

## Safety Belt Syndrome Explored

Knowing a person who was injured in a car crash, not smoking while driving, having a "higher education," and believing that lap belts are "comfortable and convenient" — these are basic characteristics that set safety belt users apart from non-users, according to a recently completed study.

The study suggests that safety belt use is not associated with knowing a person who was killed in a car crash, thus casting doubt on the utility of safety belt promotion campaigns that threaten their audiences with death for failure to "buckle up."

It also indicates that safety belt use levels are far lower than has been generally reported.

Conducted and reported by three staff members of the Insurance Institute for Highway Safety, the study relied not on claimed belt use reported in interviews, but on observed belt use in a variety of real-world driving situations. The standard interview technique was rejected because "a significant proportion of people who claim that they use safety belts 'always' do not have the belts fastened when actually observed in their vehicles."

### Inside

- Auto Makers Get Air Bag Delay . . . page 3
- Air Bag Field Tests Urged . . . page 4
- Congress Looking at Two New State Standards . . . page 5
- Quality Tire Grading Proposed — Three Years Late . . . page 7

In the technique employed in the study, safety belt use of over 4,000 drivers was unobtrusively observed in three communities of small, medium and metropolitan size. Subsequently, license plate numbers of observed users and a random sample of non-users were checked to determine their names and addresses, and the observed persons then were interviewed on a variety of topics.

The study's findings are expected to be particularly useful for those

designing safety belt promotion campaigns or measuring their effectiveness. Its principal findings are as follows:

**Use Levels:** Belts are not being used as frequently as widely published figures suggest. The study's observation phase found that lap belt usage of drivers — to whom the study was limited — in 1968-1971 model cars varied from a level of 16 per cent in large metropolitan areas to nine per cent in small cities. Shoulder belt usage was found to vary from a level of six per cent to one per cent between the same types of areas. This contrasts with the National Safety Council's claims that belts are being used "about 40 per cent of the time, on the average."

**Belt User Considerations:** Persons most likely to wear belts are those who have attained "higher education," have had a friend injured in a crash, rate belts as "comfortable and convenient," and don't smoke when driving. Factors found to be unrelated to belt use were an injury experience in a crash, having had a friend killed in a crash, sex, and age. Significant in the pattern found for those not wearing safety belts was the fact that many people consider them "inconvenient or uncomfortable."

The factor related to belt use that is most amenable to change may be the "comfort and convenience" factor, the study indicates.

"The safety belt systems in most vehicles are poorly designed. Many belts flop out of doors when they are released and must be retrieved and stored before the door can be closed. Lap and shoulder linkages which must be fastened separately are often indistinguishable and present the potential user with a good simulation of a Chinese puzzle when the belts are entangled in the middle of the seat. These problems were solved long ago by properly designed reels and single-latch three-point belts, particularly in the outside seating positions. Only a very few American manufactured models have had such configurations," it says.

**Belt Promotion Campaigns:** "There have been a number of campaigns to persuade people to use safety belts, but the present rate of use suggests that their success, if any, was temporary. Unfortunately such efforts are consistently not subjected to rigorous scientific studies of effectiveness. The campaigns are often limited to slogans such as 'Buckle Up for Safety' and the evaluation consists of measures of familiarity with the slogan," the study concludes.

As is evident from data in this study, as well as findings in earlier studies by others, "these slogans have not been persuasive enough. Attempts to persuade in mass media must go beyond slogans and include content which is relevant to the reasons for nonuse of safety belts.

"This research indicates that the inconvenience issue should be evoked and dealt with. Themes emphasizing the fact that irritation with poorly designed belts should not prevent a driver from protecting himself and his family seem justified in light of the importance of this factor, although pointing out the inconvenience may reinforce the tendency not to use belts. There are analogous situations where discomfort or inconvenience is tolerated to gain desirable ends (immunization,

seeing a dentist, etc.) which might provide a context within which the theme would be effective.

"Another theme which might be effective, in light of the relationship of use to having a friend injured but not killed, is a cosmetic or disability theme. It appears that the possibility of disfigurement or disability is more conscious and motivational than the fear of death in a crash."

The study, entitled, "Factors Associated With Observed Safety Belt Use," was co-authored by Leon S. Robertson, the Institute's senior behavioral scientist; Brian O'Neill its senior mathematical statistician, and Charles W. Wixom, its communications project manager. It will be published in the March, 1972 issue of the Journal of Health and Social Behavior. Copies of the study in prepublication form are available by writing to "Belt Use," Insurance Institute for Highway Safety, Watergate 600, Washington, D. C. 20037.

## **DOT Gives Two-Year Delay On Air Bags**

Auto makers have been granted a two-year reprieve from requirements to place air bags or other passive restraint devices in cars by Aug. 15, 1973. Passive restraints will now be required for the first time on cars manufactured after Aug. 15, 1975, a date intended to correspond with the introduction of 1976 model cars.

The government decided that even though, in its own words, "systems now available will meet the requirements" that had been established for 1974 model cars, "It does not now appear, however, that tooling and production leadtimes will permit manufacturers to make large-scale introductions of passive systems before the fall of 1973."

For those reasons and because of what the National Highway Traffic Safety Administration calls "extreme dislocations, and the attendant financial hardships, that would be caused by requiring the world industry (to the extent of the vehicles sold in this country) to introduce major new systems in substantially all their passenger cars at the same time," the agency has abandoned its plans for a mandatory "phase-in" of the devices that would have started with the introduction of 1974 model cars.

Shortly before the delay was made public, NHTSA Administrator Douglas W. Toms was quoted in the Detroit News as saying that an announcement on the matter was "very, very close" and that the President was "very much concerned about the economic situation" in the auto industry. Toms was further quoted as saying that "we have the flexibility of adjusting the (air bag standard) time schedule if we have to -- we can back off. We've been holding the industry's feet to the fire on this but we are aware of their problems. I don't think any responsible engineer is opposed to the air cushions, it is really an issue of time."

## ***Haddon Calls For Air Bag Field Tests***

The following is excerpted, with permission, from the Sept. 6, 1971, issue of The National Observer. It appeared in a story by David Henninger entitled "Air Bags For Lazy Drivers."

The man who first headed the safety administration when it was established in 1967, Dr. William Haddon, Jr., thinks the agency is taking unwarranted risks by rushing air bags from proving ground to highway without a large, controlled field test. Dr. Haddon says that air bags should be tested and introduced as have previous public-health measures, such as the polio vaccines.

"We simply have not had experience in actual use with people," he says. It is a fact that an air bag never has been involved in an unrehearsed accident. "It's as if we had developed polio vaccine largely using animals and immediately said we should immunize people by the tens of thousands," adds Dr. Haddon. He thinks this sort of hurry-up is not "prudent or professionally responsible."

None of Dr. Haddon's remarks should be taken as criticism of air bags. It was he who coined the term "passive restraint," and he says that he would have an air bag in his own car today if it were possible. He is concerned that the NHTSA may not realize that past public-safety measures frequently looked good during research but produced unforeseen mis-

haps during field testing. Generally these problems have been corrected easily before they alarmed the public.

### **Limited Testing Is Scheduled**

Actually, field tests aren't being ignored completely. Ford says that it will put air bags in 1,000 company cars after the first of next year if it can solve several air-bag problems by then. General Motors has scheduled proving-ground tests of 1,000 air-bagged cars this fall. The safety administration will do some limited fleet testing, but it won't elaborate on its plans.

Dr. Haddon doesn't think the manufacturers or the Government can obtain reliable scientific data from a few thousand cars. He also says he wonders what sort of objectivity one can expect from testers whose biases for or against air bags have been on public display for some time.

If it proceeds in ordering air bags in cars without a large, objective, co-ordinated field test, Dr. Haddon says, the Government could be risking a major air-bag failure that "could blow out of the water for a long time, maybe even permanently, an extremely promising system."

Instead of NHTSA's earlier mandated "phase-in" starting with 1974 models, the revised standard allows manufacturers four years to convert to passive protection at their own pace. Barring further amendments to the regulation, cars manufactured after Aug. 15, 1975, must provide passive protection at all seating positions in a 30 mile per hour head-on barrier crash.

Protection will also be required in any barrier test crash up to 30 degrees from head-on and also when hit laterally at 20 miles per hour by a moving barrier and in rollover crashes. Manufacturers had vigorously contested the rollover requirement on the grounds that they know of no rollover test that would produce repeatable results. In ruling on the automakers' complaints, the safety administration said that "occupant ejection in rollover accidents, and the retention of occupants in rollovers is a major element in effective crash protection," and that the test prescribed by the agency gives a "high degree of repeatability."

In responding to other auto industry complaints about the rule, the safety administration:

- Retained injury criteria that manufacturers had objected to as too severe.
- Put off making a decision on what to do about various state regulations that auto makers claim would prohibit the use of pressurized cylinders and explosive devices that are used to activate some air bag systems.
- Said it plans to announce at a later date "more detailed performance and descriptive specifications for test dummies."

In a new proposal, issued separately, the safety administration seeks to add a third option to its earlier plan that offered two options by which auto makers may meet requirements for protection of front seat occupants in 30 mile per hour head-on barrier crashes. The options would be effective for cars manufactured between Aug. 15, 1973, and Aug. 15, 1975.

**OPTION ONE:** Sole use of a passive restraint;

**OPTION TWO:** Passive protection which may be augmented by lap belts;

**OPTION THREE:** Lap or lap and shoulder belts with inertia reel retractors that are used in conjunction with ignition interlocks and a warning system that is intended to signal when seats are occupied and belts are not in use.

The newly added ignition interlock proposal, which has been advocated by Ford Motor Company, would mean that manufacturers choosing the third option must use devices that would not allow the car to start until lap belts are either buckled or pulled four inches or more from their "normally stowed" position. After the car is started an audible and visual warning system would activate for one minute if the buckle were then unfastened or if the belt were allowed to return to its "normally stowed" position.

Comments on the ignition interlock proposal should be sent to Docket 69-7, National Highway Traffic Safety Administration, Room 5221, 400 Seventh Street, S. W., Washington, D. C. 20590, prior to Nov. 2, 1971.

## **Two State Standards Reviewed By Congress**

Two new national highway safety standards — one on pupil transportation, the other on uniform accident investigation — are currently undergoing congressional scrutiny prior to being issued by the National Highway Traffic Safety Administration.

When adopted, they will bring to 18 the number of safety standards that NHTSA has issued as criteria for state safety programs receiving federal aid under the Highway Safety Act of 1966.

The **pupil transportation** standard would require states to establish procedures "to reduce the incidence of highway crashes involving school buses and esta-

blish uniform procedures for conducting an effective pupil transportation program," Safety Administrator Douglas Toms said in recent testimony before the House Public Works Committee's Subcommittee on Roads. Seventy-five pupils died last year as a result of school bus mishaps and "4,000 pupils receive disabling injuries annually," Toms said.

The standard would require, among other things:

- Uniform color, markings and lighting systems on all buses used exclusively for pupil transportation;
- Development of state programs for selection and training of bus drivers;
- Periodic student instruction in "safe riding practices" and drills in emergency evacuation;
- Semi-annual safety inspections and "systematic preventive maintenance programs" for all school buses.

Although the standard would require drivers and students to wear safety belts in some types of buses, it would not require installation of belts nor would it address other aspects of vehicle equipment or design. NHTSA has not yet issued an occupant protection vehicle standard for school buses and equipment, although recently the Vehicle Equipment Safety Commission issued a model standard that the state of Maryland has adopted. (See Status Report, Vol. 6, No. 15, Aug. 16, 1971.)

The **accident investigation and reporting** standard outlines a program for development of uniform, comprehensive systems for collecting accident data," Toms told the subcommittee.

Such a system is "necessary to enable the states to plan, implement and evaluate the effectiveness of their programs and to identify new requirements," he said. Current methods of accident reporting often fail to supply data that are adequate enough to be of any use, Toms claimed.

The standard would:

- Establish guidelines for types of information to be gathered relevant to a crash;
- Require states to establish accident investigation teams comprised of police, traffic, highway and automotive engineers, and persons with medical, behavioral and social science backgrounds.
- Direct the teams to investigate "an appropriate sampling of accidents" where a "disproportionate number" of crashes occur, paying particular attention to "environmental conditions;"
- Also require the teams to watch for motor vehicles or motor vehicle parts, drivers, pedestrians and vehicle occupants in particular age, sex or other groupings that are involved in a "significantly large" number of crashes.

Safety administration officials refuse to speculate on when the standards might be issued in final form. However, copies of the draft standards are available from the Office of Standards Development and Implementation, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590.

## Tire Quality Grading Rule Proposed

Three years late, the National Highway Traffic Safety Administration has proposed a consumer information standard on tire quality that may begin to unravel the maze of buyer confusion over manufacturers' claims on tire performance.

Section 203 of the National Traffic and Motor Vehicle Safety Act of 1966 required that such a standard be issued by September 1968. However, a lack of basic data on tires, and difficulties encountered "converting a very complicated subject into lay terms," hampered safety administration efforts, according to an agency spokesman.

According to Safety Administrator Douglas Toms, "The consumer has been confused by individual manufacturer terms such as premium, first line, and second line. Our proposal would present a quality grading system with uniform tests by which all passenger car tires would be measured."

The rule would seek to lessen consumer confusion by requiring tire manufacturers to grade and label new tires for four characteristics: high speed performance, endurance, road hazard resistance and uniformity and balance. The safety administration says it plans to add requirements for information on treadwear and traction at a later date.

Ratings of "one" "two," or "three" would be given to tires for each of the four performance area characteristics. A rating of "three" would be the highest a tire could receive.

The numerical rating would be accompanied by an explanation of that rating. For example, a "three" rated tire in the area of road hazard resistance would be marked as suitable for use "primarily on unpaved roads." Tires rated "two" would be suitable for "frequent use on unpaved roads." A rating of "one" would require a notation that the tire is suitable for "use on paved roads with only occasional use on unpaved roads." Similar explanations of "suitable use" also would be given for the other three specified areas of performance.

Ratings assigned to tires in areas of high speed performance, endurance and road hazard resistance would be based on the degree to which they exceeded minimum requirements of the federal standard for new pneumatic tires (FMVSS 109), the safety administration says.

Ratings in the uniformity and balance area would be based on a proposed test that employs a static balancing device rather than a test that determines balance under dynamic conditions. Although widely used, static balancing devices are con-

sidered primitive. They often indicate that a tire is properly balanced although in actual use, or under dynamic conditions, the tire may be severely imbalanced.

The proposed effective date for the consumer information standard is Sept. 1, 1972. Comments should be sent to Docket 25, National Highway Traffic Safety Administration, Room 5221, 400 Seventh Street, S.W., Washington, D.C. 20590, prior to Dec. 20, 1971.

### **Advisory Committee Members Named**

The Department of Transportation has announced the appointment of 13 new members to its National Highway Safety Advisory Committee.

The 35-member committee was created by the Highway Safety Act of 1966 to advise and consult with the Secretary of Transportation on federal standards for state and community highway safety programs.

The new members are J. B. Creal, executive vice president, American Automobile Association, Washington, D.C.; Dr. Walter W. Gray, director, Driver Education Instructional Demonstration Center, Indiana State University, Terre Haute, Ind.; Representative Joel K. Gustafson, Florida House of Representatives, Fort Lauderdale, Fla.; Daumants Hazners, associate professor, civil engineering, Mercer Community College, Trenton, N.J.; Murray Miller, vice president, International Brotherhood of Teamsters, Dallas, Tex.; Representative Ruth Peck, Arizona House of Representatives, Phoenix, Ariz.; Manuel Quevedo, Jr., community relations consultant for the state of California, San Bernardino, Calif.; Wayne E. Rapp, vice president, Walker Manufacturing Co., Racine, Wis.; Thomas Skutt, tax consultant and secretary, Mutual of Omaha, Omaha, Neb.; Cordell Smith, Colorado coordinator of highway safety, Denver, Colo.; John K. Tabor, attorney, Pittsburgh, Penn.; Joseph Wilcox, realtor, Greenwich Conn.; Dr. Ruth Winkler, optometrist and officer, National Association of Women Highway Safety Leaders, Tulsa, Okla.

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