interlocks as an alternative. The ad states, "Ford Motor Company engineers are researching a new safety device that could actually save up to 6500 lives a year . . . if everybody used it . . . But you probably won't even like it . . . It's a buckle start system . . . That means either you have your seat belts buckled . . . Or your key won't start the engine . . ."
- Nov. 3, 1970 Takata Kojyo Co., Ltd., a safety belt manufacturer, urges DOT to adopt an interlock system that the company has developed.

- Dec. 3, 1970 Ford Motor Co., in a petition asking NHTSA to delay its passive restraint rule, reminds the agency that it has previously "urged that belt systems be retained as an alternative to the so-called passive restraint systems as they are known today." Ford continued, "We are not suggesting that a mere warning system will bring belt usage up to acceptable levels but rather that some device such as a more sophisticated ignition interlock system, exterior warning device, etc., can be developed to do the job."
- 1970 or 1971 Henry Ford II, board chairman of Ford Motor Co., and Lynn Townsend, board chairman of Chrysler Corp., "went directly" to President Nixon to voice their concern about passive restraints and "perhaps" discuss "alternatives," according to a congressional memo on behind-the-scenes maneuvering by auto makers on ignition interlocks.
- "Probably" 1971 Secretary of Transportation John Volpe and other DOT officials meet with several top White House staff members, including John Ehrlichman, according to a congressional memo. After the meeting, Volpe was said to have remarked, "We are in trouble on the air bag." The memo quotes a former National Highway Traffic Safety Administration official as saying that "if that meeting with White House officials had not taken place, DOT would never have raised the interlock as an alternative to the air bag."
- Jan. 8, 1971 Ford Motor Co.— DOT meeting results in a DOT memo reporting that "Ford feels that the customer should have the option of buying a safety belt system interlocked to prevent starting the car if the belts are not used, or a passive (e.g. air bag) system."
- Ford presses the point in at least five private subsequent meetings with DOT officials on July 21, 1971; July 23, 1971; July 28, 1971; July 30, 1971 and Sept. 24, 1971, according to DOT memos.
- Feb., 1971 DOT issues report on effect of ignition interlocks in various combinations with buzzers and warning lights on safety belt use. The study, done in cooperation with the American Safety Belt Council, claims that "most drivers would accept or even welcome a device in their vehicles that would require or clearly remind them to fasten their safety belts."
- July, 1971 Ford puts ads in major newspapers, entitled, "An up-to-date report on air bags. The good news. The bad news." An NHTSA analysis of the Ford ad concludes that some of its statements about air bags are "inaccurate and misleading." In the ad, Ford lists the "buckle-start system" as one of the "promising possibilities for improving occupant protection" that it is working on.
- July 26, 1971 Ford Motor Co. files in DOT's passive restraint docket a report on effect of buzzer-light warning system on safety belt usage. Study reports that "the presence of the flashing light and buzzer is a powerful incentive to change the behavior of seat belt users in a positive direction."
- August 6, 1971 American Seat Belt Council again writes DOT that the ignition interlock is a "viable alternative" to passive restraints.

- Oct. 1, 1971 DOT issues proposal to allow use of ignition interlocks as an interim alternative to passive restraints.
- Oct. 8, 1971 Lowell Dodge, director of the Center for Auto Safety, and Ralph Nader write Secretary Volpe asking him to place in the public docket memos on all "contacts between officials of the Department of Transportation and other persons" on DOT's passive restraint rulemaking. In making their request, Dodge and Nader write that there have been reports that "certain White House aides had intervened on behalf of the automobile manufacturers in order to bring about the reversal of an administrative decision which would have dramatically reduced automobile accident fatalities."
- Oct. 15, 1971 Acting Secretary of Transportation James Beggs denies Dodge and Nader request. Beggs replies that it is not DOT's "practice to make a record" of "intra-governmental communications."
- Oct. 20, 1971 Ford files in DOT's passive restraint docket a report on effect of buzzer-light warning system with ignition interlock on belt usage. Such a system "appears to be capable of changing seat belt usage behavior among confessed infrequent users," the study reports. However, there was "no statistical difference between the behavior changes observed" when cars had only the buzzer-light warning system and when cars had that system accompanied by an ignition interlock, the study reports.
- Oct. 28, 1971 American Safety Belt Council writes DOT that "we endorse the proposed requirement" of ignition interlocks.
- Nov. 1-2, 1971 The four major U.S. auto makers split in their comments on the ignition interlock proposal. While all endorse belts as an interim alternative to passive restraints, Ford Motor Co. and American Motors Corp. support ignition interlocks and General Motors Corp. and Chrysler Corp. oppose them.
- Nov. 21, 1971 Ford files its brief in the auto makers' suit to overturn DOT's passive restraint standard, telling the court that it "and other manufacturers repeatedly urged during this proceeding [to establish a passive restraint standard] that the Administration [NHTSA] consider various means of increasing belt usage — including technological improvements in safety belt systems . . . as an alternative to mandatory passive restraints."
- Feb. 24, 1972 DOT issues final amendment to FMVSS 208 to allow use of ignition interlocks on cars manufactured between Aug. 15, 1973 and Aug. 15, 1975.
- Sept. 18, 1972 An Insurance Institute study, reviewing the July, 1971 Ford and the February, 1971 NHTSA belt use reports, concludes that those efforts represented "inept science." The Institute study, which first reported that the buzzer-light system did not significantly increase belt use, terms the device a "public health failure."
- March 15, 1973 DOT's National Motor Vehicle Safety Advisory Council (NMVSAC) adopts resolution urging the department to "withdraw those provisions of FMVSS 208 which require starter restraint system interlocks."

- April, 1973 DOT releases report on effect of ignition interlocks on seat belt usage in rental cars. The study finds no significant difference in belt use in vehicles equipped with buzzer-warning systems and vehicles equipped with ignition interlocks.
- May 22, 1973 Secretary of Transportation Claude S. Brinegar writes NMVSAC that DOT has decided "after a thorough review of the issues that the public benefits from the interlock system will outweigh the costs."
- Aug. 15, 1973 Ignition interlocks required on all new cars.

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Under DOT's FMVSS 208, interlocks have been a requirement on new cars since the beginning of the 1974 model year. DOT has proposed, but not yet adopted, a revised FMVSS 208 requiring increased passive restraint protection, presumably through provision of air bag systems, starting with the 1977 model year. At that point interlocks no longer would be required. (See *Status Report*, Vol. 9, No. 6, March 26, 1974.)

Perhaps unintentionally, the Wyman amendment not only would prevent DOT from requiring ignition interlocks and standard-equipment air bags, it would also do away with DOT's authority to mandate all types of "passive restraint" systems in any new car equipped with belts — including, for example, the passive-type energy absorbing steering columns, laminated windshields and dash board crash padding already required on new cars for years under DOT standards. These features have measurably reduced death and injury in crashes.

During an August 30 appearance on NBC-TV's "Today" show, Wyman defended his amendment, by characterizing the interlock system as "an outrageous interference with an individual option in America . . . It is not going to accomplish what it was designed to accomplish, which is to adopt what amounts to a federal mandatory seat belt law."

Appearing as a guest on the same show, Dr. William Haddon, Jr., president of the Insurance Institute for Highway Safety, warned that the interlock, "obtrusive as it is" as an "interim measure," is working well enough that its elimination would produce deaths and injuries "by the tens of thousands." (An Insurance Institute for Highway Safety study released in July reported a belt use level — lap only or lap-shoulder combination — of 59 per cent in 1974 model cars equipped with the interlock, compared with a use level of 25-28 per cent for earlier model cars equipped with only a buzzer-warning light belt system. See *Status Report*, Vol. 9, No. 13, July 8, 1974. The Wyman amendment would permit DOT's belt standard to require only warning lights.)

Haddon also pointed out on the "Today" show that the Wyman amendment would forbid DOT's requiring combination lap belt air bag protection in new cars. "You would preclude the most promising development for saving these smashed bodies from occurring all over the country," Haddon told Wyman.

AMC Withdraws Fuel System Suit

American Motors Corp. has withdrawn its court challenge to the National Highway Traffic Safety Administration's fuel system crashworthiness standard.

AMC had filed its suit earlier this year. (See *Status Report*, Vol. 9, No. 12, June 18, 1974.) The auto maker gave no reason for its recent action. However, the move followed passage in the U.S. House of Representatives of a bill that would mandate upgraded fuel system standards.

Allstate Tells Of Lifesaving Inflation

Allstate Insurance Co. has bought advertising space in *The New York Times*, *The Washington Post* and *The Washington Star-News* to tell the story of James Jonas.

Earlier this year Jonas bought an air bag equipped Buick Electra. Two months later he bought another one. The story is the event that prompted the second purchase.

Jonas and his wife survived a near 100 mile-per-hour closing speed head-on crash with a sedan pick-up. He had a sprained wrist. Her pelvis had a hairline fracture — a moderate injury. They were riding in their 1974 air bag equipped Buick Electra. They were not wearing their lap belts.

The occupants of the GM El Camino pick-up, not equipped with air bags, didn't fare so well. The driver had a basilar skull fracture, a broken left leg and a broken ankle. His passenger was considered to be in even more critical condition with a fractured skull, fractured ribs, cerebral contusion and lacerations of the face, neck and arms. They were not wearing their safety belts. (See *Status Report*, Vol. 9, No. 12, June 18, 1974.)

A few days later Jonas bought another Buick — equipped with air bags. "After my experience with the air bags, I believe they should become standard equipment in the future," the Allstate advertisement quotes Jonas as saying.

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SENATE PROSPECTS

The Wyman amendment will be among the many issues considered in a joint Senate-House conference to reconcile the House's Motor Vehicle and School Bus Safety Act and a Senate version of the same bill passed earlier. (See *Status Report*, Vol. 9, No. 12, June 18, 1974.) The Senate version of the bill makes no mention of air bags or safety belt interlocks. It will be up to the conferees to retain, modify or drop the Wyman amendment. The conference will negotiate a single agreed-on version of the bill, which both the House and Senate probably will pass.

The conference, which may meet as early as the week of September 16, will consist of members of the Senate and House Commerce Committees. The conferees will be Senate Commerce Committee Chairman Warren Magnuson (D-Wash.), Sen. Vance Hartke (D-Ind.), Sen. Frank E. Moss (D-Utah.), Sen. Robert P. Griffin (R-Mich.), Sen. Ted Stevens (R-Alaska), Rep. Harley O. Staggers (D-W.Va.), chairman of the House Commerce Committee, Rep. John E. Moss (D-Calif.), Rep. Williamson S. Stuckey (D-Ga.), Rep. Samuel L. Devine (R-Ohio) and Rep. James T. Broyhill (R-N.C.).

Even before the conference meets, however, it is likely that the Senate will be asked to consider other versions of the Wyman amendment. Two Senators, James Buckley (CR-N.Y.) and Thomas Eagleton (D-Mo.) have publicly said they plan to promote legislation to outlaw DOT's interlock standard. One or the other may offer an anti-interlock bill as an amendment to a Senate public works bill scheduled for a Senate vote later this month.

According to an Eagleton staff member, the senator "believes DOT's figures" that air bags would save 15,600 lives a year and eliminate one million injuries if they were available in all cars on the highway. However, the staff member said, the senator nonetheless "is considering" a bill that would both outlaw the interlock standard and forbid DOT to require air bag type protection without "congressional approval prior to adoption of the air bag."

Buckley's position toward air bags is different. In a letter explaining it, the senator said that although he wants an anti-interlock law, he thinks it would be "impractical, unreasonable and inappropriate for Congress to assert itself at this time" as to air bag standards. Instead, he said, the matter should "more appropriately" be left to DOT's discretion.

If Eagleton attempts to offer a bill limiting DOT's right to require air bags, he may face opposition from Magnuson. The Senate Commerce Committee chairman is in favor of mandatory air bags. In an address prepared for delivery at a San Francisco meeting on automotive safety in July, Magnuson criticized DOT for failing to move fast enough in developing its passive restraint standard, and warned that the Congress "might have to do it [mandate air bags] by legislation" if DOT didn't issue the standard promptly (See *Status Report*, Vol. 9, No. 14, July 26, 1974.)

Magnuson could also object to a Buckley or Eagleton anti-interlock amendment on jurisdictional grounds. He could argue that the amendment involves matters — motor vehicle safety standards — within the purview of his Senate Commerce Committee, and therefore should be offered during debate on commerce committee legislation, not public works legislation. A ruling in his favor would stop the amendment from coming to a Senate floor vote for the time being, since no commerce committee bills are scheduled for floor consideration in the near future.

Safety Groups Criticize Wyman Amendment

The National Safety Council and the Center for Auto Safety have sharply criticized the House-passed amendment, authored by Rep. Louis Wyman, (R-N.H.) to outlaw interlocks and forbid the Department of Transportation from issuing a standard requiring air bag type passive restraint protection in all new cars.

Meanwhile, Allstate Insurance Co., a vigorous proponent of air bags, has urged members of the Senate to vote against the amendment. Speaking with "the support of the overwhelming proportion of the automobile insurance business," Allstate said in telegrams to each Senator that "the wrong decision against air bags can kill and maim as many people as the Vietnam War during a comparable period."

In a press release, the National Safety Council said that the House amendment would "leave a gaping void in the area of automobile occupant protection that could result in the loss of thousands of lives each year." NSC President Vincent Tofany said that passive restraints "are a logical answer to the problem of non-belt use." The House action would "slow the development of passive restraint systems," he said. Tofany also called for "passage of mandatory safety belt usage laws by the states."

The Center for Auto Safety position was spelled out in a letter to the chairman of the Senate Commerce Committee from Stanton R. Koppel, who recently succeeded Lowell Dodge as director of the center.

“Removal of the mandatory interim interlock feature will immediately result in the public’s loss of valuable protection,” Koppel noted. He added, “In contrast to the unpopular ignition interlock system, air bags offer excellent protection without confinement or discomfort to the vehicle occupant We strongly urge that the air bags not be relegated to a role as optional equipment.”

OTHER EFFECTS

Koppel also warned that beyond “direct adverse effects” of outlawing interlocks and standard-equipment air bags, the House amendment “seriously undermines the future ability of the Department of Transportation to effectively discharge its administrative responsibilities under the National Traffic and Motor Vehicle Safety Act of 1966, and to provide crucial public leadership in the achievement of a safe transportation environment.”

Allstate’s telegram to Senators, signed by Board Chairman Arch Boe, suggested that the optional-equipment approach of the House amendment toward air bags can’t work, because “to prohibit the mandatory installation of air bags, which is the only way their cost can be made generally affordable, is to deny to all but the most affluent the greatest occupant safety device ever developed by American technology.”

Costs, Benefits Favor Air Bags, NHTSA Says

Air bag lap belt systems that have been proposed for 1977 and subsequent model cars “could save an estimated 85,000 lives and reduce vehicle injuries by more than 5.4 million” by 1985 if they are introduced on schedule, according to the National Highway Traffic Safety Administration’s recently published study on the costs and benefits of occupant restraint systems.

The agency estimated that by 1985 the “societal benefits” of the air bag lap belt system could total \$9.8 billion annually. “The benefits would still be rising because the standard would still not be fully implemented throughout the vehicle population,” the agency said.

NHTSA estimates that by 1985 currently required “interlock belts would be effecting annual savings (societal benefits) of \$3.9 billion.” By that time “the annual benefits to be gained from this system would have almost reached their peak,” the agency said. NHTSA estimates that between 1977 and 1985 the interlock-belt system “could save more than 47,000 lives and reduce injuries by more than two million” — 38,000 fewer lives and 3.4 million fewer injuries than air bags could save over the same period of time, according to agency figures.

According to Safety Administrator Dr. James B. Gregory, his agency’s study “clearly shows the superiority of passive restraint systems compared to belt systems presently required.”

NHTSA’S ESTIMATES

USE RATES: The Safety Administration estimates that “after belt usage habits ultimately stabilize, the lap and shoulder belts together will be used on the average by about 50 per cent of the front outboard occupants in cars, with an additional 10 per cent using the lap belt only, or a total of 60 per cent lap belt usage.” With the air cushion lap belt system, “it is estimated that, after belt usage habits stabilize, the lap belt will be used 60 per cent of the time by front seat occupants motivated by the sequential warning system and the remaining 40 per cent of the time they will have potential use of the air cushion only.”

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Due to its timeliness, the following editorial is being reprinted. It first appeared in the NEWSLETTER of the American College of Preventive Medicine, Vol. XV, No. 2, 1974. It was also published, with references, in the April, 1974, issue of The Journal of Trauma. Copies are available from the Insurance Institute for Highway Safety, Watergate Six Hundred, Washington, D.C. 20037.

Strategy In Preventive Medicine:

Passive vs. Active Approaches To Reducing Human Wastage

This note is an invited comment on the notion of "passive" as opposed to "active" approaches in preventive medicine and public health.

I coined the terms early in 1961, and described the distinction later that year in two papers, one with James L. Goddard as co-author. I picked these terms to have labels — perhaps handles would be more accurate — for the opposite poles of what continues to seem to me a broadly useful distinction concerning strategies to reduce various types of human or other wastage. Simply stated, such strategies distribute along a dimension defined in terms of the amount of action on the part of individuals in the general population required for their efficacy.

At one extreme are such "active" measures as: boiling water during a flood; slapping mosquitoes in a malarious region; fastening seat belts; taking "the pill"; and wearing helmets, lead aprons, shin guards, condoms, diaphragms, and other protective "barriers."

At the other extreme are such "passive" measures as: pasteurizing milk; controlling screw-worm damage by inundating the wild population with sterilized individuals; fluoridation and chlorination of water, and iodination of salt; enriching foods; providing electrical systems with fuses and insulation; prevention of release of pollutants into air, water, or food; and equipping of motor vehicles with energy-absorbing steering assemblies, air bags, and other passive, deceleration-attenuating devices.

In between the extremes are distributed measures that require some action by individuals in the general population. Thus, vaccines that require more than one shot for protection initially, or for maintenance, are closer to the active extreme than those, such as for yellow fever, that do not.

These distinctions are not merely classificatory niceties. They have direct, practical

relevance. Reducing human wastage through active as opposed to passive tactics typically involves differences in the types and numbers of individuals whose cooperation must be achieved and in the approaches employed, for example private individuals versus members of the relevant power structures. This is well illustrated, on the one hand, by attenuating potentially damaging energy transfers in vehicle crashes through belt use, an active approach requiring for complete success billions of individual actions per month by all sorts of people, in all sorts of mental and physiological states. On the other hand, the universal provision of air bags to achieve the same purpose would require only a behavior change, a simple binding decision, by one federal official or by some three or four executives of motor vehicle manufacturing companies.

Historically, adequate success through active approaches has been rare, and requires exceptionally broad understanding and strong motivation on the part of those involved. In sharp contrast, passive approaches, when available, and once initiated, have a spectacularly more successful record. Consequently, in situations where a passive approach is feasible, available, and known to work well, professional, humane, and responsible decision-making mandates its adoption. This is the case for the placing of air bags in future vehicles. When no adequately passive approach is available, but only an efficacious active one insufficiently used, it should be mandated. This is the case for requiring belt use in vehicles already produced. The two approaches are compatible and complementary. The continued toll of men, women, and children whose injuries in highway crashes would be lessened or eliminated by these now well-proven approaches cries for the implementation of both. Surely as a nation we can find the necessary moral strength and guts for the decision these two steps require.

William Haddon, Jr., M.D.

September 9, 1974

What Is An Air Bag?

An air bag is a passive restraint system that:

1. Works automatically only when needed – in an injury-threatening car crash. It is triggered by sensors as the crash begins. The bag inflates in less than 25/1000 of a second – literally quicker than the blink of an eye.
2. Gently, bouyantly spreads the force of the crash evenly across the protected crash occupant's body, rather than concentrating it harmfully at a few points. During the critical split second of the crash, the bag becomes an energy-absorbing shield between the protected crash occupant and the hazardous, hard, sharp interior structure that the occupant otherwise might smash against.
3. Does its protective work during the instant of the crash, then deflates – so rapidly that the protected crash occupant doesn't realize the bag was there until after it's out of his way.
4. Is entirely unobtrusive and inoffensive to the people it protects. The bag is stored completely out of sight when not needed; it requires no prior action by the user (such as the buckling up of belt users), and it interferes in no way with the operation of the vehicle.
5. Is required to meet injury-prevention criteria far tougher than safety belts – even when used – must meet in comparable crashes. Has successfully been subjected to more than 70 million miles of real-world driving exposure, not to speak of millions of miles of laboratory and controlled-environment testing.

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RESTRAINT EFFECTIVENESS: According to NHTSA, "Two classes of testing have shown that air cushion systems are superior in effectiveness to shoulder lap belt systems. First, human volunteers have endured about three times the acceleration with air cushion systems as compared to highly developed, sophisticated belt systems; and second, cadavers received 'fatal' level injuries when being restrained by lap shoulder belts systems, while in similar environments human volunteer test subjects with air-cushion restraints received minor or no injury."

The agency's estimates of restraint effectiveness in various crash modes are shown below:

<u>System</u>	<u>Percent Effectiveness In Preventing Fatalities</u>				<u>Percent Effectiveness In Preventing Injuries</u>			
	<u>Type of Crash</u>				<u>Type of Crash</u>			
	<u>Front</u>	<u>Side</u>	<u>Rear*</u>	<u>Roll</u>	<u>Front</u>	<u>Side</u>	<u>Rear*</u>	<u>Roll</u>
Lap and Shoulder Belt	37	30	0	50	27	30	0	50
Lap Belt Only	20	30	0	40	0	20	0	40
Air Cushion and Lap Belt	57	45	0	50	64	40	0	50
Air Cushion Only	57	20	0	15	64	25	0	15

*NHTSA assigned no value to rear impact protection because, it said, "Restraint systems seldom come into play when a vehicle is impacted in the rear."

Restraint effectiveness estimates, considered with the estimated *frequency* of fatalities and injuries in various seating positions and crash modes, led NHTSA to conclude that "after the entire passenger car population complies with the respective standards," the current interlock belt system would annually save 7,000 lives and 340,000 injuries. NHTSA estimates that proposed air bag lap belt systems would save 15,600 lives and one million injuries.

SOCIETAL COSTS: The agency estimated "societal cost of approximately \$240,000 per death and \$7,000 per injury."

SYSTEM COSTS: The price of the interlock belt system was put at \$100 per vehicle. The cost of an air bag lap belt system was estimated at \$210.

BENEFIT-TO-COST RATIOS: Using three different methods of analysis, the agency figured that the current interlock belt system has a benefit to cost ratio between 4.1 and 2.9. The estimated ratio for the proposed air bag lap belt system fell between 5.1 and 3.6.

AAA DISAGREES

The American Automobile Association has also published figures that it claims represent the relative costs and benefits of restraint systems. AAA, a long-time opponent of air bags, said that a study it is conducting will show that NHTSA's proposed passive restraint system would cost car owners "\$3.65 billion additional annually for what would amount to at best only \$2.25 billion in yearly benefits in terms of lives saved and injuries prevented." Safety belts "could return \$2.9 billion in benefits on expenditures of only \$1.1 billion," the organization claimed.

In a five-page news release, AAA declared that air bags "would cost consumers 100 per cent more than safety benefits they would return, while offering a benefit versus cost ratio only one third that of present lap belt/shoulder harness systems."

AAA said its pronouncement was based on an incomplete study that "will be published in the near future." The study is being prepared by Economics and Science Planning, a Washington-based research organization. An AAA spokesman told *Status Report* that the study will not be completed "for several weeks." He cited congressional deliberations as the reason for releasing the figures before the study is complete.

Although AAA did not say how the figures in its news release were derived, it estimated that safety belts, assuming 75 per cent usage, would save 9,105 lives and prevent 559,000 injuries annually. According to AAA, its study will show the annual cost of belts to be \$1.05 billion with benefits of \$2.85 billion, giving a benefit to cost ratio of 2.7. (The organization claims that 75 per cent belt use "could be achieved through improvement in their comfort and convenience.")

AAA said its study will show that an air bag lap belt combination, assuming 65 per cent belt usage and no air bag failures, would save 8,540 lives, prevent 388,000 injuries, cost \$3.65 billion and produce benefits amounting to \$2.25 billion annually giving a benefit to cost ratio of 0.7. AAA assumed that the air bag lap belt system would cost \$250 per car.

Although not stated in the news release, the AAA study reportedly will assign \$140,000 as the cost of a fatality and \$2,750 as the cost of an injury. These values are markedly lower than the worth of life and cost of injury used in NHTSA's study.

NHTSA, GM Air Bag Tests With Humans Successful

In two recent series of air bag effectiveness tests, human volunteers experienced 30 mile-per-hour simulated crashes with no significant injuries. One set of tests was sponsored by the National Highway Traffic Safety Administration; the other by General Motors.

In both series of tests, occupant compartments similar to recent model GM full size cars were mounted on test sleds that could simulate frontal barrier crashes. Male volunteers, ranging in age from 19 to slightly over 30, rode the test sleds in crash simulation of from under 15 to just over 30 miles-per-hour.

In the 33 NHTSA sponsored human volunteer tests, the "most adverse" injury was a "muscle spasm," according to the final report on those tests. GM reported that there was "no significant injury" to any of the volunteers in the 15 tests it funded. After experiencing the equivalent of a 30 mile-per-hour barrier crash, one volunteer in the GM tests said he would not be concerned about doing a 40, 50 or 60 mile-per-hour crash simulation, according to the GM report.

GM compared the calculated head injury potential of its human volunteers with that measured in identical crash simulations done with test dummies. GM found that the injury potential in both sets of tests was similar and well within the injury limits set by NHTSA's passive restraint proposal (FMVSS 208). (One reason auto makers recently gave for asking NHTSA to delay its passive restraint proposal was their claim that test dummies are unable to duplicate human responses in a crash. See *Status Report*, Vol. 9, No. 12, June 18, 1974.)

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the highway
loss reduction

STATUS REPORT

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