

SAFETY SELLS

**Market Forces and Regulation
in the Development of Airbags**

By Martin Albaum

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Foreword

Accidents are the leading cause of death among people in the United States under the age of 45. Motor vehicle accidents are by far the leading cause of accidental deaths. About fifty years ago research first showed that the major part of these deaths — and serious injuries — was caused by crash forces hurling people against the inside of the vehicle or out of it. Rather than prescribing the traditional remedy for accidents — take care and avoid crashes — a new school of safety researchers and their allies among consumer groups pointed to ways of keeping people restrained during the crash. The first method was the seat belt. When it became obvious that few people were using the seat belts in their cars, airbags were developed because they would restrain automatically. In 1966 Congress passed a law setting up a federal agency to set safety standards that car manufacturers would have to follow. Providing seat belts was in the first group of standards issued. Shortly after that the agency began considering airbags as part of a possible passive (later called automatic) restraint.

Requiring airbags and the consequences of doing this have been among the most contentious issues on the federal regulatory agenda for the past thirty years. These issues have been intertwined with others concerning both the level of seat belt use and its requirement. But the more controversial issue has been requiring airbags. The opponents of this requirement proposed instead requiring the use of seat belts. So airbag regulation is the focus of this study although seat belt issues have a leading role. For most of the story many participants in the debate viewed airbags and seat belts as alternative restraints. In recent years they have come to be regarded as two parts of an integrated system, which could save most crash victims from death or serious injury.

The regulatory framework within which airbags developed in the United States came about largely because auto manufacturers seemed not to be paying enough attention to producing safer vehicles. They did not exactly flaunt the motto that safety did not sell, but they concentrated on other sales appeals. The regulation that emerged after long wrangling did not specify airbags, but they triumphed over other passive restraints — namely automatic belts — because customers believed they were safer. Many other countries — Canada, Australia, and much of Europe — also have experienced the rapid spread of airbags, but this is because favorable experience in the United States led to customer demand elsewhere. Market forces led to airbags' spread in these countries where regulation is otherwise pervasive.

At first some American automakers — Ford and General Motors — actively participated in developing airbags. But they turned against regulations requiring passive restraints (which meant airbags for most of this history) until in the early 1990s driver airbags proved to have strong sales appeal. Then, when passenger airbags began to harm children and small adults, the auto industry joined insurers and other safety groups in promoting both ways of avoiding the harm (using seat belts and keeping children restrained in rear seats) and developing standards for advanced, relatively harmless, airbags. Automakers have also responded to regulatory hints about the need to protect against side crashes by developing voluntary standards for side airbags.

So, apart from the intrinsic interest of the long and twisty story of a piece of technology that will be part of every American's life, and might save many of them, the story suggests that regulatory and market processes are not simple opposites. There may be other lessons for policy making suggested by this case study. "Suggested" is the operational word, since a single case can never establish any generalization.

The story proceeds chronologically, stopping in 2002 even though advanced airbags and side airbags are still evolving, both technologically and in regulatory terms. After explaining how motor vehicle safety became a federal concern, it notes the early appearance of both airbags and safety belts on that regulatory agenda and tracks the development of proposed rules for their use through the political, economic, legal and conceptual changes that shaped them. At the end there are some reflections on the possible implications of the story.

This case history is not written with any pretensions to neutrality or objectivity. But I have tried hard to be aware of my biases and to give a full and balanced account of the views of all sides of each contentious issue. I played a very minor role in the story, as a member of the Board of Directors of the Insurance Institute for Highway Safety for eighteen years, until 1991, and as an officer in an automobile insurance company that actively supported airbag requirements. The Insurance Institute for Highway Safety, a leading proponent of airbags, supported this study. But IIHS has never tried to guide the positions taken in it.

Here is a partial list of all the debts I contracted in writing this study. I was introduced to the serious study of highway safety by William Haddon, Jr. After Bill's untimely death, Brian O'Neill succeeded him both as president of the Insurance Institute for Highway Safety and as my mentor. Brian and his colleagues, Chuck Hurley, Steve Oesch, Allan Williams, Adrian Lund, Susan Ferguson, and Michele Fields, have patiently led me through the technical and legal mine fields of the subject. Maria Kaufmann has been an insightful and skilled editor. Most of my research exploited the resources of the IIHS library, where Kris Pruzen and Carolyn Sosnowski were unfailing sources of advice and Ellen Sanders was a patient helper. Kristi Lowe patiently refined my word processing. So many participants in the history shared their recollections with me in sometimes lengthy interviews that I have listed them in a separate appendix. But I want to especially thank Joan Claybrook, Raymond Peck, Helen Petruskas, and Roger Maugh for the trouble that they took to answer my questions. The reader will note that I have built on the foundations laid by the earlier studies of Joel Eastman and John Graham.¹ The latter even allowed me to review his interview notes. If, in spite of all the help I received in this study, there are errors or gaps, the fault is mine alone.

1. Joel W. Eastman, *Styling vs. Safety: The American Automobile Industry and the Development of Automotive Safety, 1900-1966* (Lanham: University Press of America, 1984); John D. Graham, *Auto Safety: Assessing America's Performance* (Dover, MA: Auburn House, 1989).

SAFETY SELLS: Market Forces and Regulation in the Development of Airbags

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CHAPTER 1: Automobile Safety Becomes a Federal Affair

The National Traffic and Motor Vehicle Safety Act of 1966, the first law making automobile safety a federal concern, established the framework for the regulatory battle that shaped the development of airbags. The idea of using airbags to protect occupants by restraining them in a crash dates back at least to 1952, when the first patent application involving the concept was filed.¹ But the crucial steps to making the device work were taken only after William Haddon, Jr., the first administrator of the National Highway Safety Board, a body established under the 1966 Act, began the long process of defining performance requirements for occupant protection safety standards. The rules of the game by which such a standard could be imposed on automobile manufacturers in the United States were first enumerated in that Act. To understand the long and tortuous history of airbag regulation, it is important to understand the interests and attitudes toward automobile safety, and the automobile itself, that shaped the law.

The Automobile Redefines America

During the roughly seventy years that passed between the appearance of the motor vehicle and the passage of the 1966 law, the automobile reshaped American society. The changes accelerated after World War II. Widespread ownership of automobiles made possible the suburban sprawl away from commuter railway lines that had defined earlier metropolitan growth patterns. This, in turn, increased the demand for automobiles and for new highways. By 1965 there were 79 million automobiles registered in the United States, owned by 79 percent of families. Seventy percent of workers commuted by automobile. Twenty percent of the gross national product was directly involved in the manufacture, sale, or maintenance of the automobile.

Roads — their construction, rules, and safety — had been the responsibility of state and local governments in the United States. Motor vehicles did not change that arrangement. In the first decade of the twentieth century, the National Association of Automobile Manufacturers and the American Automobile Association lobbied strenuously for national regulation of automobiles. But Congress did not see the need to supersede the states, and as motor vehicle laws grew in uniformity, the effort to create a national code waned and finally disappeared by the close of the decade. At about this time the incidence of crashes and injuries related to motor vehicles began to exceed those related to horse-drawn vehicles.

1. The first patent on airbags in automobiles was filed by John W. Hetrick on August 5, 1952, but there is a sketch of an airbag for airplane crash protection by Assen Jordanoff dated March 1952. See Carl Clark and Carl Blechschmidt, "Human Transportation Fatalities and Protection Against Rear and Side Crash Loads By the Airstop Restraint," *Proceedings of the 9th Stapp Car Crash Conference*, October 20-21, 1965, s.l., 1966, pp.24-25.

Although the federal government started in 1912 to contribute 33 percent of the cost of building post roads and, in 1916, offered to contribute 50 percent of the cost of building public rural roads, the safety of these roads and the vehicles that used them was rarely mentioned as a federal concern.²

Automobile and Highway Safety

Automobile and road safety became the primary concern of a network of public and private professionals — traffic policemen, state troopers, teachers of driver's education, and a plethora of associations led by the National Safety Council. Their common themes were the need for better roads, stricter enforcement of the rules of the road, more careful driving, and better selection and education of drivers. Occasionally there was discussion of the need to improve one or another aspect of the car itself, but the received wisdom was that almost every "accident" was caused by the driver and that the vehicle was as safe as the manufacturer could make it. Challenges to these ideas were little noticed. One such challenge was offered by the Accident Prevention Conference, appointed by President Roosevelt in 1936, which said in its first report that engineering, rather than law enforcement, was the most effective way of protecting the driver against his own folly. The report pointed to the need for slower speeds, better lights, and safer body construction, and called on automobile manufacturers to change their product voluntarily rather than waiting for government requirements. That call was ignored, as was a later book by Arthur Stevens, *Highway Safety and Automobile Styling* (1941), that referred to it. Stevens believed that faulty vehicle design was the key to the rising number of deaths in automobile accidents — 40,000 by 1937. It would be easier, said Stevens, to teach top auto executives to remedy these designs than to teach safe driving to the masses.³

Design of the automobile began to concern a few professionals in the disciplines most likely to be touched by automobile crashes — physicians and engineers. As Daniel Patrick Moynihan noted, "The medical doctors were the first on the scene."⁴ One of the earliest was a Detroit plastic surgeon, Dr. Claire L. Straith. As a result of his clinical experience with facial injuries caused by impacts with car interiors in crashes he installed seat belts in his own car and designed a padded dashboard. Straith also gained the attention of Walter P. Chrysler. The 1937 Dodge incorporated a number of features to make handles and knobs less likely to cause injury in a crash. The 1939 Studebaker had similar safety features. But World War II interrupted these developments. Established manufacturers forgot about interior safety, although Preston Tucker did plan to incorporate some of Dr. Straith's ideas in his cars before his new company failed in 1948, after just a few production models had been built.⁵

2. Joel W. Eastman, *Styling vs. Safety: The American Automobile Industry and the Development of Automotive Safety, 1900-1966* (Lanham: University Press of America, 1984), pp. x-xii, 14.

3. Cited *ibid.*, pp.145,155-156.

4. Testimony of Daniel P. Moynihan, *Traffic Safety: Hearings Before the Committee on Interstate and Foreign Commerce, House of Representatives, 89th Congress, Second Session, 1966, Part 2, p. 1320.*

5. Eastman, *op.cit.* pp. 181-186.

Some doctors continued to gather evidence on the issue. In 1948 Dr. Fletcher Woodward published a summary of his clinical observations in the *Journal of the American Medical Association (JAMA)*, in which he also pointed out the success of cooperative efforts by physicians and engineers to reduce crash injuries in aircraft during World War II.⁶ Hugh DeHaven was one of the pioneers of these efforts, starting from his attempts to understand how he had survived a World War I plane crash. In an early article summarizing his work (1942), DeHaven concluded:

The human body can tolerate and expend a force of two hundred times the force of gravity for brief intervals during which the force acts in transverse relation to the long axis of the body. It is reasonable to assume that structural provisions to reduce impact and distribute pressure can enhance survival and modify injury within wide limits in aircraft and automobile accidents. (emphasis added.)⁷

This publication led to a wartime crash injury research project at the Cornell Medical School, essentially directed by DeHaven. The project survived the war with private financing. Cornell helped the Indiana State Police to design accident data collection. The result was a 1952 report showing that ejection was associated with most fatal rural car crashes and that collisions with doors, steering assemblies or windshields were responsible for most deaths of those who stayed in the car. Based on this and on his earlier work DeHaven stressed, in a 1952 paper to the Annual Meeting of the Society of Automotive Engineers, the importance of “packaging” car occupants as stunt drivers protect themselves:

We will get into anybody’s automobile, go any desired distance at dangerous speeds, without safety belts, without shoulder harness, and with a very minimum of padding or other protection to prevent our heads and bodies from smashing against the inside of a car in an accident. The level of safety which we accept for ourselves, our wives and our children is, therefore, on a par with shipping fragile valuable objects loose inside a container.⁸

John F. Stapp, an Air Force medical researcher, provided laboratory tests of both animals and humans that showed the ability to survive large amounts of deceleration when the force is properly dispersed.⁹ In 1952, Dr. William N. Harper summarized his 15 years of consulting with insurers and police, saying, “We have spent too damn much time worrying about the cause of accidents. It’s time we started worrying about the causes of injuries.” The occupant, according to Harper, should wear the car, as if it were armor, by strapping into it. Responding to a report by Dr. Horace E. Campbell, based on

6. See also, Dr. Woodward’s remarks testifying as Chairman of the Committee on Medical Aspects of Automobile Deaths and Injuries of the American Medical Association, Research Needs In *Traffic Safety*, Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 85th Congress, Second Session, 1958, pp. 38-40.

7. Hugh De Haven, “Mechanical Analysis of Survival in Falls From Heights of 50-150 Feet,” *War Medicine*, vol.2, reprinted in William Haddon, Jr., Edward A. Suchman, and David Klein, *Accident Research: Methods and Approaches*, New York: Harper and Row, 1964, p. 546.

8. De Haven, “Accident Survival-Airplane and Passenger Automobile,” reprinted, Haddon, et al., op.cit., p. 564. A good account of De Haven’s work and the early days of the Cornell Automobile Crash Injury Research Project is in Eastman, op. cit., pp. 211-224.

9. Summarized by then Col. John F. Stapp, “Human Tolerance to Deceleration,” *American Journal of Surgery*, vol, 93, 1957, reprinted in Haddon, et al., op. cit., pp. 554-562.

Harper's work and others', the House of Delegates of the Colorado State Medical Society called in 1953 for seat belts to be standard in all cars and for seats and doors to withstand collisions.¹⁰

By 1955 two of the most influential medical societies called for safer interior design of the automobile and, in one case, for national safety standards. On February 19, 1955, the Board of Regents of the American College of Surgeons approved a resolution that automobile manufacturers should:

stress occupant safety as a basic factor in automobile design, to include (1) doors which will not become displaced on impact [an issue raised by the first Cornell Automobile Crash Injury Research report in 1954]; (2) seats and cushions which will not become displaced on impact; (3) energy absorbing interiors; (4) adequate safety belts or other passenger stabilizing devices that will resist impacts of at least 20 G's¹¹

An editorial in the *Journal of the American Medical Association* issue of June 11, 1955, declared:

The principle cause of injury to automobile passengers appears to be uncontrolled motion of the occupants in relation to that of the automobile... Automobile manufacturers advertise at considerable cost the thrills and satisfaction of increased acceleration. The time has come to emphasize the more abiding satisfaction of controlled deceleration. This can be done by making the automobile safer, with the occupants properly protected to survive.¹²

In the November 5, 1955, issue of *JAMA*, Dr. C. Hunter Sheldon discussed in some detail injuries related to seat failures, interior projections, steering wheels, and lack of seat belts. Sheldon went on to say that no automobile manufacturer could unilaterally undertake an immediate and complete safety program. Therefore, he proposed a national group, appointed by the President of the United States, "to prevent public sale of vehicles that do not meet requirements of safety design."¹³ These thoughts were echoed in a resolution of the House of Delegates of the American Medical Association which:

strongly urge[d] the President of the United States to request legislation from Congress authorizing the appointment of a national body to approve and regulate automobile construction.¹⁴

The beginnings of a scientific theory of automobile safety can be seen in testimony by Dr. Campbell in 1959:

We have accepted the epidemiological concept of "host and agent," which recognizes the person in the car as the host and the car itself as the agent. In other words the people in the car cause the accidents, but it is the vehicle itself that hurts them. It is the material that the person in the car strikes, when the accident occurs, that causes the injury... We think

10. Eastman, op. cit., pp. 193-194.

11. Reprinted from *Bulletin*, American College of Surgeons, May-June, 1955, in *Traffic Safety*, Hearings Before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 84th Congress, Second Session, 1956, pp. 269-270.

12. *Ibid.*, pp. 38-39.

13. *Ibid.*, pp. 9-17.

14. Extract from the *Proceedings* of the House of Delegates of the American Medical Association, November 29-December 2, 1955, *ibid.*, p.49.

we can be most successful by preparing the automobile for the protection of the person, as accidents cannot ever be entirely prevented.¹⁵

In the late 1950s William Haddon, Jr., a public health physician then working in the New York State Health Department, began to try to apply research and analytical techniques of epidemiology to the study of automobile injuries. In his job he came into contact with Daniel P. Moynihan, then a young, politically active social scientist who was acting secretary to Governor Harriman.¹⁶ Dr. Haddon had studied the work of DeHaven, Stapp, and others. Working with a group of researchers gathered by the Association for the Aid of Crippled Children, he recognized the importance of the ideas suggested by James J. Gibson, a Cornell psychologist, who theorized that “injuries to a living organism can be produced only from some energy interchange.” Gibson elaborated the categories of such exchanges: mechanical, thermal, radiant, chemical or electrical. Haddon related this to the work on body tolerances that DeHaven and Stapp had started. He also adopted Gibson’s critique of the concept of “accident” as a random, and, therefore, uncontrollable event. The exchanges of energy that cause injuries could be diagnosed; calling them “accidental” hindered analysis and understanding. With his collaborator, James L. Goddard, another public health physician, Haddon may have coined the term, “second collision,” which later attracted the attention of lawmakers in 1966:

[A]lthough the vehicle itself *may* not contribute significantly to the initiation of most motor vehicle accidents, it *is* involved in 100 percent of accidents in which injuries and deaths occur. It is the *second*, and most important, collision, the collision of the occupant (or pedestrian) with the vehicle (or with some elements in the environment) that produces the injury or death. In the absence of this second collision, injury or death cannot occur.¹⁷

Haddon and Goddard also brought from their public health discipline the concept that passive protection was superior.

[O]ne point is particularly noteworthy. This is the distinction between “active” and “passive” means of reducing the severity of the “second accident” — the collision of the passenger or pedestrian with the vehicle. It has been the consistent experience of public health agencies concerned with the reduction of other causes of morbidity and mortality that measures which do not require the continued, active cooperation of the public are much more efficacious than those which do. Consequently a much higher value and, hence, priority should be placed on proven measures in the “passive” than in the “active” area. This also implies that the introduction of such measures as energy-absorbing steering wheels, for example, should not be made dependent upon public demand.¹⁸

15. *Motor Vehicle Safety*. Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 86th Congress, First Session, 1959, p.41. Campbell was testifying on behalf of both the American Medical Association and the American College of Surgeons.

16. Daniel P. Moynihan, “Keynote Address: Motor Vehicle Injuries,” *Bulletin of the New York Academy of Medicine*, vol.64, 1988, pp. 612-614.

17. James L. Goddard and William Haddon, Jr., “An Introduction to the Discussion of the Vehicle in Relation to Highway Safety,” *Passenger Car Design and Highway Safety*, Proceedings of a conference on Research, Published by the Association for the Aid of Crippled Children and Consumers Union of the U.S., Inc, 1962, P.5. Emphases in the original.

18. “An Analysis of Highway Safety Strategies,” loc. cit., pp.9-10.

Haddon's concepts were incorporated into a ground-breaking reader on research methodology in 1964 edited by Haddon, Edward A. Suchman, and David Klein that still had the word "accident" in its title, *Accident Research: Methods and Approaches* (1964). Although technical in nature, the book was sprinkled with editorial comments.

It cannot be argued that injurious motor vehicle crashes are such rare events that it is unreasonable to anticipate them by safely packaging the passenger... [V]ehicle designers should seek as their logical goal the production of vehicles that are "safe to have accidents in, if these accidents occur under the types of use for which these vehicles are designed."¹⁹

Moynihan reviewed *Accident Research* enthusiastically in *The Reporter*.²⁰ Either this or another review of the book was one of the things that led Senator Abraham Ribicoff of Connecticut to initiate hearings on the federal role in traffic safety the following year.²¹ Moynihan had also published a wide-ranging article in *The Reporter* in 1959, both summarizing the research literature to date and attacking the safety establishment and the auto manufacturers.²² Independently, a young attorney, Ralph Nader, had begun studying the automobile injury problem and writing on it both in legal journals and general interest magazines. When Moynihan became Assistant Secretary of Labor, he hired Nader as a consultant on highway safety issues in 1964 and 1965. Nader also assisted Ribicoff and his staff in planning their 1965 hearings. Toward the end of 1965 Nader published *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile*. Perhaps because the Ribicoff hearings had sensitized the media to this issue, Nader's book was widely reviewed and sold well.

Starting with an attack on the safety of General Motor's Corvair, Nader went on to discuss issues like automotive quality control and the practice of not publicizing safety recalls. After summarizing the work of DeHaven, Stapp, and the Cornell group in a chapter on the "second collision," Nader contrasted their accomplishments to the support of the status quo by automotive engineers and stylists, the safety establishment, and the auto insurance industry. He also reviewed recent political developments and ended with a prescription for reform:

The regulation of the automobile must go through three stages — the stage of public awareness, the stage of legislation, and the stage of continuing administration. Since

19. *Accident Research*, p.681. The quote within the quotation is from J.L. Goddard and W. Haddon, Jr., "An Introduction to the Discussion of the Vehicle in Relation to Highway Safety," in *Passenger Car Design and Highway Safety*, 1962, p. 6. Gibson's article, "The Contribution of Experimental Psychology to the Formulation of the Problem of Safety-A Brief for Basic Research," first appeared in *Behavioral Approaches to Accident Research*, New York, Association for the Aid of Crippled Children, 1961, pp.77-89 and was reprinted in *Accident Research*, pp. 296-303. For the development of Gibson's and Haddon's theory see Michael Guarnieri, "Landmarks in the History of Safety," *Journal of Safety Research*, vol.23, 1992, pp. 151-158.

20. "A Plague of Our Own," *The Reporter*, December 31, 1964, reprinted in *Federal Role in Traffic Safety*. Hearings before the Subcommittee on Executive Reorganization of the Committee on Government Operations, Eighty Ninth Congress, First Session, 1965, part 1, pp.278-280.

21. Eastman, op.cit., pp.243-244.

22. "Epidemic on the Highways," *The Reporter*, April 30, 1959, reprinted in *Federal Role in Traffic Safety*, part 1, pp. 313-320.

automobile safety ideally should keep pace with advancing technological capabilities, administrators have to do more than hold the line; they have to advance it...

Such vigilance can be maintained simply by understanding a few facts about automobile safety. First, safety measures that do not require people's voluntary and continued cooperation are more effective than those that do. Second, the sequence of events that leads to a crash injury can be interrupted by effective measures even before there is a complete understanding of the causal chain. Apply these two cardinal principles of safety policy, proven in the control of epidemics and machine hazards, to highway safety and the focus shifts to the engineering of the automobile. Furthermore, our society knows a good deal more about building safer machines than it does about getting people to behave safely in an almost infinite variety of driving situations that overburden the driver's perceptual and motor capacities. In the 20-40 million crashes that occur each year, only a crashworthy vehicle can minimize the effects of a second collision. Vehicle deficiencies are easier to analyze and to remedy than human inadequacies.²³

The idea of concentrating on automotive designs that provide automatic protection and of advancing (later more bluntly phrased as "forcing") the technology with which to do this became central to the development of airbag technology.

The Automobile Industry Reacts to New Safety Ideas

The automobile industry could not completely ignore the new ideas in safety research. DeHaven had established contact with a General Motors safety engineer early in 1952. Later that year he presented his research and conclusions about passenger packaging to the Society of Automotive Engineers. The three major manufacturers cooperated with the Cornell Crash Injury Research Project and the Indiana State Police in designing crash data reporting procedures that were the basis of much of the subsequent Automobile Crash Injury Research (ACIR) work. When the first ACIR report in 1954 documented the association between auto crash deaths and ejections through open doors, manufacturers began to install safety door latches. The Automobile Manufacturers Association and General Motors reacted cautiously to research on the effectiveness of seat belts in planes and to medical recommendations for their installation in cars. Early in 1955 Ford and Chrysler said that seat belts would be options in their new cars. American Motors and finally General Motors joined them later that year. By 1955 Ford and Chrysler joined the Public Health Service and the Army in financial support of ACIR; General Motors came on board in 1957.²⁴

During this period Ford was the manufacturer most interested in safety. In 1953 its safety specialists began exploring energy-absorbing steering columns and safety belts and the redesign of instrument panels to eliminate protrusions and increase shock absorption. Management decided to install some new safety equipment in 1956 Fords and to make these the focus of that year's marketing campaign.

23. Ralph Nader, *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile*, New York: Grossman Publishers, 1965, pp. 343-345.

24. Eastman, op.cit., pp. 221-228;

Instead of an energy-absorbing steering column, which engineers had not yet mastered, there was a deep-dish steering column, some improvements in brakes and seating, and safety door latches. Padded visors and dashboards, as well as seat belts, were optional. Ford enlisted the medical pioneers of the safety movement — Straith, Woodward, DeHaven, and Stapp — and many others to attend a Ford Safety Forum kicking off the campaign. Cornell and the American College of Surgeons permitted their materials to be quoted in television advertising. A survey by Ford showed that 60 percent of the public had heard and understood the safety message, and buyer demand for seat belts far outstripped Ford's plans.

Nevertheless, Chevrolet sales far exceeded Ford's in the early part of the model year, and the safety campaign was quietly replaced by other themes. The safety changes remained in place, but many in the industry concluded that "safety does not sell." Some Ford executives felt, however, that their sales would have been even lower without the safety promotion.²⁵

There was one effort from outside the automobile industry to design a safer car during the 1950s. Between 1951 and 1961, Frank J. Crandell, vice president and chief engineer of the Liberty Mutual Insurance Company, spearheaded a project, financed by his company, to design vehicles in which occupants could survive a crash of 40-50 mph. Using standard production cars as starting points, two prototypes — Survival Cars I and II — were actually produced to display the requisite safety features. They were either ignored or derided by the manufacturers, and automobile insurers left the field of auto safety design for the next decade.²⁶

Political Rumblings

In spite of the growing body of medical work on auto crash injuries and car design by the mid-1950s, there was no organized popular movement for political action on the subject. But one congressman, Kenneth A. Roberts, a Democrat from Alabama, did manage to get House approval in 1956 for hearings on traffic safety. Although Roberts had no clear political agenda, the leadoff witness, Senator Paul Douglas of Illinois, proposed minimum safety requirements within the auto industry. He mentioned three possible approaches — voluntary action by the industry under an antitrust immunity; promulgation of industry standards by a public body, like Cornell; and national, legally enforceable standards. While the hearings republished much of the medical commentary cited earlier and featured some of the more articulate physicians, much time was devoted to visiting auto manufacturers and hearing testimony about their dedication to safety.²⁷ Although little noticed in the press, the hearings served as a vehicle for

25. Arjay Miller, President, Ford Motor Company, *Federal Role in Traffic Safety*, Hearings Before the Subcommittee on Executive Reorganization of the Committee on Government Operations, United States Senate, 89th Congress, First Session, July 13, 14, 15 and 21, 1965, Hearings Before the Subcommittee on Executive Reorganization of the Committee on Government Operations, United States Senate, 89th Congress, First Session, part 2, pp. 893-896; Eastman, *op.cit.*, pp.228-232.

26. Eastman, *op.cit.*, pp.192-193; Nader, *op. cit.*, pp.254-255. See, also, Crandell's testimony before the House Hearings on *Motor Vehicle Safety*, 1959.

27. *Traffic Safety*, Hearings before a Subcommittee of the Interstate and Foreign Commerce Committee, House of Representatives, 1956.

gathering information on traffic safety research. In 1958 Roberts introduced a bill to bar manufacturers from shipping automobiles not equipped with “reasonable safety devices.”²⁸ In 1959, hearings were held on a bill ordering the General Service Administration to specify safety features that were to be required on federally purchased cars. Both the industry and the Eisenhower Administration said this was unnecessary, but the House passed the bill in that session and in the next two. Finally, in 1964, Senator Magnuson of Washington agreed to report the bill out of the Senate Commerce Committee in exchange for Roberts’ help on a bill providing medical care for commercial fishermen. President Johnson signed the bill in August, 1964.²⁹ This success did not prevent Roberts’ defeat by a Goldwater Republican in that year’s election.

Congressman Roberts’ 1958 hearings on requiring safety belts in cars had generated little support. But in 1961, in response to a New York State law sponsored by Senator Edward Speno, the major auto manufacturers announced that lap belt anchorages — but not the belts themselves — would be standard equipment in all 1962 models. This was the final nudge; soon after, all the major manufacturers announced that front seat lap belts would be standard after January 1, 1964.³⁰

The early 1960s brought signs of growing interest in the role of automobile design in highway safety. In June 1960 the Governors’ Conference called for a special commission to encourage use of auto safety devices and design features. On March 15, 1962, President Kennedy included the following passage in his message to Congress on protecting consumer interests:

In addition, I am requesting the Departments of Commerce and of Health Education and Welfare to review, with representatives of the automobile industry, those changes in automobile design and equipment which will help reduce the unconscionable toll of human life on the highways and the pollution of the air we breathe. Additional legislation does not appear required at this time in view of the automobile industry’s action to incorporate in the new models design changes which will reduce air pollution.³¹

By October 1964 the issue was sufficiently prominent for *The New York Times* to summarize the views of Senator Kenneth Keating and Robert Kennedy, New York State’s candidates for the U.S. Senate, on whether federal or state legislation should require manufacturers to build crash-proof cars. Neither candidate clearly committed himself on this issue.³²

Newly elected Senator Abraham Ribicoff had gained national attention with his campaign against speeding when he was governor of Connecticut. In the spring of 1965 he made the broader topic of traffic safety the focus of his first legislative efforts on the national scene. As chairman of a subcommittee on executive reorganization of the Committee on Government Operations of the U.S. Senate, he started a

28. *New York Times*, February 20, 1958.

29. Nader, *op.cit.*, pp.295-301; Eastman, *op.cit.*, pp. 241-243.

30. *New York Times*, October 1, and 3, 1961; March 18, 1962; April 1, 1963; August 22, 1963.

31. *New York Times*, March 16, 1962, P.16. For the Governors’ Conference, see the June 30, 1960, issue.

32. *New York Times*, October 12, 1964.

wide-ranging set of hearings on the “Federal Role in Traffic Safety.” Ralph Nader assisted the subcommittee staff in preparing the hearings, which began with three days of testimony by government officials. In April the United Automobile Workers offered to back the automobile industry’s drive to reduce the federal excise tax on cars if the industry pledged to pass on some of the benefits by adopting safety devices. The industry refused. However, Senator Ribicoff incorporated the idea in an amendment to the tax bill. The amendment passed the Senate but failed in the House. The traffic safety hearings continued in July, with testimony by leading executives of General Motors, Chrysler, and Ford. National television showed both the chairman and president of General Motors uncomfortably parrying Senator Robert Kennedy’s questions about how much money their company had spent on safety research in 1964 compared with profits. The first response was \$1.2 million versus \$1.7 billion, but later GM insisted that the former figure should be \$193 million.³³

The Broader Environment and Climate of Opinion

The period from the beginning of the Kennedy Administration through 1966, the mid-point of the Johnson Administration, was one of fairly continuous and widespread prosperity in the United States. The gross national product grew fairly steadily, and the consumer price index showed annual increases of under two percentage points until 1966, when it reached 2.9 percent. Unemployment was low. Auto manufacturer sales and profits were also strong.³⁴ Motor vehicle deaths — the only really firm measure of highway injuries then and now — went up dramatically, from 38,000 each year in 1960 and 1961 to 53,000 in 1966.³⁵ It was easy to cite both actual death figures as well as the projections of the National Safety Council to compare the death toll on the highways with those of the wars in Korea or Vietnam.

There is some evidence that the increased discussion of highway and vehicle safety was influencing public awareness. In April, 1965, the Gallup Poll asked a national sample:

Do you think there should or should not be a law requiring automobiles now being built to be equipped with safety belts?

Fifty-five percent said “should,” 15 percent said “should not,” and 29 percent had no opinion. In April, 1966, a broader question was asked:

There is talk about setting higher safety standards for automobiles which will be made in the future. Should these standards be set by the Federal Government, by the automobile industry, or both?

33. Elizabeth Brenner Drew, “The Politics of Auto Safety,” *The Atlantic Monthly*, October, 1966, pp. 95-97; *Federal Role in Traffic Safety*, Hearings Before the Subcommittee on Executive Reorganization of the Committee on Government Operations, United States Senate, 89th Congress, First Session, parts 1 and 2, March and July, 1965; *New York Times*, April 14, 23, and 24, 1965, for the UAW offer.

34. *Congress and the Nation*, vol II, 1965-1968, Congressional Quarterly Service: Washington, D.C., 1969, p. 121.

35. U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, Government Printing Office: Washington, D.C., 1975, vol.1, p. 58.

Answers

By government	12 percent
By automobile industry	29 percent
Both	55 percent
No opinion	4 percent

Note the very significant drop in the “no opinion response” between the narrow question about safety belts in 1965 and the broader question about safety standards. But note also that the question did not offer the opportunity to defend the status quo, i.e., to oppose any safety standards or to suggest that they be set by the states.³⁶

The Kennedy Administration started with a commitment to protect consumer interests. But legislative and regulatory attention was concentrated on issues related to food, drugs, and pollution. As previously noted, the brief reference to highway safety in the President’s 1962 message on consumer protection had no proposals attached to it. After President Kennedy’s assassination, the Johnson Administration paid more attention to consumer issues. President Johnson appointed Esther Peterson, who was Assistant Secretary of Labor, to the additional post of special assistant to the President for consumer affairs in January, 1964, and later that year he sent a special consumer message to Congress.³⁷ Highway safety was not a prominent issue in these developments, and there is no evidence that it was being pressed by any broad-based consumer movement. But the Administration did not ignore the mounting pressure on the subject. On March 2, 1965, the President sent a letter to Secretary of Commerce John T. Connor, directing that the Interdepartmental Highway Safety Board, which the Secretary chaired, complete by March 15, 1965, a report on “the proper role of the Federal Government in the field of highway safety... the report should propose a concrete action program.”³⁸ Meanwhile the General Services Administration was working on implementing the Roberts Bill by defining 17 safety devices that would have to be in federally-purchased 1967 model year cars. The rule was issued on June 30, 1965. During the July hearings of his subcommittee, Senator Ribicoff as well as Senator Robert Kennedy pressured the automobile manufacturers to make these devices standard — or at least available. The media coverage given to these hearings, and the widespread attention to Ralph Nader’s *Unsafe At Any Speed*, may have encouraged President Johnson to send Congress, on March 2, 1966, a “Message on Transportation” in which he proposed both a new Department of Transportation and passage of the Traffic Safety Act of 1966.³⁹

36. George H. Gallup, *The Gallup Poll: Public Opinion, 1935-1971*, New York: Random House, 1972, vol.3, pp.1948, 2006.

37. *Congress and the Nation*, vol. II, p.780; New York Times, January 4, 1964.

38. *Federal Role in Traffic Safety*, part 1, p.42.

39. *Traffic Safety*, Hearings Before the Committee on Commerce, United States Senate, 89th Congress, Second Session, 1966, pp. 2-12.

Federal Auto Safety Standards Are Mandated

President Johnson's message called for a law that would allow the Secretary of Commerce — or of Transportation if that office was established — to mandate motor vehicle safety standards. But that authority could be exercised only if, after two years, the Secretary found that existing public or private standards were inadequate. Even before hearings on the bill, Senator Magnuson, the chairman of the committee with jurisdiction, and Senator Ribicoff announced that they would support an amendment requiring interim standards based on the General Service Administration's, to be followed soon after by a set of permanent safety standards. The automobile manufacturers submitted a counterproposal that they be allowed to work on voluntary standards, under an antitrust exemption and in coordination with a strengthened Vehicle Equipment Safety Compact. (The VESC had been authorized in 1958, but did not start to work until 1965. The manufacturers implicitly conceded that the need for uniformity in mass production made varying state standards undesirable.)

The effectiveness of the manufacturers' opposition was undermined by the sensational news that General Motors had hired private detectives to investigate Ralph Nader. They were trying to find evidence that Nader had a financial stake in the numerous Corvair lawsuits, but they also probed his personal life, politics, and attitude toward Jews. President Roche of General Motors admitted the facts although he said he had not personally authorized the investigation. The whole matter was aired in Ribicoff's subcommittee, where Roche apologized to Nader. Later in April, the Automobile Manufacturers Association dropped its opposition to the Roberts bill. Lloyd Cutler, an experienced Washington attorney with good Democratic connections, became the chief negotiator for the auto manufacturers, while Nader was the main advisor to the preregulation forces. In the end the only contentious issue that came to a floor vote was that of criminal penalties for disobeying federal standards. It was defeated in votes before both houses. The bill itself was unanimously passed by both the Senate and the House and signed by President Johnson on September 9, 1966.⁴⁰

The National Traffic and Motor Vehicle Safety Act of 1966:

- set up an accident and injury research and test facility, and gave the Secretary of Commerce (later of Transportation) authority to perform research and testing on motor vehicle and motor vehicle equipment safety,
- established a National Driver Register of license denials or terminations,
- required manufacturers to notify buyers and dealers of safety-related defects,
- required the Secretary to issue tire safety standards and labeling requirements
- and, most importantly for this study, required the Secretary to issue motor vehicle safety standards for new vehicles and to enforce these standards; state standards that were inconsistent were preempted.⁴¹

40. Drew, *op.cit.*, pp.99-101.

41. Public Law 89-563, printed in *National Traffic and Motor Vehicle Safety Act of 1966: Legislative History*, vol. 1, pp.3-15.

The stated purpose of the law was “to reduce traffic accidents and deaths and injuries to persons resulting from traffic accidents.” The Administration bill had included the reduction of property damage among its objectives, but that was apparently one of the items the manufacturers managed to eliminate. The law required that safety standards be standards for performance of the vehicle or its equipment. These standards were to meet the need for safety, be practicable, and provide objective criteria. In prescribing standards, the Secretary had to consider not only these requirements, but also available safety data, research, testing and evaluation, and whether the standards were appropriate for the particular type of vehicle or equipment to which they would apply. Although the powers established by the law were granted to a presidential appointee and a member of his cabinet, it gave the president no explicit right to review the standards that might be set.

The need to set auto safety standards was virtually taken for granted in the debate on the law. There was little discussion about the failure of the market to provide for safety; instead the emphasis was on the failure of the industry to do so. The most explicit discussion about markets was in the Senate committee report on the bill:

[T]he committee met with disturbing evidence of the automobile industry’s chronic subordination of safe design to promotional styling, and of an overriding stress on power, acceleration, speed, and “ride” to the relative neglect of safe performance or collision protection. The committee cannot judge the truth of the conviction that “safety doesn’t sell,” but it is a conviction widely held in industry which has plainly resulted in the inadequate allocation of resources to safety engineering.⁴²

The Senate Report noted that promoting safety through voluntary standards had largely failed.

The individual in the marketplace, upon whom the free market economy normally relies to choose the superior among competing products, is incapable of evaluating the comparative safety of competing model cars... Both industry and Government share the responsibility for supplying adequate consumer information of (sic!) automobile safety.⁴³

The legislative history enlarges a bit on two terms that were to become pivotal in the history of airbag regulations: “practicable” and “standards for performance.” The House Report on the bill said that:

practicable... would require consideration of all relevant factors, including technological ability to achieve the goal of a particular standard as well as consideration of economic factors.⁴⁴

The Senate Report stressed safety before coming to practicability:

The committee intends that safety shall be the overriding consideration in the issuance of standards under this bill. The committee recognizes, as the Commerce Department letter indicates, that the Secretary will necessarily consider reasonableness of cost, feasibility and adequate lead time.⁴⁵

42. Senate, 89th Congress, Second Session, Report No. 1301, as reprinted in *Legislative History*, vol. 1, p. 272.

43. *Ibid.*, p. 274

44. House of Representatives, 89th Congress, Second Session, Report No. 1776, as reprinted in *Legislative History*, vol. 1, p. 108.

45. United States Senate, 89th Congress Second Session, Senate Report 1302s, reprinted *ibid.*, p.276.

Performance standards were something on which both the automobile manufacturers and their critics seemed to be able to agree fairly easily. As early as 1959 a spokesman for the manufacturers, William Sherman, stressed the need for standards set with “specifications which spell out the desired results, rather than the detailed means by which the results are to be obtained.”⁴⁶ Soon after they accepted the principle of federal safety standards, the manufacturers were far less clear about their criteria. They used terms like “clearly warranted in the light of all relevant factors” and embodying “feasible devices and techniques that are available.” But William Stieglitz, an independent safety engineer who had worked on the feasibility study for the New York State safe car, returned to the AMA’s earlier formulation:

Properly written safety standards should not and will not dictate design. The purpose of minimum standards is to define safety objectives; the means of achieving the objectives can, and should be left to the designer...⁴⁷

The manufacturers apparently returned to this concept since there is no hint of disagreement on it in the legislative history. The Senate Report made this sound like a victory for the manufacturers and free enterprise:

Unlike the General Service Administration’s procurement standards, which are primarily design standards, both the interim standards and the new and revised standards are expected to be performance standards specifying the required minimum safe performance of vehicle but not the manner in which the manufacturer is to achieve the specified performance. Manufacturers and parts suppliers will thus be free to compete in developing and selecting devices and structures that can meet or surpass the performance standard.⁴⁸

The committee reports of both Houses referred to the “second collision” as the cause of injury or death as distinct from the first collision, which was the crash itself. The House Report noted that “Considerable improvement can be made by the use of safety belts and other restraining devices.” The Senate Report was even broader.⁴⁹ There was an evident unwillingness to enumerate too many technological possibilities. However, nowhere in the legislative history is there any clear encouragement of technology forcing or of the notion that safety devices that are automatic or passive should be preferred. These ideas were current among the proponents of the legislation, but they were not made explicit in it.

Nor did the legislation provide for any direct power to require certain driver or occupant behavior although one of the first candidates for a safety standard — providing seat belts — would be effective only if they were used. Instead, a separate law, the Highway Safety Act of 1966, passed in tandem with

46. Testimony of William Sherman, Secretary, Engineering Advisory Committee, Automobile Manufacturers Association, *Motor Vehicle Traffic Safety*, Hearings before a subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 86th Congress, First Session, 1959, p.51.

47. For The AMA position see the letter of John S. Bugas, Secretary, Safety Administrative Committee to Congressman Staggers, *Traffic Safety*, Hearings before the Committee on Interstate and Foreign Commerce, House of Representatives, 89th Congress, Second Session, 1966, part 1, pp.338-339; for Stieglitz’ testimony, *ibid.*, part 2, p. 904.

48. Senate Report 1301s, *Legislative History*, vol. 1, p.276.

the National Traffic and Motor Vehicle Safety Act of 1966, gave the Secretary the power to establish — after consulting with the states — uniform standards for State highway safety programs, aiming, among other things, to improve driver performance. States that did not implement an approved program could lose both funds appropriated under the new law as well as 10 percent of federal highway aid after the beginning of 1969. The Secretary was authorized to carry out both the Highway Safety and the Motor Vehicle Acts through the same administrator in the National Highway Safety Bureau.⁵⁰ But while the motor vehicle standards were to be administered directly by him, the standards relating to highway performance were left to the states. In this way, traditional state functions relating to the laws of the road were maintained.⁵¹

The Origins of Airbags

The airbag was to become the prime example in the history of auto safety standards of a safety device that was both automatic and needed forced development. Although the technology had not been perfected by 1966, safety experts made both the House and Senate committees aware of it. Ralph Nader sent the Ribicoff Committee a copy of the earliest airbag patent, by John W. Hetrick, filed on August 5, 1952, and granted on August 18, 1953.

This invention relates to safety devices for automotive vehicles, and more particularly, has reference to an inflatable cushion assembly adapted to be mounted in the passenger compartment of a vehicle, and arranged to be inflated responsive to sudden slowing of the forward motion of the vehicle.

It is well appreciated that many persons suffer death or serious injury when hurled against an unyielding structural portion of an automotive vehicle, when the vehicle is involved in a collision or is braked suddenly and heavily to avoid a collision.

My main object, in devising an inflatable cushion assembly for automotive vehicles, is to provide a means whereby death or injury can be prevented, when a situation such as that described above occurs.⁵²

One of the early airbag experimenters, Dr. Carl Clark, testified before the House Committee's hearings on the 1966 bill. He had been working for two years under contract with NASA "on the possible use of airbag restraint systems in space craft and in aircraft," with some afterthoughts on possible uses in automobiles and high speed trains. He showed the Committee film demonstrating a dummy restrained by an airbag in a crash, but noted that techniques of rapid inflation and deflation still had to be developed.

49. *Ibid.*, vol. 1, pp.103, 273.

50. Public Law 89-564, 89th Congress.

51. Both Houses of Congress saw the Highway Safety Act as an expression of the need for Federal leadership, but in setting state safety programs the House Report said explicitly, "The actual working programs must be in the hands of the states." 89th Congress, 2d Session, House of Representatives, *Highway Safety Act of 1966*, Report No. 1700, July 15, 1966, pp. 6,7; also in the same session, for the same act, Senate Report No. 1302, p. 6.

52. *Federal Role in Traffic Safety*, part 3, p.1321.

Clark had first thought that his airbag idea was original, but in his testimony he acknowledged earlier work by Jordanoff, Hetrick, Benrud, Bertrand, and Lipkin⁵³

As on many auto safety subjects, the most articulate appreciation of the potential of airbags was presented by Ralph Nader in *Unsafe At Any Speed*.

The seat belt should have been introduced in the twenties and rendered obsolete by the early fifties, for it is only the first step toward a more rational passenger restraint system which modern technology could develop and perfect for mass production. Such a system ideally would not rely on the active participation of the occupant. It would eliminate the “acceleration overshoot” characteristic of conventional seat belts, which do not prevent the passenger from striking his head or his upper body or both on the corner post, instrument panel, windshield, or header strip. It would eliminate the “bottoming effect” or the passenger’s sliding under, and the backlash or rebound effects.

Protection like this could be achieved by a kind of inflatable airbag restraint which would be actuated to envelop a passenger before a crash. Such a system has been recently experimented with for airplane protection. Both General Motors and Ford did work on a system like this about 1958 but dropped the inquiry and now refuse even to communicate with outside scientists and engineers interested in this approach to injury prevention.⁵⁴

Note Nader’s emphasis on automatic protection, the superiority of cushioned restraint over belted restraint, and his bitter assessment of the manufacturers’ behavior. These were to be major themes in the battle over airbags.

Summary

The movement to set federal safety standards for motor vehicles was the result of concepts about safety that emerged from medical and engineering research. A distinction was drawn between random crashes on the road and the injuries caused by the predictable collisions within vehicles after the crashes. Highway safety legislation was not promoted in any significant way by a nascent consumer movement dedicated to protecting the automobile buyer. Instead, the evidence is that Ralph Nader, the prototypical consumer advocate, came to his generalized concern for the consumer from his work on auto safety and car design.

The research that focused on the vehicle rather than on driver behavior coincided with the emerging consumer and environmental reform movement that stressed the need to regulate the businesses associated with the problems. This change in the climate of opinion made it hard for the auto manufacturers to defend themselves against the charge of producing unsafe vehicles by arguing that safety problems were overwhelmingly caused by the driver (or the pedestrian). Nor did they use the excuse that safety did not sell, although that was often imputed as the cause of their apparent lack of interest in the subject. So the debate on federal motor vehicle safety regulation targeted the

53. *Traffic Safety*, Hearings, 1966, part 1, pp.686-692.

54. Nader, *op. cit.*, p.124.

manufacturers. Driver behavior was not entirely ignored. The federal agency setting motor vehicle standards was also instructed to set a uniform standard for state highway safety programs, including those aimed at improving driver performance. States that did not enforce the standards could lose 10 percent of their federal highway funds. But the new federal program put much more weight on motor vehicle standards than on driver performance.

High figures for road fatalities combined with high auto sales made it difficult for the automobile manufacturers to resist the call for federal motor vehicle safety standards. They might have done so if they had been more aggressive in voluntarily incorporating the lessons of the new auto injury analysis in their designs. But their record was mixed at best. The growing tendency for states to enact safety standards — represented by safety belt legislation in the early 1960s — made federal standards seem an acceptable alternative. The agreement between manufacturers and the safety advocates that became law required the standards to be defined in terms of objective performance that was practicable and appropriate to the vehicle. In other words, the government would set goals that were achievable and industry would determine the methods of achieving them. So room was left for some competition in the design to meet safety standards. As we shall see, goals and methods, performance standards and technology, are not as clearly separable as the law assumed. And sometimes one technology is clearly superior to others in injury-reducing potential, but manufacturers may not believe it or find it in their interest to believe it. Passive restraints were the performance standard and airbags were the technology that tested this law to its fullest.

SAFETY SELLS: Market Forces and Regulation in the Development of Airbags

By Martin Albaum

CHAPTER 2: Getting to the First Automatic Occupant Crash Protection Standard: 1966-1970

The legislative history of the 1966 National Traffic and Motor Vehicle Safety Act never explicitly mentioned passive restraints. Still, in the first four years after its enactment, passive restraints — usually identified in the media with airbags — became the most controversial issue in the administration of that law.

It was a time of large scale unrest in the United States, specifically over the Vietnam War and race relations. A counterculture arose among college-age people and even teenagers that engendered a widespread distrust of established institutions, especially business. Consumerism, which had scored its most notable victory with the surprising passage of the 1966 law, was one of the milder, but possibly most influential and enduring, forms of that distrust. From now on, Ralph Nader and his allies and imitators would produce a steady flow of inquiries and charges about the safety and quality of American products and services. The automobile would never be far from the center of these concerns.

The passage of the first federal law specifically regulating its product showed that the American automobile industry was not politically all powerful. But its financial strength still seemed unshakable during these years. New car sales showed a long-term rise, with many short-term variations. Sales in 1966 were only slightly below the all-time high of 1965. In 1967 they fell 5.5 percent, but in 1968 they rebounded 15.8 percent and were essentially unchanged in 1969. A UAW strike against General Motors in 1970 contributed to a 12.3 percent decline in 1970 sales, while 1971 saw a 22 percent increase. The flaw in this apparently strong performance was the fact that domestic manufacturers' sales during this period never went above their 1965 high while import sales nearly tripled.¹ Nevertheless, the Big Three were still very big, and their defenses against regulation did not include the need for financial relief. But toward the end of this period the automobile insurance industry did begin to see federal auto safety regulation as one way of stemming the inflation in insurance premiums. Insurers started to move away from their traditional reluctance to challenge the automobile establishment.

In the middle of this four year-period, Lyndon Johnson felt obliged not to run again for the presidency, mainly because of the split in his own party caused by the Vietnam War. Spending on the war was also causing inflationary pressures that became obvious in 1968. Richard Nixon defeated Hubert Humphrey, but the Republican did not win by a landslide vote. Although the new administration had a more pro-business vocabulary than its predecessor, it did not begin with sweeping plans for deregulation.

1. U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1990*, U.S. Government Printing Office, Washington, D.C., 1990, p.604. Cf. *The New York Times*, January 5, 1966, p.39; January 9, 1967, p.68; January 4, 1968, p.47; January 4, 1969, p. 39; January 7, 1970, p.55.

In fact, one of the pioneers of automobile safety legislation, Daniel P. Moynihan, joined Nixon's White House staff and played an occasional role in encouraging the development of passive restraints.

The Original Occupant Crash Protection Standard: Seat Belts

On October 15, 1966, President Johnson nominated Dr. William Haddon, Jr., to be the first director of the agency formed to administer the National Traffic and Motor Vehicle Safety Act. The agency was provisionally in the Department of Commerce, but when the Department of Transportation was officially formed in 1967, it was transferred to that department and became the National Highway Safety Bureau. During this period it was under the Federal Highway Administration. Early in 1970, Secretary of Transportation Volpe made the director of the bureau report directly to him, and later in the year Congress changed its name to the National Highway Traffic Safety Administration. To avoid confusion, that name or its initials, NHTSA, will be used throughout this study, except in references.

Haddon was confirmed without controversy. His most demanding and immediate task was to meet the requirement of the 1966 law that initial "interim" Federal Motor Vehicle Safety Standards (FMVSS) be issued by January 31, 1967, based on existing — mainly Government Services Administration — standards for federal vehicles. To do this with sufficient time for public comments, preliminary standards had to be published by November 30, 1966. Haddon met these deadlines, but there were loud complaints from Ralph Nader and his colleagues that the standards merely reflected what the manufacturers wanted. One of the early supporters of the idea of auto safety standards, William Stieglitz, protested the proposals by resigning as a NHTSA consultant. The domestic automobile manufacturers, on the other hand, complained that the standards were too tough on them compared with foreign companies. Haddon answered Stieglitz and Nader by noting that the law required him to issue "reasonable and practicable" standards, and that he had gone as far as existing information allowed.²

There was not much public discussion of another issue raised by the new standards, the conflict between the requirements that they be based on existing standards and that they be performance rather than design standards. Haddon tried hard to adapt existing standards to performance standards but was not always successful.³ For example, one of the new standards was Federal Motor Vehicle Safety Standard (FMVSS) No. 208, Seat Belt Installations. Lap belts had been included in the front seats of passenger cars since the beginning of 1964. The new standard required lap and upper torso restraints (called "shoulder harnesses" in the press) in the front outboard seats and lap belts in all other positions. This definitely was a design standard.

2. *New York Times*, February 1, 1967, p. 1, February 2, 1967, p. 32, and February 3, 1967, p. 1. See also *Motor Vehicle Safety Standards*, Hearings Before the Committee on Commerce, United States Senate, 90th Congress, First Session, March 20 and 21, 1967.

3. U.S. Department of Commerce, National Traffic Safety Agency, *Report on the Development of the Initial Federal Motor Vehicle Safety Standards Issued January 31, 1967*. Washington, D.C., March 17, 1967, p. iii.

There are no precise legal or other criteria for deciding when a performance standard begins to have design overtones. For example, a requirement for the installation of seat belts forces the use of one *design* solution to the general problem of occupant restraint. In this case, there has not yet been enough medical and engineering research to enable anyone to write an occupant restraint standard in more general, performance-based terms, indicating the forces to be applied by any means to restrain the body, avoiding mention of belts or other devices for achieving this. As a result, in the seat belt standard and others, the Agency incorporated some design overtones in the standards to make certain that the desired performance would be achieved.⁴

Some manufacturers, like Chrysler, complained that they could not gear up shoulder belt production before the beginning of the 1968 model year. But the shoulder belt requirement was seriously challenged in August 1967 when General Motors brought to NHTSA crash test films of unbelted rear-seat occupants who were shown being hurled forward in high-speed crashes to hit the heads of front-seat occupants restrained by shoulder belts. All major American manufacturers then announced that they would not install shoulder harnesses in their early 1968 model year cars, which would be produced before the standard actually came into force. Haddon appealed for performance data on shoulder belts. Volvo had been installing shoulder belts since 1959 and produced a study of 28,000 Swedish crashes. There had been no deaths in crashes under 60 mph when the belts were used, but there were deaths at speeds as low as 12 mph among unbelted occupants.⁵

The Volvo study estimated that its three-point belts had been used by only about 25 percent of drivers and 30 percent of front-seat passengers, and that 20-year-old drivers used the belts in 16 percent of cases while 45 year-olds were belted in 30 percent of cases.⁶ This level of three-point belt use in Sweden was higher than estimates of American lap-belt use, estimated at about 15-20 percent.⁷ NHTSA summarized the data by saying that a third of the motoring population claimed to wear lap belts when available, but visual checks reduced this to a fifth.⁸

Belts had to be actively fastened, and many car users found them cumbersome. In the Senate hearings on the initial safety standards, Senator Norris Cotton asked whether adding shoulder belts would

4. *Ibid.*, pp. 6-7. See also p. 83.

5. N.I. Bohlin, Passenger Car Engineering Department, AB Volvo, "A Statistical Analysis of 28,000 Accident Cases with Emphasis on Occupant Restraint Value," *Proceedings*, 11th Stapp Car Crash Conference, October 1967, Society of Automotive Engineers, New York, 1967, pp.455-478. For background, see comments by Haddon, *ibid.*, p. 3, and by Joan Claybrook, "Motor Vehicle Occupant Restraint Policy," National Academy of Sciences, *Conference on Risk Assessment*, June 1, 1981, pp.7-8. Also, see *New York Times*, August 22, 1967, p.41, August 23, 1967, p.51, August 24, 1967, p.28, and October 10, 1967, p.20.

6. *Ibid.* pp.475, 477.

7. Richard G. Snyder, Joseph Young, Clyde C. Snow, "Experimental Impact Protection with Advanced Automotive Restraint Systems: Preliminary Primate Tests with Airbag and Inertial Reel/Inverted-Y Yoke Torso Harness," *Proceedings*, Eleventh Stapp Conference, Society of Automotive Engineers, N.Y., 1968, p. 408.

8. National Highway Safety Bureau, "Crash Injury Reduction," May 2, 1969, a document printed in *Motor Vehicle Safety-1969*, Hearings Before the Committee on Commerce, United States Senate, 91st Congress, First Session, April 14 and 15, 1969, p.257.

not compound this problem. Haddon's answer was that they were a proven safety device, which could not in good conscience be kept out of the standard. He said he hoped that experience would lead to increased usage, adding:

We would far prefer to adopt only standards that pose no [usage] problem to anyone and that do not require any active cooperation on the part of the user. This is the approach, after all, which has been used in public health going back 50 and 100 years with such programs as pasteurization of milk, chlorination of water supplies, and so forth.... Unfortunately the state of the art, or rather the state of the technology in the highway safety field, is not quite that far along with respect to so-called restraint systems.⁹

The Airbag Issue Emerges

The airbag officially came to the attention of NHTSA in the spring or early summer of 1968, when Eaton, Yale, and Towne, a major supplier to the auto industry, gave a demonstration to Dr. Robert Brenner, deputy director of NHTSA. By then there had been at least 16 years of design and development of the concept. After the 1952 patent given to J.W. Hetrick, a 1953 patent was filed by R.W. Hodges for an airbag stored in the instrument panel to protect front-seat occupants. A 1955 patent was filed by H.A. Bertrand for inflatable bags to restrain everyone in the car, and that same year P.M. Maxwell patented the concept of an airbag trigger. By 1957 Ford was working on the concept, but apparently got no further than identifying the major problems, namely a trigger and gas that could inflate in the 40 milliseconds between the instant of the crash and the occupant's collision with the interior of the vehicle. In 1960 General Motors also did some work on the subject.

Serious developmental work began about 1964. Dr. Carl Clark, then at Martin Aircraft, presented a paper, along with two collaborators, to the 8th Stapp Car Crash Conference, reviewing work he had begun under contract to NASA on pre-inflated airbags in commercial aircraft. The paper ended with a suggestion for a similar device in automobiles that might be inflated by the driver, by abrupt braking, or by bumper contact.¹⁰ Eaton began working on the concept about the same time, testing a pre-inflated system in April, 1966. A month earlier Ford had become convinced that there was enough progress on the transfer of high pressure gas to justify a joint project with Eaton. Together they demonstrated the feasibility of transferring the high pressure gas to a low pressure airbag.¹¹ In 1967, Ford and Federal Aviation Agency researchers reported that baboons survived sled run impacts as high as 57 Gs without gross trauma when restrained by pre-inflated Eaton airbags, but that 40 Gs were fatal with the inertial

9. *Motor Vehicle Safety Standards*, p.112.

10. Carl Clark, Carl Blechschmidt, Fay Gordon, "Impact Protection With the 'Airstop' Restraint System," *8th Stapp Car Crash and Field Demonstration Conference*, Lawrence M. Patrick, ed., Wayne State University Press: Detroit, 1966, pp. 79-113.

11. Stuart M. Frey, "History of Airbag Development," in Department of Transportation, *International Conference on Passive Restraints*, May 11-12, 1970. Sponsor: North Atlantic Treaty Organization. Co-Hosts: U.S. Department of Transportation/U.S. Automobile Industry. General Motors Proving Grounds, Milford, Michigan, p. 26.

reel/inverted Y-yoke torso harness.¹² In January 1968, Eaton and Ford engineers presented a paper to the Society of Automotive Engineers outlining the airbag concept. An inflatable cushion, stowed folded behind the front instrument panel, would be inflated in a frontal collision by a sensor activating a detonator that released high pressure gas. The airbag would keep the driver and right front-seat passenger in place, dissipating 90 percent of the deceleration forces. Automatic upper torso restraint seemed feasible, but, according to the authors, the system still required lap belts for secondary or multiple impacts. Sensors had to be developed to signal within 20 milliseconds of a crash, and the ability of occupants to withstand the noise and pressure levels caused by the bag's detonation had to be shown. Reliability and serviceability also had to be dealt with. Nevertheless, the results of 42 high-G sled tests and one test into a crash barrier:

showed possible levels of survivability unapproached by any other known restraint system and indicated that potential solutions to the many problems of applying this system to the high production automobile may be found.¹³

This led *The New York Times* to carry a story in its January 14, 1968, edition on "A balloonlike airbag [that] could increase survival in automobile crashes by 50 per cent..." A spokesman for Eaton was cited as hoping that the system could be ready in three or four years, but a Ford spokesman said ten years was more likely. Eaton engineers were quoted as saying they hoped to develop other inflators at the side and top of the car to protect against nonfrontal crashes.¹⁴

On July 19, 1968, Haddon convened a meeting on airbags that had been requested by Eaton, Yale, and Towne to discuss four human factors:

1. effect of airbag deployment noise on the human ear,
2. pressure of the airbag impacting an out-of-position occupant,
3. testing with human volunteers to establish the correlation with test dummies,
4. driver reaction to inadvertent deployment.

Besides Eaton and NHTSA staff members, there were representatives present from American Motors, Chrysler, Ford, and General Motors. In his brief introduction, Haddon recalled his long-standing preference for passive safety measures.

[A] passive approach is, generally speaking, almost invariably far superior to any one that requires cooperation of drivers, or pedestrians, no matter what their competence might be... [T]he general area of passive devices is the way to go whenever possible... Also, we think with respect to the specific approach — although not necessarily the specific gadgets being discussed here — that the general approach of airbag restraint... is extremely promising from many, many standpoints, and is one to be furthered, if at all

12. Richard G. Snyder, Joseph Young, Clyde C. Snow, "Experimental Impact Protection with Advanced Automotive Restraint Systems: Preliminary Primate Tests with Airbag and Inertial Reel/Inverted-Y Yoke Torso Harness," *Proceedings*, 11th Stapp Conference, October 10-11, 1967. Society of Automotive Engineers, N.Y., 1968.

13. R.M. Kemmer, R. Chute, D.P. Hass, W.K. Slack, "Automotive Restraint System," SAE Paper 680033, January 8-12, 1968, p.9. See also Stuart M. Frey, Chief Body Engineer, Ford Motor Company, "History of Airbag Development," *International Conference on Passive Restraints*, May 11-12, 1970, pp. 23-28.

14. Quoted by Graham, from "Steel," December 30, 1968 pp. 9-10, as quoted in Graham, op cit. p. 56

possible... In fact, as far as I am personally concerned, after clearing up the side structure and head area and windshields, this is clearly, in my opinion, the highest priority that the industry and the Government and anyone else concerned with highway safety should have.¹⁵

The bulk of the meeting was a technical, collegial discussion of how to achieve solutions to the problems, with most attention paid to the noise issue. But at one point, with the issue of passivity obviously in mind, Haddon asked whether any of the work involved eliminating lap belts. One of the Eaton representatives answered that the shoulder harness could be eliminated but lap belts were still needed because of rollover crashes and impacts that were not head-on. Haddon commented:

[F]rom our standpoint, while we were very impressed with the reduction in death and injury you can get in the lap and shoulder harness, we recognize that not everybody cares for the shoulder harness, in particular... because... these are not always designed to be particularly comfortable. They have to be designed for people of different heights and weights, and so forth, that we would be very, very delighted, indeed, to see any such substitute for the shoulder harness, even if we would have to stay with a lap belt.¹⁶

One participant, Professor L. Patrick, a Wayne State faculty member, commented that airbags would be useful even for unbelted occupants since the majority of cars in crashes do not roll over. Haddon also was concerned about the need for real-world testing.

[W]e should pay extremely careful attention to avoiding a forced introduction of an approach before it has been completely evaluated.¹⁷

For all his interest in the development of airbags, Haddon did not volunteer to do any of the work in his bureau or to support any of it financially. His resources had been severely limited by budget constraints, but Joan Claybrook, who was Haddon's special assistant at the time, says he felt that developing technology was industry's function and that the agency should be an evaluator and standard writer.¹⁸ Both the Ford and General Motors representatives remained cautiously cooperative. Eaton was clearly leading the charge.

The First Steps Toward Standards Involving Airbags

During the rest of 1968 and throughout 1969, developmental research on airbags continued. Eaton worked with all the major American manufacturers, but other possible suppliers like Rocket Research, Thiokol, and Olin Mathieson also entered the field. The first airbag sled tests with human volunteers were held at Holloman Air Force Base. Haddon resigned in February 1969 at the request of John Volpe, Nixon's new transportation secretary.

15. "Proceedings," U.S. Department of Transportation, National Highway Safety Bureau, of Meeting on July 19, 1968, a typescript in the files of the Insurance Institute for Highway Safety, pp.4-5.

16. Ibid., p.41.

17. Ibid., p. 57.

18. Interview with Joan Claybrook, September 13, 1993.

For most of 1969 Robert Brenner was acting director of NHTSA, and he continued to give moral support to airbags. On April 14, 1969, he told the Senate Commerce Committee that airbags could be the answer to the vulnerability of very small cars in crashes with larger, heavier autos. This was a very brief comment in extensive testimony at an oversight hearing, but *The New York Times* took it as an occasion to review Eaton, Yale, and Towne's technology and to say that Ralph Nader found it exciting.¹⁹ NHTSA later submitted to the committee a document dated May 2, 1969, that gave a comprehensive review of seat restraint systems. Starting from an explanation of the difference between active and passive systems and the low usage of current active (belt) systems, it went on to describe the levels at which minor to moderate injuries would be experienced by a 200-pound man in a 30 mph crash. Although test data were limited, the paper gave estimates of 40 Gs for lap and shoulder belts and 80 Gs for airbags. After describing how the airbag worked in a frontal crash, and acknowledging the challenges of side crashes, the agency said it "anticipated that a first generation airbag type seat-restraint system will be installed in most 1972 model year and in some 1971 model year cars."²⁰

John Volpe was a liberal Republican who had been governor of Massachusetts. He was sympathetic to the death- and injury-reducing goals of federal auto safety regulation, but he was also, at first, skeptical of airbag technology. According to Joan Claybrook, the staff that remained after Haddon's resignation were convinced that airbags were the most important issue on the agency's agenda, and they feared that Frank Turner, the Federal Highway Administrator to whom Brenner now reported, did not share their enthusiasm. In the late spring of 1969, they arranged for the leadership of the National Motor Vehicle Safety Advisory Council to request a presentation on the subject at a time when Volpe would be present. When the presentation was made, complete with test films, Volpe immediately saw both the life-saving potential of airbags and their popular appeal.²¹ By June 17, *The New York Times* was reporting that Volpe was backing the use of airbags.²² He approved taking the first step in the regulatory process, the issuance of an Advanced Notice of Proposed Rulemaking (ANPRM) on June 26, 1969.

The ANPRM, as published in the *Federal Register*, had a title, "Inflatable Occupant Restraint Systems," that emphasized design rather than performance standards, an emphasis that permeated the existing occupant restraint standards FMVSS 208. The discussion in the notice became more general when it said that the Administrator:

19. *Motor Vehicle Safety-1969*, Hearings Before the Committee on Commerce, United States Senate, 91st Congress, First Session, April 14 and 15, 1969, p. 118; *New York Times*, April 20, 1969, p.92. Attached to Brenner's prepared statement, in supplementary data to support the authorization request for 1970 and 1971, was this sentence: "...efforts will be continued to develop more effective seat restraint standards equivalent to the airbag device which together with energy absorption design hold the promise of a major breakthrough in injury prevention." *Op.cit.*, p.43.

20. *Op.cit.*, pp.257-259.

21. Interview with Joan Claybrook, September 13, 1993. According to Robert Brenner, essentially the same presentation was given by Robert Carter to the August 27 public meeting; Federal Highway Administration, *Transcript of Proceedings, Meeting on Inflatable Occupant Restraint Systems (Airbags)*, August 27, 1969, p.8.

22. *New York Times*, June 17, 1969, p.49.

is considering the issuance of a Federal Motor Vehicle Safety Standard requiring the installation of, and specifying performance standards for, inflatable occupant restraint systems or other passenger occupant restraint systems which provide comparable protection in passenger cars, multipurpose vehicles, trucks, and buses.

The value of safety belts had been proven, the notice said, but few vehicle occupants were using them. Hence the need for “the prompt development and installation of passive restraint systems.” The airbag was “one very promising system, now in its final development stages.”

A device such as the airbag has enormous advantages over traditional restraint systems. It is automatic. It distributes the heavy loads generated in motor vehicle crashes over a large area of the body enabling occupants to experience much higher crash forces without injury. It cushions occupants during the crash.²³

For these reasons, and at the urging of the National Motor Vehicle Safety Advisory Council, a standard was being considered that required the installation of some sort of passive restraint “as soon as possible, and not later than January 1, 1972.” Comments and data were invited, within 90 days, on crash conditions for deployment, deployment and deflation times and positions, biomechanical standards such as loads on various human body parts, changes to be made in other standards, design considerations like reliability and serviceability, and environmental issues, costs, and production timing.²⁴

A later notice called for a public meeting on the issues raised in the ANPRM. It was held on August 27-28, 1969, with Acting Director Robert Brenner presiding. Dr. Robert Carter, a biodynamicist at NHTSA, gave the first presentation. After some generalities about the applied physics of force management, he concentrated almost entirely on airbags, noting that the airbag was “the most promising restraint system that we have seen to date,” a phrase that became a NHTSA cliché. Carter continued:

The airbag has two major advantages, as Dr. Brenner points out. It is a passive system. Therefore we have essentially 100 percent of the people experiencing crashes using their restraint. In addition to that, it provides an excellent load distribution of the forces over the body, which in turn will enable us to go to high total crash force or high G without injury.²⁵

The noise problem, a major theme at the July 1968 meeting, now seemed to Carter to have been solved. Ninety-one people had been tested at Wright-Patterson Air Force Base with an oversize airbag that was deployed in a Rambler. There was no damage or pain to ear drums. As for the inadvertent deployment issue, Carter reported that to date there had been none in road tests, and even when airbags were deployed at inappropriate times, drivers had had no problem handling their vehicles. Answering

23. Department of Transportation, Federal Highway Administration, [Docket No. 69-7; Notice No. 1], “Inflatable Occupant Restraint Systems,” Advanced Notice of Proposed Rule Making, *Federal Register*, July 2, 1969, vol 34, p. 11148.

24. Department of Transportation, Federal Highway Administration, [Docket No. 69-7; Notice No. 1], “Inflatable Occupant Restraint Systems,” Advanced Notice of Proposed Rule Making, *Federal Register*, July 2, 1969, vol. 34, p. 11148.

25. Federal Highway Administration, *Transcript of Proceedings: Meeting on Inflatable Occupant Restraint Systems (Airbags)*, August 27, 1969, pp.17,24.

those who feared that deployment forces would injure occupants, Carter said that in 40 sled tests with humans the most serious injury had been a bloody nose.²⁶

Although Carter noted in his presentation that there were still very limited data on airbag performance, none of the potential suppliers gave significant additional data in their presentations. Eaton, Olin Mathieson, Atlantic Refining, and others gave what were essentially sales presentations. Representatives of the American Automobile Association and the American Safety Belt Association professed neutrality, but raised again all the problems that Carter had tried to minimize. They made it clear that any action would be premature until all the problems were solved and reliability was established by substantial real-world testing. In fact, the safety belt manufacturers felt that “airbags at best can be and should be a complement for seat belts.”²⁷

Some independent researchers gave cautious support to airbags. Reporting on work at the Highway Safety Research Institute of the University of Michigan, Vernon Roberts said they would not campaign for or against the use of airbags, but in crash simulations with a 50th percentile male dummy, an inflated restraint system showed some improvement over the lap and shoulder belt combination. Although the lower torso could slide under the bag, Roberts said a change in airbag geometry could remedy this.²⁸ Wayne State Professor Lawrence Patrick drew on work he had done for Chrysler, where he concentrated on identifying problem areas, especially airbags mounted in steering wheels. With the airbag the same dimension as the steering wheel, nonlife-threatening fractures, were caused to the cadaver of a 76-year-old man hitting the wheel. Patrick also was concerned about the possibility that the gas used for inflation might vent in dangerous concentrations and that eyeglasses might become hazardous during bag deployment. But on the whole, he felt that the potential for reducing injury with airbags was high:

Frankly, I think that the development is in a state where we are not ready yet to put it into a car. But I'm quite sure that in a matter of a few years that the airbags will be used and that we will look back and say it is hard to believe that in a meeting such as this there was a large amount of opposition to such a device.²⁹

The three largest auto manufacturers gave extensive testimony supporting the concept of airbags, but stressing unsolved problems and the need for much more testing and development. Chrysler stressed the need for a broad vehicle standard based on objectively measurable criteria, but was also concerned both about product liability and consumer acceptance. The Ford presentation included all these points, but emphasized that it was working with Eaton to offer airbags in the right-front compartment of one of its standard models. A week earlier the press had carried a story citing Ford engineers predicting that 1971 model Mercurys would have such an airbag available.³⁰ This was part of a program aimed at real-world

26. *Ibid.*, pp. 20-25.

27. For the American Seat Belt Association, see *ibid.*, pp.69-72; for AAA see pp.109-116.

28. *Ibid.*, pp.89-97.

29. *Ibid.*, p.163. Patrick's statement is on pp.147-164.

30. *New York Times*, August 22, 1969, p. 70.

testing, but there were so many outstanding issues that Ford felt delaying the standard would be prudent. In any case, a lap belt would still be needed to prevent ejection. General Motors started its presentation with a similar, but more graphic list of problems, including a 5th percentile unbelted female dummy sliding completely under a bag in a crash, and a six year-old child dummy, resting against the instrument panel, being blown back with lethal force by the exploding bag. Although at the present state of the art lap belts were still needed, General Motors concluded that “a totally passive restraint system offers the greatest promise for increased occupant protection,” and said it was accelerating its airbag work.³¹ Meanwhile, representatives of Volkswagen and Mercedes-Benz said flatly that they could not meet the proposed 1972 deadline.

The day of his presentation, Stuart Frey, Ford’s representative and chief body engineer, attempted to demonstrate outside the meeting hall the deployment of an airbag, but when he pushed the button nothing happened. Ford’s embarrassment got national media coverage.³² In contrast, shares of Eaton, Yale, and Towne, the leader in airbag development, reached a new high in the stock market at the end of August, buttressed by *Automotive News*’ prediction that airbags would be required in all 1972 model cars.³³ Patents on Eaton’s airbag system had recently been granted to two of its engineers. In October it acquired a facility where it could produce pilot airbag systems for its customers, who now included the four largest American automakers and some foreign ones.³⁴

The First Proposed Standard for Passive Restraints

Comments received by NHTSA on the ANPRM repeated the positions taken in the August 1969 meetings. All foreign manufacturers joined the domestics in appealing for more time.³⁵ Possibly because of these pleas there was a fairly long delay in taking the next step, publishing a Notice of Proposed Rulemaking (NPRM). During much of this time, NHTSA had no permanent administrator. Some candidates had refused to be considered because of the position’s subordination to the Federal Highway Administration. According to Joan Claybrook, who was then working at NHTSA, Volpe wanted to be sure that the new administrator had a positive attitude toward airbags. He found his candidate in Douglas W. Toms, Washington State’s director of motor vehicles. Toms was a Republican who had been trained in the graduate traffic safety program at the University of Michigan and had done serious research on the subject. Volpe asked him to review NHTSA’s organization. When Toms proposed that the agency report

31. Federal Highway Administration, *Transcript of Proceedings: Meeting on Inflatable Occupant Restraint Systems (Airbags)*, August 28, 1969, p.213. For Ford, see *ibid.*, pp.233-240. The Chrysler presentations are in the previous day’s transcript, pp.127-146.

32. *New York Times*, August 29, 1969, p.58.

33. *New York Times*, August 31, 1969, section III, p.2.

34. Graham, *op.cit.*, p. 43.

35. National Transportation Safety Board, *op.cit.*, p.10.

directly to the secretary, his recommendation was accepted, and he was offered the position. His appointment was announced in December.³⁶

Toms issued the first NPRM for passive restraints on May 5, 1970.³⁷ The proposal delayed the passenger car passive restraint standard for a year from the January 1, 1972, date mentioned in the ANPRM, but in other respects was quite demanding. Protection was required for all positions and essentially for all types of crashes. For 1972, new cars without passive restraints would need improved lap and shoulder seat belts.

The notice reviewed again the low belt use rates. But it noted that a promising alternative to seat belts had emerged in the form of airbags, which would dramatically reduce highway deaths and serious injuries.

Most important (sic!), these systems are 'passive,' in that they require no prior effort by vehicle occupants. Similar basic passive protection may now also be achieved by other means such as deployable nets, extensive use of modern energy-absorbing materials on interior contact surfaces or combinations of these systems.

The notice also said that the highway death rate of over 50,000 per year and the even higher annual injury rate meant that:

improved passive crash protection must proceed with all possible speed. It is recognized that the effective dates proposed will make extensive demands on the resources of the automobile industry and its suppliers, and that to some extent they will require changes in the normal model-change and model year schedules of the industry. The costs of accelerated introduction of passive protection systems will, however, be far outweighed by the savings in lives and injuries. Any delay beyond the earliest possible dates by which basic protection can practicably be provided would therefore be unconscionable.

During 1972 new passenger cars could, as noted above, have either passive restraints or improved seat belts. The passive protection requirements were for all seating positions in a 30 mph frontal fixed barrier crash. Active systems would have to restrain both pelvis and upper torso without separate action. Seat belts, if used, had to meet detailed specifications like having integrated lap and shoulder belts and inertial reels, which allow belts to move freely under normal conditions but lock up in crashes.

On or after January 1, 1973, passenger cars would be required to meet the frontal crash test, and in addition a lateral impact test and a rollover test, by means requiring no action by vehicle occupants.

In each of the three crash modes noted above, the occupant could not be ejected from the vehicle.

36. Claybrook interview, June 21, 1993; Graham, op.cit., pp.42-43; New York Times, November 27, 1969, p. 74 and December 6, 1969, p. 20.

37. National Highway Safety Bureau, [Docket No 69-7; Notice 4] "Occupant Crash Protection; Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses, Notice of Proposed Motor Vehicle Safety Standard," *Federal Register*, volume 35, May 7, 1970, pp. 7187-7189.

Because development of passive protection systems had been concentrated on passenger cars, trucks of less than 10,000 pounds gross vehicle weight and multipurpose passenger vehicles had until January 1, 1974, to provide passive protection for all seating positions. But by January 1, 1972, those vehicles without passive protection systems had to provide seat belts in all seating positions, including upper torso restraints. Seat belt assemblies would be required at each seat in larger trucks and at the driver's position in buses.

The notice gave detailed criteria for measuring injury thresholds on anthropometric dummies that met Society of Automotive Engineers (SAE) Recommended Practice J963, along with a description of the types of crash tests required. NHTSA conceded that the crash test dummies might not yield totally reproducible results, but said that they were the best available.

Reactions to the Proposed Rule

The NPRM was issued a few days before an International Conference on Passive Restraints was scheduled to take place at the General Motors Proving Grounds in Milford, Michigan, under the sponsorship of the North Atlantic Treaty Organization (NATO). The Department of Transportation and the U.S. automobile industry were co-hosts. Daniel Patrick Moynihan, then a member of the White House staff, and NHTSA Administrator Douglas Toms, had initiated the meeting to inform foreign automakers about the technology of airbags so that they could meet the proposed standards. Volpe opened the conference declaring: "Our motto should be 'Get the bugs out of the bags,' or whatever devices work best. We must get our systems perfected at the earliest possible moment."³⁸ Up to now Eaton and Ford had been the leaders in airbag development. Although Stuart Frey, Ford's chief body engineer, gave a presentation recounting Ford's work with Eaton, General Motor's detailed account of its progress dominated the meeting. Frey revealed that testing in the summer and fall of 1969 had shown the following problems:

- a standing child might be subjected to impacts in the fatal range if his face was close to the bag deployment;
- in an angular car-to-car crash, bag deployment was delayed and ineffective;
- major deformation of the instrument panel occurred during deployment, including windshield breaking.³⁹

Tests showed that changing the design of the bag seemed to resolve the standing child problem, but the new design increased panel deformation. Ford's efforts up to that point had been limited to the right-front passenger position in a standard size car, assuming use of a lap belt to prevent ejection. The company had not yet worked on the differences between unitized and frame cars nor on side crashes.

38. Department of Transportation, *International Conference on Passive Restraints, May 11-12, 1970*. Sponsor: North Atlantic Treaty Organization. Co-Hosts: U.S. Department of Transportation/U.S. Automobile Industry. General Motors Proving Grounds, Milford, Michigan, p.4.

39. Stuart M. Frey, "History of Airbag Development," *ibid.* p. 31.

Any system as potentially dangerous as the airbag if it inadvertently fires, especially in multiple installations, must have a system reliability comparable to space craft...

As a high volume production device, the airbag restraint system is still in its infancy and a great deal of design and testing (and possibly invention) will be required before the Ford Motor Company would recommend this system for adoption as standard equipment on future vehicles.⁴⁰

In contrast to Ford, General Motors had been working on what it termed “air cushions” for all occupant positions. Edward Cole, president of General Motors since 1968, was supporting aggressive development of this technology. He also did not like seat belts, believing that air cushions would make driving safer and relieve people of the need to fasten belts.⁴¹ As he explained at the beginning of the conference:

The development of passive restraints for automobile occupants ought to be a top priority in our national efforts to reduce highway deaths and injuries. Many proposals have been made for passive restraint systems to replace the lap and shoulder belts. At this time, however, the inflatable air cushion appears to have by far the greatest potential.⁴²

GM engineers reported on substantial progress while emphasizing that there was still much work to be done. Different designs were shown for the driver, where the collapsible steering column would be supplemented by a knee cushion, and for the other occupants, where cushions of varying configurations would be used. A large cushion for rear-seat passengers seemed to restrain well enough in a frontal crash, but the noise level was unacceptable when it deployed at the same time as the frontal cushions. Although occupant protection had been demonstrated in 10-30 mph frontal impacts, head and chest injury severities had not been consistently within tolerance ranges, and the limitations of the test dummy did not allow testing for neck forces. Testing for different size occupants, dealing with the out-of-position child, and restoring clear vision to the driver a second after a possibly unintended deployment, were all problems that had to be solved. Also, the sensor placement and air cushions had to be adapted to a wide variety of vehicle configurations.⁴³ GM said that it had developed a crash sensor of superior speed with a low probability of inadvertent triggering, but that it too would have to be tested for durability and environmental conditions.⁴⁴ In fact, GM gave a separate presentation to underline the statistical logic behind the need for “large quantity, long term testing of production units” to establish the reliability of the air cushion systems in its various models.⁴⁵

Other manufacturers gave presentations that in each case included a statement about the need for more time to work on problem solving and testing. Chrysler reported on its work using black powder as a

40. Ibid. p. 32.

41. Interview with David Martin, December 20, 1996.

42. Ibid. “Conference Opening – Remarks,” p.7.

43. R.F. McLean, “Inflatable Air Cushion Status Report By General Motors Corporation,” *ibid*, pp. 35-42.

44. Trevor R. Jones, “Inflatable Passive Restraint System Crash Sensors,” *ibid*, pp.61-66.

45. Ronald G. Day, “Reliability Aspects of the Air Restraint System,” *ibid*, pp.101-106.

source of solid gas generation for the airbag. Toyota outlined its plans for a sensor based on radar. American Motors showed films of the tests done for it by Wayne State. Nissan also showed a film of its airbag, promised to report on another approach to passive restraints (a falling net system), and questioned why belt usage was not enforced by law.⁴⁶ Among the system suppliers, the Rocket Research Corporation seemed to be the most forward looking:

[W]e have studies underway now aimed at multiple impact capability, omnidirectional protection, and you can even project, if desired, a system whose deployment is an adaptive one in proportion to the severity of the crash... Ultimately you might have under a crash system, from any direction, panels or coverings which would spring out and virtually envelop the passenger in all directions...⁴⁷

During a question and answer panel at the end of the conference Toms said that he had considered compulsory seat belt usage legislation, adding “I don’t think Congress will do it and I don’t think there is any State legislature that will do it.”⁴⁸ Because seat belts were used so infrequently, Toms thought that it was counterproductive to consider passive restraints that would work only with belts. In fact, he said “our objective is to get to the point where we are with an entirely passive system as soon as possible.”⁴⁹ As for the lack of airbag production capacity, industry would have two years to remedy that, a goal Toms said was attainable.

We’ve come a long way in the last two to six months. I think we’re going to see an equal rate of progress in the next six months. It’s my hope that we’ll be in that position a couple of years from now.⁵⁰

Contoured airbags that wrapped around occupants were, Toms believed, good potential solutions for side impact and rollover collisions. Toms was against allowing a test of airbags as optional equipment because he feared, based on Ford’s experience in 1956, that the public would not buy them. But he did concede that product liability was an issue that should be discussed with Congress.

Ed Cole gave the last presentation at the conference, noting that General Motors was convinced of the technical feasibility of the air cushion system and was investing considerable resources to develop it by the earliest possible date. But he added that key issues like where to locate sensors for a range of vehicles and crashes and how to deal with an inadvertent deployment, loss of driver control, injury caused by deployment, and the overall problem of product reliability, were all still to be resolved.

I believe it is important to point out the undesirability — if not impossibility — of introducing air cushion restraint systems across the board on all cars at the same time. The fact that this would represent a tremendous expense for our customer could, I recognize, be accepted if our development testing indicates that its safety benefits are acceptably high. But the requirements of tooling and new manufacturing facilities to

46. Takuya Kitamura, “Nissan Passive Restraint Developments, *ibid.* p. 98.

47. *Ibid.* p.139.

48. *Ibid.* p. 144.

49. *Ibid.*, p. 150.

50. *Ibid.*, p.149.

produce such a volume of new equipment would be staggering if it were required for the entire industry in the same model year.

In conclusion, let me say that General Motors believes that our industry and other competent research and development organizations should aggressively pursue answers to unresolved problems of air cushion restraints as a number one safety priority... As far as General Motors is concerned we cannot say when our air cushion restraint system will be ready for volume production. We will do it as soon as possible, consistent with time requirements for thorough testing, necessary tooling and pilot production procedures to insure a high degree of manufacturing quality in volume production and reliability in the field.⁵¹

Volpe and Toms continued their public support for a standard requiring completely passive restraints, using airbags to illustrate its feasibility. At an Insurance Institute for Highway Safety symposium, after Volpe had strongly endorsed airbags, Toms explained their position to safety expert B.J. Campbell, who was advocating a combined seat belt/airbag system:

[A]irbags do work. Our standard does not say that the auto industry must use an airbag. It says only that they must use a passive restraint... Now B.J. (Campbell), you asked about why we are going completely passive with no active response on behalf of the occupant whatsoever. The simple answer to the question is, right now only 20 per cent to 30 per cent of the entire population are wearing lap belts. About 4 per cent are wearing upper torso (belts). We don't want to permit the industry to go to an airbag system that is active. If they design airbags that require the fastening of the seat belt, we are still not going to get the pay-offs we want. We feel that we want to protect that 80 per cent of the population who won't do anything...

If we thought we could depend upon people to fasten their seat belts, we'd be delighted to go to a lap belt, airbag system.⁵²

Six weeks after the NATO conference on June 24 and 25, 1970, the Department of Transportation held a public meeting on occupant crash protection in Washington. The one major change in positions taken by the automobile manufacturers was a schedule offered by General Motors as an alternative to the one in the NPRM. After further research and development in 1971, GM would produce 25,000 pilot components for testing between January 15 and April 15, 1972. In the 1973 model year, GM would expect to install 150,000 units. By the next model year capacity would be increased to one million units, and by the fall of 1974 (1975 model year) air cushions would be standard equipment in all passenger cars and light trucks.⁵³ There was no explanation of how GM had progressed to this very specific timetable from the indefinitely large testing it said was needed to establish reliability in its NATO conference presentation.

51. Edward Cole, "Concluding Remarks," *ibid* pp.155-156.

52. Address by Douglas W. Toms, Director, National Highway Safety Bureau, in Charles W. Wixom, ed., *Key Issues in Highway Loss Reduction*, Proceedings of the Insurance Institute for Highway Safety 1970 Symposium, Washington, D.C., June 9-10, 1970. pp. 181-182. For Volpe's statement see p. 73.

53. Presentation by David D. Campbell, Assistant Chief Engineer, Fisher Body Division, in U.S. Department of Transportation, National Highway Safety Bureau, *Public Meeting on Occupant Crash Protection: Transcript*, June 24, 1970, pp.34-47.

Stuart Frey continued to be Ford's spokesman, but with a more negative tone than before. He accused NHTSA of favoring a particular kind of restraint system, and stressed the potential of lap belts, whose use he claimed had gone from 7 percent in 1964 to 30 percent in 1968. Usage could rise, Ford believed, to 60 percent in cars equipped with belts, which would provide a benefit comparable to airbags' effectiveness. The new seat belts required would, however, prevent this, Ford claimed, because they were impractical and likely would not to be used. The torso restraints called for would have to fit all sizes of occupants, adjust automatically, and be operated with one hand, requirements Ford said could not be met, for example, in models with fold-down seats. Moreover, the automaker said that requiring use of inertial reels was an unnecessary design restriction. As for airbags, Frey continued to maintain that Ford was not opposed to them, but he said there was a need for considerably more testing, a claim he documented with crash test films. In one, a dummy's knee prevented deployment of the bag and its head went through the windshield, and in another a dummy was partially ejected when the car rolled over.⁵⁴

Representatives of the seat belt manufacturers joined Ford in criticizing the proposal for upgrading seat belt standards, and argued that design standards should not be imposed. As an alternative to other passive restraints, they proposed an interlock system, i.e., one that would prevent engine ignition if seat belts in occupied positions were not fastened.⁵⁵ Hammill Manufacturing, a division of Firestone, described another passive restraint, an automatically deployed blanket.⁵⁶ Road Research Laboratory of London, England, proposed a three-point passive belt.⁵⁷ Eaton, Yale, and Towne's representative had the ticklish job at the June meeting of encouraging NHTSA without contradicting its own chief customers: "The proposed rule making is all good, and we are optimistic the objectives can be reached. But not on the time table required by the proposed rule making." The timetable could not be met for all types and sizes of cars, for all seating positions, and for collisions from all directions including rollovers. Instead, Eaton wanted to concentrate on frontal crashes, where injuries and deaths were most numerous.⁵⁸ Lawrence Patrick of Wayne State made many of the same points as Eaton and went on to point out that some of the injury measurements required by the proposed rule could not be made. If the public was going to have to pay for the expensive upgrade of seat belts required by the rule for a single year, he concluded that a mandatory use law was needed to avoid a very wasteful investment.⁵⁹ Even Lowell Dodge, the director of the Center for Auto Safety, a new organization started by Ralph Nader and Consumers Union, doubted the need for a new safety belt standard although he favored the passive restraint rule. He also suggested acquiring some on-the-road experience with passive restraints by

54. Presentation of Stuart M. Frey, Chief Body Engineer, Ford Motor Co., *ibid.* pp.19-33.

55. Presentations of C.H. Pulley and Georege Johanessen, American Safety Belt Council, *ibid.* pp. 57-72.

56. Presentations by D.L. Wethe, President, and Roy L. Huber, Manager, Research and Development, Hamill Manufacturing, *ibid.*, pp.100-116,

57. Presentation by Gill Johns, Road Research Laboratory, *ibid.* June 25, 1970, pp. 18-20.

58. Presentation by Richard Brow, Vice President, Eaton, Yale, and Towne, *ibid.* pp.13-17.

59. Presentation by Professor L. M. Patrick, Wayne State University, *ibid.* June 24, 1970, pp.126-141.

requiring them in all cars bought by the federal government in 1972 and in a minimum percentage of manufacturers' production.⁶⁰

There were indeed efforts to encourage the availability of passive restraints in order to get some real experience with the devices before the standards went into effect. About the time of the Department of Transportation's June meeting, the National Transportation Safety Board had asked the General Services Administration to require passive restraints in federally purchased cars, and the National Motor Vehicle Safety Advisory Council urged passive restraints for both state and federal vehicles.⁶¹ Neither initiative succeeded. GSA did not ask for airbags or other passive restraints in its 1971 cars, although a spokesman said there was a plan to "retrofit" some federal vehicles with airbags, a plan never carried out. Officials in two states said they would require airbags on some 1971 cars, and three others had plans for 1972.⁶² These plans obviously came to nothing when the equipment did not become available. Late in June, the Department of Transportation announced contracts with American Machine and Foundry's Advanced Systems Laboratory, Republic Aviation, and General Motors to build experimental safety vehicles that would minimize injuries in 50 mph frontal barrier crashes and in two-car crashes at 75 mph. The contracts called for passive restraints.⁶³

The docket for the proposed passive restraint rule closed on August 3, 1970. There was little in the comments submitted that had not already been presented at the June public meeting or the NATO conference. Ford continued its theme that "an appropriate belt restraint system that is used can be as effective and may be more effective than an airbag." The manufacturer then broke some new ground by announcing that it was developing "an ignition interlock system that will require front seat occupants to connect the lap belts before the engine will start." Ford planned to test market the system before offering it widely. But Ford also outlined more specific plans for testing and producing airbags, although not nearly on the scale of GM's earlier proposal. Ford proposed installing 200-400 airbag units in 1971 model year vehicles. Any changes dictated by this first trial would be incorporated into 2,000-4,000 company owned models in 1972. In the 1973 model year, 20,000-40,000 vehicles in one model line would be available with airbags as a production option, followed by five other model lines in 1974. By January 1, 1975, all Ford car and light truck models would have airbags as options in the front right and center positions, provided that no hitches developed. Other parts of the lengthy submission repeated points Ford had made in June.⁶⁴

60. Presentation by Lowell Dodge, Director, Center for Auto Safety, *ibid.*, p. 224 ff

61. Insurance Institute for Highway Safety, *Status Report*, vol.5, no. 11, July 7, 1970, p. 5.

62. *Status Report*, vol. 5, no.14, p. 5.

63. *New York Times*, June 27, 1970, p. 56; *Status Report*, vol. 5, no. 11, p. 1.

64. Letter from J.C. Eckhold, Automotive Safety Director, Ford Motor Company, to National Highway Safety Bureau, Re: Occupant Crash Protection: Passenger Cars, Multipurpose Vehicles, Trucks and Buses (Docket No. 69-7; Notice 4), August 3, 1970. [Docket 69-07-NO4-084].

General Motors essentially stuck to its proposed schedule for making its air cushions standard in its 1975 models. GM also explicitly called for passive restraint standards to be delayed until January 1, 1975, for deletion of the rollover and angular impact tests, for revision of human tolerance values to reflect its understanding of the state of the art, and for elimination of the new seat belt requirements. Within this schedule GM said it might be possible to develop a radar-controlled sensor, which would solve many other air cushion problems.⁶⁵

Other manufacturers all insisted that they could not meet the January 1, 1973, deadline for passive restraints. The most optimistic, Renault, proposed a January 1, 1974, date for front passenger seats, with a one-year delay for other positions. Chrysler said it could meet the standard by 1975, and American Motors said it could provide passive restraints for front passengers by the 1976 model year. Volkswagen and the Japanese Automobile Manufacturers Association both said that they could meet the standard for front passengers only by January 1, 1975.⁶⁶

The docket also contained two identical letters from members of Congress, one signed by Senator Frank E. Moss and 20 other senators, the second by Representative Benjamin S. Rosenthal and 61 other members of the House. They urged that DOT keep the proposed rule, arguing that the benefit of saving 20,000 lives with highly reliable airbags far outweighed the short-term costs to the companies.⁶⁷ Allstate Insurance Company took its first stand on the issue by suggesting that NHTSA require airbags only for the front right passenger seat in 1973, with other positions covered the following year.⁶⁸ No other auto insurer submitted a comment to the docket on the issue. Nor did William Haddon in his new role as president of the Insurance Institute for Highway Safety (IIHS), a position he had taken almost as soon as he left NHTSA. But IIHS had begun to report on the issue in its newsletter, *Status Report*, and had afforded both Volpe and Toms a forum for spreading their views.

The Rule Is Modified

Before issuing its “final” passive restraint rule, the National Highway Traffic Safety Administration proposed on September 24, 1970, a modification of the interim restraint standard, effective January 1, 1972. The modification was an attempt to lower the cost of the interim standard by making changes “to reduce the necessity for redesign and retooling in certain areas.” Three options would be available during this period, the first one being passive restraints. The second option required lap belts only in all positions, then the current standard, but also required that certain injury criteria for 30 mph barrier crashes be met, a requirement that seemed to call for airbags. The third option required shoulder

65. “Comments of General Motors Corporation with Respect to Notice of Proposed Rule Making, Occupant Crash Protection, Docket No. 69-7,” August 3, 1970. [Docket 69-07-No.4-085]

66. *Status Report*, vol. 5, No. 14, August 17, 1970, pp. 2, 4.

67. National Transportation Safety Board, op. cit., vol. 2, p. 16.

68. Letter from Judson B. Branch to Douglas Toms, July 31, 1971, in NHTSA docket 69-07-No.4--109; also *New York Times*, August 5, 1970, p. 46.

restraints in front outboard positions, lap belts in all positions, and certification that the belts restrained a dummy in a 30 mph barrier crash; no injury criteria were included. The second and third options also required both audible and visible warning systems. Ignition interlocks were explicitly rejected because they could cause safety problems and were inconvenient.⁶⁹

Despite the appearance of willingness to make some concessions in the interim standards for occupant restraints, Toms still was making tough statements about the feasibility of passive restraints. He tried to buttress his position by referring as often as possible to the issue in generic terms — passive restraints rather than airbags. He asked New York State Senator Speno, the chairman of the National Motor Vehicle Safety Advisory Council, to join him in this effort. But Toms conceded nothing in his belief that passive restraints were superior to active belts, a position the manufacturers, led by Ford, were beginning to question:

And my point is that if you're well informed and you know what's going on, passive restraints are beyond the controversial point... If you want to argue whether they can get them in 10 million cars next year, sure that can be controversial. Or if you want to argue whether the industry wants to do it, that can be controversial. But if you talk scientifically whether it's better or not, that isn't controversial. They *are* better.⁷⁰

On November 3, 1970, the National Highway Traffic Safety Administration issued an occupant crash protection rule that made two important concessions to manufacturers' requests for more time, both to gear up production capacity and to develop technology. The front-seat passive restraint requirement for cars was delayed for six months, until July 1, 1973, essentially the 1974 model year, and the rear-seat requirement was postponed until July 1, 1974. As of the latter date, passive restraints would also be required in multipurpose vehicles and light trucks (of less than 10,000 pounds gross vehicle weight). Seat belts were not required, not even to address the problem of side impacts. NHTSA defended eliminating the seat belt requirement with undocumented arguments — that their low rate of usage meant that their cost was unjustified, that they reduced the effectiveness of air cushions in some high-speed impacts, and that they might be incompatible with some types of passive systems. Although NHTSA noted that passive systems other than airbags were possible, the agency suggested, obviously with airbags in mind, that manufacturers might use contoured seats and door cushioning to keep occupants in place. The passive restraints had to be effective in head-on crashes of 30 mph, although future requirements of 40 mph or higher were anticipated. The rule strengthened some injury criteria without explanation and referred to other changes that were being proposed, both in injury criteria and tests, in a parallel Notice of Proposed Rule Making. The new tests aimed to make both side-impact and rollover tests reproducible, and proposed a minimum speed of 15 mph for crash-deployed protection. With these new tests, the agency

69. National Highway Safety Bureau, [Docket No.69-7; Notice 6] "Occupant Crash Protection: Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses", *Federal Register*, vol. 35, September 25, 1970, pp. 14942-14943.

70. *Status Report*, vol. 5, No. 19, p. 7. For Toms' request to Speno, see *ibid*, No. 16, September 15, 1970.

proposed that passive protection against lateral crashes be effective July 1, 1973, and rollover crashes a year later. Little noticed, but significant in view of a later court decision, was NHTSA's reply to the comments that the dummy specifications in SAE Recommended Practice J963 were inadequate and incomplete. These dummies were, the agency held, "the most complete and satisfactory ones presently available." But it did add some specifications.⁷¹

The new rule provoked unanimous pleas for reconsideration from automobile manufacturers. In fact, Ford dropped its veneer of cooperative investigation and threatened to go to court to block the rule. These developments will be explored in the next chapter.⁷²

Summary

The idea of airbags preceded the federal law that called for motor vehicle safety standards. Shortly before the law was passed, Eaton, Yale, and Towne and Ford combined forces to try to develop this idea. They were clear that it was an automatic restraint, one that would diffuse the forces of the so-called second collision without any action being taken by occupants. The first administrator of NHTSA, Dr. William Haddon, was a public health professional, who was disposed to believe that automatic safeguards were always superior to voluntary ones. Apparently, he and his staff always saw the need for a more generalized passive (or automatic) restraint standard. Of course, the law under which they were operating required that standards be specified in terms of performance rather than technology. But it was clear during the development of the first rule that the standards were being formulated with the airbag in mind.

As airbags became the center of the rule-making process, the early spirit of cooperation among auto manufacturers, equipment suppliers, and regulators was replaced first by tension, then, toward the end of 1970, by outright antagonism in some cases. Eaton, Ford, and GM had early success dealing with some of the problems of airbags, such as storage and transmission of gas under high pressure, reliability of sensors, and reduction of forces on out-of-position occupants. This encouraged both the NHTSA staff and leadership to feel that solutions to all problems could be reached in a short time with enough investment and effort. And the number of lives that would be saved and injuries averted made it unconscionable not to mandate the effort. The manufacturers objected to the burden that was placed on them. Although the first "final" standard and accompanying proposal delayed rear-seat and rollover

71. National Highway Safety Bureau, Department of Transportation [Docket 69-7; Notice 7] Part 571-Motor Vehicle Safety Standards: "Occupant Crash Protection in Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses," *Federal Register*, vol. 35, November 3, 1970, pp. 16927-16931. National Highway Safety Bureau, Part 571, [Docket 69-7; Notice 8], "Occupant Crash Protection in Passenger Cars, Multipurpose Vehicles, Trucks and Buses, Notice Of Proposed Rule Making," *Federal Register*, Vol. 35, November 3, 1970, pp.16937-16939. The first is the "final" rule, the second the modifications in testing procedures and criteria.

72. Joan Claybrook believes that Henry Ford II was upset by the failure of the Ford airbag demonstration in August 1969, and began then to steer the company away from further work on airbags. Interview with Joan Claybrook, September 13, 1993. For Ford President Iacocca's threat to go to court, see *New York Times*, November 18, 1970, p. 29.

protection for a year after frontal crash protection for front-seat occupants, protection against lateral crashes was not delayed. There were no established methods for meeting the lateral crash standards, and, perhaps with the exception of GM, manufacturers still had to work out the detailed technology and testing of driver and rear-seat positions. Criteria for testing whether vehicles met the injury standards were, by the regulator's admission, incomplete, but they were the best available and, since lives were at stake, Toms and his associates thought they would have to do.

The November 1970 rules and proposals set the stage for controversy over the objectivity and practicality of what were, officially, passive restraint standards. But for most people, including the main players in the controversy, the issue was still really airbags. Airbags would replace seat belts, according to both General Motors and NHTSA.

SAFETY SELLS: Market Forces and Regulation in the Development of Airbags

By Martin Albaum

CHAPTER 3: Positions Harden: 1971-1976

In spite of all the political and cultural turmoil of the 1960s, it was a time of prosperity for most Americans and for the auto industry. The period from 1961 to 1969 was one long phase of expansion. Although inflation rose as the Vietnam War expanded, personal incomes grew even more quickly.¹ Growth and prosperity became more unpredictable during the 1970s. The recession that had begun in early 1969 continued through almost all of 1970, with expansion starting about November of that year and lasting for three years until just after the oil embargo of October 1973. New car sales suffered in 1970 from the combined effects of the recession and a strike against General Motors. But in the next three years they bounced back, to reach 11.4 million in 1973, a level not attained again by the industry as a whole until 1986. In fact, 1973 was the high water-mark for the domestic auto industry; it never again sold as many as 9.7 million passenger cars.²

The oil embargo imposed against the United States by OPEC caused a drastic increase in inflation — the rise in the consumer price index went from 3.2 percent in 1972 to 11 percent in 1974 and 9.1 percent in 1975. Wage and price controls were resurrected. The entire economy contracted in 1974, reaching a trough in March 1975, then expanding until 1980. After dropping 23 percent in 1974, car sales began to rise again, up 17 percent between 1975 and 1976.

During the oil embargo, fuel economy and energy conservation became national obsessions. A broad energy strategy never emerged, but one result was the temporary 55 mph speed limit imposed by Congress in December 1973 and made permanent the next year. It was one of the reasons why traffic fatalities dropped from 54,000 annually in 1972-1973 to 45,000 in 1974-1976, in spite of the fact that car buyers were beginning to buy smaller, more fuel-efficient cars that were less crashworthy than larger models.

The Watergate affair led to President Nixon's resignation in August 1974, to be succeeded by an even more conservative, pro-business president, Gerald Ford. Watergate also led to a certain public disillusionment with government. Still, public sentiment in favor of some consumer and safety regulation remained high.³ This was translated into federal action by pro-safety legislation in the very early 1970s. In 1970, a presidential order created the Environmental Protection Agency. Toward the end of 1972, Congress passed the Motor Vehicle Information and Cost Savings Act to promote bumper standards and

1. *Statistical Abstract of the United States, 1990*, pp. 450, 469 and 539.

2. American Automobile Manufacturers Association, *Facts and Figures '93*, p. 14.

3. Benjamin I. Page and Robert Y. Shapiro, *The Rational Public: Fifty Years of Trends in Americans' Policy Preferences*, The University of Chicago Press, Chicago and London, 1992, pp. 156-158.

improve consumer information about vehicle losses. The Consumer Product Safety Act was passed and signed about the same time. But later efforts at broader measures, such as setting up a centralized consumer protection agency that would have assumed the duties of NHTSA, narrowly failed in both the Nixon and Ford administrations, partly because of both presidents' veto threats.⁴

During both administrations there was a growing emphasis on comparing the costs of proposed regulations with their benefits, an emphasis made all the more pointed by the inflationary shock of the oil embargo. These comparisons became a pervasive concern in the debate on airbags and passive restraints. In 1972 NHTSA entered the discussion for the first time, estimating the cost of the average life lost in a motor vehicle accident at \$200,700 and the average nonfatal injury at \$7,300. Assuming 55,000 deaths annually (close to the actual figure for 1972) and 3.8 million other injuries, NHTSA estimated that total annual societal costs were \$11 billion for fatalities and \$27.6 billion for other injuries.⁵

Another “Final” Occupant Restraint Rule

On March 10, 1971, NHTSA responded to the manufacturers' unanimous requests to delay the “final” occupant protection rule, issued the previous November, by releasing a more comprehensive rule with a new timetable. The first requirement, passive protection for front-seat occupants, was only delayed from July 15 to August 15, 1973, because NHTSA said that the technology was “sufficiently advanced to provide this basic protection...” (The new timing was geared to customary model year changeovers.) On that date, all new passenger cars would have to meet one of two options:

- complete passive protection in 30 mph crashes for all positions in all crash modes;
- or passive protection for front-seat occupants in a head-on collision at 30 mph, with a lap belt for every position and a system to warn front-seat occupants if they were unbelted.

The latter option gave manufacturers time to meet rollover and rear-seat requirements. But after August 15, 1975, all cars would have to provide passive protection for all positions in every crash mode. Light trucks and multipurpose vehicles were granted a two-year delay. The requirement for a minimum deployment speed for passive restraints was dropped, and some modifications were made in the injury criteria.⁶

Although the new standard gave the manufacturers a variety of delays, they did not regard it as a victory. Even the manufacturer most sympathetic to the passive restraint strategy, General Motors, petitioned for changes in the new standard, claiming that neither the tests involving the anthropomorphic

4. *Congress and the Nation*, Vol. III, 1969-1972, Congressional Quarterly, Inc., 1973, Washington, D.C., pp. 691-694; *ibid.*, Vol IV, 1973-1976, Congressional Quarterly, Inc., Washington D.C., 1977, p. 433.

5. National Highway Traffic Safety Administration, Department of Transportation, *Societal Costs of Motor Vehicle Accidents: Preliminary Report*, April 1972.

6. National Highway Traffic Safety Administration, Department of Transportation, [Docket 69-7; notice 9] Part 571, Federal Motor Vehicle Safety Standards, Occupant Crash Protection in Passenger Cars, Multipurpose Vehicles, Trucks, and Buses, *Federal Register*, Vol. 36, March 10, 1971, pp.4600-4606.

dummy nor the rollover mode were repeatable. GM recommended changing the dummy tests and dropping the rollover tests altogether. GM also thought several technical changes were needed to allow passive belts to meet the standard.⁷

Chrysler's position was more representative of the adamant opposition of the rest of the industry. It said it could not meet the FMVSS 208 standard by the dates set and did not know when it could. Furthermore, Chrysler said that nothing in the docket supported the conclusion that passive restraint systems meeting the standard were practical or ready for introduction.⁸ American Motors and Ford also objected to the rule, and, along with Chrysler, petitioned the Sixth Circuit Federal Court of Appeals to review it.⁹

While waiting for the results of this appeal, Ford ran an ad in the *Washington Post* on June 21, 1971, and in some national magazines at about the same time. It suggested that, at best, airbags were only as effective as seat belts when belts were used, but airbags would not be sufficiently tested for all car lines by August 1973. The ad also stressed problems with out-of-position occupants, multiple impacts, and inadvertent deployments. Ford said the airbag would cost \$100 for the front seat and a like amount for the rear, and that it was examining other, less expensive systems, including one where the car would not start unless belts were buckled. This came to be called an ignition interlock system. Ford had covered much the same ground in television commercials the year before. NHTSA's Office of Crashworthiness quickly replied to the ad in a document filed in the docket on June 24 and summarized in the *Washington Post*, the *Wall Street Journal*, and the *New York Times*.¹⁰ It said that tests showed that airbags were indeed safer than belts, that there were solutions for the out-of-position problems, and that multiple impacts and inadvertent deployments were insignificant issues. NHTSA also said that sensor manufacturers were satisfied with sensor reliability, which seemed to be Ford's main concern about testing, and that the agency believed, based on information from suppliers, that the costs of airbags would be half of Ford's estimate.

NHTSA was not entirely insensitive to the manufacturers' objections. On May 4, 1971, a statement by Administrator Toms was published defining passive systems under the occupant crash protection rule as ones that "require no action other than would be required if the passive system were not present in the vehicle." This seemed to rule out interlock systems, but the statement went on to say that

7. General Motors Corporation, "Petition for Reconsideration of Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses," Docket No. 69-6; Notice 9. April 9, 1971.
8. Chrysler Corporation, Petitioner, to Administrator, NHTSA, DOT, "In the Matter of Motor Safety Vehicle Standard No. 208, Occupant Crash Protection in Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses. Docket No. 69-7; Notice 9." April 8, 1971.
9. *Status Report*, May 10, 1971, pp. 5-6.
10. Memorandum from Director, Office of Crashworthiness, to Docket 69-7, "Ford Advertisement on Monday, June 21, 1971 Washington Post," June 24, 1971, Docket 69-7-N09-059. The articles from the *Washington Post* and the *Wall Street Journal* are in Docket 69-07-N09-071 and -072, respectively.

“further rulemaking action may be taken in the future to permit such systems in certain cases.”¹¹ Then, in July, another clarification by NHTSA announced that active belts would not be required if seating positions were already protected by passive belts.¹² In a notice published October 1, 1971, NHTSA admitted that the dummies prescribed for crash tests in FMVSS 208 were not yet completely specified for all test modes. In the meantime, variance in manufacturer tests due to these limitations would not be deemed noncompliance with the standard.¹³

A Presidential Intervention and Another Delay

In the same notice that promised not to penalize them for variances related to poorly specified dummies, NHTSA also acknowledged that only with severe financial hardships would manufacturers be able to meet the passive restraint standard for front-seat occupants in all lines by August 15, 1973. The *Detroit News* quoted Administrator Toms as saying that the President was very concerned about the economic situation of the carmakers. He went on to say:

we have the flexibility of adjusting [the standard] time schedule if we have to — we can back off. We’ve been holding the industry’s feet to the fire on this but we are aware of their problems. I don’t think any responsible engineer is opposed to the air cushions, it is really an issue of time.¹⁴

A rule was published on October 1, 1971, that delayed the passive restraint requirement until August 15, 1975, by giving carmakers the option of installing front seat belt systems with ignition interlocks.¹⁵ NHTSA cited no research on the effectiveness of the interlock. None existed. According to Administrator Toms, its adoption was a way of agreeing to manufacturers’ requests for delay while doing something that seemed likely to raise belt use.¹⁶ In a memo to presidential assistant Peter Flanigan that was not included in the public docket, DOT Secretary Volpe described negotiations with the manufacturers:

In summation, Ford and Chrysler desire that an active belt system be permitted up until the time when passive head-on angular and side protection, as well as roll-over, is

11. National Highway Traffic Safety Administration, Department of Transportation [Docket 69-7] Part 571—Federal Motor Vehicle Safety Standards, Occupant Crash Protection: Interpretation of Passive Systems. *Federal Register*, vol 36, no. 86, May 4, 1971, p. 8296.

12. National Highway Traffic Safety Administration, Department of Transportation [Docket No. 69-7; Notice 10] Part 571—Federal Motor Vehicle Safety Standards; Occupant Crash Protection; Reconsideration and Amendment. *Federal Register*, vol. 36, no. 131, July 8, 1971, p. 12858. On the same day a notice was issued proposing the requirement of an emergency release for passive safety belts that would be “self-restoring.” *Federal Register*, vol 36, p. 12866, July 8, 1971, as quoted in *State Farm v. DOT*, 680 *Federal Reporter*, 2d Series, p. 210.

13. National Highway Traffic Safety Administration, Department of Transportation, [Docket 69-7; notice 12] Part 571—Federal Motor Vehicle Safety Standards. Occupant Crash Protection for Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses, *Federal Register*, vol.36, no. 191, October 1, 1971, pp. 19254-19255.

14. *Status Report*, October 4, 1971, p.3.

15. National Highway Traffic Safety Administration, Department of Transportation, [47 CFR Part 571] [Docket 69-7; notice 13] OCCUPANT CRASH PROTECTION IN PASSENGER CARS; Proposed Safety Standards. *Federal Register*, vol. 36, no. 191—October 1, 1971, pp. 19266-19268. The rule was formally adopted, with minor revisions, by Notice 16, published in *Federal Register*, vol. 37, no. 37, February 24, 1972, pp. 3911-3913.

16. See Graham’s interview with Toms, op. cit., p. 64.

required. They expect, of course, to prove to us that an active system with interlocks will achieve the same results in reduction of fatalities as a full passive system. Thus they would expect at some point the requirement for airbags would fully disappear. The Department's view is that an active system will not solve the problem, and we would expect that the demand for complete passive systems will grow with the introduction of a GM airbag system on a small percentage of their 1972 models.¹⁷

Volpe thought a delay in the passive restraint standard — to the 1977 model year, in the draft he was discussing — would allow sufficient time to create a production line and to prove the system effective. He also thought it would render the manufacturers' lawsuit moot.

Ralph Nader and the Center for Auto Safety immediately attacked the delay of the passive restraint standard. There were rumors of White House intervention. Nader and his colleagues tried to verify these rumors by asking Secretary Volpe to file in the docket documents arising from contacts with the president's office about FMVSS 208. When this was rejected, Nader and the Center tried to force the action by injunction. The court refused, on the grounds that such documents were intragovernmental correspondence.¹⁸

There is substantial evidence, both in the National Archives and in sworn court testimony, of White House intervention in the passive restraint regulatory process. In April 1971, President Nixon wanted to meet with the leaders of the automobile industry. Presidential assistant Peter Flanigan asked chief of staff H.R. Haldeman:

[I]s there not a serious risk of adverse publicity that the President "sold out" to the Big Four if after such a meeting we make decisions favorable to the industry on some of the issues [pollution, passive restraints, bumpers] listed above?¹⁹

The result was to first schedule a meeting of the President and John Ehrlichman, his assistant for domestic affairs, with Henry Ford II and Lee Iacocca of Ford on April 27, 1971. Like all meetings in the Oval Office at the time, it was secretly taped. In a briefing paper for the meeting, Flanigan told Nixon that airbags were the leading passive restraint system, and that "Ford has said compliance, given the state of the art is impractical; GM has basically said it can comply."²⁰

17. John A. Volpe, Memorandum for Honorable Peter Flanigan, Assistant to the President, "Passive Restraint Rule," August 31, 1971. The National Archives—Nixon Project.

18. Ralph Nader, Esq., et al. Plaintiffs, v. John Volpe et al. Defendants, United States District Court, District of Columbia, January 28, 1972 [340 F. Supp. 1178 (1972)].

19. Peter Flanigan, Memorandum to H. R. Haldeman, "Meeting with Automobile Industry Leaders," April 21, 1971. The National Archives—Nixon Project.

In testimony cited below, John Ehrlichman said, "The Ford people asked for the meeting." It is conceivable that Ford started the process and that Nixon wanted to broaden attendance.

20. Peter M. Flanigan, Memorandum for the President, "Meeting with Henry Ford, Lee Iacocca, John Ehrlichman, April 27, 1971, 11 a.m. (30 minutes)," no date, The National Archives—Nixon Project.

A memorandum from John Huntsman to John Ehrlichman, attached to this document, but dated April 29, 1971, quoted the President as commenting about the paragraph headed "Safety," which described the requirement for flashers and buzzers as seat belt use warnings and then went on to describe passive restraints: "No! John, let's not go crazy on this!"

At the start of the meeting Ford complained at length about pollution controls, and then Iacocca spoke about the cost of safety regulations, especially airbags. Nixon passed over the pollution issue with rhetoric:

But where there is pollution and where there is safety, the general principle that I believe in is that, well, then we'll do the best we can to... eliminate the toxins. But we can't have a completely safe society or safe highways or safe cars and pollution-free and so forth.

On Iacocca's airbag issue, Nixon said he would see what he could do. He instructed Ehrlichman to talk with Secretary Volpe.²¹

John Ehrlichman has recently testified under oath that Nixon later told him to order Volpe "to stop those [airbag] regulations, to make sure that they didn't go into effect." Ehrlichman called Volpe and later visited him with Peter Flanigan.

Volpe strenuously objected to the instructions that I had given him. And said, of course, that he would have to hear these instructions from the President personally.

And then he began to send written material to the President arguing for the regulations. The communication to which you refer in the second week of May was a handwritten letter from Volpe to the President acknowledging that he had received the instructions from Peter Flanigan and me, but he thought the President was making a serious mistake, and he wanted him to reverse his decision.

The day after Volpe sent that note to the President,²² Nixon met with James Roche, chairman of General Motors. Roche spoke about the possibility of accidents caused by inadvertent airbag deployments and about not being able to meet the standard with airbags by 1973; he also ridiculed passive belts. Subsequently Volpe met with Nixon, who reaffirmed his decision and said it would not be reversed.²³

Ehrlichman's testimony is essentially corroborated by a memorandum that Flanigan wrote to Nixon on August 9, 1971.

Acting on your direction, John Ehrlichman and I met with Secretary Volpe informing him of your wish that no action be taken making airbags mandatory, and that any "passive restraint" system be discussed with the White House before action was taken. Two follow-up meetings have emphasized these points, also requesting that National Transportation Safety Director Toms be directed not to discuss airbags publicly.²⁴

21. General Services Administration, National Archives and Research Service, "Part of a Conversation among President Nixon, Lide Anthony Iacocca, Henry Ford II, and John D. Ehrlichman in the Oval Office on April 27, 1971, between 11:08 and 11:43 A.M." The transcription was authenticated on February 21, 1984. The quality seems poor, with much of the President's comments on the passive restraint regulation called "unintelligible."

22. Volpe sent a memorandum to the President on April 28, 1971, "As a follow-up to your meeting, April 27..." summarizing the status of the passive restraint rule, arguing strongly for it, and welcoming the opportunity to present detailed information on the subject. The National Archives—Nixon Project.

23. Transcript of Proceedings: Testimony of John Ehrlichman, Court of Common Pleas, Luzerne County PA, Davis vs. General Motors Corporation, September 26, 1994. Ehrlichman based his testimony both on transcripts of the two meetings with the auto executives and on copies of his handwritten notes. After the meetings, Nixon asked Ehrlichman to have Charles Colson call them to say that the President had been impressed by their arguments and to ask for a political contribution. There is no evidence that this round of meetings included the heads of Chrysler and American Motors, as Nixon had apparently intended.

24. Flanigan goes on to say, "After your direction that no action be taken on mandatory airbags, I talked to the heads of each of the major manufacturers. All three agreed that:

After one of these meetings with DOT, Dr. Lawrence A. Goldmuntz, an assistant director in the Office of Science and Technology, wrote to Ehrlichman and Flanigan urging postponement of the passive restraint rule because, “[t]here is little evidence that airbags are superior to lap-shoulder harness over the entire range of accidents,” lap-shoulder harnesses were effective in saving lives in crashes up to 65 mph, and there were techniques to encourage their use.²⁵

Flanigan told Nixon on August 9 that withdrawing the order was one option; another “would be a modification of the order that would make it acceptable to major manufacturers.” On September 8, 1971, Flanigan wrote to Nixon that “[a]s a result of negotiations with the automobile industry, Secretary Volpe proposes, subject to your approval, to issue a revised rule.” Part of the rule would require a three-point belt with ignition interlock. A passive restraint could be substituted for the interlock; GM was said to regard this option as important because “it is most optimistic about airbags, plans to install them in 2,000 of this year’s cars.” Nixon then approved a change in the DOT order that would make passive restraints mandatory in 1977 models, but at Volpe’s request he extended it to 1976 models after Flanigan told him the domestic automakers said they would accept this change.

For political purposes they will, when the rule is announced, indicate they would have preferred a later date. However, they have assured me that they find this rule entirely acceptable.²⁶

Sources in NHTSA later gave both Ralph Nader and Representative John Moss (D-CA), information about Volpe’s dealings with Ehrlichman and Flanigan on the passive restraint standard. Possibly because the delay of the standard was linked to allowing a seat belt interlock option, Moss and Nader said that the Ford visit to Nixon resulted in an order from Ehrlichman to go along with the interlock option. Nader cites an interview he had with Toms on January 5, 1976, to confirm this, but in fact the Toms quotation deals only with the delay, not with the interlock.²⁷ There is no direct evidence linking the White House with the suggestion of the interlock itself. Nor did either Ford executive mention it in the intelligible part of the transcript of their meeting with Nixon. Although Ford was the only major

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- Passive restraints will be desirable when the technology has been developed;
 - The inflatable airbag is the most promising way of providing a passive restraint;
 - The technology does not presently exist to manufacture and install airbags.
 - There is a difference of opinion as to when airbag technology will be sufficiently developed to be offered either as optional or standard equipment. Cole believes it might well be by mid-1974, while Townsend [Chrysler] and Ford will make no predictions. (Jim Roche is very negative on the airbag, but he reaches retirement age this year and Cole says “he is taking care of Roche’s opposition.”)
 - Peter Flanigan, Memorandum for the President, “Airbags,” August 9, 1971. The National Archives—Nixon Project.
25. Dr. Lawrence A. Goldmuntz, Memorandum for Dr. Edward E. David, Jr., Mr. John D. Ehrlichman, Mr. Peter M. Flanigan, “DOT’s Proposed Automotive Passive Restraints,” July 7, 1971. The National Archives—Nixon Project.
26. Peter Flanigan, Memorandum for the President, “Airbags and Bumpers,” September 8, 1971; also Peter Flanigan, Memorandum for the President, September 22, 1971. The National Archives—Nixon Project. Nixon initialed both memos.
27. Excerpts from “Washington Under the Influence: A 10-Year Review of Auto Safety Amidst Industrial Opposition,” by Ralph Nader, reprinted in *Regulatory Reform—Volume IV: Consumer Product Safety Commission, National Highway Traffic Safety Administration, Federal Trade Commission*, Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, 94th Congress, 2nd Session. Serial No. 94-83, February 27, 1976, pp. 436-439.

American manufacturer promoting the interlock, it seems most likely that the interlock option evolved as a method of delaying the passive restraint standard in the course of the negotiations between DOT and the manufacturers that were initiated by Nixon's order. While the Ford Motor Company was the most aggressive promoter of the interlock idea, and Iacocca claimed that he and engineers at Ford developed the idea, many others had also talked about it.²⁸ Peugeot, Renault, the American Safety Belt Council, and Takata Kojyo Co. had all called the seat belt interlock to NHTSA's attention in 1970. However, Ford did so repeatedly in 1971.²⁹

Once NHTSA had proposed the interlock, manufacturers, including Ford, found considerable fault with the details. There were injury criteria for the front outboard belts that were not acceptable to them. Many asked that the interlock not apply to the front middle seat. A few carmakers actually opposed it. Volvo said there was no evidence that it was more effective in promoting belt usage than a sequential warning system. Both GM and Chrysler opposed the interlock because of concerns about reliability, although they were both quite pleased by the delay in the passive restraint standard. Chrysler, however, wanted passive restraint requirements dropped entirely, while GM said it needed more time to solve problems raised by research on out-of-position baboons.³⁰ These comments by the automakers led Donald L. Schaffer, the general counsel of Allstate and already an outspoken advocate of airbags, to the bitter observation:

We find that no seat belt supplier or auto manufacturer believes that these injury severity standards [for seat belts with interlocks in current 208] can be met through seat belts and harnesses (nonpassive restraints) and yet there are no plans to equip 1974 and 1975 model cars with passive restraint systems as standard equipment.

Accordingly, somebody is surely kidding... This means that for 1974 and 1975 model years the federal injury severity standards will not be met with either belts or airbags...

We are convinced that the installation of airbags is not being delayed because the technology is not ready or because the cost outweighs the benefits. Rather their installation is resisted for politico-economic and philosophic reasons unrelated to the technical merits or their ability to save lives and prevent injuries.³¹

28. Lee Iacocca with William Novak, *Iacocca: An Autobiography*, Bantam Books, Toronto, 1984, p. 298.

29. See the chronology, "Ignition Interlock: Ford's Better Idea," *Status Report*, September 9, 1974, pp. 2-5.

30. Ralph J. Hitchcock, Office of Crashworthiness, NHTSA, Occupant Crash Protection; Summary of Comments on Docket 69-7, Notice 13, October 1, 1971, November 3, 1971. For the details of GM's comments, see "Comments of General Motors with respect to Notice of Proposed Rulemaking: Occupant Crash Protection," Docket No. 69-9, Notice 13, November 2, 1971. For Ford, Letter from J.C. Eckhold, Automotive Safety Director, Ford Motor Company, to NHTSA Docket Section commenting on Docket 69-7 No.12, November 2, 1971.

31. Donald L. Schaffer, "The Airbag Controversy: A Case of Overinflation or Underinflation?" *Second International Conference on Passive Restraints*, May 22-25, 1972, Detroit, Michigan, SAE 720431. The injury criteria for seat belts were formally rescinded by NHTSA on June 20, 1973. See note 67.

Airbag Research and Testing: 1970-1972

During 1970 young Air Force volunteers were tested on sleds with lap belts only and also with lap belts plus airbags. The combination of airbags and lap belts performed better than lap belts only.³² But subsequent crash tests of four Ford Galaxy models carried out by the Highway Safety Research Institute at the University of Michigan raised questions about the use of sled tests to predict crash experience.³³ About the same time, NHTSA began to sponsor tests and developmental work on airbags. Cases where the devices did not work properly were analyzed to see how functioning could be improved. Dummy tests showed results were sensitive to the shape, size, material and venting of airbags, and also to the speed and force of deployment. Ways to vary these characteristics to reduce problems were developed, and tests showed that multiple bag designs performed better in oblique and multiple impact collisions.³⁴ Other research sponsored by General Motors had raised serious questions about the vulnerability of children who were out of position when airbags deployed. Building on this exploratory research, by May 1972 General Motors engineers were able to report favorable results testing deployment with dummies representing three year-olds, both sitting and standing out of position. This was possible because varying inflation rates eased cushion action, porous fabric was used, and the cushion was deployed by being unrolled from the lower instrument panel.³⁵ Research into remote sensors, based on radar or microwaves, was a surprisingly prominent theme at the 1972 Second International Conference on Passive Restraints sponsored by the Society of Automotive Engineers.³⁶

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32. C.D. Gragg, C.D. Bendixen, T.D. Clarke, H.S. Klopfenstein, and J.S. Sproffske, "Evaluation of the Lap Belt, Airbag, and Air Force Restraint Systems During Impact with Living Human Sled Subjects," *Proceedings of Fourteenth Stapp Car Crash Conference*, November 17-18, 1970, Society of Automotive Engineers, NY, pp. 241-262.
33. J. H. McElhaney, D.H. Robbins, A.W. Henke, and V.L. Roberts, Car Crash Tests, Highway Safety Research Institute, University of Michigan, for NHTSA, DOT-HS-800-543, July 1, 1971.
34. A sampling of such studies: on venting and multiple cell airbags, Cornell Aeronautical Laboratory, Inc., Research and Development of an Advanced Inflatable Occupant Restraint System, Final Report, Contract No. FH-11-7574, September 1971. DOT HS-800-540; on hardness, James F. Martin and David J. Romeo, "Preliminary Vehicle Tests—Inflatable Occupant Restraint Systems," *Proceedings of Fifteenth Stapp Car Crash Conference*, November 17-19, 1971; on inflation speed, Cornell Aeronautical Laboratory, Vehicle Research Division, *Inflatable Occupant Restraint System (IORS) for Rear Seat Occupants, Eleventh Progress Report*, Contract No. DOT-HS-053-1-168, Period 1 May to 31 May 1972. See also, the summary of research and testing in this period in National Transportation Safety Board, *Safety Effectiveness Evaluation of the National Highway Traffic Safety Administration's Rulemaking Process*, Volume 2—Case History of Federal Motor Vehicle Safety Standard 208: Occupant Crash Protection, NTSB-SEE-79-5. United States Government, September 28, 1979, p. 25.
35. E.H. Klove, Jr., and Robert N. Oglesby [GM], "Special Problems and Considerations in the Development of Air Cushion Restraint Systems," *2nd International Conference on Passive Restraints*, Detroit Michigan, May 22-25, 1972, SAE 740411. At the same meeting where GM engineers presented the solution to the problem, Patrick reported on his GM sponsored experiments at Wayne State using baboons instead of small children, showing that serious injury or even death could be brought about when airbags were deployed against baboons tied out of normal position. Lawrence M. Patrick and Gerald W. Nyquist, "Airbag Effects on the Out-of-Position Child," *ibid.*, Detroit, Michigan, May 22-25, 1972, SAE 720442.
36. See, especially, the four papers Keith B Termaat and Kenneth A Freeman [Ford], "Development of the Crash Sensor/Vehicle Interface," SAE 720425; Trevor A. Jones, Dale M. Grimes, Ronald A. Dork [GM], "A Critical Review of Radar as a Predictive Crash Sensor," SAE 720424; Tohru Takahashi, Takayuki Makino, and Kazuo Sato [Toyota], "Development of a Radar Sensor for Inflatable Occupant Restraint System," SAE 720422; John B. Hopkins, F Ross Holmstrom, Morrin E. Hazel, Edward White, and Timothy Newfell, [USDOT], "A Microwave Anticipatory Crash Sensor for Automobiles," SAE 720423. These papers emphasize the unsolved technical problems of sensing crashes at a distance.

Some aspects of the human reaction to airbags continued to be open issues. One NHTSA study tested the noise made by a large cushion in a small space and found no more than temporary effects on hearing. But another NHTSA-supported study estimated that up to 30 percent of occupants would suffer hearing loss if all front and rear bags inflated simultaneously.³⁷ Conrad Cooke, a NHTSA analyst, estimated that, based upon mathematical modeling of barrier tests, the passive restraint standard would save 5,700 lives annually, but he questioned whether crash barrier tests could replicate real-world experience and said that the psychological effects of crash experience with airbags ought to be considered.³⁸

In the spring of 1972, two failures of airbags to perform in tests drew media attention. In the first, on April 20, the failure of an obsolete Rocket Research Corporation unit was traced to a faulty crimp that allowed gas to escape contrary to design.³⁹ On May 23, another experimental unit from the same manufacturer did not deploy at a demonstration for the National Motor Vehicle Safety Advisory Council because of a faulty solder bridge.⁴⁰

There were still practically no airbag-equipped cars on the road to provide real-world experience. General Motors had promised to field-test its airbag system with 1,000 Chevrolet Impalas in 1973. Ford had no such plans for 1973, although it had produced 831 Mercurys in the 1972 model year equipped with passenger-side airbags. NHTSA Administrator Toms had hoped for 5,000 airbag equipped cars to test in government and private fleets.⁴¹

In May 1972 Chrysler was the first car maker to publish a consumer survey on airbags and other passenger restraints, based on 270 couples in Kansas City, Missouri, who owned 1968 or newer cars. They were shown 1971 Chryslers equipped with alternative restraints and an airbag demonstration, and were also given a statement of advantages/disadvantages that listed many disadvantages for airbags and few for seat belts. The result was that the great majority (84 percent) preferred seat belts and practically no one (3 percent) preferred airbags.⁴² An earlier survey, done for General Motors, had had quite different results, but it was not made public until quite a bit later. In the spring of 1971, 333 men and 297 women who had bought a new car within the past three model years were brought to a research facility near O'Hare Airport.

37. Charles W. Nixon [Wright-Patterson AF Base], "The Human Ear in an Airbag Noise Environs," *Proceedings of the Fourteenth Annual Conference of the American Association for Automotive Medicine*, November 19-20, 1970, pp. 121-132; C.D. Allen, R.D. Bruce, C.W. Dietrich and K.S. Pearsons, "Noise and Inflatable Restraint Systems," Bolt, Beranek, and Newman, Inc., Report No. 2020, September 1970 (DOT Contract HS-006-1-006), quoted in National Transportation Safety Board, *op. cit.*, p. 26.

38. Conrad H. Cooke, "Safety Benefits of the Occupant Crash Protection Standard," Office of Crashworthiness, Motor Vehicle Programs, NHTSA, January 1971. [69-07-GR-043]

39. Memorandum by John G. Womack, Attorney-Advisor, NHTSA, To Docket 69-7-GR-151, on "Airbag Test Failure, Southwest Research Institute." July 20, 1972; *New York Times*, May 7, 1972.

40. *New York Times*, May 24, 1972; Status Report, July 17, 1972, pp.1-2.

41. *New York Times*, February 27, 1972; Status Report, August 21, 1972, p. 4-6.

42. Robert S. Baxter, Chrysler Corporation, "Passenger Car Occupant Restraint Alternatives Demonstration and Display: A Consumer Research Study," *2nd International Conference on Passive Restraints*, Detroit Michigan, May 22-25, 1972, 720430.

They were interviewed, shown passenger restraints and films of both airbags and passive belts in action, and were then asked to re-rate the alternatives both before and after they got GM's price estimates. The results showed that about half the sample preferred the airbags at about every stage of the study.⁴³

A Major Court Ruling

All American carmakers except General Motors and many of the foreign manufacturers appealed to the Sixth United States Circuit Court of Appeals to overturn NHTSA's "final" rule of October 1971 mandating passive restraints. The court took virtually all of 1972 to review both the arguments and the massive record. It issued a decision on December 5, 1972, upholding NHTSA's position on all but one crucial issue.

The manufacturers had challenged NHTSA's authority to order safety standards that require technological improvements or new developments. The court rejected that view as contrary to the legislative history:

In summary, the Agency is empowered to issue safety standards which require improvements in existing technology or which require the development of new technology, and it is not limited to issuing standards based solely on devices already fully developed.⁴⁴

As for practicability, the court found that many of the problems emphasized by the manufacturers, like noise, sensor reliability, danger to out-of-position occupants, and effectiveness in nonfrontal crashes, either had been eliminated or were "the subject of development efforts." The court noted that airbags were superior to seat belts in their ability to spread crash forces and to work automatically, while belts might be superior in rollovers or multiple crashes. It concluded that NHTSA's "decision to abandon active restraints in favor of passive restraints was a proper exercise of its administrative discretion."⁴⁵

While the three-judge panel agreed on all of the points already cited, a two-to-one majority of the court found that the test procedures spelled out in the standard did not meet the objectivity requirement of the Safety Act. NHTSA itself had admitted shortcomings in the dummy that it had prescribed. For example, the neck lacked sufficient flexibility and there were no specific criteria for the construction of the head. Therefore, many aspects of testing were not sufficiently repeatable. NHTSA was ordered to revise the standard to make the measurements more objective and also to make sure that it did not effectively eliminate convertibles and sports cars from the auto market.

43. General Motors Corporation, "Memorandum from William A. Pfromm, Manager, Advertising Research Activity, on Restraint Systems Product Clinic Report, to E. Cole, H. Warner, et al." June 17, 1971; the report attached to the one page memo is entitled: "Consumer Opinions Relative to Automotive Safety Restraint Systems, Pilot study; Chicago, Illinois, May 21 through May 23, 1971." Congressman John Burton cited it, along with GM airbag surveys, in 1978 and 1979, in a press conference that he held accusing GM of suppressing information showing that consumers tended to favor airbags. See *Congressional Record*, December 12, 1979, p. E6094, and *Status Report*, December 21, 1979, pp.1, 16-18.

44. Chrysler Corporation v. Department of Transportation, United States Court of Appeals, Sixth Circuit, December 5, 1972. [472 F.2d 659 (1972)], p. 673.

45. *Ibid.*, p.674.

Judge William Miller dissented from the part of the decision involving testing. He felt that an objective standard only needed to be measurable, and that the manufacturers could be required to develop the precise measurements as they developed or applied the technology. Miller's opinion could have provided a basis for a NHTSA appeal to the Supreme Court. Instead the agency followed the court's order and began to work on revising measures using a new dummy.

The agency's reaction to the court order may have been influenced by a change in leadership. After the 1972 election, President Nixon replaced all cabinet members who were not "loyalists," among them Secretary of Transportation John Volpe, who was named ambassador to Italy. NHTSA Administrator Douglas Toms gave notice of his intention to resign at the same time, but he did not actually leave until March 1973. The new secretary was Claude S. Brinegar, an executive at Union Oil Co. of California. He did not name a new safety administrator until mid-summer; he was James B. Gregory, a chemist and another former Union Oil manager.

The Seat Belt Alternative

While passive restraint standards became the focus of increasingly antagonistic argument, evidence for the real-world effectiveness of seat belts was accumulating. Under the sponsorship of the Insurance Institute for Highway Safety, the University of North Carolina's Highway Safety Research Center analyzed that state's police reports on car crashes between 1966 and 1968. They found that lap belts, when worn, reduced serious and fatal injuries by 43 percent at all speeds and by 49 percent at high speeds.⁴⁶ A 1972 study by Volvo added precision to its 1968 study of the effectiveness of three-point belts. The sample included Volvos that were under a five-year warranty in four Swedish metropolitan areas. This time drivers and front-seat passengers used the belts in 39 percent of the cases, with a 32 percent reduction in injury frequency for drivers and 36 percent for front passengers.⁴⁷ Using another sample biased toward more severe injuries in belted compared with nonbelted cases, a study sponsored by Peugeot and Renault concluded:

The probability of being seriously injured or killed is *six times lower with the belt* within ranges lower than a delta V of 55 km/h, that is to say for 96 percent of all frontal collisions...

The probability of being seriously injured or killed is *twice higher without a belt* for the most severe 4 percent accidents, despite factors then intervening to limit the efficiency of the belt.⁴⁸

46. Highway Safety Research Center, University of North Carolina, "Effectiveness of Lap Belts and Energy Absorbing Steering Systems in Reducing Injuries," cited in *Status Report*, December 20, 1971, p. 4.
47. A. Asberg, Volvo, "A Statistical Traffic Accident Analysis," USDOT, NHTSA, *Report of the Fourth International Technical Conference on Experimental Safety Vehicles*, March 13-16, 1973. pp. 359-391.
48. Claude Tarriere, [Peugeot-Renault], "Efficiency of the 3-Point Belt in Real Accidents," USDOT, NHTSA, *ibid.*, Pp 607-619. The report also concluded that three-point belts were effective in rollovers and some side collisions.

Partly because of the evidence that belts worked when used, and partly because of the commonly recognized problems of adapting airbags to small cars, European auto manufacturers were trying harder than their American competitors to develop passive belts. A British auto industry researcher claimed that passive belt configurations had been developed that were “reasonably acceptable to the car driver and passengers” and:

As an alternative to the airbag the passive seat belt offers certain advantages. It restrains the occupants in many conditions of deceleration. Its protection in conditions of rollover is possibly superior to that offered by the airbag and in cases of secondary impact the occupant is still constrained.⁴⁹

Volvo was working seriously on a three-point passive belt.⁵⁰ A study commissioned by NHTSA to evaluate passive restraint alternatives to airbags concluded that only a three-point passive belt showed real promise.⁵¹ But the car maker that pushed the approach forward most vigorously was Volkswagen. By October 1973 it claimed that it was able, with a two-point passive belt and a knee-bolster filled with foam, to meet all of FMVSS 208 standards for passive restraints, except for the lateral test. It petitioned for a fourth option through August 14, 1975 — a passive system that met all but the lateral impact tests.⁵²

The effectiveness of seat belts when used and the potential effectiveness of passive belts presented a stark contrast to their actual use. In a study based on the unobtrusive observation of over 4,000 drivers of 1968-1971 cars, the Insurance Institute for Highway Safety reported that lap belts were used by 16 percent in large metropolitan areas and 9 percent in small cities.⁵³ Nevertheless, a publication from the Office of Science and Technology compared the cost-effectiveness of airbags unfavorably with three-point belts. The report entitled, *Cumulative Regulatory Effects on the Cost of Automotive Transportation*, was given the acronym RECAT and issued by an *ad hoc* committee chaired by Dr. Lawrence Goldmuntz, the author of an earlier memo to White House staff criticizing a passive restraint proposal. The report contended:

The passive system that has received the most attention is the airbag... Earlier reported potential hazards of airbags — noise, toxicity, ear damage, and injury to out-of-position children — appear to be resolved or in the process of resolution. The airbag cost is substantially higher, and the predicted benefit is no greater, than the corresponding cost of the well-known, time-tested three-point belt harness system. However the belts require occupant action to make them effective, and their utilization rate is so low that most

49. E. Nichol, “Seat Belts for the Future,” *Report on the Third International Technical Conference on Experimental Safety Vehicles*, May 30-June 2, 1972, pp. 2104-2112.

50. Stig Pillhall and Nils Bohlin [Volvo], “A Passive Safety Belt System,” *2nd International Conference on Passive Restraints*, May 22-25, 1972. Detroit, Michigan, SAE 720440.

51. N.S. Phillips, “Fully Passive Restraint Systems: Alternatives to Passive Systems,” *Proceedings of Seventeenth Conference of the American Association for Automotive Medicine*, November 14-17, 1973, pp.31-51. This is apparently based on a study for NHTSA: N.S. Phillips, *Alternate Passive Occupant Restraint Development*, Final Report to U.S. Department of Transportation, NHTSA, under Contract No. DOT-HS-220-3-375, January 24, 1973.

52. Petition for Rulemaking Amendment to FMVSS 208, Volkswagen to James B. Gregory, Administrator, NHTSA, [for Rulemaking on Amending S4.1.2 and S4.5 of FMVSS 208]. October 1, 1973.

53. Leon Robertson, Brian O’Neill, Charles W. Wixom, “Factors Associated With Observed Belt Use”, *Journal of Health and Social Behavior*, March, 1972, quoted before publication in *Status Report*, October 4, 1971, p.2.

occupants go inadequately protected. Although MVSS also requires warning systems in 1972 and interlocks in 1973 that are expected to increase utilization substantially in the next three years, the “passive” restraint requirement is to be imposed in 1975 regardless of the extent to which belt utilization is improved by these measures. Thus large added costs (about \$300) per car are to be imposed on automobile consumers whether or not added benefits can be expected. A potential alternative is, through local ordinance, to mandate the wearing of seat belts. Such a step was taken by the state of Victoria, Australia and increased the usage rate of belts to 75 percent.⁵⁴

During 1972 the Insurance Institute for Highway Safety studied the effectiveness of methods for increasing belt use then being tried in the United States. A series of television messages promoting seat belt use was shown during prime time, with the frequency of a major advertising campaign, to half of 13,000 subscribers to a cable network in a medium-size American city; the other half served as a control group. No significant differences were observed in seat belt use between the two groups.⁵⁵ The buzzer-light standard, requiring a minute’s buzzer warning and flashing message to fasten seat belts, had gone into effect on January 1, 1972. IIHS observed 5600 1972 model-year cars, about half with the buzzer-light system. Drivers in cars with the warning used belts 18 percent of the time, compared with 16 percent in cars without the warning — a statistically insignificant difference.⁵⁶

By far the most effective method to raise seat belt use was the one cited at the end of the quotation from the RECAT report — laws requiring their use. The first law was passed in the Australian state of Victoria in December 1970, requiring vehicle occupants to wear seat belts or risk a fine of \$20A. The law took effect in October 1971. By January 1972, all Australian states had similar requirements. The observed average belt use rate in Victoria then rose to 75 percent in metropolitan areas and 64 percent in rural. During the first nine months, occupant car crash deaths dropped 24 percent compared with the same period the year earlier in metropolitan Victoria, and 13 percent in its rural areas.⁵⁷ In New South Wales there were similar results. Use rates were raised by a factor of three to four times, and vehicle occupant deaths in 1972 were “about 25 percent lower than might have been predicted from a 10-year trend line.”⁵⁸

Whether inspired by the Australian example or by the logic of the situation, supporters of belt use laws began to be active in the United States in 1972, at least on the state level. By the end of the state legislative season in 1972, at least twelve legislatures had considered bills on the subject, but none had

54. *Cumulative Regulatory Effects on the Cost of Automotive Transportation (RECAT)*, Final Report of the Ad Hoc Committee, February 28, 1972, prepared for the Office of Science and Technology, p. 44. In 1976 Ralph Nader charged that RECAT was done because of a political directive; Goldmuntz denied this and said it had been done at his own initiative. *Regulatory Reform—Volume IV: Consumer Product Safety Commission, National Highway Traffic Safety Administration, Federal Trade Commission*, Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, 94th Congress, 2nd Session. Serial No. 94-83, pp. 439-440.

55. Leon S. Robertson, et al., “A Controlled Study of the Effect of Television Messages on Safety Belt Use,” as summarized in *Status Report*, June 12, 1972, pp. 1-3.

56. Leon S. Robertson and William Haddon, Jr., “Belt Warning Devices,” summarized in *Status Report*, September 18, 1972, pp. 1-3.

57. *Status Report*, June 12, 1972, p. 3.

58. J.M. Henderson and K. Freedman, “The Effect of Mandatory Seat Belt Use in New South Wales, Australia,” *Proceedings of the Seventeenth Conference of the American Association for Automotive Medicine*, November 14-17, 1973, pp.53-69.

passed. Lee Iacocca of Ford, Richard Gerstenberg, chairman of General Motors, and the National Safety Council all endorsed the concept. Supported by Administrator Toms and Undersecretary Beggs, Secretary of Transportation Volpe approved a plan to include standards for state seat belt laws in a revision of highway safety standards that would reduce federal highway funds to states not meeting them.⁵⁹ Before the standards could be issued, Congress passed the Highway Safety Act of 1973, which allowed NHTSA to increase a state's highway safety fund by as much as 25 percent if it had a mandatory belt use law. At a three-day conference in December 1973 NHTSA proposed three grant incentive levels: a 10 percent increase if lap belt use were required for all front-seat occupants, 15 percent if front-seat occupants were to use all available belts or all occupants were to use lap belts, and 25 percent if all occupants were to use all available belts. NHTSA had no plans to penalize states failing to pass seat belt use laws. On May 30, 1973, before either Congress or NHTSA had acted, Puerto Rico authorized fines of \$10-25 if seat belts were available and not used in cars traveling faster than 15 miles per hour.⁶⁰

Redefining Passive Restraint Standards and Other Delays

On April 2, 1973, NHTSA responded to the Court of Appeals' requirement for a more objective way of defining injury standards for passive restraints by proposing the use of the Hybrid II dummy, developed by General Motors and Alderson Research Laboratories. The proposal became final on August 1 of the same year — rapid action by the standards of federal regulatory agencies.⁶¹ The notice said that a factor in choosing the GM dummy was that GM had already used it in tests done in preparation for the expected sale of up to 100,000 cars with airbags in model year 1974. In the interim, General Motors had seemed to waver in its commitment to its air cushion project, or at least in its ability to put that equipment in 100,000 cars. It had already built 1,000 cars with air cushions in 1973. On June 22, 1973, GM President Cole said in a letter to Secretary Brinegar that GM's 1974 goal could not be met because a final certifying standard had not been issued and the proposed one did not fit the Hybrid II dummy in all details. Even an August ruling would be too late for September production, and so both 1974 and 1975 production plans (100,000 and one million air cushion cars, respectively) would have to be put on hold. Furthermore:

Before the air cushion restraint becomes standard, we would still need a proper phase-in period. This is all-important. Therefore, we believe that the 1976 standard should be deferred indefinitely — or, at least until a program that would accommodate an appropriate phase-in can be established... Currently we have not developed a satisfactory rear seat passive system. Therefore, the present rear seat lap belt configuration should be continued.

59. *Status Report*, June 12, 1972, pp. 6-8; July 3, 1972, p. 4.

60. *Ibid.*, June 26, 1973 and December 20, 1973.

61. The two notices, 73-8, Notices 1 and 2 were published in *Federal Register*, vol. 38, pp. 8455, 20,449.

We also wish to re-emphasize our concern over the current requirement of MVSS 208 for rollover tests. Our position on this requirement continues the same as in previous comments to NHTSA in which we recommended that this impracticable requirement be deleted.

Our studies have indicated that all three choices (air cushions, air cushions with lap belts, and the combined lap/shoulder belt with a starter interlock) will yield a substantial reduction in highway death and injuries. It appears that the primary advantage of the air cushion is that of convenience, but experience may prove that equal or better protection may be provided with other systems or a combination of systems. Thus, a delay in the mandatory requirement for passive restraints would appear to be in the public interest.⁶²

Cole said he still wanted to proceed with the air cushion options, but wanted to delay passive restraint mandates.

General Motors had never been an unqualified supporter of the passive restraint requirement because of doubts about the feasibility of the schedule, especially for rear seat and rollover conditions. But the studies Cole alluded to also questioned the superiority of air cushions in saving lives. The central analysis was done by a jury or panel of four GM engineers, who evaluated the potential of four occupant protection possibilities had they been applied to 706 actual fatal crashes between 1967 and 1972:

The primary results of this field accident study are as follows:

- If all the fatalities had been wearing a lap belt, 17 percent could have been saved.
- If all the fatalities had been wearing a lap and shoulder belt, 31 percent could have been saved.
- If all the cars had been equipped with air cushions, 18 percent of the fatalities could have been saved.
- If all the cars had been equipped with air cushions, and all the fatalities had been wearing a lap belt, 29 percent could have been saved.⁶³

In other words, the GM panel of engineers concluded that air cushions were no better than seats belts in saving lives if the belts are used — an important condition. The air cushion-only option reflected GM's earlier plans for passive restraints. In fact, its first 1,000 models produced with the air cushions did not have seat belts. Allstate added them to the cars it bought. This study contributed to General Motors' decision to place lap belts in cars with air cushions.⁶⁴

Allstate Insurance Company had, as noted above, become a leading advocate of airbags. It had bought for its company fleet airbag-equipped Mercurys from Ford and some of the 1,000 Chevrolets built with air cushions by GM. It advertised the virtues of airbags both in national print media and on television. Now in testimony before the Senate Commerce Committee, one of its actuaries, John S. Trees, challenged the validity of the GM jury study. He noted that the reliability of the jury methodology was unproven and

62. Letter from E.N. Cole, President, General Motors Corporation to Claude S. Brinegar, Secretary of Transportation, June 22, 1973.

63. Richard A. Wilson, Carl M. Savage, "Restraint System Effectiveness," *Proceedings, Automotive Safety Engineering Seminar*, June 20-21, 1973, Sponsored by Automotive Safety Engineering Staff, General Motors Corporation.

64. Interview with Donald L. Schaffer, January 12, 1993; Graham, op. cit., p. 74.

that the sample was biased. About half the sample was from DOT multidisciplinary accident reports, which the department itself had characterized as biased, and half was from the files of Motors Insurance, a GM subsidiary that wrote only physical damage insurance, not including liability. Claims involving fatalities made against the insurer would, therefore, over-represent single car crashes, which are significantly more severe than others.⁶⁵ Allstate's critique did not lead GM to withdraw or amend its jury study.⁶⁶

The final rule on the Hybrid II dummy was crafted to meet all GM's objections. So on August 10, 1973, Cole wrote Brinegar that because of the new rule General Motors would make air cushions available in the 1974 model year on Cadillacs and some models of Buicks and Oldsmobiles. But because of the lateness of the rule, only 50,000 1974 model cars could be equipped with air cushions instead of the planned 100,000; another 100,000 were now planned for 1975 models, instead of the mass production of a million cars that had been promised earlier. Mass production would require fully automated tools that involved lead times of at least 15-18 months.⁶⁷ An October 4, 1973 status report on its air cushion project sent to NHTSA by David Martin, GM's director of automotive safety engineering, again cited the jury study as a reason for waiting until the results of actual experience demonstrated the effectiveness of air cushions. Until uncertainties about the standard were resolved, GM would not prepare for mass production, but urged the encouragement of seat belt use legislation.

[W]e urge the NHTSA to take advantage of the GM air cushion program for 1974-75 and use this experience as a basis for determining the future course of MVSS 208. If air cushion use is expanded, either as standard or optional equipment, a two-year allowance for automated tools would be needed. Accordingly we propose that the current three options for MVSS 208 be continued until sufficient field data are available for a proper decision.⁶⁸

The Center for Auto Safety questioned whether GM's production plans for airbags would produce enough crash experience to test them with any confidence, even if all of them were sold.⁶⁹

Reaction to the Interlock

Before the ignition interlock could go into production, the *Chrysler v. DOT* decision occurred. A subsequent ruling by the same court held that while the interlock option was still valid, it could no longer be subject to injury criteria using a dummy that had already been rejected. As a result, NHTSA eliminated

65. John S. Trees, "Comments on General Motors' Paper Regarding Effectiveness of Various Restraint Systems," United States Senate. Committee on Commerce. Ninety-Third Congress, First Session, *Airbag Development and Technology*, Hearings, August 1, 1973, pp. 38-40.

66. An unsigned, undated defense of the study, apparently from GM, was printed in a later volume of Senate hearings: *Motor Vehicle Safety Oversight*, Hearings Before the Committee on Commerce, United States Senate, Ninety-Third Congress, Second Session, on Motor Vehicle Safety Oversight, February 21, 25, March 21, 25, and 28, 1974. Serial No. 93-95, pp.373-376.

67. Letter from E.N. Cole, President, General Motors Corporation, to Claude S. Brinegar, Secretary of Transportation, August 10, 1973.

68. Letter from David Martin to Gregory forwarding "Air Cushion Status Report," General Motors Corporation, October 4, 1973.

69. *Status Report*, October 17, 1973, p. 8.

these injury criteria for the front outboard seat belts and the interlock requirement for the front middle seat.⁷⁰ But NHTSA insisted on retaining the ignition interlock as an alternative to passive restraints, despite petitions from General Motors, Chrysler, American Motors, and Fiat that it be dropped because of reliability concerns that could lead to consumer dissatisfaction. Even Ford, which did not object officially, was apprehensive about press and public reaction. The National Motor Vehicle Safety Advisory Committee also opposed the interlock. But NHTSA noted that the manufacturers' concerns were speculative, and that they themselves were responsible for quality control.⁷¹

From the very beginning of the 1974 model year, the publicity about the ignition interlock was overwhelmingly negative. By October 19, 1973, NHTSA had received over 400 letters on the subject and estimated that over 98 percent opposed the interlock as cumbersome, inconvenient, and an infringement on individual rights. Car dealers said it deterred sales.⁷² Horror stories about malfunctioning interlocks became commonplace in the media. Car owners, often with the connivance of auto service people, frequently disabled the mechanism permanently. Nevertheless the interlock did produce a significant increase in usage of the three-point belt. A General Motors survey in the Detroit area of 1,715 drivers of 1974 cars observed 55 percent using the shoulder portion; 48 percent of 460 right-front passengers were using it. Ford's market researchers observed 63 percent of 713 drivers and 53 percent of front-seat passengers wearing both shoulder and lap belts when they were invited to discuss their new cars during the first two months of the model car year in seven metropolitan locations.⁷³ An Insurance Institute for Highway Safety survey found that 44 percent of 606 city drivers were using both lap and shoulder belts (plus 9 percent using only lap belts) in cars equipped with the interlock, while only 8 percent of 2,246 drivers were doing so (plus 19 percent using only lap belts) in cars with the earlier buzzer-light system.⁷⁴ A later analysis by the Highway Safety Research Institute of three samples of towaway crashes involving 1973 and 1974 model year cars showed that the 1974 ignition interlock system increased full restraint system usage by a factor of 10 over 1973 cars. The 1974 full restraint system (lap and upper-torso belts) also demonstrated a greater reduction in severe injuries (AIS \geq 2) than the 1973 lap-belt-only system.⁷⁵

70. *Ford Motor Company v. NHTSA and DOT*, No. 72-1179. US Court of Appeals, Sixth Circuit, Feb. 2, 1973. [473 F.2d 1241 (1973)]; National Highway Traffic Safety Administration, Department of Transportation, [Docket 69-7, Notice 27] Part 571—Federal Motor Vehicle Safety Standards. Occupant Crash Protection, *Federal Register*, vol. 38, p. 16072, June 20, 1973.

71. *Status Report*, April 9, 1973, pp. 2-3, and April 24, 1973, p. 8.

72. *Status Report*, October 30, 1973, p. 4. Also, *The New York Times*, September 5, 1973, p. 1; October 23, 1973, p. 65; November 28, 1973, sec. III, p.13.

73. Letter from David Martin, General Motors Corporation, to James Gregory, National Highway Traffic Safety Administration, February 6, 1974; Letter from J.C. Eckhold, Ford Motor Company, to James Gregory, National Highway Traffic Safety Administration, January 31, 1974, with a study from Marketing Staff, Ford Motor Company, "Wave I, 1974 Model Seat Belt Observation Study," January 16, 1974.

74. *Status Report*, March 26, 1974, pp.10-11.

75. Joseph C. Marsh, R.E. Scott, and John W. Melvin, Highway Safety Research Institute, U. of Michigan, "Injury Patterns by Restraint Usage in 1973 and 1974 Passenger Cars," *Proceedings of Nineteenth Stapp Car Crash Conference*, November 17-19, 1975, Society of Automotive Engineers, Warrendale, PA. pp. 45.

The effectiveness of the ignition interlock in increasing belt usage and, ultimately, in reducing injuries could not overcome the public's irritation. An Insurance Institute for Highway Safety survey of drivers of 1974 model cars found that "at least 29 per cent" considered the ignition interlock one of the least liked features of their car. *The New York Times* reported in April 1974 that a check of new car owners showed interlock systems were "almost universally disliked."⁷⁶ During a House floor debate on the Motor Vehicle and School Bus Safety Amendments of 1974, whose main features were no-cost repair of manufacturer defects and school bus safety standards, Representative Louis C. Wyman (R-NH) introduced an amendment to forbid the ignition interlock requirement or any seat belt warning device other than lights. The amendment also required that federal occupant restraint standards issued for the 1977 model year or later provide for the option of either passive restraints or belts. The debate on the motion was replete with stories about motorists stranded when the interlock malfunctioned and with arguments about individual liberties and freedom of choice. The strongest opponent of the amendment, Representative John E. Moss (D-CA), did not try too hard to save the interlock, which he revealed was the result of White House intervention after the 1971 meeting between President Nixon and Henry Ford. Instead, he concentrated on removing mention of the passive restraint standard. But Wyman objected to making car buyers pay an additional \$200 to \$300 for every car they would buy after 1976 (accepting the carmakers' estimates of the cost of airbags); he wanted to "make sure they have an option..." His amendment was passed 339 to 49, with 44 not voting.⁷⁷

The House passage of the Wyman Amendment led to a mobilization of safety and consumer advocates. Even the day before its passage, Secretary Brinegar had written to Congressman Moss objecting to the amendment and especially to the restriction on passive restraint standards. He said he had "misgivings about Congress legislating specific safety standards which we believe are more appropriately the subject of traditional regulatory action."⁷⁸ The National Safety Council, the Center for Auto Safety, the American Association for Automotive Medicine, and insurance interests led by Allstate and IIHS all lobbied against the proposed restriction. Allstate bought advertising space in *The New York Times*, *The Washington Post* and *The Washington Star-News* to tell the story of Dr. James Jonas. He believed his life and his wife's were saved by airbags in a high-speed collision with an El Camino pick-up, whose occupants were seriously injured. Jonas experienced only a sprained wrist and his wife had a hairline fracture of the pelvis. He bought another Buick with airbags, saying they should be standard equipment.⁷⁹ On the other hand, the carmakers, led by Richard Gerstenberg, the CEO of General Motors, and Lee

76. *Status Report*, October 11, 1974, pp. 8-9; *The New York Times*, April 7, 1974, sec. XI, p. 20.

77. U.S. Department of Transportation, National Highway Traffic Safety Administration, *National Traffic and Motor Vehicle Safety Act of 1966: Legislative History*, U.S. Government Printing Office, 1985, vol. IV, pp. 188-201 reprints the House debate of August 12, 1974, from the Congressional Record.

78. *Ibid.*, pp. 586-588.

79. *The New York Times*, August 20, 1974, p. 17; *Status Report*, September 9, 1974, pp. 6-8, and September 27, 1974, pp. 5-6.

Iacocca, president of Ford, called for the ending of the interlock requirement, as well as the elimination of other safety and anti-pollution rules, to avoid price increases or even to allow reductions.⁸⁰

The next vote on the issue came in the Senate, on September 11, 1974, on a motion by Senators James L. Buckley (R-NY) and Thomas Eagleton (D-MO) to outlaw interlocks and require hearings and congressional approval before any occupant restraints other than seat belts could be approved. Besides eliminating the regulatory “error” on interlocks, they both said it was important to make sure that something as expensive as the airbag was feasible. Eagleton expressed concern about airbag deployment when people were using pipes or wearing glasses. He also noted that their proposal would not preclude a passive restraint standard.

The Senate passed the motion by 64 to 21 and then withdrew it unanimously because it was attached to a highway bill rather than to the companion to the House bill. The Senate had already passed its companion bill in 1973, but Buckley contended that the effect was “to place the Senate clearly on record in opposition to the mandating of the systems and, therefore, in effect, we had instructed the Senate conferees to accede to the House position.” On the other hand, Senator Hartke said that the result “has preserved the flexibility of the Department of Transportation with respect to passive restraints...”⁸¹

A conference committee of the House and Senate adopted wording that directed the Department of Transportation to end the ignition interlock and continuous buzzer requirements within 120 days of the President’s signature of the law. DOT was also directed to have public hearings on rules requiring occupant restraints other than seat belts, as well as to submit the rules to Congress, which might disallow them within 60 days. President Ford signed the bill on October 28, 1974. Later in the year Congress eliminated incentive grants for states that passed safety belt use laws.⁸²

NHTSA chief Gregory later said that he felt the interlock had saved lives and that he had never been encouraged by the Administration to remove the interlock standard before the law was passed.⁸³ However, NHTSA used the debate on interlocks as reason for delaying final action on a passive restraint rule that it had proposed in March. And, in fact, public and congressional reaction to ignition interlocks would cast a shadow over airbag regulation efforts for the next ten years.

James Gregory and the Passive Restraint Debate

After James Gregory was confirmed as Administrator of NHTSA on August 13, 1973, there was no real action on passive restraints by the agency for the rest of the year. Pressure for action mounted slowly. Donald L. Schaffer, general counsel of Allstate, wrote Secretary Brinegar in September to say that

80. *The New York Times*, September 1, 1974, p. 18, and September 4, 1974, p. 57.

81. *Legislative History*, vol. IV, p. 289. The Senate debate on September 9 and 11, 1974 is reproduced on pp. 258-289.

82. *Status Report*, November 11, 1974, p. 9.

83. *Regulatory Reform—Volume IV: Consumer Product Safety Commission, National Highway Traffic Safety Administration, Federal Trade Commission*, Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, 94th Congress, 2nd Session. Serial No. 94-83, p. 466.

Allstate would give a 30 percent discount on personal injury protection and medical payment premiums for airbag-equipped cars. He asked for quick action to require airbags. At the end of October Volvo petitioned for a rule, saying that the delay had caused work that might ultimately have to be discarded. The next month the Center for Auto Safety urged a prompt decision, noting that early surveys of the effect of the ignition interlock on seat belt use showed that use rates were far below the 80-85 percent level that former Administrator Toms said might justify the abandonment of passive restraints. During Senate oversight hearings on motor vehicle safety in February of 1974, Ralph Nader accused Secretary Brinegar and Administrator Gregory of having been chosen to delay automatic protection standards:

Who else but these men could have given comfort and assistance to the anti-airbag forces within General Motors led by Chairman Gerstenberg so they could erode the position of the formerly ascendant pro-airbag forces?

This is creative lethality rare even among the most retrograde of regulatory agencies. But then the “Secretary of Penn Central” has duties other than auto safety to fully occupy his limited, one-track managerial abilities.⁸⁴

Gregory defended himself by saying that he was working on the passive restraint issue, but that updating the temporary dummy requirements had to come first to avoid problems when new passive restraint standards were issued. Brinegar insisted that passive restraints were at the top of his list of measures for cutting highway deaths.⁸⁵

On March 19, 1974, NHTSA proposed a new occupant restraint standard, noting that, even with the ignition interlock, the use of three-point belts was at about 60 percent and likely to go lower as car owners discovered how to disconnect the interlock. On the other hand, the agency said, road experience was confirming the potential of air cushions, and passive belts were at an advanced stage of development. Earlier, on January 30, the agency had answered a Volkswagen petition by proposing to count its two-point belts as passive restraints at least for the 1975 model year. Now NHTSA wanted to extend the then-existing options — including the interlock, which had not yet been outlawed — until the beginning of the 1977 model year, a year later than the previous revision. By that time the rule would require passive protection for front-seat passengers in 30 mph crashes into a barrier in frontal, angular, and lateral modes. If the car could not meet a rollover test passively, seat belts would be required at all positions, and rollover tests would have to be met with belts fastened. This compromise with purely passive protection was justified, in part, on the ground that it allowed sports cars and convertibles to meet the rollover test as required by the court in *Chrysler v. DOT*. Passive protection was no longer required for rear-seat

84. *Motor Vehicle Safety Oversight*, Hearings Before the Committee on Commerce, United States Senate, Ninety-Third Congress, Second Session, on Motor Vehicle Safety Oversight, February 21, 25, March 21, 25, and 28, 1974, Serial No. 93-95, p. 41. For the earlier comments see *Status Report*, February 21, 1974, p. 3.

85. *Motor Vehicle Safety Oversight*, pp. 74, 120.

occupants since it was not cost-effective. Also, passive belts would be required to have a push-button release mechanism for emergency exit, a significant addition that would have unexpected ramifications.⁸⁶

The same day he issued the 30 mph occupant protection proposal, Gregory also released an advance notice proposing to raise to 45 or 50 mph the speed of barrier crashes in the rule, effective September 1, 1980. This was based on the judgment that technology already existed to protect occupants in a fixed barrier crash that exceeded 40 mph.⁸⁷ Six months were allowed for comment, and auto manufacturers were uniformly negative, despite the NHTSA-sponsored research. But this announcement, along with the proposed 30 mph rule for passive restraints, signaled that Gregory, like his predecessors, had been swayed by the case for passive restraints, especially airbags. His remaining concern was how to impose the standard on a large scale with the necessary reliability.⁸⁸

Indeed, much of NHTSA's research in these years concentrated on passive restraints, with an emphasis on airbags.⁸⁹ Special attention was paid to the feasibility of airbag protection above 30 mph. Extensive sled tests by Olin, an airbag manufacturer, seemed to establish feasibility up to 50 mph. Calspan worked on a combination of airbags, collapsible dash panel, and crushable knee bar that performed satisfactorily in sled tests with a 50 pound child at 40 mph and an average-size male at 50 mph. Ten frontal barrier crashes of 1972 Pintos at 30-35 mph met existing federal safety criteria.⁹⁰ But NHTSA felt that while the feasibility of protecting drivers in full-size cars up to 40-45 g seemed established, this was not yet the case for subcompacts. The agency was also interested in exploring the idea of passive air belt, but dropped radar sensors because of the frequency of error.⁹¹

Technological advances did not figure in the response of the automobile manufacturers to the March 1974 proposal for 30 mph passive restraints. All four major American carmakers told NHTSA that

86. Department of Transportation, National Highway Traffic Safety Administration, [49 CFR Part 571] [Docket No. 74-14; Notice 1] Motor Vehicle Safety Standards; Occupant Crash Protection, *Federal Register*, vol. 39, Tuesday, March 19, 1974, pp.10271-10273. The passive belt proposal was [49 CFR Part 571][Docket 74-4; Notice 1] Motor Vehicle Safety Standards. "Passive Belt Release Mechanism," *Federal Register*, vol. 39, January 30, 1974, p. 3831. The latter proposal was made final in [Docket 74-4; Notice 2] Part 571-Federal Motor Vehicle Safety Standards, "Passive Belt Requirements," *Federal Register*, vol. 39, April 25, 1974, pp. 14593-14594. In this rule passive belts were to have emergency releases provided an ignition interlock and warning buzzer encouraged their reattachment. After Congress prohibited these mechanisms, passive belts were still required to have a latch type emergency release involving single point push button action. *Federal Register*, vol. 39, p. 38,380 (October 31, 1974), cited in *State Farm v. DOT*, 680 F. 2d 203 (1982), p.211. Passive restraint was defined: "The essence of a passive restraint is that it provides at least the minimum level of protection without relying on occupant action to deploy the restraint."

87. [49 CFR Part 571][Docket No. 74-15; Notice 1], Motor Vehicle Safety Standard; Advance Notice Concerning Higher Speed Protection Requirements, *Federal Register*, vol. 39, March 19, 1974, p. 10273.

88. Interview with James Gregory, June 18, 1996.

89. Through fiscal 1972, NHTSA had spent \$3 million on airbag research and \$700,000 on other passive restraints. *Department of Transportation and Related Agencies Appropriations for 1974*. Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives, 93rd Congress, 1st Session, part 3, p.130.

90. National Transportation Safety Board, *Safety Effectiveness Evaluation*, vol. 2, p. 49; Norris E. Shoemaker and David J. Biss, "The Development of an Airbag on Collapsible Dashpanel Restraint System for Right Front Seat Occupants," in *3rd International Conference on Occupant Protection*, Troy, Michigan, July 10-12, 1974. Society of Automotive Engineers, New York, N.Y., p. 168; and Status Report, April 9, 1974, pp. 1-3.

91. Charles E. Strother and Richard M. Morgan, "The Efforts of the National Highway Traffic Safety Administration in the Development of Advanced Passive Protection Systems and Child Restraint Systems," in *3rd International Conference on Occupant Protection*, pp. 246-267.

the proposal was not needed because lap and shoulder belts, when used, were at least as effective as airbags in protecting vehicle occupants. The ignition interlock, it was claimed, had tripled belt use rates, and the increase would continue, especially as belt use became mandatory with the passage of state laws. The lead time allowed for passive restraints was insufficient, especially for small cars. Ford said it had not yet worked on small cars, and GM said more work was needed before it could produce air cushions for subcompacts. The other manufacturers believed that GM's pricing of airbags was too low, and GM itself believed that the costs outweighed the benefits. In May, Ford released a study in which it estimated that airbags plus lap belts would cost 270 percent more than lap and shoulder belts but be only equally effective in reducing deaths and injuries. All the manufacturers felt that NHTSA did not yet have objective measures for its new proposal.⁹²

For the first time since passive restraints had become a regulatory issue, automobile insurers that represented the overwhelming majority of the industry in financial terms supported Gregory's passive restraint proposal. The companies taking this stand were essentially the membership of the Insurance Institute for Highway Safety. Dr. William Haddon, president of IIHS, had already announced his support both for passive restraint rules and for mandating seat belt use when passive restraints were not available. "Passive" public health measures were, he said, more successful, but when they could not be used, "active" ones should be mandated. Allstate continued to be the most outspoken among the insurers, making it clear that it regarded airbags as the passive restraint of choice.⁹³

The automobile insurance industry had hired Haddon in 1969, after he had left NHTSA, to turn IIHS into an active research and communications organization. It was clear to insurers that the trend in auto crashes was a major contributor to the rise in insurance premiums that had led to periodic tightening of insurance regulations by states. The oil embargo intensified that regulatory pressure. State insurance departments argued that the decrease in car usage and the dramatic decline in crash fatalities meant a windfall for insurers that should be balanced by rate reductions. In January 1974, the Council on Wage and Price Controls announced a freeze on auto insurance premiums until March 17. This occurred at a time when rapid inflation was dramatically increasing the cost of vehicle repairs and medical care. The freeze was lifted as scheduled, but the pressure that it, as well as state actions, put on insurers' financial results led them to focus more intensely on basic cost-control strategies. Haddon and Allstate's Don Schaffer convinced the industry that mandating passive restraints, especially airbags, was one such strategy.⁹⁴

92. The three major American manufacturers all submitted their comments to the docket on June 3, 1974. For GM, see 74-14-No.1-074; for Ford, 74-14-No.1-067; for Chrysler, 74-14-No.1-66-01. See, also, *Status Report*, June 18, 1974, pp. 1-5.

93. *Status Report*, May 23, 1974, pp. 1-3 for Allstate and other insurers, comments; *ibid.*, February 21, 1974, p.7, for a reprint from the *Journal of Trauma* of an editorial by William Haddon, Jr., President of IIHS.

94. This is based on the author's personal experience as member of the Board of Directors of the Insurance Institute for Highway Safety. For the Cost of Living Council's actions on auto insurance, see *The New York Times*, January 18, 1974, p. 35, and February 28, 1974, p. 53.

Among U.S. carmakers, General Motors alone continued to publish substantive research on airbags, which it still called “air cushions” or “ACRS.” During the middle of 1974 GM engineers reported on a series of 40 tests of human volunteers at eight levels of severity, compared with 32 dummies under similar conditions.

No significant injuries were experienced by the volunteers. The extent of trauma was generally limited to minor abrasions, ecchymosis, and erythema. In comparable tests, the anthropomorphic [Hybrid II] dummies’ response to impact was more exaggerated than the humans.⁹⁵

NHTSA reported 33 similarly favorable tests with volunteers.⁹⁶ One part of GM’s testing included surprise air cushion deployments during driving; no driver lost control of the car. GM was, of course, still offering air cushions on some of its larger cars, but few were being bought. The sale of large models had plummeted with the energy crisis.

The most powerful supporter of air cushions at GM, President Cole, due to retire in September 1974, made some valedictory comments about airbag technology at the SAE 3rd International Conference on Occupant Protection. He still felt that passive restraints should be a top priority, since people were not making active use of safety belts. Although the 14 real-world crash deployments that had occurred were not enough to evaluate the air cushion’s effectiveness:

our experience so far satisfies us that it works like it’s supposed to... But at the same time we strongly resist the idea that airbags should be made mandatory across the board over all car lines. We have told the federal government that, for a number of reasons, we believe the air cushions should remain an optional item, allowing us to further refine and develop it on an orderly basis — looking for ways to reduce the weight and the cost, for example — and to further evaluate its occupant protection value in the field.

Cole thought it might be time to slow down rulemaking in order to evaluate accomplishments and consider new directions, as well as have enough time to develop energy-absorbing systems for small cars.⁹⁷ About this time Volvo and Allstate announced the first road test of smaller cars — Allstate would add 75 airbag-equipped Volvos to its 450 Ford and General Motors large cars with airbags.⁹⁸

In August, 1974, about the time that the Wyman amendment to outlaw both interlocks and mandatory passive restraints was being debated in the House of Representatives, Gregory released NHTSA’s first major cost-benefit analysis of an occupant protection proposal, the passive restraint rule issued in March. Gregory felt that the study clearly demonstrated the superiority of passive restraints — in this case airbags — over seat belts:

95. L.C. Lundstrom, R.A. Wilson, G.R. Smith [GM’s Automotive Safety Engineering Staff], “Relating Air Cushion Performance to Human Factors and Tolerance Levels,” prepared for the 6/6/74 session of the *Fifth International Technical Conference on Experimental Safety Vehicles*.

96. *Status Report*, September 9, 1974, p. 12.

97. Remarks by Edward N. Cole, President, General Motors Corporation, at SAE 3rd Int Conference on Occupant Protection. July 11, 1974, Troy Michigan.

98. *Status Report*, June 18, 1974, p. 4.

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 belt systems, while in similar environments human volunteer test subjects with air-cushion restraints received minor or no injury.⁹⁹

The price of the interlock system was assumed to be \$100 per car, that of the airbag/lap belt combination \$210.

Interlock-belt system effectiveness was compared with air cushion-lap belt system effectiveness in terms of reduced deaths and injuries. If the total passenger car population were equipped with the interlock belt system we could expect 7,000 fewer fatalities and 340,000 fewer injuries annually. Comparable figures for the air cushion-lap belt system are 15,600 and 1,000,000, respectively. Using three different techniques for economic analysis, the benefit/cost ratios range from 2.9 to 5.2 for the interlock-belt system and 3.6 to 6.0 for the air cushion-lap belt system.¹⁰⁰

All the American manufacturers rejected the conclusions of NHTSA’s cost-benefit study. They disagreed with its assumptions about the cost of airbags, the cost of deaths and injuries, and the effectiveness of both airbags and belts. GM preferred effectiveness estimates based on its own study. The American Automobile Association commissioned a study from Lawrence Goldmuntz of Economic and Science Planning that was widely cited for showing the superior cost-effectiveness of belts, when used, to airbags. Within the industry, only Volvo conceded that:

given the American public’s reluctance to make use of presently available, less expensive belt type restraint systems, passive restraints, or specifically the airbag system seems to be cost effective in terms of overall societal benefit/cost ratio.¹⁰¹

Partly in response to the large number of comments and partly to take account of the Congress’ prohibition of the ignition interlock, NHTSA amended its cost-benefits analysis in December 1974. Estimated costs of airbags were raised somewhat, and those of belts lowered. Increased belt effectiveness was assumed in frontal crashes and lowered airbag effectiveness was assumed in side and rollover crashes. But with the elimination of the ignition interlock requirement, belt use was predicted to gradually decline to 20 percent.

System benefits are now estimated to be 2,700 lives and 128,000 injuries saved by the lap shoulder belt system with simple reminder as compared with saving 11,600 lives and 620,000 injuries saved by the air cushion and lap belt system (with simple reminder). Therefore the proposed system would save 8,900 lives and 492,000 injuries in cars of

99. Motor Vehicle Programs, NHTSA, DOT, *Analysis of Effects of Proposed Changes to Passenger Car Requirements of MVSS 208*, August, 1974, p. 9.

100. *Ibid.*, p. 1.

101. Quoted in *Status Report*, December 10, 1974, p.6. See also the September 9, 1974 issue, pp. 8, 10, 11. For examples of other comments: “Comments of General Motors Corporation with Respect to the NHTSA Report Entitled ‘Analysis of Effects of Proposed Changes to Passenger Car Requirements of MVSS 208’” [69-7 GR 256 #1]; and Letter from S.L. Terry, VP Public Responsibility and Consumer Affairs, Chrysler Corporation, to James Gregory, NHTSA, October 3, 1974, plus Chrysler’s comments on “Analysis of Effects of Proposed Changes to Passenger Car Requirements of MVSS 208” [69-7-GR 256-#16].

each model year affected... Economic comparison of updated societal benefits with refined consumer cost estimates indicates ultimate cost-benefit ratios of 1.8 for the lap-shoulder belt system and 3.2 for the air cushion-lap belt system, with the simple reminder in both cases.¹⁰²

In early 1975, Lawrence Patrick, an academic consultant to the auto industry who had been an early proponent of airbag technology, attacked the NHTSA analysis as “grossly biased in favor of the airbag.” But he seemed to be referring to the original, rather than to the amended, analysis. He found mandated three-point belts with knee bars more cost-effective than airbags and was concerned about protecting the rights of belt users who did not want the added cost of airbags.¹⁰³

1975: Another Year of Debate and Delay

Early in 1975 George Eads, who had recently become assistant director for government relations of the Council on Wage and Price Stability in the Executive Office, was asked by NHTSA’s James Gregory to comment both on the revised cost-benefit study and on whether the passive restraint standard should be implemented. Eads, in turn, asked Larry Goldmuntz, of Economics and Science Policy, to prepare a critique of the assumptions in the study. Goldmuntz’ critique essentially built on his earlier work for the American Automobile Association. Eads felt that Goldmuntz raised serious questions about NHTSA’s estimates of injury and death costs, restraint system costs and effectiveness, and belt usage rates, leading Eads to ask whether mandatory seat belt laws might not be more cost-effective than passive restraint mandates:

I am impressed that the U.S. appears to be the only country opting for airbags while several others are passing such laws. I am informed that the promise of Federal funds has generated considerable interest in such laws. I am informed that this promise has since been withdrawn and that as a result, state interest has cooled. I would like to know why the policy on this law has changed.

Then Eads went on to ask whether NHTSA had considered “the possibility of conducting a large scale experiment in which 500,000 cars per year would be equipped with airbags with the Federal government picking up the increased cost.” Such an experiment would avoid the “downside risk” of being saddled with an unnecessarily expensive regulation if any of NHTSA’s key assumptions proved to be wrong.¹⁰⁴

102. Motor Vehicle Programs, NHTSA, *Amendment to Analysis of Effects of proposed Changes to Passenger Car Requirements of MVSS 208*. December 1974.

103. L.M. Patrick, “Passive and Active Restraint Systems-Performance and Benefit/Cost Comparisons,” SAE 750389. [2/75]

104. Memorandum from George Eads, Assistant Director, Government Operations and Research, Council on Wage and Price Stability, for James B. Gregory, NHTSA, on Motor Vehicle Safety Standard 208, February 7, 1975.[69-7-GR-256] Also in the same docket file: Review and Critique of National Highway Traffic Safety Administration’s Revised Restraint System Cost-Benefit Analysis, prepared by Economics and Science Planning, Inc., for Council on Wage and Price Stability. January 22, 1975, corrected February 10, 1975. Eads testified about his large scale test idea before the Senate Commerce Committee on March 20, and he later gave IIHS further details. *Status Report*, March 31, 1975, pp. 9-10.

Gregory was apparently sensitive to such critical comments. After a couple of months he sent Eads a long letter that included a detailed response to Goldmuntz' critique and a denial that NHTSA's analysis represented only one side of the debate. Although by law the key criterion for motor vehicle standards was safety, NHTSA had begun its cost-benefit study before the Executive Office had required inflation impact analyses.¹⁰⁵ It was Congress that had removed the incentive money for state laws mandating seat belt use; NHTSA still favored the incentives. He said NHTSA was not against the idea of a large-scale demonstration of airbags, but it could not suspend rulemaking to wait for the results of such a test. Moreover, Gregory noted that the proposed standard did not require airbags, it required any passive restraint that met the injury criteria.¹⁰⁶ Gregory's letter did not forestall a speech by President Ford in which he illustrated the need for cost-benefits analyses of regulations by asking whether airbags "had proven sufficiently cost-effective for us to require their installation in all cars at between \$100 and \$300 each."¹⁰⁷ At a later date, Gregory felt that this comment could only have been prompted by material from COWPS; he had no way of getting a rebuttal to the White House.¹⁰⁸

Brinegar had resigned as secretary of the Department of Transportation at the end of 1974, effective February 1. William T. Coleman, a black corporate attorney and liberal Republican, was named to succeed him. Gregory remained at NHTSA. In March 1975 he announced a public meeting on the passive restraint proposal, to begin May 19. Gregory asked all automakers and restraint equipment manufacturers to answer a detailed questionnaire on passive restraints and to summarize their responses at the public meeting. If data were not submitted voluntarily, Gregory threatened to use his subpoena power.¹⁰⁹

The public meeting lasted five days and Gregory was present for most of it. The carmakers reiterated their now unanimous opposition to the passive restraint standard, and almost all of them supported seat belt use laws. General Motors provided the most detailed response. While not opposing the passive restraint concept as such, GM said that only the system it still called ACRS (air cushion restraint system) could meet the federal safety standards for most cars. Padded interiors would be too confining, and passive belts, according to GM, were uncomfortable, inconvenient, and could not protect a center-seat passenger. And although ACRS was performing reliably and had not caused any injuries or loss of control, there were too many problems with ACRS. Existing crash test methods did not produce results that were correlated with real-world ACRS experience. With 11,000 car years of experience and only 44 deployments, mostly at low speeds, there were not enough data to justify replacing lap/shoulder belt

105. Executive Order 11821, November 24, 1974 and Office of Management and Budget circular A-107, January 28, 1975.

106. Letter from James B. Gregory, Administrator, NHTSA, to George Eads, Assistant Director, Government Operations and Research, Council on Wage and Price Stability, April 25, 1975 [74-14-N01].

107. Quoted in *Status Report*, May 12, 1975, p. 6.

108. Interview with James Gregory, June 18, 1996.

109. An example of Gregory's letter is the one he sent to David Martin, Manager, Automotive Safety Engineering, April 18, 1975, with a 21 page questionnaire attached containing three exhibits.

protection. GM also maintained that to achieve protection comparable to lap/shoulder belts, lap belts would have to be used with air cushions, violating the principle of passivity. Not only would the added weight and cost of ACRS violate existing energy and price guidelines, said GM, their additional cost, \$218, would cause a 5 percent decline in new car sales, translating into a loss of more than 100,000 jobs.

GM said it had already spent \$60 million on ACRS and had absorbed a \$250 loss on each system sold. It would have to spend \$400 million more to meet the costs of the proposed standard, and would need 48 months to gear up for production in all car lines. GM argued that, instead, ACRS should be allowed to develop through normal business competition. How this might happen was not clear since GM was not planning to make air cushions available after the 1976 model year. This was partly because of its new emphasis on small, energy-efficient cars, and partly a result of its sales experience. GM had sold only 10,000 ACRS cars; it had further capacity for only 10,000 ACRS cars through the 1976 model year. GM proposed mandatory seat belt laws, while accumulating field experience with airbags over the next five years.¹¹⁰

The Ford Motor Company maintained that airbags were unproven and that airbags plus lap belts were uneconomical. If forced to provide passive restraints, Ford said it would need 33 months to put them in one car line and 52 months for all lines. Ford was talking specifically about airbags; like GM and Chrysler, it agreed that no other passive restraint could be installed in all cars. But Ford had no plans to produce passive restraints. Like the other carmakers, Ford strongly supported the promotion of seat belt use, especially through laws. Ford and Chrysler also agreed with George Eads that NHTSA should conduct a massive field test of airbags.¹¹¹

Although none of them supported a passive restraint requirement, and most emphasized the problems of adapting airbags to small cars, some foreign car manufacturers showed a little more flexibility toward the technology. Mercedes-Benz held that the three-point belt was the key protection in a strong passenger compartment and agreed with a study done for NHTSA by Man Factors, Inc., that the design of active belts should be improved to encourage their use. Mercedes “also consider[ed] the airbag as a supplement to an occupant crash protection system and not as a complete system itself.” It was

110. General Motors' position is summarized from the presentation, “General Motors' Position on Mandating Passive Restraints,” May 20, 1975, the letter from David Martin to James Gregory, June 16, 1975, transmitting General Motors' answers to Gregory's 4/18/75 questionnaire. GM's field experience was presented by Gerald W. Scheel, Staff Engineer, Automotive Safety, in DOT, NHTSA, *Stenographic Transcript of Hearings in the Matter of Occupant Crash Protection, Motor Vehicle Standard No. 208*, May 23, 1975. Volume 5, pp. 79-115.

111. Presentation of John C. Eckhold, Director of Automotive Safety, Ford Motor Company, *Hearings in the Matter of Occupant Protection*, May 20, 1975; Ford Motor Co., “Reply to Letter of Dr. James B. Gregory Dated April 18, 1975, Requesting Information on Restraint Systems,” June 16, 1975 [docket no?]; and John Versace and Roger J. Berton, Ford Motor Co, “Determination of Restraint Effectiveness: Airbag Crash Test Repeatability,” SAE Automotive Engineering Congress and Exposition, Detroit, Michigan, February 24-28, 1975, SAE 750395. Chrysler also told NHTSA it would choose airbags plus lap belts for standard and intermediate cars and either this or passive belts for smaller cars if it were forced to provide passive restraints against its better judgment. Chrysler letter to Gregory, 6/18/75, signed by S.L. Terry, answering the 4/18/75 NHTSA questions [74-14-N01-153]

working on a system that would integrate airbags with improved belts, for possible field testing in the fall of 1975.

This system utilizes an active three-point belt improved to encourage occupant use by better placement of anchorage points, improved retractors and easier access. To improve crash protection capability, the passenger belt will be equipped with tensioners and load limiters, and a 60-liter airbag will be installed in the steering wheel.¹¹²

Volvo had already tested airbags that met the 30 mph frontal barrier standard and sometimes met it at 40 mph. Volvo agreed that airbags plus a lap belt or three-point belts were both cost-beneficial, but that the benefits of three-point belts were lower because of low use rates in the United States. Volvo said it could meet a passive restraint standard by the 1979 or 1980 model year, but preferred efforts to convince the public of the value of seat belts through a federal mandatory use law and to leave airbags optional.¹¹³ Volkswagen also voiced its preference for mandatory belt use laws over a passive restraint rule, while it continued making passive belts available.¹¹⁴

In its presentation, General Motors placed some stress on a telephone survey of 475 buyers of 1975 full size Oldsmobiles, done to explore the reasons for the poor sales of ACRS. Sixty-eight percent of the buyers had been somewhat aware of the ACRS option, 11 percent had considered it and only 3 percent actually purchased it. GM did note that about half (actually 57 percent) thought that ACRS would be very or somewhat beneficial if installed in all cars, but that only 1 percent would have a great deal of interest in buying it at \$300, and about 33 percent would at \$100. GM also cited other negative surveys by Chrysler and two mail surveys of AAA members in stating that all the evidence pointed to the fact that the public did not accept the air cushion. But Ben Kelley, of the Insurance Institute for Highway Safety, said that public acceptance was not a criterion for assessing the proposal and that the surveys were not valid.¹¹⁵

Because of the uncertain demand for airbags, potential suppliers — Allied Chemical, Eaton, Olin and Thiokol, and Rocket Research — had all stopped production work, and most had suspended further investment in research. Allied said that it had developed a sound- and pressure-reduction feature for all lines, as well as bag-folding techniques that eliminated the risk to out-of-position children. But it did not

112. Dr Willie Reidelbach, Director of Basic Body Design and Research, Daimler-Benz, in DOT, NHTSA, *Stenographic Transcript of Hearings in the Matter of Occupant Crash Protection, Motor Vehicle Standard No. 208*, May 19, 1975, pp. 223-243; Daimler-Benz AG, Response to NHTSA Questionnaire Regarding Passive Restraint Development, May 19, 1975. [74-14-N01-138c]

113. Letter from Donald W. Taylor, Manager, Product Safety and Quality, Volvo of America Corporation, to Robert Carter, NHTSA, with Revised testimony for 5/19-23 hearings, sent July 10, 1975. Std 208 Docket 74-14. The version of Volvo's testimony presented to the May 20, 1975, meeting also noted that research by Lawrence Patrick, which it had sponsored, that emphasized the problem of standing children, should not be counted against airbags. Airbags were not the root cause of the problem.

114. Submission of Volkswagen Regarding the NHTSA-questionnaire on restraint systems, May, 1975, [74-14-N01-138c]; presentation by Joseph W. Kennebeck, Manager, Emissions, Safety and Development Department, Volkswagen, May 20, 1975.

115. The full report of the GM survey cited in its presentation is Market Research Group, Inc, "Air Cushion Restraint System: National Consumer Research Study," prepared for Market Research Department, General Motors Corporation. May 7, 1975. Kelley's criticism is in *Stenographic Transcript*, May 23, 1975, vol.5, pp.200-209.

expect to begin producing equipment on any meaningful scale without a federal mandate that would cause car companies to place large orders. Possibly to avoid contradicting the auto manufacturers, other suppliers avoided going even this far in support of the standard, but they generally emphasized their solutions to problems cited by the carmakers, including adapting airbags to compact or sub-compact cars.¹¹⁶

Seat belt manufacturers, represented by the American Safety Belt Association, compared the unproven value of airbags to the well-established benefits of seat belts, whose use they said should be mandated. The effectiveness of seat belt use laws had already been shown abroad. At the very least, said the associations, a decision favoring passive restraints should be put off until they were tested on a large scale.¹¹⁷

The supporters of passive restraint standards at the May 19-23 meetings were essentially the same as those who had registered their support the year before. They included the Insurance Institute for Highway Safety, most of the automobile insurance industry, and consumer groups, especially those allied with Ralph Nader. IIHS spokesmen Haddon and Kelley attacked GM, Ford, and Chrysler for failing to carry through on earlier promises to make airbag-equipped cars generally available. IIHS showed crash test films that compared airbag-equipped cars hitting a barrier at over 35 mph with nonequipped cars. In the first case, the dummies were restrained by the airbags; in the second, they collided with the dash board, glove compartment, and other parts of the interior. In a third test, illustrating an out-of-position adult, IIHS showed a panic braking at 36 mph, followed by a barrier crash at 19.3 mph, in which the dummies lurched forward at braking, but were forced into position by the deploying airbags. Brian O'Neill of IIHS questioned the growing emphasis on cost-benefit analysis, citing the difficulty of estimating many aspects of the costs of a life. Instead, he advocated relying on the relative effectiveness of restraints for reducing injury and death.¹¹⁸

Shortly after it testified, IIHS questioned the significance of a favorite issue raised by airbag opponents — the danger of airbags to children. It reported a survey of 4,602 children in vehicles leaving malls in Maryland and Virginia. Only 123 children were in positions where they would be contacted by airbags early in their deployment. In a related observational survey, only 7 percent of children were properly restrained.¹¹⁹

Allstate's automotive engineering director, Jack Martens, reviewed favorable cases of airbag deployments. He was followed by John DeLorean, a former senior General Motors executive, who was

116. *Stenographic Transcript*, May 21, 1975, pp.3-21, 22-32, 84-97; letter from Bruce H. Pauly, Vice President-Engineering and Research, Eaton Corporation, to Gregory, NHTSA, May 13, 1975, explaining why Eaton will not make a presentation at the 5/19 meeting. Std 208 Docket 74-14. Allied Chemical Corporation, Automotive Products Division, Response to Questions for Restraint Systems Suppliers [May, 1975] [74-14-N01-138d].

117. *Stenographic Transcript*, May 19, 1974, pp. 104-124; May 23, 1974, pp.11-12.

118. *Stenographic Transcript*, May 19, 1975, pp.29-55 for testimony by Haddon and Kelley, and May 23, 1975, pp. 190-199 for O'Neill.

119. Allan F. Williams, "Airbags and Out-of-Position Children-A Survey," IIHS, June 1975; *Status Report*, May 12, 1975, pp. 1-4.

supervising a cost-benefit analysis for Allstate. The study was much more favorable toward airbags than was NHTSA's. DeLorean predicted that the lowest-weight vehicles would almost double their road presence in the next decade. This would result in a 40 percent rise in injuries and deaths without remedial action. If airbags were installed in all cars by 1978, DeLorean said, fatalities in 1985 would be 2.5 percent below those forecast for 1975. Belt systems, he said, do not perform well in smaller cars, while airbags do. Charles Y. Warner, of Brigham Young University, a former NHTSA staff member, presented some of the details of the Allstate/DeLorean study, adding the conclusion that a delay in the rollover, as well as in the passenger side impact requirements of the passive restraint rule, was probably justified. Don Schaffer completed Allstate's presentations by questioning GM's commitment to marketing airbags, raising doubts about the relative effectiveness of both active and passive belts, and stating that mandatory seat belt laws were not a substitute for automatic protection. Like Haddon, he supported seat belt laws as a supplement to a passive restraint standard.¹²⁰

Speaking for the automobile insurance trade associations, Don Segraves thought the revised NHTSA cost-benefit analysis understated the cost-effectiveness of passive restraints. The plan of the domestic automakers to redesign cars to meet national energy-savings goals proved a good opportunity to incorporate new passive restraint designs. He predicted that the standard would result in insurance savings, with immediate discounts of 15-20 percent in medical payment and no-fault coverages, and additional savings being realized in injury liability and life insurance. This was a partial response to a request from NHTSA to the insurance industry earlier in the year, asking about discounts for airbags. Allstate had already announced such discounts in 1973. Now Nationwide announced a similar 30 percent discount in medical payment, family compensation, and no-fault premiums for cars with airbags.¹²¹

The Center for Auto Safety reviewed the now numerous and unsuccessful attempts to pass seat belt use laws in the states. Consumers Union proposed that airbags be mandated for front seats because they were the only practical passive restraint that could cover the center seat. Ralph Nader, who was associated with both organizations and was accompanied by Clarence Ditlow of the Public Interest Research Group, included in his support of the standard a vitriolic description of the tensions within General Motors:

The technological history of the airbags within the domestic corporate giants is one of willing and competent engineers versus callous bookkeepers and money managers. Nowhere is this more evident than at General Motors.¹²²

120. *Stenographic Transcription*, May 19, 1975, pp. 55-83 (Martens), 84-102 (DeLorean), 197-208 (Warner); May 23, 1975, pp. 41-78 (Schaffer).

121. *Stenographic Transcription*, May 19, 1975, pp. 175-191 (Segraves); May 22, 1975, pp. 3-33 (R.G. Chilcott for Nationwide). For Gregory's letter, see Status Report, February 14, 1975, p.7.

122. *Stenographic Transcription*, May 22, 1975, pp. 150-183 (Center for Auto Safety), pp. 193-204 (Consumers Union); May 25, 1975, pp. 119-148.

Two congressmen who were by now firm supporters of the passive restraint regulation, Representative John Moss and Senator Vance Hartke, also made statements at the meeting. They were balanced by Senator Thomas Eagleton and Representative James M. Collins, who either wanted the rule delayed or withdrawn.¹²³ Another public official, George Eads, renewed his proposal for a large-scale test of airbags in spite of Gregory's earlier rejection. He now wanted the large, airbag-equipped cars then in the fleet plus those to be sold by GM before it ceased production to be augmented by 100,000 small cars with airbags in the 1977 model year. He told IIHS that this was his proposal to the Office of Management and Budget, rather than a Ford administration position. The auto manufacturers doubted that they could produce the cars in that time.¹²⁴ A few weeks later B.J. Campbell, the director of the University of North Carolina's Highway Safety Research Center, wrote a letter to Administrator Gregory saying that no passive restraint standard should be issued without further field testing of airbags. He understood that the incidence of "more-than-trivial injuries" in the 57 airbag deployments that had already occurred was higher than would be expected in cases with no restraints. The American Automobile Association also favored such a test.¹²⁵

The May public meeting and the automakers' responses to the questionnaires in June were followed by a long pause in rule-making on passive restraints. This was punctuated by demands for action from a handful of Democratic legislators, somewhat balanced by occasional pleas for delay, made by Republicans.¹²⁶ At the end of 1975, Ralph Nader sent one of his typical hard-hitting letters to Secretary Coleman calling for a passive restraint standard without further delay.¹²⁷ One reason for the delay was internal disputes within NHTSA between Robert Carter, the associate administrator of motor vehicle programs, who continued his long-standing support for airbags, and Gene Mannela, the associate administrator for research and development, who was more cautious. This led Gregory to call on Howard Dugoff, the associate administrator for plans and policy, to analyze the issues. Dugoff's report was the basis for the quantitative estimates in Gregory's recommendations, as well as in the decisions made by Secretaries Coleman, Adams, and Dole.¹²⁸ But Gregory recalls that his desire to work out some way to strengthen industry incentives for passive restraints and enhance public confidence in them was a more important reason for delaying a decision.¹²⁹

123. *Stenographic Transcription*, May 19, 1975, pp. 7-10 (Moss), pp. 11-18 (Eagleton), pp. 19-28 (Hartke). May 20, 1975.

124. *Stenographic Transcription*, May 23, 1975, pp. 149-188; Status Report, June 18, 1975, p. 5. Just before Eads' presentation, Howard Gates and Lawrence Goldmuntz of Economic Science and Planning, reported on the critique of NHTSA's cost benefit analysis they had prepared for Eads. *Ibid.*, pp. 132-166.

125. Letter by B.J. Campbell, Director, University of North Carolina Highway research Center to Gregory, June 18, 1975; *Stenographic Transcription*, May 22, 1975, pp. 137-150, for the A.A.A.

126. *Status Report*, November 5, 1975, pp. 4-5; February 2, 1976, p.2; May 3, 1976, p.2.

127. The letter of December 23, 1975, is reprinted in *Regulatory Reform—Volume IV: Consumer Product Safety Commission, National Highway Traffic Safety Administration, Federal Trade Commission*, Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, 94th Congress, 2nd Session. Serial No. 94-83, pp. 514-515.

128. Interview with Howard Dugoff, July 20, 1995.

129. Interview with James Gregory, June 18, 1996.

Meanwhile NHTSA was encouraging the passage of state seat belt use laws with no success. Such a rule did go into effect in Ontario, Canada at the beginning of 1976 and in Quebec later that summer. An IIHS survey of driver seat belt use in Ontario found it went from 23 percent in December 1975 to 75 percent in February 1976 and down to 51 percent in June. Use rates improved least among the youngest drivers. The Motor Vehicle Manufacturers Association hired a full-time consultant in the United States to coordinate its drive for state belt use laws. Actual belt use rates remained low after the withdrawal of the interlock standard.¹³⁰

Coleman Takes Over

James Gregory announced his resignation from the National Highway Traffic Safety Administration on February 26, 1976. The next day he told a congressional committee that he had not been pressured to make or delay any decisions. His resignation, he said, was voluntary, not related to FMVSS 208 or 121 (antilock brakes for trucks, another controversial issue). The agency aimed for a decision on occupant restraints before the August recess of Congress. But Gregory noted that he was obliged to operate under the Executive Order requiring cost-benefit analyses, even though the law says that safety rather than cost should determine standards.¹³¹

After Gregory's resignation, Secretary Coleman assumed control of the passive restraint issue. He set up a task force at the departmental level of DOT, outside of NHTSA, to assist him on the issue. Among its members were Mary Graham, Michael Browne — both attorneys — and Martin Jischke, an academic engineer who was a White House fellow. Browne, who was the leader of the task force, had no previous exposure to the passive restraint issue before he came from Coleman's law firm to DOT as the secretary's special assistant. Frank Berndt, the general counsel of NHTSA, and Howard Dugoff soon became their regular consultants.¹³²

On April 12, 1976, before he left office, Gregory sent Coleman his recommendations on how to deal with FMVSS 208.¹³³ He proposed issuing *both* a new traffic safety standard, requiring 75 percent belt usage in each state three years after its effective date, *and* a new version of 208 requiring passive restraints for the driver by the 1980 model year and for front-seat passengers two years later. The final versions of each would be subject to congressional review, with the whole process to be completed by October, before the presidential election. Gregory assumed that airbags would be the passive restraint generally used, except in some compact and many subcompact cars, where passive belts would take their

130. *Status Report*, May 3, 1976, p.3; June 28, 1976, pp.1-3, 5-6

131. *Regulatory Reform—Volume IV*, pp. 420, 431-433, 444, 448. In an interview twenty years later, Gregory repeated that his resignation was on his initiative alone, noting that it had been accepted with the request that he stay on the job until a successor could take over at NHTSA. Interview with James Gregory, June 18, 1996.

132. Interview with Michael L. Browne, July 30, 1996; interview with Howard Dugoff, July 20, 1995; interview with Frank Berndt, December 4, 1995.

133. James B. Gregory, National Highway Traffic Safety Administrator, Memorandum to the Secretary and the Deputy Secretary on FMVSS 208, "Occupant Restraint, Options, Alternatives and Issues," April 12, 1976.

place. A central point in the proposal was equating the benefits of 72 percent lap/shoulder belt usage with those of airbags plus 20 percent use of lap belts.

In our studies of relative restraint effectiveness factors, I have indicated that we decided to equate the airbag with the shoulder belt. Engineering judgment says that overall the bag should be more effective because the force of the frontal impact is spread over more restraint area; therefore greater cushioning of upper torso is achieved. But we were trying to be fair and somewhat conservative in view of the emotional polarization I spoke about...

We have gone further and assumed relatively lower effectiveness factors for the airbag at lower severity levels even when used in conjunction with the lap belt, which we have concluded is necessary for protection in crashes other than frontal. This conservatism will undoubtedly spark even more criticism.

Although the traffic safety standard would not specify how to reach 75 percent belt use, Gregory believed that laws were the only practical way of getting there. But he was skeptical that many states would enact belt use laws. So the passive restraint proposal was the crucial alternative. The driver-only requirement “gives the biggest single boost in occupant safety, barring any way to get a significant increase in belt wearing...” While Gregory dismissed concerns about potential airbag hazards and believed that the incremental costs of airbags, using suppliers’ estimates, would be about half carmakers’ estimates, he still thought:

There is ample evidence to suggest that issuance of a passive restraint standard will produce initial and substantial adverse public and Congressional reaction due to concerns about (1) economic impact, (2) infringement of individual choice, and (3) fear of inadvertent or harmful airbag deployment.

DOT would have good counter-arguments to all these concerns, Gregory said. But the adequacy of airbag field data was the “Achilles heel.” Of the 89 deployments, 4 involved deaths and 20 involved moderate or severe injuries, but this was insufficient evidence upon which to base confident projections.¹³⁴ There had been five product liability suits involving GM air cushions. These overlapped with six inadvertent deployments — three in service garages, one caused by fire, another by abrasion of a wire, and the last by sensor quality control. Suggestions for a larger field test would cost \$50 million and lead to further years of delay. Gregory concluded that:

we are confident enough with the data we have and confident enough in our judgment to proceed with a passive restraint standard in view of the safety gains to be made.

134. One of the deaths was of an unrestrained infant lying on a front seat, injured as a result of panic braking. In two others the occupant compartment was destroyed. Charles Kahane, of NHTSA, estimated a few days before Gregory’s memo that, regardless of the cause, four deaths were statistically more than might have been expected based upon the December 1975 estimate of 55 percent effectiveness made by the Agency. Office of Statistics and Analysis, NHTSA, “Statistical Analysis of Airbag Deaths,” April 9, 1976. The study was released several years later. Kahane said in an interview on January 13, 1995, that his aim was to show that the estimate of effectiveness was too high rather than to question airbags’ benefits entirely.

Gregory's conclusions bore the strong imprint of his personality. Although they were not accepted by Coleman, and Browne does not remember any discussion of them by the task force that advised Coleman,¹³⁵ the logic and structure of this valedictory on occupant restraints seemed to be reflected in the way that Coleman shaped the discussion of the issue in the months that followed.

Shortly after he took office, Coleman invited his staff to make recommendations on options for 208. His assistant secretary for systems development and technology, Hamilton Herman, sent him a memorandum in February 1976 saying the data base did not support the airbag/lap belt option and calling for both more field and engineering testing.¹³⁶ There may have been other internal documents opposing Gregory's recommendations. On May 24, before a speech he was to give to the Economic Club of Detroit, Coleman announced that his decision would be delayed. In the speech itself he seemed to suggest that the cost of airbags was high and their effectiveness limited; he said there were other options to consider, like seat belt use laws.¹³⁷ There was an implication that a new public hearing would be held. The announcement brought a slashing letter from Ralph Nader.

Further delays will condemn hundreds of thousands more individuals to death and serious injury that could be avoided if you would act now to protect the public health and welfare. Even courage is not needed to save these lives and prevent these injuries.

In reply, Coleman explained that hearings were called because he felt that he had "not received all information and that the issue is still open to debate... I hope I can demonstrate to you that I was not and am not a coward."¹³⁸

Coleman published on June 14, 1976, a notice of the public meeting on amending FMVSS 208, to be held for six hours on August 3.¹³⁹ While Gregory's recommendation discussed public and congressional concerns about "infringement of freedom of individual choice," the notice made "the appropriate role of the Federal government in prescribing motor vehicle standards" the first issue to be addressed.

Many are questioning whether increased government regulation is in the public's best interest. The public, of course, should always make a distinction between safety regulation and economic regulation as we in the Department of Transportation attempt to do. The success of governmental regulatory policy in any area, however, will ultimately depend upon the support it receives within the body politic.

135. Interview with Michael L. Browne, July 30, 1996.

136. Herman's memorandum, dated February 26, 1976, is quoted in National Transportation Safety Board, op. cit., vol. 2, pp. 54-55.

137. *Status Report*, June 7, 1976, pp.1-3; Graham, op. cit., p. 97.

138. Nader's letter to Coleman of June 3, 1976, is printed in *Regulatory Reform—Volume IV*, p. 523, Coleman's reply is on p. 527. Another critical letter was sent by Allstate's Don Schaffer on May 25, 1976; see p. 521.

139. Department of Transportation, Office of the Secretary, [49 CFR Part 571] [23 CFR Part 1204] [OST Docket No. 44; Notice 76-8] "Occupant Crash Protection; Highway Safety Standards. Proposed Rulemaking and Public Hearing." *Federal Register*, vol 41, No. 115, June 14, 1976, pp. 24070-24079.

Recent congressional action banning interlocks and Federal requirements of motor cycle helmets “reflect the belief of many that there are limits to the Federal government’s role in forcing the individual to protect himself or herself.” Should people, he asked, who now use belts be required to buy more expensive passive restraints to further a social goal?

The second set of issues outlined in the notice was the benefits and costs of alternative restraint systems. Without the qualifications noted in Gregory’s recommendations, the notice said that a 70 percent usage level of lap and shoulder belts would bring “nearly the same” benefits as full, front-seat airbags with 20 percent lap belt use — ultimately preventing 11,200-11,500 fatalities per year. The costs of lap/shoulder belts were estimated as \$60 per car, and at \$190 for full, front air cushion, resulting in benefit cost ratios, according to NHTSA, of 7.6 for 70 percent belt use and 2.2 for full, front-seat airbags. In contrast, 15 percent lap and shoulder belt use plus 5 percent for lap belts, which was close to the then current experience, were estimated to save only 3,000 lives, but to have a benefit cost ratio of 2.0. Coleman asked about the effect of the shift to smaller cars, as well as the effect a decision on 208 would have on insurance rates and on sales and employment in the auto industry.

The third set of issues, public acceptance, was intertwined with the first. Not only was the public slow to adopt belt use, but state legislators were not passing belt use laws. Twenty states had considered them in 1974, and Congress had refused to fund incentives for such laws. Public acceptance of passive restraints appeared to be low. GM had sold only 10,000 airbag-equipped cars in all, compared to its previous plans of selling 100,000 annually. Only 30,000 cars with passive belts had been sold by Volkswagen. The notice listed all the hazards that had been attributed to airbags — hearing and eye damage, toxicity of the chemicals used in deployment, unreliability in deployment, injury to out-of-position occupants, improper disposal of the actuators — but noted that both laboratory and field experience showed that these were not significant risks.

The notice outlined five options along with their pros and cons:

1. Continuation of the existing requirement, which a separate notice would propose extending for another year while rule-making on passive restraints continued.
2. State mandatory belt usage laws; Congress would have to pass a new law to make this a traffic safety standard, but “Everyone would agree that this is the quickest way to realize substantial safety benefits.”
3. Federal field test of passive restraints, which would cost \$50-\$150 million and would require congressional approval.
4. Mandatory passive restraints, but for which positions?
5. Mandating a passive restraint option.

A few days after publication of the meeting notice, NHTSA issued the promised proposal to extend the existing occupant protection rule for a year.¹⁴⁰ There were some changes proposed, which occasioned little comment. The carmakers' request for an indefinite extension was turned down when NHTSA adopted the extension on August 30. Earlier, at the same meeting in Detroit where Coleman had announced his extension of passive restraint rulemaking, E.M. Estes, then president of General Motors, had told reporters that the company was reconsidering its decision not to offer air cushions as an option on any 1977 models. Instead, they might be offered on large cars that had not been redesigned.¹⁴¹ In its July 15 meeting, DOT's National Motor Vehicle Safety Advisory Council voted 11 to 9 to urge the Secretary to move ahead with "a fully passive restraint standard," and also to promote seat belt use laws aggressively until passive restraints were fully available.¹⁴²

Coleman presided over the August 3 public meeting as an active, interested, and well-informed questioner. The positions and arguments presented by the interested parties had changed little from the 1975 hearings. But some new points were made. James W. Snow, the Minister of Transportation and Communications for Ontario, testified on his recent experience with enforcing a new seat belt use law. Not only was usage still high at 66 percent — more than IIHS had estimated — but there were 13 percent fewer deaths and 18.5 percent fewer injured in the first six months of 1976 than in the comparable period in 1975.¹⁴³ Speaking for IIHS, William Haddon testified that airbags alone were at least as effective as three-point belts when they were used. An IIHS national survey showed that about 80 percent of people planning to buy new cars preferred crash protection that required no action on their part, and that they would be willing to pay \$12 a month for it.¹⁴⁴ On the other hand Robert Hess, director of the Highway Safety Research Institute of the University of Michigan, said that while lap-torso belts' effectiveness had clearly been established by real-world experience, statistical data on airbags showed that their effectiveness was either questionable or unknown. Airbags' reliability was similarly unknown in mass production models. Hess argued that DOT should encourage further development and field testing of both active and passive restraints.¹⁴⁵ In his statement to the meeting, Ralph Nader attacked Coleman personally by comparing the delay in passive restraint standards to attacks on civil rights.¹⁴⁶

140. NHTSA [49 CFR 571] [Docket 74-14; Notice 5], Passenger Cars: Occupant Crash Protection, *Federal Register*, vol. 41, July 19, 1976, pp. 29715-29718.

141. *Status Report*, June 7, 1976, p.2.

142. National Motor Vehicle Safety Advisory Council, "Position Paper on Proposed FMVSS 208," July 15, 1976.

143. Department of Transportation, *Transcript of Proceedings in the Matter of Passive Restraints FMVSS 208*, August 3, 1976, Washington, D.C., pp. 41-49.

144. *Ibid.*, pp. 151-166. In its statistical analysis later submitted to NHTSA, IIHS' researchers found that mean injury severities in crashes with airbag deployments showed a slight, but not statistically significant improvement over cases restrained by lap/shoulder belts. Dinesh Mohan, Paul Zador, Brian O'Neill, and Marvin Ginsburg, IIHS, "Airbags and Lap/shoulder belts—A comparison of Their Effectiveness in Real World, Frontal Crashes," *Proceedings of the 20th Conference of the American Association for Automotive Medicine*, 1976: pp.315-335.

145. *Ibid.*, pp. 210-215.

146. *Ibid.*, pp. 170-185. Graham says that Nader compared "Coleman's influence on auto safety and the role of the Ku Klux Klan in civil rights." *Op. cit.*, p. 98. There is no mention of the KKK in the transcript.

The written submissions to the docket following Coleman's public meeting added some interesting details. After a two-day briefing by the new head of NHTSA, John Snow, the DOT Citizen's Advisory Committee on Transportation Quality recommended by a vote of 10-6 that the Secretary order passive restraints for new cars. Although support for belt use laws had been almost universal, Susan Baker of Johns Hopkins University warned that the evidence from Canada was that young and nighttime drivers were least likely to obey the law, so benefits would not be proportional to the increase in use. Both opponents and proponents of passive restraints opposed the idea of a requirement that restraints be offered as an option. A poll by the Motor Vehicle Manufacturers Association showed that licensed drivers were least likely to vote against a "mandatory airbags law" compared to a mandatory seat belt use law and loss of insurance benefits for not wearing a seat belt in a crash.¹⁴⁷

On September 2, 1976, Volkswagen issued a press release reporting that passive belts were as effective as airbags, but less expensive. This was based on investigations of 39 crashes, of which 12 were called "major." Only one of 18 occupants in the "major" crashes sustained a severe injury.¹⁴⁸ Another, more widely quoted press story about airbags was published by Albert Karr in the *Wall Street Journal* on November 11, 1976. Karr recounted the resistance he experienced in trying to buy an airbag-equipped car.

But a Wall Street Journal survey of car buyers, GM dealers and some close watchers of the auto scene shows that the airbag received no wholehearted promotion: instead, the company and its dealers actively discouraged sales. The survey shows that many dealers, like many people in general, know little about the airbag, did little to make buyers aware of it or whet their interest in it, and often sought to pour cold water on any interest that customers showed... Mr. Cole, the former GM president, says an auto maker must "create a desire on the part of the user to buy an option like the airbag. Did the company do that? Mr. Cole's reply: "No."¹⁴⁹

Several years later, NHTSA commissioned a study by National Analysts on General Motors' effort to market air cushions from 1974 to 1976. It was based on GM documents, interviews with dealers, and group "depth" interviews. The study was done partly to evaluate the charge that GM lacked a corporate commitment to airbags, which had been made by Karr and also later by IIHS. Only 10,243 ACRS cars had been sold during 1974-1976, out of a production capacity of 100,000 per year. National Analysts attributed the low sales level to lack of dealer commitment and to consumer concerns that GM did not uncover in its market research. GM's sparse market research had concentrated on comparing the appeal of air cushions with that of passive belts. National Analysts argued that the fact that two-thirds of owners of large GM cars expressed an interest in air cushions did not mean that they would have bought them. The study found no evidence of a lack of commitment on the part of GM, in spite of the September

147. *Status Report*, October 12, 1976 summarizes the submissions.

148. Volkswagen Press Release, "VW Passive Belt Accident Study Shows No Fatalities." September 2, 1976.

149. Albert R. Karr, "Saga of the Airbag, Or the Slow Deflation of a Car-Safety Idea," *Wall Street Journal*, November 11, 1976.

1979 admission by E.M. Estes, then president of GM, on the “Today Show” that the company “didn’t really push” air cushions in 1974-1976.¹⁵⁰

On December 6, 1976, a month after Gerald Ford had lost the presidential election, Coleman announced that he had decided to call for a large-scale public demonstration program of passive restraints, rather than mandating them in new cars. The reason was not to make up for the lack of definitive data on how passive restraints worked in the field, but to convince the public that they did work. He explained at a news conference:

I am convinced that the airbag technically does work and can be produced at reasonable cost. I am equally convinced based on every sampling of public opinion I have seen, including the record of my recent public hearing, that such a device would not be accepted by the majority of Americans today.¹⁵¹

Passive restraints, which, in the case of airbags, could cost about \$100 per car, would reduce traffic deaths by 12,000 annually and serious injuries by the tens of thousands. But Coleman was afraid that public rejection of the unfamiliar devices would lead to congressional disapproval, which would be devastating because it would, by DOT’s reckoning, cost the auto industry \$600 million and seriously undermine the public’s trust in safety regulation. On the other hand, more public exposure to the systems would generate market demand, and seat belt use could also be increased. It was highly unlikely, however, that the federal government could persuade the states to pass laws requiring the use of seat belts.

Coleman reached a different conclusion from Gregory’s final analysis, although the two men shared almost all of the same premises — especially on the effectiveness of airbags and their unacceptability to the public. (As evidence would later reveal, they both somewhat overestimated public resistance to airbags.) Their major difference was Gregory’s belief that the safety benefits of airbags would eventually outweigh any problems posed by public and congressional opinion. Coleman, on the other hand, doubted DOT’s ability to change opinion without mounting a large-scale test, and he seemed willing to accept the consequences of more delay.

Coleman’s decision included a benefits analysis similar to Gregory’s, with some increase in the lives saved by airbags and a decrease for lives saved by passive belts.

150. National Analysts, A division of Booz-Allen and Hamilton Inc., “A Retrospective Analysis of the General Motors Air Cushion Restraint System Marketing Effort. 1974 to 1976,” prepared for NHTSA, July, 1983. The Estes quote is in the IIHS piece that National Analyst was evaluating: “GM and the Airbag: A decade of Delay,” *Status Report*, June 25, 1980, p. 12. In a talk to an automotive meeting, Haddon noted that in 1973 GM had produced a 10.5 minute film to market ACRS to its dealers, but few apparently ever did see it. William Haddon, Jr., “Quadriplegia and Other Motor Vehicle Injuries: Some Implications and Choices For Motor Vehicle Manufacturers,” *Automotive News World Congress*, Detroit Michigan, July 25, 1978.

151. DOT Press Release: “Statement of Secretary of Transportation William T. Coleman, Jr., at the news conference, December 6, 1976, on the announcement of a proposed demonstration program of passive restraints.”

Annual Benefits of Occupant Crash Protection Systems System¹⁵²

System	Fatalities Prevented	Injuries Prevented (AIS 2-5)	Value of Benefits (\$ billions)
Lap/shoulder belt use			
15 percent lap/shoulder belt use plus 5 percent lap belt use	3,000	39,000	1.2
35 percent lap/shoulder belt use plus 5 percent lap belt use	6,300	86,000	2.5
70 percent lap/shoulder belt use (assumed result of belt use laws)	11,500	162,000	4.6
100 percent lap/shoulder belt use	16,300	231,000	6.5
100 percent lap belt use	10,900	96,000	4.1
Driver Only			
Airbag plus 20 percent lap belt use	9,600	86,000	3.6
Full, front airbag plus 20 percent lap belt use	12,100	104,000	4.5
60 percent use of passive belts	9,800	117,000	3.8

Coleman said that the increase in the estimate of airbag effectiveness was a response to estimates from “the insurance industry,” presumably IIHS, but did not change his conclusion that full front airbags with 20 percent lap belt use was equivalent to 70 percent use of lap/shoulder belts. Yet he had little confidence that such a level of belt use could be reached and proposed concentrating on airbags in the demonstration program. Coleman wanted the car manufacturers to agree to market over two years, beginning September 1, 1978, 500,000 cars meeting the proposed passive restraint standards. At least half the cars would have full, front-seat airbags, costing no more than \$100, while the rest had driver-side airbags, costing \$50. The overall cost of the program would be \$86 million — \$36 million borne by buyers and most, if not all, of the rest by the industry. This was a change from the notice of proposed rulemaking, which had assumed that the government would bear the cost of a demonstration.¹⁵³ Coleman also expected the insurance industry to make a firm commitment to reduce premiums on cars equipped with passive restraints. Negotiations on the contract would begin December 20, he said, with an agreement to be announced by January 5, 1977.

The negotiations were difficult, extending through the Christmas holidays and most of January. Michael Browne did the detailed negotiating for DOT, Roger Smith was the chief negotiator for General Motors, Herbert Misch for Ford, and Don Schaffer for Allstate. Browne had the impression that the two auto companies were anxious to reach some sort of agreement.¹⁵⁴ Finally, on January 18, 1977, two days before the end of the Ford administration, the Department of Transportation announced agreements with both auto manufacturers and insurers. The Ford Motor Company agreed to manufacture, in the 1980 and 1981 model years, 140,000 cars with driver-side airbags, priced at \$50 in 1976 dollars. Two million dollars would be spent aggressively promoting them. The contract was subject to Ford’s ability to find product liability insurance comparable to that for the airbag-equipped cars it had produced in 1972.

152. Department of Transportation, “The Secretary’s decision concerning occupant crash protection,” Washington, D.C., December 6, 1976, p. 40.

153. Interview with Howard Dugoff, July 20, 1995.

154. Interview with Michael I. Browne, July 30, 1996.

During the same period, General Motors agreed it would have production capacity for 300,000 ACRS-equipped cars, 50,000 of which might be driver-side only, which would meet Coleman's announced price levels. GM would spend between \$5 million and \$15 million in promoting the system. Volkswagen agreed to produce at least 125,000 passive-belt-equipped cars between 1975 and 1980, with at least 60,000 between the 1978 and 1980 model years, to be sold at the current pricing policy. Mercedes-Benz would produce 750 driver-side airbag cars in the 1980 model year, and 1,500 in the next model year, for a suggested retail price of not more than \$425. The agreements included provisions for crash reporting and for termination by August 31, 1983, whenever Department of Transportation issued a proposed notice of rulemaking on passive restraints. The Department of Transportation also released letters from Allstate, Nationwide, and Volkswagen Insurance reaffirming, or agreeing to, a 30 percent discount on no-fault and medical payment premiums for cars with full front airbags and a possibly smaller discount for driver-side-only equipment.¹⁵⁵

The clause that would terminate the agreements whenever the Department of Transportation issued another proposal on passive restraint rulemaking obviously raised questions about the real future of the demonstration. The new Democratic administration about to take office could very well revive the proposed standard. The manufacturers were adamant about escaping the agreements if they were faced with a new standard. Coleman had to concede this point, and with it the substance of his achievement.¹⁵⁶

Like other supporters of the passive restraint standard, Ralph Nader had already deplored Coleman's decision to delay its issuance. Upon announcement of the agreement with the car companies, Nader sent a public letter to U.S. Attorney General Edward H. Levi, asking him to investigate possible violations of the antitrust laws by the auto manufacturers both before and after they met with Secretary Coleman. He also called on Levi to rule on whether Coleman had authority to negotiate such contracts with the auto industry.¹⁵⁷

Summary

During the six years following the first passive restraint standard, airbag technology came into real, if limited, use, and an alternative passive restraint emerged in the form of automatic seatbelts. As more testing and on-the-road experience with airbags accumulated, fears about inadvertent deployments, effects on hearing, danger to out-of-position children and adults, and reliability were dismissed by NHTSA, but not by the manufacturers. NHTSA was also aggressively encouraging development of technology for small-car airbags, although all the auto manufacturers except Volvo seemed to be making little progress here. Indeed, there is little evidence of developmental efforts by manufacturers on any

155. Department of Transportation, results of the Secretary's negotiations concerning motor vehicle occupant crash protection demonstration program, Washington, D.C., January 18, 1977.

156. Interview with Frank Berndt, December 4, 1995.

157. Ralph Nader, Letter to Edward H. Levi [Attorney General], December 10, 1976.

aspect of airbag technology in the first years after the ignition interlock option delayed implementation of the passive restraint standard. On the other hand, NHTSA began to recognize the need to allow more time for manufacturers to design rear seat-airbags, as well as ones that met injury standards in rollover and ejection crashes. NHTSA also quietly conceded the need for seat belts, at least lap belts, along with airbags. Without the belts, airbags were of limited, if any, use in rollover crashes. Automakers pointed out that airbags plus belts was not strictly passive protection, but NHTSA assumed that belts would be used with airbags at the same rate as by the public at large. These concessions to technological limits occurred in spite of the Court of Appeals decision in *Chrysler v. DOT*. The Court upheld the power of regulators to force technological development, while delaying implementation of the regulation until a well-defined measurement could be specified.

Political and economic factors, rather than technology, were the forces impacting the passive restraint issue in this period. An auto industry weakened somewhat by “normal” sales cycles and then by the massive blow of the oil embargo was emboldened to resist government regulation more strongly than ever before. General Motors, never a supporter of passive restraint mandates, began to actively fight them and to curtail its work on air cushions. On the other hand, high rates of inflation subjected the auto insurance industry to rate freezes and intensified the search for ways to control spiraling costs. Two car design issues on which insurers focused were better bumpers and injury reduction through passive restraints. Thus auto insurers, led by the Insurance Institute for Highway Safety and Allstate, became leaders in the fight for passive restraints, preferably airbags.

The political leadership of the federal government had begun to turn against airbags even before the oil embargo. As he began his campaign for a second term, President Nixon courted auto manufacturers by secretly reining in the proposed passive restraint standard. The White House may not have directly ordered the ignition interlock option, but this was the solution offered when the President decided not to order airbags. Interference was both less covert and more subtle during the Ford Administration. The cost of regulation had to be measured against its benefits, and the President made it clear that he was skeptical about the balance when it came to airbags.

Although both auto manufacturers and safety experts worried about the reliability of the ignition interlock, they seemed surprised by the strong public reaction against it. The result was that a Congress nominally led by advocates of safety forbade the interlock requirement and warned that it might override future occupant restraint standards. This, in turn, heightened sensitivity on the issue at both NHTSA and DOT. And so Secretary Coleman, although finding no problems with airbags or passive restraints from an economic or technical perspective and believing that they could save 12,000 lives a year, decided that he could not mandate them in the face of what he believed to be a negative public. The issue was not precisely whether safety would sell, but whether this particular safety device would sell. GM’s under-powered effort to market them had produced barely 10,000 sales.

At the same time that a limited number of cars with airbags were coming into use, evidence was growing for the effectiveness of seat belts. In fact, NHTSA began to say that if 70-75 percent of the public could be convinced to use three-point belts, the benefits might equal those of airbags and at a lower cost. But the reluctance of the American public to use seat belts was another aspect of public opinion that concerned regulators. Auto manufacturers and their seat belt suppliers argued that the solution was to pass belt use laws, as had been done with considerable success elsewhere in the world. State legislatures resisted this approach, apparently because of public opposition. Congress had tried, unsuccessfully, to promote seat belt laws with legislation that increased federal highway grants by 25 percent to states that passed them. Only Puerto Rico passed such a law, and Congress eliminated funding for these incentives. This led DOT and NHTSA to drop previous plans to add seat belt use laws to the standards for federal highway safety programs. Gregory proposed that Coleman issue both a passive restraint standard and a traffic safety standard requiring 75 percent seat belt usage within three years. But Coleman doubted that seat belt use could be legislated.

Coleman's solution to the problem of public opinion was to adopt an approach that had been suggested by Executive Office officials and supported by auto manufacturers — a large-scale test of passive restraints, especially of airbags. The idea was originally designed to allow collection of adequate data about airbag effectiveness and reliability. But Coleman did not have much concern about data; rather he wanted to convince a skeptical public, through a large scale test, that airbags worked well. However, Coleman's concession that manufacturers could terminate the test-marketing agreement if rulemaking on a passive standard resumed left the future of passive restraints in doubt.

SAFETY SELLS: Market Forces and Regulation in the Development of Airbags

By Martin Albaum

CHAPTER 4: A Standard Emerges Temporarily: 1977-1980

Jimmy Carter's close victory over Gerald Ford in the 1976 presidential election meant that both the executive branch and the two houses of Congress were governed by the Democratic Party.¹ Under Nixon and Ford, a Republican president had to deal with Democratic Congresses. But in all three administrations it was possible for conservative Democrats to combine with Republicans to block regulatory measures that seemed not to have massive popular support.

Carter had campaigned as a moderate, rational reformer who wanted to eliminate regulations that did not work and introduce inexpensive reforms — including pro-consumer measures — that would. He presented himself as an outsider to the Washington establishment who would apply the tools of modern business planning to an essentially moderate agenda. But as an outsider, he was fairly ineffective in mobilizing the Democratic majorities in Congress behind most of his initiatives. Many in Congress were antagonized, for example, when he proposed killing 18 water projects as “pork barrel.” Congress rejected the broadest proposal that could have affected auto safety regulation when it did not go forward with the consumer protection agency Carter proposed.

One of the first cabinet officers appointed by Carter was the new secretary of transportation, Brock Adams, a moderate Democratic congressman from the state of Washington. After some delay, it was announced that Joan Claybrook would be administrator of NHTSA. While Adams had no particular association with highway safety issues, Claybrook, as noted earlier, had worked at the agency as a special assistant to William Haddon, leaving shortly after Toms told her that she was too identified with the Democrats. While at the agency she had been a fervent promoter of airbags. For the next six years Claybrook worked with Ralph Nader. She and Esther Peterson, Carter's new special assistant for consumer affairs, were among the Nader associates recruited by the new administration.

During the first two years of the Carter administration, domestic politics were dominated by economic issues related to apparently continuing high unemployment and inflation. In hindsight, the National Bureau of Economic Research saw the period from March 1975 to January 1980 as the growth phase of a business cycle. Inflation, however, did increase during 1977-78, and then seemed to spiral out of control in 1979-80, driven by the increase in oil prices brought on by the Iran crisis. The rise in the consumer price index went from an uncomfortable 6.5 percent in 1977 to 13.5 percent in 1980.² The administration reacted with a policy of voluntary price and wage controls administered by the Council on

1. The discussion of the Carter Administration draws mainly on Burton I. Kaufman, *The Presidency of James Earl Carter* (Lawrence, Kansas: University Press of Kansas, 1993) and *Congress and the Nation*, vol. V, 1977-1980 (Washington: Congressional Quarterly, Inc., 1981).

2. *Statistical Abstract of the United States, 1990* (Washington: U.S. Department of Commerce, Bureau of The Census, 1990), pp.469 and 539.

Wage and Price Stability (COWPS). That agency had been established by the Ford administration in 1974 to review regulatory measures, like passive restraint standards, for their inflationary effect. Carter strengthened the review process with Executive Order 12044, issued on March 24, 1978, which required that alternative approaches be considered and the least burdensome one be chosen.

The Carter administration and Congress were still wrestling with the need for a comprehensive energy policy in the aftermath of the 1973 oil crisis when another external shock, in late 1978, the Iranian revolution, caused a worldwide petroleum shortage. By May 1979 long lines at gasoline stations were the rule in many parts of the country, and fuel prices were increasing dramatically. Automobile buyers had begun to drift back to larger cars before this crisis, but now preferences switched again to smaller cars with more efficient engines. Auto buyers found that foreign manufacturers, especially the Japanese, frequently met their needs when American producers did not. Domestic new car sales increased by about a half million from 1976 to 1977, and the increase in sales of imported new cars, a much smaller market, was about the same. In 1978 domestic sales increased about 200,000, while imports shrank slightly. By 1979, domestic new car sales dropped by nearly a million while imports increased by nearly a third of a million. New sales of U.S. autos plunged 21 percent in 1980, but in spite of the contracting economy and high inflation, import sales held their own.³ In 1979 Chrysler, the smallest of the “big three” U.S. auto manufacturers, had to be rescued from bankruptcy by a federally guaranteed loan. By 1980 the whole domestic industry was suffering large losses and demanding protection from imports and relief from the expense of regulation, including safety rules.

When the economy expanded and car sales rose during the first two years of the Carter administration, motor vehicle fatalities also rose, both as a whole and in passenger cars and light trucks. After all such fatalities dropped from 54,000 a year in 1972-1973 to 44,000-45,000 in 1974-1976, they rose to 47,878 in 1977 and 50,331 in 1978. Passenger car fatality trends paralleled these figures at a lower level. As gasoline became scarcer and more expensive, total motor vehicle fatalities leveled off at about 51,000 a year in 1979 and 1980.

Reopening the Passive Restraint Standard

At his confirmation hearing, in 1977, Brock Adams said that he would review “most carefully,” Coleman’s plan for demonstration projects, but during an interview on NBC’s “Meet The Press” on February 6, 1977 he declared that he could not “rationalize” the plan.⁴ Toward the end of March, Adams did issue a proposed passive restraint rule. Claybrook had not yet been confirmed, but she fully agreed with the action.⁵ The notice gave three reasons for reopening the issue. First, consumer resistance might not be statutory grounds for Coleman’s decision. Second, the fear of consumer resistance was based on

3. American Automobile Manufacturers Association, *Facts and Figures '93*, p.14.

4. *Status Report*, February 3, 1977, p. 1, and February 14, 1977, p. 1.

5. Interview with Joan Claybrook, September 13, 1993.

public reaction to the ignition interlock, which forced car occupants to take action; passive restraints by definition required no action. Third, the demonstration agreements implied a five to eight year delay in the decision to install passive restraints, a period during which the anticipated “downsizing” of cars would heighten the need for increased occupant protection. Three possible courses of action were laid out in the notice:

1. Maintain the current standard;
2. Mandate passive restraints in three model years, as proposed in the notice of June 1976, with lap belts required at all designated front seats unless there was a fully passive way of dealing with lateral impacts and rollovers; the alternative offered was to require passive protection at one of the extreme front seats, delaying full front-seat protection;
3. Raise belt usage to 80-85 percent either through Congressional approval of incentives for state belt use laws or through a federal act mandating belt use. Adams said, “I have no illusions about the popularity of such (state) laws.”

A day of public hearings was set for April 27, 1977.⁶

In a press conference to announce the new rulemaking, Adams agreed that the Coleman demonstration project was “now out the window,” when asked by a reporter. The new standard would be promulgated, he promised, by July 1, 1977, the date by which Congress had required that new fuel economy levels be established for 1981-1984 cars. The fuel requirements would result in smaller, lighter cars, needing improved occupant protection.⁷

The hearings actually continued over two days, April 27 and April 28. Adams was an active questioner during many of the presentations. The major protagonists largely repeated arguments that they had aired in the Gregory and Coleman hearings. The carmakers were unanimous in opposing mandated passive restraints and questioning whether airbags plus lap belts were truly passive. Almost all still favored keeping the current standard while adding federal incentives for state seat belt use laws and reinstating the Coleman plan so that passive restraints, especially airbags, could be definitively tested. When Adams asked why the public would react to these laws more favorably than to the ignition interlock, the Motor Vehicle Manufacturers Association cited favorable foreign experience with such belt use laws and better current understanding of seat belt benefits. General Motors noted that there were no good data on passive belt benefits and challenged DOT’s estimates of airbag benefits. A new study in which a jury of its engineers again compared injuries in collisions involving ACRS cars with matched unrestrained front seat occupants concluded that ACRS plus lap belts provided no more protection than the current level of belt use. Adams found this hard to believe.⁸

6. National Highway Traffic Safety Administration, [49 CFR Part 571] [Docket No. 74-17; Notice .08] OCCUPANT CRASH PROTECTION: Alternatives For Passenger Cars. *Federal Register*, Vol. 42, No. 57, March 24, 1977, pp. 15935-15937.

7. *Status Report*, March 29, 1977, pp. 1-3.

8. Department of Transportation, National Highway Traffic Safety Administration, *Public Hearing on FMVSS 208, Transcript of Proceedings*, Washington, D.C., 27 April 1977, pp. 58-64 for testimony by David Potter of General Motors. MVMA’s testimony is on pp. 42-49. Other carmakers’ statements are scattered throughout the two days of hearings.

Edward Cole, the retired president of General Motors, had written a letter to Dr. Haddon on January 20, 1977, saying:

The passive restraint system is different than emissions. The technology is available and the need is there. I think the only way passive restraints are going to get to first base is making them mandatory. Another test will prove nothing. Let the passive air cushion evolve like all other systems... (m)andating the basic performance requirement and not telling the industry how it should be done will get the job done.

With Cole's permission, on February 10 Haddon submitted this letter to the docket along with an earlier one critical of active seat belts.⁹ When he was invited to testify at the Adams hearings, Cole told Claybrook that he would rather not because "the boys were really pressuring me, and I'm going to have to say that there needs to be time." Claybrook convinced him to testify anyway. Without a prepared statement, Cole told Adams that, while he favored passive restraints, six years would be needed to solve the problems raised by mass production and product liability.¹⁰

Don Friedman, president of Minicars, a consultant to NHTSA, told Adams that not only were 30 mph airbag designs for small cars current reality, which could easily be adapted by manufacturers, but protection could be expanded to 45 mph.¹¹ Ralph Nader had already cited small car airbag tests by Calspan and Transco to document his belief that "advanced passive restraints can make small cars safer than present large cars." But auto companies had gotten used to the *de facto* moratorium on auto safety standards during the Nixon and Ford years, and would, Nader believed, continue to resist standards for new technology.

It is important, Mr. Secretary, for the Department to be alert, once this standard is issued — and I certainly hope it is shortly — to potential collusion by the car companies to try to meet it by passive seat belt standards...¹²

Like most committed passive restraint advocates, both inside and outside NHTSA, Nader believed that passive belts were second best to airbags. Insurers who testified in favor of the passive restraint standard reiterated that it would result in discounts, but only for airbags did they cite a specific figure — 30 percent.¹³ Haddon stressed IIHS' analysis showing the superiority of airbags plus lap belts in real-world crashes over lap and shoulder belts even when used, although he acknowledged that there were not enough airbag cases to make the difference statistically significant. But on the more general issue of passive restraints, Haddon criticized Coleman for ignoring the IIHS survey showing that 80 percent of the public preferred restraints that required no action on their part when Coleman said in his decision that the public would not accept airbags.¹⁴

9. Insurance Institute for Highway Safety files.

10. *Public Hearing on FMVSS 208*, April 27, 1977, pp. 20-27; interview with Joan Claybrook, September 13, 1993.

11. Department of Transportation, National Highway Traffic Safety Administration, *Public Hearing on FMVSS 208, Transcript of Proceedings*, Washington, D.C., 28 April 1977, pp. 138-145.

12. *Public Hearing on FMVSS 208*, April 27, 1977, pp. 51-52.

13. *Ibid.*, pp. 11-15 for Allstate, pp. 139-144 for Nationwide.

14. *Ibid.*, pp. 65-70.

Airbag suppliers, as in the past, were generally optimistic about their technology. Rocket Research told Adams that using pyrotechnic gases would help solve the problem of short deployment time in small cars. Except for Eaton, suppliers supported the standards, which they seemed to believe implied widespread use of airbags. Eaton, however, thought mandates were impractical because there was insufficient capacity to meet the need they would create for airbags. Claybrook said that she discounted Eaton's testimony because it was falling behind in technology.¹⁵ Thiokol thought that, with 6-12 months for design, mass production could begin in 36 months.

Seat belt manufacturers, represented by Howard Gates and Lawrence Goldmuntz of Economics and Science Planning, proclaimed the superior cost effectiveness of increasing belt use and suggested that Congress might even mandate their use. Moreover, they said that passive belts were more effective than airbags and called for more road testing to establish this fact.¹⁶

Several independent, and apparently disinterested, experts thought more data were still needed on airbags. Dr. John States, an orthopedic surgeon, was afraid they might cause injury in small cars and preferred immovable protection like knee bars and other energy-absorbing materials. Don Huelke, of the University of Michigan medical school, thought that airbags worked but should not be mandated on the basis of evidence not comparable to what would be needed to gain approval for a new drug, for example. Samuel W. Alderson, an engineer with Humanoid Systems and a pioneer in the development of test dummies, thought that airbag test results were still too variable to provide reliable evidence for the passive restraint standard.¹⁷

The formal comments filed after the hearings contained no revelations. General Motors documented its paradoxical claim that a combination of front seat airbags plus lap belts at current (20 percent) usage rates would save fewer lives than current belt usage alone.¹⁸ IIHS explained this paradox by noting that GM used all airbag crashes in its analysis, rather than the frontal crashes for which airbags were designed, and ignored both the severity of the crash and the effect of multiple injuries. When these factors were accounted for, airbags retained their superiority although statistical significance was still not achieved. IIHS also refuted a claim by AAA that occupants of cars with airbags were not better protected than the occupants of other cars with which they had head-on crashes.¹⁹

15. *Ibid.*, pp. 32-36 for Rocket Research, pp. 106-114 for Eaton, pp. 198-201 for Allied Chemical. Public Hearing on FMVSS 208, April 28, 1977, pp. 4-13 for Thiokol. Claybrook's comment was in her interview, September 13, 1993.

16. *Public Hearing on FMVSS 208*, April 27, 1977, pp. 75-79 and April 28, 1977, pp. 67-72.

17. *Public Hearing on FMVSS 208*, April 27, 1977, pp. 71-75 for States; April 28, 1977, pp. 55-59 for Huelke and pp. 117-122 for Alderson.

18. General Motors Corporation, "Response to Proposal to Amend Standard No. 208, Occupant Crash Protection," (Docket No. 74-14, Notice 08) Transmitted by letter dated 5/27/77 from David E. Martin, Director, Automotive Safety Engineering to Brock Adams.

19. Insurance Institute for Highway Safety Submissions to docket 74-14, no. 8, May 13-May 27, 1977, in IIHS files.

A “Final” Passive Restraint Standard

On June 30, 1977, Brock Adams issued his “Final Rule” on passive restraints. The text, with an elaborate explanation of “considerations underlying the standard,” was transmitted to Congress and published on July 5 in the *Federal Register*.²⁰ Adams accepted Coleman’s December 1976 findings about “the technological feasibility, practicability, reasonable cost and life-saving potential of passive restraints.” The final rule emphasized the need for increased protection arising from the smaller automobiles that would predominate given the President’s new energy policy and the end of a cheap energy society.

The option involving promotion of mandatory belt use laws was rejected because “(t)he prospects for passage... by more than a few states appear to be poor,” public opinion was unfavorable, and no state had enacted such a bill. Adams said he would favor state belt use laws, but did not expect Congress to encourage them with incentives after it had removed DOT’s authority to encourage state motorcycle helmet use laws through safety funding. The decision rejected the option of “driver-side only” passive protection, because it would offer one occupant better protection than the other in the same vehicle. On balance, there seemed to be little cost or lead-time advantage to this approach.

In accepting DOT’s estimate of the effectiveness of passenger restraints, Adams rejected, as lacking in objectivity, the General Motors study’s conclusion that airbags would be less effective than 20 percent use of lap/shoulder belts, noting that “its foundation is a long series of qualitative judgments made by employees of the party itself.” The underlying data had not been made available to opposing parties. On the other hand, the Insurance Institute for Highway Safety’s study was rejected as too narrow, even though it showed that airbags performed better than three-point belts in frontal accidents. The three estimates of airbag effectiveness submitted by Economic and Science Planning were dismissed because of their wide variations. The decision took comfort from an analysis comparing injuries experienced in all airbag cars with those that would have occurred, after adjusting for vehicle size and years. Expected injuries of AIS-2 severity and above would have been 91, but only 38 were reported, for an effectiveness estimate of 0.58. For frontal accidents only, the effectiveness was 0.52. These figures substantially exceeded the effectiveness estimates in the earlier Coleman decision, but they were still not statistically significant. The decision denied that statistically significant “real world data” were needed before a standard could be issued, contending that both legislative history and the Chrysler decision made it clear that DOT was not supposed to wait for widespread use of a technology before mandating it.

DOT raised its estimate of the initial costs of full front airbags to \$112 from the \$97 it had used the previous October. But the higher figure was still substantially lower than the \$193 estimate from GM

20. Vol. 42, pp.34289-34299. The section titled “The Considerations Underlying the Standard” are explained at somewhat greater length in NHTSA, “Standard No. 208—Passive Restraint Amendment, Explanation of Rule Making Action,” undated, but apparently July 26, 1977.

and the \$235 from Ford. DOT went to some lengths to explain the differences, because it wanted a figure to compare with the insurance savings companies like Nationwide said would occur if all cars were equipped with airbags. The savings — \$32.50 per car — would, after appropriate discounting and taking operating costs into account, be more than enough to cover the initial cost of the airbags.²¹

The decision argued that while injuries might be caused by airbag deployments, field experience indicated that they would be in the minor to moderate categories, far less serious than many injuries being prevented. The danger to out-of-position occupants would be minimized by pyrotechnic inflation systems that allowed slower initial inflation to push occupants out of the way before maximum force was deployed. The sodium azide used in pyrotechnic designs posed no real danger. Inadvertent deployment of airbags on the road might occur once in every 200 occupant lifetimes based on experience to date, which in all likelihood overstated the probability since early inadvertent deployments were due to GM design defects that were later remedied. Reliability of airbag and other passive restraint systems was the manufacturers' responsibility, but to make sure that manufacturers avoided performance problems, the ruling allowed a phase-in that provided opportunity for pilot production. DOT intended to monitor the quality and reliability of passive restraints developed and sold during the phase-in. The manufacturers' fears of product liability risk were offset by insurers' doubts that this would occur, especially by Allstate's willingness to sell product liability insurance to GM for cars with airbags at a rate no higher than for cars without them.

The decision acknowledged that small cars required more occupant protection and presented more difficult problems for airbag designers because of the shorter time available for deployment in a crash. Some small cars might require passive belts rather than airbags, but studies done for DOT had shown no insuperable difficulty in meeting the 30 mph standard for cars as light as 2,000 pounds gross vehicle weight. The solutions would be left up to the manufacturers.

Lead time for requiring the installation of passive restraints in front seats of passenger cars was extended to four years, from the three years called for in earlier versions of FMVSS 208. This gave GM the time it said it needed for producing passive restraints for all product lines, and it allowed the manufacturers to familiarize consumers with passive restraints by selling them in limited quantities during the four years. There would be a three-year schedule for the requirements: September 1, 1981 for cars with wheelbases more than 114 inches, September 1, 1982 for cars with wheelbases over 100 inches, and all cars by September 1, 1983. This schedule recognized that there were already airbag designs for large

21. The text of the decision did not include an analysis of the effect of the cost of airbags on the sale of cars, which was included in NHTSA's "Explanation" of the decision. It used a Wharton School econometric model that related a 1.52 percent drop in sales to a 1 percent increase in price, assuming no perceived change in the quality of the car. A cost of \$112 per car would mean a decline of sales in the order of 220,000-430,000 cars in the first year, with a return to normal in succeeding years. Underlying this estimate is an assumption of 12 million sales. NHTSA, "Standard No. 208—Passive Restraint Amendment, Explanation of Rule Making Action," July 26, 1977.

cars and gave makers of the smallest cars the longest lead time to solve the problems of passive design. Carmakers still could choose to provide passive protection only for frontal crashes, in which case lap belts had to be provided in all positions to protect against side or rollover crashes. If there was passive protection against side, rollover, and frontal crashes, seat belts could be omitted from the front seats.

Joan Claybrook felt that she had acceded to the manufacturers' need for lead time when she recommended to Adams that requirements be phased in over three model years starting with 1981 models (September 1, 1980). Four major airbag suppliers had urged NHTSA to start a phase-in of the standard in 1980. But Adams' staff, she said later, was concerned about the ramifications for his planned race for the Senate in 1980 if the phase-in started during the campaign, and Adams himself was influenced by Cole's testimony about the need for longer lead times. So Adams decided to delay the effective date of the standard by one year. Other senior members of the NHTSA staff, like Mike Finkelstein and Frank Berndt, felt that the delay was justified by the manufacturers' design and tooling needs.²²

At the press conference announcing his decision, and in letters sent on that date, Adams asked the auto manufacturers not to abandon the passive restraint agreement they had signed with Coleman. It was important to have passive restraints available before they were mandatory, and he even wanted the companies that had not signed the agreement to get some airbags into production at an early date. Volkswagen noted that it was continuing to make passive belts available in Rabbits. Henry Ford II replied that Ford would not follow through with its plans since DOT had already decided the issue; also its agreement with Coleman had called for driver-side airbags in compacts, rather than the full frontal protection in large cars that was called for first in the initial mandate under FMVSS 208. Thomas Murphy, the chairman of General Motors, said that GM had been concentrating on meeting its commitment to Coleman by designing a new ACRS for midsize cars rather than large cars. Now GM was planning a broad market test of passive restraints that included making passive belts available in a representative model in each size category and ACRS available in all large cars. If Congress struck down the passive restraint standard, Murphy said, he was willing to discuss continuing this voluntary program or reinstating the Coleman agreement.²³

Murphy was referring to the 1974 law that allowed Congress sixty days to review and disapprove any occupant restraint standard. Seven minutes after Adams concluded his June 30 press conference on his passive restraint decision, Rep. E. G. Shuster of Pennsylvania introduced a bill to reject it. A short

22. Interviews with Claybrook, Finkelstein, and Berndt, cited above. For the views of the suppliers see *Status Report*, July 26, 1977, p. 9.

23. Letter from T.A. Murphy, Chairman, General Motors to Secretary Adams, August 24, 1977 [74-14-N10-052-A]. The letter from Henry Ford II and Adams' answer are both in the docket and reproduced in a court filing—Center for Auto Safety and Ralph Nader, Before the United States Department of Transportation in the Matter of Federal Motor Vehicle Safety Standard 208, Occupant Crash Protection, August 4, 1977. Adams told Ford, on July 22, 1977, that the latter's lack of cooperation "suggests to me that we were too generous in our expectations of industry cooperation and in the provision of lead time for the standard."

while later, Sen. Robert Griffin of Michigan introduced a similar measure. To defend the standard, insurers, medical organizations, and public interest groups formed a National Committee for Automobile Crash Protection. The United Automobile Workers, whose president, Douglas A. Fraser, had already written Adams in support of a passive restraint standard, also joined the group. The American Automobile Association separately issued a statement supporting the new rule and reversing its previous opposition.²⁴

In early August 1977 the domestic automobile manufacturers filed petitions with DOT for reconsideration of FMVSS 208. General Motors said that DOT's evaluation of GM's studies and its cost/benefit analysis were incorrect; there should be an independent review of the two evaluations. Ford attacked the rule on many detailed points, including its underestimation of the potential for seat belt use, both with and without use laws, and the nonpassivity of a standard that combined active lap belts with airbags. Ford asked for a return to the *status quo ante* — the previous standard and the Coleman agreement. Chrysler emphasized the expense of airbags versus the efficiency of higher belt use, which could be attained by a combination of legislation and education. The most unusual petition was from Howard Goldmuntz and his firm, Economics and Science Planning, presumably acting for the American Seat Belt Council. It cited fatality data for Volkswagen Rabbits to support the effectiveness of passive belts and requested that passive restraint standards be keyed to passive belts. In other words, the passive restraint standard should be for the outboard front seats but not for the middle seat. The Center for Auto Safety and Ralph Nader both petitioned DOT and filed suit to have all new cars equipped with passive restraints by September 1, 1980. After waiting 120 days, DOT denied all the petitions.²⁵

Hearings on the passive restraint rule began almost simultaneously in both the House of Representatives and the Senate the second week of September 1977.²⁶ The arguments and the interests represented were a reprise of the Adams hearings, and the secretary defended his decision. Esther Peterson, the President's special assistant for consumer affairs, confirmed in the House hearings that Mr. Carter supported Adams. But there were a few new developments. Possibly to keep in step with the commitment made by the General Motors CEO to make passive restraints optional before they were mandatory, a Ford spokesman, Herbert Misch, said that Ford was planning to make passive belts an option on one midsize car line in the 1980 model year and on a subcompact in the 1981 model year, when

24. *Status Report*, July 26, 1977, pp. 1,3-5.

25. David E. Martin, Director, Automotive Safety Engineering, General Motors Corporation, Letter to Administrator Claybrook, August 4, 1977, submitting GM's Petition for Reconsideration. [74-14-N10-024]; J.C. Eckhold, Director, Automotive Safety Office, Ford Motor Company, Letter to Administrator Claybrook with Petition of Reconsideration of Notice 10. August 4, 1977 [74-14-N10-022]; Chrysler Corporation, Petition for Reconsideration, Docket No. 74-14, Notice 10, Occupant Restraint System, August 3, 1977 [74-14-N10-025]; Lawrence A. Goldmuntz and Howard P. Gates, jr., Economics and Science Planning, Inc., "Petition for Reconsideration," Docket No. 74-14, August 4, 1977, [74-14-N10-023].

26. Subcommittee on Consumer Protection and Finance of the Committee on Interstate and Foreign Commerce, House of Representatives, *Installation of Passive Restraints in Automobiles*, Hearings, Ninety-Fifth Congress, First Session, September 9 and 12, 1977; *Passive Restraint Rule*, Hearings Before the Subcommittee for Consumers of the Committee on Commerce, Science, and Transportation, United States Senate, First Session, on Department of Transportation's June 30, 1977 Passive Restraint Rule, September 8, 9, 14, and 21, 1977. Serial No. 95-126.

airbags would also be an option on one full-size car model. Misch said that Ford would take these steps even if Congress rejected the passive restraint standard.²⁷

Shortly before the hearings CALSPAN performed some airbag tests with cadavers. In two cases, the results indicated possible injuries. Congressman John Dingell of Michigan accused NHTSA of covering up these findings, which he thought supported his doubts about the safety of airbags. IIHS' Dr. Haddon called upon his medical training to point out that pre-existing conditions might have affected the performance of the cadavers.²⁸

The leaders of the House drive to reject the passive restraint rule — Shuster and Dingell — attacked in committee hearings and on the floor, but they did not succeed in bringing the issue to a floor vote. The House Subcommittee on Consumer Protection and Finance, chaired by Bob Eckhardt, an Adams supporter, defeated the proposal to reject the standard. But the resolution did not die there because it had 162 co-sponsors. It was forwarded to the full committee with a thoroughly negative report.²⁹ The full House Committee on Interstate and Foreign Commerce tabled the resolution by a close vote on October 12, two days before the 60-calendar-day deadline for Congressional action. The Senate subcommittee defeated Senator Griffin's resolution to kill the rule by a 5-0 vote. In the full committee, Griffin managed to get his resolution referred to the floor with a 9-7 recommendation to reject it. Senator Magnuson, the committee chairman, managed a 65-31 defeat of the Griffin resolution by the full Senate on the same day the House committee took its final action.³⁰ The passive restraint rule could now take effect. Two months later Adams issued his "final" rule. It rejected all petitions for reconsideration, but implemented some changes related to the positions of test dummies.³¹

Adams' decision was challenged in the federal court by two appeals, from opposite points of view. Ralph Nader and the Center for Auto Safety attacked both the four-year delay in implementing the standard as well as the three-year phase-in. Nader also called for the resignation of Joan Claybrook as administrator of NHTSA because his former associate supported these timetables. The Pacific Legal Foundation attacked the passive restraint requirement itself on the ground that there were insufficient data showing the effectiveness of airbags and that the decision ignored both public opinion and the safety

27. *Passive Restraint Rule*, pp. 66-67.

28. *Installation of Passive Restraints in Automobiles*, pp. 342-343, and p. 187, where Dingell also says that he suspects that once its rule is in place DOT will drop passive belts and insist on the more expensive airbags. The House Subcommittee on Consumer Protection and Commerce accepted Haddon's argument in its report, *The Department of Transportation Automobile Occupant Passive Restraint Rule*, 95th Congress, 1st Session, [House] Committee Print No. 95-23, October 1977, Pp. 36-38.

29. Subcommittee on Consumer Protection and Finance, Committee on Interstate and Foreign Commerce, House of Representatives, *The Department of Transportation Passive Restraint Rule*, Ninety-Fifth Congress, First Session. October 1977.

30. *Automobile Crash Protection*, Report together with Minority and Supplemental Views of the Committee on Commerce, Science, and Transportation on S.Con. Res. 31, to Disapprove FMVSS 208, Transmitted on June 30, 1977, 95th Congress, 1st Session, Report No. 95-481, October 7, 1977. *Congress and the Nation*, vol. V, p. 296; *Status Report*, November 8, 1977, pp. 3-4.

31 *Status Report*, December 23, 1977, p. 4.

hazards of airbags. The two petitions were consolidated into one case in the District of Columbia Court of Appeals, which ruled unanimously in Adams' favor in February 1979. Nader's arguments against delay were dismissed because the court said the secretary had "good cause" to be concerned about manufacturers' ability to produce passive restraints and about the public's reaction. Using wheelbase as a criterion for the phase-in was justified because size was related to airbag fit. The court accepted Adams' assessments of both airbag effectiveness and hazards. But it also agreed with the Pacific Legal Foundation's argument about the importance of public acceptance.

We believe that the agency cannot fulfill its statutory responsibility unless it considers public reaction. Without public cooperation there can be no assurance that a safety system "can meet the need for motor vehicle safety." And it would be difficult to term "practicable" a system, like the ignition interlock, that so annoyed motorists that they deactivated it.

But the court went on to say: "Despite the Secretary's claim that he need not consider the response to the new standard, he adequately justified his action in terms of the anticipated public reaction."

This refers to Adams' claim that restraints were different from the ignition interlock because they did not require independent action.³²

Restraint Developments Following Adams' Decision

A NHTSA-supported study released late in 1977 showed that 18.5 percent of car drivers were using safety belts, slightly less than the 20 percent assumed for all front seat occupants in that year's rulemaking.³³ This study included 16 major cities, between August 1976 and March 1977. It was a high point for belt use rates during the Carter Administration. A series of surveys by the Opinion Research Corporation in 19 major cities reported driver safety belt use of 14.1 percent between November 1977 and June 1978, of 13 percent for all of 1978 and of 10.9 percent for January through November 1979.³⁴ Domestic auto manufacturers made several attempts to increase belt use during 1977. In April and May they sponsored a media campaign by Motorists Information, Inc., in Grand Rapids, Michigan. A random sample of drivers was interviewed by telephone. Those saying they used belts "always" or "most of the time" increased from 29 percent to 41 percent during the campaign. The Insurance Institute for Highway Safety later checked the findings, basing its on review on seat belt use observations rather than claims and comparing Grand Rapids with Milwaukee, a small city where there had been no such campaign. Drivers were seen to wear seat belts in 12 percent of the observations in Milwaukee and 13 percent in Grand

32. Pacific Legal Foundation, Ralph Nader, and Public Citizen, et. al. vs. Brock Adams, Secretary of Transportation, 593 *Federal Reporter*, 2d Series, pp.1338-1349. For Nader asking Claybrook to resign, see *The New York Times*, December 1, 1977, p. 18.

33. Kirchner Associates, *Safety Belt Usage: Survey of the Traffic Population*, (August,1976-March 1977), Prepared for NHTSA, December 1977.

34. Benjamin M. Phillips, Opinion Research Corporation, *Safety Belt Usage Among Drivers*, DOT HS-805-398, May 1980.

Rapids, a statistically insignificant difference.³⁵ In October, midway through another Motorists Information advertising campaign in Detroit — this time budgeted at \$1.75 million — IIHS measured driver belt usage there at 13 percent, “even lower than safety belt use levels observed by us in Detroit at the same sites in the spring of 1976.”³⁶ But Motorists Information, Inc., claimed that its observations of 40,000 drivers in southeastern Michigan showed that belt use increased from 14.7 percent before to 21 percent after its campaign. This conflicted not only with IIHS’ findings but also with a NHTSA before-after study in three Michigan cities in the campaign. In both Detroit and Marquette use was not affected by the campaign, remaining at 15 percent in the former and 12 percent in the latter. In Traverse City it declined from 17 percent to 16 percent. Dr. Haddon commented that even the auto industry claim — 21 percent driver belt use — was discouraging.³⁷

The continuing failure to increase belt use through persuasion caused belt use laws to become a recurring issue. Advocates pointed to data showing that belt laws in other countries produced 65-70 percent or even higher usage among drivers and right front seat passengers. An international conference in February 1977 reported a 10-20 percent reduction in occupant deaths and serious injuries as a result of these laws, far less than would have been expected from the known effectiveness of seat belts.³⁸ Brian O’Neill, of IIHS, noted that these findings showed that NHTSA was wrong in assuming that the benefits of 70 percent seat belt use were equivalent to the benefit of an airbag plus lap belt.³⁹

Pressure for laws to encourage seat belt use reached a high point when a House subcommittee held hearings on seat belt usage in June 1978. The chairman, Bo Ginn (D-GA), professed to be a supporter of the passive restraint standard, but said he was concerned that promoting seat belt use not be neglected during the long transition period. The ranking minority member, James C. Cleveland (R-NH), shared this concern, but concentrated on using economic incentives like insurance rebates to encourage use or reductions in liability recoveries to penalize nonuse.⁴⁰ Ben Kelley and Leon Robertson testified on the Insurance Institute for Highway Safety’s research about the ineffectiveness of educational campaigns to raise belt usage, but also noted that belt laws, when enforced, could be effective in raising usage, although with a disproportionately low effect on deaths and disability. This led Congressman Ginn to ask whether IIHS’ view of seat belt laws was negative or positive. Kelley insisted that it was positive because

35. *Status Report*, August 15, 1977, pp.1-2.

36. Dr. William Haddon quoted in *Status Report*, October 13, 1977, p. 8.

37. *Status Report*, December 23, 1977, p. 6.

38. *Status Report*, May 9, 1977, p. 8, reporting on the Sixth International Conference of the International Association for Accident and Traffic Medicine in Melbourne, Australia during February 1977.

39. *Passive Restraint Rule*, Hearings Before the Subcommittee for Consumers of the Committee on Commerce, Science, and Transportation, United States Senate, First Session, on Department of Transportation’s June 30, 1977 Passive Restraint Rule, September 8, 9, 14, and 21, 1977. Serial No. 95-126, p. 139.

40. *Safety Belt Usage*, Hearings Before the Subcommittee on Investigations and Review of the Committee on Public Works and Transportation, House of Representatives, Ninety-Fifth Congress, Second Session, 95-39. San Juan Puerto Rico, January 4, 5, 1978; Washington, D.C., June 6-8, 1978, pp. 131-132.

laws were the only known way of predictably raising belt use.⁴¹ In her testimony, Joan Claybrook emphasized the failure of states to pass any belt use laws after DOT had held a conference to encourage them. Since the House deleted funds to encourage these laws, DOT had made no effort to do so. Claybrook was pessimistic about the chances of passing state laws because surveys sponsored by the Highway Users Federation and the Motor Vehicle Manufacturers in 1975 and 1976 showed that more people opposed the laws than favored them.

Our belief at this point is that unless there is some change in the attitude of Congress or the public, efforts by the department to encourage belt use laws are unlikely to succeed. However, we still may be able to pursue belt use laws for specific groups such as children.⁴²

But a couple of days later Mr. Ginn asked Claybrook to respond to his citation of a report by the Senate Appropriations Committee, that the House deletion of funds for encouraging state belt use laws was not a prohibition of such a program.⁴³ In reply, Claybrook noted that Congress had, in fact, appropriated no such funds and that DOT's budget experts thought it was useless to ask for them. Ginn closed the hearings saying: "To your chairman, there has been a disturbing overtone to much of what we have heard, an aura of defeatism and resignation."⁴⁴ There was no discussion about the possibility of including a requirement for seat belt use regulations in the standards that could be promulgated under the Highway Safety Act of 1966. This might not have been very effective, since the Highway Safety Act had been amended in 1976 to eliminate the requirement that states comply with every standard or with each element of a standard.⁴⁵ But Representative Cleveland did ask about the possibility of not applying the airbag mandate if any state reached 65 percent usage of shoulder/lap belts.⁴⁶

Largely in reaction to congressional pressure, Claybrook wrote to all state governors on August 21, 1978, urging them to consider support of mandatory seat belt use laws. Although she realized that passing such laws would be difficult, the success of these laws in other countries and their life-saving potential made the attempt worth the effort. Claybrook followed the advice of IIHS president Haddon to ask the governors to tell her about the chances of passing mandatory belt use laws in their states. By December, 27 states had replied, with a uniformly pessimistic view of the chances for passing such laws, although some governors said they would continue to promote belt use.⁴⁷ Claybrook said that she had already concluded that the best chance for changing public and legislative opinion in favor of mandatory use laws was to target children. She had already alluded in her congressional testimony to the role that

41. *Ibid.*, pp. 249-277.

42. *Ibid.*, p. 144.

43. *Ibid.*, p. 378.

44. *Ibid.*, p. 489.

45. The legislative history is cited in Department of Transportation, National Highway Traffic Administration and Federal Highway Administration, [NHTSA Docket No. 93-55, Notice 5] "Uniform Procedures for State Highway Safety Programs," *Federal Register*, June 26, 1997, p. 34397.

46. *Ibid.*, p. 369.

47. Interview with Joan Claybrook, September 13, 1993; *Status Report*, September 20, 1978, pp.5-6 and December 14, 1978, pp. 1-3.

NHTSA had played in encouraging the child restraint use law that had gone into effect in Tennessee at the beginning of 1978. Although the law was flawed because it exempted from restraints children held in their parents' laps, it showed that such laws could be passed. One person within NHTSA was assigned full-time to work on organizing conferences and getting information to the medical community and PTAs. NHTSA published a standard upgrading the requirements for child safety seats at the end of 1979.⁴⁸ These efforts began to pay off in 1980. IIHS did a study showing that use of child seats increased from 8 to 29 percent after the Tennessee law was passed. More than 30 states considered similar action. Rhode Island passed a law requiring all children in front seats to be properly restrained, and California passed a weaker law calling for a one-year information campaign on child restraints, followed by the issuance of warnings to drivers carrying unrestrained children.⁴⁹

The Battle of the Passives

Before Adams affirmed the passive restraint standard, American automobile manufacturers were clearly skeptical about passive belts. There was no design that could work for the center front seat. Advocates of passive restraints, in and out of NHTSA, barely hid their own preferences for airbags.⁵⁰ There were few NHTSA research and development projects on automatic belts, little testing, and very little on-the-road experience. But as early plans for compliance with the new standard began to emerge, passive belts suddenly grew in prominence.

During 1977 and 1978 data began to appear on the effectiveness of Volkswagen Rabbit passive belts. Using insurance company data, the Highway Loss Data Institute, an affiliate of the Insurance Institute for Highway Safety, reported in July 1977 that Rabbits with passive belts had a 24 percent lower frequency of personal injury (PIP) claims and a 19 percent lower frequency of Medical Payment claims than those with active belts. HLDI said this was only a preliminary finding because of the relatively small exposure.⁵¹ Later in the year Volkswagen itself announced another preliminary study, based on 58 accidents with more than \$750 in physical damage to the car — there were no deaths or very serious injuries.⁵² The next year, NHTSA analysts using the Fatal Accident Reporting System (FARS) database found that passive-belt-equipped Rabbits had a 0.78 fatality rate in front seats compared with 2.34 for other Rabbits, a decrease of two-thirds.⁵³ A few months later, the same methodology showed that passive

48. Claybrook Interview; NHTSA, DOT, "Occupant Protection Program: Progress Report," August 30, 1978, p. 20; NHTSA, DOT, "Occupant Protection Program Progress Report No. 2," April 1979, pp. 17-20; NHTSA, "Automobile Occupant Crash Protection: Progress Report No.3," July, 1980, pp. 63-78.

49. *Status Report*, May 20, 1978, pp. 6-7, June 25, 1978, p.8, November 5, 1978, pp. 3-4.

50. Their preferences were made clear in the interviews, cited above, with Nader, Claybrook, Finkelstein and Schaffer, and in my conversations with Haddon during this period.

51. Highway Loss Data Institute, *A Preliminary Comparison of Volkswagen Rabbits With Passive and Active Seat Belts, 1975 and 1976 Models* (HLDI A-8), Washington, D.C.

52. J.D. States, S.R. Miller, and U.W. Seiffert, "Volkswagen's Passive Seat Belt/Knee Bolster Restraint, VWRA: A Preliminary Field Performance Evaluation," *21st Stapp Car Crash Conference*, October 19-21, 1977.

53. NHTSA, DOT, "Occupant Protection Program: Progress Report," August 30, 1978; *Status Report*, July 29, 1978, p.7.

belts reduced fatalities by about half.⁵⁴ Another HLDI report on VW Rabbits published in August 1979 was more ambiguous. No-fault personal injury claims were only slightly lower for automatic-belt cars and there was no real difference for medical payments.⁵⁵ That year Volkswagen aired a prime-time television commercial promoting its passive belts, but the advertising was withdrawn after a complaint of deceptive advertising to the Federal Trade Commission (FTC). The complaint was later dismissed.⁵⁶

In February 1978 General Motors announced that starting in May Chevette buyers would have the option of an automatic seat belt similar to the Rabbit's — stretching across the body when the door closed, with a knee bar to contain forward movement and a manual lap belt and ignition interlock.⁵⁷ GM's interest in automatic belts was also demonstrated by its petition for methods, besides a simple push button, to release the belt in an emergency. To minimize disconnections of the belts, GM wanted to try a spool release that would “play out” in an emergency. Its president, Peter Estes, convinced Claybrook of his good intentions, and NHTSA embodied the GM proposal in a notice of proposed rulemaking on May 22, 1978. All the comments on the proposal were positive; a final rule was issued on November 13, 1978, allowing a single emergency release mechanism, without any further design specifications.⁵⁸

NHTSA's 1979 seat belt usage study found that drivers of VW Rabbits with automatic belts had the highest belt use rate, 81 percent, compared with 13 percent for all drivers. There were no cases of Chevettes with automatic belts in the analysis.⁵⁹ But a separate study of automatic-belt cars found that 89 percent of Rabbit owners said they used their belts “always” or “almost always” compared with 72 percent of Chevette owners. Eighty-four percent of Rabbit owners and 41 percent of Chevette owners said they would prefer an automatic system in a new car. Chevette owners were significantly more likely to cite inconvenience and discomfort in evaluating their cars.⁶⁰ By 1980 VW engineers were proclaiming that the Rabbit's experience made it clear that airbags were not needed to meet the requirements of standard 208.⁶¹

During the Carter administration no new airbag-equipped cars were put on the road. NHTSA continued to track their fatality experience. A 1979 report showed that all airbag-equipped cars had about

54. DOT, NHTSA, “Occupant Protection Program Progress Report No. 2,” April 1979, pp. 13-14.

55. Highway Loss Data Institute, *Comparisons of Claim Frequencies of Volkswagen Rabbits with Automatic and Manual Seat Belts*, Report A-10, August 1979, Washington, D.C.

56. Statement of Richard Peet, Department of Transportation, *Hearing on Notice of Proposed Rulemaking, Re Passive Restraints for Unrestrained Persons* (sic!), December 7, 1983, morning session, pp.132-134. Peet, the head of Citizens for Highway Safety, had lobbied for the commercial and appeared in it.

57. *New York Times*, February 14, 1978, p. 20; Status Report, March 2, 1978, p. 7.

58. NHTSA [49 CFR Part 571][Docket 74-14; Notice 13] Occupant Crash Protection. *Federal Register*, vol. 43, no. 99, May 22, 1978, pp. 21912-21915, and [Docket 74-14; Notice 14] *Federal Register*, vol. 43, No. 219, November 13, 1978, pp. 52493-52494. Claybrook's account of the matter is from her interview, September 13, 1993.

59. Phillips, op. cit., pp. 25, 30.

60. Opinion Research Corporation, *Highlights of Four Research Studies: I. Safety Belt Usage Among Drivers, II. Use of Child Restraint Devices, Passenger Safety Belts, and Seat Position Data, III. Motorcycle Helmet Usage, IV. Automatic Safety Belt Systems*. Prepared for NHTSA, U.S. D.O.T., March, 1980.

61. Wolfgang Rosenau and George M. Welkey, [VW], “Field Performance of Volkswagen Automatic Restraint System,” D.O.T., N.H.T.S.A., *Eighth International Technical Conference on Experimental Safety Vehicles*, October 21-24, 1980, pp.369-378.

a third fewer fatalities than seat-belt-equipped cars.⁶² Admittedly, there were still not enough cases to be statistically significant, and the General Accounting Office (GAO) argued that standard 208 was based almost entirely on laboratory tests. The GAO report, which originated in its Detroit office, also concentrated on some of the key issues that critics were still raising about airbags — out-of-position occupant problems and sodium azide. Appended to the report was a response by NHTSA that amounted to a vigorous defense of airbags.⁶³ The year before, Claybrook had tried to stimulate commercial demand for airbags by asking 875 fleet owners to send her an indication of their interest in buying 1980 or 1981 model-year cars equipped with airbags. The replies showed a potential fleet demand for 39,000 such cars, even before the passive restraint standard would be in effect.⁶⁴

In August 1978, DOT and NHTSA held a press conference to highlight the findings that both seat belts and airbags were saving lives on the road and that the public favored the passive restraint standard. The material was summarized in NHTSA's first progress report on the occupant restraint program. A Gallup poll had already reported in the summer of 1977 that the public supported the airbag requirement by a margin of 46-37 percent. Now a DOT-sponsored survey by Peter D. Hart Research Associates found that support for the passive restraint standard exceeded opposition by about two to one. Preference for airbags or automatic belts was somewhat dependent on price — especially if the difference exceeded \$200. DOT believed that the public would be served best if it had a choice of airbags or passive belts in a full selection of car sizes and styles. So far, manufacturers seemed inclined to offer airbags only in their most expensive cars. Nevertheless, at the press conference Adams seemed to be saying that choice would be available:

General Motors, Ford, Chrysler and Volvo intend to offer airbags one year before they are required to do so; Volkswagen and General Motors currently are selling cars with automatic belts; and Ford and Toyota have announced that they also will offer automatic belts in advance of the requirement.⁶⁵

GM and Ford were about to complete negotiations with airbag suppliers. Although Eaton had withdrawn from airbag production earlier in the year, DOT listed a number of other suppliers and concluded that competition should be strong. There was only a slight hint of the difficulties Japanese carmakers had told Claybrook they were having in designing airbags for their small cars.⁶⁶

In its second "Occupant Restraint Progress Report," issued in April 1979, NHTSA reported that the three large American automakers were still planning airbags as optional equipment in some 1981

62. Conrad Cooke, NHTSA, "Fatality Rate Comparison, With and Without Airbags," February 14, 1979, Amended November 9, 1979. Submitted July 17, 1980 to docket 74-14-GR-375.

63. Comptroller General of the United States, *Passive Restraints for Automobile Occupants—A Closer Look*, July 27, 1979. The sodium azide issue had recently been reviewed by three studies, two sponsored by the MVMA and the third by a group that included potential airbag suppliers. They found no evidence of cancer-causing effects from sodium azide in airbags. *Status Report*, June 21, 1979, pp. 6-9.

64. *Status Report*, March 2, 1978, pp. 1,2-4.

65. U.S. Department of Transportation "News: August 30, 1978". Nothing in the paragraph was new news.

66. NHTSA, DOT, "Occupant Protection Program: Progress Report, August 30, 1978;" Minutes of meetings between Claybrook, other NHTSA officials and Japanese auto officials in Japan, May 22-26, 1978.

model cars — all GM large cars, the Ford Lincoln and Mark lines, and the Chrysler Le Baron and Dodge Diplomat. Allied Chemical had withdrawn as an airbag producer in December 1978, after concluding that the great majority of cars would be made with passive belts. Still, several airbag suppliers had received letters of intent from the car companies, and supplies of the components seemed adequate. NHTSA now estimated that airbags would cost about \$200 more than current belt systems.⁶⁷ When GM raised its estimates of the cost of ACRS units, making them almost double those of other manufacturers at various levels of production, Michael Finkelstein, NHTSA associate administrator for rulemaking, challenged the basis of the estimates. He also questioned why airbags would apparently be offered as options while automatic belts would be standard, a surprising outcome given GM's recent market study showing consumers preferred airbags over other systems (about which more later). But in July Ford also raised its airbag cost estimates, to a level closer to GM's.⁶⁸

Toward the end of September 1979, General Motors must have shattered what optimism NHTSA had left about its intentions by announcing that it would not provide airbags in any 1980 models because tests had revealed risks to out-of-position children. NHTSA was asked to hold a seminar to explore the issue while GM continued tests that might allow the option in full-sized 1982 models.⁶⁹ Claybrook told a press conference on October 1 that based on:

a preliminary look at the limited evidence GM presented to us... (t)he scope of the problems raised by GM, even if it is valid, is very narrow and does not in any way detract from the large number of lives that will be saved by this system, including the lives of many children...

In the real world, airbag equipped cars built by General Motors have performed well... The Department of Transportation does not believe that the problems GM now alleges may arise have in fact occurred.

Nevertheless, Claybrook announced that she was setting up a team of NHTSA experts to deal with the issue.⁷⁰ In a mid-November trip to Detroit with Neil Goldschmidt, who had recently replaced Adams at DOT, Claybrook learned that GM felt that it now had the problem under control and was ready to make airbags optional in some 1982, models. This was made public in December.⁷¹

While General Motors was switching signals about its willingness to sell airbags, Rep. John L. Burton (D-CA) released the results of some GM surveys that he had gotten, along with a request for

67. NHTSA, DOT, "Occupant Protection Program Progress Report No. 2," April 1979, pp. 43-49.

68. Letter from David E. Martin, Director, Automotive Safety Engineering, Environmental Activities Staff, General Motors Corporation, to Joan Claybrook, NHTSA, March 5, 1979. [74-14-N10-273]; Finkelstein's reply is quoted at length in *Status Report*, June 21, p. 3; Letter from J.C. Eckhold, Director, Automotive Safety Office, Ford Motor Co., to Joan Claybrook, July 5, 1979.

69. Betsy Anker-Johnson, Vice President, Environmental Activities Staff, General Motors Corporation, Letter to Joan Claybrook, NHTSA, September 27, 1979. [74-14-GR-305]

70. Claybrook's statement is reproduced in *Status Report*, October 9, 1979, pp. 3-5.

71. *Status Report*, December 21, 1979, p. 1; New York Times, December 9, 1979, p. 26.

confidentiality, from GM Vice President David Potter.⁷² The 1971 market study in which GM customers said they preferred ACRS to passive belts, already summarized in a previous chapter, was included. But there were two more recent studies. In a Midwestern city in 1978, 1,014 GM owners rated active belts, airbags and passive belts. Airbags “received the highest rating on all operation, comfort and appearance items evaluated.” In the second study, in 1979, 195 GM large car owners in Chicago were asked to choose among airbags and three types of automatic belts. Seventy percent preferred the airbags, costing \$360, to the passive belts that ranged between \$80 and \$150.⁷³ An earlier GM-sponsored survey of ACRS owners, which was in the 208 docket, said in its summary:

As indicated by comments on the returned postcards, many respondents had a favorable attitude toward ACRS. Of those who commented, most felt safer with ACRS in the car and were willing to pay the extra cost or go to a lot of trouble to purchase the ACRS.⁷⁴

Despite its market research, during the first half of 1980 General Motors continued what seemed like a hesitant retreat from airbags. In March it told NHTSA it did not plan to put airbags into small or medium size cars in the 1982-86 model years, but might still offer them in full-size cars. GM President Estes said that it would have the capacity to equip 200,000 large cars with airbags in the 1982 model year; a GM memo circulating in Congress put it at 250,000. Then in early June General Motors announced that to save some \$20 million in capital investment during a period of poor sales, it had canceled all airbag plans for its 1982 models.⁷⁵ This was happening at a time when the auto industry was calling for a rollback of government safety and environmental regulations in response to the massive losses caused by the Iranian oil crisis. The Carter administration went no further than to promise that no major new safety regulations would be issued during 1980, but, as we shall see, there was more activity in Congress.⁷⁶

Ford and Chrysler made no announcements about their airbag plans during 1980. In its midyear progress report on occupant crash protection, NHTSA assumed that Ford was still planning to make airbags available in limited numbers in some 1981 models.⁷⁷ Roger Maugh recalled that about this time, to keep its hand in airbag research, Ford installed driver-side airbags in 100 Lincoln Town Cars that were used as police cars in Dearborn. Maugh recalls that they were in use about 18 months and that every car had an airbag sensor corrosion problem.⁷⁸

72. Graham, *op. cit.*, p. 124.

73. *Status Report*, December 21, 1979, pp. 1,16-18.

74. Livia K. Li, and B.B. Campbell, *Air Cushion Restraint System (ACRS): A Survey of Owners' Opinions*, Highway Safety Research Center, University of North Carolina, May, 1978, p. 15-16.

75. *Status Report*, March 25, 1980, pp. 1-2; June 10, 1980, pp. 1, 10; June 25, 1980, pp. 1, 10-13. *New York Times*, June 4, 1980, p. 16.

76. *Status Report*, July 21, 1980, pp. 1-3.

77. NHTSA, “Automobile Occupant Crash Protection: Progress Report No.3,” July, 1980, p. 6.

78. Interview with Roger Maugh, April 22, 1996.

Mercedes-Benz told NHTSA in May that it was planning to put an airbag system in all 1982 model year cars it would sell in the United States.⁷⁹ Later in the year Volvo said that it was planning airbags for 4,000 of its 1982 cars.⁸⁰ Still, NHTSA was concerned that only automatic belts would be available in the kinds of cars most Americans would buy. According to Michael Finkelstein, NHTSA thought its proposed rule to improve the “comfort and convenience” of seat belts would make automatic belt installation more difficult.⁸¹ This was not spelled out in the notice of proposed rulemaking, which emphasized that a key aim was to discourage use of the detachment mechanism for automatic belts.⁸² But Volkswagen, at least, was aware of the implication; it told the White House that the NHTSA proposal would “eliminate VW’s passive belt system.”⁸³ The comfort and convenience standard was never issued, and NHTSA was still searching for a way to make airbags more available when Congress offered an opportunity.

Congressional Interventions

Led by Congressmen Shuster and Dingell, Congress voted to prohibit the use of funds in the 1979 and 1980 fiscal years to enforce any occupant protection standard other than seat belts. Since standard 208 was not yet in effect, the action was symbolic, but President Caldwell of Ford still congratulated Dingell when the bill was passed in 1979.⁸⁴ Toward the end of 1979 David Stockman, then a Republican congressman from Michigan, introduced an amendment to the 1980 and 1981 fiscal year appropriations that he said would guarantee “consumer choice” in occupant restraints — apparently referring to airbags, automatic, and manual belts. How this would have worked in practice was far from clear, and because it was attached to a one-year appropriations bill, its significance was also symbolic. But if it remained in effect during the period of standard 208 enforcement, manufacturers could conceivably have been forced to have three different restraint designs for each model. The amendment was adopted by the House. The Senate bill had already passed without Stockman’s proposal, and it was not until the middle of 1980 that serious negotiations to reconcile the two bills began in the conference committee.

Claybrook and her allies used the opportunity of the reconciliation negotiations to try to revive the prospects for airbags. With the help of Senator John Warner (R-VA), a newly recruited airbag supporter, Claybrook negotiated a compromise that incorporated some GM proposals. In July GM President Estes had offered Secretary Goldschmidt a deal. GM would make airbags optional in their B-C large cars during the 1983-85 model years; in return, GM wanted standard 208 to be delayed until the

79. Heinz W. Gerth, Mercedes-Benz of North America, Inc., Letter to Michael Finkelstein, Assoc. Dir, NHTSA, May 27, 1980.

80. *Status Report*, November 5, 1980, pp. 1,6,7.

81. Interview with Michael Finkelstein, July 7, 1995.

82. A preliminary notice had been issued at the end of 1979. NHTSA [Docket 74-14, Notice 17] Federal Motor Vehicle Safety Standards; Improvement of Seat Belt Assemblies. NPRM. *Federal Register*, Vol.44, No.251, December 31, 1979, pp. 77210-77224.

83. *Status Report*, August 6, 1980, p. 7.

84. *Congress and the Nation*, vol V, p. 296; *Status Report*, June 15, 1978, pp. 7-8; July 14, 1978, p. 5; August 21, 1979, pp. 1, 9, 10; October 9, 1979, pp. 1-3.

1983 model year and then applied first to small cars, a market dominated by the Japanese manufacturers and Volkswagen. The compromise reached in conference would have rolled back standard 208 to the 1983 model year, when the large manufacturers — GM, Ford, Toyota, Datsun, and VW — would have had to start meeting the standard in small cars, but also to provide airbags as an option on at least one car line in model years 1982-85. Other manufacturers would be required to meet the standards beginning with midsize cars. The bumper standard would also be rolled back.

Support for mandating airbags was provided by a survey commissioned by *The New York Times*. Answering the question: “Would you favor or oppose requiring car manufacturers to equip all new cars with air safety bags?”, 45 percent of licensed drivers were in favor, and 32 percent were opposed. But 93 percent of retail car dealers were opposed, one third of them giving “damage to sales” as the reason for opposition.

Although Ford and GM had participated in drafting the language, their support for the Warner proposal wavered. The compromise was adopted in the Senate on September 25, but very narrowly defeated in the House on October 1 and again on December 4, the second time by a three-vote margin. With the Reagan administration already elected and Stockman a key figure in it, Warner and Claybrook made one last effort to pass the compromise. They drafted another slightly revised bill which might have attracted a few more votes and convinced Dingell to allow another House vote if the Senate passed it. But Senator Metzenbaum blocked the Senate vote. When Claybrook brought Nader in to try to overcome Metzenbaum’s opposition, Nader refused to support her. He felt the compromise was not worth the rollback of the bumper standard.⁸⁵ So by the end of 1980 the passive restraint standard was still in place for 1982 models, but its future in the Reagan administration was uncertain.

Summary

The Carter administration had provided the friendliest political environment for consumer protection since the previous Democratic presidency, Johnson’s. The team of Brock Adams at DOT and Joan Claybrook at NHTSA seemed to put in place all the pieces for the successful initiation of the passive restraint standard. For all the leading advocates of the standard, the best way to fulfill it was with airbags — or at least by giving consumers the real option of choosing airbags. Although American manufacturers seemed at first to feel that airbags were the only feasible passive restraint, they gradually turned to automatic belts as Volkswagen’s sales and road experience accumulated.

General Motors led the reaction against airbags, claiming that its statistical analysis showed that they were no more effective than manual belts at the current use rate. But GM’s real motivation may have

85. *Congress and the Nation*, vol. V, p. 335; Interview with Joan Claybrook, September 13, 1993; Interview with Ralph Nader, July 27, 1993; *Status Report*, January 11, 1980, pp. 1-4, June 10, 1980, pp. 1,8, August 6, 1980, pp. 1, 3-6, December 31, 1980, pp. 1-4; Graham, *op. cit.*, pp. 129-135.

been a fear of the product liability risk of the technology, and the effect of airbag costs on sales. As the Iranian energy crisis assaulted the auto market, the deterioration in sales and income led American carmakers to demand, especially during the 1980 election, relief from all kinds of government regulations. Preferring automatic belts over airbags was consistent with this posture. Ford, however, did not go as far as GM in abandoning airbags, and it is possible that Ford would have offered them on some models if the standard had actually taken effect as scheduled.

Belt use laws within the United States seemed further from reality than ever. Claybrook reacted to Congressional pressure by asking state governors about the possibility of passing such laws, and got a uniformly negative response. Instead she invested NHTSA's resources in promoting state child restraint laws.

The performance standard requirement in the 1966 motor vehicle standards statute seemed to make it virtually impossible to dictate technology to the manufacturers. It was not absolutely impossible; comfort and convenience standards, or the requirement that there be an automatic reattachment after an emergency release, could have made automatic belts a more expensive choice, or even technologically unfeasible. But airbag advocates chose a more direct approach, the exception to the performance standard embodied in the Warner amendment. The exception was justified not by a direct attack on the principle of performance standards, but by the desirability of giving consumers a choice between airbags and automatic belts. The rhetoric of consumer choice had a powerful appeal. Stockman had used it to try to undermine the mandatory aspect of the passive restraint standard. Claybrook and Warner almost succeeded in requiring airbags in some of the models produced by large carmakers.

SAFETY SELLS: Market Forces and Regulation in the Development of Airbags

By Martin Albaum

CHAPTER 5: How an Airbag Standard Finally Succeeded in a Period of Deregulation

Ronald Reagan's election in November 1980 brought to power a Republican administration that claimed to be more pro-business and committed to deregulation than its predecessor. Reagan's nearly 10 percent lead in the popular vote and overwhelming sweep of the electoral vote were accompanied by Republican gains of 33 seats in the House of Representatives and 12 in the Senate, enough to take control of the Senate but not of the House.

Although there was some real growth of the gross domestic product in 1981 after a bit of shrinkage in 1980, inflation and unemployment were still unusually high. In 1982 domestic production fell again, more dramatically than in 1980, but inflation was beginning to ease. The domestic auto industry was a focus of the current economic crisis. Domestic passenger car sales declined from 8.3 million in 1979 to 6.6 million in 1980, 6.2 million in 1981, and 5.8 million in 1982. Car imports stayed fairly steady during this period, since importers were supplying the small, quality cars Americans increasingly wanted but could not get in adequate numbers at home.

Among the highest priorities of the new administration were those measures aimed at improving the economy — stimulating investment by cutting taxes and repealing restrictive regulations. In the case of the auto industry this meant trying to eliminate regulation or possibly minimize their enforcement, rather than changing the legislation on which they were based. NHTSA went from 874 permanent, full-time positions in fiscal year 1980 to 640 in 1985.

Regulatory relief for the auto industry was a prominent part of Reagan's drive to minimize regulation wherever possible. Changing regulations, rather than legislation, was the preferred method because Reagan's party did not control both houses of Congress. Executive Order 12291, issued in the earliest days of his presidency, required that benefits of regulation must exceed their costs, but agencies were exempted when this violated their legislative mandate, as it did for all health, safety, and environmental agencies. These agencies still had to make such an assessment, but not a formal comparison. Any proposed regulation had to be submitted to the Office of Management and Budget (OMB) for approval by the Office of Information and Regulatory Affairs; a denial could be appealed to the President.¹

1. W. Kip Viscusi, "The Misspecified Agenda: The 1980s Reforms of Health, Safety, and Environmental Regulations," in Martin Feldstein, (ed.), *American Economic Policy in the 1980s*, Chicago: The University of Chicago Press, 1994, p. 457, notes that minimizing the issuance of specific regulations was a general approach of the Reagan administration, which used its legislative energy "on tax reform rather than rewriting the legislative mandates of regulatory agencies." See also pp. 460 and 463, as well as Barry D. Friedman, *Regulation in the Reagan-Bush Era: The Eruption of Presidential Influence*. Pittsburgh: University of Pittsburgh Press, 1995, pp. 31-38.

The Democrats increased their control of the House in the election of 1982, while the Senate remained fairly unchanged. By 1983 the economy was expanding again, which it continued to do throughout the remainder of Reagan's two terms, with relatively moderate inflation levels of 2-4 percent. Unemployment was historically high, but shrank fairly steadily from nearly 10 percent in 1982 to 5.5 percent in 1988. Sales of new domestic cars recovered in 1983-1985, reaching a peak of about 8.2 million in 1985-1986, and then falling to 7 million in 1987 and 7.5 million in 1988. Prosperity and relative peace brought a sweeping popular vote victory for Ronald Reagan in 1984; he defeated former Vice President Walter Mondale by 18 percentage points, and regained some of the ground that his party had lost in the House, but not enough to take control. By the 1986 election, the Republicans had lost both houses of Congress.² From 1984 on the Reagan administration gave lip service to deregulation, but returned to the regulatory patterns of previous administrations.³

There was evidence of growing public concern about automobile safety in the late seventies and early eighties. Many states were passing child safety seat requirements; Mothers Against Drunk Driving had been effectively advocating tougher drunk driving laws and their enforcement. Automobile manufacturers began to recognize that car safety might sell. The Highway Loss Data Institute (HLDI), an affiliate of the Insurance Institute for Highway Safety, for years had published data on injury claims by car make and model. For the first time, an American manufacturer cited its performance in mass media advertising. In January 1982, General Motors advertised that it produced 15 of the 19 cars with the best HLDI injury experience among 1978-1980 models. In a June 1982 press briefing Howard Kehrl, Vice Chairman of General Motors, said that the idea that safety does not sell was not true then, if it ever was; public opinion surveys showed that more Americans than ever were considering safety when buying cars.⁴ A public opinion survey commissioned by the All-Industry Research Advisory Council in 1981 found that 63 percent of those polled considered as "very important" the "degree to which the car protects people from injury," trailing only cost and mileage ratings as the prime concerns of car shopper.⁵ Still, Kehrl and other auto company representatives did not express enthusiasm for a passive restraint regulation.

Whatever was occurring to increase public sensitivity to safety issues was not the result of crash experience. Motor vehicle fatalities showed no marked trend during the Reagan years. They dropped somewhat in the beginning — from 51,000 in 1980 to nearly 44,000 in 1982, then ranged between 42,500

2. Election and economic statistics are from *Statistical Abstract of the United States: 1990*, Washington, pp. 244, 255, 380, 427, 468; car sales are from American Automobile Manufacturers Association, *Facts and Figures '93*, p. 14.

3. Viscusi, *op. cit.*, pp. 466-467, 501.

4. The GM newspaper ad is reported in *Status Report*, January 27, 1982, pp. 2-3. The Kehrl briefing was cited by Raymond A. Peck Jr., NHTSA Administrator and confirmed by Kehrl himself in *Motor Vehicle Safety and the Marketplace*, Hearings before the Subcommittee on Surface Transportation of the Committee on Commerce, Science, and Transportation, United States Senate, Ninety-Eighth Congress, First Session. Serial No. 98-16. February 17, March 10 and 11, 1983, pp. 162-163, 182-183.

5 *Status Report*, February 17, 1982, pp. 2-3.

and 47,000 for the rest of the decade. Broadly speaking, this reflected a slight drop in the fatality rate per registered vehicle.⁶

Regulatory Relief for Auto Manufacturers

As the Reagan administration was coming to power, there was essentially bipartisan concern about the contraction of the American automobile industry. In the last days of the Carter years, Secretary of Transportation Neil Goldschmidt sent the President a report suggesting that the adversarial regulatory approach currently applied to the auto industry might be replaced by a negotiating process like that used in other countries, maybe even with incentives for achieving goals rather than penalties for not achieving them.

In addition, where government deems a particular improvement to have merit, it should be prepared to share the cost of implementing it. The unproductive and bitter battle over airbags could easily have been short-circuited had government been prepared to assume part of the cost of their installation.⁷

The Reagan administration was preparing more sweeping action. In his “Economic Dunkirk” memorandum prepared in December 1980, David Stockman, soon to become a leading spokesman as director of the Office of Management and Budget, cited the airbag rule as one that should be quickly rescinded. Stockman wanted to stop the government from making marketplace decisions that he said could be made more effectively by buyers or sellers. The American Enterprise Institute and the Heritage Foundation, conservative “think tanks” that were considered close to the Republican planners, called for even broader curtailment of regulations issued under the Motor Vehicle Safety Act of 1966.⁸ So it was no surprise that the transportation task force of the new government in waiting let it be known that the opportunities to increase auto safety at a reasonable social cost had been exhausted.⁹ The day after inauguration a task force on regulatory relief was appointed, chaired by Vice President Bush.¹⁰ Drew Lewis, the new secretary of transportation, was named head of another task force to help the beleaguered auto industry. Lewis said then that the only question about the automatic restraint standard was whether to switch the timing and have it apply to small cars before large ones.¹¹ Spokesmen for General Motors and Ford told Senator John Danforth of Missouri, at hearings held shortly after Lewis’ interview, that the standard ought at least to be delayed and that it should apply to small cars first. GM said that if the standard were promptly rescinded it would be able “to avoid most of the projected \$285 million investment for passive belts in all its cars.” Ford emphasized the safety benefits of requiring passive restraints in small cars first. Chrysler, as a maker concentrating on small cars, said it could not comply in

6. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 1992*, pp. 1518.

7. *The U.S. Automobile Industry, 1980*. Report to the President from the Secretary of Transportation, January 11, 1981. The recommendations are in the letter of transmittal signed by Secretary of Transportation Goldschmidt.

8. *Status Report*, January 19, 1981, p. 1; the “Economic Dunkirk” memo is reprinted in William Greider, *The Education of David Stockman and Other Americans*, New York: Dutton; 1982.

9. *The New York Times*, December 28, 1980, p. 15.

10. Friedman, op. cit., p. 38.

11. *The New York Times*, January 29, 1981, section IV, p.1; *Status Report*, February 9, 1981, p. 8.

time if the standard were to apply to small cars as early as the 1982 or 1983 model years. All three still favored reassessing or dropping the automatic protection requirements entirely.¹²

Early in 1981 the Department of Transportation issued a notice of proposed rulemaking that called for a one-year delay in requiring automatic occupant protection for large cars, from September 1, 1981 to September 1, 1982. The reasons given to justify the delay stressed changes in economic conditions and the incorrect premises for the phase-in schedule. Car sales were depressed, and there were 200,000 auto workers unemployed. The passive restraints required by the new standard would raise the prices of large cars and shift demand to mid-size and small cars, where foreign manufacturers competed. By 1984 or 1985 the large car share of the market would be negligible, DOT said, cutting in half the benefits anticipated from having automatic restraints in large cars. The delay in applying the standard to small cars had been intended to allow time to develop effective airbags for them. But now it appeared that almost all of them would be equipped with automatic belts. Although there was no explicit cost benefit analysis in the proposal, DOT did concede that delaying the standard for one year would result in 600 more deaths and 4,300 more serious injuries.¹³ A few days after the delay proposal was issued, Lewis was quoted as telling a meeting of the Automobile Dealers Association, “If I could do it, it would be a 4-year moratorium. I know 4 years is unrealistic, but my point is this administration opposes regulation.”¹⁴

The major American auto manufacturers not only supported the delay unanimously, they either advocated the outright revocation of the automatic restraint standards or called for their reevaluation, which they expected would lead to revocation. Both General Motors and Chrysler argued that the manufacturers’ decision to implement automatic restraints entirely with automatic belts of a detachable variety — GM called them “less coercive” — meant that they were not likely to be used more frequently than manual belts. Without the one-year delay, GM expected to lose \$760 million in large car sales and a further \$13 million in capital costs. Mercedes-Benz, on the other hand, told NHTSA that the delay proposal caught it in the middle of preparing to voluntarily install airbags in all 1982 model-year cars, but that they were now reassessing their course.¹⁵

12. *Government Regulations Affecting the U.S. Automobile Industry*, Hearing Before the Subcommittee on Surface Transportation of the Committee on Commerce, Science, and Transportation United States Senate, 97th Congress, First Session, January 28, 1981. The GM estimate is on p. 30.

13. Department of Transportation, National Highway Transportation Safety Administration, 49 CFR Part 571. [Docket 74-14, No. 20] Federal Motor Vehicle Safety Standards; Occupant Crash Protection; Notice of Proposed Rulemaking. *Federal Register*, February 12, 1981, pp. 12033-12036.

14. *Washington Star*, February 11, 1981, reprinted in *Automatic Crash Protection Standards*, Hearings Before the Subcommittee on Telecommunications, Consumer Protection, and Finance of the Committee on Energy and Commerce, House of Representatives, Ninety-Seventh Congress, First Session, April 27 and 30, 1981. Serial No. 97-10, pp. 233-234. On p. 228 Ralph Nader said he checked the accuracy of the quotation with Lewis’ office.

15. Betsey Anker-Johnson, Vice President, General Motors, Letter to Drew Lewis, Secretary of Transportation, with Comment on N-20 attached, March 16, 1981, [74-14-NPRM-N20-109]; Letter from Roger E. Maugh, Director, Automotive Safety Office, Environmental and Safety Engineering Staff, Ford Motor Company, 3/16/81 [74-14-NPRM N20-104].; Letter from C.M. Kennedy, Director, Federal Government Affairs, to Docket on Notice 20, March 13, 1981 [74-14-NPRM-N20-079]; Memorandum to the Docket from Diane K. Steed, Associate Director, NHTSA, “Meeting with Mercedes-Benz Representatives,” March 17, 1981.[74-14-NPRM-N20-152].

Automobile insurers were the most active and outspoken opponents of the proposed delay. Allstate stressed the superiority of the protection provided by airbags over belts. State Farm stressed the legal argument that safety had to be the overriding concern of any action taken under the Motor Vehicle Safety Act of 1966. Nationwide reiterated its 1977 estimate of the insurance savings that would result from automatic occupant protection. All of them challenged the government's right to judge that economic losses could outweigh the loss of 600 lives and 4,300 serious injuries predicted in the proposal. They then went on to cite the cost-benefit analysis produced for them by William Nordhaus, a Yale professor who had been a member of Carter's Council of Economic Advisors. Based upon a detailed econometric analysis, he concluded:

In terms of the costs and the benefits of different options, there is no justification for either the proposed delay or a general rollback. In particular, the economic costs of the proposed delay are approximately five times greater than the benefits, for a net cost of over \$200 million. The net costs of the general rollback are significantly greater, in the order of \$4.5 billion.

Nordhaus estimated that the financial benefits of the proposed delay for the automobile industry were minuscule. Since it meant that more cars would get automatic protection earlier, a one-year delay plus making all small cars subject to the standard in model year 1983 was the most beneficial standard he analyzed. Because it gave the auto industry some immediate financial relief, this was the option on which both the Insurance Institute for Highway Safety and the insurers pinned their hopes.¹⁶

NHTSA paid careful attention to Nordhaus' cost-benefit analysis but differed in some key assumptions, most seriously in predicting automatic seat belt use would range from 15-60 percent rather than his 60 percent. NHTSA also believed the standard would reduce large car sales by 100,000, leading to a profit reduction of \$292 million and 13,200 lost jobs.¹⁷ So in spite of the increase of 1,800-11,600 serious injuries and 75-490 fatalities that it now estimated would result, DOT adopted the one-year delay as originally proposed. There was powerful political backing for the action "I make no bones about the fact that I and [Drew] Lewis and Dave [Stockman] thought it was appropriate to delay the standard," said James C. Miller III, administrator of OMB's Office of Information and Regulatory Affairs. "The issue

16. Comments of William Nordhaus on N20 [74-14-NPRM N20-110?]; Letter from Don Schaffer to the author, March 9, 1981, with a draft of Allstate's comment [to be filed by NAI] on Notice 20. He says;

"One reason we want a strong industry position is because if all that is accomplished is that the Secretary eliminates the requirement for the large cars in 1982 there will be no pressure to revise the whole standard through a Warner-type proposal so as to move the small cars up a year and guarantee the public some choice between automatic belts and airbags." See also the final filings by Allstate, Nationwide, NAI, State Farm and IHS of comments on Notice 20. All of these positions were restated in the House April hearings on *Automatic Crash Protection Standards* cited above.

17. "Final Regulatory Impact Analysis: Amendment to Federal Motor Vehicle Safety Standard No. 208, Occupant Crash Protection," NHTSA, Plans and Programs, Office of Program and Rulemaking Analysis. April 1981. [74-14-N21-001] NHTSA also argued that Executive Order 12291 required that regulation must take into account "the particular industries affected ...[and] the condition of the national economy" in addition to benefits outweighing costs. The delay was justified by the totality of these considerations. See Appendix A, p. 19.

was discussed in Cabinet meetings, sometimes with the President there, and so I don't think that it should come as any surprise that [the department] took action expeditiously."¹⁸

On the same day DOT issued another proposal to review the status of the entire standard. Both actions were announced by the White House on April 6, 1981 as part of an initiative to eliminate 35 air quality and safety regulations in order to help the automobile industry.¹⁹ The notices were signed by Drew Lewis because the man he had selected to be administrator of NHTSA, Raymond A. Peck, Jr., was not yet confirmed. Peck was a Washington attorney who had worked in the Nixon and Ford administrations on environmental issues and had become well known as an opponent of regulatory expansion. Peck had met Lewis when he was asked by the Reagan transition team to brief cabinet designees on regulatory procedures,²⁰ and so was well aware of the Reagan Administration's strategy for regulatory reform.

The review of the automatic restraint rule that Peck was now to carry out was presented in terms of three alternatives:

1. small cars would be subject to the standard by the 1983 model year (September 1, 1982), midsize cars by the 1983 model year, and large cars by the 1984 model year;
2. all cars by March 1, 1983; or
3. automatic restraint requirements would be rescinded entirely.

The first two alternatives would include eliminating the automatic restraint requirement for the front center seat. The regulatory impact analysis that accompanied the rule echoed the analysis supporting the one-year delay, noting major changes that had occurred since the 1977 rule:

- large cars would be 1 percent of new cars;
- automatic protection would be provided by airbags in 1 percent of new cars rather than in 62 percent;
- because of their detachability, automatic belt usage would range anywhere from 15 to 60 percent rather than 60 percent;
- ultimately the standard would save 750-7,500 lives rather than 9,000.²¹

Congressman Tim Wirth (D-CO) quickly convened hearings on DOT's review of the automatic crash protection standard.²² Peck made it clear that since the proposed standard would require airbags to be installed in no more than 1 percent of cars, the issue centered on the extent to which automatic belts, most easily detachable, would actually be used. Wirth wondered whether the standard would encourage or

18. Jonathan Rauch, "Fasten Your Seat Belts-There is Turbulence Ahead on the Safety Front," *National Journal*, June 27, 1981, pp. 1158-1162.

19. *The New York Times*, April 7, 1981; Department of Transportation, National Highway Transportation Safety Administration, 49 CFR Part 571 [Docket 74-14, No. 21], Federal Motor Vehicle Safety Standards; Occupant Crash Protection; Final Rule. *Federal Register*, April 9, 1981, pp. ??; also 49 CFR Part 571 [74-14, No. 22] Federal Motor Vehicle Safety Standards; Occupant Crash Protection; NPRM. *Federal Register*, April 9, 1981, pp. 21205-21208.

20. Interview with Raymond Peck, June 5, 1995.

21. National Highway Traffic Safety Administration, Office of Plans and Programs, Regulatory Impact Analysis, Proposed Amendment to FMVSS 208 Automatic Occupant Protection, April 1981. [74-14-NPRM-N22-001]

22. *Automatic Crash Protection Standards*, Hearings Before the Subcommittee on Telecommunications, Consumer Protection, and Finance of the Committee on Energy and Commerce, House of Representatives, Ninety-Seventh Congress, First Session, April 27 and 30, 1981. Serial No. 97-10.

discourage the use of poorly designed, detachable automatic belts. Peck answered that it was a performance standard that did not reach the design issue, but that even the best automatic belt, which he thought was found on the Cadillac, was hard to get used to. Joan Claybrook, now representing the Nader-founded group, Public Citizen, attacked the rescission option with some asperity:

Essentially what they have done [in that option] is delegate to the auto companies the ability to decide the issue, not the government, by saying that the auto companies offer the worst possible system and the public does not like it; then, there is no payoff on the standard.²³

Ralph Nader wanted Congress to require airbags that met a 40 mph standard in all cars by 1983, and to fund a GSA order for airbags in all federally purchased cars.²⁴ Representatives of the insurers and the auto manufacturers repeated their positions on the proposed delay, with the automakers making it clear that they favored complete rescission. GM said it had abandoned its plans to offer airbags because they would not sell at \$1,100 per car. In fact, based on its sales experience with both airbags and passive belts, GM felt the public would not accept any form of passive restraint.²⁵ In a document filed with the House committee, Ford attributed delays in airbag production first to concerns regarding out-of-position children, adding:

Continued deterioration of the large car market, a shortened cycle life on the large Lincoln and Mark, continually rising variable and retail costs for the airbag option, *potential regulation requiring a noncoercive detachable passive belt system, (emphasis added)* and low installation rate projections led to the cancellation of the production Lincoln/Mark airbag program in February, 1981.²⁶

NHTSA issued a call for a public hearing to be held August 8th on its proposed alternatives to the passive restraint standard 208. Administrator Peck presided and questioned most of the speakers at the hearing, which lasted two days.²⁷

Congressman Wirth led off by calling on NHTSA to eliminate the loopholes that allowed compliance with the standard through designs that even the agency itself called poor. Peck denied that NHTSA ever had called any design “poor.” Speaking for the Insurance Institute for Highway Safety, Dr. William Haddon seconded Wirth’s point and noted that airbags, when installed, would by definition always be used, yet NHTSA had done nothing to encourage their availability. In fact, by exempting the front center seat from the standard, the agency would eliminate an important incentive for the manufacturers to offer airbags.

23. Ibid., pp. 42-43 for the exchange between Wirth and Peck, and p. 96 for the Claybrook quote.

24. Ibid., p. 230.

25. Ibid., pp. 259-362 and 319.

26. Ibid., pp. 354-356.

27. Department of Transportation, *Transcript of Public Hearing Concerning the Automatic Occupant Restraint Requirements of Safety Standard No. 208, Occupant Crash Protection*, two volumes, August 5-6, 1981.

Ralph Nader asked whether Peck really had the authority to support the reinstatement of standard 208 given the unanimous opposition among his superiors, both in DOT and at the White House. Peck insisted that he felt free to choose among the options in the proposal. Nader observed that rescission would destroy the airbag industry. He revised his earlier position, calling for a 30 mph standard to be applied to all models by the 1983 model year instead of a 40 mph one, to be followed by a proposal for a 50 mph standard. NHTSA should also have arranged for fleets to order 50,000-100,000 airbag-equipped cars.

William Nordhaus, the Yale economist, continued to criticize NHTSA's assumptions about automatic belt usage; this was the sole significant difference between the cost-benefit analyses that he had done with the support of a group of insurers and the agency's analysis. His most recent work showed net benefits of a passive restraint standard would be \$2.5 billion. Another academic economist, Henry Grabowski, testified about an unsponsored cost-benefit analysis that he and Richard J. Arnould had published.²⁸ It showed a high benefit for an automatic belt standard but essentially no benefit for airbags because of their high cost. Peck cross-examined him aggressively about usage rates. Grabowski maintained that even if automatic belt usage rates were only 15-20 percent higher than for manual belts, there would be a positive benefit. Don McHugh, State Farm's general counsel, again relied on Nordhaus' analysis. When asked, however, whether State Farm gave a discount to cars with airbags, McHugh said that State Farm would give a discount only on the basis of its claims experience. But another insurer, Nationwide, noted that it did give discounts for airbags.

When the auto manufacturers' representatives gave their now standard arguments for dropping the automatic occupant protection requirement, Peck asked what might lead them to offer airbags to the public. Roger Maugh, speaking for Ford, said it would depend on demand. When asked whether Ford would sign the Coleman agreement again, he ducked the issue by saying that Ford had fulfilled one of the agreement's purposes by continuing to work on the technology. The General Motors spokesman said airbags would be offered on large cars only in response to competition from foreign manufacturers. GM did not commit to signing a revived Coleman plan and claimed the American public would not accept mandatory seat belt use laws. Peck explored the extent to which either automaker thought safety was a selling point. The furthest either would go was to say that no manufacturer could allow a vehicle to get a reputation for being unsafe. Chrysler's representative said that it would be glad to have the Coleman plan revived (it had no commitments under it), but that the company could not meet any of the proposed revised timetables for automatic protection. Ford said it could not begin meeting them until the 1983 model year.

28. Richard J. Arnould and Henry Grabowski, "Auto safety regulation: an analysis of market failure," *The Bell Journal of Economics*, Vol 12, pp. 27-48.

Apparently Mercedes-Benz chose not to testify, but its German competitor, BMW said it was planning to meet the standard with airbags in its top three models and automatic belts in the others. Twenty-two months would be needed to provide airbags, BMW said, so it wanted the 1984 model year to be the target. Both Toyota and Volkswagen joined their American competitors in urging rescission, saying they could not meet the standard with automatic belts in the 1983 model year.

Airbag suppliers, including Thiokol, Talley, and Romeo Kojyo, avoided supporting the standard but urged NHTSA to encourage airbags, possibly through reviving the Coleman plan. The airbag industry was rapidly disappearing for lack of contracts with carmakers. On the other hand, the Automobile Occupant Protection Association, an alliance of airbag manufacturers, insurers, and consumer groups, continued to support the passive restraint standard, but did not oppose the first two delay alternatives offered in the NHTSA proposal.

After some delay, Peck wrote the first draft of the decision himself on a Colorado vacation, cut off from the NHTSA staff. He has said that he never discussed the substance of this issue with DOT Secretary Lewis or any other Reagan administration official, either before his appointment or before the decisions he later made. The only time he had talked about the issue with Lewis was before his decision, when Lewis told him that the decision on the airbag standard was Peck's to make and that Lewis would back him on it, whatever it was.²⁹ However, the Reagan administration made a practice of selecting political appointees who would be "the first line of *offense* in ferreting out ineffective and excessively burdensome regulations," according to former administration officials James Miller and Murray Weidenbaum.³⁰ As a briefer of the transition team, Peck did not need explicit instructions on the administration's policy preferences. At his confirmation hearing Peck was frank about his personal feeling that automatic restraints should be offered as options rather than required on all cars.³¹

When he returned from his retreat, Peck said he called senior staff into his office on a Saturday to tell them that he had no alternative but to rescind the passive restraint standard. Michael Finkelstein, the associate administrator for rulemaking, said he told Peck, with profane punctuation, how stupid that was.³² At a press conference on the decision Peck said:

I don't think anyone on my staff agreed with all aspects of this decision, with all aspects of this conclusion. Most agreed with some. There were as sharp differences of opinion in my staff as I am sure there are in this room, and I certainly did not enjoy being the only one that had to make this decision...

29. Interview with Raymond Peck. Peck told almost the same story in Congressional testimony a few months after the decision: *National Highway Traffic Safety Administration Oversight and Authorization*, Hearing Before the Subcommittee on Telecommunications, Consumer Protection, and Finance of the Committee on Energy and Commerce, House of Representatives, Ninety-Seventh Congress-Second Session, March 23, 1982, pp. 403-404.

30. James C. Miller and Murray L. Weidenbaum as quoted in George C. Eads and Michael Fix, *Relief or Reform? Reagan's Regulatory Dilemma*. Washington, D.C.: Urban Institute Press, 1984, p. 139.

31. *Status Report*, April 27, 1981, p. 4.

32. Interview with Michael Finkelstein, June 7, 1995. Both Peck and Barry Felrice (interviewed December 8, 1994) mentioned the meeting.

I think it would be fair to say, in some form or another, they all argued to retain this standard. I think it is also fair to say, in some form or another, they all saw elements of this decision that would militate against retaining the standard, but it was my decision.³³

Yet Peck insisted in a House hearing a few months later that he had been misquoted:

At our senior staff meeting, I offered anyone who wished to express an opinion to me as much time as was needed either singly or with others to in effect lobby me on the issue because I wanted to be absolutely certain I had the full range of their views. Based on my recollection of some of the discussions, I think what you have here is probably charitable on the side of rescission, I think there were some very persuasive arguments indeed made to retain the standard. I might point out that every argument made to retain the standard was based on one set of facts, and that was that without the standard we would not get airbags. Everyone without exception said the standard was dumb and belts were not going to work and it was conceded that was the case, but without the standard we would never have airbags introduced into the fleet. The determination I made in making this decision was that I could get airbags into the fleet without this standard, and that to waste a million (sic!) dollars a year was intolerable.³⁴

Senior staff members who were present at the hearing did not contradict Peck directly, but in interviews Messrs Finkelstein, Felrice, and Berndt all said that they had made it clear that they disagreed with the rescission.

Establishing that the decision was his alone seemed to be even more important to Peck than showing that the staff agreed with his logic. According to Peck, he had arranged a trip to Europe the day after the regulation was to be released. The purpose of the trip was to convince Mercedes-Benz to make airbags available in their U.S. models. The day before the scheduled release, Frank Berndt, the general counsel, came in with Finkelstein to tell Peck that they had all forgotten about the need for the regulation to be cleared by OMB. Peck then called David Stockman and, using his speaker phone, explained the scheduling problem and asked for a waiver of the review. Stockman, instead, promised a quick overnight review if the regulation could be brought to his office before the close of day. He then asked whether Peck could tell him what the decision was, and reacted with astonishment when Peck told him. Peck then noticed that the staff were thunderstruck because Stockman had not known the decision up to that time. In separate interviews both Berndt and Finkelstein remembered the incident although they said they could not hear Stockman's side of the conversation. At the October 23, 1981, press conference, Peck answered a question about whether OMB had signed off on his decision by saying, "I called Director Stockman yesterday and obtained clearance before telling him what the decision was."³⁵ Christopher DeMuth, who reviewed the regulation as administrator of OMB's Office of Information and Regulatory Affairs, said

33. "Transcript of Raymond Peck, Administrator, National Highway Traffic Safety Administration, at the News Conference on the 208 Decision, October 23, 1981," pp. 24 and 25. This is available in the Ronald Reagan Library.

34. *National Highway Traffic Safety Administration Oversight and Authorization*, Hearing Before the Subcommittee on Telecommunications, Consumer Protection, and Finance of the Committee on Energy and Commerce, House of Representatives, Ninety-Seventh Congress-Second Session, March 23, 1982, p. 406.

35. Transcript, October 23, 1981, p. 26.

that Peck had called him and asked for a rapid review. DeMuth knew that the President was very skeptical about the standard, as he was himself, and so did a very cursory job. DeMuth also thought that he had discussed the issues with Peck before that.³⁶

The rationale for the decision to rescind the automatic occupant protection standard was essentially one that both General Motors and Chrysler had suggested in their comments on the earlier proposal to delay it. Ninety-nine percent of cars would meet the standard through passive belts, they said, usually easily detachable. Once detached, there was no reason to believe that they would be used more than manual belts. So, the argument continued, there would be little probable return for imposing estimated price increases of about \$1 billion a year. There was no attempt in the decision to estimate what automatic belt use might actually be. The emphasis was, instead, on the uncertainty. Compelling belt use with nondetachable belts might be counterproductive and contribute to public backlash, NHTSA said. Instead, the agency favored a campaign to promote seat belt use.³⁷ The decision included a vague commitment to encourage airbag development and production.

Keeping Airbags Alive after Rescission

Whenever he got the opportunity, in press conferences and in congressional hearings, Peck insisted that he believed that airbags would save lives and reduce injuries; he just did not believe that they could be mandated with cost-effectiveness. In the press conference announcing his decision, Peck said he was launching a “full-court press” on airbags.³⁸ That ultimately led to three initiatives.

One high priority initiative was to convince Mercedes-Benz to make airbags available on cars in the United States. Peck and Finklestein visited the manufacturer shortly after announcing the decision to rescind the passive restraint standard. As Karl-Heinz Faber, one of the company’s vice presidents, had said in a letter to Ralph Nader, Mercedes-Benz had been ready to meet the standard using airbag technology “across the entire model line... to the extent permitted by production and supplier capability restraints.” Although it had delivered more than 1,100 airbag-equipped cars in Europe, it had delayed further commitments until the NHTSA decision.³⁹ Daimler-Benz executives listened to Peck’s request that they bring airbags to the United States even without the standard and promised to continue to work on it. But they did not announce that airbags would be available on Mercedes-Benz in the United States until January 1983. Then it was described as a “supplemental restraint system” which was an integral part

36. Interview with Christopher DeMuth, July 24, 1995.

37. NHTSA, 49 CFR Part 571 [Docket 74-14, No. 25] Federal Motor Vehicle Safety Standards; Occupant Crash Protection: Final Rule, *Federal Register*, October 29, 1981, pp. 53419-53429.

38. *New York Times*, October 24, 1981; also, as an example of Peck’s testimony, *Small Car Safety Technology*, Hearings Before the Subcommittee on Transportation, Aviation and Materials and the Subcommittee on Investigation and Oversight of the Committee on Science and Technology, House of Representatives, Ninety-Seventh Congress, Second session, November 30, December 3, 1982. [No. 164], p. 317.

39. *Status Report*, November 5, 1981, p. 3.

of the protection provided by a three point belt and an emergency belt tensioner retractor.⁴⁰ The point of the description was that Mercedes-Benz drivers were not being offered a passive restraint, but a device that gave protection in addition to a seat belt.⁴¹ This description set a precedent followed by all other automobile manufacturers. It may have been a potential defense against product liability suits, but it also reflected the manufacturers' belief that seat belt use was key to occupant protection.

Just after announcing his decision to rescind the standard and before leaving for Europe, Peck said that he called the major American auto companies to ask them to make airbags available on a voluntary basis. General Motors and Chrysler did not react positively. The contact at Ford, Herbert Misch, had been responsible for reviving an airbag program at the company in the 1970s. When Roger Maugh, director of Ford's safety engineering, suggested to him that they could use a mothballed pilot production plant that Ford was still paying for, Misch sent him to talk with Peck. Together they worked out a plan for the General Services Administration to request bids for 5,000 compact cars with driver-side airbags. NHTSA and GSA announced that plan in April 1983 without noting that there was a supplier waiting in the wings. Although still concerned about the problem of out-of-position children on the passenger side, Ford did engineer driver-side airbags as original equipment for the compact Tempo. In April 1984, about a year after Peck had left NHTSA, Ford announced that it would provide the airbag-equipped Tempos to GSA during the 1985 model year at a cost of \$7,000 per car, to be paid by NHTSA. Ford was hoping to get enough orders from private fleets to provide 35,000 cars. According to several participants, Ralph Nader played a role in these negotiations and in lining up some fleet buyers.⁴²

Peck's third initiative to keep airbag technology alive was to encourage retrofitting them into cars on the road. NHTSA asked for proposals for kits to retrofit the driver side. A contract with Romeo Kojyo, providing \$458,000 to retrofit up to 500 police cars, was released in April 1983, shortly before Peck stepped down. About a year later, the Breed Corporation was given a contract for \$588,000 to develop an all-mechanical driver-side airbag that would also be retrofitted into police cars.⁴³

Almost immediately after Peck rescinded the passive restraint standard, Senator Danforth, chairman of the Surface Transportation subcommittee, filed a bill to restore it. But shortly afterward Danforth preempted his own bill by introducing a tax measure that would allow automakers to claim a \$300 tax credit for each car with airbags, starting with the 1984 model year. The bill would also levy an

40. Letter from W.R. Bodack, President, Mercedes-Benz of North America, Inc, to Raymond Peck, NHTSA, January 28, 1983, in appendix C-1, *MVMA v State farm*, Brief of the Automotive Occupant Protection Association as Amicus Curiae, Supreme Court, February 7, 1983. See also statement of Walter R. Bodack, *Motor Vehicle Safety and the Marketplace*, Hearings before the Subcommittee on Surface Transportation of the Committee on Commerce, Science, and Transportation, United States Senate, Ninety-Eighth Congress, First Session. Serial No. 98-16. February 17, March 10 and 11, 1983, pp. 206-207.

40. Interview with Ingo Kallina and Dr. Zeidler, Mercedes-Benz, July 21, 1994.

42. Interviews with Herbert Misch, Roger Maugh, Raymond Peck, Michael Finkelstein, Ralph Nader; Status Report, April 22, 1983, p. 8 and March 3, 1984, pp. 1-2.

43. On the request for proposals, see the testimony of Finkelstein on p. 288 and of Peck on p. 317 of *Small Car Safety Technology*; on the contracts, Status Report, April 22, 1983, p. 8 and March 24, 1984, pp. 1 and 3.

excise tax on every car sold without airbags. Danforth told the press that he aimed to shift the cost of airbags to society as a whole and eliminate the automatic belt issue. In hearings early in 1982 IIHS, consumer advocates, and insurers supported the proposal, but the Treasury Department and Peck opposed it. Peck said he preferred a demonstration program and revealed the existence of the Ford-GSA negotiations. Danforth's bill went nowhere.⁴⁴

Six months after rescinding the passive restraint standard, Peck provided additional regulatory relief for the auto industry by rolling back the bumper standard. The existing requirement for a 5 mph "no damage" bumper was replaced by a requirement for a 2.5 mph test, front and rear, that allowed unlimited damage to the bumper itself. Peck's loyal application of Reagan administration policy on deregulation antagonized many Congressional safety advocates in both parties. Rep. Tim Wirth (D-CO) held more than one hearing at which Peck was closely cross-examined, and Senator Danforth (R-MO) did the same. Even before the rollback of the bumper standard, Danforth lamented:

In barely a year, this "can-do" spirit has been replaced with an "un-do" spirit...

The centerpiece of NHTSA's work for the last 15 years, the passive restraint rule, was killed...

I am at a loss to think of a single thing that NHTSA has done to save lives on the highway or to make it easier for people to choose safer cars.⁴⁵

A low point in Peck's Congressional relations was reached when Congressman Adam Benjamin (D-IN), during a discussion of airbag cost estimates, asked how he could believe Peck when he was not under oath. Peck then demanded to be sworn in, and Benjamin instead "excused" him from the hearing.⁴⁶

Peck claimed in early 1982 that his efforts would put airbags in cars earlier than the passive restraint standard would have.

I am confident at this point — and I have received no negative implications from any manufacturer — that we will have airbags in cars. We will have airbags in all probability earlier than we would have had under the 208 standard. We have in fact been pressing on that technology issue.⁴⁷

A year later Peck had apparently convinced himself that the auto manufacturers were going to provide airbags, both because the market demanded it and because they now knew that safety was a selling point.

First, with respect to the market for airbags, we know it is out there, because both we and the industry have done testing on it... at any event, we understand the motivations that exist in the marketplace for safety. I think you will hear from the auto manufacturers later

44. *Status Report*, December 9, 1981, pp.3-4; December 21, 1981, p. 3; February 17, 1982, pp. 4-5; March 15, 1982, pp. 10-11.

45. *NHTSA Oversight*: Hearing Before the Subcommittee on Surface Transportation of the Committee on Commerce, Science, and Transportation, United States Senate, Ninety-Seventh Congress Second Session, March 31, 1982. Serial No. 97-111, p. 2. Senator Danforth chaired the committee.

46. *National Highway Traffic Safety Administration Oversight and Authorization*, Hearing Before the Subcommittee on Telecommunications, Consumer Protection, and Finance of the Committee on Energy and Commerce, House of Representatives, Ninety-Seventh Congress-Second Session, March 23, 1982, p. 428.

47. *NHTSA Oversight*, p. 8.

on today that what has been usually described as their traditional attitude, that safety does not sell, is changing, in some cases has changed dramatically.⁴⁸

Peck cited a press conference held by Howard H. Kehrl (see above), vice chairman of General Motors, as a source of his belief that automakers now thought that they could sell safety. But in a statement to the same Senate subcommittee that heard Peck, Kehrl was more restrained: “While Americans are very interested in safety, there appear to be limits on what they will do to increase the level of safety in their cars.”⁴⁹ And although Roger Maugh of Ford said that “the airbag has a lot of potential,” neither he nor Christopher Kennedy, the Chrysler representative, were unequivocal about safety being a selling point. Maugh said that customer acceptance and willingness to pay a premium for the technology still had to be tested.⁵⁰

The Courts Intervene

Given the litigiousness that had already marked the passive restraint standard, an appeal of the rescission was to be expected. The lead in the appeal was taken, unexpectedly, by State Farm. Within the insurance industry there was a well understood division of leadership on public policy issues, with Allstate leading on airbags and State Farm on bumper standards. For nearly a decade Don Schaffer, Allstate’s general counsel, had been an eloquent advocate of the lifesaving qualities of airbags, but now Archie Boe, the chairman of Allstate, did not want to lead the attack on the Reagan administration’s decision. Although State Farm was not nearly as committed to airbags, its general counsel, Don McHugh, and its auto safety specialists had been convinced by Bill Haddon of IIHS of the superiority of passive restraints. McHugh used both the public health benefit potential of the rule and its consequent financial benefits to State Farm to convince Chief Executive Ed Rust that they had to appeal the rescission. The first step was a motion by State Farm, which was soon joined by the National Association of Independent Insurers (NAII), to stay NHTSA’s order. Schaffer and Allstate participated in the case, but Arnold and Porter, State Farm’s law firm, provided the legal leadership.⁵¹

State Farm’s petition to the Court of Appeals in the District of Columbia attacked NHTSA’s decision as arbitrary and capricious because its basis for rescission — the presumed almost universal adoption of detachable automatic belts — ignored the availability of other technologies; the rule could have been modified to ensure that its goal would have been reached. In a separate brief, filed with the same court, NAII went one step further, suggesting that NHTSA could have issued an airbag only standard:

48. *Motor Vehicle Safety and the Marketplace*, Hearings before the Subcommittee on Surface Transportation of the Committee on Commerce, Science, and Transportation, United States Senate, Ninety-Eighth Congress, First Session. Serial No. 98-16. February 17, March 10 and 11, 1983, p. 143. Senator Danforth chaired this hearing.

49. *Ibid.*, p. 183.

50. *Ibid.*, pp. 190-195.

51. Interviews with Donald C. Schaffer, January 21, 1993, with Donald McHugh, February 16, 1993, and with James Fitzpatrick, July 19, 1995. Fitzpatrick was a senior attorney at Arnold and Porter, State Farm’s counsel on the case.

Even if it is assumed, *arguendo*, that no type of automatic seat belt will be consistent with the needs of automobile safety, Notice 25 is flawed for not even considering, much less adopting, the obvious alternative of proceeding with an airbag-only passive restraint alternative.⁵²

The two cases were later joined. The Court of Appeals denied the petition for a stay, but did hear the case for reversing the ruling with a three-judge panel consisting of David L. Bazelon, Abner J. Mikva, and Harry T. Edwards, all reputed liberals.

NHTSA's defense of its decision rescinding standard 208 was largely a restatement of its original rationale, except for some procedural arguments. A major one was that the court should defer to the agency because this was an administrative action poorly suited to judicial resolution. Another argument was that the agency could not have prohibited detachable seat belts without further rulemaking, but, even so, the possibility had been considered and rejected. No notice was taken of the argument about an airbag only rule.⁵³ NHTSA noted that its own uncertainty about the effectiveness of the passive restraint law was not unlike State Farm's unwillingness to give discounts to automobiles equipped with passive restraints before their actual effect on loss experience could be tallied. State Farm replied that it believed that the standard would reduce losses; it simply could not predict the size of the reduction, but noted that the Insurance Service Office and other insurers had offered discounts. On the other hand, NHTSA was said to have ignored the implications of its own studies showing that the major reasons for not buckling up were that it took too much time and that occupants were lazy or forgetful. Even detachable automatic belts, the argument continued, would be left on and would result in a significant net increase in belt use.⁵⁴

The case was argued on March 1, 1982. Three months later the court issued a unanimous decision that NHTSA's rescission was arbitrary and illogical.⁵⁵ The decision, written by Judge Mikva, was not endorsed in all respects by Judge Edwards, but the latter noted tartly "the agency decision appears to be nothing more than a determined effort to achieve a particular result without regard to the facts at hand."

Mikva reviewed congressional action since 1974 and concluded that, in each of three periods, Congress had essentially confirmed the passive restraint standard. Therefore, NHTSA had to explain why it was reasonable for it to change course. This it failed to do.

The rescission of Modified Standard 208 on the grounds stated by NHTSA was arbitrary and illogical for two general reasons. The agency has offered no evidence that seatbelt usage will fail to increase as was expected when the standard was first promulgated, and has therefore made no showing that the standard is unjustified as written. More important,

52. In the United States Court of Appeals for the District of Columbia Circuit. National Association of Independent Insurers v. National Highway Traffic Safety Administration, November 25, 1981. State Farm v. Department of Transportation was filed November 23, 1981.

53. United States Court of Appeals for the District of Columbia Circuit, State Farm Mutual Automobile Insurance Co., et. al., v. Department of Transportation, et al., "Brief for Respondents," filed in preliminary form January 25, 1982.

54. United States Court of Appeals for the District of Columbia Circuit, State Farm v. DOT, Petitioners' Reply Brief, February 8, 1982.

55. State Farm v. DOT, 680 *Federal Reporter*, 2d Series, pp. 206-243. United States Court of Appeals, District of Columbia Circuit. Argued March 1, 1982; decided June 1, 1982.

NHTSA has failed to consider or analyze obvious alternatives to rescission, and has thus artificially foreclosed attempts to further the purpose of the Safety Act.

The court held that there was no evidence supporting the conclusion that detachable seat belts would not raise use by at least 13 percentage points, and that alternatives like nondetachable belts or airbags were not given serious consideration. Nor did it understand why the agency did not consider reviving the Coleman plan for demonstration projects. Within hours after the rescission was issued, Mikva noted, the automobile manufacturers had begun to dismantle their passive restraint programs. Now they said that it would take at least 12 months after the beginning of the next model year to make up the lost ground.

The remand decision gave NHTSA 30 days to submit a schedule for resolving the opinion's questions, leaving open the possibility that NHTSA might still find a reasoned basis for rescission. The agency's response was to suggest a notice be issued calling for comments on how to gauge potential usage of automatic belts and on standards for either nondetachable automatic belts or airbags only. The proposal was attacked by State Farm, NAII, Allstate, and others as a delaying tactic, and they urged that standard 208 be reinstated. On August 4, 1982, the Court of Appeals did just that, which meant that all cars manufactured after September 1, 1983, had to comply, unless NHTSA proved that the schedule could not be met. The agency was given until October 1, 1982, to respond. The Motor Vehicle Manufacturers Association and the Automobile Importers Association then appealed to the Supreme Court, and Chief Justice Warren Burger gave the federal government until September 8 to appeal. Earlier, Senator Danforth got unanimous consent for an amendment to prevent NHTSA from using appropriated funds to appeal the Court of Appeals order. The clause was dropped in committee, but both he and a more conservative senator, Orrin Hatch, argued that the basic issue at stake was whether a federal agency could overrule Congress. DOT did, however, join the manufacturers in appealing the June 1 decision, pleading its right to change standards under changed circumstances and charging the Court of Appeals with usurping executive powers by issuing a timetable. At about the same time, NHTSA told the Appeals Court that, as the manufacturers also maintained, automatic restraints could not be installed in all new cars until the 1986 model year. Insurers ridiculed this further delay, but State Farm suggested that no decision be made until the Supreme Court decided whether it would accept the appeal. Meanwhile, the insurers and health groups argued that the Supreme Court should not accept the appeal. On November 8, the Supreme Court issued a writ of *certiorari* to DOT and the manufacturers. On November 18, the Court of Appeals recalled its order to NHTSA.⁵⁶

On June 24, 1983, the Supreme Court unanimously upheld the Court of Appeals decision, but not all of its reasoning.⁵⁷ Justice Byron White's majority opinion was, however, followed by a partial dissent by Justice William Rehnquist, supported by three other members. The minority did not agree that NHTSA was arbitrary and capricious in its view of detachable seat belts.

56. *Status Report*, July 22, 1982, pp. 1-5; August 12, pp. 1-2; September 2, p. 1; September 15, p. 3; October 21, pp. 1, 2, 6, 7; November 19, 1982, p. 1.

57. 103 *Supreme Court*, 2856 (1983).

Many of the arguments on each side concerned procedural issues and the question of whether a decision to rescind should be viewed any differently than a decision not to issue a regulation in the first place. The Supreme Court held that revoking a regulation required the same test as promulgating it. It was not to be “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” There had to be “a reasoned analysis for the change.” This was a stronger standard than the one needed for refusal to regulate in the first place, which was the one the MVMA said should apply.

The Court’s decision spent little time discussing the overall performance standard of automatic, or passive, restraints. Instead, it went directly to the two kinds of technologies available to meet the standard and considered them separately.

The first and most obvious reason for finding the rescission arbitrary and capricious is that NHTSA apparently gave no consideration whatsoever to modifying the Standard to require airbag technology be utilized. Standard 208 sought to achieve automatic protection by requiring automobile manufacturers to install either of two passive restraint devices: airbags or automatic seat belts. There was no suggestion in the long rulemaking process that led to Standard 208 that if only one of these options were feasible, no passive restraint standard should be promulgated.

The agency based its decision on the possibility that safety goals would not be reached because so many cars would meet the standard with detachable seat belts.

Given the effectiveness ascribed to airbag technology by the agency, the mandate of the Safety Act to achieve traffic safety would suggest that the logical response to the faults of detachable seatbelts would be to require the installation of airbags. At the very least this alternative way of achieving the objectives of the Act should have been addressed and adequate reasons given for its abandonment...

The automobile industry has opted for the passive belt over the airbag, but surely it is not enough that the regulated industry has eschewed a given safety device. For nearly a decade the automobile industry waged the regulatory equivalent of war against the airbag and lost — the inflatable restraint has proven sufficiently effective... If, under the statute, the agency should not defer to the industry’s failure to develop safer cars, which it surely should not do, *a ortiori*, it may not revoke a safety standard which can be satisfied by current technology simply because the industry has opted for an ineffective seatbelt design... [T]he mandatory passive restraint rule may not be abandoned without any consideration whatsoever of an airbag only requirement.

The majority of the Supreme Court also held that NHTSA’s dismissal of the safety benefits of automatic seat belts that might be detachable was not enough to demonstrate reasoned decision making. The agency’s argument that a detachable belt was the same as a manual belt overlooked the fact that once attached, the automatic belt would stay that way unless another positive act was taken. Also, it did not give an adequate basis for not requiring nondetachable seat belts. It considered the nondetachable seat belt, along with the ignition interlock, as a use-compelling device and asserted, without proof, that it would generate the same kind of negative public reaction. Since the continuous seat belt does not interfere

with the operation of the car as the interlock does, the majority rejected equating them. In reexamining the likely range of seat belt use rates, NHTSA was told to reconsider the reasonableness of the monetary and other costs associated with the standard, and “bear in mind that Congress intended safety to be the preeminent factor under the Motor Vehicle Safety Act.”

The minority opinion by Justice Rehnquist agreed that the agency had to explain why it had not left the airbag and continuous-spool automatic seat belt requirements intact, but found adequate the explanation of why the standard should be revoked in so far as detachable seat belts were concerned. Then Rehnquist went on to make this comment:

The agency’s changed view of the standard seems to be related to the election of a new President of a different political party. It is readily apparent that the responsible members of one administration may consider public resistance and uncertainties to be more important than do their counterparts in a previous administration. A change in administration brought about by the people casting their votes is a perfectly reasonable basis for an executive agency’s reappraisal of the costs and benefits of its programs and regulations. As long as the agency remains within the bounds established by Congress, it is entitled to assess administrative records and evaluate priorities in light of the philosophies of the administration.

The majority vacated the Court of Appeals decision and instructed that court to remand the matter to NHTSA “for further consideration consistent with this opinion.”

New Leaders at DOT and Another Review

Early in 1983 Drew Lewis resigned as Secretary of Transportation and was replaced by Elizabeth Hanford Dole, a former member of the White House staff and of the Federal Trade Commission and the wife of Senator Robert Dole, the majority leader. Shortly after her confirmation in April, she told the *Washington Post* that the airbag was “a good safety device,” a view that she shared with Ray Peck.⁵⁸ About that time Peck resigned from NHTSA. His successor was his associate administrator, Diane Steed, a career federal official who had also once worked for OMB.

Almost as soon as the Supreme Court decision was published, Ralph Nader urged Mrs. Dole to take over the case.⁵⁹ Even before then, Peter Passell, *The New York Times*’ economic commentator, noted that Peck’s “dismissal” and Mrs. Dole’s reputation as “a smart, practical conservative,” raised the hope that the Reagan administration would realize that auto safety regulation did not necessarily conflict with free market principles.⁶⁰ On the other side, in an opinion piece in *The Wall Street Journal*, Sam Kazman, who wrote the Pacific Legal Foundation’s brief to the Supreme Court defending rescission, attributed the court’s decision to Peck’s acceptance of his staff’s favorable evaluation of airbags. Mrs. Dole, he feared,

58. *The Washington Post*, April 10, 1983, quoted by Graham, op. cit., p. 162.

59. Letter from Ralph Nader to Secretary Elizabeth Dole, June 29, 1983. [208-GR-99]

60. *The New York Times*, May 10, 1983.

would not be any more critical.⁶¹ Apparently White House officials attempted to reassure the auto industry on this point. A report in *Ward's Auto World* quoted “a high ranking aide” to President Reagan:

The Administration plans to fight this challenge all the way... If we lose, the worst the carmakers should expect might be an automatic-seat-belt requirement some years down the road... Mrs. Dole's marching orders on this one will be cut by the Vice President's task force on regulatory relief.⁶²

The article went on to say that economists at OMB were drafting better arguments for rescission at the request of the task force. State Farm's attorneys at Arnold and Porter quickly wrote Mrs. Dole saying that the legitimacy and integrity of the remand proceeding had been compromised if this report were true. They asked that all past contacts on the matter between the White House, OMB, and DOT be published, as well as all future communications. James Burnley, DOT's general counsel, replying for the secretary, denied the report, but said that there was no need to hamper the full and frank exchange of ideas by requiring the kind of publication State Farm demanded.⁶³

Senator Danforth held a hearing on whether OMB was taking over the decision. Diane Steed denied it, and Christopher DeMuth, the head of the OMB office responsible for regulatory review, said that in any case department heads carried great weight in the process.⁶⁴ Danforth had introduced a bill to require airbags in all new 1986 model cars, but the full Senate Commerce Committee approved a milder version mandating major automobile producers to offer airbags as an option in at least one 1986 model.⁶⁵ No legislation resulted.

Like most of her predecessors — Drew Lewis had been an exception — Mrs. Dole did take over the decision on the passive restraint rule. Burnley, who later moved from general counsel to deputy secretary at DOT, briefed her on the Supreme Court decision. He has said that the hurdles set by the decision were so high that simply rewriting the justification of the rescission would not work; if there was a positive safety outcome to be obtained from a regulation, there would have to be an extremely strong justification for not taking that route. Even if a cost-benefit analysis showed that costs exceeded benefits, the court had clearly said that this could not override the safety intent of the statute. On the other hand, according to Burnley, the White House's attitude was obvious to the DOT staff from the history of the case:

It was a Reagan Administration decision to rescind the 208 decision of the prior Carter Administration. There was no mystery about what the attitude would be in the Office of Information and Regulatory Affairs. We knew from day one that they would be skeptical and perhaps hostile.⁶⁶

61. *The Wall Street Journal*, July 21, 1983.

62. *Ward's Auto World*, August 1983, p. 45.

63. James F. Fitzpatrick and Michael N. Sohn, Arnold and Porter, Letter to Elizabeth H. Dole, Secretary, DOT, August 16, 1983; James Burnley, General Counsel, replying on behalf of Secretary Dole, September 18, 1983. [74-14-N.31-004]

64. *Status Report*, September 20, 1983. pp. 1-2,4,9.

65. *The Wall Street Journal*, September 21, 1983.

66. Interview with James Burnley, June 8, 1995. The description of the decision-making process within DOT, here and later in this chapter, is based on that interview as well as on those with Robert Davis (Mrs. Dole's chief of staff at DOT) and Erica Jones (counsel, NHTSA), March 4, 1994; and Diane Steed, April 25, 1996.

Diane Steed has said that she thought at the time that it might still be possible to make a case for rescission. Mrs. Dole, according to both Burnley and other colleagues, had no initial predisposition on the issue. It was clear to her and her staff that whatever the decision, it was going to be challenged in the courts. So she wanted a complete record that would document her decision and its safety impact. An informal task force was set up within DOT, headed by Burnley and apparently dominated by political appointees, with membership changing depending on the issue.

In early August a group of nine insurance industry representatives, including McHugh of State Farm and Schaffer of Allstate, met with Diane Steed, then still deputy administrator of NHTSA, and some of her associates to discuss how DOT should handle the Supreme Court remand. If passive restraints were not mandated at the earliest possible date, “they would explore their legal options to ensure this outcome.” The aim, they thought, should be to use a streamlined rulemaking procedure to implement the 1977 rule with some expression of concern about detachable belts. Steed said she could not make commitments about time; “DOT was already exploring the widest possible range of options... (N)either she nor the Secretary was contemplating extensive new studies”⁶⁷

Before she announced the fact-finding process, Dole received a letter from Roger Smith, the chairman of General Motors, advising her to hire one or two consultants to help her sort out the issues involving airbags and their alternatives. He went on to say that the airbag systems currently on the road were so obsolete that no safety engineer would consider them acceptable.⁶⁸ When he learned of Smith’s letter, Allstate’s Don Schaffer wrote Dole:

Mr. Smith is not a credible adviser upon this subject. He is an avowed opponent of automatic crash protection. He canceled the GM airbag program. He caused GM to submit the strategy upon which rescission of the safety standard was based. He included rescission of passive restraint standards on his first “wish list” when the Administration took office. His suggestions should be ignored.⁶⁹

When NHTSA suspended FMVSS 208 for a year, pending the review mandated by the Supreme Court, State Farm objected that a final decision should come as quickly as possible, well before the one-year period. Expedited rulemaking should be limited to the issue of the lead time needed to install passive restraints.⁷⁰

67. Memorandum from Erika Z. Jones, Special Assistant to the Deputy Administrator/NHTSA, Meeting with Insurance Industry Representatives on Passive Restraints, August 24, 1983. [74-14-N31-003]

68. Letter of Roger B. Smith to Secretary Dole, August 26, 1983, reproduced in Appendix A, Attachment 1, General Motors Corporation, “Response to National Highway Traffic Safety Administration Proposal on Occupant Crash Protection, Docket No. 74-14, Notice 32.” December 19, 1983. [74-14-N32-1666]

69. Letter from Donald L. Schaffer to Elizabeth H. Dole, September 7, 1983.

70. Comment of State Farm on Notice 31, September 8, 1983. [74-14-N31-001]; Department of Transportation, National Highway Traffic Safety Administration, 49 CFR 571, [74-14, No. 31] FMVSS Occupant Crash Protection; Automatic Occupant Restraint Requirement. Suspension of Rule and Request for Comment. *Federal Register*, September 1, 1983, pp. 39908-9.

So it was in a fairly overheated atmosphere of continuing controversy that the Department of Transportation issued a new notice of proposed rulemaking, presented explicitly as part of the review “contemplated” by the Supreme Court.⁷¹ It was a long and thorough document with no breathtaking assumptions. It also took no special notice of the financial condition of the auto industry, which was now reviving from its low point in 1981-82.

The notice estimated that manual seat belts, when used, reduced fatalities by about 50 percent and moderate to critical injuries by 65 percent. But current usage was a little over 12 percent. Automatic seat belt effectiveness was not estimated in the notice because DOT thought usage “could vary substantially depending on the particular design.” The major change in effectiveness estimates in the notice was for airbags. DOT continued to believe that they were highly reliable and would work properly. Instead of estimates of a 66 percent reduction in fatalities for airbags plus lap belts and 40 percent for airbags alone, airbags plus lap belts were now estimated to fall in the 20-44 percent effectiveness range. The reason for this new estimate was mainly the discovery of additional fatalities in airbag deployments and further analyses of these data, even though it was acknowledged that the additional deaths were not statistically significant.⁷² Also lap belt usage with airbags was now assumed to be the same as currently observed seat belt usage. The preliminary regulatory impact analysis included a break-even analysis that was not explicitly repeated in the notice:

Given the airbag effectiveness range of 20-44 percent, manual seat belt usage must increase to 40-87 percent, and automatic belt usage to 36-100+ percent, to provide the same fatality benefits (assuming the higher level of airbag effectiveness and lower level of automatic belt effectiveness, the benefits of belts would not be equal to the benefits of airbags, regardless of usage.)⁷³

The notice included a range of potential automobile insurance savings, depending on the usage rates of automatic belts or the effectiveness of airbags. For automatic belts, a usage rate of 20 percent was assumed to produce average annual savings with a discounted value of \$20 over a 10-year car life. For a usage rate of 80 percent the savings were estimated at \$197. For airbags, the comparable figures were \$72 at 20 percent effectiveness and \$215 at 40 percent effectiveness.

The notice’s section on public acceptance cited surveys that said that comfort, convenience, and forgetfulness were factors in low belt usage. The lack of seat belt use laws was offset by the fact that bills were still being introduced and surveys showed a majority of people in Michigan, New York, and Delaware favored them. But no surveys were mentioned in the notice about attitudes toward automatic belts or airbags, although the preliminary regulatory impact analysis reviewed several of them.

71. DOT, NHTSA, 49 CFR Part 571 [74-14, No. 32] FMVSS; Occupant Crash Protection, NPRM, *Federal Register*, October 19, 1983, pp. 48622-48641.

72. *Ibid.*, pp. IV-24-IV-33a.

73. *Ibid.*, pp. IV-70, IV-72.

DOT estimated costs of the various restraint devices on the basis of one million units per annum. Manual lap and shoulder belts would be about \$50, fixed anchorage automatic belts would add \$80 to that, and motorized automatic belts would add \$180. Airbags in front seats would add \$320. All of these estimates were lower than industry estimates, but all industry estimates used volumes far below one million.

The department outlined three regulatory actions it could take in response to the Supreme Court decision:

1. Amend the automatic restraint requirements of FMVSS 208 so they could be satisfied by installing:
 - a. only airbags or nondetachable, continuous automatic belts,
 - b. only airbags,
 - c. or automatic restraints of any type in all automobiles.

These possibilities could apply just to the driver's side, to all the outboard positions, or to all positions in the car;

2. Retain FMVSS 208 as issued in 1977, but with new compliance dates;
3. Rescind FMVSS 208, but all the hurdles to rescission posed by the court decision were noted in detail, including the requirement that DOT cogently explain why it did not require airbags or continuous nondetachable belts.

Three other steps were proposed as possible supplements to the regulatory actions:

1. Conduct a demonstration program before taking a specific regulatory action;
2. Seek mandatory state seat belt usage laws through federal legislation that would provide for incentives; (this was clearly considered to be an alternative to automatic restraint requirements, rather than an option that could coexist with them.)
3. Seek legislation mandating that airbags or automatic belts be offered as optional equipment.

All of the possible strategies had detailed sets of questions attached concerning the issues of flexibility and reasonableness, public acceptance, cost, and technology.

There was a very explicit timetable in the notice; 60 days for public comment, two weeks for public meetings, and 120 days to analyze and prepare the decision as well as obtain clearance from the Office of Management and Budget on or before April 12, 1984. If needed, a supplemental notice would be issued by that date. With another 30 days for comment and 60 days for analysis, the final decision would be issued by July 11, 1984. DOT essentially kept to this schedule.

Two days of hearings were held, both in Los Angeles and in Overland Park, Kansas, followed by three days in Washington.⁷⁴ Mrs. Dole presided over one hearing in Kansas; Diane Steed was the senior official on all the other days. The DOT panel took pains to ask almost all of the witnesses' follow-up questions, and there were occasional questions from the audience. At many of the hearings those in favor of automatic restraints arranged for crash victims or their families to testify. Both Ms. Steed and Barry

74. Transcripts of the hearings are in Docket 74-14-N33-001 through 74-14-N33-004 and 74-14-N33-136 through 74-14-N33-139.

Felrice, the associate administrator for rulemaking, later said that the victim testimony had an important impact.⁷⁵ Almost all the regular participants in the debate filed docket comments in addition to appearing at the hearings.

Automobile manufacturers continued to be virtually unanimous in calling for the rescission of automatic restraint requirements and the enactment of laws requiring seat belt use. Most also expressed concern about their ability to meet the test requirements for airbags in small cars and about the effect of airbags on out-of-position passengers. But there were some interesting variations in their proposals. General Motors wanted its vehicle safety improvement program, which aimed to avoid injury in crashes up to 25 mph by improving car interiors, to be an alternative to other occupant protection requirements. GM also repeated its chairman's proposal that an independent consultant review the merits and costs of airbags and other technologies. Under questioning, GM's director of safety engineering, David Martin, seemed mildly encouraging about driver-only airbags, including those provided on an aftermarket basis.⁷⁶

Ford was more positive about airbags than other American carmakers, but there were important nuances to its position. Helen Petrauskas, its new spokesperson on regulatory affairs, called for a mandatory test of passive restraint technology, both airbags and passive belts, by requiring that manufacturers include them in 5 percent of cars sold over a four-year period. The compliance tests for each kind of restraint should also be changed: for example, manual and passive belts should be subject to the same tests, and airbags should be tested only with restrained dummies and in frontal crashes. Ford joined almost all other car companies in rejecting the concept of automatic occupant protection:

The effectiveness of airbags, even in the frontal collisions for which they are designed, depends on the willingness of drivers to use their safety belts. Likewise the effectiveness of passive belts depends on the public's willingness to use such systems. The idea of automatic protection is illusory and does not serve the public interest in motor vehicle safety.

[we have]... a very, very basic premise and that is our belief that there is no such thing as an automatic system. In order to get the full benefit of any system, we need belt usage laws.⁷⁷

But as Roger Maugh stressed later, Ford still thought airbags were a lifesaving technology:

It is our judgement that the effectiveness of airbags should be greater than 15 percent, but the lack of statistically meaningful data points to the need for further on the road experience with this technology...

In summary, Ford believes airbag technology holds promise as a supplementary protection device when used with a safety belt, but NHTSA must first document effectiveness and acceptability before wide-scale implementation of this costly system is

75. Their interviews with the author.

76. General Motors Corporation, "Response to National Highway Traffic Safety Administration Proposal on Occupant Crash Protection, Docket No. 74-14, Notice 32." December 19, 1983. [74-14-N32-1666]; also Hearings, 74-14-N33-136, starting at p. 84.

77. Hearings, December 1, 1983, 74-14-N33-003, pp. 44, 50-51.

ordered. Further, we believe any near-term airbag applications must be limited only to the driver-side because of unresolved out-of-position occupant issues and the lack of production-ready technology.⁷⁸

Diane Steed has said that the fact that people at Ford supported the lifesaving potential of airbags was important to DOT's decision makers.⁷⁹

Professor Willi Reidelbach of Mercedes-Benz, maker of the only automobile in the American market with airbags available, took positions similar to Ford's on the need for on-the-road demonstrations of airbags and their value as a supplemental restraint. But he said consumer research justified Mercedes-Benz's decision to market airbags.

Our decision [to provide the SRS option] is supported by market surveys of luxury car owners which show, among the other things, that safety is prominent among reported purchase considerations, and that 53 percent of Mercedes-Benz drivers sometimes, or almost always, use their seat belts.⁸⁰

BMW was going to make driver-side airbags optional in one of its 1985 model year cars, as a complement to the three-point seat belt, but otherwise its position was like those of the other carmakers'.⁸¹ Volvo planned to install driver-side airbags in some expensive models by 1987 and use them to comply with a passive restraint standard.⁸²

The proponents of mandating passive restraints made few new arguments in response to the DOT notice, frequently citing the Supreme Court decision as supporting their position. State Farm insisted that state motor vehicle laws or any other nonregulatory alternative could not be legally substituted for an automatic occupant protection regulation. But the company continued to be on the defensive about not granting discounts for airbags or other passive restraints because of its policy of basing discounts on actual claims experience. Barry Felrice wanted to know why NHTSA should then be expected to base its policy on data too meager to justify policy discounts. State Farm replied that other insurers were giving such discounts.⁸³

Insurers and their allies, most notably Dr. Haddon, the head of the Insurance Institute for Highway Safety, usually emphasized that state seat belt laws, if vigorously enforced, could save some lives, but that they supplemented, rather than substituted for, automatic restraint requirements. Haddon cited findings of a national telephone survey done for IIHS that nine out of ten car buyers wanted airbags or automatic belts either as standard or optional equipment. But, as it always did, IIHS emphasized the

78. Letter from Roger E. Maugh to Diane Steed, Re Occupant Crash Protection — Docket 74-14; Notice 32, December 19, 1983.

79. Interview with Diane Steed.

80. Hearings, December 7, 1983, 74-14-N33-138, p. 40.

81. Hearings, December 6, 1983, 74-14-N33-137, pp. 132-141.

82. NHTSA Hearings, December 5, 1983, [74-14-N33-136] pp. 158-167.

83. Before the United States Department of Transportation, December 19, 1983, In re Automatic Crash Protection Rulemaking Proceeding, Docket 74-14, Notice 30; Statement of Position of State Farm Mutual Automobile Insurance Company. [74-14-N32-5295]; and NHTSA, Hearings, December 6, 1983, 74-14-N33-137, pp. 85-110.

lifesaving potential of airbags alone and especially of airbags in combination with lap belts. It challenged NHTSA's lowered airbag effectiveness estimate of 20 percent, saying it should be at least 35 percent.⁸⁴

Don Schaffer, for Allstate, noted that airbags were so superior to other restraints that product liability considerations alone might force carmakers to use them. Costs should not be a consideration in issuing the occupant restraint rule, said Schaffer, since performance standards meant that costs were a result of manufacturers' choices. Under the Supreme Court decision, went Schaffer's reasoning, DOT could choose between either an airbag only or a passive restraint rule, and Allstate preferred the latter.⁸⁵

Although they doubted the crucialness of cost-benefit studies, insurers continued to support William Nordhaus' updating of his earlier analyses. Assuming that automatic belts would be the basic means of complying with FMVSS 208, and using most of NHTSA's other assumptions, Nordhaus now estimated the standard's annual benefits to be between \$2.7 and \$4 billion — higher if only airbags were used. He avoided NHTSA's problem of estimating automatic belt use by using FARS data about the reduction of fatalities associated with VW automatic belts, and he rejected NHTSA's reduction of its airbag effectiveness estimate. Automatic protection standards would still be beneficial, according to Nordhaus, even if belt use were increased by only 8 percentage points and airbags cost \$825 per car. The standard might bring some small reduction in auto industry employment, but Nordhaus' econometric analysis showed that this would be more than balanced by employment growth among restraint makers. He rejected as flawed a study by Barbara Richardson of the University of Michigan that said that a passive restraint standard would reduce GNP by 0.12-0.36 percent and increase unemployment by 60,000-200,000. The flaws Nordhaus cited included assuming that the standard was an airbag-only one, that airbags had no value to the consumer, and that their cost was fully reflected in the Consumer Price Index. Automatic crash protection, according to Nordhaus, would be one of the most cost-effective federal regulations ever enacted, comparable in effect to the elimination of deaths caused by tuberculosis.⁸⁶

Ralph Nader wanted to reinstate FMVSS 208 for model year 1985 and to raise its barrier impact standard. Nader believed that the real block to an automatic protection standard was the White House's anti-regulatory politics. With their return to profitability, the financial condition of companies like General Motors was no longer an issue. Nordhaus believed that mandating state seat belt laws was merely a stratagem to avoid an automatic protection standard. Nader's colleague, Joan Claybrook, added an attack on Ford's demonstration proposal, calling it a mere delaying tactic and an attempt to reduce the

84. NHTSA, Hearings, December 5, 1983, 74-14-N33-136, and Letter from William Haddon, MD, to Diane Steed, NHTSA, December 19, 1983 [74-14-N32-?]; also *Status Report*, January 27, 1984, pp. 1, 4-5.

85. NHTSA, Hearings, November 28, 1983, [74-14-N33-001], pp. 41-61, and Supplemental Submission to the Docket Re: Standard 208 National Highway Transportation Safety Administration, DOT, December 19, 1983, by Donald L. Schaffer, Allstate.

86. Comments by William Nordhaus on Notice of Proposed Rulemaking on Federal Motor Vehicle Safety Standards, Occupant Crash Protection, Docket No. 74-14; Notice 30 [really 32], December 19, 1983.

stringency of the standard. Nader believed that insurance discounts were irrelevant to the safety considerations that should guide rulemaking.⁸⁷

Although restraint manufacturers avoided direct clashes with automakers, one of their trade association leaders, Charles Pulley of the American Seat Belt Council, favored both reinstating FMVSS 208 and providing federal incentives for the passage of state seat belt laws. He also thought NHTSA should encourage the installation of airbags. Jack Martens, speaking for the Automotive Occupant Protection Association, wanted passive restraints mandated for all cars by the 1987 model year, with airbags in all cars with a 101-inch or smaller wheel base and either airbags or nondetachable automatic belts in larger cars.⁸⁸ Robert Rockow, a tester of airbags at Dynamic Science, was asked by Steed to comment on the relative effectiveness of airbags and automatic belts:

It is my personal feeling that when you get above 35 miles an hour in a frontal accident, 35 to 40 miles, somewhere in that range, your belt systems start causing you internal problems. You are going to have severe injuries occurring. Where your airbag will move that up to a higher speed. (sic!) Some years ago we tested some vehicles at our site, where we put three-point systems in one automobile and an airbag in another and we were able to get those up to about 45 miles an hour, where the airbag was saving the occupant, based on our dummy data and, of course, on the belt side the occupants of that vehicle were killed.⁸⁹

Rockow thought that an all-airbag standard could be met by the industry in two years and that the 30 mph standard should be no problem for small cars.

DOT Explores New Possibilities

After a few months of review, Mrs. Dole announced that the comments received raised some new issues and possible alternative rules. According to her deputy, James Burnley, the 208 task force had become “fairly enamored” with the idea of combining a push for state seat belt laws with reinstatement of the passive restraint standard if enough laws were not passed. It was obvious that passive restraints would save lives, but with a long time lag. State seat belt laws would have an immediate payoff without any significant expense. The success with which child restraint laws had been passed in the previous few years encouraged the task force to believe that this might also happen with seat belt laws. Moreover, the emphasis on state action would make a favorable impression on the White House. This combination strategy was something the group came to itself after a few months of fact gathering.⁹⁰ There is no evidence that the group was aware of Congressman Cleveland’s apparently offhand comment in 1978 about the possibility of exempting any state from airbag requirements if 65 percent of its vehicle occupants used seat belts.⁹¹

87. For Nader, see NHTSA Hearings, December 6, 1983, [74-14-N33-137], pp. 44-65, and for Claybrook, see the next day’s Hearings [74-14-N33-138], pp. 141 ff.

88. NHTSA Hearings, December 2, 1983 [74-14-N33-004], pp. 245-261 for Pulley, and pp. 261-288 for Martens.

89. NHTSA Hearings, November 29, 1983, [74-14-N33-002], pp. 300-301.

90. Interview with James Burnley. Also interview with Robert Davis and Erica Jones, both members of the 208 task force, March 4, 1994.

91. See Chapter 4.

A supplemental notice of proposed rulemaking was needed to condition the rescission of the automatic protection standards on the passage of seat belt use laws. Some other issues were also aired.⁹² For example, State Farm had argued that the public acceptability issue raised in the prior notice was relevant only to the extent that the public might act to disable the safety equipment.⁹³ DOT invited comment on this interpretation and the extent to which the public might take such action. As a result, the range of automatic belt effectiveness was lowered because of the possibility that there would be a somewhat greater chance of nonuse and, therefore, ejection compared with manual belts. Based on slightly revised estimates of the loss reductions that would result from various combinations of equipment, the notice estimated a range of potential savings in automobile insurance premiums and raised questions about how to ensure these savings were passed on to the insureds. Comments were invited on a number of test issues.

Four rulemaking alternatives were presented in the supplemental notice. Two concerned conditioning automatic protection requirements on the passage of mandatory seat belt use laws (MULs). Under consideration were waiving the requirements for any state that passed such a law, or not having the requirements come into force if 75 percent of the states (or states with 75 per cent of the population) passed MULs. The notice contained a detailed list of minimum criteria that the MULs would have to meet. Also, beginning on March 1, 1985, manufacturers would have to report on their strategies for meeting the automatic protection requirements and how these would be affected by state waivers. Ford's proposal for a mandatory demonstration program, involving 5 percent of each automaker's new cars, was the third alternative. The fourth was a variation of a proposal in the previous notice, requiring airbags on the driver's side only, but this time restricting the requirement to small cars only. All four alternatives were accompanied by many questions.

Insurers and other automatic restraint supporters generally opposed these new alternatives on the ground that seat belt laws and automatic restraint standards should not be either/or propositions. They doubted DOT's legal powers to condition safety rules on state MULs, and they felt that a demonstration program that was a substitute for safety standards meant long delays and more lost lives.⁹⁴ But IIHS did support the idea of a driver-side airbag requirement if it would lead to an early effective date for full frontal airbags.⁹⁵

John Graham, now at Harvard's School of Public Health, thought the driver-side airbag alternative for small cars was the most innovative new approach in the 15-year history of FMVSS 208.

92. DOT, NHTSA, 49 CFR Part 571 [74-14, No. 35] FMVSS; Occupant Crash Protection, [Supplemental Notice of Proposed Rulemaking], *Federal Register*, May 14, 1984, pp. 20460-20470.

93. Before the United States Department of Transportation, March 26, 1984. In re: Automatic Crash Protection Rulemaking Proceeding, Docket 74-14, Notice 32; Supplemental Statement of State Farm Mutual Automobile Insurance Company: "Public Acceptance" of Mandatory Automatic Crash Protection. [74-14-N32-6421]

94. See, for example, Statement of Allstate Insurance Company Submitted to Department of Transportation NHTSA 49 CFR 571(Docket No. 74-14; Notice 35) FMVSS occupant Crash Protection by Donald L. Schaffer, June 11, 1984. [74-14-N35-042] and Comments on Occupant Crash Protection 49 CFR Part 571 [Docket No. 74-14; Notice 35] from Nationwide Mutual Insurance Company, June 12, 1984. [74-14-N35-038].

95. Letter from William Haddon to Elizabeth H. Dole, Re: Docket 74-14, Notice 35, June 12, 1984.

Ford's demonstration proposal was flawed, he said, because it might not be large enough to provide statistically significant evidence. He was skeptical that enough states would pass MULs, and even if they did he doubted they would be effective substitutes for automatic restraints unless they resulted in belt use higher than 50 percent.⁹⁶

William Nordhaus maintained that, with NHTSA's new estimates, passive restraint standards still produced \$2-2.5 billion a year in net benefits; a delay to pursue a demonstration program or state MULs would cost \$5-14 billion. Every automatic crash protection technology in each of the seating positions considered was cost beneficial, and the benefits increased if requirements were not restricted by car size or position.⁹⁷

Automobile manufacturers generally objected to tying automatic protection standards, which they did not favor, to MULs, which they did favor. They all thought that the state by state alternative would be too costly and difficult to administer. They tended to object both to the criteria for judging state laws and to the requirement that they report their automatic protection strategies while the laws might be pending. The carmakers were also critical of the driver-side airbag requirement for small cars because they felt that the technology was not perfected. Although Mercedes-Benz and Volkswagen supported Ford's mandatory demonstration plan, most manufacturers suggested some changes — most frequently the smaller companies wanted to be excused from participation.⁹⁸

Mrs. Dole's decision

Secretary Dole was an active participant in the task force discussions about FMVSS 208. As we have seen, she was always inclined to believe that airbags worked. Now she was concerned about the opposition displayed to them by many manufacturers and wanted to make sure that consumers had an opportunity to choose airbags for their cars. According to Burnley:

Elizabeth Dole personally wanted to see bags out there... If we were going to end up with automatic restraints, she was not happy that we might end up with a fleet of automatic belts and no bags. Of all the alternatives, she did not think automatic belts were the most attractive. In fact, she felt they were the least attractive because they were so easily disabled. So she thought that would be the worst of all safety outcomes... Her desire was

96. Testimony of John D. Graham, June 11, 1984 [74-14-N35-063]

97. Comments of William Nordhaus on Supplemental Notice of Proposed Rulemaking on Federal Motor Vehicle Standards, Occupant Crash Protection, Docket No. 74-14, Notice 35, June 13, 1984. [74-14-N35-079].

98. American Motors Comments on Notice 35, submitted by Dale E. Dawkins, VP Environmental and Safety Affairs, June 12, 1984. [74-14-N35-035]; Letter from H.K. Sperlich, President, Chrysler Corporation, to Diane Steed, NHTSA, on Notice 35, June 12, 1984. [74-14-N35-036]; Ford Motor Company Comments on Supplemental Notice of Proposed Rulemaking FMVSS 208-Occupant Crash Protection. 74-14; Notice 35. [74-14-N35-065]; Letter from Betsey Ancker-Johnson to Elizabeth Dole enclosing comments on Docket 74-14; Notice 35, June 13, 1984. [74-14-N35-068 and 068A]; Comments of American Honda Motor Co. on Notice 35, June 8, 1984 [74-14-N35-048]; Letter from Karl Heinz Faber, Mercedes-Benz of North America, to NHTSA Docket, on Notice 35, June 12, 1984. [74-14-N35-043]; "Renault's Comments on the Supplemental NPRM of May 14, 1984 ...Notice 35," June 12, 1984 [74-14-N35-050]; Toyota's Comments on STD. 208 Supplementary Notice of Proposed Rulemaking, 74-14;N35; June 13, 1984 [74-14-N35-041]; Volvo's Comments on Docket 74-14; N35, June 12, 1984; [74-14-N35-039] June 12, 1984; "Volkswagen Comments to Docket 74-14; Notice 35...." June 12, 1984; [74-14-N35-046].

to see that bags were available in significant numbers, and see what happens... She really personally had a lot to do with that element of this thing... She was quite insistent that we were going to craft an outcome that would do what it could to encourage bags.⁹⁹

The main elements of Mrs. Dole's decision were to make an automatic protection standard contingent on not achieving state MULs, and to encourage the availability of airbags. During June 1984, two civil servants, Barry Felrice and Neil Eisner — respectively NHTSA associate administrator for rulemaking and a DOT assistant counsel — were briefed on the elements of the decision and asked to prepare the final regulation.

While the DOT task force had been working on the problem, Mrs. Dole, Burnley, and Diane Steed maintained open channels on the issue with Christopher DeMuth, head of OMB's Office of Information and Regulatory Affairs and executive director of the Presidential Task Force on Regulatory Relief. Although Burnley thought that they might have convinced DeMuth of their position, DeMuth recalled that he was not persuaded that the Supreme Court ruling presented an insuperable barrier to a reformulated rescission.¹⁰⁰ In any event, DeMuth felt that it was his role to argue for deregulation in any close case, and he did just that in a couple of closed meetings with the President's counsel, Ed Meese. There were meetings in the West Wing of the White House, Burnley recalled, that also included James Baker, the President's chief of staff, and Boyden Grey, the Vice President's counsel. These meetings took place at the very end of the process. Burnley characterized them as more philosophical than political. When the White House senior staff had endorsed Mrs. Dole's decision, she met with President Reagan to get his final blessing. She had a neurosurgeon with ties to the President, Dr. Paul Meyer, waiting outside in a limousine to brief the President on the medical aspects of passive restraints. But he was not needed. The President's assent was "pretty much a done deal," Burnley remembers.

On July 11, 1984, Secretary Dole issued her final rule on automatic occupant restraints¹⁰¹ which contained a summary of the lengthy regulatory impact analysis.¹⁰² Buried near the end was the acknowledgment that the Supreme Court's *State Farm* decision precluded DOT from rescinding automatic occupant protection requirements "at this time."¹⁰³ DOT could not say how much detachable automatic seatbelts would increase belt use, but it did believe that there would be some increase.

On the other hand... such a substantial increase [in belt use] as a result of the widespread enactment of MULs would provide increased safety benefits much more quickly and at a much lower cost, thus making rescission clearly justifiable... Thus, the Department has

99. Interview with James Burnley.

100. Interview with Christopher DeMuth.

101. Department of Transportation, National Highway Traffic Safety Administration, 49 CFR Part 571 [Docket 74-14; Notice 36] Federal Motor Vehicle Safety Standard; Occupant Crash Protection; Final Rule. *Federal Register*, vol. 49, No. 138, July 17, 1984, pp. 28962-29010.

102. Department of Transportation, National Highway Traffic Safety Administration, Plans and Programs, Office of Planning and Analysis, *Final Regulatory Impact Analysis, Amendment to Federal Motor Vehicle Safety Standard 208, Passenger Car Front Seat Occupant Protection*, July 11, 1984. [74-14-N35-152].

103. Op. cit., p. 29002.

concluded that if two-thirds or more of the American people were covered by such laws, the need for an automatic occupant restraint would be obviated.¹⁰⁴

So, in a sense, the Dole decision substituted a possible future rescission for Peck’s unconditional rescission.

DOT summarized its estimates of the annual benefits of various forms of protection (once the automatic forms were in the whole fleet) compared with benefits of manual belts at current 12.5 percent use levels:

	Safety Benefits ¹⁰⁵					
	Incremental Reduction In Fatalities AIS 2-5 Injuries					
	Mid-	High	Low point	Mid-	High	Low point
Airbags only	3,780	6,190	8,630	73,660	110,360	147,560
Airbags and lap belts (12.5 percent)	4,410	6,670	8,960	83,480	117,780	152,550
Airbags with lap/shoulder belts (12.5 percent)	4,570	6,830	9,110	85,930	120,250	155,030
Automatic belts						
20 percent use to	520	750	980	8,740	12,180	15,650
70 percent use	5,030	6,270	7,510	86,860	105,590	124,570
MULs in all States						
40 percent use to	2,830	3,220	3,590	47,740	53,440	59,220
70 percent use	5,920	6,720	7,510	100,430	112,410	124,570

Airbag effectiveness estimates were not based on statistically inadequate field experience, but on engineering judgments NHTSA staff applied to four samples that were presumed to be less biased than the ones used in the earlier GM engineer jury study. There was little disagreement, the ruling held, that airbags worked well in noncatastrophic frontal collisions.

Airbags offer a distinct advantage over other occupant restraints in that they ensure a usage rate of nearly 100 percent for both drivers and passengers. Used alone, they do offer protection, but to equal the effectiveness of a manual lap and shoulder belt, airbags must be used with lap belts. Lap belts in airbag equipped cars would probably be used only at a level near the current level of seatbelt use, 12.5 percent. Because manual belt use is so low, however, airbags would provide much greater safety benefit.

Airbags with lap belts also provide protection at higher speeds than safety belts do, and they will provide better protection against several kinds of extremely debilitating injuries (e.g., brain and facial injuries) than safety belts. They also generally spread the impact of a crash better than seat belts, which are more likely to cause internal injuries or broken bones in the areas of the body where they restrain occupants in severe crashes.¹⁰⁶

Judgments of how well airbags would work in side collisions, rollovers, and catastrophic frontal collisions were reflected in the different levels of estimated benefits. As in the past, DOT dismissed fears that airbags might fail to deploy or deploy inadvertently or cause harm from the toxicity of sodium azide. It noted that the unobtrusiveness and almost 100 percent deployment of airbags in frontal crashes made

104. Ibid., p. 29003.

105. *Final Regulatory Impact Analysis*, p. IV-1. The same table is in the final rule, op.cit., p. 28986.

106. Ibid. p. 28991.

them the most beneficial restraint when combined with belt usage at current levels. The major drawback of airbags was their cost, which DOT, based on data from suppliers, said should be no more than \$320 for full, frontal airbags in large production volumes. But no car maker's estimates came close to even twice that amount.¹⁰⁷ Although Breed estimated that the all-mechanical airbag it had developed would cost \$141, it was at least a year from being ready for commercial use.

The problem of out-of-position occupants in small cars was discussed in a way that tried to balance the dangers and safety benefits of airbags:

The out-of-position occupant problem primarily affects children less than three years old. (The size of the child and the speed with which the bag must open in small cars are the primary reasons for the problem.) Overall, the safety benefits are greater for an out-of-position occupant with an airbag than without one. Moreover, technical modifications (e.g., sensors that could detect an out-of-position occupant and adjust the opening of the airbag to account for the occupant's position) and child restraint laws should lessen the problem. Nonetheless, the Department can not state for certain that airbags will never cause injury or death to a child. This situation is similar to current safety belts where the benefits are well-known, but they do on occasion cause injuries that otherwise would not have occurred. Again, the Department is not mandating the use of airbags.¹⁰⁸

All of the problems related to airbags plus the negative consumer comments in the docket were cited as reasons for allowing choice among automatic restraints rather than mandating airbags.

Three-point automatic seat belts were estimated by DOT to be as effective as their manual counterparts when they were used; the effectiveness of two-point automatic belts was somewhat downgraded because of the greater possibility of ejection reported in a Canadian study. Nondetachability was eliminated as a possible requirement because of fear that it would make automatic belts inconvenient and generate adverse public reaction. The estimated effectiveness of seat belt laws in raising belt use by at least two or even three times was based on a study of foreign experience by Peat, Marwick and Mitchell.¹⁰⁹ DOT dealt with skepticism about the political feasibility of state passage of MULs by citing the fact that 47 states and the District of Columbia had passed child restraint laws and New York State had just passed a seat belt use law with a \$50 fine. Moreover, public attitudes toward safety had changed markedly in recent years, DOT said, as evidenced by "the grass roots uprising in opposition to drunk driving" and recent surveys showing majority support for MULs in Michigan, Delaware and Ohio.¹¹⁰

A demonstration program was rejected in the final rule because it would entail a delay in achievable benefits. Requiring that consumers be allowed to choose among passive restraint options would be a viable alternative only if the old rule were rescinded. But it would impose a major financial

107. Ibid. Table 9, p. 28989.

108. Ibid., p. 28992.

109. Peat, Marwick, Mitchell and Co., *Effectiveness of Safety Belt Usage Laws*, prepared for the National Highway Traffic Safety Administration, Contract No. Dot HS 9-02104. DOT HS-805 490, U.S. Department of Commerce, National Technical Information Service. May 1980.

110. Ibid., p. 28994.

burden on manufacturers, as would requiring an airbag retrofit capability. The manufacturers' claim that test procedures specified in the rule were not repeatable was rejected, as were proposals for other test changes. GM's request that barrier standards be lowered from 30 to 25 mph for "passive interiors" was denied because there were no data on the safety implications of such a change, but DOT had friendly words for the concept. The front center seat was exempted from the automatic protection rule both because of its small number of occupants and because manufacturers would eliminate it if using automatic belts.

The rule called for automatic protection to be placed into a minimum of 10 percent of all cars manufactured after September 1, 1986, 25 percent of cars manufactured after September 1, 1987, 40 percent after September 1, 1988, and all new cars after September 1, 1989. Although unstated, the reason for no longer basing the phase-in schedule on car size was probably concern that a delay for small car compliance would benefit importers. The requirements would instead be based on the average number of cars produced by the manufacturer in the United States. The rationale for the phase-in included the notion that more time was needed to engineer possibly better systems than automatic belts, like airbags or passive interiors. It was also hoped that by the time MULs covered two-thirds of the U.S. population, automatic restraints would have been produced at low enough prices to ensure public demand. During the phase-in period, manufacturers would receive a one-half car additional credit for every car produced with something to protect the driver automatically other than a passive belt. The right front passenger would also have to be protected automatically. DOT said explicitly that this credit was designed to encourage manufacturers to provide airbags:

Even though fewer cars would be equipped with automatic protection if extra credit is given for airbag automobiles, airbags — when used with belts — are very effective... This should promote the development of what may be better alternatives to automatic belts than would otherwise be developed.¹¹¹

The automatic protection requirement would be rescinded as soon as DOT determined that two-thirds of the population of the United States was covered by mandatory use laws. But this could occur no later than April 1, 1989. A state-by-state waiver was rejected as too burdensome to the manufacturers and too subject to possible abuse. Although the decision noted that "the effectiveness of the airbag system is substantially diminished if the occupant does not use a belt,"¹¹² it tended to view the two systems as alternatives rather than complements. The proposal to have both automatic restraints and MULS was dismissed on the ground that it ignored the issue of consumer resistance to the restraints and the incentives that the new DOT approach gave to passing MUL laws. To qualify for being counted toward the waiver, MULs would have to meet these minimum criteria:

111. *Ibid.*, p. 29000.

112. *Ibid.*, p. 28998.

- federally mandated seat (i.e., three-point) belts had to be used by front-seat outboard passengers whenever the vehicle was moving;
- no occupant waivers except for medical reasons;
- penalties of at least \$25 for each violation;
- civil damages for auto injuries might be mitigated if the victim was unbelted;
- an education program to encourage compliance
- a program to evaluate the effectiveness of each law;
- an effective date no later than September 1, 1989.

When she issued her decision on July 11, 1984, Secretary Dole also announced a \$40 million program to promote seat belt use and seat belt laws, half to be funded by DOT, half by the “private sector.”¹¹³ Later, Congress authorized only about \$7.5 million for that purpose.¹¹⁴

Manipulating the “Trapdoor”

The insurance and consumer groups and state officials who had been the chief advocates of an automatic protection standard reacted to Mrs. Dole’s final rule with predictable dismay about its potential rescission if enough states passed qualifying MULs. They quickly dubbed this the “trapdoor,” which could be triggered if laws were passed in the 16 most populous states. Ralph Nader and Joan Claybrook predicted that manufacturers would concentrate on lobbying for seat belt laws rather than providing airbags. IHS and the insurers deplored the idea that seat belt laws were viewed as possible substitutes for automatic restraint standards rather than as complements. State Farm almost immediately filed suit in the District of Columbia Court of Appeals to overturn that aspect of the rule, while the Automobile Importers of America filed and later dropped another appeal in California.¹¹⁵ State Farm was joined, either in appeals or in *amicus* briefs, by other insurers and health organizations as well as by the states of New York and New Mexico and the National Association of Insurance Commissioners. The appeal argued that DOT did not have the power to, in effect, shift its regulatory authority to the states. It also argued that the ruling was arbitrary and capricious because, among other things, it did not give serious consideration to having both MULs and a passive restraint standard.¹¹⁶

Automobile manufacturers founded “Traffic Safety Now” to campaign vigorously for state seat belt laws. According to James Burnley, DOT did not play an active role in this lobbying, avoiding the state by state campaign for fear that its involvement would be counterproductive. But it did answer inquiries and generally encouraged those favoring the laws to make their views known.

113. Department of Transportation, “Statement by Secretary of Transportation Elizabeth Hanford Dole, News Conference on Automatic Crash Protection, July 11, 1984.”

114. Graham, *Auto Safety*, pp.181-182.

115. Status Report, July 28, 1984, pp. 1-6.

116. State Farm, et. al., v. Elizabeth Dole, Petition to Review a Final Order of the Department of Transportation, Petitioners’ Final Brief, In the Court of Appeals for the District of Columbia Circuit, December 31, 1984.

The MUL passed in New York became an early source of controversy. Evidently with the New York law in mind, the Secretary's final rule said that the Department would consider granting a waiver for any law passed before August 1, 1984, that did not meet the minimum criteria but substantially complied with them. The New York law had a maximum fine of \$50 rather than a minimum one of \$25. Also Governor Cuomo, in signing the law, added a memorandum stating that he interpreted it as requiring lap belts and that shoulder belts might not be used if they caused discomfort. The Insurance Institute for Highway Safety used this as the basis for petitioning DOT to rule that the New York law did not meet its minimum requirements.¹¹⁷ DOT did not respond to this or other requests for assessing whether specific bills or laws met its criteria; the reasons, according to both James Burnley and Diane Steed, were to let the process play itself out and to realize the maximum safety benefits both from MULs and from the spread of automatic restraints.¹¹⁸ Proponents of automatic restraints began to follow the strategy articulated by Charles Hurley, Washington representative of the National Safety Council, when he said it would lobby for state seat belt laws "that include language making it clear that such laws are not aimed at overturning the federal rule."¹¹⁹ In other words, they would aim to include a provision that was contrary to at least one of the minimum criteria, so as not to promote rescission of the automatic restraint standard.¹²⁰ Although neither James Burnley nor Mrs. Dole commented at the time, Burnley later said that they were dismayed by this strategy, because the criteria were aimed at making the MULs meaningfully enforceable.¹²¹ There is no clear evidence whether Mrs. Dole originally hoped, or expected, that MULs would lead to rescission.

While the decision argued that the climate of opinion on seat belt laws was changing, the decision itself probably was the greatest force in bringing that change about. Both the automobile manufacturers and those favoring the automatic restraint standard worked vigorously for their versions of MULs. The result was relatively rapid passage of laws that were almost always a compromise between the two forces and, therefore, did not strictly meet all the minimum criteria. New Jersey quickly followed New York in passing a belt use law that could be enforced only if a car was first stopped for some other reason — a "secondary enforcement law." Although this limitation was not explicitly prohibited by the criteria, the law was soon amended to carry a maximum fine of \$20, below the minimum specified fine of \$25. Illinois was the next state to pass a law, one that entailed secondary enforcement and prohibited reduction of civil damages because of failure to use seat belts.¹²²

117. *Ibid.*, November 3, 1984, pp. 1-2.

118. Interviews with Burnley and Steed.

119. *Status Report*, October 13, 1984, p. 6.

120. Dr. Haddon put it in a more general way: "Seat-belt laws can help reduce this [highway injury] toll. But they should complement automatic protection. They should not be enacted in a manner that would defeat attainment of the goal of automatic protection for everyone." "The Trapdoor," an editorial reprinted from the *Baltimore Sun*, in *Status Report*, January 19, 1984, p. 2.

121. Interview with James Burnley.

122. *Status Report*, January 19, 1984, p. 4.

By November 1985, 16 states had passed MULs, or 17 if Nevada's law was counted — it was effective only if the national speed limit was raised to 70 mph. Massachusetts' law included a provision that would require automatic protection for all cars sold in the state if the federal requirement was rescinded. After lengthy consideration, the California law included both a similar provision and something called a “poison pill” — a concept borrowed from corporate anti-merger tactics. If the state's law was counted by DOT toward rescinding the automatic protection standard, it would be immediately revoked. James Fitzpatrick, of Arnold and Porter, says the “poison pill” was brought into the California negotiations by his firm.¹²³

While state legislatures were considering mandatory use laws, the legal challenge to “the trapdoor” was slowly working its way through the Court of Appeals. DOT argued against any decision on the merits of its rule on the ground that it was not “ripe,” since the decision that was being opposed had not yet been made. The Court was forced to hear the arguments twice since one of the members of the panel, Judge Edward Tamm, died after the first hearing and was replaced by Antonin Scalia. Judge Kenneth Starr wrote the majority decision issued September 18, 1986, agreeing that the issue was not yet ripe, but noting that the MULs passed in states covering 50 percent of the population apparently did not conform to the minimum criteria. The decision said that the petitioners could get judicial review if the Secretary were to bend the requirements of the minimum standards to justify counting MULs as long as they were in substantial compliance. Also rejected was New York State's argument that the final rule did not justify the rejection of an airbag-only standard or one requiring automatic belts to be nondetachable. Judge Mikva dissented from this part of the decision.

Brian O'Neill, the new president of IIHS, declared that the Court of Appeals decision meant the automatic protection standard would stand.¹²⁴ By the end of the year, there was some retreat from the high point of 27 states with MULs when Nebraska and Massachusetts repealed their laws.¹²⁵

The Spread of Driver-Side Airbags

Although almost all the automobile manufacturers petitioned for reconsideration of one or another aspect of the final rule and put substantial effort into lobbying for seat belt use laws, they also began planning to meet the phase-in requirements for automatic restraints. They could not gamble on the rescission threshold being met before the 1987 model year.¹²⁶ Although Helen Petrauskas has said that Ford's long term strategy was to go to 100 percent airbags over time, that assumed that the open issues — especially those related to passenger airbags — could be resolved. For the immediate future, Ford was going to use automatic belts. Most of the manufacturers still planned to use detachable automatic three-

123. Interview with James Fitzpatrick. For the various laws, see the special issue on seat belt laws in *Status Report*, November 2, 1985.

124. 802 F.2d 474 (D.C. Cir. 1986), and *Status Report*, October 4, 1986, pp. 1,7. Dr. William Haddon died prematurely in 1985.

125. *Status Report*, December 13, 1986, pp. 1, 5-7.

126. Interviews with Roger Maugh, Helen Petrauskas, David Martin, Christopher Kennedy.

point belts to meet the standard. But Ford studied VW's experience with the Rabbit's two-point belts and Toyota Cressida's two-point motorized belt and concluded that they were almost as effective as three-point manual belts. So Ford made motorized belts its first choice to meet the standard in spite of adding \$150 to the cost of the car.¹²⁷

Thanks apparently to Ray Peck's earlier initiatives, driver-side airbags were becoming available even before Mrs. Dole's final rule took effect. Mercedes-Benz was selling out its optional driver-side airbags by the time the rule was issued.¹²⁸ A few weeks after the final rule, Ford followed up on its earlier announcement to provide driver-side airbags in 1985 model year Tempos by saying that they would be available as options on the 1986 Tempo and Mercury Topaz for \$830, a price that Roger Maugh acknowledged to be unattractive.¹²⁹ Ford would be the first American manufacturer to offer airbags to consumers since General Motors stopped its sales at the end of the 1976 model year. According to Maugh, Ford had concluded that it had to have the people in its cars "restrained or we were forever going to be exposed to problems in litigation and the public's perception of us as people building cars where they were getting hurt."¹³⁰ Both Maugh and Petrauskas have said that Ford's marketers concluded that safety was an aspect of the strategy expressed in its slogan "Quality is job 1." With it they would sell more cars. The decisions to provide both motorized safety belts and driver-side airbags were driven by this strategy.

In October 1984, Ford petitioned NHTSA to permit manufacturers to meet the phase-in requirement with a driver-side airbag and a manual, rather than automatic, belt for the front outboard passenger. After some delay, the petition was granted in August 1985. A car so equipped would be counted only once rather than the 1.5 times it would be counted if it had both a driver-side airbag and a passenger-side automatic belt.¹³¹ In the 1985 model year, Mercedes-Benz made the driver-side airbag standard on some of its models; by the next model year it was standard on all of its models.¹³² The Insurance Institute for Highway Safety estimated at the end of 1985 that at least 100,000 cars with driver-side airbags would be sold in 1986. This was based on all of Mercedes-Benz's 85,000 sales, 5 percent of the expected 350,000 Ford Tempos and Mercury Topazes sold, and about 1,500 BMWs.¹³³ Chrysler was considering offering airbags in two of its 1987 models. Early in 1986, Roger Smith, CEO of General Motors, announced that driver-side airbags would be options — to supplement manual belts — in selected 1988 models, not because of regulation, but to meet consumer demand.¹³⁴

127. Interviews with Roger Maugh and Helen Petrauskas.

128. *Status Report*, July 28, 1984, p. 5.

129. *Status Report*, September 22, 1984, pp. 1, 6.

130. Interview with Roger Maugh.

131. Department of Transportation, National Highway Traffic Safety Administration, 49 CFR 571, [74-14; Notice 40; Occupant Crash Protection; Response to Petitions for Reconsideration, 50 *Federal Register*, August 30, 1985, pp. 35233-35237.

132. *Status Report*, October 5, 1985, p. 2.

133. *Status Report*, December 7, 1985, pp. 1, 6.

134. *Status Report*, February 22, 1986, pp. 1, 7.

Also early in 1986, Roger Maugh told Diane Steed that Ford did not have the engineering resources to continue work on the still unresolved problems with passenger-side airbags, while at the same time designing automatic protection for all its lines by the deadline of the 1990 model year. With the ending of credits for driver-only airbags, Maugh argued that airbags would disappear unless Ford and other manufacturers had time to solve the passenger-side problems and to adapt their engineering to complete car design cycles. To achieve this room to maneuver, Ford wanted the one-car credit for driver-side airbags extended beyond the phase-in period. The extension would also allow airbag manufacturers to increase their still limited production capacities. Steed was afraid that acquiescence might seem to undermine the final rule. She suggested that Maugh discuss the issue with the Insurance Institute for Highway Safety, and he met with Brian O’Neill in March 1986. O’Neill’s reaction was sympathetic, but he wanted the case to be presented to his board of directors, composed of insurance company and trade association executives and including this author. Maugh was leaving the Ford safety director post, and his boss, Helen Petrauskas, talked to the IIHS Board in May. She made it clear that if NHTSA prolonged the driver-side airbag credit, Ford would supply massive numbers of cars so equipped while continuing to work on passenger-side airbags.¹³⁵ With support from O’Neill, the board decided to back Ford’s petition.

On June 11, 1986, Ford petitioned NHTSA to extend the driver-side airbag credit, repeating the arguments Steed had already heard and requesting a quick decision.¹³⁶ Ford listed a fair number of issues still to be resolved for passenger side airbags: the low temperature characteristics of the igniter, the optimum design of the aspirator, the material of the inflator canister, the optimum characteristics of the deployment door, and, most importantly, hazards to out-of-position occupants, especially children. If its petition were granted, Ford said that it would “in all likelihood” equip the majority of its American-made family cars with driver-side airbags in the 1990 model year. At least 60 percent of passenger cars would have to be occupied by belt users to achieve similar safety benefits. IIHS filed its support, but suggested that the driver side credit be extended only until the 1994 model year, saying that was time enough to engineer passenger side airbags. Brian O’Neill hailed Ford’s position as the breakthrough that would make airbags standard equipment at a reasonable price.¹³⁷

Maugh had asked O’Neill not to discuss the petition, before it was filed, with Joan Claybrook of Public Citizen and Clarence Ditlow of the Center for Auto Safety. O’Neill arranged for Ford to make its case at a meeting of the National Coalition to Reduce Car Crash Injuries; Claybrook and Ditlow were essentially the only major players in the coalition not won over by Ford’s arguments. Claybrook and Ditlow believed that Ford had the resources to do all the engineering needed, exaggerated the problems of

135. Interviews with Roger Maugh, Diane Steed, Helen Petrauskas, and Brian O’Neill.

136. The Ford petition is in docket 74-14, Gen. Ref. 654 and 654A. IIHS’ supporting document is in 74-14, Gen. Ref. 654.

137. *Status Report*, June 28, 1986, pp. 1-2.

passenger-side airbags, and was motivated strictly by profit considerations.¹³⁸ Ralph Nader took no public position on the matter. Congressional supporters of airbags, like Representative Tim Wirth and Senator John Danforth, initially shared Claybrook's skepticism.

In November NHTSA published a notice of proposed rulemaking embodying Ford's petition, but extending the credit for the driver-side airbag only until September 1, 1993, as IIHS had suggested.¹³⁹ An earlier petition by Porsche and IIHS for a double credit for cars with both driver and passenger airbags was denied in the same notice, because NHTSA said such a credit would not significantly affect their production. Diane Steed has said that IIHS' support for Ford's petition helped to verify its safety benefit. All the automobile manufacturers also supported the petition. At a Senate Commerce Committee hearing chaired by Sen. Danforth, Helen Petrauskas said that if Ford's petition were granted, its annual driver-side airbag production would come closer to a million than a half million. Chrysler said that driver-side airbags would be standard equipment on at least one 1988 Chrysler model and on most by the 1990 model year. Danforth said at the hearings that he had started out as a skeptic, but was now convinced.¹⁴⁰ General Motors later declared that if the driver-side airbag credit were extended, it would produce a half million cars with that equipment by the 1990 model year, reaching nearly 3 million by the 1992 model year if programs under study proved feasible. Volvo said that all its models would have driver-side airbags by the 1989 model year.

On March 25, 1987, the Department of Transportation announced the extension of credits until September 1, 1993, for cars equipped with driver-side airbags and manual belts for the front outboard passenger seat. The Secretary's written statement noted:

The action we are taking today will result in the installation of more airbags sooner than would have occurred without this rule. It will also encourage the orderly development and production of passenger-side airbag systems.¹⁴¹

In the final rule, NHTSA noted the widespread support for the extension of these credits. All car manufacturers and airbag suppliers said credits were needed, because of both scarce engineering resources and limited airbag production capacity. Only the Center for Auto Safety and Robert Phelps, a private citizen, opposed the extension. NHTSA rejected the Center's arguments that Ford's submission had not been made public, noting that all but some competitively sensitive information had been published. The Center had also argued that the extension would discourage Mercedes-Benz, Jaguar and Porsche from providing full, frontal airbag systems, an assertion contradicted by the manufacturers' filed comments. In fact, Porsche was already offering full, frontal airbags on the 1987 model 944 Turbo.

138. Interview with Joan Claybrook.

139. DOT, NHTSA, 49 CFR Part 571, [74-14; Notice 48], FMVSS; Occupant Crash Protection; NPRM, 51 *Federal Register*, November 25, 1986, pp. 42598-42603.

140. *Status Report*, January 24, 1987, pp. 6-7.

141. Department of Transportation, "News: Dole Announces Final Rule to Encourage Early Installation of Airbags," March 25, 1987.

Interestingly, while the DOT announcement spoke of “more airbags sooner,” NHTSA maintained that the rule did not aim to favor any one automatic protection technology, but aimed

to encourage the development of a variety of automatic restraint systems. Ultimately, the types of automatic restraints that prevail in the marketplace will be determined by the choices made by consumers.¹⁴²

Consumer Reaction and Accident Experience

During January and February 1986, NHTSA sponsored a national survey to measure the public’s understanding and acceptance of occupant protection systems.¹⁴³ Only 40 percent of the public had heard of automatic belts and most of them did not know how they worked. Sixty percent preferred manual to automatic belts when buying or renting a car, although more than 40 percent said they’d be willing to pay as much as the cost of a radio for automatic belts. In contrast, more than 90 percent said they had heard of airbags and 76 percent had accurate information about them. Favorable opinions about airbags outweighed the unfavorable, but there were concerns about inadvertent inflation, loss of control or impeded vision after inflation, and cost. Only a third said they would be willing to pay as much for airbags as the cost of an AM/FM stereo radio/cassette player — roughly equivalent to DOT’s cost estimate. While airbags clearly were favored over automatic belts, the public’s willingness to pay a price close to the manufacturers’ offer had yet to be established.

In its upscale market, Mercedes-Benz seemed to have little trouble selling its expensive combination of driver-side airbag and belt tensioner. Ford’s early experience with their much lower priced cars was different during 1986 and 1987. By February 1987 only 455 Tempos and 294 Topazes had been sold. A sales push managed to raise the totals to 1,014 and 439, respectively, by May 1. Dealers’ attitudes toward airbag-equipped cars seemed to be negative, especially since they had to be specially ordered. CEO Donald Petersen had already said that Ford was committed to offering full, frontal airbags. He now took command of the sales effort, raising Ford’s production capacity for driver-side airbags from 12,000 in 1986 to 36,000 in 1987 and writing letters to all Ford and Lincoln-Mercury dealers stressing the need for support of the airbag program. In May the price of airbags was temporarily reduced from \$815 to \$295. Helen Petrauskas believes that none of these steps really eliminated the skepticism about airbags as much as the media stories about drivers surviving severe crashes with airbags (see Chapter 6).¹⁴⁴

The climate for occupant protection was changing in other ways. Manual belt use was up to 39 percent in NHTSA’s 19 city survey during the first half of 1986; in states with mandatory belt use laws it was 46 percent. A year later belt use was up to 42 percent.¹⁴⁵ A series of surveys by the Insurance

142. DOT, NHTSA, 49 CFR Part 571, [Docket No. 74-14; Notice 50] FMVSS; Occupant Crash Protection; Final Rule, 52 *Federal Register*, March 30, 1987, pp. 10098.

143. Suzanne Loux, et. al., *National Understanding and Acceptance of Occupant Protection Systems*, SRA Technologies, Inc. Alexandria VA, July 1986, DOT HS 807 025.

144. Interviews with Roger Maugh and Helen Petrauskas; Graham, op. cit., pp. 204-206; Status Report, October 4, 1986, pp. 1-2, and November 8, 1986, pp. 1, 6, 11.

145. *Status Report*, May 30, 1987, p.3 and December 5, 1987, p. 6.

Institute for Highway Safety showed that initial increases in belt usage seen immediately after MULs were passed was followed by later declines. Use was greater in states where enforcement was “primary,” i.e., did not depend on another violation, and where it was vigorous. But by the end of 1986 only 8 of 25 states with MULs had primary laws.¹⁴⁶ There seemed to be initial evidence that MULs were producing lower injury and death rates, but both the Highway Loss Data Institute, an affiliate of IIHS, and NHTSA reported in September and October 1988 that insurance data showed that airbags made no real difference in insurance injury costs.¹⁴⁷

On the other hand, the small groups of cars with driver-side airbags were beginning to accumulate some experience. Reports from the GAO fleet, from police cars retrofitted with airbags, and from Mercedes-Benz, both in Europe and the United States, showed that the airbags deployed appropriately. Injuries were nonexistent, minor, or, very occasionally, unavoidable.¹⁴⁸ But the experience was still not credible statistically. In the absence of clear evidence, insurers took differing approaches toward premium discounts. Early in 1986 Nationwide reduced its premiums for injuries to occupants by 40 percent for full, frontal airbags, 25 percent for driver-side airbags, and 10 percent for automatic belts. On the other hand, Government Employees Insurance Company (GEICO) was giving a 30 percent discount for any kind of automatic protection.¹⁴⁹ By late 1987 the Insurance Institute for Highway Safety noted that most auto insurers had automatic restraint discounts, frequently at the same rate for both belts and airbags. The Insurance Service Office, filing rates on behalf of many companies, gave 30 percent discounts for both full, frontal airbags and automatic belts, but only 20 percent for driver-side airbags.¹⁵⁰ Insurers did not distinguish between detachable and nondetachable automatic belts in spite of strong evidence from the Insurance Institute for Highway Safety that detachable automatic belts, such as those provided by General Motors and Chrysler, were much less likely to be used than the motorized, nondetachable belts in Fords, Toyotas, and Nissans.¹⁵¹

James Burnley became Secretary of Transportation late in 1987, after Elizabeth Dole was named Secretary of Labor. At his confirmation hearing he told the Senate Commerce Committee: “It’s very clear that while we have a great many seat belt laws... rule 208, the passive restraint rule is going to be fully implemented.”¹⁵² At a subsequent meeting with the board of directors of the Insurance Institute for Highway Safety, Burnley challenged auto insurers to encourage auto buyers to choose airbags and other safety options. General Robert McDermott, the CEO of USAA, a major auto insurer, announced in April

146. See, for example, *Status Report*, February 1, 1986, pp.1-2; June 28, 1986, pp.1, 6; October 4, 1986, pp. 1, 5, 6; and December 13, 1986, pp. 1,5,6.

147. *Status Report*, May 12, 1986, pp. 1, 6, 7; August 23, 1985, pp. 1-2; September 7, 1986, pp. 1,4; September 17, 1988, p. 6; October 15, 1988, pp. 4-5.

148. *Status Report*, August 10, 1985, pp. 1-3; April 26, 1986, p.4; April 16, 1988, pp. 4-5.

149. *Status Report*, February 1, 1986, p. 5.

150. *Status Report*, October 17, 1987, p. 2.

151. *Status Report*, June 27, 1987, pp. 1, 7; November 21, 1987, pp. 1-3.

152. *Status Report*, December 5, 1987, p. 3.

1988, that, as a direct consequence of that challenge, the company would give a \$300 “safety bonus” to members (i.e., policyholders) who bought airbags as optional equipment and also grant a 60 percent discount on first party injury premiums for cars with airbags. At about the same time State Farm dropped its resistance to anticipating claims experience and announced a 40 percent discount for cars equipped with both airbags and automatic belts (a combination then not available), a 20 percent discount for driver-side airbags, and a 10 percent discount for automatic belts.¹⁵³

Although Ford, Chrysler, and even General Motors had told both NHTSA and Congress that they were planning to supply driver-side airbags in massive numbers, no American auto company had yet committed to airbags as standard equipment. In May 1988 Lee Iacocca, the CEO of Chrysler, smallest of the “big three,” stole a march on Ford and made that announcement. It was widely reported by the television networks and in the press, and Chrysler amplified that coverage with full-page ads in major newspapers. Iacocca had been a bitter opponent of airbags when he was president of Ford in the 1970s and he had reaffirmed that stance in his best-selling autobiography. Now Chrysler ads were headlined: “Who says you can’t teach an old dog new tricks?”¹⁵⁴ The next month Ford announced that it would be the first domestic manufacturer to make airbags standard equipment, for both the driver and the front seat passenger in 1989 Lincoln Continentals. By the following model year, airbags would be standard in 11 of Ford’s lines.¹⁵⁵ By the end of 1988, the Insurance Institute for Highway Safety reported, based on its survey of carmakers and airbag suppliers, that production of cars with driver-side airbags would jump from 480,000 in the 1989 model year to 3.3 million in the 1990 model year. Auto manufacturers were beginning to report receiving fan mail from customers who thought their lives had been saved, or serious injury avoided, by airbags.¹⁵⁶

The official end of the regulatory battle for airbags passed almost unnoticed except by a few interest groups. On April 1, 1989 because a sufficient proportion of the population was not covered by seat belt use laws that met NHTSA’s standard, the automatic occupant restraint rule would go into effect for all 1990 passenger cars.¹⁵⁷ Thanks to the maneuvering of the agency and most safety advocates, and the leadership role taken by Ford, the automatic restraints installed in cars were increasingly likely to be airbags.

Summary

The new Reagan Administration had given every sign that automobile manufacturers were finally going to win their struggle against mandates for passive restraints and airbags. Under the combined slogans of deregulation and financial relief for an ailing automobile industry, the administration did delay

153. *Status Report*, April 16, 1988, pp. 1-3.

154. *Wall Street Journal*, May 19, 1988; *New York Times*, May 20, 1988.

155. *Status Report*, July 9, 1988, pp. 1, 7.

156. *Status Report*, December 3, 1988, pp. 1, 3, 9-11.

157. *Status Report*, April 22, 1989, p. 6.

the phase-in of the automatic occupant protection standard and then tried to completely rescind it. But the rationale that Administrator Peck gave for the standard's rescission — that manufacturers would equip almost all cars with detachable automatic belts, which might not be used more than manual belts — was dismissed as arbitrary and capricious by the Supreme Court.

Although voters seemed to accept the ideology of deregulation championed, in somewhat different ways, by both the Carter and Reagan administrations, they were also showing increasing concern about highway safety. Starting with Tennessee in 1978, every state had passed an automobile child restraint law by 1985, most of them during Reagan's first term. The movement against drunk driving, spearheaded by Mothers Against Drunk Driving, led to many state laws and, in 1985, to the federal Uniform Minimum Drinking Age Act. Surveys of car buyers found serious concerns about the safety of cars. This changing climate of opinion strengthened the positions of safety engineers at both Mercedes-Benz and Ford, who believed that airbags, which they thought had great safety potential as "supplemental restraint systems" to manual seat belts, might also have great sales potential. So Ford and Mercedes-Benz responded positively to Peck's efforts to save the airbag industry from the complete extinction that might have resulted from a rescission of the automatic restraint standard.

Even before the rescission, the airbag industry was facing disaster because of the decision of all manufacturers to use automatic — mostly detachable — seat belts to meet automatic occupant protection performance standards. In spite of his quick acceptance of the effectiveness of airbags, Peck believed that the Safety Act's requirement to enact performance standards left him no way to explicitly require airbags. Instead, he resorted to jaw-boning and the use of federal contracts, which allowed a residual airbag industry to survive. The Supreme Court, however, was apparently not restrained by the concept of performance standards. One of the reasons why it struck down the rescission was that NHTSA had paid no serious attention to the possibility of an airbag-only standard; another was that NHTSA had not seriously considered the possibility of requiring nondetachable automatic belts. Both of these reasons were worded in terms of specific designs, rather than performance terms, although they could have been rephrased in performance terms.

The new team at DOT, led by Elizabeth Dole, was faced with a Supreme Court decision that would require it to overcome apparently insuperable hurdles to reinstate the rescission, in an environment marked by a recovering auto industry and the public's greater interest in safety. The rule that Mrs. Dole issued was the single most influential decision in the history of airbag regulation. It combined an automatic protection standard with its potential rescission if enough states passed seat belt use laws — something that DOT said would provide more immediate safety benefits — along with incentives for driver-side airbags. This led, on the one hand, to intense competition between the auto industry and the insurance industry about the details of state seat belt legislation, and, on the other hand, to collaboration between them on driver-side airbags. The result of the competition sparked by Dole's decision was the

passage of many state seat belt laws in fairly short order after years of unsuccessful efforts. But, thanks to the work of insurers and consumer safety groups, most of the laws did not meet DOT's standards and did not allow direct, i.e., primary, police enforcement. This last limitation reduced the laws' effectiveness, as was soon shown by IIHS research.

Dole's decision did lead *both* to a large number of seat belt use laws as well as to the requirement for automatic restraints. As we shall see, the laws did significantly increase belt use, and airbags very quickly became the automatic restraint of choice. This was the result that critics of the "trapdoor" said should have been required in the first place. If this was Dole's ultimate intention, she has never said so.

Could Dole have achieved mandatory belt use in a more direct way, one that might have been more effective nationally and explicitly emphasized the importance of airbags and seat belts working together? She had the power to propose a new federal highway safety standard under the Highway Safety Act, as Secretary Volpe had once planned to do and as Gregory had once proposed to Coleman. The Highway Safety Act had been amended in 1976, eliminating the requirement that states comply with every uniform standard. Still, introducing MULs into the uniform standards might have been a prelude to proposing stronger federal legislation. Although the regulatory record shows that Dole and her team were aware of these possibilities, they were dismissed with the argument that the either/or approach gave a greater incentive for the passage of MULs (to try to avoid the requirement of automatic restraints!).

The collaboration between Ford and IIHS, along with its insurance industry supporters, on extending the driver-side airbag credit was facilitated by NHTSA's suggestion that such an extension would probably be granted if both manufacturers and insurers agreed that the action had safety benefits. It may seem surprising that insurers like Allstate, which had for so long battled carmakers in a public relations campaign for airbags, and State Farm, which had taken the battle all the way to the Supreme Court, were now willing to accept Ford's good faith representations in petitioning for extension of the credit. But by the time this alliance was struck, it was clear that there was little chance state laws would meet DOT's rescission deadline. At the same time, manufacturers did not have the resources to design both automatic belts and airbags in time to meet the phase-in calendar. Although automatic belts had far less consumer appeal than airbags, at their initial prices driver-side airbags sold well only in the highest priced cars. So insurers were confident that circumstances were finally forcing Ford, for one, to behave rationally and support the superior safety technology of airbags. These same circumstances, lubricated by NHTSA's extension of the driver-side airbag credit, led the rest of the automobile industry to follow Ford's lead, first making driver-side airbags available as options and then as standard equipment.

SAFETY SELLS: Market Forces and Regulation in the Development of Airbags

By Martin Albaum

CHAPTER 6: The Consequences of the Airbag Rule: 1989-2002

From 1989 to 2000 the consequences of the automatic occupant protection rule developed in an environment characterized by a fairly stable or increasingly prosperous economy, conservative policies in spite of changes in political leadership, and continued concern about automobile safety mixed with hostility to government regulation. The gross domestic product grew 2 to 4 percentage points, in real terms, in most years. The exceptions were a real growth rate closer to 1 percent in 1990, a 1 percent decline in 1991, and 5 percent growth in 2000. The short recession of 1991 also brought with it a decline in retail vehicle sales. Apart from that recession, automobile manufacturers, on the whole, seemed reasonably sound financially. Domestic automakers benefited particularly from the growing market for utility vehicles, vans, and pickup trucks.

President George H. W. Bush's defeat by Bill Clinton in 1992 brought little change in the politics of automobile safety except for replacing the political leaders at the relevant agencies. The Republican domination of both houses of Congress in the 1994 elections had mixed results for highway safety rules. At the end of 1995, federal lawmakers gave speed limit regulation of interstate highways back to the states and ended incentive grants for helmet use laws. The same law initiated grants for states with laws allowing no measurable alcohol in people under 21. People killed in fatal highway crashes declined from 45,582 in 1989 to 39,250 in 1992, but then the number began to rise again, reaching an early estimate of 42,815 for 2002.

With the narrow presidential victory of George W. Bush in 2000 the executive branch became more strongly business oriented, but its drive toward deregulation did not aim at the airbag standards already in place. In the first year of the new Bush administration, economic growth came to a virtual halt, with real GDP growing 0.3 percent, improving to 2.4 percent in 2002. But sales of cars and light trucks declined 1.2 percent in 2001 and 1.7 percent in 2002.

Jeffrey W. Runge, an emergency room physician, became NHTSA administrator in August 2001. He continued the airbag and seat belt use programs of the Clinton administration and proposed to maintain its emphasis on encouraging state regulatory programs in his suggestions for renewing TEA 21.¹

1. Jeffrey W. Runge, Testimony Before the Subcommittee on Competition, Foreign Commerce, and Infrastructure Committee on Commerce, Science, and Transportation, United States Senate, May 22, 2003. Runge called the proposed program SAFETEA.

The Market Overtakes The Automatic Protection Rule

When the regulation requiring automatic occupant protection in cars finally came into force for the 1990 model year, it became a marketing opportunity. This occurred because of NHTSA's agreement to consider airbags for the driver only plus passive belts for right front passengers to be sufficient compliance with the passive restraint requirement for the time being. First the availability of driver airbags, and then their inclusion as standard equipment, became major selling points. General Motors and the Japanese manufacturers were at a disadvantage because of their late start — they had to cope not only with the design changes needed to install airbags but also with a shortage of facilities for manufacturing them.

The news media featured traffic crash stories with a new angle — lives saved by airbags. The high point of this publicity was occasioned by the head-on collision of two airbag-equipped Chrysler LeBarons in Culpeper, Virginia, on March 12, 1990. Both drivers — the only occupants — walked away from the collision. Only one had been belted. IIHS documented the crash in detail and acquired the cars. Chrysler boasted about it in a massive television campaign. Helen Petruskas of Ford believed the media stories about airbags in collisions, rather than any specific marketing move by any company, led to the massive demand for cars with airbags.² The reports often featured testimonials by the survivors that they were alive thanks to airbags. These stories spread quickly.

In model year 1989 more than 500,000 new passenger cars were sold with driver airbags. By 1990 more than 2.3 million cars, 27 percent of all new cars, had driver airbags but only 149,000 also had passenger airbags.³ In April 1990 the Insurance Institute for Highway Safety polled new car dealers in the Washington, D.C., area on customer attitudes toward safety. Two-thirds of dealers said that it appeared to be an important consideration, and more than half said that airbags were the safety feature most important to customers.⁴ A national survey sponsored by the insurance industry reported late in 1990 that the public was likely to consider “the degree to which a car protects people from injury in crashes” the most important factor in choosing a new car to buy. Two-thirds had seen or heard an ad about airbags in the past few months and half of these wanted a car with an airbag, although only 2 percent had one.⁵ A smaller national survey of prospective new car buyers, done for the Insurance Institute for Highway Safety in March 1992, found that 67 percent said driver airbags were very important safety features and 54 percent said passenger airbags were very important.⁶ While belts had been the method chosen overwhelmingly by manufacturers to meet the automatic occupant protection requirements during the phase-in period, in 1990-1993 airbags took over and then became dominant. By the 1994 model year they

2. Interview with Helen Petruskas, May 4, 1996.

3. Department of Transportation, National Highway Traffic Safety Administration, Office of Plans and Policy, “Unpublished estimates of airbag installations in the in-use fleet,” nd.

4. *Status Report*, June 30, 1990, pp. 1,6.

5. *Public Attitude Monitor 1990: A Survey of Public Attitudes on Auto Safety Issues*, Insurance Research Council, December 1990.

6. Susan Ferguson, ‘Survey of New Car Buyers, Insurance Institute for Highway Safety,’ July 1992.

were in 91 percent of all passenger car models, with 63 percent having dual airbags. *The Wall Street Journal* reported that General Motors was at a competitive disadvantage in the 1994 model year because 44 percent of its car lines did not have dual airbags, compared with 25 percent for Ford and Chrysler. By then Honda was offering dual airbags in all its U.S. cars.⁷ In almost all cases the airbags were standard equipment. In 1995 almost all new cars were equipped with airbags, and 90 percent had dual airbags. In the same year 85 percent of new light trucks had driver airbags and 18 percent had them on the passenger side.⁸ By the middle of 1995, however, only 27 percent of passenger vehicles on the road (both cars and light trucks) had airbags on the driver and only 7 percent had them on the passenger side.⁹

About 1990-1991, European car and consumer magazines began to spread the word that airbags could save lives, even among those who invariably wore seat belts. Although Mercedes, BMW, and Volvo had made airbags available for the driver for some time in Europe, they were not in lower-priced cars and drew little notice. Europeans were not attracted by the concept of “passive restraint.” In places like Germany, Britain, Scandinavia, Belgium, and the Netherlands, belt use laws were widely observed. But articles like one in *Automotor und Sport* in 1991 that compared crash tests of Mercedes with and without driver airbags stimulated interest. By 1993, airbags had also become an important competitive tool among European manufacturers, especially in Germany, Britain, and other northern countries. There was little interest in Italy, Spain, or much of France. By 1995, it was expected that 40-50 percent of new cars in Europe would have driver airbags and about 25 percent would have passenger airbags. All of this was happening without the benefit of government regulation. Nor is there currently any such regulation in Europe or anyplace else outside the United States. Australia requires that if airbags are installed, they conform to requirements derived from FMVSS 208 but only as applied to belted drivers.¹⁰

European driver airbags were often much smaller (30-50 percent smaller) than those in American cars, although Mercedes, Opel, Saab, Volvo, and Jaguar did use full-size bags. There is no published evaluation, based on statistically significant data, of the effectiveness of airbags in Europe. A theoretical analysis suggests that the smaller European bags, dubbed ‘facebags,’ are less beneficial than full-size airbags.¹¹ However, reviews of small samples of crashes involving airbags in Europe consistently reported that they were associated with lower severity injuries, fewer head injuries, and none of the serious

7. “Automobiles,” *Wall Street Journal*, October 12, 1993.

8. *Status Report*, October 9, 1993, p. 10; see also, note 1. An academic study also documents the role of buyer demand in the spread of airbags: Fred Mannering and Clifford Winston, “Automobile Airbags in the 1990’s: Market Failure or Market Efficiency,” *Journal of Law and Economics*, vol. XXXVIII, October 1995, pp. 265-279.

9. Memorandum by Becky Trempel, “Estimated Number of Vehicles in Fleet with Airbags,” Highway Loss Data Institute, February 1998.

10. National Transportation Safety Board. *Proceedings of the National Transportation Safety Board Public Forum on Airbags and Child Passenger Safety*; 1997 March 17-20; Washington, DC. Report of Proceedings NTSB/RP-97/01. Washington, DC., 1997, pp. 328-330. A British government advisory on the internet dated 6/1/01 noted that most new cars have a frontal airbag for the driver, and many do for the passenger, but there is no regulation requiring them. <http://www.roads.dtlr.gov.uk/vehicle/standards/airbags/index.htm>.

11. B.N. Fildes, et. al., “Airbag and Facebag Benefits and Costs,” *Accident Analysis and Prevention*, vol. 26, No. 3, pp. 339-346.

problems occasioned by airbags in the United States.¹² An Australian study showed that belted drivers experienced significant reduction in the frequency of moderate to severe injuries to the head and chest and in the frequency of all injuries to the neck, although injuries to the upper extremities increased. “Societal harm” per driver was 60 percent greater in vehicles without airbags.¹³

The marketing appeal of airbags may have contributed to Volvo’s decision to use them to protect drivers and right-front passengers from side impacts. Earlier, in 1994, GM said it was studying side airbags. They were made available first in Volvo’s luxury 850 model for 1995 and later in all its models. Side airbags were much smaller than frontal ones and were designed initially to protect the thorax; protection for the head came later. By the spring of 1996 virtually every major airbag supplier was developing side airbags for auto companies. Mercedes had begun offering them in some 1996 models, and Audi, BMW, and Toyota announced plans for some 1997 models. GM said side airbags would be standard in Cadillac DeVilles and the new Catera in 1997.¹⁴ In April 1998 Ford announced that side airbags would be available in all of its passenger cars during the next few years, including the Windstar minivan. They became standard equipment in Cadillac Seville and Chevrolet Prism sedans and in Chevrolet Venture, Oldsmobile Silhouette, and Pontiac Trans Sport minivans, as well as in all BMWs. Side airbags were options on Mercedes models and on the Toyota Camry and Corolla.¹⁵ All of this took place in the absence of any regulatory requirement. In fact the design of side airbags might have conflicted with federal head protection requirements, although BMW’s version of side airbags had been shown by IIHS tests to be effective protection for the head. But NHTSA issued a rule eliminating any conflict just before the start of the 1999 model year.¹⁶

More Regulations: A Performance Standard Replaced by a Technological Standard

During the mid-to-late 1980s light trucks became a well-established part of the American passenger motor vehicle market. Vans, pickups, and utility vehicles make up this category, as defined by NHTSA. While not included in passenger car sales statistics kept by manufacturers, they accounted for about 5 million sales annually between 1985 and 1988 compared with about 10 million passenger cars per year. Light trucks were not covered by the 1984 automatic protection requirements although, by the 1992 model year, they had to meet injury reduction criteria in a 30 mph barrier crash either with manual three-

12. D. Otte, “Review of the Airbag Effectiveness in Real Life Accident Demands for Positioning and Optimal Deployment of Airbag Systems,” *39th Stapp Car Crash Conference Proceedings*, P-299, November 1995, pp. 1-10; Langwieder, K., Hummel, T.A., Muller, C.B., “Experience with Airbag-Equipped Cars in Real-Life Accidents in Germany,” *Proceedings, The Fifteenth Technical Conference on Enhanced Safety of Vehicles*, Melbourne Australia, May 13-16, 1996, pp. 132-154, cited in James Lenard, Richard Frampton, Pete Thomas, “The Influence of European Airbags on Crash Injury Outcomes,” Paper No. 98-S5-0-01, for delivery at the 16th ESV Conference, 1998. See also the last note.

13. Morris A, Barnes J, Fildes B, Bentivegna F and Seyer K, “Effectiveness of ADR 69: A Case-Control Study of Crashed Vehicles Equipped with Airbags,” *Road Safety Research Report*, CR 199, May 2001.

14. *Status Report*, May 4, 1996, pp. 1-3, 6.

15. *New York Times*, April 8, 1998, p. A 1.

16. *Status Report*, December 27, 1997, pp. 1-5; Department of Transportation Press Release, July 30, 1998.

point belts or automatic crash protection. Fatalities in these vehicles went from 6,500 in 1984 to 8,300 in 1988; NHTSA estimated that the death rate per occupant was roughly equal to that for passenger cars. The agency found that manual lap/shoulder belts were even more effective in reducing fatalities in pickups than in passenger cars, but were used less frequently. Thus the potential for saving lives and injuries by applying automatic crash protection requirements to these vehicles seemed particularly high.

After noting that mandatory use laws had not passed in enough states to prevent the automatic crash protection rule from taking effect for all new cars, NHTSA waited close to a year before proposing comparable automatic protection for light trucks. The proposal was analogous to the passenger car rule, including driver airbag credits. Each manufacturer and importer would be required to have automatic protection in 20 percent of its 1994 model-year light trucks, 50 percent of 1995 models, and all 1996 models. The schedule was more aggressive than for passenger cars, but the agency felt that most of the structural changes needed would have already been made to meet the dynamic test criteria for manual belts. Driver airbags would get a one-truck credit over a four-year period from the start of the phase-in. That is, requirements for automatic protection for the passenger would be delayed through the 1998 model year for trucks equipped with driver airbags. The justification for this was much the same as it was for cars. The agency still thought that manufacturers would choose to provide the easily installed automatic belts rather than a driver airbag and an automatic belt. In another similarity to the car rule, the proposal allowed automatic belts to be detachable, although NHTSA had recently granted IIHS' petition to amend FMVSS 208 to prohibit detachable belts. Because many pickups had no rear seats, the proposal included provision of attachments for child seats at the right front passenger position.¹⁷

More than a year passed before the agency issued a final rule. By this time Chrysler had already announced that driver airbags would be available in many of its vans and minivans, and Ford said they would be standard in one 1992 minivan model and two full-size vans.¹⁸ NHTSA added campers, motor homes, and convertible open-body trucks to the light trucks covered by the new rule. The design problems posed by convertible and open-body light trucks were part of the justification for extending the end of the phase-in schedule. The beginning of the phase-in was also delayed because of the fairly unanimous concern of manufacturers about the pressure of making multiple changes for the 1994 model year. These included the end of the driver airbag credit for cars as well as the extension of other passenger car standards to light trucks. The increased demand for airbag sensors for passenger airbags would make them less available for light trucks. So the new schedule required automatic protection in 20 percent of light trucks produced in the 1995 model year, 50 percent in 1996, 90 percent in 1997, and 100 percent by

17. Department of Transportation, National Highway Traffic Safety Administration, [Docket No. 74-14; Notice 62] Federal Motor Vehicle Safety Standard: Occupant Crash Protection. Notice of Proposed Rulemaking. Federal Register, January 9, 1990, pp.747-760. The IIHS petition of February 28, 1989, to prohibit the use of detachable automatic belts, was granted in a letter from Barry Felrice, Associate Administrator for Rulemaking, on August 4, 1989. It was apparently never implemented..

18. *Status Report*, January 25, 1991, p. 2.

the 1998 model year. If it had only one model of light truck, a manufacturer could delay introducing automatic protection during the first phase-in year, but would then have to meet the rule for all its light trucks in the second year. The four-year duration for the “one-truck” credit for driver airbags was retained. Automatic belts could still be detachable.¹⁹

Before NHTSA could issue its final rule, four senators introduced a bill that preempted it. The bill required airbags to be installed not only for drivers and right-front passengers in all cars manufactured after September 1, 1995, but also for all drivers of vans, pickups, and utility vehicles after September 1, 1996. The next year, passenger airbags would be mandated for light trucks. Senator Richard Bryan (D-NV) was the chief sponsor, with Senators John Danforth (R-MO), Brock Adams (D-WA), and Slade Gorton (R-WA) as cosponsors. They based their proposal on their belief that airbags were clearly superior to automatic belts, especially the detachable kind. There was little debate about the bill. In subcommittee hearings, the noncongressional proponents were represented mainly by Joan Claybrook of Public Citizen and Ben Kelley, then with the Institute for Injury Reduction. The insurance industry and IIHS did not take a stand on the bill. The Motor Vehicle Manufacturers Association did object, not to the intent of the bill, but to mandating a technology rather than a performance standard. The manufacturers also wanted some easing of the timetable, which they got in the final law. NHTSA Administrator Jerry Ralph Curry shared some of the manufacturers’ concerns, but, speaking for the Bush Administration, he did not oppose the law.²⁰

The law became part of the Intermodal Surface Transportation Efficiency Act (ISTEA), signed by President Bush on December 18, 1991. Dual airbags plus manual lap/shoulder belts were to be installed in at least 95 percent of passenger cars manufactured in the 1995 model year and in all cars thereafter. During the 1998 model year 80 percent of light trucks would be required to have at least a driver airbag (as NHTSA interpreted the law), and in the 1999 model year all light trucks would have to have airbags and manual belts for both front outboard seats. So the performance standard for automatic protection was finally replaced by a law mandating airbags.²¹

The Growth of Seat Belt Use

While driver airbags were becoming increasingly common on American roads, drivers were also using their seat belts more often. Belt use rates went from 14 percent when the Dole decision was issued to 51 percent in 1991 (see the table below). There is no objective analysis available to explain the rise of seat belt use in the United States. But it seems reasonable to assume that increased usage was due both to the influence of state seat belt use laws and the spread of automatic seat belts. While there had been some

19. NHTSA (DOT), [Docket No. 74-14; Notice 70] Federal Motor Vehicle Safety Standards; Automatic Crash Protection, Final Rule, *Federal Register*, March 26, 1991, pp. 12472-12487.

20. *Status Report*, March 19, 1991, p. 2 and May 4, 1991, p. 9.

21. *Status Report*, December 31, 1991, p. 1; NHTSA (DOT) [Docket No. 74-14; Notice 79] Federal Motor Vehicle Safety Standard; Occupant Crash Protection, Notice of Proposed Rulemaking, *Federal Register*, December 14, 1992, pp. 59043-59053. The NPRM proposed the regulations required by the 1991 act.

speculation that airbag protection would make people less likely to use seat belts, a 1990 study by the Insurance Institute for Highway Safety proved otherwise. A survey observing belt use among drivers of late model cars in four metropolitan areas showed that drivers of cars with airbags were just as likely to use their seat belts as drivers of cars without airbags.²²

Driver belt use in 19 cities ²³	
1983	14 percent
1984	14 percent
1985	21 percent
1986	30 percent
1987	42 percent
1988	46 percent
1989	46 percent
1990	49 percent
1991	51 percent

Automatic belts contributed to belt usage, but the contribution was greater if the belts were motorized than if they were not, and also greater if they were not detachable. Other data from NHTSA's 19-city seat belt use study showed that in 1987 there was 99 percent belt use among drivers of cars with motorized belts with no disconnect, 95 percent among those with a disconnect, 77 percent for nonmotorized 3-point belts, and 83 percent for nonmotorized 2-point belts. By 1991 there was a deterioration in all categories, although it was less for motorized belts overall and for those without disconnects than for the other belt types.²⁴

NHTSA stopped its 19-city seat belt use surveys after 1991 and began to rely on weighted summaries of state belt-use surveys. After making appropriate adjustments for differences in state methodologies, NHTSA reported that overall "belt use increased steadily in the United States, from 54.1 percent in 1991 to 69.5 percent in 1999. Belt use in cars increased from 59.1 percent to 72.4 percent; in light trucks, from 45.1 percent to 65.8 percent."²⁵

The best available estimate of national seat belt use is from NHTSA's National Occupant Protection Use Survey (NOPUS), a probability sample of observed shoulder belt use conducted for the first time late in 1994. It produced an overall estimate of 58 percent for seat belt use in all vehicles, 63 percent in passenger cars.²⁶ NOPUS was repeated in the last quarter of 1996, reporting an overall estimate

22. *Status Report*, June 30, 1990, p. 3. The full report is in: Allan F. Williams, JoAnn K. Wells and Adrian K. Lund, "Seat Belt Use in Cars with Airbags," *American Journal of Public Health*, December 1990, vol 80, pp. 1514-1516. A statewide survey in North Carolina produced comparable results. D.W. Reinfurt, C.L. St-Cyr, W.W. Hunter, "Usage patterns and misuse rates of automatic seat belts by system type," *Accident Analysis and Prevention*, 1991, pp. 521-530.

23. DOT, NHTSA, *Evaluation of the Effectiveness of Occupant Protection: Federal Motor Vehicle Safety Standard 208*, Interim Report, June 1992, [DOT-HS-807 843] p. 12.

24. *Ibid.*, p. 13.

25. Charles J. Kahane, *Fatality Reduction by Safety Belts for Front-Seat Occupants of Cars and Light Trucks; Updated and Expanded Estimates Based on 1986-99 FARS Data*, Evaluation Division, Plans and Policy, National Highway Traffic Safety Administration, December 2000, [DOT HS 809 199], p. 63.

26. National Highway Traffic Safety Administration, *Third Report to Congress*, pp. 56-65. The state based use figure for 1995 is also taken from this report. The report also comments on some of the shortcomings of the state surveys.

of 61 percent belt use in all passenger vehicles, 64 percent in cars.²⁷ The measurement of NOPUS in the fall of 2000 showed 71 percent belt use in all passenger vehicles, 74 percent for cars.²⁸ These rates would have seemed utopian in 1984, when the final rule for automatic occupant protection was issued and driver belt use was 14 percent. But in October 1994 Transport Canada reported driver belt use in that country had reached 92 percent.²⁹ This increase was not due to automatic belts but to enhanced enforcement.

Evaluating Driver Airbags

By the middle of 1991 there had been enough deployments of driver airbags to permit analyses of their effectiveness based on actual crash experience. The first studies were published in October 1991 by the Insurance Institute for Highway Safety and its affiliate, the Highway Loss Data Institute.

The HLDI study used the only set of data available at the time that would allow analysis of significant samples of injuries rather than fatalities. It was based on a special survey of collision claims in the HLDI data base, involving frontal impacts exceeding \$5,000 for 1990 model-year cars during April-December 1990 in the files of 11 insurers. Thirty percent of the claims were for cars equipped with airbags, 70 percent for those with automatic belts. The airbag cars were more likely to have longer wheel bases and to be more expensive. The key results were:

When the data were standardized to account for differences in car size, drivers of airbag and automatic belt cars had the same frequency of injury, regardless of severity. However, moderate and severe injury rates were 28 percent lower and hospital injury rates were 24 percent lower for drivers of airbag cars than for drivers of automatic belt cars...

Drivers of airbag cars generally had lower rates of injury to the head and torso regions than did drivers of automatic belt cars. These differences were more pronounced when only moderate and severe head and torso injuries were compared.

There were comparable differences between airbag and automatic belt cars when results were standardized to account for differences in car price.³⁰

The IIHS study was more definitive and dramatic since it was based on deaths reported in the federal Fatal Accident Reporting System (FARS) during 1985-1991 for cars in those model years. Driver deaths from collisions in cars with airbags were compared with deaths in cars with manual belts only, of the same make, series and size class. (Some airbag cars were included in the main analysis even though there was no earlier airbag car of that model.) The estimates were based on driver fatalities in frontal crashes compared with driver fatalities in nonfrontal crashes for airbag cars versus manual belt-only cars. This assumed that the airbag had no effect in nonfrontal crashes. Driver fatalities in *frontal* crashes were

27. NHTSA, Research Note: *Observed Belt Use in 1996*, April 1997.

28. *Observed Safety Belt Use Fall 2000* National Occupant Protection Use Survey, Research Note, February 2001, U.S. Department of Transportation, National Highway Traffic Safety Administration.

29. *Status Report*, July 1, 1995, P. 2.

30. *Driver Injury Experience in 1990 Models Equipped with Airbags or Automatic Belts*, Highway Loss Data Institute, Insurance Special Report A-38, October 1991.

28 percent lower in airbag cars and 19 percent lower in *all* crashes. Frontal fatalities were reduced 50 percent in large cars, 19 percent in midsize cars, and 14 percent in small cars. Drivers reported to be belted in an airbag car (not always a reliable report) had 15 percent fewer deaths in frontal crashes than belted drivers without airbags, 31 percent fewer than unbelted drivers. The contribution of airbags to reducing fatality risk was, as expected, greater when the driver was otherwise unrestrained than when a seat belt was used.³¹

In June 1992 NHTSA published its first estimate of driver airbag effectiveness in its *Evaluation of the Effectiveness of Occupant Protection: Interim Report*, using FARS data. The report compared estimates of fatality reductions obtained using various restraint combinations with manual belt-equipped cars at 1983 use rates. (1983 was the year before the automatic crash protection rule was issued.) The results were:

Best Estimates: Fatality Reduction (Percent) Relative to Manual Belts at 1983 Use Rates³²	
Driver airbags with manual belts	23
Motorized 2-point belts (<i>without</i> disconnect)	16
Motorized 2-point belts (<i>with</i> disconnect)	7*
Motorized 3-point belts (<i>with</i> disconnect)	10
Nonmotorized 2-point belts	8*

*not statistically significant

What is not noted in the table is that the 1991 rate of manual belt use added another 10 percentage points to the 1983 fatality reduction rate attributed to manual belts. So only airbags and motorized 2-point belts without disconnect improved on the fatality gain realized from the then current use of manual belts. All of these estimates were averages — of five separate estimates in the case of airbags, and six estimates for each type of automatic belt. Adrian Lund of IIHS criticized the averaging techniques used for airbags; they combined estimates that were not equally valid. One estimate was based on a comparison of driver and passenger fatalities, which reduced the sample size by about two-thirds since passengers were frequently not present. Also crashes might differ depending on whether passengers were present. In other comparisons, “cars with belts only” were restricted to those cars weighing at least 2,500 pounds, while some airbag-equipped cars were lighter. Lund said that the best estimate was one that adjusted for the car’s mass, market class, age, manufacturer, driver age and sex, and calendar year. This produced a 17 percent fatality reduction estimate at 1991 manual belt use rates and a 26 percent fatality reduction compared with 1983 belt use rates.³³

31. Paul L. Zador and Michael A. Ciccone, “Driver Fatalities in Frontal Impacts: Comparisons Between Cars with Airbags and Manual Belts,” Insurance Institute for Highway Safety, October 1991.

32. Op. cit., p. 35.

33. Adrian Lund, IIHS, Letter to Marion Blakey, Administrator, NHTSA, August 24, 1992. The regression is described in the Interim Report, p. 25.

In 1992 IIHS began several annual updates of driver airbag effectiveness, using the same procedures as it had in 1991. The results were almost the same: 29 percent reduction in fatalities in frontal crashes and 20 percent in all crashes for cars with airbags compared with manual belt-equipped cars at the current belt use rate. Airbag effectiveness continued to be higher for larger cars and for drivers reported to be unbelted.³⁴

In 1993 IIHS found 24 percent fewer deaths among drivers in airbag-equipped cars compared with other cars in frontal crashes from 1985-1992, which translated to a 16 percent fatality reduction in all kinds of crashes. Fatality reductions by car size and belt usage were somewhat lower. The growing data base of airbag crashes then allowed IIHS to begin comparing driver deaths in airbag cars with death rates in previous models without airbags, avoiding the assumption that there was no airbag effect in nonfrontal crashes. The nonairbag group was weighted to produce the same mix as for airbag cars. The result was also a 16 percent reduction related to airbags for fatalities in all kinds of crashes; frontal crash fatalities were reduced by 23 percent. IIHS president Brian O'Neill noted that airbag effectiveness estimates would change, presumably drop, as belt use inched up.³⁵

The survivors of crashes in which airbags deployed were enthusiastic witnesses for their effectiveness. But there were beginning to be some exceptions. IIHS sponsored a survey of the survivors of all 215 such crashes in North Carolina in 1991. Eighty-nine percent said that the airbags protected them, 76 percent said "a lot." Only four respondents did not want an airbag in their next car; they had gotten minor bruises, blisters or abrasions.³⁶

Early in 1994 State Farm researchers published a study of airbag effectiveness in terms of injuries, the first since the HLDI study of October 1991.³⁷ The principal source of the study was claims files involving airbag deployments since May 1989. As the largest auto insurer, State Farm collected data on 2,818 deployments — 27 for every 100 million miles traveled and 95 per 1,000 frontal crashes. Cars with collisions involving at least \$5,000 damage in which airbags deployed were somewhat more likely to have drivers with some injuries than comparable cars with belts only. But drivers in the airbag cars were 35 percent less likely to suffer moderate or severe injuries. Seat belts were still important. Belted drivers in cars where airbags deployed were 23 percent less likely to get moderate or severe injuries than unbelted drivers in deployments. Drivers in airbag deployments were more likely to have abrasions, lacerations, and contusions of the face, arms, and wrists but less likely to have potentially serious head and chest injuries.

34. *Status Report*, October 3, 1992, pp. 1-3.

35. *Status Report*, October 3, 1993, pp. 1-2. The same analysis was reported in more detail in Adrian K. Lund, Susan A. Ferguson, "Driver Fatalities in 1985-93 Cars with Airbags," Insurance Institute for Highway Safety, August 1994.

36. D.W. Reinfurt, et. al., "Survey of Attitudes of Drivers in Airbag Deployment Crashes," *Journal of Safety Research*, Vol. 23, No. 3, pp. 147-157.

37. John V. Werner and Wayne W. Sorenson, "Survey of Airbag Involved Accidents: An Analysis of Collision Characteristics, System Effectiveness and Injuries," Reprinted from *Safety Technology*, (SP-1041), SAE Technical Paper Series 940802, International Congress and Exposition, February 28-March 3, 1994.

About the same time as State Farm published its results, NHTSA updated fatality reduction estimates attributed to automatic occupant protection standards, with data from 1986 through mid-1993.³⁸ This time two methods were used to estimate driver airbag effectiveness. In the first, driver fatalities were compared with passenger fatalities to produce estimates of 15 percent fewer fatalities for cars with driver airbags versus those with manual belts only in frontal crashes, or 8 percent in all crashes. The second estimate used the IIHS method of comparing frontal crashes to all crashes (but eliminated models that got antilock braking systems at the same time as airbags). This produced estimates of an 18 percent fatality reduction in cars with driver airbags in frontal crashes, and 12 percent for all crashes. These estimates were based on comparisons with the current rate of manual belt use, which reduced fatalities 14 percent compared with the lower 1983 use rate. Averaging the two estimates of overall airbag effectiveness and comparing them with the 1983 manual belt use rate, NHTSA estimated that driver airbags had reduced fatalities 23 percent. But the only automatic belt system that saved more lives than did increased usage of manual belts — 5 percentage points more — was the motorized 2-point system without disconnect.

IIHS continued to get somewhat higher estimates of airbag effectiveness for driver fatalities than NHTSA did.³⁹ Another analysis sponsored by NHTSA showed that for calendar years 1991-1994, airbags plus safety belts were significantly more effective than safety belts alone, while airbags alone were still effective. Airbag deployments in tow-away crashes had risen to about 20 percent in 1994, and about 90 percent of these involved belt use, according to the analysis.⁴⁰

Although the various analyses differed in details and methods, all studies found that airbags were saving drivers' lives and reducing their rates of moderate and serious injuries. But State Farm did report that for claims over \$5,000 there was a higher incidence of *all* injuries in cars with airbags than in cars without airbags.

Injuries and Deaths from Airbags

Along with the enthusiastic press reports of people walking away from serious car crashes after airbags deployed, the media began, in the early 1990s, to report injuries and even deaths associated with airbag deployments, often in low-speed collisions. Lacerations or bruises of drivers' wrists and arms, eye injuries, and burns from the venting of hot airbag gases, were featured in the reports. One of the most balanced press accounts was published by *The Detroit Free Press* in November 1992. It concluded, "Airbags work. They've saved hundreds of lives, and trigger properly over 99 percent of the time." But

38. Charles J. Kahane, "Fatality Reduction by Automatic Occupant Protection in the United States," Presented at Experimental Safety Vehicle Conference, 1994. NHTSA. Paper No. 94-S5-0-08.

39. Susan S. Ferguson, Adrian K. Lund, Michael A. Greene, "Driver Fatalities in 1985-1994 Airbag Cars," IIHS, April 1995. This time driver airbag cars were compared both with cars with manual belts only and those with three pointed door-mounted automatic belts with a disconnect.

40. A.C. Malliaris, et. al., "Airbag Performance and Injury Patterns," SAE 960659, *Occupant Protection Technologies for Frontal Impact: Current Needs and Expectations for the 21st Century*, SP-1144. Society For Automotive Engineers, Warrendale, Ohio, 1996, pp. 49-72.

the article also noted that, “One-third of the motorists involved in airbag deployments are hurt by the bag. Most injuries are minor scrapes, bruises or burns, but airbags also have been blamed for some broken bones — and even a few deaths”⁴¹ The newspaper quoted Dr. Donald Huelke of the University of Michigan: “Some people get polio from the polio vaccine. Does that mean you drop the vaccine? Of course not. If any one is going to be seriously injured from an airbag, it’s a long shot.” About the same time Huelke and colleagues published an article in *The Journal of Trauma* that seemed to authoritatively confirm the minor nature of airbag-caused injuries.⁴²

Earlier in 1992 the Motor Vehicle Manufacturers Association (MVMA) had petitioned NHTSA to require a warning label in cars that, among other things, would say that airbags “could impart serious or even fatal injury to an occupant who is in close proximity to the steering wheel.” IIHS opposed the petition, partly because being close to the steering wheel was a hazard in all kinds of crashes, and MVMA had not shown a safety need for the warning.⁴³

On October 10, 1993, IIHS headlined an article in *Status Report*, “Close Study of Injuries from Airbags Yields Concern, Not Alarm.” It quoted a NHTSA study of 1,200 crashes of airbag-equipped cars in which 280 occupants had received “confirmed” injuries caused by airbags. Ninety-six percent of the injuries were minor (AIS 1) and 4 percent were moderate (AIS 2). Almost all the injuries were abrasions, bruises, cuts, or burns; 4 were fractures. Data from the National Accident Sampling System (NASS) for 1988-1991 showed that 45 percent of those in airbag crashes had minor injuries from their restraints compared with 11 percent of those restrained by belts only in crashes. The article also noted the occurrence of some more serious injuries. One, reported in the *New England Journal of Medicine*, had already been widely cited in the press. It involved an airbag-related tearing of the right atrium of the heart of a 22 year-old woman driver in a 10-15 mph crash, from which she eventually recovered.⁴⁴ IIHS also said there had been 5 or 6 driver fatalities, mostly involving women, sometimes elderly, sitting close to the steering wheel, or, in 2 cases, believed to be slumped over the wheel because of illness. There were also 2 deaths of children standing or sitting in front seats.⁴⁵ The same issue of *Status Report* (pp. 5-6) discussed how the characteristics of airbags — deployment speeds, folding patterns, tethering, sensors, and vents — might be changed to make airbags both more effective and safer. It looked forward to “smarter” airbags, whose inflation could be tailored to crash severity, belt use, and occupants’ proximity to airbags just before deployment. This anticipated much of the discussion of “smart airbags” that would appear in NHTSA documents.

41. *Detroit Free Press*, November 22, 1992, p. A 1.

42. Huelke, Donald F., Jamie L. Moore and Mats Ostrom, “Airbag Injuries and Occupant protection,” *The Journal of Trauma*, 1992, vol 33, No. 6, pp. 894-898.

43. Letter from Brian O’Neill, Insurance Institute for Highway Safety, to Jerry R. Curry, NHTSA, May 22, 1992, Comments Regarding MVMA Petition to Require Airbag Warning Labels, PRM-208-088.

44. Letter to the Editor, Airbag-Associated Rupture of the Right Atrium,” *New England Journal of Medicine*, February 4, 1993, p. 358.

45. *Status Report*, October 9, 1993, pp. 8-9.

State Farm used its 1994 study to examine the effects of manufacturers' design changes — the use of somewhat less powerful inflators, finer fabric weaves for the bags, and tethers. Although the sample was small, the results were consistent: all types of minor injuries were less frequent, for the face and all other body regions.

In March 1995 IIHS reported another analysis of NASS for 1989-1993. Out of an estimated 10.9 million crashes, there were an estimated 209,000 airbag deployments (actually 829 cases in the sample). An estimated 90,000 drivers and right-side passengers sustained 163,000 injuries from contact with airbags or airbag-generated gas. Ninety-six percent of the injuries were minor (AIS 1), about 3 percent moderate (AIS 2), and fewer than 1 percent worse. IIHS also mentioned 11 airbag-related deaths, two of which were unrestrained children, and others were being investigated. Again smarter, safer airbags were being touted for the future. Dual deployment-threshold airbags were already in use in Mercedes and BMWs, deploying at 9-12 mph when belts were used and at about 16 mph when they were not. A study by Transport Canada was cited to support the argument that such dual thresholds would reduce airbag-related injuries. A subsequent Transport Canada study suggested improvement could be achieved by simply increasing the deployment threshold.⁴⁶

Beginning in 1993, passenger airbags were also implicated in injuries and even deaths in low to moderate speed crashes, and as the years passed they accounted for more deaths than driver airbags, even though the front passenger seat is occupied less than half the time. Newspaper accounts of airbag-related deaths, which had focused on small, often elderly women drivers, were replaced by grisly and heartrending accounts of children suddenly dead, in at least one case decapitated, in low-speed crashes.⁴⁷ Almost all of the passenger airbag-related deaths were of children unrestrained in the front seat or of infants in rear-facing safety seats. The case of the unrestrained child was the one that had most concerned automobile manufacturers when they were arguing against airbags. More than once, as related in previous chapters, they withdrew this objection, saying that there were solutions. But when Ford proposed extending driver airbags credits, the automaker cited concern about the problem and the need to work on it as justification for the extension. Given the demand for passenger airbags and the expiration of the driver credit, no manufacturer used the issue of out-of-position children to avoid producing vehicles with passenger airbags.

While the attention paid by the media to airbag-related deaths and injuries probably reached its peak in 1996 and early 1997, the cases continued to accumulate. NHTSA concentrated its investigations of airbag crashes on cases involving deaths in low-speed crashes. Although by June 1, 1998, there were an estimated 75 million vehicles with driver airbags and slightly fewer than 47 million with passenger

46. *Status Report*, March 18, 1995, pp. 2, 4, 9; Dainius J. Dalmotas, et. al., "Airbag Deployment Crashes in Canada," DOT, NHTSA, *The Fifteenth Technical Conference on Enhanced Safety of Vehicles*, Melbourne Australia, May 13-16, 1996, pp. 155-168.

47. "Airbag aftermath," *Washington Post*, March 21, 1993, is a relatively mild example. A decapitation was reported in *The St. Louis Post Dispatch*, November 29, 1996.

airbags, airbag-related passenger deaths had overtaken those among drivers — 65 passenger deaths vs. 40 driver deaths. Of the 40 drivers, 22 were apparently unbelted; 30 were women, 12 of whom were 5'2" or shorter. Four of the 65 passengers were adults, the rest infants or children. Of the 48 children, 40 were apparently unrestrained. Ten out of the 13 infants were in rear-facing infant seats and 2 in adults' laps.⁴⁸

Because they were less dramatic than fatalities, there was far less publicity about airbag-related injuries. Based on analyses of 2,007 airbag deployments during 1989-1995 in NASS, Susan Ferguson, an IIHS researcher, reported that 42 percent of them resulted in airbag-related injuries. Ninety-seven percent of these injuries were minor, 2 percent were moderate, and 1 percent was serious.⁴⁹ Another study using NASS showed that the incidence of moderate or serious driver injuries in frontal crashes was less when airbags deployed than when there was no restraint, but somewhat greater than when drivers used lap/shoulder belts alone. Twenty-one percent of the driver airbag injuries were to the arm, compared with 11 percent of the injuries for the others.⁵⁰

Attitudes Toward Airbags

IIHS was still reporting very positive attitudes toward airbag deployments in early 1996. In a survey of both drivers and passengers involved in airbag deployments in Maryland, North Carolina, and South Carolina, 92 percent wanted their next car to have airbags. About 8 in 10 believed the bags protected them from injury.

When asked if they experienced any problems with the airbag deployment, 81 percent of drivers and 67 percent of passengers said they didn't. About 15 percent of passengers and 10 percent of drivers said they were coughing or had trouble breathing after the deployment. Very few among either passengers or drivers said they were injured by the airbag. Three percent of each group reported skin abrasions or burns. About 1 percent reported burning eyes.⁵¹

The public's continued faith in airbags seemed to be one reason why auto manufacturers generally won product liability suits involving airbags. Fear of losses in such suits and of problems getting product insurance coverage had been a persistent theme in manufacturers' opposition to airbags in the 1970s and '80s. Chrysler said that by August 1996 it had not lost a jury award in 200 cases alleging faulty airbags, and GM had won 11 of 12 jury verdicts. The companies attributed their track records to the quality of the product, but defense lawyers were worrying about the potential of suits brought by parents over the deaths of children from airbag deployments in low-speed crashes.⁵²

48. DOT, NHTSA, Special Crash Investigations, Summary Tables of Airbag-related Deaths, June 1, 1998, on NHTSA Airbag web site; Insurance Institute for Highway Safety, "Airbag Statistics," June 11, 1998, on IIHS web site.

49. Susan A. Ferguson, "Update on Airbag Performance in the United States: Benefits and Problems," presented at the Airbag 2000 Conference in Karlsruhe, Germany, November 26, 1996. This evidently updates the study cited in note 46 above.

50. Sheldon L. Stucki, et. al., "NHTSA's Improved Frontal Impact Program," SAE 950497, *Issues in Automotive Safety Technology: Offset Frontal Crashes, Airbags, and Belt Restraint Effectiveness*, SP-1072. Society of Automotive Engineers, Warrendale, PA, 1995. Pp. 279-291.

51. *Status Report*, February 3, 1996, pp. 6-7.

52. *Wall Street Journal*, August 14, 1996, p. 1A.

By June 1996 the media reports and official warnings about airbag-related injuries and deaths were beginning to have a measurable effect on public attitudes. A national survey by Roper Starch Worldwide for the Insurance Research Council reported that 51 percent were aware of potential problems with airbags. Fifty-nine percent were aware of the potential danger of children sitting in the front seat. Only 27 percent mentioned that this risk could be reduced by putting children in the rear seat. Still, 67 percent wanted airbags in their next car, slightly more among those with children under 13.⁵³ In a nationwide Gallup Poll in October 1996 sponsored by *USA Today*, 65 percent said that they would prefer to buy a vehicle with dual airbags, 13 percent with driver airbags, and 18 percent with no airbags at all. Seventy-seven percent said that a passenger airbag made the front seat more dangerous for children. Eighty-three percent had heard reports about the safety of airbags and small children.⁵⁴ IIHS did a more nuanced survey in January 1997 among drivers of vehicles with airbags in Michigan, North Carolina, and Texas; 42 percent believed airbags were very effective and 43 percent said they were somewhat effective. Fifty percent could name at least one problem with airbags — 35 percent mentioned dangers to children and 14 percent cited dangers to shorter or smaller people. While 73 percent did not want to disconnect their airbags, 19 percent said they would have their passenger airbag disconnected and 13 percent said they would disconnect their driver airbag.⁵⁵

The Effectiveness of Passenger Airbags

Although NHTSA and other airbag proponents continued to insist that the net effect of airbags was to save lives, no objective evaluation of passenger airbags was available until September 1996. Then the Insurance Institute for Highway Safety released an analysis based on FARS data.⁵⁶ Using the technique of comparing frontal and front-angle crashes to nonfrontal crashes, IIHS reported that there were 18 percent fewer passenger deaths in frontal and front angle crashes — 11 percent fewer in all crashes — in cars with passenger airbags than in those with driver airbags only. Among passengers reported to have been belted, the reduction was 15 percent, among the unbelted 22 percent. However, among children younger than 10, deaths were 33 percent higher than expected in frontal crashes.

In October 1996 NHTSA released a statistical study with results quite similar to those of IIHS.⁵⁷ There were about 18 percent fewer than expected deaths among right-front passengers 13 and older in *all frontal* crashes in cars with dual airbags; NHTSA emphasized the 27 percent reduction for this group in

53. Insurance Research Council, Press release on *Public Attitude Monitor 1996*, December, 1996.

54. *USA Today*, November 1, 1996, p. 1B.

55. *Status Report*, February 15, 1995, p. 3. A more complete report is in Michael X. Cammisa, Susan Ferguson, "Survey of Drivers of Airbag-Equipped Vehicles, Insurance Institute for Highway Safety," March 1997.

56. Susan A. Ferguson, Elisa A. Braver, Michael A. Greene, Adrian K. Lund, "Preliminary Report: Initial Estimates of Reductions in Deaths in Frontal Crashes among Right Front Passengers in Vehicles Equipped with Passenger Airbags," IIHS, September 1996.

57. Charles J. Kahane, *Fatality Reduction by Airbags: Analyses of Accident Data Through Early 1996*, Evaluation Division, Plans and Policy, NHTSA, August 1996. The NHTSA press release of the report was on October 3, 1996.

purely frontal crashes. But among children under 13 there was an increased risk of death, estimated in the report, but not in the press release, at 13.5 percent. The effectiveness of driver airbags was holding steady compared with earlier reports, and their effectiveness for light trucks was comparable to that for cars. There was, however, some evidence that driver airbags might be less effective for those 70 or older.

At the end of 1996 NHTSA published a little-noticed analysis of the injury-reducing effects of airbags as well as seat belts.⁵⁸ Based on modeling of data from NASS, it estimated that while manual lap/shoulder belts, when used, reduced the risk of receiving at least a moderate injury by 49 percent, and automatic belts did so by 43 percent, airbags plus lap/shoulder belts reduced the risk by 60 percent. But airbags alone reduced that risk only by 18 percent, a figure not statistically significant because of sample size. When the analysis was restricted to serious injuries only, MAIS 3+ rather than MAIS 2+, the advantage of airbags plus belts over manual belts disappeared.

A November 2001 update by NHTSA on restraint effectiveness showed minor changes in fatality reduction, but added greater changes in other injuries. Airbags with three point restraints reduced serious injuries by 68 percent; so did manual lap/shoulder belts when used. Airbags alone reduced serious injuries by 30 percent, which was not statistically significant because of sample size. Moderate injuries were 73 percent lower when lap/shoulder belts were used with airbags, 60 percent with lap/shoulder belts alone, and 29 percent (again not statistically significant) when airbags were the only restraint. Airbags plus lap/shoulder belts reduced the risk of both serious and moderate head injury by 85 percent; airbags alone reduced the risk of moderate head injury by 57 percent and of serious head injury by 43 percent.⁵⁹

In March 1997 NHTSA estimated that airbags had saved the lives of 1,639 drivers and 189 passengers since 1986. The comparable estimates for October 2003 were 10,8971 drivers and 2,500 passengers.⁶⁰

The Early Regulatory Response to Airbag Injuries

As evidence of airbag hazards increased, so did the pace and level of NHTSA's reactions.⁶¹ NHTSA issued a Consumer Advisory in December 1991, warning parents not to use rear-facing child seats in the front seats of vehicles with passenger airbags. Posting this warning on the sun visors in airbag-equipped cars was required by the September 1993 final rule implementing the airbag requirement. In February 1994

58. Department of Transportation, National Highway Transportation Safety Administration, *Third Report to Congress: Effectiveness of Occupant Protection Systems and Their Use*, December 1996, Exhibit 8 (the copy of the report on the NHTSA web site does not have page numbers).

59. Department of Transportation, National Highway Traffic Safety Administration, *Fifth/Sixth Report to Congress: Effectiveness of Occupant Protection Systems and Their Use*, November 2001, pp. 14-16.

60. Department of Transportation, National Highway Traffic Safety Administration, [Docket No. 74-14; Notice 114] Federal Motor Vehicle Safety Standards; Occupant Crash Protection, *Federal Register*, March 19, 1997, pp. 12960-12975; Department of Transportation, National Highway Traffic Safety Administration, "Special Crash Investigation Report," May 1, 1999 and October 1, 2003.

61. NHTSA's actions before August 1996 on airbag hazards are summarized in NHTSA, [Docket 74-14; Notice 100] FMVSS; Occupant Crash Protection; Notice of Proposed Rulemaking, *Federal Register*, vol. 61, No. 152, August 6, 1996, pp.40787.

NHTSA issued a regulation requiring rear-facing child seats to have a similar warning. In October 1994, the agency responded to a request from the American Automobile Manufacturers Association (AAMA, the new name for MVMA) by proposing to allow manual cutoff devices for passenger airbags in vehicles with no rear seat. In May 1995 a final rule was issued that also extended permission for cutoff switches to vehicles with rear seats too short to accommodate infant seats.⁶² Ford and, later, General Motors, were among the manufacturers that made cutoff switches available in some of their models.

On October 27, 1995, Dr. Ricardo Martinez, head of NHTSA, issued a strong warning to parents that children under 12 should ride in the rear seat whenever possible. If the child had to ride in front, the seat should be moved as far back as possible, and the child should always be restrained by a safety belt. This broadened previous warnings that had stressed the dangers of rear-facing infant seats. On November 9, 1995, NHTSA published a request for public comments on the design, track record, and dangers of airbags. It highlighted the concept of smart airbags, noting Ford's proposal to reduce the danger of injury from airbags by making the test speed for unbelted dummies 25 mph and that for belted dummies 35 mph.⁶³

Media reports of airbag injuries and deaths caused the Senate Commerce Committee to hold hearings during March 1996 on airbag safety. The testimony was full of assurances that airbags were still overwhelmingly saving lives. Putting children 12 and younger in the rear seat and using seat belts were the most immediate solutions recommended by all sides. Primary seat belt laws were favored as a key method for getting people to buckle up. The manufacturers also emphasized the need to change the requirements of FMVSS 208 to permit depowering, and some safety advocates, notably Brian O'Neill of IIHS, agreed emphatically. Although NHTSA Administrator Martinez noted all the technological fixes that were embodied in the notion of smart airbags, the industry warned that they were some years off.⁶⁴

On August 6, 1996, NHTSA proposed new warning labels and manual cut-off switches for vehicles that did not have smart passenger airbags.⁶⁵ The agency also proposed to define smart airbags broadly, in terms of the harm they would avoid, to give manufacturers flexibility in design choices, but left open whether they would be mandated or left to market forces.⁶⁶ In comments to the agency

62. National Highway Traffic Safety Administration, [Docket No. 74-14; Notice 94] Federal Motor Vehicle Safety Standards; Occupant Crash Protection; Final Rule, *Federal Register*, May 23, 1995, pp. 27233-27239. The initial proposal, Docket No. 74-14; Notice 92, was in *Federal Register*, October 7, 1994, pp. 51158, ff.

63. Department of Transportation, National Highway Safety Administration, [Docket No. 74-14; Notice 97] Federal Motor vehicle Safety Standard; Occupant Crash Protection; Request for comments, *Federal Register*, November 9, 1995, pp. 56554-56559.

64. *Airbag Safety*, Hearing Before the Committee on Commerce, Science, and Transportation, United States Senate, 104th Congress, Second Session, March 7, 1996. S. Hrg. 104-571.

65. Notice 100. See note 58.

66. The definition of smart airbags read:

"For purposes of this standard, a smart passenger airbag is a passenger airbag that: (a) Provides an automatic means to ensure that the airbag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard passenger seat, or (b) Incorporates sensors, other than or in addition to weight sensors, which automatically prevent the airbag from deploying in situations in which it might have an adverse effect on infants in rear-facing child seats, and unbelted or improperly belted children, or (c) Is designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children."

manufacturers had confirmed that they were developing a variety of smart airbags, but it was not clear how soon they would be in production vehicles. Ford said they would be introduced gradually, during the next decade. GM was even vaguer. Mercedes said that, with regulatory approval, it could convert a device that deactivated the passenger airbag if the seat was unoccupied to one that would activate the airbag only if the seat were occupied by someone weighing at least 66 pounds. Some earlier comments from manufacturers of automobiles and airbags also wanted the manual cutoff option extended for a longer time or extended to all vehicles. IIHS and Advocates for Highway and Auto Safety generally opposed indiscriminate installation of cutoff switches.

NHTSA published its final rule on new warning labels on November 27, 1996.⁶⁷ New vehicles that did not have smart passenger airbags had to have three new “attention getting” warnings, two of them on the sun visors and a third on the dash. A new label, with stronger warnings, was also required on rear-facing infant safety seats. The agency was aware that warnings were not a cure, but said that focus group studies indicated that improved warnings might get the message to more parents and caregivers. In February 1996, IIHS reported on a national survey of 500 households, in which 75 percent knew that it was not safe to travel with a baby in a rear-facing car seat placed on a front seat with a passenger airbag. But 23 percent of the parents had traveled with infant seats in the front passenger seat.⁶⁸ By December 1996 a larger national poll had 88 percent saying it was important to put small children in the back seat when a car had a passenger airbag, but 10 percent still thought it was unimportant.⁶⁹

As publicity about airbag-related deaths and injuries mounted, other government bodies expressed concern. The National Transportation Safety Board (NTSB) released a study in September 1996 with numerous recommendations for NHTSA, manufacturers, and state governments.⁷⁰ It found that passenger airbags were not acceptable for protecting children, nor were any of the immediate fixes being considered by NHTSA likely to change this situation. The NTSB also said that NHTSA should consider remedies for passenger airbags already installed, and that passenger airbag standards, especially those for advanced (which many were still calling “smart”) airbags, should reflect actual crash conditions, like pre-impact braking, the presence of out-of-position children (both belted and unbelted), and the passenger seat being pushed close to the front panel. Governors were urged to heed previous calls for primary seat belt use laws (only 11 states had them in July 1996), to emphasize to the public the need to keep children restrained and in back seats, and to be sure that state laws required children up to 8 years old to use child restraints or booster seats. Older children should be covered by seat belt use laws.

67. NHTSA, 49 CFR Part 571 [Docket 74-14; Notice 103] Federal Motor Vehicle Safety Standards; Occupant Crash Protection. Final Rule. *Federal Register*, November 27, 1996, pp. 60206-60221.

68. *Status Report*, February 3, 1996, p. 6.

69. “Airbag Poll,” Associated Press, December 20, 1996, as relayed by the Executive News Service.

70. *SAFETY STUDY: The Performance and Use of Child Restraint systems, Seatbelts, and Airbags for Children in Passenger Vehicles*, vol. 1: Analyses. National Transportation Safety Board, Washington, D.C., September 1996.

In a press release on November 22, 1996, along with its final rule on airbag warning labels, NHTSA outlined its plans to reduce airbag dangers to children and at-risk adults. The ultimate objective was to require manufacturers to phase smart airbags into vehicles in two years, beginning with the 1999 model year. NHTSA planned to issue an NPRM to define these airbags early in 1997. But before that it would try to reduce airbag injuries and deaths by allowing airbags to be inflated more slowly, to be deactivated at the consumer's request, and to have cutoff switches in vehicles without rear seats until model year 2001. The strategy was topped off by a public awareness drive, coordinated with The National Airbag Safety Campaign, as well as expanded research to improve airbag testing and crash protection for children and women.⁷¹

In a later interview, NHTSA Administrator Martinez outlined the priorities underlying the plan:

Three basic principles were overriding (sic) the airbag debate in my mind. First, we had to make a fundamental policy decision that we put children and at risk adults ahead of other people... We placed the priority on children. That's what we had to do. That's number one. So we were willing to lose the lives of young adults to save children. That was a tough decision, quite frankly. But given that we had a one size fits all technology that clearly didn't work we had to make a policy decision. That was my first decision. The second was to work with as many groups as possible to implement solutions as quickly as possible. And the third thing was to move as quickly as possible.⁷²

As we shall see, the "tough decision" to give a higher priority to children's lives was made fairly explicit in the rule-making process and widely supported by those commenting on the proposals.

On December 28, 1996, President Clinton expressed his concern about airbags and child safety in his regular Saturday radio talk and set the stage for three notices to be announced by NHTSA the next working day. According to Martinez, the President's staff had been following developments at NHTSA rather than setting policy. The issue was selected as a family-oriented theme suitable for the last radio talk of the year. Clinton added to his plea for wearing seat belts an instruction that the Secretary of Transportation submit to him a plan for increasing their use.

Although there was general support for NHTSA's strategy of searching for quick fixes and promoting seat belt use while encouraging development of smart airbags, there were disagreements about the fixes. The most thoroughgoing dissents came from three groups that tended to have almost identical positions — Public Citizen, the Center for Auto Safety and a new group, the Parents Coalition for Airbag Warnings, started by parents whose children were killed in airbag deployments, and later renamed Parents for Safer Airbags. Joan Claybrook of Public Citizen was the most articulate spokesperson for these groups. They called for dual airbags, with deployment thresholds and degrees of force that would vary with collision speeds and belt use; for a 15 mph deployment threshold (higher than the current

71. *New York Times*, November 23, 1996, p. 1; Department of Transportation News Release, "NHTSA Announces Comprehensive Plan to Improve Airbag Technology and Reduce Airbag Dangers," November 22, 1996.

72. Interview with Ricardo Martinez, M.D., February 3, 1998.

approximate 10 mph threshold); and for airbags that deployed vertically. The groups wanted the first two changes incorporated into FMVSS 208; NHTSA noted that these two proposals were not ruled out by the standard. However, both IIHS and NHTSA said that the analysis of vertically deploying airbags was flawed.⁷³ Later, IIHS compared the deployment profiles of two airbags supposed to deploy in predominantly vertical modes and two that were supposed to have horizontal deployments. All inflated in three directions, and it was difficult to say which direction predominated.⁷⁴

One of the three notices issued on January 6, 1997, was uncontroversial — a final rule extending permission to manufacturers to offer cutoff switches for passenger airbags in vehicles without rear seats or with rear seats too small for rear-facing infant seats.⁷⁵ The rule was uncontroversial just because it did not extend this permission to all vehicles. Most manufacturers, except Volvo and BMW, had opposed such a blanket extension. So had insurance groups, IIHS, and most other health and safety groups.

While the other NPRMs issued at the beginning of January were awaiting comments, NHTSA held a technical workshop to discuss smart airbags, particularly the development of technology to avoid harm caused by passenger airbags. Representatives of airbag providers touted their progress, but the automakers' representatives maintained that the technology was not sufficiently developed to define the tests for a smart airbag standard. If NHTSA moved too quickly to establish tests, it could discourage some experimentation. IIHS agreed with this argument. The spokesman for the American Automobile Manufacturers Association said his group

recommends the principles for future design should be clearly established to maximize protection for belted occupants while minimizing harm to children and small statured adults; then, provide the highest feasible protection for unbelted adults.⁷⁶

The American Occupants Restraint Council, the trade organization of airbag and seat belt makers, also noted that smart restraints could not only avoid harm, as NHTSA had specified, but could also optimize protection in some circumstances. Some time after the workshop, NHTSA replaced the catchy phrase “smart airbags” with the more pedestrian “advanced airbags.” NHTSA deferred defining “advanced airbags” any more precisely, but said in November 1997 that a proposal to require their installation was expected “this winter.”⁷⁷

73. Joan Claybrook, President of Public Citizen, “Statement on FMVSS 208 and Airbags,” House of Representatives, Committee on Appropriations, Subcommittee on Transportation and Related Agencies, December 19, 1996; Center for Auto Safety, Comments to Docket on N 107 and N 108, February 5, 1997; Public Citizen, Press Release, “Airbag Study Shows Huge Variation in Safety Record,” July 3, 1997; *New York Times*, July 6, 1997, p. A-12; *The Airbag Crisis: Causes and Solution*, Parents for Safer Airbags, October 1997.

74. Susan A. Ferguson, “An Update on the Real-World Experience of Passenger Airbags in the United States,” Airbag 2000+: Fourth International Symposium on Sophisticated Car Occupant Systems, Karlsruhe, 1998.

75. Department of Transportation, National Highway Traffic Safety Administration, [Docket 74-14; Notice 109] FMVSS; Occupant Crash Protection. Final Rule. *Federal Register*, January 6, 1997, pp.798-806.

76. Statement of Vann H. Wilbur, in *Transcript of NHTSA, Smart Airbag Public Meeting*, February 11, 1997.

77. Department of Transportation, National Highway Transportation Safety Administration, 49 CFR Parts 571 and 595 [Docket No. NHTSA-97-3111] RIN 2127-AG61; Airbag On-Off Switches; Final Rule *Federal Register*, vol. 62, No. 225, November 21, 1997, p. 62409.

NHTSA did act fairly promptly on its proposal to allow manufacturers to “depower” airbags by 20 to 35 percent as a method of reducing airbag-related fatalities in low speed crashes while keeping most of their effectiveness in high speed crashes.⁷⁸ Two approaches were being considered. One was to raise the chest injury criteria for the unbelted; the other, requested by AAMA, was to replace the unbelted crash test with a sled test. The sled test would use a longer deceleration period than occurs in a barrier crash, allowing airbags to deploy with less force but still protect unbelted occupants. NHTSA was concerned that either proposal might result in killing more unbelted occupants than in saving lives. Also, should there be a sunset provision? One possibility contemplated by NHTSA was to end permission for depowering once smart airbags began to be installed on a mandated schedule, then projected to begin on September 1, 1998.

NHTSA issued a final rule on March 14, 1997, allowing manufacturers to depower airbags until September 1, 2001.⁷⁹ This “sunset” provision was almost immediately criticized by both manufacturers and IIHS on the grounds that depowering would save lives and should not be phased out without serious consideration. More than a year later, Congress passed a law allowing manufacturers to continue depowering until a rule for advanced airbags was issued.⁸⁰

The depowering regulation permitted the use of AAMA’s modified unbelted sled test, rather than allowing an increase in the chest loads for unbelted occupants in crashes. Almost all the comments received favored depowering, although foreign manufacturers also stressed replacing the unbelted test with a belted one.⁸¹ Much discussion centered around the apparently favorable experience with depowered airbags in General Motors’ Holden cars sold in Australia, which were designed to work with seat belts. Belts were worn by more than 90 percent of vehicle occupants in that country.⁸² The Center for Auto Safety and the Parents Coalition for Airbag Warnings were among the few groups that opposed depowering for fear that deaths would increase among unbelted adults. NHTSA shared some of these concerns, but said:

While the agency recognizes the possibility that there is a potential for net disbenefits from depowering, it believes it must consider both the short run and long-run implications of this rulemaking on safety. Ultimately, the continued availability of any safety device as standard equipment, whether provided voluntarily by manufacturers or pursuant to a regulation, is dependent on consumer acceptability. The agency believes that airbags which fatally injure occupants, particularly children in low speed crashes, place the concept of airbags at risk, despite their overall net safety benefits. Accordingly, to help assure that airbags remain acceptable to consumers and ultimately achieve their full potential in the future, the agency believes it is reasonable to accept some short term safety tradeoffs associated with depowering, while better solutions are being developed.

78. Department of Transportation, National Highway Traffic Safety Administration, [Docket No. 74-14; Notice 108], NPRM. *Federal Register*, January 6, 1997, pp. 807-831.

79. Department of Transportation, National Highway Traffic Safety Administration [Docket 74-14; Notice 114] Federal Motor Vehicle Safety Standards; Occupant Crash Protection, *Federal Register* March 19, 1997, pp. 12960-12975.

80. Public Law 105-178, section 7103 (a) (4). The Department of Transportation refers to the law as TEA 21. See below for other provisions related to advanced airbags and state seat belt use.

81. Association of International Automobile Manufacturers comment to Docket 74-14, No. 108, February 5, 1997.

82. Notice 114, p. 12969

NHTSA also notes that, as discussed in the NPRM, it believes that even if the net effect were negative, the opportunity to avoid the deaths of a significant number of children who would otherwise be injured by airbags justifies foregoing the opportunity to save some unbelted teenage and adult passengers.⁸³

Both AAMA and IIHS had argued that NHTSA was too pessimistic in estimating the number of adult deaths that might be caused by depowering,⁸⁴ but as is shown in the quotation above, NHTSA made its decision almost in spite of those estimates.

Soon after the depowering rule was issued, Ford announced that it would put depowered airbags in all its 1998 model vehicles, and Chrysler said it would do the same except for one sports car. Other auto manufacturers had more gradual plans for depowering. However, most 1998 American vehicle models had depowered air bags.⁸⁵ IIHS continued to believe that depowered airbags would have beneficial effects and asked for the elimination of the sunset clause.⁸⁶

Of the proposals it issued on January 6, 1997, Notice 107 was the most troublesome to NHTSA. The agency proposed, apparently with reluctance, to allow owners to have driver or passenger airbags deactivated by vehicle dealers and repair businesses, something that was illegal up to then.⁸⁷ Vehicle owners would be required to get NHTSA information sheets about when deactivation was appropriate and the risks involved and to sign statements of informed consent; warning labels would also be installed in the affected vehicles. Deactivation would not be permitted if there was already a cutoff switch or if the vehicle had smart airbags. NHTSA noted that deactivation would be in the best interests of occupants “only in limited instances.”

NHTSA received many more comments from the public favoring deactivation than opposing it. Fear of airbags was frequently supported with citations of two scary columns by Joan Beck in the *Chicago Tribune*. In contrast, virtually all organized groups opposed the idea of deactivation unless each deactivation was formally approved by the agency itself. General Motors, for example, doubted that NHTSA had the legal authority to allow deactivation without reviewing individual cases and thought cutoff switches, rather than mechanical disabling, should be the only method permitted. BMW and Volvo had been cited by NHTSA as supporters of the deactivation idea, but they now joined their competitors in supporting deactivation only after NHTSA conducted individual case reviews.⁸⁸ There were two

83. Op. cit., p. 12964.

84. Letter from Vann H. Wilbur, AAMA to L. Robert Shelton, Associate Administrator, NHTSA, on information requested 12/19/96, January 8, 1997. [74-14-N108-099]; Adrian K. Lund, IIHS to Ricardo Martinez, MD, NHTSA, Comments on 74-14; Notice 108. February 5, 1997. Both AAMA and IIHS also asked NHTSA to add a test for out of position occupants to FMVSS 208.

85. Newsday, April 25, 1997; Peter Weiss, “Curbing Airbags’ Dangerous Excesses,” *Science News*, September 26, 1998, p. 206.

86. Susan Ferguson, IIHS, Letter to R. Martinez, NHTSA, 74-14-No. 113, June 4, 1997.

87. Department of Transportation, National Highway Traffic Safety Administration, [Docket 75-14; Notice 107] Airbag Deactivation, NPRM. *Federal Register*, January 6, 1997 pp.831-844.

88. For the letters see the analysis by Amy Feldman, IIHS, “Memo on docket comments on Notice 107,” January 31, 1997; the raw materials are in “Comments submitted to NHTSA’s Docket 74-14 Notice 107, February 5, 1997.” Almost every manufacturer and automobile trade association submitted a statement to the docket opposing the proposal in Notice 107.

exceptions to the opposition to deactivation, Jim Hall, chair of the National Transportation Safety Board, and Brian O’Neill of IIHS. Although both agreed that very few people would benefit from deactivation, they feared pressure to repeal the airbag requirement would become overwhelming unless it was relieved by this safety valve.⁸⁹ However, on March 5, 1997, the heads of major insurance companies that supported IIHS, along with the chief executives of all the major automobile manufacturers, sent a letter to Secretary of Transportation Rodney E. Slater protesting the “broad, on demand, deactivation policy” in Notice 107. A coalition of auto companies, auto retailers, insurers, safety groups, and physicians worked during the spring and summer to head off the proposal. In August the coalition told the agency that it should have no trouble screening all written requests for airbag deactivation since it was currently answering all of them within 72 hours. Then, fearing that NHTSA had already decided on deactivation on demand, the coalition met with the agency that reviews all proposed regulations — the Office of Management and Budget — to urge that permission be granted only to people in groups at risk, and only after NHTSA had reviewed each application. Representatives of the coalition repeated their case before NHTSA in August and then again before OMB in October.⁹⁰ Administrator Martinez has said that these meetings helped to sensitize him to the concerns of the coalition, but that much of the discussion was on deactivation, which by then NHTSA was not proposing.⁹¹

Instead of allowing deactivation, the final rule, issued on November 18, 1997, permitted installation of on-off switches, but only after NHTSA determined that applicants, or users of their vehicles, belonged to defined risk groups.⁹² When the NPRM had been issued, many manufacturers said that they could not provide aftermarket on-off switches very quickly. But many had since acquired that capability, or were about to, which made the on-off switch more attractive to the agency than the hard-to-reverse step of deactivation. Applicants had to affirm that they had read the NHTSA brochure, which defined risk groups and described the easy steps by which almost everyone could reduce their risk, including using seat belts, sitting as far back from the airbag cover as possible, and always putting children in the rear seat, restrained. The four risk groups were:

- infants in rear facing car carriers who could not be placed in the rear seat,
- drivers or passengers with unusual medical or physical conditions,
- children aged 1 to 12 who could not be placed in a rear seat, and
- drivers who could not get back at least 10 inches from the steering wheel.

89. See Brian O’Neill, Letter to Ricardo Martinez, M.D., NHTSA, February 5, 1997, on NHTSA Docket No. 74-14; Notice 107; also Status Report, February 15, 1997, p. 7; Testimony of Jim Hall, Chairman, NTSB, Before the Senate Commerce, Science and Transportation Committee, Regarding the Dangers of Airbags to Infants and Small Children, January 9, 1997.

90. Airbag On-Off Switches; Final Rule, *Federal Register*, pp. 62414-62415.

91. Martinez Interview.

92. The final rule was extraordinarily lengthy and defensive; “Airbag On-Off Switches; Final Rule,” *Federal Register*, vol. 62, No. 225, November 21, 1997, pp. 62406-62455.

A medical panel convened by NHTSA had explained that there were very few medical conditions that required occupants to avoid possible airbag deployments.⁹³ Research by IIHS was cited as the basis for saying that very few women drivers under 5'2" were unable to sit 10 inches from the steering wheel after being shown how to do it.⁹⁴ Although NHTSA feared the consequences of improper or forgetful use of the on-off switch, it noted the results of two driver surveys by IIHS. In the first, a poll of drivers of airbag-equipped vehicles in three states, 76 percent said that they wanted at least driver airbags in their next car, but 30 percent wanted an on-off switch for the driver and 67 percent wanted it for the passenger airbag. In a second survey of a comparable sample, IIHS found that 79 percent wanted airbags in their next vehicle; 16 percent would be willing to pay for an on-off switch for the driver, 23 percent for the passenger. After they were read a statement about the benefits of airbags and the easy steps that would overcome their risks, the percentages that still wanted an on-off switch dropped to 12 for the driver side and 16 for the passenger.⁹⁵ As with the final rule on depowering, and using some of the same words, NHTSA stressed the effect that the new on-off switch rule would have on public opinion, especially on improving attitudes toward airbags:

NHTSA is issuing this final rule, notwithstanding its potential to reduce the number of lives saved by airbags, because the agency believes that it must consider both the short-run and long-run implications of this rulemaking on safety. Ultimately, the continued availability and use of any safety device, whether provided voluntarily by manufacturers or pursuant to a regulation, is dependent on public acceptability. The agency believes that airbags which fatally injure occupants, particularly children in low speed crashes, weaken the acceptability of airbags, despite their overall net safety benefits. Accordingly, to help ensure that airbags remain acceptable to the public and ultimately achieve their full potential in the future (as advanced airbags are developed and introduced), the agency believes it is reasonable and appropriate to give persons in risk groups the opportunity to obtain and use an on-off switch, upon the making of the requisite certifications on the agency request form and obtaining agency approval for each request.⁹⁶

NHTSA discerned a distinct improvement in the public's attitude toward airbags between early 1997 and the period just before it issued its on-off switch rule, evidenced by the decreased interest in switches, as reported in IIHS surveys. The wave of child fatality reports featured in the media in January had been followed up by hearings and public information campaigns — most notably the Airbag Safety Campaign — aimed at assuring the public of the benefits of airbags and the ease with which most people

93. The Ronald Reagan Institute of Emergency Medicine, Department of Emergency Medicine, and the National Crash Analysis Center, The George Washington University Medical Center, National Conference on Medical Indications for Airbag Disconnection: "Final Report," July 16-18, 1997, (NHTSA Web site).

94. The full report was published later in Doreen M. De Leonardis, Susan A. Ferguson, Janella F. Pantula, Survey of Driver "Seating Positions in Relation to the Steering Wheel," Insurance Institute for Highway Safety, December 1997.

95. Michael X. Cammisa, Susan A. Ferguson, "Survey of Drivers' Attitudes Toward Airbags and Deactivation," Insurance Institute for Highway Safety, November 1997; Michael X. Cammisa, Susan A. Ferguson, "Survey of drivers of Airbag-Equipped Vehicles," IIHS, March 1997; "Airbag On-Off Switches, Final Rule," p. 62424. The data cited are from the later IIHS report; they differ somewhat from the figures in the final rule.

96. *Ibid.*, p. 62439.

could avoid their dangers. The most pessimistic reaction among experts had come from John Graham of the Harvard School of Public Health, who told the National Transportation Safety Board that the benefits of driver airbags had been oversold even though they were about as effective as most other preventive medicine remedies. They had reduced deaths among unbelted drivers by only 13 percent, he said, while the promise had been 30 percent. Passenger airbags were even more oversold and were killing more children than they were saving. “Taking into account risk, cost, and benefit, my own opinion is that the current passenger-side airbag is not acceptable,” Graham declared. He said that a survey done by his Center for Risk Analysis showed that the public overvalued airbags and misunderstood their risks and how to deal with them.⁹⁷ However, Graham also felt that if all children occupied the back seat and were restrained, this would “move the passenger-side airbag into a more acceptable situation” because the “cost per quality adjusted life” would be reduced from \$400,000 to \$104,000 (compared with \$70,000 per life saved by driver airbags).⁹⁸

The public’s reaction to the availability of on-off switches may be taken as evidence either that airbags’ image is “teflon,” as Graham contended, or that the Airbag Safety Campaign — described below — was extraordinarily effective in educating the public about the benefits of airbags and how to avoid their dangers, as Administrator Martinez contended. By the end of February 1998, *The New York Times* reported that applications for on-off switches were coming into NHTSA at a rate of about 100 to 200 a day; a total of 18,000 had been received. By the beginning of June 1998, 30,594 authorizations had been granted — 23,861 for the driver side and 14,018 for the passenger side. Fifty-four percent of the latter were for problems involving children; 32 percent were for medical conditions. Seventy-nine percent of driver authorizations involved distance from the steering column. But NHTSA knew of only 1,065 on-off switch installations. In its last summary posted on the Internet NHTSA reported total on-off switch authorizations of 57,183, with 11,195 installed.⁹⁹ There were no major changes in the reasons for authorizations, but there were indications that dealers and repair businesses had been refusing to install

97. Statement of John D. Graham, Professor of Policy and Decision Sciences, Harvard School of Public Health, to National Transportation Safety Board Supplemental Restraint Panel. March 17, 1997. Among the misconceptions in the survey cited by Graham were: 59 percent believe airbags save more children’s lives than they kill; 74 percent believe it is safe for children under 12 to ride in the front seat; 78 percent believe that a drivers risk of injury from an airbag is minimal if he wears a safety belt. [Almost all experts share the last “misconception.”] But the same survey cited as “knowledge” that 67 percent recognize it is dangerous to place an infant in a rear-facing carrier in the front seat; 71 percent recognize that a driver sitting too close to the wheel can be injured or killed by the airbag; 68 percent recognize that more female drivers have been saved than killed by airbags. “The Airbag’s Teflon Image: A National Survey of Knowledge and Attitudes,” Center for Risk Analysis, Injury Control Center, Harvard School of Public Health, March 17, 1997.

In a cost-benefit analysis published later in 1997, based on NHTSA and IIHS statistical evaluations, Graham and associates showed that driver-side airbags were cost beneficial, but questioned the mandating of passenger airbags, given their effect on children. John D. Graham, Kimberly M. Thompson, Sue J. Goldie, Maria Segui-Gomez, Milton C. Weinstein, “The Cost-effectiveness of Airbags by Seating Position,” *Journal of the American Medical Association*, vol. 278, No. 17, November 5, 1997, pp.1418-1425.

98. National Transportation Safety Board, *Proceedings*, March 17-20, 1997, p. 372

99. National Highway Traffic Safety Administration, “ON-OFF Switch Request and Authorization Summary,” weeks ending 6/6/98 and 10/30/99,” on NHTSA Web site.

the switches because of fear of liability. NHTSA posted a “Special Message for Dealers and Repair Businesses” on the Internet assuring them that the chances of a liability suit were very slight and asking them to allow their names to be listed on its site of businesses willing to install switches. The list was not very extensive; for example, by July 10, 1998, there were 19 businesses listed for all of California and one for Alabama. NHTSA’s assurances had some effect — by May 18, 1999, there were 48 businesses listed for California and 5 for Alabama.

Seat Belt Use as a Solution to Airbag Injuries

By May 1996 private interests were sufficiently worried about the reaction to airbag injuries and deaths that they joined the government in a coalition to prevent these dangers. In a press release on May 21, 1996, Secretary of Transportation Federico Pena announced that automobile manufacturers, airbag suppliers, insurance organizations, and safety groups had joined the federal government in a campaign with three objectives, all involving primarily seat belt use rather than airbags themselves:

- to educate drivers, parents and care givers about proper seat belt and child safety seat use, especially in vehicles with airbags;
- to lobby for primary seat belt use laws, which were in force in only 11 states and were significantly more effective than the secondary laws that were in force in 37 states;
- to increase enforcement of all seat belt and child seat use laws.

Coalition members pledged \$10 million to the privately funded Airbag Safety Campaign.

Basic to the Airbag Safety Campaign was the acknowledgment by coalition members that proper seat belt use was the key to safer, more effective airbags. A survey of airbag technology trends in October 1996 noted:

When the subject of SIRs [supplemental inflatable restraints] comes up with auto industry engineers, talk invariably reverts to seat belts. They stress that although airbags are an important safety device, they should always be treated as supplements to a properly worn seat belt, thus the term supplemental inflatable restraint. That underlying theme with all the talk about airbags is one of the drivers of airbag development and its role in the refinement of the total occupant protection system.¹⁰⁰

An IIHS report in 1992 had claimed that this position reflected an even wider agreement:

There is now a strong consensus in the United States that the combination of an airbag and a lap/shoulder belt is the best occupant protection system currently available, and all auto manufacturers are promoting airbags as supplementary protection to belts. There is less agreement on the value of airbags when belts are not worn...

100. Kevin Jost, “Airbag technology trends,” *Automotive Engineering*, October 1996, pp. 67-72. See, also, a more general statement from German engineers:

“The utility of airbag systems is incontestable, as demonstrated by the reports of accident researchers, doctors, and insurance companies. Just as clear, however, is the realization that an airbag system — as valuable and important as it is — can merely be a part of a comprehensive concept of occupant security. The use of safety belts remains the most important measure for the prevention or reduction of accident injuries.”

Hiltman Schubert and Karl-Friedrich Ziegahn, “Technological Trends in Occupant Protection Systems — Recent Research Challenges from the German Point of View,” SAE 960663, *Occupant Protection Technologies for Frontal Impact: Current Needs and Expectations for the 21st Century*, SP-1144. Society For Automotive Engineers, Warrendale, Ohio, 1996, p. 86.

From a public health perspective, seat belts and airbags should be thought of as complementary systems. Although the airbag supplements the protection offered to belted occupants, it also offers protection for unbelted occupants in frontal crashes...¹⁰¹

More recently both Brian O'Neill of IIHS and Ford's Helen Petrauskas have used almost the same words, describing lap/shoulder belts and airbags as working together as a system, but with airbags being secondary.¹⁰²

The president of the American Automobile Manufacturers Association said that this view of airbags as secondary restraints established that passive restraints were an illusion:

We now have enough experience with airbag technologies to recognize that the concept of airbags as "passive" restraints — requiring no action by occupants to receive a safety benefit in a crash — is an illusion we can no longer afford to pursue. In fact, we are learning just the opposite — that is, with an airbag safety belt use becomes even more important. Airbags are a supplemental restraint technology able to provide maximum benefit only when occupants are belted. After depowering, and after "smart" airbags are implemented, occupants will still have to be belted to reduce the risk of collision related injury...¹⁰³

Arguments about passivity and primacy were rapidly becoming moot because airbags and seat belts reinforced each other in increasingly complex ways as safety technology developed. Being properly buckled kept occupants in position when airbags deployed during a crash. Airbag technology also was used to make belts more effective through belt pretensioners that tighten the belt during a crash, keeping the occupant in place more effectively. The pretensioner is actuated by the same crash sensor that deploys the airbag and the tightening force comes from solid state propellants developed for use with airbags. The presence of airbags also made it less risky for force limiters to be installed in the chest portion of the belts; these allow belts to give way slightly, reducing the likelihood of chest trauma. Pretensioners and force limiters, as of model year 2001, were available in almost all passenger cars and were sometimes standard.¹⁰⁴

101. Brian O'Neill, Adrian K. Lund, "The Effectiveness of Airbags in Preventing Driver Fatalities in the United States," *Proceedings of the International Conference on Airbags and Seat Belts: Evaluation and Implications for Public Policy*, October 18-20, 1992 *Chronic Diseases in Canada*, Vol. 14, no. 4, Supplement Autumn 1993, p. S53.

A senior GM safety engineer stated the complementarity somewhat differently:

"Airbags and safety belts are now viewed as complements for occupant protection in a crash....While safety belts effectively prevent fatal injuries, they must be worn to protect vehicle occupants. Safety belts provide the greatest relative effectiveness in rollover crashes, where airbags provide little protection. However, the greater load distribution provided by airbags in frontal crashes enhances the protection of safety belts and provides substantial protection for unbelted occupants."

David C. Vianno, [GM], "Restraint Effectiveness, Availability and Use in Fatal Crashes: Implications to Injury Control," *Journal of Trauma*, vol 38, No. 4, April 1995, p. 538.

102. National Transportation Safety Board. 1997. *Proceedings*, March 17-20, pp. 148, 149, 151.

103. Andrew H. Card, Jr., President and CEO, American Automobile Manufacturers Association, Statement to House of Representatives, Committee on Appropriations, Subcommittee on Transportation and Related Agencies, December 19, 1996.

104. Telephone and e-mail discussions with Brian O'Neill, July 13 and 27, 2001. See also H. John Miller, "Occupant Performance with Constant Force Restraint Systems," SAE Technical Paper Series, 960502, Warrendale, PA, 1996.

After his brief call in December 1996 for a plan from the secretary of transportation to increase seat belt use, President Clinton sent a more detailed letter of instruction in January, 1997. He asked for a plan that would address state belt use laws, and DOT assistance in improving those laws, as well as a public education campaign. The plan was published in April 1997. It set national goals of 85 percent belt use by 2000 and 90 percent by 2005 (from 68 percent in 1996), and also goals to reduce occupant fatalities among children 4 and younger by 15 percent in 2000 and by 25 percent in 2005 (from a total of 685 in 1996). In the style of the Clinton administration, the plan for achieving these goals was to include “public-private partnerships;” enactment of both strong state primary seat belt use laws and laws closing the gaps in vehicle safety provisions for children up to age 16; high visibility enforcement of these laws following the examples of North Carolina and Tennessee; and public education on the benefits of safety belt and child restraint use.¹⁰⁵

DOT’s ability to motivate states to adopt highway safety standards had been weakened by Congress in 1976 and 1987, so that by 1997 it had only the power of persuasion to get states to pass more effective and thorough belt use laws.¹⁰⁶ The new seat belt plan included an earlier Clinton administration proposal that Congress fund incentive grants to the states to improve their occupant protection laws and seat belt use rates. Also beginning in fiscal year 2003 DOT was to have the authority to transfer a percentage of highway construction funds to safety programs if a state had not passed a primary seat belt use law or had failed to reach specified belt use levels.¹⁰⁷ According to Martinez, Congress never accepted these proposals “because of states’ rights.” But when a comprehensive transportation act was finally passed and ratified in June 1998, it did contain incentives — \$500 million for fiscal years 1999-2003 for states to increase seat belt use rates and \$83 million over the same period to states that adopted innovative safety programs like primary seat belt or special traffic enforcement laws.¹⁰⁸

Early in 1998, before Congress reinstated some fiscal incentives for seat belt use laws, NHTSA reviewed the accomplishments of its seat belt plan. NHTSA claimed some credit for adoption of primary seat belt use laws in Oklahoma, Maryland, and the District of Columbia, and for New Hampshire and Virginia upgrading their child passenger laws to include all those up to ages 18 and 16, respectively. But highly visible enforcement of seat belt laws had still not become a widely accepted police strategy despite the examples of Canada and North Carolina. From a statewide belt use rate in 1992 of 62 percent, around the national average, North Carolina quickly reached the 80 percent level through a program of publicity and repeated enforcement campaigns.¹⁰⁹ Martinez claimed that 92 percent of the public had been exposed

105. Department of Transportation, *Presidential Initiative for Increasing Seat Belt Use Nationwide: Recommendations from the Secretary of Transportation*, DOT Web site, nd, but probably late April or May 1997.

106. Department of Transportation, National Highway Traffic Safety Administration and Federal Highway Administration, 23 CFR Parts 1200 and 1205 [NHTSA Docket No. 93–55, Notice 5] *Federal Register*, June 26, 1997 pp.34397- 34405.

107. Presidential Initiative for Increasing Seat Belt Use Nationwide, p. 12.

108. DOT’s Analysis of TEA-21 – Transportation Equity Act for the 21st Century, DOT web site; Martinez Interview.

109. *Status Report*, December 20, 1993, pp. 1-5, and February 15, 1997, p. 6; Williams, A.F., Reinfurt, D.W., and Wells, J.K., “Increasing seat belt use in North Carolina,” *Journal of Safety Research*, 1196, vol 27, pp. 33-41.

in one year to the messages of the Airbag Safety Campaign, and the campaign was extended to the year 2000 in support of the long-range belt use plan.¹¹⁰ Primary seat belt use laws (now dubbed 'standard' by their promoters) spread slowly. By the end of 2000 they were in force in 17 states and the District of Columbia. In September 2003 that had grown to 22 states plus D.C, but all U.S. jurisdictions except New Hampshire had mandatory seat belt use laws. Although under TEA-21 Congress authorized \$500 million to be divided among the states in fiscal years 1999-2003 to encourage seat belt use, only \$83 million was authorized for the same period for a program that included adopting or demonstrating primary enforcement laws. Child safety seat use was also to be promoted under the \$83 million. By August 2003 all states and D.C. had child restraint laws but the ages covered and the responsibilities of adults varied considerably.¹¹¹

Seat belt use continued to grow toward the end of the millennium, from 61 percent in 1996 to 71 percent in 2000 and 79 percent in 2003. Although there continued to be a significant difference between secondary and primary enforcement states, *usage* grew in both groups. Still, even in primary enforcement states, the use rate was at 83 percent, far below Canada's.¹¹² However, both the states of California and Washington achieved belt usage over 90 percent through strict enforcement of their primary laws.¹¹³

Defining Advanced Airbags

Defining "advanced airbag technology," was, in early 1999, the key unfinished business in NHTSA's strategy for dealing with airbag injuries. Automobile and restraint manufacturers and the Insurance Institute for Highway Safety issued a joint statement of recommendations on the subject in March 1998. The actions it recommended were:

- Continue support for educating the public on airbag and seat belt safety and for enacting and enforcing primary seat belt use laws.
- Establish priorities for occupant protection.
- Assure that future airbag rules are objective, practicable, meet the need for motor vehicle safety, and are performance based and data-driven.
- Retain the current mid-size male, unbelted, high-speed sled test until other, more appropriate tests for assessing unbelted protection can be developed.
- Avoid arbitrary lead-times (sic) and deadlines which may inadvertently inhibit innovation and result in unintended consequences.
- Undertake a thorough and timely real-world evaluation of the safety effects of depowering.

110. Department of Transportation, National Highway Transportation Safety Administration, *Buckle Up America. The Presidential Initiative for increasing Seat Belt Use Nationwide*: House and Senate Appropriation Committees Requested Biannual Report, January 1998, published on NHTSA's web site; Martinez Interview, February 3, 1998; "Remarks Prepared for Delivery," Secretary of Transportation Rodney E. Slater, Airbag Safety Campaign Press Conference, February 10, 1998. The campaign was renamed the Airbag and Seat Belt Safety Campaign at the press conference.

111. Insurance Institute for Highway Safety, "Child Restraint, Belt Laws as of August 2003," accessed September 25, 2003 at www.highwaysafety.org/safety-facts; *Status Report*, September 25, 2003, p. 6; Derrig RA, Segui-Gomez M, Abtahi A, Liu LL, "The effect of population safety belt usage rates on motor vehicle-related fatalities", *Accident Analysis and Prevention*, 2002; 34(1): 101-110.

112. Donna Glassbrenner, "Safety Belt Use in 2003," Power Point presentation, August 20, 2003, National Center for Statistics and Analysis, National Highway Traffic Safety Administration, accessed September 26, 2003 at nhtsa.gov.

113. *Status Report*, January 2003, pp. 1-3.

- Recognize that airbags are just one part of the vehicle's occupant protection system; that no single combination of airbag characteristics is best for all vehicles; and that as a result, attempts to "rate" vehicle performance on selected airbag design characteristics are misleading.¹¹⁴

The first priority for improving occupant protection, according to the statement, should be to reduce harm to belted occupants and to children and others who are out of position. Protection for unbelted occupants should be improved only to the extent consistent with the first priority. But "[i]n no case should protection be diminished to any group as a result of rulemaking changes." The statement noted the currently available features of both airbag and seat belt technology that could help reduce airbag-related injuries as well as the new designs that were being tested. But it stressed that the most immediate gains in safety were attainable through behavioral changes — increasing use of occupant restraints, either seat belts or child seats, and placing children 12 and under in the rear seats.

In spite of the manufacturers' and IIHS' warning against arbitrary deadlines for advanced airbag definitions, Congress did direct the Department of Transportation to begin rulemaking that would:

improve occupant protection for occupants of different sizes, belted and unbelted, under Federal Motor Vehicle Safety Standard No. 208, while minimizing the risk to infants, children, and other occupants from injuries and deaths caused by airbags, by means that include advanced airbags...

no later than September 1, 1998, with a final rule to follow by March 1, 2000. This complex statement of purpose seemed to assign no particular priority to protecting belted or unbelted occupants or children. Advanced airbags were to be on all new vehicles by model year 2007.¹¹⁵

NHTSA issued a proposed rule on advanced airbags in mid-September 1998.¹¹⁶ The proposed standard was defined in terms of tests to be performed with an entire family of dummies representing children aged 1, 3, and 6 years, small (5th percentile) adult females, and average-size males. Previous airbag standards used only a median (50th percentile) male dummy. The rationale for using the new dummies was to promulgate standards that eliminated airbag harm to at-risk groups. A complex array of tests, with new criteria for chest and neck injury, was included.

Generally, automakers would have the options of suppressing the airbag if it put an occupant at risk or of demonstrating that the risk of injury in deployment would be low. Thus, for the 3 and 6 year-old dummies, there would be the options of showing that there would be no deployment if children were too close to the airbag or of passing a 30 mph barrier crash test with pre-impact braking. Testing of the small

114. American Automobile Manufacturers Association, Association of International Automobile Manufacturers, American Occupant Restraints Council, and Insurance Institute for Highway Safety, Joint Statement and Recommendations on Advanced Airbag Technology, March 1998.

115. Transportation Equity Act for the 21st Century, section 7103 (a). The law was signed June 9, 1998.

116. Department of Transportation National Highway Traffic Safety Administration 49 CFR Parts 571, 585, 587, and 595 [Docket No. NHTSA 98-4405; Notice 1] Federal Motor Vehicle Safety Standards; Occupant Crash Protection; Notice of proposed rulemaking. *Federal Register*, September 18, 1998, pp. 49958-50021.

female driver dummy would have to show that, if the dummy got too close to the airbag, deployment would be suppressed or the injury risk would be low. For the small female dummy, there would also be the option of simulating a low-speed crash with pre-impact braking. The small female would be tested in a 25 mph offset crash into a deformable barrier to test survivability in crashes into 'soft' or 'localized' objects. Finally, both the small female and median male dummies would have to survive a 30 mph barrier crash test, both belted and unbelted. The sled test alternative would be eliminated.

The new standard would be phased in between the 2003 and 2005 model years. Both a preliminary economic assessment and a technological assessment of advanced airbags by the Jet Propulsion Laboratory cited technological developments that might allow manufacturers to meet the proposed standards.

In spite of the complexity of the new test requirements and injury criteria, the most strenuous objections to the proposal from automakers and IIHS, as might be expected from prior statements, were to the elimination of the sled test and the restoration of the 30 mph unbelted crash test into a flat barrier.¹¹⁷ They feared that this would mean a return to higher powered airbags, which were the main source of the fatalities and serious injuries. The automakers also criticized the complexity of the standard, the new neck and chest injury criteria, and the assumption that technology under development in 1998 would be ready to meet the phase-in schedule. Some manufacturers objected to specific test standards, and IIHS noted the need for further research on the child and small female dummies. Automakers and the trade association of restraint manufacturers, AORC, complained about the large number of tests. AORC also argued "that to fully assess protection for belted and unbelted occupants, full vehicle barrier crash tests should be included." Although this was a mild difference from the manufacturers' position, AORC did not go so far as to specify a crash speed.

A major reason that NHTSA gave for replacing the 30 mph sled test was that it was unrealistic because it did not include the vehicle's entire structure. IIHS countered that the barrier tests were not more realistic, because they did not replicate either the forces that put occupants out of position or intrusion into the passenger compartment. IIHS urged NHTSA to consider a 35 mph unbelted offset test into a deformable barrier if the sled test had to be replaced. Toward the end of August 1999 the vehicle manufacturers recommended that the unbelted rigid barrier crash test for 50th percentile males and 5th percentile females should be at 25 mph. NHTSA and some safety advocates, including Public Citizen, the Center for Auto Safety, and Advocates for Highway and Auto Safety, feared that depowered airbags, tested only with belted dummies or in unbelted sled tests, would lead to increased harm to unbelted

117. Comments on the advanced airbag NPRM are accessible at the DMS search site of NHTSA's web site, in docket 98-4405. See especially, comments by the American Automobile Manufacturers Association, the Association of International Automobile Manufacturers, the Trilateral Working Group (of major Us, Japanese, and European automakers) Ford, General Motors, DaimlerChrysler, the National Safety Council, the Insurance Institute for Highway Safety, the National Transportation Safety Board, Advocates for Highway and Auto Safety, Public Citizen, and the Center for Auto Safety, as well as the transcript of the Advanced Airbag Rulemaking Public Meeting held by NHTSA on November 23 and 24, 1998.

occupants. However, there were no data showing this. In fact, IIHS argued that if unbelted occupants would be harmed by softer airbags, there ought to be evidence that some airbag-related fatalities were due to airbags bottoming out. IIHS and NHTSA disagreed about whether there were any such cases in the files. The National Transportation Safety Board deplored NHTSA's issuance of a proposed standard without a thorough evaluation of the experience of depowered air bags.¹¹⁸ Professor John Graham of the Harvard Center for Risk Analysis noted that NHTSA assumed that there was no risk that advanced airbags would malfunction.¹¹⁹ The proper cost-effectiveness comparison, he said, was between advanced airbags and depowered airbags. A wide alliance of parties — the American Automobile Association, the American Trauma Association, the National Safety Council, the National Association of Governors' Highway Safety Representatives, the National Automobile Dealers Association, and Professor Graham — joined the automobile trade associations, major insurers, and IIHS in a letter to Secretary Slater strongly opposing the 30 mph unbelted crash test into a flat barrier.¹²⁰

Although the Center for Auto Safety and Public Citizen supported the bulk of NHTSA's proposal, they did complain about the lack of a minimum deployment threshold — which they wanted set at 15 mph — because most children and small adults were killed by airbags when the bags deployed at low speed. They also called for a more complete family of dummies by adding a 95th percentile male and an elderly representative.

In the aftermath of the depowering rule, NHTSA had been accumulating data on trends in airbag power and on injuries that might be related to it. At the end of October 1999 it published a report that concluded:

Based on static and dynamic tests using adult and child dummies and the injury measures obtained in those tests, it is clear that airbags in recent MY 1998 and 1999 vehicles are less aggressive than the pre-MY 1998 airbags. As such, these airbags generally pose less of an injury risk to out-of-position occupants. The special crash investigations of real-world cases tend to confirm this general trend showing a significant reduction in fatality rates due to airbags in recent MY vehicles.¹²¹

Also, despite the depowering of airbags there was no statistically significant change in overall fatality rates; depowered airbags caused fewer injuries, but were no less effective than the earlier, more powerful airbags in saving lives.¹²²

118. NTSB also questioned the reinstatement of the higher unbelted crash test for 50th percentile males: "The Safety Board is concerned, however, that the new rule proposes test criteria that may not permit the development of air bags that are safe for all occupants, including children, elderly, and short-statured adults. The Safety Board suggests that the NHTSA consider whether a crash speed of less than 30 miles per hour into a full barrier or some other off-set crash test would provide the desired results of air bags that are safe for all occupants."

119. John Graham, Harvard Center for Risk Analysis, December 18, 1998, NHTSA docket, 98-4405-112.

120. NHTSA docket 99-4405-149.

121. John Hinch, et al., Office of Research and Development, National Highway Traffic Safety Administration, *Airbag Technology in Light Passenger Vehicles*, December 16, 1999, Revision 1, p. ES-3. This passage is unchanged from the October 26 report of which this title is a revision.

122. Department of Transportation, National Highway Traffic Safety Administration, [Docket No. NHTSA 99-6407; Notice 1] Federal Motor Vehicle Safety Standards; Occupant Crash Protection, *Federal Register*, November 5, 1999, p. 60562.

On August 3, 1999, nearly a year after the proposed rule on advanced airbags had been issued, Secretary of Transportation Slater wrote to the leaders of the congressional committees on transportation to tell them that the deadline for a final rule would be extended from September 1, 1999 to March 1, 2000, as was permitted by TEA-21.¹²³ Early in November 1999 NHTSA issued a supplemental notice of proposed rulemaking [SNPRM].¹²⁴ It dealt with the most contentious issue of the 30 mph barrier crash test by proposing alternative unbelted barrier tests: (1) a rigid barrier test with a minimum speed of 18 mph, going to a maximum that could be either 25 or 30 mph, with the possibility that the maximum speed would be phased in, or (2) a deformable barrier with a minimum speed of 22 mph and a maximum speed in the 30 to 35 mph range. The second alternative was developed in response to IIHS' recommendation.¹²⁵ If the 25 mph maximum speed in the first alternative was adopted permanently, NHTSA might also increase the belted rigid barrier test to 35 mph. Continuation of the sled test was definitely rejected. In response to manufacturers' complaints, the number of tests was significantly reduced. Live women and children might be used in tests to sense occupant presence. The agency also proposed new criteria for head injuries and dropped a proposed combined thoracic index. The SNPRM proposals for alternative barrier tests did nothing to moderate the disagreements over the issue of whether the 30 mph crash test into a rigid barrier should be reinstated.¹²⁶

The automakers, IIHS, the National Safety Council, and, eventually, the NTSB, all strongly supported the 25 mph crash into a rigid barrier. Public Citizen, the Center for Auto Safety, and Parents for Safer Air Bags argued that anything less than a reinstatement of the 30 mph rigid flat barrier test would not meet congressional goals of protecting both unbelted occupants and the small adults and children at risk from airbag deployment. If the former 30 mph crash test was responsible for air bag injuries, manufacturers should be recalling all vehicles that had that equipment. IIHS did further research that bolstered its position that ejections from the vehicle and intrusion into the passenger compartment, rather than too little airbag power, were the causes of deaths and injuries in moderate to severe crashes.

After the comment period was over, the opposing parties continued making their cases to Secretary Slater and to John Spotila, the head of the office charged with reviewing regulations for the White House Office of Management and Budget. Dr. Martinez had resigned as administrator of NHTSA before the SNPRM was issued. Brian O'Neill believes that the decision on the advanced air bag rule was not made within NHTSA, which was divided on the issue, but by the deputy secretary of transportation, Mortimer Downey.¹²⁷

123. Docket 98-4405-151.

124. See the entire document cited in note 119, pp. 60555-60629.

125. NHTSA acknowledged that IIHS subsequently withdrew its suggestion because of the danger that the test would lead to unintended increases in high energy deployments. *Ibid.* p. 60569.

126. See NHTSA Docket 99-6407.

127. Interview with Brian O'Neill, October 12, 2000.

On May 5, 2000, NHTSA issued its decision on the advanced airbag rule, not in the form of a final rule but as an “interim” final rule. The rule aimed to resolve the conflict between providing improved frontal crash protection to all occupants and reducing the harm that airbags caused, mainly to small women and children.¹²⁸ The maximum speed used for rigid barrier impact tests with unbelted dummies would be lowered from 30 to 25 mph; these tests would now be required for 5th percentile female dummies in addition to 50th percentile males. The oblique (30-degree) version of the unbelted barrier test would be required for male dummies only.

It was clear that the agency, or at least influential people within it, were choosing the lower crash speed with great reluctance. The “interim” nature of the decision was tied to NHTSA’s commitment to a multiyear data-gathering effort, including monitoring new vehicles to make sure that they were not just barely meeting the 25 mph test. A future “final” decision would reexamine the maximum unbelted barrier crash speed. NHTSA noted that if the 30 mph test speed had been reinstated, many of the changes in the new rule designed to reduce risk would not be possible. In addition, a 30 mph test speed represented a 44 percent increase in energy compared with a 25 mph test speed, and ensuring that airbags were powerful enough to protect unbelted dummies at 30 mph could result in more serious and fatal injuries. The agency also pointed out that most vehicles produced to meet the temporary sled test option, in place while the former 30 mph standard was under review, would, in fact, meet the 30 mph test.

Other new crash test requirements included belted crash tests for adult male and female driver and passenger dummies at 0-30 mph and a deformable offset barrier test with a belted 5th percentile female driver. To avoid airbags deploying inappropriately at low speeds, the perpendicular unbelted tests had a minimum speed for the first time: 20 mph. Dummies representing 5th percentile females and children 1, 3, and 6 years of age would be tested to ensure their safety when airbags inflated in low-speed crashes. The manufacturers could also choose to suppress the airbags if women and 3 and 6-year-old children moved out of position, suppressing them in all cases if a 1 year-old was present (possibly also in the presence of 3 and 6 year-olds). Beginning in model year 2008, to be phased in through 2010, the maximum speed for the belted rigid barrier test would increase to 35 mph for the 50th percentile male driver. All other aspects of the standard would be required in increasing percentages of new vehicles starting with the 2004 model year, reaching the full fleet by the 2007 model year.

In early January 2003 NHTSA reduced the percentage of new cars that would have to meet advanced airbag standards in the 2004 model year from 35 to 20 percent because of technical challenges caused by an insufficient availability of parts.¹²⁹

128. Department of Transportation National Highway Traffic Safety Administration [Docket No. NHTSA 00-7013; Notice 1] Federal Motor Vehicle Safety Standards; Occupant Crash Protection: ACTION: Final rule; interim final rule; *Federal Register*, Vol. 65, No. 93, Friday, May 12, 2000, pp. 30680-30770.

129. Department of Transportation National Highway Traffic Safety Administration [Docket No. NHTSA 02-14270; Notice 1] Federal Motor Vehicle Safety Standards; Occupant Crash Protection: ACTION: Final rule, *Federal Register*, Vol. 68, No. 21, pp. 4961-4965.

The long process that led to the development of regulatory standards for frontal airbags may be contrasted with the more recent effort to develop voluntary standards for side airbags. By the 1999 model year side airbags were standard on 45 vehicle models and optional on 11 more. Manufacturers were using widely varying technologies. Although there had been no fatalities or serious injuries reported from their use, NHTSA, Transport Canada, and General Motors said crash tests showed that children might be injured by side airbags.¹³⁰ NHTSA scheduled a public meeting to discuss the issue on April 19, 1999. A few days before, the Center for Auto Safety asked the agency to develop safety standards for side airbags. At the meeting the concerns about side airbags were balanced by crash tests showing their benefits and the lack of evidence of any serious injuries yet caused by them. A month later NHTSA head, Dr. Ricardo Martinez, asked the two major automobile trade organizations to propose a plan for developing standards for their members' side airbags. The automakers invited IIHS and the Automotive Occupant Restraints Council to join them in a technical working group chaired by Adrian Lund of IIHS. In August 2000, the group published its recommended procedures.¹³¹ A family of dummies representing out-of-position children, adolescents, and small adults would be tested to assess all regions of the body potentially at risk. Automobile manufacturers and their suppliers committed to use the guidelines in developing new side airbag systems. According to one press report, automakers would test all side airbags using these procedures by the 2004 model year.¹³² Some consumer groups, like Consumers Union and the Center for Auto Safety, criticized these voluntary standards because the government could not enforce them.

By the end of 2002 it was estimated that a third of new vehicles sold in the United States would have side airbags, mostly designed to protect the torso.¹³³ By the summer of 2003 there were enough side airbag-equipped cars involved in fatal accidents for IIHS to evaluate their effectiveness. It found that the risk of driver fatalities in driver-side collisions was reduced by 45 percent with head/torso side airbags and 11 percent by side airbags protecting the torso only.¹³⁴

Trends in Airbag Fatalities and Injuries

Airbag related fatalities peaked in 1997 at 53. In 1998, a year when most autos were sold with depowered airbags, fatalities declined slightly to 48, then to 24 in 1999, 18 in 2000, 9 in 2001, and 6 in 2002. The reduction appeared first among adults, but after only a year the reduction of deaths among children became as dramatic.¹³⁵ Depowered airbags, other changes in airbag design beginning with 1998

130. *Washington Post*, April 16, 1999.

131. "Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags," Prepared by The Side Airbag Out-of-Position Injury Technical Working Group (A joint project of Alliance, AIAM, AORC, and IIHS) Adrian K. Lund (IIHS), Chairman August 8, 2000; News Release: "Vehicle Safety Experts Submit Side Air Bag Test Procedures," August 8, 2000.

132. Auto.com, a Daily Publication of the *Detroit Free Press*, August 9, 2000.

133. *Automotive News*, cited in Elsa R. Braver and Sergey Y. Kyrychenko, "Efficacy of Side Airbags in Reducing Driver Deaths in Driver-Side Collisions," Insurance Institute for Highway Safety, August 2003.

134. *Ibid.*

135. DOT, NHTSA, Special Crash Investigation Report, "Air Bag Fatal and Serious Injury Report, October 1, 2003," accessed at nhtsa.gov.

models, and the growing use both of seat belts and child restraints as well as seating children in rear seats may account for the trend. Both for children and adults, fatal airbag injuries since 1998 occurred disproportionately in pre-1998 model year vehicles. Deaths related to sled certified (depowered) airbags were much lower than those related to barrier certified airbags, but each figure has declined since 1997.¹³⁶

In April 2003 there was a public meeting of a 'Blue Ribbon Panel' of automobile manufacturers, government and safety groups to evaluate the effect of depowered and advanced airbags since the 1998 model year. With the cooperation of NHTSA and funding by the auto industry, additional crash data were collected and several different statistical analyses were presented. The minutes summarized the presentations:

Overall we see that depowered airbags are doing a good job.... There has been no cataclysmic reduction in the effectiveness of airbags as some had predicted. Indeed, most of the statistical analyses that have been conducted to date indicate that there has been a small, but measurable, increase in effectiveness...

There is now a body of evidence that the depowered and advanced airbag systems have dramatically reduced the harm to out of position children and adults in low-speed crashes, which was an area of grave concern. Head, chest and abdominal injuries all seem to be down. There is some evidence, albeit very preliminary, that some body regions may be seeing an increase in injury. We will need to watch this very closely in an attempt to understand these data better and to confirm these early impressions. The data show that while the airbag appears to work very effectively when the collision forces are straight ahead, occupants can get around or over the airbag in many off center collisions.¹³⁷

Summary

The rapid spread of driver airbags in the early 1990s was propelled by consumer demand. Buyers were reacting to the glowing stories of crash survivors, and the product once opposed so fiercely by manufacturers was now being used as a competitive tool. The government's requirement for automatic occupant protection in cars, could be met temporarily with driver airbags and manual belts for front seat passengers. Manufacturers like Ford and Chrysler did not have sufficient staff to redesign all models with more than one kind of occupant restraint. So they reacted to buyers' apparent preference for airbags over automatic belts by making driver airbags standard as quickly as possible.

The popularity of driver airbags meant that there was little resistance to extending automatic occupant protection to light trucks. Then a 1991 law required airbags in all vehicles by 1998. The apparent success of driver airbags had converted Congress from its insistence on performance standards to a technology standard. There was little suspicion that the success of driver airbags might not apply equally to those on the passenger side.

136. *Status Report*, April 6, 2002, p. 7; John C. Kindelberger Augustus "Chip" B. Chidester Eric Ferguson, Air Bag Crash Investigations, National Highway Traffic Safety Administration, Paper No. 299, ESV 18, May 2003; DOT, NHTSA, Special Crash Investigation Reports, Normalized Tables, accessed in October 9, 2003 at nhtsa.gov.

137. The minutes of the April 4, 2003 public meeting of the Blue Ribbon Panel and the texts of all the presentations are at www.highwaysafety.org/presentations/brp/downloads, accessed on October 10, 2003.

Statistical studies confirmed the effectiveness of driver airbags in reducing deaths and serious injuries. Seat belt use, with or without airbags, was rising, but airbags were saving lives even when people were restrained. The first generation of driver airbags caused minor injuries in about half of deployments and a very few deaths in low to moderate speed crashes, especially to small women. The common denominator was that these victims were too close to the airbags, which were deploying with too much force, frequently in low speed crashes when they were not needed. Most often the occupants were not wearing seat belts and were forced out of position before deployment by sudden braking. The excessive force was due to test requirements that passive restraints be effective for unbelted as well as belted occupants.

Passenger deaths related to deployments of passenger airbags in low and moderate speed crashes rose in number through 1997. Practically all involved infants in rear-facing seats or unrestrained children in front seats. The latter is the classic case that so concerned automobile manufacturers in arguing against airbags. Ford said that having the driver airbag credit would give it time to deal with this issue before installing passenger airbags on a large scale. But the technological solutions were not available before driver credits ran out, and manufacturers were not so concerned that they kept passenger airbags off the market.

When reports about deaths and serious injuries caused by passenger airbags emerged, government, manufacturers, and many safety advocates stressed behavioral changes as the first line of defense: restraining children and infants in rear seats and making sure that all occupants used restraints to keep them in position. Lap/shoulder belts plus airbags were now viewed as the primary restraint system for adults and adolescents. Using belts and keeping children restrained in the back seat would optimize the effectiveness of airbags. Indeed, under these conditions, airbags would add to the effectiveness of belts even if they deployed with less power than required for unrestrained occupants.

Passenger airbags, according to the statistical studies, were saving hundreds of adult lives, and would save even more as they proliferated. But they were killing more children than they were saving. Although the public seemed overwhelmingly aware of the need to put children and babies in the rear seat and restrain them, enough forgot to do this — and enough adult drivers were at risk — so that other, more *passive* solutions were called for. NHTSA approved fairly quickly the solutions most easily implemented: depowering airbags and installing cutoff switches where rear seats were not present or usable, or where vehicle owners claimed to be in at-risk categories. Depowered airbags were available with the 1998 model year. Deaths due to air bags have declined since 1997, both among adults and children. Permission to install on-off switches came a little more slowly — it has been available since the beginning of 1998, but very few people have applied for it and even fewer have had the switches installed.

The concentration of media attention on infants and other children killed by passenger airbag deployments in low-speed crashes raised anxiety within the safety community, and among automakers and NHTSA, that the public or their representatives might insist on reversing airbag requirements. NHTSA's strategy for dealing with the issue of airbag fatalities and serious injuries, especially its

acceptance of depowering and of on-off switches, centered on maintaining and promoting consumer acceptance of airbags. This was also the aim of the Airbag Safety Campaign, which stressed the benefits of airbags, especially when used with the correct behaviors — always buckling up and putting children, properly restrained, in the rear seat. The entire safety community now agreed that the combination of passive airbags and active restraints was the optimal approach to occupant protection. These actions by both public and private interests, as well as the decline in airbag deaths after 1997, may explain why the media stopped focusing on airbag-related injuries and deaths.

Instead of reacting against airbags, Congress mandated technological solutions to airbag injuries and deaths on an accelerated basis. The safety community was unanimous in defending airbags and recommending that adults always use seat belts and restrain children in rear seats, but they were split over whether the advanced airbag standard should revert to a 30 mph crash test into a rigid barrier or stay with the sled test that permitted depowered airbags. IIHS, the National Safety Council, NTSB, and some medical groups joined forces with auto manufacturers to oppose a return to the higher speed rigid barrier test. Public Citizen, the Center for Auto Safety, and Parents for Safer Airbags forcefully lobbied on the other side. The decision was made to abandon the sled test in favor of a 25 mph rigid barrier test while further data were gathered. The standard was finally issued in May 2000, not nearly as rapidly as Congress had wished. Its complex provisions would not begin to take effect until September 2003. There was enough sympathy within NHTSA for reversion to the 30 mph rigid barrier crash test that the new 25 mph standard was labeled an “interim” rule.

Auto manufacturers and suppliers began to develop airbags to protect against serious injuries and deaths in side collisions largely because of the marketing power and effectiveness of frontal airbags. Side airbags spread rapidly without any regulatory mandate. When the first fears were expressed about the possibility of children being hurt when they deployed, NHTSA chose to ask the industry to develop voluntary procedures to protect against negative effects of side airbags, even in the absence of proven serious injuries. The procedures were developed in fewer than two years. Their rapid development obviously was inspired by the desire to avoid the deaths and injuries of infants and children that was a by-product of frontal airbags.

The years following the Dole decision witnessed a striking rise in seat belt use, partly because the decision led to the spread of seat belt use laws and to an initial decision by manufacturers to install automatic belts. By 1996 about two-thirds of drivers were using seat belts, although only half of car occupants involved in fatal crashes were restrained. In early 2003 79 percent of drivers and right front passengers were using seat belts. Occupants restrained by seat belts were much less likely to be seriously injured by airbags, and the evidence showed that airbags added to the effectiveness of seat belts. Undoubtedly, there would have been more fatal and serious injuries occasioned by airbag deployments if the use of seat belts had not risen to current levels.

Although virtually all members of the safety community have come to agree that the best restraint protection combines a *fastened* three-point seat belt with an airbag, there is still no federal regulation mandating the whole restraint system. Nor is there a requirement for the belt pretensioners and force limiters that are supposed to have increased both the effectiveness and integrity of the system. And, in contrast to the federal requirement for airbags in passenger vehicles, there is no federal requirement for the use of seat belts. The received wisdom is that this last would be a breach of states' rights. Secretary. Dole's decision did entice almost all states to pass some sort of belt use law, but usually with inadequate enforcement. The major transportation financing law passed by Congress in June 1998 provided financial incentives both for raising seat belt use rates and passing innovative safety laws, like those providing for primary enforcement of belt use laws. While the importance of primary enforcement laws has long been established by IIHS, this marks the first federal incentives to pass them. But, with all this effort, in October 2003 primary belt enforcement laws were in force in only 17 states and the District of Columbia.

SAFETY SELLS: Market Forces and Regulation in the Development of Airbags

By Martin Albaum

CHAPTER 7: Conclusions

The history of airbag regulation was first and foremost a dispute about whether they would work — especially whether they would work better than the alternatives, either active or passive seat belts. The paradoxical answer is that they do work — not as well as once expected, but as well as they do because they work along with what was once viewed as their main alternative, active seat belts. Once an airbag regulation was issued, rather than preempting the market, the regulatory structure allowed market forces to come into play. And the airbag regulation contributed to the rise of seat belt use after decades of very low use.

How Successful Have Airbag Standards Been?

By January 2004, NHTSA estimated that 11,347 drivers and 2,620 right-front passengers had been saved by airbags, an estimate accepted both by automobile manufacturers and safety advocates.¹ When the 1984 automatic occupant restraint rule was issued, NHTSA assumed that front seat fatalities in car crashes from all directions would be reduced 20-40 per cent if airbags were used alone, and by 45-55 per cent if airbags were used together with three-point seat belts. Based on statistical analyses of driver fatalities, NHTSA showed in 2001 that airbags alone reduced driver deaths by 14 percent in all crash modes; the combination of airbags and lap-shoulder belts reduced driver deaths by 51 percent. Impressive as the estimates of lives saved by airbags may be, the numbers are still lower than either NHTSA or early proponents expected.

As NHTSA has reported, in purely frontal crashes passenger airbags are about as effective for people over thirteen as driver airbags. But they have been drastically less effective for those under thirteen. By January 1, 2004, 41 children, 81 drivers, and 11 adult passengers had been killed by airbags, mostly in low-speed crashes.² These airbag fatalities have declined dramatically since 1997, but before then more children under thirteen were estimated to have been killed than saved by passenger airbags. Although John Graham at the Harvard School of Public Health and his co-authors criticized the cost-benefit ratios of passenger side airbags because of this net loss of children's lives, they admitted that "cost-effectiveness ratios for airbags are comparable to other well-accepted measures in preventive medicine." Moreover, they noted:

1. NHTSA, Special Crash Investigation Report, 1/1/2004.

2. Ibid.

Immediate steps can be taken to enhance the cost-effectiveness of front passenger airbags, such as moving children to the rear seat and increasing the rate at which children are properly restrained in crashes.³

The balance of benefit to harm caused by airbags is probably comparable to that of many widely used drugs, vaccines, and medical procedures. But in the case of airbags the harm was concentrated among infants and small children, a segment of the population our society feels a particular obligation to protect. No one is questioning the effort to make airbags safer for them, in spite of the potentially high cost.

Airbags rank second only to seat belts as life-saving occupant protection.⁴ Airbags add to seat belts' effectiveness, and using seat belts prevents almost all the potential harm that airbags can cause adults. While airbags were originally seen as the way to protect the vast majority of American vehicle occupants who would not use belts, belts and airbags are now viewed by safety experts as reinforcing each other in an integral occupant protection system. This implies that future measures of the success of occupant protection should be based on the airbag/seat belt system; for example, counting numbers of lives saved by airbags alone, by seat belts alone, and by the two combined. Neither NHTSA nor any other safety organization currently produces such a measurement. Still, the debate leading up to the "interim" standard on advanced airbags focused on tests to protect unbelted adults, and that standard will be revisited in the future to measure whether the unbelted are being adequately protected.

As airbag-equipped vehicles have become more common, airbags have saved more lives. The harm airbags can cause in low-speed crashes, both to adults and children, seems to have been moderated by a combination of technological and behavioral fixes. While NHTSA was working on its advanced airbag standard, automobile manufacturers produced depowered versions of airbags that they believed would be less likely to cause harm but continue to save lives. And people most likely changed their behavior by placing children in rear seats and sitting further from the steering columns. Since drivers who use seat belts are more likely to see to it that children are properly restrained in their vehicles, the rising proportion of adult seat belt users probably contributed to the success of the campaign to put children, restrained, in the rear seat.

If we balance the harm and the costs of airbags against the deaths and serious injuries prevented, the outcome of the struggle for airbag standards has been clearly positive. But it did take a long time.

3. John D. Graham, Kimberly M. Thompsom, Sue J. Goldie, Maria Segui-Gomez, Milton C. Weinstein, "The Cost-effectiveness of Air Bags by Seating Position," *Journal of the American Medical Association*, vol. 278, No. 17, November 5, 1997, pp.1424-1425. See also John D. Graham, et. al., "Reducing Risks to Children in Vehicles With Passenger Airbags," *Pediatrics*, Vol. 102, July 1998.

4. One automobile statistical analyst, Leonard Evans, believes that whether the airbag mandate reduced fatalities is an open question, partly because of the higher effectiveness of seat belts, partly because of the (unproven) possibility that their presence may have led to more driver risk taking. Leonard Evans, "Transportation Safety," in *Handbook of Transportation Science*, R. W. Hall Editor, Kluwer Academic Publishers, Norwell, MA, pp. 99-106.

Would Economic Forces Have Been More Efficient Than Regulation in Making Airbags Available?

Economic or market forces do not operate in a vacuum. Buyers must recognize that a product like airbags meets their needs at a price they are willing to pay, and sellers must recognize that such a demand exists and be able to supply it. The law that introduced federal motor vehicle safety standards was passed because its backers felt that auto manufacturers were not paying enough attention to safety. Did this reflect a consensus that “safety did not sell?” The manufacturers did not use this defense; it could have led to the argument that if the market did not support safety, regulations should. Instead the manufacturers argued that they had made significant contributions to safety.

Although Ford and General Motors seemed at first to compete strenuously for leadership in developing airbags, both eventually gave up the struggle. They objected to many aspects of any proposed standard and feared that the price of airbags would reduce car sales. Airbags did not sell well in two tests — General Motors’ effort in the mid-seventies and Mercedes-Benz’ European sales in the early eighties. The manufacturers did not promote them aggressively, and buyers were not widely aware of their availability.

The airbag industry came into existence largely because of the prospect that the device might be promoted by a government standard. Airbags likely would have disappeared in the early eighties without government encouragement and support. The passive restraint standard would probably have been met almost entirely by automatic belts, chosen because of their low cost. An amendment to the automatic protection rule that allowed driver-only airbags along with manual passenger belts encouraged carmakers to make airbags available. Suddenly the media discovered that airbags were saving lives in newsworthy crashes. Only then did market forces take over, driving the spread of this technology. In Europe there has never been a regulation requiring airbags; consumer demand rose only after the American experience had been widely reported. Thus it was regulation that laid the groundwork for airbags to defeat passive belts in a market competition.

The public debate over passive restraints rarely focused on the issue of whether market forces could promote public safety more effectively than regulation. Some academic economists and Reagan administration ideologists, like David Stockman and Christopher DeMuth, did raise this fundamental question. But most of the debate centered first on whether the proposals met the criteria of the 1966 regulation and later on whether auto companies or vehicle occupants should be the subject of regulation — the auto companies and many other opponents of passive restraint rules argued that regulating driver behavior through mandatory belt use laws would be far more efficient and cost-effective than requiring manufacturers to supply passive or automatic restraints. In 1995, two economists, Mannering and Winston, argued that the spread of consumer demand for airbags through market mechanisms justified automakers introducing them gradually. The same evidence also led them to question “the potential social

value of automobile safety regulation.”⁵ Their argument ignores the role of regulation during the 1980s in preserving airbags when they were not supported by the market and in stimulating manufacturers to offer driver side airbags.

There is little doubt that regulations such as seat belt use laws can affect behavior, especially if the laws are consistently and vigorously enforced. Libertarians may object to such laws as infringements on individual freedom, but they do reduce social costs and most people seem not to object to being forced to protect themselves. Even without strenuous and consistent enforcement seat belt use began to increase in the United States after many states passed seat belt use laws. Where safety is concerned, good regulations and market forces may complement each other rather than clash. The trick is in discovering how to integrate them. One approach is suggested by the rule for setting motor vehicle standards: require the manufacturers to meet standards and allow buyers to choose among competing designs. It is even arguable that well-publicized regulations may raise safety consciousness and promote the demand for safety products, just as the demand for airbags outpaced the regulatory calendar requiring them.⁶

How Can the Motor Vehicle/Highway Safety Regulatory Process be Made More Effective?

The two most important improvements in the regulatory process suggested by the history of airbags involve scope and speed. Expanding the scope of federal regulations would permit mandates for safe practices as well as safe equipment on the highway. Accelerating the regulatory process would minimize the kind of delay that characterized airbag regulation.

Scope

The 1966 laws establishing the regulatory process separated motor vehicle standards from those involving highways and driver behavior. Both the auto industry and safety advocates wanted uniform federal motor vehicle standards in order to avoid the high cost of differing state standards and to make them more enforceable. Conversely, highway safety standards were aimed at encouraging states to adopt effective safety programs by withholding some federal highway funds if states did not comply. In 1976 the Highway Safety Act was amended to eliminate the requirement that states conform to each standard, instead turning them into guidelines. Even earlier, in 1974, Congress eliminated funding that could be used as incentives for states to pass laws mandating seat belt use.

5. Op. cit., pp. 277-278.

6. Both government and private consumer information programs also heighten awareness of the safety of vehicles, as shown by NHTSA's New Car Assessment Program beginning in 1979 and IIHS' crashworthiness tests from 1995 on. Brian O'Neill, "Improving Vehicle Safety: The Role of Regulation and Consumer Information," *Safety Transport Solutions: Regulations and Practices*, International Conference and Exposition; New Delhi, India, November 4, 2003.

Conclusions

As we already have noted, a major focus of the struggle over airbag standards from the mid-seventies on was the debate over whether a regulation mandating airbags (passive restraints) or laws mandating safety belt use should be the preferred method of dealing with the very low belt use in the United States. Airbag advocates always supported belt use laws in addition to passive restraint regulations. Years of failed attempts led them to believe that belt use laws would not be passed until the Dole decision made passage of enough state laws a way to avert the passive restraint standard. Then, it was discovered that the rising use of safety belts was helping to make airbags effective and safe by keeping occupants in place. Seat belts, in turn, were becoming more effective through pretensioners and force limiters, advances made possible by airbag technology. As noted earlier, auto safety experts now think of airbags and safety belts as reinforcing each other in an integrated system. But there is no federal mechanism for mandating both airbag technology and the use of seat belts. NHTSA has been encouraging states to make their seat belt use laws primary, and Congress has given the agency some funds to use as incentives. Results so far have been modest.

Seat belt use in the United States actually reached 79 percent in 2003 while in Canada, northern Europe, and Australia, well-enforced laws have brought usage to over 90 percent. Well enforced belt use laws also brought use to over 90 percent in California and the state of Washington. Is it conceivable that NHTSA could be given the power to require intensive enforcement? Why not enlarge NHTSA's powers to include setting standards for state laws relating to behavior as well as vehicle standards? Would local and state police actually carry out such requirements? In a time of growing judicial and federal deference to states' rights, this kind of growth in federal power might seem a pipe dream. But 20 years ago the current level of seat belt use in the United States might have also seemed inconceivable.

Speed

For some long-time airbag proponents the delay between the time airbags were first feasible, around the mid-seventies, and the time when they first became widely available, in the early nineties, is a tragic one. During these years many lives were lost that could have been saved by airbags. The delay was clearly caused by the strong opposition of American automobile manufacturers. This opposition was not inevitable. First Ford and then General Motors were promoters of airbag development, probably because of the potential competitive advantage. But both came to oppose standards that would require airbags on the grounds that the technology and production facilities were not ready. With optimism bred by some early technological progress, the first NHTSA proposals required passive protection for occupants of all seats and in all crash modes without requiring seat belts. NHTSA scaled back successive proposals as industry opposition hardened, but it will never be known if a more modest initial proposal in the early seventies would have led to industry cooperation and an earlier use of airbags.

Another opportunity to break the impasse between NHTSA and the industry might have come with a serious test of both the technological feasibility and market acceptance of airbags. This could have been done when General Motors actually began to market airbags in a few 1974-76 model large cars. But the test hardly got off the ground; barely 10,000 cars were sold with airbags. Although the airbags functioned as expected, there was no serious effort by GM or NHTSA to promote their sale.

An opportunity for an even larger scale test of airbags, one that would include aggressive marketing, was offered by the agreement between the department of transportation and major automobile manufacturers at the end of the Ford administration. But whatever trust produced that agreement disappeared when early in the Carter administration the department issued a passive restraint proposal, triggering an escape clause that the manufacturers had negotiated.

Although there has been no change in the regulatory process, recent developments suggest that the long delays that marked the early history of airbags may not be repeated in the future. While NHTSA has been very deliberate in proposing new standards for advanced airbags, manufacturers have been aggressively developing and selling their variations on the new technology. In May 1999 the NHTSA administrator, Dr. Martinez, urged the automobile industry to devise “a voluntary safety standard... to prevent serious injury to children from side-door airbags.” An industry committee, chaired by Adrian Lund of IIHS, proposed a standard in little more than a year. Safety advocates like Joan Claybrook of Public Citizen and Clarence Ditlow of the Center for Auto Safety were skeptical that voluntary standards will work, noting “there’s no penalty for noncompliance.” Still, it is possible that in the current competitive climate for safety leadership, automobile manufacturers would strive to meet or exceed these standards. This may be a model for the rapid development of future safety standards — NHTSA would request a voluntary standard with the implicit threat of imposing one if the industry did not act quickly.

Testing Assumptions

In addition to the policy issues explored above, this case study of airbag regulation tests some assumptions about broad regulatory criteria and the specific issue of the superiority of automatic protection.

Regulatory Criteria

The Preference for Performance Standards

The preference for performance over design standards was accepted as a way to avoid freezing technology and allow manufacturers to adopt the most efficient ways of reaching safety objectives. But almost from the beginning, performance standards were ignored when they seemed hard to formulate or unnecessary, as in the cases of seat belts or ignition interlocks. The Supreme Court ignored the whole issue of performance standards when it overruled the rescission of the automatic restraint requirement on

the ground that NHTSA had not considered mandating a specific design, namely airbags. Finally, Congress mandated airbags for all vehicles under its 1991 law.

Performance standards can almost always be phrased in ways that are narrow enough to dictate a specific design. Whether this is desirable depends upon the particular circumstances. There seems to be no way to prove that performance standards are always better than design standards in promoting safety.

Comparing Costs and Benefits

Comparing costs and benefits was not contemplated in the law that introduced federal motor vehicle safety standards. Such a comparison might have been implied in the requirements for practicability and feasibility, but these were clearly secondary to safety considerations. However, starting with the Nixon administration, the White House issued increasingly broad requirements for agencies to analyze the economic effects of proposed regulations. From 1974 on NHTSA supplied these analyses, although measuring costs seemed particularly dubious when manufacturers could dictate price, at least until competition took over. Safety advocates at first objected to the procedure, then used it as a way of affirming what they knew to be the superior safety of airbags. In most cases, the cost benefit analyses rested on assumptions that were arguable rather than provable, but at least they made the assumptions explicit. There is no evidence that the analyses played a decisive role in promoting or defeating automatic restraint standards.

Public Acceptability

Public acceptability was another criterion not explicitly mentioned in the law. But after the fiasco of the ignition interlock, federal safety regulators became concerned about the public's acceptance of practically all decisions about automatic occupant protection, especially airbags. Federal courts came to believe that such a criterion was implied in the law but applied it so broadly that even Secretary Adams' dismissal of his predecessor's concerns about public acceptance of passive restraints was interpreted as due consideration of public acceptability. Since that time public acceptability has not been a pivotal issue, but it has never been far from the surface. The reactions of NHTSA, auto manufacturers, insurers, and safety organizations to airbag-related injuries and deaths were, at least in part, motivated by the fear that these reports would turn the public against airbags. Whatever the letter of the law, public acceptability of a regulation cannot be ignored.

Should Some People be Given More Crash Protection Than Others?

Neither the law authorizing motor vehicle safety standards nor its legislative history established any preferences or priorities in protecting people from injuries or death. In its decisions on depowered airbags and on-off switches, NHTSA introduced the principle that children should be given priority in

protection against injury or deaths caused by airbags. The main reason was that fatal and serious injuries to children would undermine public support for airbags and prevent their full benefits from being realized. Also, children are dependent on the actions and judgments of others. Automobile manufacturers and IIHS have proposed another set of preferences: protecting seat belt users more than nonusers, possibly because nonusers are now a clear minority. The underlying assumption is that this kind of regulatory triage would be unnecessary if and when airbags are sufficiently advanced to no longer cause serious injury or death. Some groups, like Public Citizen and the Center for Auto Safety, did object to the possibility that unbelted occupants might be placed at greater risk by depowered airbags. But it is striking that there has been virtually no public debate about the moral choice made by NHTSA to protect children at the expense of many adults. This choice may reflect a deeply held value of American society.

The Superiority of Automatic Protection

The government's interest in airbags was motivated from the very beginning by the belief that passive, or automatic, protection was always superior to protection that depended on behavior, whether voluntary or prescribed by law. The first director of the agency that became NHTSA, Dr. William Haddon, brought this principle from his public health training, although he never relied exclusively on passive measures when others were effective. But seat belt use was very low after motor vehicle safety standards were introduced. So, upon the emergence of airbag technology, NHTSA began to develop a passive restraint standard with airbags in mind. Some advocates thought airbags were superior to seat belts not only because they were automatic, but also because they spread crash forces more evenly. Even into the eighties, these advocates viewed seat belts as an alternative form of occupant protection that would eventually be replaced by airbags. But safety engineers within the auto industry kept coming back to the need for seat belts to keep occupants in position and to protect against rollovers, ejections, and many nonfrontal crashes. By the mid-seventies NHTSA thought of airbags plus lap belts as a passive restraint. This could be justified in a Pickwickian sense by assuming that belts would be used with airbags only as often as without them. Even after its enthusiastic embrace of airbags, the auto industry has not accepted the superiority of passive restraints. The lap/shoulder belt is considered the primary safety restraint, with airbags providing additional protection, especially for the minority of occupants who do not always use seat belts. In recent years, almost all safety experts have come to emphasize the combination of the two restraints and the need for increasing seat belt use rather than the primacy of airbags.

It undoubtedly is true that automatic protection is better than protection based on behavior. But if the automatic protection is limited to frontal or near frontal crashes, as is the case for airbags, then the issue of influencing behavior is still with us.⁷ That process might be slow, but the spread of airbags has

7. Side airbags do reduce side impact risk, but not risk from rollover or ejection.

not been dramatically faster than the rise in seat belt use. What is important is the combined benefit of airbags and safety belts; passivity is a secondary issue.

Some have argued, like Malcolm Gladwell in *The New Yorker*, that the early concentration on passive restraints by Haddon and other safety advocates led to the neglect of seat belt use laws in the United States, and that as a result belt use has lagged and many lives have been lost. As noted previously, however, it was the low level of belt use that was the most prominent early reason for advocating passive restraints. Efforts to pass seat belt use laws almost invariably failed until Secretary Dole offered the opportunity to avoid the passive restraint regulation if enough states passed mandatory seat belt use laws. Only then did seat belt use rise, partly because of the laws and partly because most automakers initially met the passive restraint standard with automatic seat belts rather than airbags. In a way the current level of seat belt use, high compared with the 14 percent U.S. rate in 1984 but low compared with Canada, Australia, and much of Europe, was a by-product first of the drive for passive restraints and then to reduce injuries from airbags. There is little reason to believe that most states would have passed belt laws and that the U.S. belt use rate would have reached its current level of 79 percent otherwise.⁸

Assumptions about Behavior

Policy preferences are often shaped by assumptions about behavior. The assumption that safety does not sell, an assumption that lurked in the background of the National Traffic and Motor Vehicle Safety Act of 1966, has now been reversed. Once Administrator Peck believed that safety had, in fact, become salable, he assumed that airbags would succeed in the marketplace even if they were not mandated. But he did not cite this argument in his unsuccessful attempt to rescind the automatic restraint standard. Although many of the conservative economists in the Reagan administration believed that the marketplace should be the place for consumers to express their preference for safety, no political leader seriously tried to overturn passive restraint or other motor vehicle standards on these grounds.

The evolution of assumptions about seat belt use is more complex. At first, airbag proponents kept citing experience and social research to show that advertising and publicity campaigns would not raise seat belt use, while airbag opponents were emphasizing the potential of those campaigns. Then the apparent effectiveness of foreign seat belt laws led to a debate about whether such laws would ever be accepted in the United States. For more than a decade they were not, and supporters of airbags came to believe no one could rely on their passage. Suddenly, in 1984, the dam broke, at least partly in response to the pressures raised by the Dole decision. The laws seemed to raise belt use, but only a combination of consistent enforcement and publicity got use in two states up over 90 percent. Even so, those most likely

8. Malcolm Gladwell, "Wrong Turn," *The New Yorker*, June 11, 2001, pp. 50-61.

to be in crashes are least likely to use belts. Law enforcement pressures probably have to be supplemented by informal social pressures to achieve high levels of belt use among the risk-prone.

The Politics of Airbag Regulation

Presidential Intervention

Presidential intervention in airbag regulation was, at first, secret. The Nixon White House feared that its action would alienate consumer groups, which it was courting, or that its action to postpone passive restraints would be seen as improperly influencing rulemaking under federal administrative procedure. The Ford and Carter executive staffs intervened indirectly, if at all, by setting broad standards for rulemaking. President Reagan and his staff later tightened those standards and were blunt in publicizing their opposition to an automatic protection rule. Secretary Dole and her staff, in turn, were quite open about the process by which the final rule on passive restraints was cleared by President Reagan. The first President Bush seemed to play little or no role in NHTSA's activities or in Congress' decision to require airbags. President Clinton, while supporting the various initiatives taken by NHTSA as part of his administration's crusade for family values and public safety, did not appear to take the lead in these latest cases. The second President Bush seems to have left the issue to NHTSA and DOT.

In a political system in which the president's office is central, it seems inevitable that it should make the final decision, if it is so inclined, about a regulation involving so many lives.

The Political Course of Airbag Regulation

The political course of airbag regulation was, very broadly, determined by the financial concerns of the automobile and insurance businesses and the safety concerns of consumers. Ideologies and other ideas discussed above played a significant, but secondary role. No doubt many auto engineers and executives were concerned about the safety of their products, but financial survival meant promoting safety within the limits of profitability. As John Graham has already noted, industry embraced airbag technology when it seemed to offer a competitive advantage.⁹ Auto manufacturers resisted legal mandates as restraints on their freedom of action. The insurance industry supported automatic protection requirements, especially airbags, because they believed claim costs would be reduced. Of course, reducing claim costs by reducing injuries and deaths was also in consumers' interest. So it was easy for the Insurance Institute for Highway Safety to be both supported by auto insurers and to claim that its research was in the public interest. Consumer safety concerns were also reflected, selectively, through the activities of safety groups and the perceptions that political actors had of public opinion. For the most part consumer groups, IIHS, and the insurance industry were allies in support of mandating airbags. That

9. Op. cit., *passim*, especially p. 55.

alliance was frayed when IIHS and insurers supported manufacturers' petitions — first on driver-side airbag credits and then on depowering airbags. Consumer groups suspected that manufacturers were putting financial interests ahead of safety.

The initial push for airbags was obviously driven by manufacturers' competitive interests, combined with the belief of regulators that airbags were a user-friendly way of dealing with the "second collision" of the body with hard surfaces. Manufacturers later offered ignition interlocks as a way of promoting belt use and delaying airbags, which, especially during the first energy crisis, they came to regard as financially burdensome and potentially a hindrance to sales. Congress reacted to the public's outrage against the inconvenience of interlocks by raising the hurdles for future restraint regulation. Meanwhile, although virtually all the regulators believed that airbags were in the public interest, there was fear that the public would not agree. Hence Secretary Coleman's decision, during a period of major financial hardship for U.S. auto companies, to run a large-scale test of airbags and other passive restraints rather than require them. Secretary Adams' subsequent decision to mandate passive restraints, but only in the next presidential term, gave the companies some relief in the form of time. This permitted them to opt first for detachable automatic belts, which were cheaper and less sophisticated from an engineering standpoint than airbags, and then to plead for regulatory relief from the passive restraint mandate when another oil crisis tested their financial survival. The Supreme Court revived the primacy of safety in this regulatory process, and the financial recovery of the auto industry allowed Secretary Dole to balance the requirement for passive restraints with an emphasis on making driver airbags available and with incentives for state seat belt laws. Note that the Reagan administration, in spite of its professed bias toward the free market, saw no problem in promoting state regulations requiring seat belt usage. The regulation encouraging driver side airbags led to their eventual widespread availability. Media reports of airbag effectiveness in real crashes spurred consumer demand, which ultimately resulted in a congressional requirement for airbags replacing the automatic protection standard. When passenger airbags began to cause the deaths of children who were sitting in the front right seat, and some small adult drivers were injured or killed because they were sitting too close to the steering wheel, auto manufacturers joined with government and safety advocates to change seating behavior, to urge seat belt use and enforcement laws and to improve airbags. There was little demand to eliminate airbag requirements because they were still saving many more lives than they were taking, even if the injuries caused were ones the manufacturers had once warned about.

Missing from this outline is exactly how the interests of consumers are manifested. In a democracy, special interests always say they represent the public interest. Elected officials frequently find it easy to ignore weakly held majority opinions that are opposed by strongly felt and well-financed minority opinions. The courts profess to be bound not by public opinion, but by the law. The law, in turn, is what the courts say it is. Surveys and polls often do not accurately test the strength of opinions and results are easily manipulated through the wording of questions. These are classic concerns about policy-making in a democracy, and this case history throws only limited light on them. Auto safety regulation falls under the broad category of public health, and there is little dispute that the objective of public health policy is to reduce injuries and deaths. There can be disagreement about whether, and at what price, particular policies reach these goals. And sometimes choices have to be made about whether some groups should be given preference in protection. The history of airbag regulation shows that our system still does not have a straightforward procedure for resolving these issues. But in this particular case the process, did, in the long run, advance the public good.

Appendix

Interviewees

Interviewees are listed with the affiliations that are relevant to this study.

Frank Berndt, National Highway Traffic Safety Administration	Charles J. Kahane, National Highway Traffic Safety Administration
Michael Browne, U.S. Department of Transportation	Ingo Kallina, Mercedes-Benz
James Burnley, General Counsel, Deputy Secretary, Secretary, U.S. Department of Transportation	Ben Kelley, Insurance Institute for Highway Safety; then Institute for Injury Reduction
Joan Claybook, Administrator, National Highway Traffic Safety Administration; President, Public Citizen	Christopher Kennedy, Chrysler
Robert P. Davis, U.S. Department of Transportation	Richard W. Lewis, Ford
Christopher De Muth, Office of Information and Administrative Affairs	G. Murray Mackay, Accident Research Center, University of Birmingham
Howard Dugoff, National Highway Traffic Safety Administration	David Martin, General Motors
Neil Eisner, U.S. Department of Transportation	Ricardo Martinez, Administrator, National Highway Traffic Safety Administration
Barry Felrice, National Highway Traffic Safety Administration	Roger Maugh, Ford
Michael Finkelstein, U.S. Department of Transportation	Donald McHugh, State Farm
James F. Fitzpatrick, Arnold and Porter	Herbert Misch, Ford
John D. Graham, author, Auto Safety, Harvard School of Public Health	Thomas C. Morrill, State Farm
James B. Gregory, Administrator, National Highway Traffic Safety Administration	Ralph Nader
Ralph Hitchcock, National Highway Traffic Safety Administration	Brian O'Neill, Insurance Institute for Highway Safety
James Johnston, General Motors	Raymond Peck, Administrator, National Highway Traffic Safety Administration
Erica Z. Jones, National Highway Traffic Safety Administration	Helen Petrauskas, Ford
	Donald L. Schaffer, Allstate
	Diane K. Steed, Administrator, National Highway Traffic Safety Administration
	Peter Thomas, Vehicle Safety Research Center, University of Loughborough
	Jack Trees, Allstate
	Falk Zeidler, Mercedes-Benz