

Small Car Hazards Reported

The current increase in small car sales “will lead to a greater number of injuries,” including fatal and crippling injuries, a University of Michigan research group has warned.

The group based its conclusion on an extensive analysis of crash injury data from national and local crash investigation files. Its analysis showed, it said, that the following rule should be applied to new cars in crashes:

“... once involved in an accident, the chance of injury in this car increases at the rate of about 2.5 per cent for each decrease of 100 pounds in vehicle weight.”

The analysis also indicated that smaller cars are involved in single vehicle crashes at a significantly higher rate than larger cars, and in other crashes at about the same rate as larger cars.

The warning and the rule were contained in a report (HIT Lab Reports, Vol. 3, No. 9) written by James O’Day, D. Henry Golomb and Peter Cooley of the University’s Highway Safety Research Institute (HSRI).

Their conclusions underscore similar, earlier research findings, including those reported by the New York State Department of Motor Vehicles and the Insurance Institute for Highway Safety, that occupants of compact and smaller size cars are substantially more vulnerable to death and serious injury in crashes than occupants of sedan and larger size cars. (See *Status Report*, Vol. 6, No. 21, Nov. 16, 1971.)

The HSRI report stressed that the higher levels of crash injury associated with small cars is not a result of more occupants in such cars. In fact, it found that the “average number of occupants in *small cars* is slightly lower than in *large cars*,” rather than higher.

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It also found "little difference in the use of restraints by the *large* and *small* groups defined in this study. One must conclude that the increase in injuries is most probably a result of car weight and protection offered by interior size, rather than from these other factors."

As to the widespread notion that smaller cars are involved less frequently in crashes than larger ones, the HSRI report noted that in single vehicle crashes covered by the study, smaller cars were "over-represented," possibly "because of their drivers; or perhaps because of stability, handling, or control characteristics; or because of a combination of the two."

The report also suggested that an auto population solely of smaller cars, when compared with an identical size auto population solely of larger cars, would produce both more crashes, and more injuries per crash. There would be "about 50 more injury *accidents* per 10,000 reported accidents" for the smaller car population and the number of injuries would be "somewhat higher," it found.

For its definition of "small cars," the study used a conservative grouping that included "essentially all mini-cars, nearly all of the compacts, and the lighter half of the intermediates. The *large car* group includes the remaining half of the intermediates, and all full-size vehicles." The data were based on crash files primarily for the 1968-1970 period. "Later accident data will be available in the near future," the report said. "With such data the relative safety of the American 2000-2500 pound vehicle can be more accurately assessed."

'No Defect' Findings To Get Public Hearings

The National Highway Traffic Safety Administration has decided to allow the public, consumer groups, insurance companies and others to present their views when the agency closes selected controversial defect investigations without finding that a defect exists.

In the past, public hearings on defect investigations were held only when NHTSA found a defect and the manufacturer disagreed with the agency's finding. Section 113 of the 1966 National Traffic and Motor Vehicle Safety Act requires such hearings to allow a manufacturer to give its view before the agency decides to order a defect notification campaign.

In October of this year, the agency announced several changes in its defect investigation handling. (See *Status Report*, Vol. 8, No. 19, Oct. 17, 1973.) It said then that in order to give parties — other than manufacturers — a greater opportunity to participate, it would publicly announce Section 113 hearings. "This notice will advise the public of the time and place of the . . . proceedings and will invite the participation of interested persons in the proceedings," the agency said.

Now, "in those instances where the evidence indicates the nonexistence of a defect related to motor vehicle safety, the administrator may, in the exercise of his discretion, call for a public proceeding in which interested parties would be afforded an opportunity to state their views and submit for the record whatever evidence is appropriate." This will help "clear the air" in controversial investigations said an agency attorney.

The hearings will be held within 60 days after the agency closes its investigation but "no sooner than two weeks after the investigation file in that case has been completed and made public."

After studying comments made at these hearings, "The administrator may confirm his earlier finding that a defect related to motor vehicle safety does not exist or, if the new evidence received warrants, he may determine to reopen the investigation."

Breath Tester Standard Shows Authorities Ignored

The National Highway Traffic Safety Administration has issued a performance standard for evidential breath testers. This is the first federal standard for instruments designed to estimate blood alcohol concentrations for use as evidence in court.

The standard largely ignores recommendations of a committee of nationally known authorities on chemical testing for alcohol. At NHTSA's request, the committee reviewed a draft of the standard prepared for the agency by the National Bureau of Standards (NBS) before it was issued.

The chemical testing authorities, members of an ad hoc committee of the National Safety Council's Committee on Alcohol and Drugs, had submitted their recommendations to NBS.

The committee consisted of J. D. Chastain, scientific director, Texas Department of Public Safety; Kurt M. Dubowski, professor of biochemistry and toxicology, University of Oklahoma Medical Center; Brian O'Neill, senior mathematical statistician, Insurance Institute for Highway Safety; Richard W. Prouty, chief forensic toxicologist, Office of Chief Medical Examiner, Oklahoma; Robert H. Reeder, general counsel, Traffic Institute, Northwestern University; and Lowell C. Van Berkon, state toxicologist, Department of Public Safety, Minnesota.

Few of the committee's recommendations for changes in the draft were accepted. The committee had criticized many of the draft performance requirements, especially those for precision and accuracy, as "too liberal." NBS ignored the suggested changes to these requirements "after restudying the data . . . from 90 tests at NBS with three different testers at the three concentration levels," NHTSA said when it published the requirements. Several members of the committee have conducted thousands of breath tests with many different instruments. (In a single research project conducted for the Insurance Institute for Highway Safety, Richard W. Prouty conducted 566 Breathalyzer tests on more than 100 human subjects. See *Status Report*, Vol. 6, No. 11, June 7, 1971.)

As published, the performance requirements under one test in the standard would permit an instrument to indicate *an illegally high blood-alcohol concentration (0.10 per cent w/v) one out of ten times when testing subjects who are alcohol free.*

The authorities criticized many of the test methods proposed in the standard. For example, the draft proposal called for only five subjects for human testing of the instruments. The committee considered that number "inadequate," and recommended "at least twenty subjects." The final standard requires that five human subjects be used in testing.

The standard can be met by instruments that are inferior to most of the present widely used evidential testers.

In issuing the standard NHTSA said, "The primary objective of these standards is to ensure that Federal funds provided to the States under Section 402 of the Highway Safety Act are expended only for effective breath test equipment." Evidential breath testers that meet the standard will be included on a "qualified products list" that will be used to determine acceptability for purchase with federal funds. Qualification testing under the standard will be carried out on prototype models, not production models as the committee suggested. "It is expected that annual periodic testing will be conducted, using devices purchased on the open market," NHTSA said.

According to NHTSA, the new standard was necessary because the "rapidly advancing breath-sensing technology" has resulted in "a proliferation of new devices being offered on the market." Local officials requested guidance and "court developments have highlighted the importance of accuracy," the agency said.

Guidelines for implementing the agency's Highway Safety Program Standard on Alcohol in Relation to Road Safety (HSPS 8) will be amended to include as a funding criterion the "qualified products list." The list is expected to be published within six months, the agency said.

The standard was published in the *Federal Register*, Vol. 38, No. 212, Nov. 5, 1973.

Calspan Foresees Much Improved Bumpers

Calspan Corp., a Buffalo-based research organization, has predicted that in low-speed crashes bumpers on 1974 model automobiles will prove to "represent a more significant upgrading of bumper performance than that which occurred in the previous model year."

In a study prepared under contract for the National Association of Independent Insurers, Calspan said it was basing its expectation on analysis of bumper data submitted by car makers for their 1974 models, as well as on "limited computer simulations" that it conducted "to determine expected low speed performance characteristics of 1974 models."

The results, it said, "were used to establish trends between 1973 and 1974 models and between vehicles of different weight classes."

According to its report, Calspan asked the four major U.S. manufacturers to cooperate in the study by submitting available data on 1974 model front and rear bumpers. Three complied, it said, but General Motors — citing "corporate policy" — refused. Therefore, no GM cars were included in the study.

Noting that the current federal safety standard for bumper performance requires that cars sustain no damage to "safety related components" in crashes of five miles per hour front and rear into barrier and in pendulum impacts of three miles per hour into corner (See *Status Report*, Vol. 6, No. 20, Nov. 1, 1971, for details of standard.) The Calspan report reached the following conclusions:

- The "changes occurring in 1974 models are much more significant than those which took place in 1973. Modest improvements can be expected in front bumper performance but major improvements are evident in the rear systems."
- All vehicles considered in the study except the AMC Javelin "should provide energy absorption during flat barrier impacts (*front* and *rear*) at five miles per hour with no significant damage to the vehicle." (Calspan obtained manufacturers' raw bumper information for a large group of cars, from which it said it chose six for its computer simulation study: the Plymouth Fury, Valiant and Satellite, the AMC Ambassador and Gremlin, and the Ford LTD.)
- The performance of small-car bumpers, which has "traditionally lagged behind larger models," should be improved for 1974 models "to the extent that their performance should be essentially equivalent to that of larger cars."

NHTSA Action Asked On VIN Proposal

The Center for Auto Safety has asked the National Highway Traffic Safety Administration to "act immediately" to require vehicle manufacturers to release the vehicle identification numbers (VINs) of vehicles involved in defect notification campaigns.

The agency, at the urging of the center and State Farm Mutual Insurance Co., had proposed such a rule in November, 1972. (See *Status Report*, Vol. 7, No. 22, Nov. 17, 1972.) The NHTSA has not yet issued a final rule. Every car has a unique VIN that can be used by inspection stations, insurers and others to identify cars with safety related defects. They are useful in identifying second or third owners who may not otherwise receive notification that their car has a safety related defect.

The center said it was its understanding that final action on the VIN proposal has been delayed because NHTSA was awaiting the results of a State Farm-Ford Motor Co. study on improving response rates to defect recall campaigns. The results of that study were recently presented at a National Motor Vehicle Safety Advisory Council conference on safety related defects. The State Farm-Ford study found that response rates in vehicle recall campaigns can be "increased substantially." The study attributed the "dramatically increased" response rate to the use of VINs in identifying vehicle owners. (See *Status Report*, Vol. 8, No. 19, Oct. 17, 1973.)

Since the results of the study show the "need and benefit" of the proposed VIN requirement, the center requested NHTSA to proceed "as soon as possible" in establishing a final rule. An NHTSA official told *Status Report* that the agency "hopes to issue" a final rule on the VIN proposal "as soon as we can."

Neck Injury Study Completed

Researchers at the University of Michigan have completed a comprehensive study of the physical characteristics of the neck on a group of people representative of the entire driving population.

The findings will have important implications for the construction of test dummies. The lack of specific data for the neck was one of the reasons a federal court threw out the Department of Transportation's passive restraint test dummy requirements in December, 1972. (See *Status Report*, Vol. 7, No. 23, Dec. 18, 1972.)

The results will also affect the design of occupant protection devices, such as seat backs and head restraints. "Since persons involved in an accident may neither react fast enough nor be strong enough to protect themselves, these devices must be designed to accommodate the physiological limitations of the occupants and provide effective protection," the report stated among its principal conclusions.

The research was sponsored by the Insurance Institute for Highway Safety to establish for the first time basic anthropometric data on the neck. Existing data were limited and obtained usually from young, healthy males.

The new study, carried out at Michigan's Highway Safety Research Institute, is an outgrowth of an IIHS field study conducted in 1971. The field study found that decreases in neck injury insurance claims were associated with the presence in new cars of federally-required head restraints. It also showed that females were involved in more neck injury claims than males. There are no well documented medical explanations for these differences; possibilities include differences in the shapes, proportions and strengths of relevant musculoskeletal elements. (See *Status Report*, Vol. 6, No. 17, Sept. 20, 1971.) One of the objectives of the new study was to provide precise data on these differences.

In a paper prepared for delivery at the Seventeenth Stapp Car Crash Conference, held Nov. 12-13 in Oklahoma City, David R. Foust and his fellow researchers described some of the results of the Michigan study. The research was conducted on 180 volunteer subjects who were selected to represent male and female; young, middle-aged and old and tall, medium and short stature sub-groups. Before being accepted, the subjects were screened and x-rayed to ensure that they had no previous neck injury.

The subjects were measured for characteristics such as neck size, range of motion, angle of shoulder slope and slumped and normal sitting heights. Neck strength and rapidity of muscle response to impact were measured in carefully controlled tests that involved forces less than those that produce injury.

The extensive quantitative findings showed that the range of motion for women averaged one to twelve degrees more than that of men, depending on age. A decrease in range of motion for both men and women was observed with increasing age. Male neck muscles were found to be slower-reacting in reflex time than female neck muscles. The strength tests revealed that males are uniformly stronger than females. On average, female neck muscles were only 60 per cent as strong as male.

Single copies of the paper, *Cervical Range of Motion and the Dynamic Response and Strength of the Cervical Muscles*, by David R. Foust, Don B. Chaffin, Richard G. Snyder and Janet K. Baum, are available from the Insurance Institute for Highway Safety, Watergate Six Hundred, Washington, D.C. 20037.

Center For Auto Safety Cites Grate Hazards

The Center for Auto Safety has urged the Federal Highway Administration to take "prompt action" to eliminate the "lethal hazard" that it says is posed for bicyclists by "parallel bar" sewer grates.

These widely-used sewer grates consist of several bars laid parallel to the sidewalk. "The space between the bars," notes the center, "is just wide enough to catch the wheels of a bicycle and force it to stop abruptly and violently."

In a letter earlier this year, the center told FHWA of two incidents attributed to "parallel bar" grates, one involving a fatality and one a serious injury. In a more recent letter, the center provided FHWA with the names of eight more bicycle riders and the injuries they sustained plus information on one more confirmed fatality.

D. W. Loutzenheiser, director of FHWA's office of engineering, said in a reply to the first center letter that parallel grates are "the most efficient design in terms of hydraulic capacity and self-cleaning characteristics."

FHWA also claimed that parallel sewer grates should not be replaced or modified because of "cost and time involved." However, the center cited Missouri as one of the states that has "managed to finance the change." Missouri's program, "initiated only three months ago," according to the center, "is almost completed."

David Whitman, a center staff member, told *Status Report* that more than 7,200 grates have been changed in Missouri since August. The center added that legislation is pending in Missouri to "outlaw" the use of parallel bar grates. According to the center, other states are already using "modified" bar grates, grates with diagonal slots or other substitutes.

U.S. Sues On Defective Recall Campaigns

The federal government has sued International Harvester Co. for alleged repeated defect notification violations. The government charged that IH "has failed and continues to fail" to comply with defect notification provisions of the National Traffic and Motor Vehicle Safety Act and with the National Highway Traffic Safety Administration's defect reporting regulations.

The violations are alleged to have occurred in 16 recall campaigns that International has conducted during the past two years. The suit charges that among other things, International did not notify 250 bus owners of possible defective brakes until almost two years after International discovered the defect. In another campaign, International waited more than four months before notifying 119 truck owners of a possible steering defect, a NHTSA official told *Status Report*.

In addition to seeking \$390,000 in fines, the government suit asks the U.S. District Court for the District of Columbia to "permanently" restrain International "from engaging in further violations."

Wilson Leaving NHTSA

James E. Wilson, acting deputy administrator of the National Highway Traffic Safety Administration, will leave the agency effective Nov. 1, 1973, to join the Amerace Corp. as president of its signal products division. The Chicago-based corporation markets traffic control devices and pavement marking material.

Wilson joined the agency in October, 1967. He served as acting administrator between the resignation of Douglas W. Toms and the appointment of Dr. James B. Gregory. While serving in the acting positions he held the permanent position as NHTSA's associate administrator for Traffic Safety Programs; he had formerly been director, Office of State and Community Comprehensive Programs and deputy director, Highway Safety Programs Service.

Prior to joining NHTSA, Wilson spent 19 years with the California Department of Public Works' division of highways.

The 'Editorial' Was A 'Column'

Status Report (Vol. 8, No. 18, Oct. 5, 1973) and pre-publication copies of the Insurance Institute for Highway Safety study entitled *On-The-Road Driving Records of Licensed Race Drivers* inadvertently referred to a *Road and Track* column by Allen Girdler as an "editorial." At the time Girdler was executive editor of the magazine.

The quote was cited in the IIHS study to illustrate the belief, "shared by the racing fraternity," that the race driver "has fewer crashes, and is perhaps more law-abiding than the average driver." Findings of the study cast doubt on that notion.

In the February, 1972, issue of *Road and Track*, Girdler said: "I have for many years claimed that the licensed racer is far safer than ordinary chaps, on grounds of practiced skills, mental ability, cognizance of the hazards in driving, keen interest in driving well, and so on. But I have never had the facts to prove it. Let's hope this study provides them. (If it doesn't, I don't know what we'll do.)" He was referring to a study that was reportedly planned by the Sports Car Club of America to compare driving records of its members to driving records of the general public.

DOT Annual Report Sent To Congress

The Department of Transportation has sent its report to the Congress on 1972 activities under the Highway Safety and the National Traffic and Motor Vehicle Safety acts of 1966.

The report claims that in the U. S. during 1972 the annual rate of highway fatalities per 100 million vehicle miles dropped to 4.5. The rate was 5.7 when the two acts were passed in 1966 and 4.7 in 1971. Although the death rate has dropped, the actual number of deaths increased from 53,041 in 1966 to approximately 57,000 in 1972.

The three volumes of the report are available individually from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. The volumes are *A Report on Activities Under the Highway Safety Act* (stock no. 5003-00144) \$2.00, *A Report on Activities Under the National Traffic and Motor Vehicle Safety Act* (stock no. 5003-00145), \$1.95, and *An Activities Report, U. S. Department of Transportation, National Highway Traffic Safety Administration, Federal Highway Administration* (stock no. 5003-00139), \$1.45.

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