

1973 Model Crash Results

Needless Damage Found, Despite Improvements

Public, congressional and insurer pressures have brought about “noticeable progress in designing the front and rear ends of domestic automobiles to be less fragile in low speed crashes,” the president of the Insurance Institute for Highway Safety has told a Senate committee.

“But,” Dr. William Haddon, Jr., added, “the improvement is still far short of what has long been readily achievable – the design and production of vehicles immune to *all* damage at these low crash speeds.”

Haddon appeared before the Senate Commerce Committee to report the results of IIHS’s low speed crash tests of seven 1973 model cars of domestic manufacture. (See charts on 2 and 3.) He told the committee that results for 1973 model foreign cars will be released later.

Noting that IIHS first began low speed crash testing of cars in 1969, Haddon recalled, “Those early tests of 1969 model cars first demonstrated to Congress the built-in fragility of automobiles, and their resulting unnecessary damage in the low speed collisions that are so common on American streets, parking lots and driveways. The results astonished the public, and led to consumer and insurer demands for cars designed to withstand these low speed crashes without damage.” (See charts on 4 and 5.)

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One response to the demands, he said, was the Department of Transportation’s issuance of a standard requiring that 1973 model cars be able to withstand crashes of five miles per hour front-into-barrier, and 2.5 miles per hour rear-into-barrier, without damage to “safety related” parts.

Describing the standard as “simply a reflection of the existing state-of-the-showroom automobile – allowing continued fragility and resulting costly damageability in new cars,” Haddon said that IIHS’s tests of 1973 model U.S. cars showed that “it is entirely possible for a vehicle to meet the federal standard – and still suffer costly damage.” Specifically, the tests showed that:

- “. . . All but one of the cars met the 2.5 mile per hour rear-into-barrier requirement – a speed equivalent to that of a man landing after jumping off a step 2.5 inches high – with results ranging from a low of no damage in only one case (Ford Galaxie) to a high of \$67.65 (American Motors Gremlin).

- “. . . All seven met the 5 mile per hour front-into-barrier requirement, a speed equivalent to that of a man landing after jumping off a step 10 inches high, with results ranging from a low of no damage for two cars (Chevrolet Impala and Plymouth Fury) to a high of \$50.27 (Chevrolet Vega).

- “. . . Six of the seven already meet the 5 miles per hour rear-into-barrier requirement – the one that doesn’t take effect for another year – all with damage, from a low of \$65.70 in damage cost for the Ambassador to a high of \$195.05 for the Pinto.”

Haddon said that each of the three vehicles that survived a test with zero dollars in repair cost “illustrates that cars can be designed and made to withstand very low speed crashes without damage. In fact, note that of these three cars, one came from each of the ‘Big Three’ automakers – General Motors, Ford and Chrysler.”

CORNER IMPACTS

Haddon introduced at the hearing the results of a new test series initiated by IIHS – one involving corner impacts. “The new corner impact series is of particular interest in view of data from a recent study by four insurance companies, as well as very similar data from a study conducted by Ford Motor Co., both

(Cont’d on page 3)

INSURANCE INSTITUTE FOR HIGHWAY SAFETY 1973 MODEL LOW SPEED BARRIER CRASH TEST RESULTS DOMESTIC SERIES

		2.5 MPH REAR INTO BARRIER	5 MPH FRONT INTO BARRIER	5 MPH REAR INTO BARRIER	10 MPH FRONT INTO BARRIER	15 MPH FRONT INTO BARRIER
SEDANS	CHEVROLET IMPALA	\$12.00	0	\$ 98.80	\$281.80	\$1035.18
	FORD GALAXIE	0	\$16.00	\$130.00	\$417.10	\$1008.60
	PLYMOUTH FURY	\$ 9.97	0	\$ 54.37	\$856.73	\$1252.55
	AMC AMBASSADOR	\$20.00	\$25.60	\$ 65.70	\$263.39	\$1112.27
SMALL CARS	CHEVROLET VEGA	\$36.38	\$50.27	\$152.18	\$420.35	\$ 681.69
	FORD PINTO	\$ 9.60	\$ 8.00	\$195.05	\$193.40	\$ 809.50
	AMC GREMLIN	\$67.65	\$ 6.40	\$124.58	\$290.32	\$ 999.00
	AVERAGE	\$22.23	\$15.18	\$117.24	\$389.01	\$ 985.54

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INSURANCE INSTITUTE FOR HIGHWAY SAFETY
1973 MODEL LOW SPEED CAR-TO-CAR CRASH TEST RESULTS
DOMESTIC SERIES

		10 MPH FRONT-TO-REAR			10 MPH FRONT-TO-SIDE			10 MPH FRONT-TO-CORNER*		
		FRONT DAMAGE	REAR DAMAGE	TOTAL DAMAGE	FRONT DAMAGE	SIDE DAMAGE	TOTAL DAMAGE	FRONT DAMAGE	CORNER DAMAGE	TOTAL DAMAGE
SEDANS	CHEVROLET IMPALA	8.00	94.35	102.35	106.50	211.20	317.70	131.14	272.41	403.55
	FORD GALAXIE	35.10	213.85	248.95	103.50	339.50	443.00	189.20	225.10	414.30
	PLYMOUTH FURY	94.97	148.41	243.38	105.46	466.59	572.05	238.91	280.69	519.60
	AMC AMBASSADOR	130.80	223.30	354.10	126.06	366.49	492.55	268.88	304.32	573.20
SMALL CARS	CHEVROLET VEGA	224.12	233.88	458.00	70.66	181.75	252.41	172.61	209.34	381.95
	FORD PINTO	59.30	114.50	173.80	47.00	158.30	205.30	58.70	229.55	288.25
	AMC GREMLIN	68.05	116.38	184.43	104.40	291.79	396.19	366.13	327.60	693.73
	AVERAGE	88.62	163.52	252.14	94.80	287.95	382.74	203.65	264.14	467.80

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*NOT PREVIOUSLY CONDUCTED

(Cont'd from page 2)

showing approximately 40 per cent of real world collisions involve vehicle corners," Haddon said. (See *Status Report*, Vol. 8, No. 2, Jan. 15, 1973, and Vol. 7, No. 20, Oct. 31, 1972.)

In the tests, a car moving at 10 miles per hour impacted the front right corner of a parked car. The figures showed the designed-in damage, averaging more than \$450 for each pair of crashed cars. Haddon pointed out that a common characteristic of the corner impacts was "bumper mismatch and override between the two crashing cars, even though they were identical and were designed and built by the same manufacturer."

There is "no reason for a single dollar's worth of damage" in such corner impacts, Haddon said. "Consumer-sensitive design would not allow the sheet metal within range of the bumper's predictable energy absorbing impact movement," he told the committee.

In crashes of the 1973 domestic models at 15 miles per hour front-into-barrier, Haddon said IIHS "found that compared with past years, the damage-inducing fragility — while somewhat less at the lower speeds — has remained at absurdly high levels in the crashes of these same vehicles The designers are still allowing the auto shells to crumple, glass fly and radiators crack — all at inexcusably high cost to the public."

In summary, Haddon said, "There has been some progress in reducing the designed-in fragility that produces crash damage at the very lowest speeds. Still, it is far short of technology that has long been available, yet left on the shelf. And at the low crash speeds of 10 and 15 miles per hour, the damage susceptibility remains inexcusably the norm."

Copies of the complete testimony are available by writing to "1973 Model-Domestic," Watergate 600, Washington, D.C. 20037.

**INSURANCE INSTITUTE FOR HIGHWAY SAFETY
1969-72 MODEL LOW SPEED BARRIER CRASH TEST RESULTS
DOMESTIC SERIES**

		2.5 MPH REAR INTO BARRIER	5 MPH FRONT INTO BARRIER	5 MPH REAR INTO BARRIER	10 MPH FRONT INTO BARRIER	15 MPH FRONT INTO BARRIER	
SEDANS	CHEVROLET IMPALA	1969	—	\$187.15	\$195.80	\$665.80	\$1,179.50
		1970	—	196.20	247.30	491.40	740.40
		1971	—	367.90	447.00	828.50	1,170.50
		1972	\$112.60	153.75	197.05	576.65	1,133.52
	FORD GALAXIE	1969	—	\$174.30	\$173.70	\$485.00	\$854.18
		1970	—	185.80	325.25	459.05	703.10
		1971	—	341.20	318.55	781.50	1,207.45
		1972	\$20.00	402.10	242.60	917.17	1,243.30
	PLYMOUTH FURY	1969	—	\$134.35	\$134.40	\$644.15	\$1,049.25
		1970	—	171.30	202.05	600.05	652.30
		1971	—	202.25	266.35	633.50	870.65
		1972	\$96.50	331.15	224.50	722.15	1,035.10
	AMC AMBASSADOR	1969	—	\$305.15	\$352.55	\$814.90	\$823.27
		1970	—	309.25	100.05	615.75	819.50
		1971	—	415.40	285.20	699.25	1,206.98
		1972	\$12.00	168.25	159.10	830.50	1,095.90
SMALL CARS	CHEVROLET VEGA	1971	—	\$181.30	\$228.45	\$439.05	\$785.60
		1972	\$71.70	190.90	274.45	619.20	777.41
	FORD PINTO	1971	—	\$164.20	\$210.00	\$535.79	\$816.34
		1972	\$36.80	125.20	267.50	667.05	805.25
	AMC GREMLIN	1971	—	\$121.30	\$286.90	\$576.92	\$830.06
		1972	\$44.80	334.65	235.65	653.35	861.15
	AVERAGES	1969	—	\$200.24	\$214.11	\$652.46	\$976.55
		1970	—	215.64	218.66	541.56	728.82
		1971	—	256.22	291.78	642.07	983.94
		1972	\$56.34	243.71	228.69	712.30	993.09

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**INSURANCE INSTITUTE FOR HIGHWAY SAFETY
1969-72 MODEL LOW SPEED CAR-TO-CAR CRASH TEST RESULTS *
DOMESTIC SERIES**

		10 MPH FRONT-TO-REAR			10 MPH FRONT-TO-SIDE			
		FRONT DAMAGE	REAR DAMAGE	TOTAL DAMAGE	FRONT DAMAGE	SIDE DAMAGE	TOTAL DAMAGE	
SEDANS	CHEVROLET IMPALA	1969	162.30	347.95	510.25	137.10	502.75	639.85
		1970	216.25	205.05	421.30	178.55	303.25	481.80
		1971	280.50	221.05	501.55	328.85	375.30	704.15
		1972	163.35	261.70	425.05	173.90	719.25	893.15
	FORD GALAXIE	1969	218.70	266.75	485.45	196.95	505.85	702.80
		1970	240.25	273.20	513.45	166.30	312.05	478.35
		1971	248.15	469.60	717.75	241.00	439.35	680.35
		1972	265.65	423.81	689.46	341.70	598.65	940.35
	PLYMOUTH FURY	1969	310.80	138.20	449.00	273.80	437.00	710.80
		1970	227.40	256.20	483.60	183.60	332.15	515.75
		1971	201.85	246.80	448.65	247.10	306.55	553.65
		1972	269.35	151.25	420.60	310.20	524.75	834.95
	AMC AMBASSADOR	1969	281.25	314.60	595.85	290.15	351.05	641.20
		1970	446.40	367.40	813.80	270.65	250.90	521.55
		1971	256.30	141.35	397.65	233.25	379.65	612.90
		1972	220.00	280.40	500.40	338.65	421.65	760.30
SMALL CARS	CHEVROLET VEGA	1971	276.55	244.60	521.15	191.05	195.90	386.95
		1972	250.53	273.75	524.28	128.35	218.30	346.65
	FORD PINTO	1971	183.35	196.10	379.45	151.90	244.15	396.05
		1972	176.55	263.10	439.65	145.92	197.50	343.42
	AMC GREMLIN	1971	253.95	137.65	391.60	172.00	329.65	501.65
		1972	243.74	108.85	352.59	233.70	314.95	548.65
	AVERAGES	1969	243.26	266.88	510.14	224.50	449.16	673.66
		1970	282.58	275.46	558.04	199.78	299.59	499.36
1971		242.95	236.74	479.69	223.59	324.36	547.96	
1972		227.02	251.84	478.86	238.92	427.86	666.78	

*CORNER IMPACT TESTS NOT CONDUCTED FOR THESE MODEL YEARS

JANUARY 31, 1973

Car Rental Agencies Rapped On Belts, Buzzers And Bows

An organization that represents all of this country's major car and truck rental agencies has said that "some industry representatives have been careless in maintaining lap belts in workable order." The organization urged its member companies to try harder.

In a January, 1973, newsletter to members of CATRALA (Car and Truck Renting and Leasing Association), Sol M. Edidin, the association's executive director and general counsel, said that recently "we've had a lot of complaints" about rental cars because their belt warning systems "have been rendered inoperative and the belts useless by tying belts in knots or fastening them at the rear of the driver's seat so that people who want to use belts cannot, or can use them only with great difficulty."

He warned that "continuation of these conditions will undo all of our attempts to give this industry a good posture with those groups – governmental and otherwise – interested in safety and can lead to stringent measures . . . to make us do for the public what we apparently will not voluntarily do ourselves."

Edidin said that the rental industry has "a reputation for actively supporting programs which are designed to implement significant safety legislation." He said that rental agencies "should see to it" that safety belts and warning devices "are operative before we rent a vehicle. It seems to me to be at least as important as clean ash trays."

NTSB Hits New Jersey On Lax Licensing Practices

For the second time in little more than a year New Jersey's driver licensing procedures have come under fire from the National Transportation Safety Board. In both cases the board's criticism was directed at what it called administrative "inadequacies" which it said permitted drivers to obtain licenses despite numerous traffic violations and license suspensions.

In its latest report, the board recommended that the Secretary of Transportation use penalties authorized by the 1966 Highway Safety Act against New Jersey if he finds that the state is not in compliance with federal standards on driver licensing and traffic records. This marks the first time the board has recommended the use of the 1966 Act's penalty clause against a state.

The board's most recent criticism came in its report of a tractor-trailer and Volkswagen microbus crash in Moscow, Pa., in which all four occupants of the microbus were killed. NTSB found that the truck driver's license had been suspended eight times prior to the crash, the most recent suspension being just two months earlier. At the time of the crash that suspension was still in effect, but the tractor-trailer driver had secured a temporary New Jersey driver's license.

The board noted a similar situation in a November, 1971, report on a chartered bus crash near New Smithville, Pa., in which 7 people died and 47 were injured. The driver had a New Jersey "special" bus driver's license that had been issued at the same time the state was considering suspension of his driving privilege. The board said it found "no indication of interaction between these two processes . . . The fact of a proposed license suspension . . . should automatically have aborted or delayed the issuance of a special bus driver license," the board said.

The board said that a "driver's accident record, traffic violations record, licensing history, medical background and condition" are all issues that the state should consider when issuing a license. It urged that

appropriate state agencies coordinate their efforts – “the ‘right hand’ must know what the ‘left hand’ is doing if the system is to function properly.” State motor vehicle departments should be organized, the board said, so that “a known habitual violator of traffic laws will be identified, his record reviewed and analyzed by a qualified driver-improvement analyst, and appropriate corrective action taken.”

The board said that compliance with federal driver licensing and traffic records standards “would have apparently prevented the issuance” of a license to the driver involved in the Moscow, Pa., crash. NHTSA’s traffic records standard requires that state traffic record systems be able to provide quick responses to “priority requests” concerning the validity of a driver’s license. Such a system, operating properly, would have allowed New Jersey officials to note that the applicant’s “license was under suspension and that the driver had accumulated a substantial record,” the board said. The federal driver licensing standard requires that every time a driver’s license is renewed, the driver’s record be checked.

The board recommended that the Secretary of Transportation determine whether New Jersey is in compliance with the two federal highway safety standards. If New Jersey is not in compliance, the board recommended that the secretary should take “appropriate action authorized” by the Highway Safety Act of 1966. If a state is not in compliance with federal highway safety standards, the secretary can, under the 1966 Act, withhold all of a state’s federal highway safety funds and 10 per cent of the state’s federal highway construction funds.

Vehicle Radiators Producing Extensive Burns

An extensive study of burn injuries in Pittsburgh, Pa., has shown that 4.5 per cent of all burns reported were associated with automobile radiators. More than eight per cent of the 4,264 burn cases reported during the ten and one-half month study period were associated with vehicle components.

The study was conducted by Jerome I. Baranik and Maurice A. Shapiro, researchers at the University of Pittsburgh’s Graduate School of Public Health.

Reported burn injuries associated with vehicles came from radiators, exhaust systems, carburetors and engines, the research workers said. More than 350 cases of vehicle related burns were reported; more than half of these were associated with automobile radiators.

“Of the 193 injuries associated with automotive radiators or their pressurized contents . . . 31.7 per cent of the injuries involved multiple parts of the body (combinations of face-head-neck, trunk, and limbs),” the report said. “Burns associated with automotive radiators . . . tended to be less severe than other burn injuries, but considerably more extensive,” it said.

People suffering from burns associated with radiators “often complained of difficulty in removing tight-fitting or ‘frozen’ radiator caps in the process of checking fluid levels. They were often injured despite taking precautions such as covering the radiator cap with a cloth. It is postulated that the torque required to overcome the inertia of a ‘stuck’ cap causes rotation beyond the point designed to release the pressure but not the cap; as a result, these caps were unintentionally removed. A redesigned radiator cap and fitting, incorporating mandatory pressure release before cap rotation, is suggested as one possible method of intervention,” the researchers said.

In January, 1972, the National Highway Traffic Safety Administration discontinued plans, initiated in 1967, to develop a safety standard for radiator caps. When it dropped its rulemaking plans, the agency said, “Through the use of overflow tanks and other devices, vehicle manufacturers have partially eliminated the possibility of injury caused by radiator caps. At this time there is not sufficient data to justify this as a priority item for rulemaking action.”

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STATUS REPORT

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