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VEHICLE SAFETY:
WHY THE MARKET DID NOT ENCOURAGE IT AND HOW IT MIGHT BE MADE TO DO SO

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PREFACE

The purpose of this report is to explore the economics of vehicle safety, an area heretofore apparently neglected by economists. In addition, the report suggests fruitful research areas for the NHSB that could contribute to providing greater economic incentives for vehicle safety.

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SUMMARY

This report examines four topics: the relative merits of market versus administrative determination of auto safety standards, why the free market has not promoted vehicle safety very rapidly, how vehicle safety might be promoted through the market mechanism, and the research implications of the analysis for the NHSB.

Theoretically, administrative determination of auto safety standards could be carried out either through detailed component standards, as at present, or through overall vehicle safety performance standards. Component standards result in the most rapid progress toward established ends, but allow less flexibility than either overall performance standards or the free market for optimization of safety systems with respect to available technology, cost, and individual preferences. If component regulation is pursued, those innovations with a high relative owner-to-manufacturer cost of installation, (hose requiring only a passive participation by the user, and those that benefit others beside the user are preferable candidates for regulation other things equal.

The free market has not promoted vehicle safety design changes primarily because the manufacturers have not believed such changes to be profitable for themselves and because the general pub lie has not shown sufficient interest in safety features to make it profitable for the manufacturers to attempt to satisfy this demand. To the extent that this public apathy is not justified, it may be explained largely in terms of a lack of information on safety performance and faulty evaluation of the benefits of increased vehicle safety. If more reliance were placed on the market mechanism, vehicle safety could be promoted by eliminating these two problems. The former can be eliminated most easily by the introduction of hierarchical safety standards for vehicles that would permit buyers to readily judge their relative safety. The latter might be eliminated by some of the self-insurance schemes currently discussed as an alternative to the present purely liability approach to automobile insurance.

The principal research implication concerns further work on developing a practical set of hierarchical standards.

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I. MARKET VERSUS ADMINISTRATIVE DETERMINATION OF VEHICLE SAFETY STANDARDS

Although the automobile industry has been accused of placing profitability above the public welfare, economic theory holds that there is no necessary conflict between the two; in fact, in a well-functioning market, the pursuit of profit promotes the public welfare. This Memorandum examines why the market mechanism did not bring about a more rapid adoption of safety features, whether the markets in question are relatively we 11-functioning, and what might be done so that they would function better in the future. First, however, some general remarks will be made concerning the major advantages and dis-advantages of various approaches to determining auto safety standards.

Perhaps as a reaction to the slow progress of auto safety under market influences, the drafters of the National Traffic and Motor Vehicle Safety Act of 1966 and the NHSB seemingly avoided any at attempt at working through the market and went to the opposite extreme of applying detailed administrative control over the minimum safety standards for particular vehicle components. Although this may be t he fastest means for raising standards, at least at the beginning, and may even have been the only way that significant changes could be effected in a short time given the auto safety impasse of the early 1960s, it is certainly not the only, and not necessarily the best, way of promoting "optimum" safety levels. The purpose of this section is to examine the major advantages and disadvantages of a continued direct administrative approach with others, particularly a greater reliance on the market mechanism.

Several gradations of government control over safety standards could be distinguished between the present approach involving detailed government controls and the free market mechanism. One alternative, for example, is that of more general safety standards based upon the overall safety performance desired rather than the detailed requirements for particular components. These alternatives can be ranked both by the degree of government control and by their relative advantages and disadvantages in various respects (see Table 1).

Table 1

ADVANTAGES OF ALTERNATIVE SYSTEMS
FOR PROMOTING VEHICLE SAFETY

Detailed Government Control Over Component Standards (present system)	Overall Vehicle Safety Performance Standards	Free Market Incentives

←——More rapid movement toward established vehicle safety goals

Decreasing government control——→

Increasing optimization of safety systems with respect to available technology, cost, and individual preferences——→

——→Increasing technological progress in auto safety←——

So long as the Government unerringly chooses the most cost-effective way of achieving its desired vehicle safety objectives, the current approach involving detailed minimum component standards will probably produce the most rapid movement toward these particular objectives at lowest costs. Whether the desired objectives are in accord with public wishes and whether the particular standards chosen do represent the most cost-effective means of achieving these objectives is open to much more doubt under the present system, however, than under one relying more upon the market mechanism. And if the administering agency (in this case the NHSB) should make a serious mistake as to the desired objectives, or the particular component standards to implement them, the resulting controversy could well decrease the rate of movement substantially. On the other hand, it is now clear that the rate of movement under the free market system prevailing until 1966 proved to be politically unacceptable.

It seems likely, however, that systems with greater flexibility would be more likely to lead to optimization of safety systems with respect to available technology, cost, and individual preferences. If faced with more general objectives, the safety system designers can be much more imaginative in looking at new and different systems for achieving a given objective. It may be, for example, that further development of passive restraint systems such as rapidly inflating airbags, seats that tilt suitably, or still other concepts yet to be developed could achieve as much protection of the upper body as shoulder harnesses, which are not always used even when available. But if vehicle manufacturers are required to meet specific standards for shoulder harnesses, there is little incentive to attempt to find better solutions to the problem.

Similarly, a series of minimum component standards is unlikely to do a very good job of satisfying the individual preferences of new car purchasers for particular combinations of safety levels and costs. A few people would prefer the safety of an armored car and be willing to pay for it, while others would not be willing to pay a single cent for added safety. The particular compromises between the variety of

often conflicting public preferences represented by any set of minimum component standards is most unlikely to represent the optimum set of such compromises since a variety of cost-safety tradeoffs would seem to be preferable even when economies of scale for particular designs are taken into account. Presumably with a substantial effort the NHSB could conduct benefit-cost studies to determine what balance between cost and safety would be theoretically optimum under various sets of assumptions. Going beyond this, it could even conduct some public opinion surveys as to the public acceptability of various auto safety systems, and attempt to integrate these results with the results of the benefit-cost studies. But no matter how painstaking the research effort, it cannot hope to duplicate the general acceptability that can be achieved through direct use of the market mechanism.

This brief examination of the relative advantages of administrative versus market determination of vehicle safety standards suggests that an economically more efficient solution will be found as one moves toward the free market determination of safety standards but that movement toward established vehicle safety goals may be slower.

THE CHOICE OF COMPONENTS FOR REGULATION

Besides examining the larger issue of government versus market determination of safety standards, it is worth considering the economics of the choice of which components should be considered as candidates for component regulation, assuming for the moment that such regulation is desirable or a fact of life. At least three distinctions can be usefully drawn between safety innovations in this regard:

(1) Those with (a) relatively high owner to manufacturer costs of installation compared with those with (b) relatively low owner to manufacturer costs;

(2) Those that require the (c) passive versus (d) active participation of the user in order to be effective;

(3) Those (e) that benefit others besides the vehicle user and these (f) that do not.

All other things equal, those innovations falling in categories (a), (c), and (e) are more suitable for component regu lation than those in (b), (d), and (f).

(1) Safety innovations differ widely in their per vehicle cost if carried out by (I) the car owner or by the manufacturer as either (II) optional or (III) standard equipment.

In almost all cases,

$$(I) > (II) > (III).$$

However, in some cases

$$(I) \gg (II) \gg (III), \qquad (a)$$

while in others

$$(I) \tilde{-} (II) \tilde{-} (III). \qquad (b)$$

Innovations falling in case (a) will be described as those with relatively high owner to manufacturer costs while those in case (b) will be described as having relatively low owner to manufacturer costs.

At the case (b) end of the spectrum, for example, is the seat belt itself, which if installed in a car subsequent to its manufacture (assuming that the fittings are already there) costs the car owner only the extra retailing costs and a very minimal effort to purchase and install it.[1] At the other end of the spectrum are major mechanical or structural innovations such as a collapsible steering column or energy absorbing front and rear-end construction. Attempts by the individual to improve these features would be very costly compared to a design change by the manufacturer. In between these two extremes are items such as seat belt fittings, which the individual can have installed but at somewhat higher cost than if this were done by the manufacturer.

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[1]Even this minor personal effort can be avoided by having the belts installed by the dealer (at some cost).

There is a much stronger economic argument for manufacturers to be required to adopt those innovations at the high end of the relative owner-manufacturer cost spectrum than at the low end, everything else being equal. At the high end it would be very costly for those desiring increased safety to purchase it compared to the cost of providing it for everyone at very much lower unit cost and in many cases no higher total cost; if the total cost is lower, it is cheaper for the nation as a whole simply to require that suitable innovations be installed on all new cars by the manufacturer.[1] At the low end, just the opposite is the case. Here there will undoubtedly be a number of innovations not desired by a very large percentage of car owners where the total cost to the nation would be greater if manufacturers were required to install them than if a smaller number of new car buyers purchased them as extras or had them installed themselves. Seat belts would seem to be a case in point, assuming that the fittings are standard equipment.

(2) Safety innovations that require the active participation of the user to be effective are less effective, all other things equal, than those that do not. A passenger restraint system, for example, that does not necessitate the cooperation of the passenger is superior to one that does, such as seat belts, assuming benefits per use an: costs per installation to be equal, simply because the active system will be used less often. Active systems are also less suitable as candidates for component regulation because there will usually be a strong correlation between willingness to use the system if available and willingness to purchase it in the free market. Hence a much lower percentage of those forced to purchase a system under government regulation will use it than among those who voluntarily purchase it. As a result, the benefits per installation will be much lower (assuming equal benefits per use) for those installed only to meet the regulation.

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[1]Assuming that no segment of the population derives disutility from the presence of the innovations.

There is some data in the case of seat belts to support this last proposition. One recent study concludes that people who themselves made the decision to purchase seat belts arc three times as likely to be "regular" users as drivers who "inherited" belts in a used car.[1] Only 11 percent of the latter were found to be "regular" users. Although there may be differences in the type of people in each category, this conclusion does suggest that requiring installation may result in less than (possibly much less than;[2] 11 percent greater use among those who would not have bought them voluntarily. Research might or might not indicate that this is a worthwhile expenditure in terms of the value of the deaths and injuries prevented.

(3) Some safety innovations benefit others besides the owners or users of vehicles. To the extent that these external benefits are reflected in car and component choice, there is some economic justification for government intervention. Improved brakes, which benefit not only the user but also others who may be nearby, are *a* case in point. Smooth ornaments that are less likely to spear pedestrians are another example. Side marker lights provide a third illustration.[3]

One of the most curious aspects of national vehicle safety policy in the last few years is that it has been seat belts that have been among the very first innovations to be made compulsory, despite the fact that in each distinction they fall under the category less suitable for component regulation. This suggests that current detailed component standards requiring seat belts may not be the most economically efficient set.

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[1]Dean I. Manheimer, Glen D. Me 1linger, and Helen M. Crossley, "A Follow-Up Study of Seat Belt Usage," Traffic Safety Research Review, March 1966, p. 5.

[2]The 11 percent certainly includes some people, and may even consist entirely of people, who would have bought seat belts if they had not already been installed in their used cars.

[3]For a more detailed analysis of this example see Martin Wohl, Putting the Analysis and Evaluation of Traffic Safety Measures into Perspective. The RAND Corporation, RM-5631-DOT, April 1968.

II. WHY THE MARKET FAILED TO PROMOTE VEHICLE SAFETY

In explaining why the free market has not promoted the use of auto safety features very rapidly, it is necessary to examine those features with a high ratio of relative owner-manufacturer costs of installation as well as those with a low ratio. In the case of those with a high ratio, it is necessary to examine why the auto manufacturers chose nut to take action on the basis of studies indicating that deaths and injuries from traffic accidents could be greatly reduced if automobiles were designed to offer better protection to passengers in crashes. In the case of those with a low ratio, however, the question is not only why manufacturers were reluctant to make the features standard equipment, but also why car owners did not respond in larger numbers by purchasing the necessary items from component manufacturers or ay optional equipment from auto makers, and why component and automobile manufacturers did not make greater efforts to sell such features.

The remainder of this section will explore the reasons why each of the three major participants, auto manufacturers, component manufacturers, and car owners have not pursued vehicle safety more energetically.

AUTOMOBI1£ MANUFACTURERS

Two factors appear to be of importance in explaining the observed state of affairs with respect to the manufacturers:

(1) Insufficient incentives for automobile producers to introduce improved safety features;
(2) Inertia and the subordinate position of engineering considerations in industry decisions.

(1) Safety Doesn't Sell

Undoubtedly the most important factor has been that in the opinion of auto manufacturers improved safety features do not increase sales or auto value. The evidence usually advanced for this widespread

assertion within the industry[1] is the drop in 1956 Ford sales[2] at the time when Ford not only introduced a package of safety features,[3] but advertised it as well.[4] Although some have disputed the assertion that sales dropped off as a result of Ford's change in advertising emphasis,[5] it would seem fair to conclude that safety did not prove to be a major selling point at that time.

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[1]See for example, Jeffrey O'Connell and Arthur Myers, Safety Last; An Indictment of the Auto Industry (New York: Random House, 1966), Chapter 1.

[2]Since there has been some difference of opinion among writers on the subject as to how significant the drop was, it is worth reproducing the figures (as given in Automobile Manufacturers Association, Automobile Facts and Figures, 1959-60 Edition, p. 11):

Calendar Year	1954	1955	1956	1951
U.S. Production (thousands)				
Ford	1,395	1,765	1,374	1,522
Chevrolet	1,414	1,830	1,621	1,523
Percentage of Total				
Ford	25.3	22.2	23.7	24.9
Chevrolet	25.7	23.0	27.9	24.9

[3]This included four features that have since been made standard equipment (safety door latches, a deeply dished energy-absorbing steering wheel, a shatter-resistant rearview mirror, and stronger seat anchors) and three optional features (padded ins trument panel, padded sun visors, and seat belts).

[4]Ralph Nader suggests that Ford abandoned its safety campaign in the spring of 1956 because of fear that the campaign might attract the attention of the Federal Government, which might seek to establish Federal safety standards, but most other writers attribute it to economic factors. See Unsafe at Any Speed (New York: Pocket Books, 1966), p. 90.

[5]Nader (ibid.) suggests that the sales slump may have been because the 1956 Ford, unlike Chevrolet and Plymouth, was barely changed from the previous year. Nader further states that "Ford's Robert McNamara released publicly in early 1957 detailed figures on safety option sales and market surveys showing the marked success of the safety features in attracting purchasers." Earlier (p. 88) he states that McNamara said that "more than 400,000 seat belts have been sold by Ford since we intro duced them and that no other optional feature ever caught on so fast." Other information suggests that Chevrolet's increased share of the market in 1956 may have been largely a result of greatly increased pressure on dealers.

Eleven years and much publicity later the major automobile manufacturers, judging by their continued resistance to safety innovations, remain unconvinced that safety can sell any significant number of cars. Although at least three European manufacturers[1] have offered significantly improved safety features and some safety-oriented advertising in the last few years, their sales gains have not been very impressive until 1967.[2] In any case, Detroit is more concerned with competition from Volkswagen (which has over 60 percent of the imported car market) than with all of the three foreign safety leaders together.[3]

Under the circumstances the market has offered little incentive for the manufacturer either to improve the safety features of his product or to advertise such features. Rather, it has done just the opposite since manufacturers have found that other attributes, such as speed and power, which on balance are probably inimical to safety, and styling, which is at best neutral, do sell cars. The manufacturers are quite willing to go to the trouble to include particular features, advertise them, and even increase the cost of their products if these activities increase sales or revenues sufficiently, but have only economic disincentives Co do so otherwise. If a manufacturer, such as Ford, undertakes these activities but does not increase sales, the result is lower profits.

(2) Subordination *to* Styling

A second major factor in explaining why the automobile manufacturers have been so slow in adopting new safety features is an indirect result of the fact that sales seem to be strongly influenced by auto design. As a result, those responsible for styling have

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[1]Mercedes-Benz, Rover, and Volvo.

[2]According to the Wall Street Journal, December 6, 1967, p. 28, Volvo imports jumped from 1,818 in November 1966 to 3,311 in November 1967. Mercedes increased from 1,117 to 1,588. Total imports rose only 17 percent.

[3]Although the 1968 Volkswagen includes some safety features beyond those immediately required by Federal standards.

assumed an increasingly influential role within the automobile companies since the 1930s, mainly at the expense of the engineers. An inevitable result of this is that ideas that have no inherent appeal to the stylists have a difficult time gaining acceptance within the companies themselves. When proposed innovations, such as those for vehicle safety, do not meet any particular favor with those concerned with either styling or sales, there is little prospect of their acceptance.

The Ford Mustang has been cited as a classic example of a new model in which styling considerations were paramount and resulted in an instant sales success despite unfavorable reviews of some of its engineering and safety features. As long as automobile buyers place a low value on safety as well as other engineering considerations, there will be little market pressure for manufacturers to give such features any greater consideration in their internal councils.

COMPONENT MANUFACTURERS

In the case of safety features with a low ratio of relative owner-manufacturer costs of installation the question is not only why the manufacturers have been reluctant to install them, but also why owners have not shown much enthusiasm in many cases. The case of seat belts provides an example as to why component manufacturers have not done much to promote sales that may be typical of this group of safety features. Because entry into the business is fairly easy and there is little possible product differentiation, the seat belt "industry" is a highly competitive one with many firms. It is so easy to enter, in fact, that during the peak years of seat belt demand, the number of firms making belts has increased rapidly to cash in on the brief profits to be made. The result is that profits outside a few peak demand years have been small and advertising budgets even smaller. During the peak years an industry trade and quality control organization has used surplus income (based on a fixed charge per belt sold) for minor advertising efforts.

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[1]Nader, op. cit., p. 167; Consumer Reports, August 1964, p. 396, July 1965, pp. 362-363, and August 1966, p. 400; Consumer Bulletin, July 1964, pp. 10-14, April 1965, pp. 8-9, and April 1966, pp. 20, 21, and 24.

Given that there if little hope that component manufacturers can do much to promote the use of such safety features, any promotion effort would have to depend primarily upon publicity by philanthropic or governmental agencies.

THE GENERAL PUBLIC

As is evident from the preceding analysis of the motivation for automobile and component manufacturers to promote auto safety features, most of the problem can be traced to lack of interest by automobile buyers in vehicle safety. No catalogue of why the market has not promoted vehicle safety more rapidly would be complete without some attempt to explain the reasons for this consumer apathy. Three hypotheses are offered to explain whatever apathy cannot be rationally accounted for in terms of the benefits and costs of the safety Improvements potentially available on the market:

(a) The lack of information problem: lack of widely known and accepted authoritative comparisons of the relative safety offered by different makes and safety devices;

(b) The faulty evaluation problem: the difficulty of and psychological inhibitions on accurately assessing the benefits, even assuming adequate information;

(c) The unfavorable climate of opinion: the greater importance often attached to power and styling where these conflict with vehicle safety.

(a) The frequency with which one hears widely divergent statements concerning the relative safety of different makes and the value of various safety features suggests that authoritative findings on these subjects are not widely known. Until they are, it is relatively easy for skeptics to postpone purchasing a safety component or ignore safety considerations in the purchase of a new car. The recent finding, for example, that in 28,000 accidents Volvo lap and shoulder belts reduced the frequency of injuries from 40 to 90 percent and eliminated

deaths below 60 miles per hour[1] probably could greatly affect lap and shoulder belt sales and use if widely publicized in the United States. The results of earlier studies concerning the effectiveness of lap seat belts seem to be largely unknown.

(b) Even if people possess adequate information and try to assess the benefits (in terms of decreased expected accident costs) of higher levels of vehicle safety, the problem is far from easy. And like thermonuclear war, many people prefer not to make dispassionate calculations on such a disagreeable subject as the probability of persona] injury or death in a motor vehicle accident.

The problem in evaluating benefits is one of determining the decreased costs (in terms of both direct financial costs as well as pain and suffering) that can be expected from a safer car or the purchase of added safety features as compared to other alternatives. Even if a prospective car buyer knows he is twice as likely to be injured or killed in car A than in car B, how much more should he be willing to spend for car B, assuming A and B are otherwise equally attractive products (an unlikely case)? Since the probability of a serious injury or death while driving A is a small number, many consumers can be expected to ignore or underestimate the costs resulting from half this probability.

(c) The current emphasis in automobile sales on horsepower and styling undoubtedly corresponds in some degree to consumer demand. These demands are sometimes in conflict both directly and psychologically with vehicle safety. Lap and shoulder belts dangling from the door post, for example, are unlikely to enhance interior decor. Despite the example of racing car drivers who have long since adopted seat belts, some may feel that concern for the risks of personal injury does not fit in with the prevailing image of "manliness" (toward which the horsepower race and some styling trends are directed).

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[1]N. I. Bohlin, "A Statistical Analysis of 28,000 Accident Cases with Emphasis on Occupant Restraint Value," Conference Proceedings. 11th Stapp Car Crash Conference, October 10-11, 1967 (New York: Society of Automotive Engineers, 1967), pp. 299-308.

III. HOW THE MARKET MIGHT BE MADE TO WORK FOR RATHER THAN AGAINST VEHICLE SAFETY

In considering how market forces might be used to aid vehicle safety, the greatest opportunities appear to lie in attempting to remove some of the market imperfections on the demand side of the automobile and component markets outlined in the last section rather than by working on the supply side. As brought out earlier, there is little competitive pressure on auto makers to emphasize vehicle safety and the safety component makers can do very little to influence the demand for their products.

In attempting to influence the general public, two general courses of action suggest themselves in line with the first two hypotheses concerning the reasons for public apathy advanced in the last section. The first is to increase the public's ability to distinguish the relative safety of different makes and models of cars as well as the effectiveness of various safety accessories (the lack of information problem). The second is to improve the consumers' ability to evaluate the benefits of safer cars and safety features (the faulty evaluation problem).

INCREASING PRODUCT DIFFERENTIATION FOR SAFETY

In the case of vehicles, the most promising approach toward increasing the public's ability to distinguish relative vehicle safety would be through the institution of hierarchical safety standards. For safety accessories the only approach would seem to be direct advertising to publicize the effectiveness of such features.

Hierarchical Safety Standards for Vehicles

Perhaps the most useful way to increase the public's ability to distinguish the relative safety of different models is by introducing a hierarchy of easily understood Federal vehicle safety standards. Under this approach the Federal Government would establish a series of readily understandable safety standards that would enable every make

and model of vehicle produced to be categorized by a testing laboratory as to its overall safety performance. All new vehicles of the same make and model could then be required to have the safety category so determined displayed on it just as the list price must now be shown. The standards would be defined in terms of detailed technical specifications related to injury production under realistic crash situations, but would have an underlying rationale that could be easily understood by the general public.

Perhaps the most readily understandable and useful system would be one based on the probability of being injured at specific speeds. Under this approach standards might be set up, for example, to correspond with at least a 90 percent non-injury rate for each occupant for accidents in which the car under test was being driven at speeds of say 20, 30, 40 miles per hour, etc.[1] The overall probability of injury for each passenger would be the sum of the probability that the passenger would be injured by an accident in which the car tested was struck from each possible direction multiplied by the probability that the car would be struck from that direction.[2] Injury production would presumably be defined in terms of whether standardized dummies experienced greater than specified "safe" decelerations or struck any part of the vehicle with greater than a specified "safe" force. Certain ancillary standards regarding brake performance and other safety-related components would also be specified for each speed level.

According to newspaper accounts published in January 1968, the National Highway Safety Bureau was expected to require automobile manufacturers to provide performance data concerning specific components

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[1]The New York State Safety Car Program has evolved a somewhat similar concept of speed-related safety standards and has done much more work toward working out the details of their concept. See Fair child Hiller, Republic Aviation Division, Feasibility Study of New York State Safety Car Program, Final Report, FHR 3040-3, prepared the Department of Motor Vehicles, State of New York, 31 August 1966, Section IV.

[2]Based on accident investigation studies.

to purchasers, starting with brakes on vehicles manufactured after 1968. The Bureau could require this under a provision of the National Traffic and Motor Vehicle Safety Act of 1966 that manufacturers provide safety performance data to "the first person who purchases a motor vehicle."[1] This differs from the proposal made here in that it apparently would not provide for the dissemination of overall safety performance comparisons or the introduction of hierarchical standards, but suggests that vehicle manufacturers could be required to provide such information to purchasers under the existing law.

Although an overall system of performance standards would be complicated to administer, these complexities would be the problem of the experts working for both the automobile manufacturers and the Federal agency administering the program. The general public would have an easy-to-understand guideline that could be directly related to the type of driving to which the vehicle would be subjected. Those wishing to operate vehicles at lower speeds (as, for example, on a farm or only around town) or to take greater risks could choose presumably lower-priced models with lower speed-safety ratings, while those desiring safety but expecting to travel at higher speeds could purchase higher-priced vehicles that would reliably meet their requirements.

If sufficient demand existed, at least one manufacturer would attempt to meet more than the minimum standard. If so, this would permit people to choose their own preferred balance between safety and cost with full knowledge of the alternatives.[2] The Government could further increase public knowledge of the standards by a publicity campaign designed to acquaint the public with the meaning of each standard and even the categories into which each make and model is placed.

As mentioned earlier such an approach would:

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[1]Section 112(d).

[2]At least above the safety-cost trade-off prescribed by any minimum standards in effect. Increased freedom of choice would result if the minimums were abandoned.

(1) Provide vehicle buyers with accurate guidelines as to the relative safety of various makes (solve the lack of information problem);

(2) Encourage vehicle designers to safety engineer their products from a systems point of view.

Advertising Accessory Effectiveness

In the case of safety components sold directly to the public, the Government can most readily increase the public's understanding of their effectiveness by carrying out research on those not adequately studied by others and by publicizing the results of whatever studies have been or are made on them. Such publicity could be carried out through the use of donated or government-purchased advertising space. The as yet not widely accepted lap-shoulder belt represents a case where more publicity might be effective in increasing their purchase and use. Simply requiring such belts on all new cars will not result in their installation in older model cars or even insure their use in new cars.

IMPROVING THE EVALUATION OF VEHICLE SAFETY BENEFITS

If adopted, the proposals just outlined should provide sufficient information for the public to fully evaluate the relative safety of various vehicles and the effectiveness of safety accessories. The remaining problem is to assist them in the evaluation process itself. . This section will be devoted to exploring one way this might be done which would have the added effect of increasing the incentives for the public to stress safety in their car and accessory purchase decisions.

There is increasing public discussion of the need for changes in the approach to automobile insurance in the United States. The most widely discussed of the proposed alternatives is a self-insurance scheme called "basic protection" by its authors, Robert Keeton and Jeffrey O'Connell.[1] Their proposal has two principal features:

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[1]The complete proposal, together with an elaborate defense of it, is found in their book, Basic Protection for the Traffic Victim; A Blueprint for Reforming Automobile Insurance, (Boston: Little, Brown, 1965).

> The first is a new form of compulsory automobile insurance (called basic protection coverage), which compensates all persons injured in traffic accidents without regard to anyone's fault or lack of it. Basic protection insurance pays for losses up to limits of $10,000 per victim for every victim's out-of-pocket losses -- which consist principally of medical expenses and wage losses. No payment is made under basic protection for pain and suffering. Whenever a motorist carrying basic protection insurance is in an accident and he or a guest or a pedestrian is injured, the motorist's own basic protection insurance company compensates him or his guest or the pedestrian.
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> The second feature of the basic protection proposal sharply reduces negligence litigation by a statutory exemption. All those persons who are insured are exempt from legal liability for negligent driving if damages for pain and suffering (as now measured in negligence cases) are not greater than $5,000 and other damages (such as for medical expense and wage loss) are not greater than $10,000. In all other cases, the effect of the exemption is to reduce the liability for negligence by these same amounts.[1]

Bills to substitute self-insurance or a "basic protection" plan for the present liability approach have already been introduced in the legislatures of at least seven states. The primary motivation behind these proposals is to reduce the large outlays (in both money and delays) to the legal profession and the courts for determining precisely who is liable for each traffic accident.

It has not been pointed out, however, that such plans might also affect both the ability of the public to evaluate the benefits of increased vehicle safety and the incentives for them to purchase it.

The effect of the evolution of automobile liability law has been to emphasize the driver's role in traffic safety. Despite the fact that many accidents are really no one driver's "fault," and that the severity of injuries resulting from accidents can be greatly influenced by the precautions taken by the driver himself (and the manufacturer of his car), the law insists on finding one (or more) guilty parties for each accident, and provides very large financial incentives to encourage the determination process to be carried out. Besides the psychological effect of present liability law on the relative emphasis placed on

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[1]Keeton and O'Connell, "Basic Protection: A Rebuttal to its Critics," American Bar Association Journal, July 1967, p. 633.

"good driving" and "people packaging" in safety programs, there may also be some more direct effects.

Because automobile insurance is now carried on a liability basis, rates vary primarily with the probability that the driver will be found at "fault" for an accident. One of the best predictors, generally speaking, has been found to be the accident and traffic violation record of each driver. Since a minority of drivers with "poor" driving records are found to "cause" a disproportionate share of the accidents, insurance companies can offer lower rates to the majority of relatively "safe" drivers by screening out the minority. Any company that attempts to set a single rate for all drivers will obviously have to charge higher rates to "good" drivers, who will therefore choose a lower-priced company. Only the "bad risks," who represent a small minority, *will* find the company's rates attractive, which will result in either heavy losses or progressively higher rates. The result is an industry made up of large firms charging differential rates and small "high risk" firms. No one else can survive, assuming no government interference.

These underlying reasons for differential rates are unlikely to change under a "basic protection" plan (assuming no additional government regulation). What would change is the basis for the differentials. Payments by the insurance companies would vary not only with the probability that the insured would be found at "fault" for a serious accident, but also with the probability that the insured would be injured. Hence rates would presumably also vary with the probability of each. One simple measure of the probability of self-injury would certainly be the presence (and possibly even the use[1]) of particular safety features in the insured vehicle. For vehicles with all standard

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[1]There may be some objection that it would be difficult to predict the degree of use of installed safety equipment (particularly the all-important seat belts) and that therefore rates could not provide much incentive for their use. One solution might be that special insurance policies could be offered at reduced rates that would provide coverage for injuries to the insured only if the insured (and other car occupants claiming payments) were actually using say lap and shoulder seat belts at the time of the accident. This is relatively easy to determine after even a moderate accident.

equipment, the hierarchical safety standards already outlined would form a convenient basis for insurance rate diiferentials between makes.

Although there are substantial financial incentives to drive carefully under the present system, the only direct financial incentive; for vehicle safety expenditures are the reduced costs of an accident in which the owner is held to be responsible.[1] Under the "basic protection" approach, however, the owner would purchase insurance protection for all out-of-pocket accident costs within the prescribed limits, whether or not he was held at fault. Hence a larger percentage of accident costs would vary with vehicle safety expenditures and the individual could readily determine the benefits of vehicle safety expenditures by the variation in insurance rates it would produce.[2] One can question, of course, the equity and possible detrimental effects on the incentives for "safe" driving of imposing some accident costs on those not "responsible" (assuming that this can be determined, hopefully at a lower cost than the damages involved).

In summary, it would appear likely that if a self-insurance approach were adopted, it would:

(a) Increase the ability of the general public to accurately evaluate the benefits from increased vehicle safety (help solve the faulty evaluation problem);

(b) Provide increased incentives for the public to purchase vehicle safety.

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[1]To the extent that insurance payments do not cover all costs, including pain and suffering, there will be some added financial incentives to those not held to be responsible for accidents.

[2]Ignoring the relatively small benefits resulting from the decreased costs incurred above the prescribed limits in accidents where the insured is liable.

IV. IMPLICATIONS FOR FURTHER RESEARCH

The major implication of this analysis for future NHSB research is for considerable emphasis on the development of a practical set of hierarchical vehicle safety standards. The New York State Safety Car Program appears to have done more research along these lines than any other group.[1] Although their work suggests many of the important factors to be considered in defining standards, it does much less to develop any specific proposed sets of standards. As suggested in Section III, more could be done to develop a logical, easily understood, and experimentally based method for deriving a crash-injury prevention rating for vehicles. Considerable research would probably be required to establish the data necessary to derive such a method for crash-injury prevention rating. Once a suitable set of hierarchical standards had been developed, a continuing research effort would, of course, be required to categorize each make and model of motor vehicle. A similar continuing research effort would be required to analyze the effectiveness of new safety accessories not adequately studied by others.

A much smaller research effort might be usefully devoted to exploring the vehicle safety incentives of the various proposals that will undoubtedly be made in the next few years to alter the automobile insurance system so as to formulate a National Highway Safety Bureau position on these proposals.

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[1] Fairchild Hiller, op. cit.