

## LOW SPEED CRASH COSTS RELEASED

The Institute has released the first sets of results from its low speed crash cost tests of twelve 1971 car models. They show a pattern of damage that "on balance appears to have worsened" from tested 1970 models, the Institute's president told a congressional subcommittee.

Dr. William Haddon, Jr., president of the Institute, released films and an analysis of the tests at March 10, 1971, hearings by a subcommittee of the Senate Commerce Committee on legislation to give the U. S. Department of Transportation power to set vehicle standards to prevent needless property damage in low speed car crashes. (See related stories page 4 this issue, and Status Report, Vol. 6, No. 4, March 1, 1971.)

The test results, Haddon said, show that long available techniques to provide cars with energy absorbing bumpers and no-damage exteriors "continue to be ignored in the design and manufacture of new cars being sold to consumers today. The technological remedies remain on the shelf, where they have gathered dust for years."

The test series was the most recent in a program started by the Institute two years ago with crashes of selected 1969-model cars. Results of its 1969-model and 1970-model tests were first made public at earlier hearings of the Senate Antitrust and Monopoly Subcommittee.

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EDITOR'S NOTE: This issue of Status Report is published in advance of the normal publishing date, March 15, 1971, because of the announcement of results of the Institute's 1971 low speed crash tests. The normal publishing schedule will resume with the next issue dated March 29, 1971.

In his testimony, Haddon submitted exact dollar repair cost estimates for each crash. (See chart, page 3.) He also pointed to the following comparisons between average estimated repair costs produced in identical crashes of four 1971-model sedans and four comparable 1970-model sedans — Chevrolet Impala, Ford Galaxie, Plymouth Fury and American Ambassador:

- Single car, five miles an hour front-into-barrier, an average estimated repair cost for the four sedans of \$331.69 for the 1971 models and \$215.64 for the 1970 models;

- Single car, five miles an hour rear-into-barrier, an average of \$329.28 for 1971 models and \$218.66 for 1970 models;

- Two-car crash, ten miles per hour front-into-rear, an average of \$516.40 for 1971 models and \$558.04 for 1970 models;

- Two-car crash, ten miles per hour front-into-side, an average of \$637.76 for 1971 models and \$449.36 for 1970 models.

(In the car-to-car crashes, the struck and striking cars were identical models and the cost figures are the combined total for damage to both.)

Haddon said the crash films of the four sedans and of eight other models, including four intermediates and four economy models, show "why these automobile designs guarantee huge sales in crash replacement parts that are available only from those who possess the specially designed equipment which fabricated the costly, delicate, original-equipment parts in the first place."

In his testimony, Haddon covered a number of misunderstood points about the low speed crash damage problem, including these:

1. The high base line of damage sustained in the tests is due not simply to inadequate bumpers but "is a product of the overall design of the automobiles, particularly their front and rear ends."

Eliminating such damage is a question of "the use made of the space occupied by the vehicle and its components — whether, for example, the car is heavily laden at its prow and stern with expensive-to-replace cosmetic fringes — costume jewelry — and is adorned with protruding nose cones and upper lip snouts which perform all of the functions of battering rams, or instead is relieved of this pocket-picking ornamentation and, at the same time, equipped with self-restoring, energy absorbing structures."

2. General Motors Corporation's statements to the contrary, collisions resulting in damage to the rears of cars are nearly as common as collisions involving damage to car fronts, according to an analysis of a major insurance company's claims experience. "The pacifying assurance that good rear-end bumper systems would not be — to use GM's term — 'cost effective' might be rather vigorously challenged by the countless car owners whose vehicles each year are mashed from behind."

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1971 LOW SPEED CRASH TEST RESULTS  
Insurance Institute for Highway Safety

	5 MPH FRONT	5 MPH REAR	10 MPH FRONT	10 MPH FRONT/ REAR*	10 MPH FRONT/ SIDE**	15 MPH FRONT
SEDANS	Chevrolet Impala	367.90	447.00	280.50 221.05	328.85 375.30	
	Ford Galaxie	341.20	318.55	248.15 469.60	241.00 439.35	
	Plymouth Fury	202.25	266.35	201.85 246.80	247.10 306.55	
	AMC Ambassador	415.40	285.20	256.30 141.35	233.25 379.65	
SMALL CARS	Volkswagen	130.75	59.05	81.10 181.75	126.35 227.45	
	Chevrolet Vega	181.30	228.45	276.55 244.60	191.05 195.90	
	Ford Pinto	164.20	210.00	183.35 196.10	151.90 244.15	
	AMC Gremlin	121.30	286.90	253.95 137.65	172.00 329.65	
INTERMEDIATES	Pontiac Firebird	229.00	262.60	77.00 385.60	55.40 458.70	
	Buick Skylark	427.10	226.85	305.75 190.70	354.00 174.50	
	Mercury Montego	402.11	267.35	171.50 469.13	98.85 729.50	
	Plymouth Satellite	98.45	256.35	161.35 241.65	120.95 523.25	

\*In the front-to-rear crashes, the price listed first for each car model is the estimated repair cost for the striking car (front-end damage); listed second is the estimated repair cost for the struck car (rear-end damage).

\*\*In the front-to-side crashes, the price listed first for each model is the estimated repair cost for the striking car (front-end damage); listed second is the estimated repair cost for the struck car (side damage).

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3. Car designs to prevent low speed crash damage need not mean car price increases. By choosing the option of doing away with "snout configurations and fancy tinsel cosmetics" and using the freed-up space for proper energy absorbing structures, "manufacturers could reduce the initial price of the vehicle or, at worst, maintain it at its present level . . . ."

4. Weaponry design throughout the ages has been based on the principle that "impact surfaces that are hard, pointed, rigid, sharp, edged, jagged or otherwise hurtful on contact with people" will aggravate human injury and suffering. "In view of this, it can hardly be maintained that using the same lethal shapes for the surfaces of vehicles that can and regularly do impact pedestrians, bicyclists and other defenseless road users may be excused as an act of ignorance . . . . Eliminating such expensive and needless costume jewelry and substituting design and executive decisions that reflect concern for people will reduce needless human and social, as well as property, damage."

Single copies of Haddon's testimony are available by writing: Testimony, Insurance Institute for Highway Safety, Watergate Six Hundred, Washington, D. C. 20037.

### CAR-TRUCK BRAKING GAP TO CONTINUE UNDER AIR BRAKE RULE

The gap between braking abilities of lighter vehicles, such as passenger cars, and heavy trucks, buses and trailers will remain unclosed when a recently issued standard on air brake systems becomes effective Jan. 1, 1973.

In issuing its new standard (FMVSS 121) on air brake systems, the National Highway Traffic Safety Administration said its purpose is "to insure that the braking performance of these large vehicles will compare favorably with passenger cars."

However, a comparison of the standard's required stopping distances for air brake-equipped vehicles and the current braking performance of new model passenger cars as reflected in the safety administration's own consumer information listings shows that most of the makes and models of 1971 cars listed are capable of stopping in a shorter distance than that required in 1973 of vehicles equipped with air brakes.

The inability of trucks to stop in a distance compatible with the stopping distance of passenger cars has been cited as a major factor in losses experienced in multi-vehicular pile-ups in high density traffic. (See Status Report Vol. 6, No. 1, Jan. 18, 1971.)

### **STOPPING DISTANCE RULE:**

The standard requires that vehicles outfitted with air brakes be able to decelerate from 60 miles per hour to a stop in a maximum of 245 feet on a dry surface. The safety administration's current consumer information (Brakes, A Comparison of Braking Performance for 1971 Passenger Cars) shows that 64 pas-

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## CORRECTION

Fundamental discrepancies exist between a car repairability bill introduced by U. S. Sen. Philip A. Hart (D-Mich.) and a description of that bill the senator read on the Senate floor.

The March 1, 1971, issue of Status Report (Vol. 6, No. 4, page 4) contained a description of the legislation based on the senator's prepared statement and was written before a copy of the actual bill was available. The Status Report story was thus in error.

The bill (S. 976) and Hart's statement differ in the following basic respects:

1. Although Sen. Hart's statement said that the bill would require front and rear bumpers "that can withstand a five mile an hour collision into a solid barrier with no damage," his bill would require bumpers that can "withstand such impacts with a minimum amount of prescribed damage as may be determined" later by the U. S. Department of Transportation. (Emphasis added.) No definition of "minimum amount of damage" is offered in the bill.

2. According to Hart's floor statement, such bumpers would be required on "all cars manufactured after July 1, 1974 . . . ." The bill actually would not require such bumpers on any motor vehicle manufactured before Jan. 1, 1975.

The bill calls on the department to issue the bumper standard "as soon as possible after July 1, 1972." Issuance of the standard could preempt states from passing or enforcing no-damage bumper laws thereafter — even though the federal standard wouldn't take effect until Jan. 1, 1975.

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senger car makes and models out of 74 listed are capable of stopping in less than 245 feet. And, the safety administration currently is proposing amendments to its Motor Vehicle Safety Standard 105 that would require passenger cars, by Oct. 1, 1972, to decelerate from 60 miles per hour to a stop in no more than 185 feet.

In issuing its air brake standard, the safety administration weakened already modest provisions it had earlier proposed. For example, the proposal would have required deceleration from 60 miles per hour to a stop within 216 feet instead of 245.

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The standard also requires that heavy vehicles — whether fully or lightly loaded — be able to decelerate from 55 miles per hour to a stop within 218 feet on a dry surface. Tests sponsored by the state of Virginia and the American Trucking Association in 1969 showed that the test vehicles (tractor-semitrailer combinations) traveling at that speed were able to stop at 195 feet when empty and at 213 feet when fully loaded.

**DRY vs. WET:**

Although the proposed stopping distance of 54 feet during a 20 mile per hour test on wet pavement has been retained, the safety administration has deleted proposed requirements for higher speed tests on wet pavement.

In justifying deletion of the high speed test, it said that "several comments (filed with NHTSA before the standard was issued) indicated that there are no test facilities on which the 60 mile per hour stop on a wet surface can be safely conducted. As a measure of brake efficiency, moreover, the 20 mile per hour stop on a wet surface satisfactorily indicates the vehicle's behavior at higher speed . . . ." (Both high and low speed braking tests are required on dry surfaces, implying that the safety administration does not draw the same conclusion for dry-surface braking.)

**'LOCKUP' PROHIBITION:**

The standard requires that during all braking tests the vehicle remain within a test lane 12 feet wide.

During braking, wheel "lockup" — which can cause skidding or "fishtailing" is permitted on any wheel at speeds of 10 miles per hour or less and at any speed on wheels "on nonsteerable axles other than the two rearmost nonsteerable axles."

In order to meet these requirements safety administration officials feel there is a "likelihood" that manufacturers may have to install "proportioning" or "anti-lock" devices. Such devices counteract wheel "lockup" in quick stop situations and help prevent skidding or "fishtailing."

Since there are no longer any wet pavement braking requirements at high speeds, the crucial operation of "proportioning" and "anti-lock" devices in such braking situations is not determined.

**TIME EXTENSION RULE CHANGED** — Interested parties who want more time to prepare comments on rules proposed by the National Highway Traffic Safety Administration now must submit requests for an extension of time no less than 10 days before the comment period ends.

The safety administration has previously allowed interested parties to make such request up to three days before the comment deadline. The change was made because the three-day requirement did not allow NHTSA sufficient time to consider the petition and grant or deny the request before the time for comment expired, the safety administration says.

## PASSIVE RESTRAINT DEADLINE POSTPONED

The National Highway Traffic Safety Administration has issued a revised passive restraint rule which postpones for more than one year the effective date for passive restraint requirements to protect occupants of passenger cars in angled, side and rollover as well as front crashes.

The new rule, amended in partial response to requests of auto makers, includes a phased program that combines earlier proposed "interim" and final passive restraint standards. It requires passive restraint occupant protection in front, angled, side and rollover crashes in all cars manufactured after Aug. 15, 1975 — in effect, for the 1976 model year. As previously written and issued, the standard would have required such protection on all cars manufactured after July 1, 1974. (For details of the earlier rule, see Status Report, Vol. 5, No. 20, Nov. 17, 1970.)

Under the revised rule cars manufactured beginning Aug. 1, 1973, must offer only front seat passive restraint protection in 30 mile per hour head-on barrier crash tests. Under the earlier rule that would have been required beginning July 1, 1973.

Also under the new rule, multi-purpose passenger vehicles and small trucks (10,000 pounds gross vehicle weight or less) are exempted until Aug. 15, 1977. Under the earlier rule they were included in the same timetable as passenger cars. Under both the earlier version and the revised standard larger trucks are exempted from passive restraints.

A detailed analysis of the safety administration's revised passive restraint standard will appear in the next issue of Status Report.

## FLEET OPERATORS SUPPORT SPEED CONTROL . . .

The National Association of Fleet Administrators, Inc., has told the National Highway Traffic Safety Administration it supports a proposal to limit vehicle speeds. (For details see Status Report Vol. 5, No. 22, Dec. 15, 1970.)

"It is our belief that the placing of a limit on the speed at which motor vehicles can be operated and the actuation of warning devices when that speed is being reached is one practical and workable approach to one of the most serious problems facing the United States today, "the toll of death and injury caused by high speed crashes," the association said in comments filed with the safety administration.

NAFA represents fleet administrators who operate more than 675,000 passenger cars and 175,000 trucks used by industry and government.

**. . . BUT BUS OWNERS WANT EXEMPTION**

The National Association of Motor Bus Operators has asked that intercity buses be exempted from the proposed rule.

In a statement filed with the safety administration, the bus owners' association says that its members should not have to install "flashing lights and horn activation" devices to warn of speeds in excess of 80 miles per hour, as would be required by the proposal.

"All intercity coaches are now equipped with mechanical governors that restrict their maximum speed and we know of no member of NAMBO that sets its engine governors at such a high level as to permit operating as fast as 80 miles per hour," the association said.

Since, according to NAMBO, bus speeds are already regulated by speed governors, "bus companies would be severely and unjustly penalized by having to pay for and maintain equipment that would be completely useless and absolutely unnecessary . . . ."

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