

A HALF CENTURY OF ATTEMPTS TO RE-SOLVE VEHICLE OCCUPANT SAFETY: UNDERSTANDING SEATBELT AND AIRBAG TECHNOLOGY

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ABSTRACT

In road safety, a common perception exists that technology and/or regulation can solve problems, and does so in a sequential and progressive manner. This is not always the case. Technology is no panacea and government interventions can do as much harm as good. Using historical methodologies, this paper explores the multiple attempts and failures of manufacturers, governments, and other groups to solve the rather simple safety concept of crash harm reduction through properly restrained vehicle occupants. This historical-methodology approach is suggested as an effective evaluation tool to measure other road safety interventions.

INTRODUCTION

Seatbelts save lives. No responsible road safety professional today would dispute this fact. They have been in use for approximately forty years and evidence of their effectiveness is abundant. Yet usage rates in the United States today remain shockingly low (around 60 percent), especially when contrasted with Canada, Australia, and Western Europe with rates approaching or exceeding 90 percent.¹ Comparing the experience in the US with that of other countries offers insights into the nature of seatbelt use and how road safety interventions work (or do not).

The availability of the technologies of seatbelts and passive restraints have failed to solve the problem of injuries and deaths in the United States caused by the occupants colliding with the interior of the vehicle or being ejected, after the vehicle has hit another object. Yet, the technology of seatbelts has allowed other countries to solve this problem to a large extent. The US problem then, is not with insufficient technology, but with the failure of drivers and passengers to use it. A reason for this behavior rests in

¹For Canadian statistics see Transport Canada Road Safety, Leaflet CL 9709 (E).

the history of the relationship between US society and seatbelts, including the politics involved.

This paper explores the successive cycles of government intervention in the United States, each one an attempt to solve the problem of the human collision.² Using a comparative-world methodology, we contrast the case of the United States with that of Canada (especially British Columbia) and to a lesser extent with Australia and Europe. This approach illuminates the extent to which seatbelt usage has been cultural and political and demonstrates the need to consider social and human factors when evaluating or designing road safety initiatives. The political history of seatbelts in the US and society's interaction with both the belts and the politics, contributed to widespread apathy and even antipathy toward them, which has been a factor in the continued problem of deaths and injuries to unbelted Americans.

The First Attempt (to solve the problem): Government Regulated Seatbelts, 1966-1970

Initially, in the late 1950s automobile manufacturers introduced seatbelts to solve the problem of keeping the driver in his or her seat following a minor collision such that control of the vehicle could be maintained. They became an option on new vehicles—albeit not a popular one. In the mid 1960s legislators and activists (Ralph Nader being the most memorable of them) re-defined the problem to which seatbelts were the solution—they argued that seatbelts could prevent thousands of accident-related injuries and deaths by reducing the severity of the "second collision" between the occupant and the interior of the vehicle or from the occupant being ejected during an accident (the first collision being between the automobile

²That is, preventing injury to people after the vehicle has hit something. We acknowledge that road safety involves much more than seatbelt usage, but this paper is only about the problem of occupant protection.

and another object).³ Reducing second collision injuries and fatalities has remained a problem in the US for the rest of the century. Despite claims by individuals such as Ralph Nader that having seatbelts in every vehicle would solve the problem of preventing the so-called secondary collision, this failed to happen because people did not wear them.

From the early 1960s seatbelts were available as options on most American-made cars. In 1963 only 9 percent of cars had belts, yet usage rates ranged in those vehicles from 47 percent always using them on local trips to 74 percent on longer trips.⁴ Approximately 30 percent of vehicles on the road in 1966 had them, although a National Safety Council survey found that full-time usage rates among people who chose option seatbelts was 44 percent (67 percent said they used them on longer journeys exceeding 25 miles).⁵ Given a choice, automobile makers and consumers did not often opt for seatbelts (but, it's worth noting that those who chose them as an option—who were actively involved in obtaining them—tended to use them).

For the those concerned with national public safety—such as health officials, certain governors, senators, and congressmen, and consumer advocates including Ralph Nader—something had to be done about the thousands being killed each year (43,400 in 1963⁶ and approximately 50,000 by 1966⁷). Their solution was to legislate seatbelt installation along with a range of safety guidelines to make the interior of the vehicle less dangerous.⁸ In 1966 the US government created a separate Department of Transportation with a mandate to set standards and to put in place mechanisms to monitor them (soon the National Highway Traffic Safety Administration [NHTSA] would be

³Ralph Nader, Unsafe at Any Speed: The Designed in Dangers of the American Automobile (New York: Grossman Publishers, 1965, 1972), especially chapter three.

⁴New York Times (hereafter NYT), 12 April 1967, section XIV, p. 31.

⁵NYT, 10 April 1966, section XII, p. 9. Another survey, this one carried out by the Auto Industries Highway Safety Committee, found that 38 percent of drivers with seatbelts "sometimes" used them on shorter trips and 25 percent sometimes used them on longer trips.

⁶NYT, 7 April 1964, p. 34.

⁷Business Week, 11 June 1966, p. 179.

⁸Removing or re-designing dangerous protruding objects such as the metal "cookie cutter" ring on the steering wheel, were among the changes to design mandated by this legislation.

created for this purpose).⁹

The first motor vehicle safety standards went into effect in 1968. These safety standards and the creation of NHTSA were large steps forward in making motor vehicle travel safer. But the introduction of seatbelts as standard equipment on vehicles failed to make Americans buckle up and injury rates remained high. (Usage and accident rates at this time were similar in Canada where the majority of vehicles were produced by US manufacturers.)

The automobile manufactures (Chrysler, American Motors, General Motors, and Ford) predicted as much. Prior to the Motor Vehicle Safety Standards they argued that the public would not wear seatbelts, and that making them mandatory would ruin the styling of their vehicles and reduce sales.¹⁰ Auto makers further argued that Americans were not ready for seatbelts and would resent having something they did not want, and the costs for it, imposed upon them.¹¹ The manufacturers claimed to have an interest in safety, but insisted that it could be better achieved through improved highways and driver education—not federally imposed standards.¹² While it is indisputable that the auto manufacturers' main motivation in making these arguments was their complete hostility to any government regulation of their industry, hindsight shows they had some valid points.¹³

Over thirty years later, it is worth examining their

⁹This was several years after the United States government mandated that any vehicle purchased for government use through the General Services Administration be equipped with seatbelts and other safety-related equipment. The opposition to this government stance on the part of the automobile companies is written up in NYT, 31 August 1964, p. 27. The state of New York had also already ordered lap belts on all vehicles sold in the state. NYT, 18 September 1964, p. 34

¹⁰NYT, 19 February 1965, p. 37.

¹¹NYT, 18 September 1964, p. 34; 24 February 1965, p. 81.

¹²Despite claims to be concerned about safety, General Motors under tight questioning from Senator Robert F. Kennedy during government hearings on this issue admitted to making \$1.7 BILLION in profits during the previous year, and spending only \$1.2 million on safety research and initiatives. Other manufacturers showed similar records. Newsweek, 26 July 1965, pp. 67-68.

¹³It should be noted that government involvement in the industry has always been huge—through constructing highways the US government has given an enormous subsidy to the industry.

arguments. Legislating seatbelt installation did not solve occupant restraint problems, but it also did not cause a reduction in sales nor make people fear automobile use. To their pleasant surprise, auto makers did not experience a decline in sales as a result of this legislation. If anything, the increased attention to safety on the newer cars became selling features as a result of a new public interest in the issue. Regardless of whether people wanted to wear a seatbelt all the time, many wanted them there along with the other new safety features of collapsible steering wheel, dual braking systems, a padded dash board, and safety door latches.¹⁴ People seem to believe Nader who had said that people may cause accidents, but cars causes injuries.¹⁵ Arguably, since this time a culture of conspicuous consumption of safety features from airbags to anti-lock brakes and four-wheel drive has emerged, making them emblems of wealth or class status as much as safety devices.

As the auto makers predicted, people did not like or wear seat belts. A historical perspective suggests, however, that the automobile manufacturers in the United States themselves played a large role in making their own prophesy come true. The evidence presented below indicates that through making seatbelts especially ugly and uncomfortable, publicly raising concerns about price increases, and desperately arguing the (minute) potential dangers of belts, they made the arrival of the seatbelt era in America more cumbersome, controversial, and difficult than it needed to be.

For example, take the engineering and styling of the belts. By the early 1960s, seatbelts in Europe had already evolved into an early version of the self-adjusting, three-point, fully-retractable harnesses that are in common use today.¹⁶ The European models were readily available as examples on the thousands of imported automobiles sold in the US each year. US manufacturers chose instead to install manual-adjusting, especially large, belts that restricted movement, and installed shoulder belts separate from lap belts, making it necessary for the user to do up

two separate buckles.¹⁷ Moreover because these shoulder belts were not self adjusting, drivers wearing them often could not reach components on or near the dash board. Ralph Nader became especially critical of the manufacturer's tactic, suggesting that the deliberately engineering belts for "human irritation."¹⁸

The manufacturers complained loudly to the public and in the press about these belts. Executives publicly bemoaned the ugliness of the belts and how they detracted from the car's appearance. One likened them to "spaghetti" while another to the "vines" in "Tarzan's cave."¹⁹ While Volkswagen and Volvo promoted the safety features (including belts) on their vehicles in their advertising and public relations, the US auto makers complained that seatbelts ruined the car's aesthetic appeal and raised prices.²⁰ A Chrysler executive commented that "We can't think of a better way of doing it." Yet, the European example was right in front of them. This executive further commented that the inconvenience of the belt design does not increase the chance that riders will wear them, thereby publicly encouraging people not to do so.²¹

The motivation for the auto makers' tactic was their resentment of government regulation. The dialog, as reported in the newspapers, between them and the US government (and Ralph Nader) suggests a war for public support on the question of regulating the automobile industry. The manufacturers chose to make seatbelts the focus of their objections to the new regulations—even though these rules also included many other safety features. In the press manufacturers told Americans that no conclusive evidence existed on the benefits of safety belts and that adding them and other design modifications to automobiles would raise prices significantly.

Manufacturers also called attention to the minor injuries that seatbelts cause (neglecting to mention that this was while saving one's life), and asserted that insufficient data existed to warrant their widespread use. They especially attacked shoulder harnesses for the abrasions they left on the necks of people in accidents (again ignoring the lifesaving that went on in the process). If people wanted an excuse for not taking the trouble to buckle their seatbelts, the manufacturers gave it to them. A 1967 New York Times reporter even commented that the controversy raised over shoulder harnesses probably degraded the strap

¹⁴NYT, 19 August 1965, p. 13, discusses Dodge stressing 12 new safety features on it's higher priced vehicles.

¹⁵Nader views discussed in Business Week, 11 June 1966, p. 179.

¹⁶Business Week, 11 June 1966, p. 192 discussed this safety belt and an article on 23 April 1966, pp. 52-54, discussed seatbelts and safety features on Volvo and SAAB vehicles, imported into the United States. The existence of European superiority on safety belts was also discussed in NYT, 18 September, 1964, p. 34.

¹⁷NYT, 2 April 1967, section XIV, p. 28.

¹⁸Ralph Nader writing in NYT, 21 March 1968, p. 12A.

¹⁹NYT, 2 April 1967, section XIV, p. 28.

²⁰NYT, 22 August 1967, p. 41.

²¹NYT, 31 March 1968, p. 12A.

so much that Americans would not ever use it even if the belt were improved or subsequent research negated the significance of the abrasions (both of which did occur).²² The combination of manufacturers' negative attitudes toward seatbelts and unsubstantiated concerns about their safety could not have made seatbelts appealing to the average American.

Ralph Nader along with several senators fought back hard, especially on the subject of costs. To General Motors executives who complained of the costs, they countered that it was the world's most profitable corporation and therefore could absorb a few dollars for safety.²³ Subsequently Senators Warren G. Magnuson (Democrat from Washington) and Walter Mondale (Democrat from Minnesota) found evidence that the manufacturers had grossly inflated the costs of seatbelts in their propaganda. The senators' own research suggested that the costs of the new seatbelt was approximately \$3, while the manufacturers stated the costs to range from \$23 to \$34.²⁴ It appears the automobile companies hoped to convince people to write their political representatives and ask for the repudiation of the motor vehicle safety standards through which, in their view, the government forced people to buy things, like seatbelts, that they did not want.²⁵ But the auto companies failed to understand the situation: not even the most right-wing Republicans on the government's safety committees took up the position of the automobile manufacturers. Supporting safety standards was politically popular as most Americans supported the idea generally.²⁶ It took the auto manufacturers a few years to recognize the new reality.

The end result of these seatbelt-focused exchanges was not public opinion against the regulations; people believed that making cars safer was a good idea. Instead this dialog contributed to negative opinions towards seatbelts specifically and helped instill the view that they were something being imposed on Americans by a "big brother" government that was growing. Nearly fifteen

²²NYT, 27 August 1967, section IV, p. 13. Dr. Haddon, director of the National Highway Safety Bureau, undertook investigation and reported his findings in January 1968, noting that in Sweden a study of 28,000 crashes that involved lap and shoulder seatbelts saw no one killed at speeds under 60 miles per hour. NYT, January 1, 1968.

²³NYT, 7 January 1968, p. 54.

²⁴NYT, 8 January 1968, p. 47.

²⁵NYT, 15 September 1968, p. 46.

²⁶Elizabeth Brenner Drew, "The Politics of Auto Safety," *Atlantic Monthly* (October 1966): 95-102.

years later, in letters to the editor the public continued to echo these same sentiments.²⁷ The result of people not wearing belts was thousands needlessly dying, which in turn brought more government intervention in the industry and in Americans' lives—not less.

The Second Attempt: Additional Seatbelt Paraphernalia, 1971-1976

Because the imposition of safety standards failed to solve the problem of carnage caused by the second collision by the early 1970s, advocates for public safety decided they needed to undertake greater measures. The secretary of transportation believed that he had five choices (retain the present rules, conduct a five-year field test of air bags, require air bags as an option on all new cars, make seatbelt use mandatory, or mandate passive restraints on all cars starting with the 1980 model year).²⁸ The choice in the US, where the government now had some control over the automobiles on the market (a luxury that Canadian or Australian governments did not have) was to turn to new technology (while Canada and Australia turned to mandatory [seatbelt] usage laws [MULs]).

In the early 1970s the United States had recently been to the moon, proving its technological capacity to be unmatched in the world. A faith in technology permeated US culture. It became the prescription for the country's ill of motor vehicle accident casualties.

The US government regulators took three steps in the early 1970s aimed at increasing the amount of technology on vehicles. The first was to convince manufacturers to experiment with the relatively new airbag technology with a goal of introducing it within a few years.²⁹ The second move was to attempt to increase belt usage through reminder systems that buzzed when the seatbelt was not fastened. All cars manufactured for the 1971 model year (and subsequent years) had this feature. But, usage rates remained low, bringing yet another cycle of legislation—insisting that all new vehicles for the 1974 model year would have an interlock system installed which would prevent the vehicle from being started unless the seatbelt were fastened. Opposition to interlock technology was

²⁷NYT, 6 November 1981, p. 30; and 31 December 1984, p. A26.

²⁸NYT, 2 August 1976, p. 24.

²⁹*Popular Mechanics* (February 1971), pp. 64-65.

Experiments with airbags began in the late 1960s with Ford forming a partnership with Eaton Yale & Towne, Inc. to develop the airbag. They were tested by the Air Force using baboons. *Newsweek*, 1 January 1968.

widespread and probably created as much resentment toward seatbelts and government demands that people wear them as it did converts to the wearing of them. It should be noted that the Canadian government did not demand the interlock system and most manufacturers either left it off of vehicles being shipped to Canada or gave Canadians a bypass switch.³⁰

The Third Attempt: Airbags and other Passive Restraints, 1976-1983

With interlock devices not working, US legislators and certain lobbyists proceeded to their third choice of airbags or other passive restraints (such as the automatic seatbelt developed first by Volkswagen).³¹ The public widely seems to have embraced the idea of airbags as it gave an excuse for not becoming accustomed to seatbelt wearing and it fit with the western (and especially American) cultural tendency to see technology as a panacea thereby absolving individuals and society of taking responsibility for their own behavior.³² Industry at first balked at the idea of airbags. They cited their excessive costs and the stressed the dangers that they believed inherent in airbags—especially to children.³³ The industry had "cried wolf" when it protested seatbelts on the basis of their safety, which made their calls of dangers with airbags much less credible at the time (nevertheless, the history of their use in the 1990s has born out these concerns to be real issues with airbags).

In 1976 airbags seemed like the only technology that might save Americans from themselves and NHTSA sought to make them mandatory. Manufacturers protested adamantly. The auto makers received a slight compromise from the transportation secretary William T. Coleman in 1976, who seems to have listened to the safety concerns. The auto companies agreed to make 250,000 vehicles with airbags each year, that would be sold to consumers and monitored by NHTSA to gather information about them.³⁴ Soon, in 1977, a new transportation secretary (Brock Adams) ordered that airbags or automatic lap and shoulder

³⁰Vancouver Province, 17 July 1973, p. 5. It should be noted that most vehicles in Canada were US made, or made for the US market. 1973 probably marked the first year that the standards would be different.

³¹Popular Science (March 1974), p. 93.

³²Business Week, 4 July 1977, p. 20. Discusses this as a problem with promoting airbags to a large extent.

³³NYT, 3 July 1977, section IV p. 6.

³⁴NYT, 12 December 1976, p. 6.

restraints be installed in all standard and luxury automobiles by 1982, and in all smaller cars by the 1984 model year.³⁵ General Motors protested this in 1979, still arguing that airbags might injure small children.³⁶

In the 1980s the Reagan administration reversed pending legislation that would mandate passive restraints (airbags or automatic belts) in all vehicles. This move belonged to a general policy of deregulating American industries. The President called for improved driver training as the solution, rather than vehicle regulation.³⁷

Consumer advocate groups and automobile insurance companies took the government to court over the reversal of this bill, and won.³⁸ Reagan's Transportation Secretary Elizabeth Dole was told that the problem of occupant restraint had to be solved to save lives, and she was given a year to draft new, replacement legislation or the old bill passed in 1977 would be re-instated. In 1983 she introduced a compromise that included phasing in airbags (on 25 percent of new vehicles after September 1 1987, 40 percent after September 1, 1988, and 100 percent by September 1, 1989. But, she also legislated that this requirement would be removed if enough individual states passed mandatory usage laws (MULs) that taken together covered at least 2/3 of the American population.³⁹ Automobile companies suddenly became huge proponents of seatbelts and MULs.⁴⁰

The Fourth Attempt: Mandatory Usage Laws, 1984-1990s

More than a decade after parts of Australia made seatbelt usage mandatory, eight years after Canada began doing so, and after thirty-two other countries had adopted MULs, the US states began to look at the issue.⁴¹ On

³⁵NYT, 1 July 1977, p. 1.

³⁶NYT, 2 October 1979, p. A17.

³⁷Motor Trend (April 1981), p. 32. NYT, 24 October 1981, p. 1.

³⁸NYT, 25 June 1983, section one, pp. 1,8; This decision to insist that the government return to the passive restraint technology approach could be interpreted as a legal statement supporting the notion of technology as a panacea for a major social or behavioral problem—that of people refusing to buckle a seatbelt.

³⁹NYT, 12 July 1984, p. A18.

⁴⁰On auto company involvement see NYT, 6 December 1983, p. 31. 25 April 1984, p. 22. 12 July 1984, p. A19.

⁴¹NYT, 6 June 1984, p. D25. 32 countries, 7 Canadian

January 1, 1985 the law went into effect in New York state and over the next few years other states passed similar legislation. Unlike in Canada or Australia, where the passage of such laws have contributed to long-term substantial decreases in the number and severity of injuries caused by the second collision, their effect in the United States has been more limited. This indicates that neither seatbelts, nor the law, alone or combined, contain the entire solution to the problem (if it did, US rates would resemble more closely those of other countries).⁴²

Several likely reasons exist for the failure of seatbelts and MULs to save Americans, which will be explored here. One possible explanation for the law's failure to raise US usage rates to the levels seen elsewhere is that the law has often had limited enforceability. In some states (although not New York) it was a secondary enforcement law; police officers could not pull a vehicle over solely for the infraction of not wearing a seatbelt—there had to be another reason and the seatbelt would become an additional, discretionary ticket. This weakened regulation decreased the seriousness of the issue in people's minds. Although New York kept it a primary offense, it did not experience the same long-term levels of compliance as Canada, likely because the police themselves did not take enforcement of the MUL as seriously.⁴³

Perhaps a bigger explanation for why MULs in the US have been less effective than elsewhere has been the lack of accompanying awareness of the need for seatbelts on the part of the US public. Compare the arguments for and against MULs in the US (especially NY state) and Canada (taking British Columbia [BC], which enacted an MUL in 1977, as the main source of data). In BC, newspaper editorials, letters to the editor and newspaper reports stressed the importance to the BC economy of passing such a law. With government-run medical insurance and motor vehicle insurance, the costs of unbelted drivers to the provincial economy became clear to most voters. For example, the BC Medical Association (Physicians) in 1976 argued that injuries cost on average \$4000 a piece, and deaths \$150,000 and that 115 of the 717 people who died in automobile crashes in the province

provinces and the US territory of Puerto Rico had passed such legislation. The countries that had done so included Japan, Britain, France and the Soviet Union.

⁴²While one could argue that this is because Australians or Canadians are more law abiding generally than the average American, no solid evidence exists to support this.

⁴³*NYT*, 28 February 1985, p. B5; A police Chief named Margeson is quoted as saying only a few tickets in his jurisdiction had been issued, that "It's not a priority."

the previous year would have survived had they been wearing seatbelts (thus a needless cost of \$17.25 million dollars).⁴⁴ Because medical insurance came from tax revenue and vehicle insurance was run by the government (and thus considered like a tax) people could understand that taxes would go up if claims from injuries and deaths did not go down.

In the United States the costs to society were less clear for the average person than they were in BC. With hundreds of auto insurance companies and medical coverage companies to choose from in the US, and with a large population, the effect on society of the unbelted driver was less evident to the average person—although known to federal government agencies such as NHTSA and the insurance companies.

Arguments for and against the MULs given in the newspapers, by interests groups, and everyday citizens, differed between New York and BC. The argument against an MUL made frequently in the US—that the unbelted driver only endangers him- or herself—was quickly negated in the British Columbia campaign. Not only did an unbelted driver cost society, according to reporters and letters to the editor, but the unbelted driver could also lose control of the vehicle following a first collision and would be unable to avoid hitting another vehicle or pedestrian. British Columbians stressed the need to protect society in general ahead of any arguments about individual rights. Whereas in New York and the US, citizens stressed that individual rights should come before measures to protect society at large—even if society paid for the medical and vehicle losses through higher insurance rates. Fears of an Orwellian "Big Brother" government were often repeated by politicians and citizens in New York as the reason to oppose MULs.⁴⁵ Meanwhile, the state of Virginia refused to go along with the federal push for MULs on the principle that the state had a proud history of opposing the federal government—safety, monetary losses, and lives lost were subordinated to a political and cultural principle.⁴⁶

Along with automobile companies, insurance companies became prominent proponents of MULs in the US.⁴⁷ While in general this is similar to BC where the one automobile insurance company, ICBC (the Insurance Corporation of British Columbia)⁴⁸ actively supported the

⁴⁴*Vancouver Province*, 9 April 1976, p. 33.

⁴⁵*NYT*, 12 October 1984, p. C1. That this debate happened in 1984 contributed to Orwellian interpretations.

⁴⁶*NYT*, 28 February 1985, p. B5.

⁴⁷*NYT*, 25 June 1983, p. 8.

⁴⁸All motorists in the province must insure their vehicles

concept of an MUL, there is also a substantial qualitative difference. Whatever else British Columbians felt about ICBC, they could recognize it as an exclusively BC entity, designed to serve residents of the province. American insurance companies generally transcend state and regional boundaries, and Americans may not have seen them as having local and community interests foremost in their minds (ahead of their own financial statements). Thus, many citizens may have written off MULs as the imposition of a powerful insurance lobby in Washington DC and the state capitals, and not something as emerging from society.

In British Columbia the MUL did not result from federal government initiative, but from Provincial concerns and studies, and citizen interest. In 1975 ICBC sponsored a safety conference that examined the impressive results in the Australian state of Victoria (20 percent decline in fatalities and a 50 percent decline in hospital admissions from car accident injuries⁴⁹) and the need for reducing government pay outs to injured individuals through government-run medical insurance and car insurance.⁵⁰ Citizens came to support the idea of an MUL and even push politicians who acquired cold feet, concerned about public reaction to a perception of an imposition on civil liberties.⁵¹ Politicians debated the MUL for two years before finally passing the legislation.

This political waffling ironically may have made the laws more popular as people were able to fault the government for inaction on a proposal that would save lives and money.⁵² Of course some people opposed the concept of legislating seatbelt use, but the majority seemed to accept its necessity as everyone paid for the costs of injuries and fatalities.⁵³ Education also played a large role in

through ICBC, a government-owned and regulated company, created in 1972.

⁴⁹Vancouver Province, 26 March 1975, p 8.

⁵⁰Vancouver Sun, 24 January 1976, p. 5 and 12 March 1976, p. 5; Vancouver Province, 26 March 1975, p 8.

⁵¹Vancouver Province, 29 October 1975, p. 4 an editorial notes that the highways minister said that any government with guts should pass a seat belt law, and that he supported one, but that the public should expect him or his government to initiate such a law. New Democratic Party (a semi-socialist party) Premier Dave Barrett echoed these remarks in the Vancouver Sun, 19 November 1975, p. 53.

⁵²Vancouver Sun, 12 April 1975, p. 43 and 24 January 1976, p. 5; Vancouver Province 21 June 1975, p. 5;

⁵³Examples of opposition in letters to the editor in the Vancouver Sun, such as 20 September 1975, p. 5. Article

fomenting public support in British Columbia. In BC the MUL was combined with an intense education campaign—before and after the passage of the law—in the schools, at fairs, and in the media stressing why one should wear a belt.⁵⁴

When the BC MUL finally passed in 1977 (with only one legislator opposing the bill⁵⁵), approximately 65 percent of citizens supported it. It went into effect on October 1, 1977 and statistics (73 percent usage in the Vancouver and Victoria areas in March 1978) suggest that the majority of those who opposed it, wore their belts anyway. Prior to the MUL, only 28 percent in these areas used safety belts.⁵⁶ (By contrast in the United States in 1978 metropolitan-area usage was 14 percent).⁵⁷

To contrast these facts with those from New York reveals striking differences. Governor Cuomo of New York approximated that during the time the state legislature debated the MUL, correspondence received from state residents was about "18,000-to-1 against."⁵⁸ Moreover, politicians in New York and other states were far from unanimous in their votes for the law. Most laws that did

stating that the majority polled favored the law in Vancouver Sun, 21 October 1975, p. 15.

⁵⁴Advertisements promoting the MUL included instructions on how to wear a seatbelt and why one should wear one. For example, see Vancouver Sun, 24 September 1977, p. 27. ICBC also toured the Seat Belt Convincer, a seat mounted on a ramp that people could sit in, belted in. An attendant would pull a trigger sending the seat sliding down a 12 foot incline, coming to an abrupt stop at 9.6 km/h, producing a jolt sufficient to demonstrate the utility of the seatbelt; The Colonist (Victoria BC), 19 November 1977, p. 11.

⁵⁵Vancouver Sun 26 March 1977, p. 16. By contrast when the state of Washington passed seat-belt legislation nearly a decade later, the vote was 33 to 15. Vancouver Sun, 8 March 1986.

⁵⁶Vancouver Sun, 9 January 1978, p. A12. Vancouver Sun, 13 May 1978, p. A8. Within a year, these numbers dropped significantly, to only approximately 55 percent of drivers buckling up by December 1980. The Colonist (Victoria BC), 19 December 1980, p. 6. Subsequent studies following the implementation of MULs elsewhere in Canada reveal a pattern of high initial compliance, followed by a lessening of usage rates.

⁵⁷NYT, 17 December 1978, p. 34.

⁵⁸NYT, 1 February 1985, p. B2.

pass, did so with a bare majority.⁵⁹ The one similarity between New York and BC was that, at least initially after the MUL went into effect, the majority of people (over 70 percent) buckled up regardless of their opinion of the law.⁶⁰ Subsequently, in both places rates dropped (to 40 percent in NY after just three months, and in BC it gradually fell to a low of 55 percent over the next few years).⁶¹ But since that time BC's rate has steadily increased reaching near 90 percent while that of NY has grown much more slowly.

This BC increase happened because of direct interventions on the part of ICBC. Following the decline to 55 percent, ICBC established its Traffic Safety Division with a mandate to promote seatbelt usage and other safer driving behaviors. ICBC created a three pronged approach to safety initiatives that has proven successful on many campaigns to this day. The first prong is police involvement through road checks and other enforcement programs (known as STEP—Selective Traffic Enforcement Program). The second aspect is a corresponding education campaign on radio and in newspapers (and more recently, television) that promotes the reason for the initiative and informs people that the police are actively looking for violators. The third prong involves making use of local traffic safety committees (usually comprised of representatives from town government, educational institutions, related businesses, and citizens groups) to promote the initiative locally through such means as fairs, contests, or banners in key locations; this last aspect gave communities partial "ownership" of the problem and the solution process. This approach was first used successfully to reduce drinking and driving (and the program remains in place today, providing consistent and sustained pressure).

In 1983 ICBC applied the approach to achieve compliance with the seatbelt MUL, and by maintaining the program through the years has helped bring the steady increase in seatbelt usage rates. In British Columbia these campaigns have included a particular focus on children and youth, with remarkable success.⁶² At a time in their lives

when they are supposed to be risk-takers, BC's youth has a high rate of seatbelt usage (and also thanks to these education programs, the lowest rate of drinking-and-driving incidents).⁶³ Given the contrast with the US, BC's long-term commitment to road-safety education has likely played a significant role in reaching a 90th percentile usage rate.

In the US some efforts at education occurred at the federal and state levels, but the quality and commitment appears to have been much lower.⁶⁴ In New York, legislators intended that the law itself would be the educator (and not an intimidator). But without accompanying education, people viewed the law as a nuisance, and not a real reason to buckle up.⁶⁵ Indeed, through the 1980s a large percentage of Americans continued to believe that it is better to be thrown free of the vehicle in an accident.⁶⁶ All of this suggests a need for increased educational efforts.

Overall, the contrast in US and Canadian MUL experience demonstrates the necessity of public involvement in creating the legislation whether directly through lobbying or indirectly through interacting with education programs or media reports that convince people of the need for a new regulation or a certain behavior. Having a comprehensive, multi-faceted education program in place before, during, and after the discussion of the MUL, contributed to favorable public interest in seatbelts

but also in car accidents) or leaving the driving population, thereby increasing the percentage of people wearing seatbelts through natural aging of the population. Furthermore, psychologists have identified that people become more cautious as they enter their 30s and 40s, or have children. The US baby boomer population themselves, by moving into this more conservative age group helped to raise usage rates. These generational factors alone do not, however, account for the increased rate of usage into the 90 percentile range in Australia and Canada.

⁵⁹In New York in the lower house it was 82-60, only 6 votes more than the needed number for passage *NYT*, 22 June 1984, p. B3. In the NY senate the vote was 37 to 22 (*NYT*, 26 June 1984).

⁶⁰*NYT*, 1 February 1985, p. B2.

⁶¹*NYT*, 9 May 1985, p. A13.

⁶²All regions have seen a gradual increase in seatbelt usage as the population has aged. Moreover, younger generations have generally had higher usage rates than older ones. This suggests that those most opposed and most unaccustomed to wearing belts are gradually dying off (mostly of old age,

⁶³*Canadian Medical Association Journal* 157, no. 12, 15 December 1997, pp. 1661-1662.

⁶⁴Whether this is due to the nature of the education campaigns or the amount of money spent on them is not known but is a question worthy of study.

⁶⁵*NYT*, 28 February 1985, p. B5, shows examples of these opinions.

⁶⁶*NYT* 26 September 1984, p. C1. This report on education declared it a failure as fewer than 15 percent of Americans wear seat belts. This article also reported the persistence of a myth that it is better to be thrown free of a vehicle during an accident.

usage. Yet BC has some preconditions that New York does not. In Canada there has generally been a culture of accepting government regulation and direction and being angry when the government is not perceived as protecting its citizens. Moreover, with government-run medical and vehicle insurance, it was much easier for British Columbians to understand the cost to them personally of a society that does not buckle up.⁶⁷

The Fifth Attempt: Airbags Revisited, 1990s

With US MULs still failing to reduce second collision casualties sufficiently, the US government returned to airbags and passive restraints in the 1990s. All passenger cars produced today for the US market must have airbags (in addition to seatbelts and buzzers, and MULs in most states). Yet, airbags are not as neat and simple a solution as seatbelts when the latter are used. Airbags only inflate once, are useless the occupants during any subsequent collisions or roll-overs, and cannot help them in incidents that do not involve a front-end collision. Used in conjunction with seatbelts, airbags provide approximately 5 percent more protection in frontal crashes. Yet they also have inherent dangers.

Until 1998 airbags exploded at such a high velocity as to be potentially dangerous. The airbag was designed to prevent serious injury to an unbelted 50th percentile male crashing at 50 kilometers and hour; but the power required to do this has proved deadly to smaller occupants (especially women and children). Making them mandatory on all vehicles meant that those people willing to wear belts faced unnecessary dangers. Because the majority of Americans did not buckle up, law makers and engineers began opting for a technology that was not necessarily more effective than a properly buckled three-point harness in a frontal collision.

This illustrates an industrial, one-size-fits-all mentality. No discussion has emerged until this past year of offering different types of technologies to suit individual needs (and still meet a federal occupant protection criteria). Recent Canadian regulators have demanded that airbags on vehicles destined for Canada be depowered (because the majority of Canadians wear their belts and do not require such a powerful bang for adequate supplementary restraint)—a first step toward a more flexible view of safety technology.⁶⁸ Law makers and manufacturers in the US

⁶⁷Canadian settlers followed the Mounted Police and the Hudson's Bay Company—the government--, while in the US the procedure was the reverse.

⁶⁸*Financial Post Daily*, 14 November 1997, p. 30 and

seem unwilling to acknowledge that safety might require a more flexible approach than the industrial paradigm. Solving the problem of occupant restraint may require acknowledging this human factor--everyone is not created equal nor uses safety technology in the same way. (As GM safety engineer Paul Skeels said in 1966, designing an automobile interior for safety would be different for a belted versus an unbelted occupant.⁶⁹)

CONCLUSIONS

The Problem Persists

Although US efforts to protect people from the second collision have been less successful than those in other places, there have been some gains. US Injury and fatality rates did begin to fall in the 1980s, for the first time in history.⁷⁰ Recent surveys undertaken by NHTSA as part of President Clinton's new seatbelt usage drive suggest that over half of Americans favor a primary enforcement MUL. Although this same survey suggests that, at best, 66 percent of Americans buckle up every time they enter a vehicle, it also indicates that more people are starting to recognize the importance of seatbelt use.⁷¹

The history of the interaction of seatbelt technology with the US public suggests that there are large obstacles for society and safety advocates to overcome in order to see widespread usage and a resolution to the problem of preventing second collision injuries so long desired. Efforts at improving safety have often created greater resentment toward seatbelts and government safety measures among large sectors of US society. Negative memories of seatbelts and government intervention can be passed to the next generation, and continued low usage rates suggests

Canadian Press Newswire, 1 November 1996.

⁶⁹*Business Week*, 11 June 1966, p. 184.

⁷⁰*NYT*, 5 February 1984, p. 22. In 1983 43,028 people were killed on US highways, the lowest level in 20 years according to Transportation Secretary Elizabeth Dole, or 2.6 deaths per 100 million vehicle miles—the lowest level ever recorded. She attributed the drop to seatbelt use and anti-drinking-and-driving campaigns. In 1980 the death rate had reached 51,091.

⁷¹From the NHTSA website (<http://www.nhtsa.dot.gov/people/injury/buckleplan/presbelt2/>). This is inferred from the fact that 76 percent of drivers said they wear a seatbelt "all the time" when driving but over 10 percent of this group also stated that at least once in the previous week they had not worn the belt. That they lied suggests they know that they should be wearing it.

that they have been. Seatbelt education at the elementary school level might be necessary to counter parental influence. Ultimately to improve US usage, road safety promoters need to understand the failures and design programs with these in mind. The solution will likely be one that brings everyday citizens into the process and that allows them to understand the need for belts. Sustained, region-based education and enforcement programs, perhaps based on the BC model (but adapted to local, US conditions) is one possible way to take control of the situation, rather than waiting for a technological solution.

This exploration of seatbelts and airbags demonstrates that technology alone can not solve problems. Further experiments with technology are not the answers to the US problem of excessive injuries and deaths caused by second collision injuries. Through this comparative-regional methodology this paper illustrates the problem in fact rests with the political, cultural, and historical context of that technology. This paper also shows that the failure to address the cultural and political context of seatbelt technology in the US has resulted in five unsuccessful and different attempts to decrease the severity of second collisions through government legislation and additional technology (but without much public or community involvement).⁷² Each attempt has been complicated by, and has further exacerbated, the culture and politics of seatbelt usage.

Comments on the methodologies

Road safety concerns have been with society since the onset of the automotive era. The issue of traffic safety generally, like that of occupant protection specifically, has a complex history and one that has not developed in isolation from the people that use it.

One way to understand what has helped to prevent deaths and injuries on the road (and why) or what did not help significantly (and why not) requires analyzing the situation in such a way as to establish variables and constants. Because history cannot be repeated in a lab, "virtual" variables and constants can be established through comparisons and contrasts with other regions that had the same problems, but achieved different outcomes from interventions. That is what we have done here. One of our constants is the MUL, while the multiple variables include: the BC combination of community involvement, police action, and sustained education on the issue of seatbelt wearing; the US style of federally-led usage initiatives; and

⁷²By contrast BC went from the first attempt (seatbelts in all vehicles) to the fourth (MULs), without the steps in between.

the contrast in the initial conditions in each place such as cultural attitudes toward government regulation and the economic context of socialized medical and vehicle insurance.⁷³ With so many variables, determining the crucial ones is not an exact science, but it is one of the best means available to understand the social mechanisms involved.

Another way to understand the reasons for success and failure is to compare one historical era with another (put another way, through historical reflection). We compared attitudes toward technology in the 1960s and 1970s with more present day perspectives, and noticed the extent to which politicians, manufacturers, and the public considered technology as a panacea—and the more, the better.

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⁷³A good analysis of comparative methodology can be found in Theda Skocpol and Margaret Somers, "The Uses of Comparative History in Macrosocial Inquiry," *Comparative Studies in Society and History* 22 (1980): 174-195.