

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

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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

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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 Mannella, 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.