

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

By Martin Albaum

CHAPTER 1: Automobile Safety Becomes a Federal Affair

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

The Automobile Redefines America

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

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

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

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

Automobile and Highway Safety

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The Automobile Industry Reacts to New Safety Ideas

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

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

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

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

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

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

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

Political Rumblings

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The Broader Environment and Climate of Opinion

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

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

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

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

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

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

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

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

Answers

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

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

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

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

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

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

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

Federal Auto Safety Standards Are Mandated

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

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

The National Traffic and Motor Vehicle Safety Act of 1966:

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

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

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

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

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

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

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

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

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

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

The Senate Report stressed safety before coming to practicability:

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

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

43. *Ibid.*, p. 274

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

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

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

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

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

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

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

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

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

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

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

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

The Origins of Airbags

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Summary

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

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

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

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

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

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