

Side Damage Up

Some 1974 Models More Damage-Prone

Taken on balance, 1974 model domestic cars are “no less damage-inviting than the 1973 versions – and, in some cases, considerably more vulnerable to damage,” the Insurance Institute for Highway Safety has told the House Commerce and Finance Subcommittee.

Reporting on the filmed results of IIHS’s low-speed crash tests of a range of 1974 model cars of American manufacture, the Institute’s president, Dr. William Haddon, Jr., told a subcommittee hearing:

“The designs of many of these new car models resulted, in the very low speed crashes used in our tests, in promoting damage that could have been completely avoided had the vehicles been equipped with front- and rear-end energy absorbing capabilities such as those provided by numerous systems long available to the auto manufacturing industry and long known to Congress, DOT and the public.”

Haddon stressed that not every 1974 model performed as expensively as the 1973 version – “proving,” he said, “that it is most realistic to expect *all* new cars not only to meet the current, modest federal standards for bumper performance, but also to be designed at long last to reduce, and certainly not to increase, the avoidable damage costs of low-speed crashes.”

The nation is “increasingly squeezed by drains on our natural resources – including the petroleum-consuming plastics and the metals used for making both the new-car parts damaged in such crashes *and* the countless dollars worth of replacement parts sold by their manufacturers each year to repair them – so it is very reasonable indeed to expect management decisions in auto manufacturing that will discourage, instead of continue and even expand, the use of our shrinking resources for such completely wasteful, completely avoidable ends.”

The Institute test results included the following:

- For seven representative domestic sedan and small-car models, the average designed-in damage cost for the 1974 versions at the very low impact speed of five miles per hour front-into-barrier was nearly triple the average cost for the 1973 models – \$43.18 as compared with \$15.18 – even though nearly all the 1974 models met the prevailing federal bumper standard.

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“The 1974 car that performed worst in the five mile per hour front-into-barrier test, the Plymouth Fury, produced nearly \$120 worth of such damage,” Haddon reported. “The best performers, the AMC Gremlin and Chevrolet Impala, proved the ease with which cars can be designed to permit not even a penny’s worth of damage in such an impact.”

- In all but one case – again the Plymouth Fury – the seven 1974 models produced substantially less damage on average than the 1973 models in five mile per hour rear-into-barrier crashes, presumably in reflection of the slightly toughened federal standard requiring that these new cars be designed to resist “safety-related” damage in such crashes.

- But in 10 and 15 mile per hour front-into-barrier tests, the designs of the 1974 models encouraged damage costing as much to repair, on average, as for the comparable 1973 models. “Variations in repair costs from model to model were very large, reflecting manufacturers’ design choices granting a measure of low-speed crash protection to the buyers of some 1974 models, but withholding it from others,” Haddon told the subcommittee. He noted that repair estimates are “based on the conservative labor cost of eight dollars per hour” – the same amount used to estimate damage in IIHS crash tests in the two previous years. He pointed out that the eight dollar hourly rate “is considerably lower than the auto repair rate prevailing in many parts of the country.”

“Despite the stated intent of the current federal bumper standard to reduce bumper mismatch in intervehicular crashes, some 1974-model cars are so designed that in our tests their bumpers actually promoted underride and override in jogging speed, 10 mile per hour, front-into-corner crashes, thus aggravating, by design, the damage and repair cost resulting from such commonplace crashes,” he said.

“Designed-in, inappropriate vulnerability of automobile sides to needless, expensive damage in very low speed crashes has reached a remarkable high,” Haddon said, “an average of \$452.66 for side damage in front-to-side collisions at 10 miles per hour, compared with substantially lower amounts in the 1969 through 1973 models. Judging from the results of our front-into-barrier tests, this increase cannot be explained away by claims that the front bumpers of 1974 model cars are relevantly tougher than the 1973 versions.

“Across the board, the modest improvements found last year in the damageability of new-car sides have been more than negated by the design and manufacturing choices represented by the 1974 models.”

Haddon noted in his testimony that DOT “has no authority to protect American consumers” with standards directed at minimizing the economic penalties of side impacts. “DOT is empowered under the Motor Vehicle Information and Cost Savings Act of 1972 to set such a standard for ‘bumper’ performance in crashes at low speeds – speeds that DOT has appropriately defined as 20 miles per hour and below. But so far, it has issued only a *proposed* standard, which is limited to five mile per hour impacts,” he pointed out.

For detailed damage costs and comparisons, see charts on the following pages.

Copies of the complete testimony are available by writing to “1974 Model, Domestic,” Insurance Institute for Highway Safety Watergate Six Hundred, Washington, D.C. 20037.

Better Bumpers Pose No Hazard

The administrator of the National Highway Traffic Safety Administration has assured the Senate Commerce Committee that he does not foresee "any new safety problems for the occupant or the pedestrian" as the result of the no-damage bumper standard that DOT must issue under the Motor Vehicle Information and Cost Savings Act of 1972.

Dr. James B. Gregory was responding to a question submitted by the Commerce Committee in which he was asked if NHTSA "anticipated any new safety problems arising as the result of the use" of improved bumpers.

Under Title I of the Act, NHTSA must promulgate and enforce bumper standards "to reduce the economic loss resulting from damage to passenger motor vehicles involved in motor vehicle accidents." In comments to NHTSA on the agency's proposed "no damage" bumper standard, some auto makers questioned whether improved bumpers would increase occupant or pedestrian hazards.

INSURANCE INSTITUTE FOR HIGHWAY SAFETY 1974 MODEL LOW SPEED BARRIER CRASH TEST RESULTS DOMESTIC SERIES

		5 MPH FRONT INTO BARRIER	5 MPH REAR INTO BARRIER	10 MPH FRONT INTO BARRIER	15 MPH FRONT INTO BARRIER
FULL SIZE	CHEVROLET IMPALA	0	0	289.02	709.23
	FORD GALAXIE	89.10	0	450.45	992.06
	PLYMOUTH FURY	119.75	95.12	1,061.99	1,783.96
	AMC AMBASSADOR	19.00	81.45	255.98	1,170.33
SUB-COMPACTS	CHEVROLET VEGA	70.40	67.80	441.20	1,071.33
	FORD PINTO	4.00	11.00	268.60	792.30
	AMC GREMLIN	0	0	205.79	675.80
	AVERAGES	43.18	36.48	424.72	1,027.86

**INSURANCE INSTITUTE FOR HIGHWAY SAFETY
1974 MODEL LOW SPEED CAR-TO-CAR CRASH TEST RESULTS
DOMESTIC SERIES**

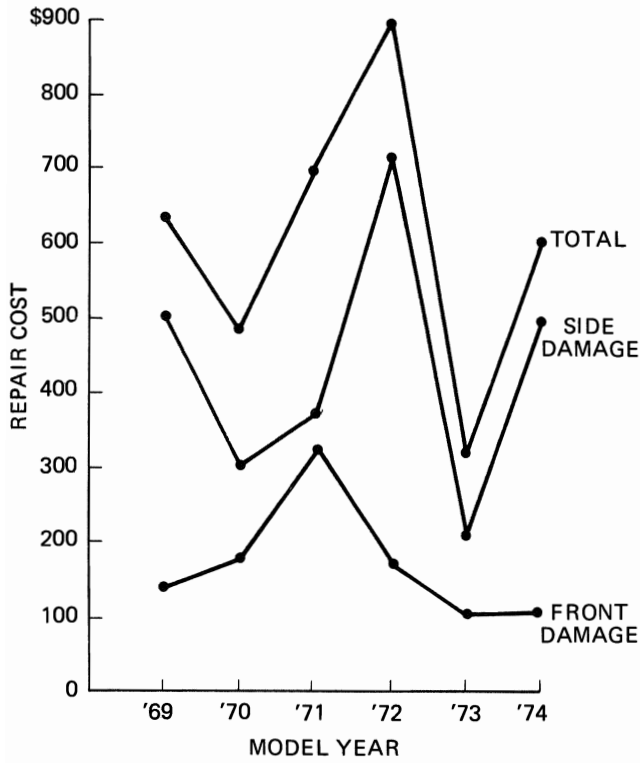
		10 MPH FRONT TO REAR			10 MPH FRONT TO SIDE		
		FRONT DAMAGE	REAR DAMAGE	TOTAL DAMAGE	FRONT DAMAGE	SIDE DAMAGE	TOTAL DAMAGE
SUB- COMPACTS	CHEVROLET IMPALA	124.80	71.15	195.95	109.87	497.50	607.37
	FORD GALAXIE	150.25	83.85	234.10	85.10	676.15	761.25
	PLYMOUTH FURY	227.97	97.92	325.89	110.77	528.07	638.84
	AMC AMBASSADOR	19.00	102.70	121.70	42.00	736.77	778.77
COMPACTS	CHEVROLET VEGA	89.70	102.00	191.70	125.38	215.00	340.38
	FORD PINTO	72.75	73.10	145.85	152.19	240.80	392.99
	AMC GREMLIN	81.00	71.08	152.08	67.53	274.36	341.89
COMPACTS	CHEVROLET NOVA	—	—	—	—	—	—
	FORD MAVERICK	—	—	—	—	—	—
	PLYMOUTH VALIANT	—	—	—	—	—	—
	FORD MUSTANG II	—	—	—	—	—	—
AVERAGE		109.35	85.97	195.32	98.98	452.66	551.64

**INSURANCE INSTITUTE FOR HIGHWAY SAFETY
1974 MODEL LOW SPEED CAR-TO-CAR CRASH TEST RESULTS
DOMESTIC SERIES**

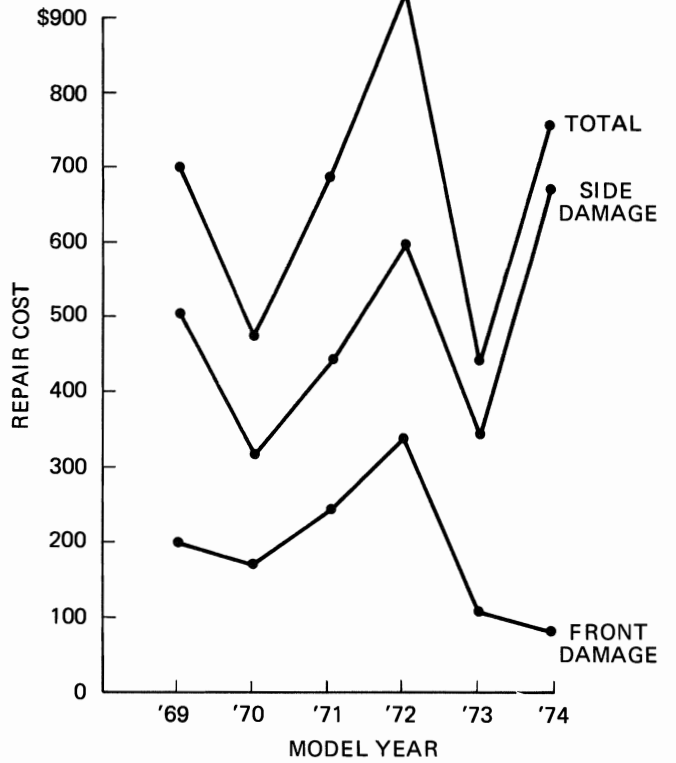
		10 MPH FRONT TO FRONT CORNER			10 MPH FRONT TO REAR CORNER		
		FRONT DAMAGE	CORNER DAMAGE	TOTAL DAMAGE	FRONT DAMAGE	CORNER DAMAGE	TOTAL DAMAGE
SUB- COMPACTS	CHEVROLET IMPALA	79.70	108.30	188.00	137.05	131.80	268.85
	FORD GALAXIE	112.40	379.75	492.15	132.05	160.85	292.90
	PLYMOUTH FURY	177.72	372.56	550.28	195.92	202.30	398.22
	AMC AMBASSADOR	200.18	305.30	505.48	94.53	244.33	338.86
COMPACTS	CHEVROLET VEGA	120.90	149.43	270.33	94.20	160.30	254.50
	FORD PINTO	79.10	294.05	373.15	110.70	162.25	272.95
	AMC GREMLIN	72.33	145.33	217.66	75.39	143.48	218.87
COMPACTS	CHEVROLET NOVA	92.56	160.41	252.97	167.46	104.30	271.76
	FORD MAVERICK	115.85	266.60	382.45	97.20	286.85	384.05
	PLYMOUTH VALIANT	54.83	263.94	318.77	54.83	224.30	279.13
	FORD MUSTANG II	53.35	379.40	432.75	493.25	230.55	723.80
AVERAGE		105.36	256.82	362.18	150.23	186.48	336.72

SEDANS – 10 MPH FRONT-TO-SIDE
INSURANCE INSTITUTE FOR HIGHWAY SAFETY CRASH TEST RESULTS

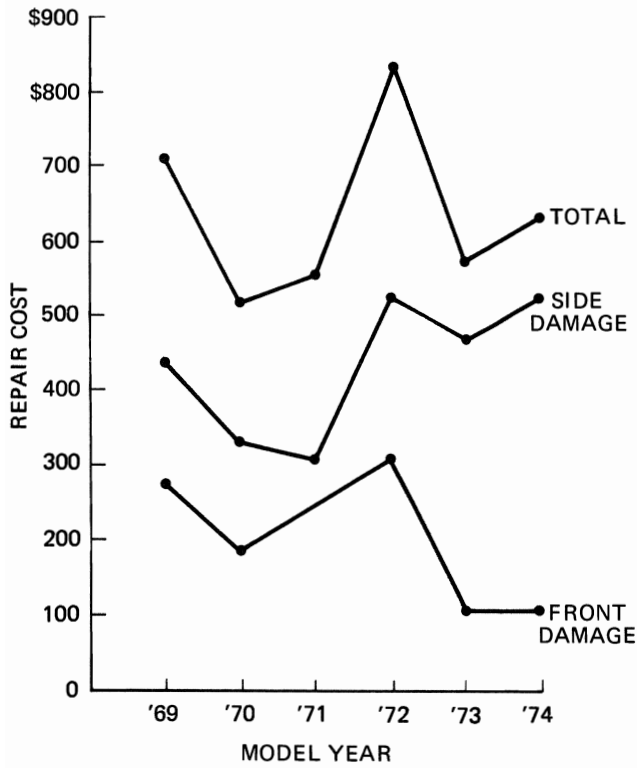
CHEVROLET IMPALA



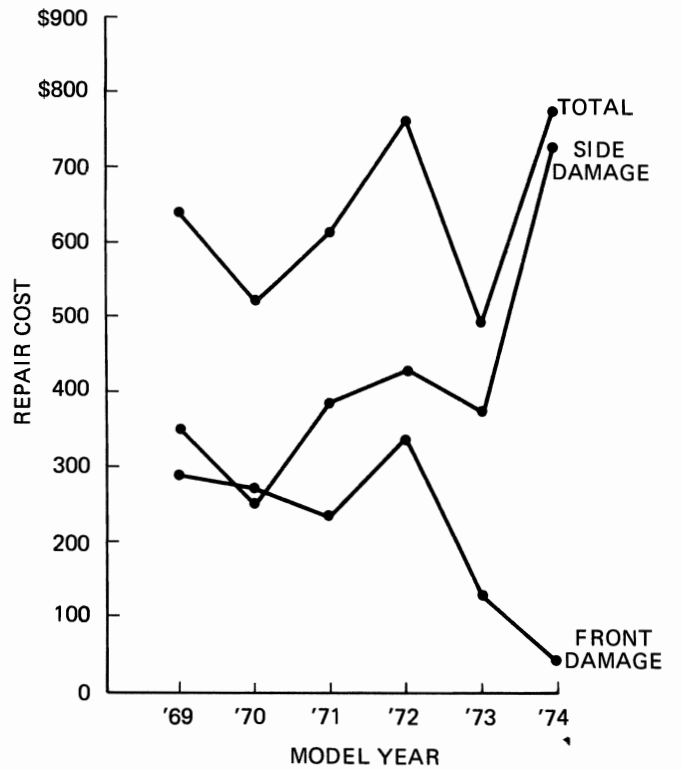
FORD GALAXIE



PLYMOUTH FURY



AMC AMBASSADOR



INSURANCE INSTITUTE FOR HIGHWAY SAFETY
 1969-73 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	
FULL SIZE	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
		1973	12.00	0	98.80	281.80	1,035.18
	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
		1973	0	16.00	130.00	417.10	1,008.60
	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
		1973	9.97	0	54.37	856.73	1,252.55
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	
	1973	20.00	25.60	65.70	263.39	1,112.27	
SUB COMPACT	CHEVROLET VEGA	1971	—	\$181.30	\$228.45	\$439.05	\$785.60
		1972	\$ 71.70	190.90	274.45	619.20	777.41
		1973	36.38	50.27	152.18	420.35	681.69
	FORD PINTO	1971	—	\$164.20	\$210.00	\$535.79	\$816.34
		1972	\$ 36.80	125.20	267.50	667.05	805.25
		1973	9.60	8.00	195.05	193.40	809.50
	AMC GREMLIN	1971	—	\$121.30	\$286.90	\$576.92	\$830.06
		1972	\$ 44.80	334.65	235.65	653.35	861.15
		1973	67.65	6.40	124.58	290.32	999.00
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	
	1973	22.23	15.18	117.24	389.01	985.54	

INSURANCE INSTITUTE FOR HIGHWAY SAFETY
1969-73 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-FRONT CORNER				
		FRONT DAMAGE	REAR DAMAGE	TOTAL DAMAGE	FRONT DAMAGE	SIDE DAMAGE	TOTAL DAMAGE	FRONT DAMAGE	CORNER DAMAGE	TOTAL DAMAGE		
FULL SIZE	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	-	-	-	
		1973	8.00	94.35	102.35	106.50	211.20	317.70	131.14	272.41	403.55	
		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	-	-	-
			1973	35.10	213.85	248.95	103.50	339.50	443.00	189.20	225.10	414.30
		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	-	-	-
			1973	94.97	148.41	243.38	105.46	466.59	572.05	238.91	280.69	519.60
	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	-	-	-	
		1973	130.80	223.30	354.10	126.06	366.49	492.55	268.88	304.32	573.20	
SUB COMPACT	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	-	-	-	
		1973	224.12	233.88	458.00	70.66	181.75	252.41	172.61	209.34	381.95	
		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	-	-	-
			1973	59.30	114.50	173.80	47.00	158.30	205.30	58.70	229.55	288.25
		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	-	-	-
			1973	68.05	116.38	184.43	104.40	291.79	396.19	366.13	327.60	693.73
		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	-	-	-	
		1973	88.62	163.52	252.14	94.80	287.95	382.74	203.65	264.14	467.80	

*REAR CORNER IMPACT TESTS NOT CONDUCTED FOR THESE MODEL YEARS

New Studies Show Small Car Hazards

Two studies recently completed at the University of North Carolina have added to growing evidence that small car occupants face much greater risk of severe injury and death than those faced by occupants of larger cars.

In one study, highway loss researchers documented for the first time that the risk of severe injury and death is about twice as great when two smaller cars crash than when two larger cars crash.

In the second study, they found that belted drivers in sub-compact cars fare as badly in crashes as unbelted drivers in full-size cars.

These and other findings come from two significant studies conducted by researchers at the university's Highway Safety Research Center. The year-long study that yielded the injury data for crashes of like-sized cars, supported by the Insurance Institute for Highway Safety, involved data on 162,000 cars – 1966 through 1970 models – that were involved in crashes in North Carolina in 1966 and 1968 through 1971. That study analyzes injuries sustained by unbelted drivers in cars of various weight classes, both in car-to-car and single vehicle ran-off-road crashes.

The second study compares injury experience of more than 17,000 belted and unbelted drivers in 1970 through 1972 model full-size and sub-compact cars.

WEIGHT AND INJURY

In the first study, entitled "Relationship Between Driver Crash Injury and Passenger Car Weight," the results show that chances of injury and death increase with decreasing vehicle weight. The data tend to show that the chances of severe injury and death increase especially rapidly in cars weighing less than 3,000 pounds.

Similarly, in front-to-rear and front-to-side crashes between vehicles of equal weight the chances of severe injury and death increase more rapidly in cars weighing less than 3,000 pounds than in cars weighing more than 3,000 pounds. In head-on crashes between vehicles of equal weight, however, the relationship between vehicle weight and chance of death and injury is more constant throughout the complete range of vehicle weights.

(The Department of Transportation recently awarded five contracts for development of a "Research Safety Vehicle" in the 3,000 pound range. This is an extension of DOT's "Experimental Safety Vehicle" program that was widely criticized, in part, because the ESV's, weighing about 6,000 pounds, were considered by many to be too large for practical use.)

The researchers report that the association between vehicle weight and occupant injury "seems to decline with newer model cars. This probably reflects the progressive increase in energy management systems in newer cars," the study suggests.

(See charts on pages 9-11 illustrating injury severity by weight class in various types of crashes.)

In the same study, the researchers found, in four of the five model years analyzed, a weak negative relationship between vehicle weight and serious injury in single vehicle ran-off-road crashes. The weak relationship led the researchers to note that "from these data it cannot be concluded that there is a negative relationship between vehicle weight and serious injury in single ran-off-road crashes." Consequently, "pure weight does not seem to be an overriding factor in the single vehicle crash. . . ." the authors concluded.

BELTED AND UNBELTED

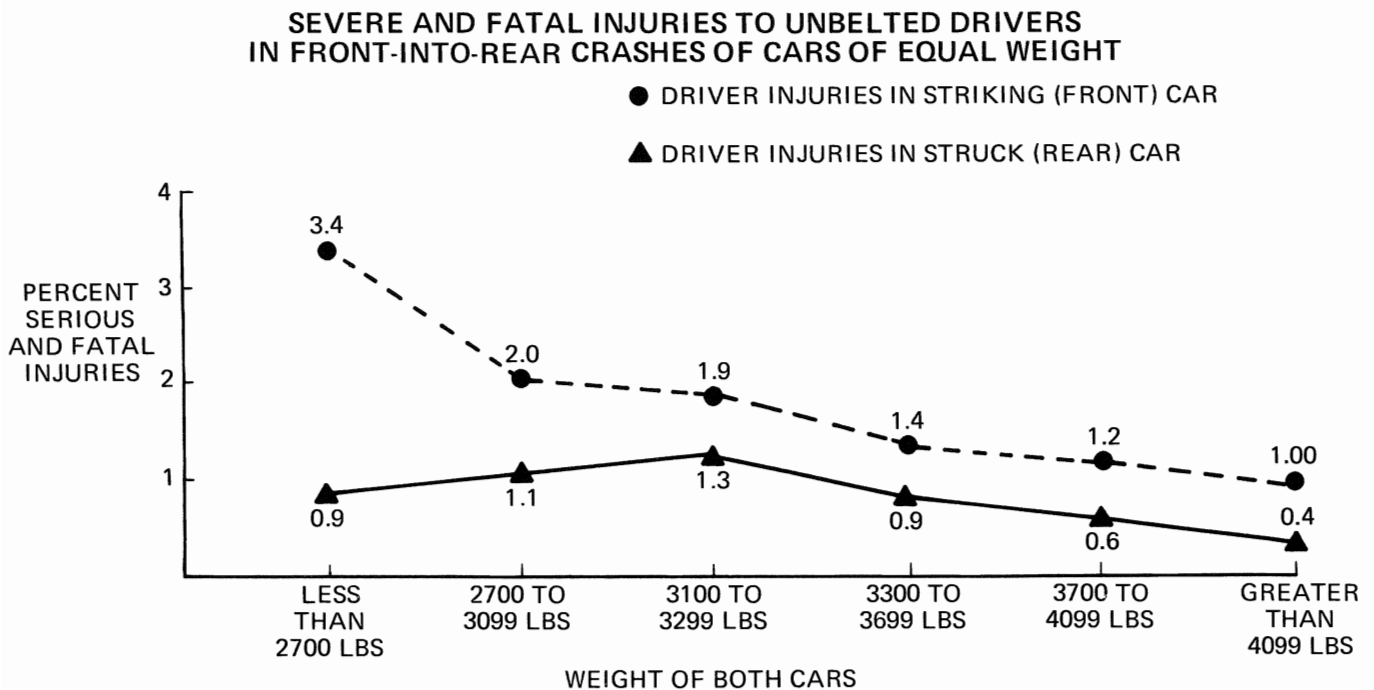
In the other study, entitled "Safety, Small Cars and the Gasoline Shortage," comparing belted and unbelted drivers of more recent model sub-compact and full-size cars, the researchers found:

- "Overall the injury picture for belted drivers in sub-compacts is almost identical to the situation for unbelted drivers of standard sized cars."
- In both full-size and sub-compact cars, "drivers who use a belt fare much better than those who do not."
- "For both belted and non-belted drivers, serious injuries in sub-compacts are one and one-half times more frequent" than they are in standard size cars.

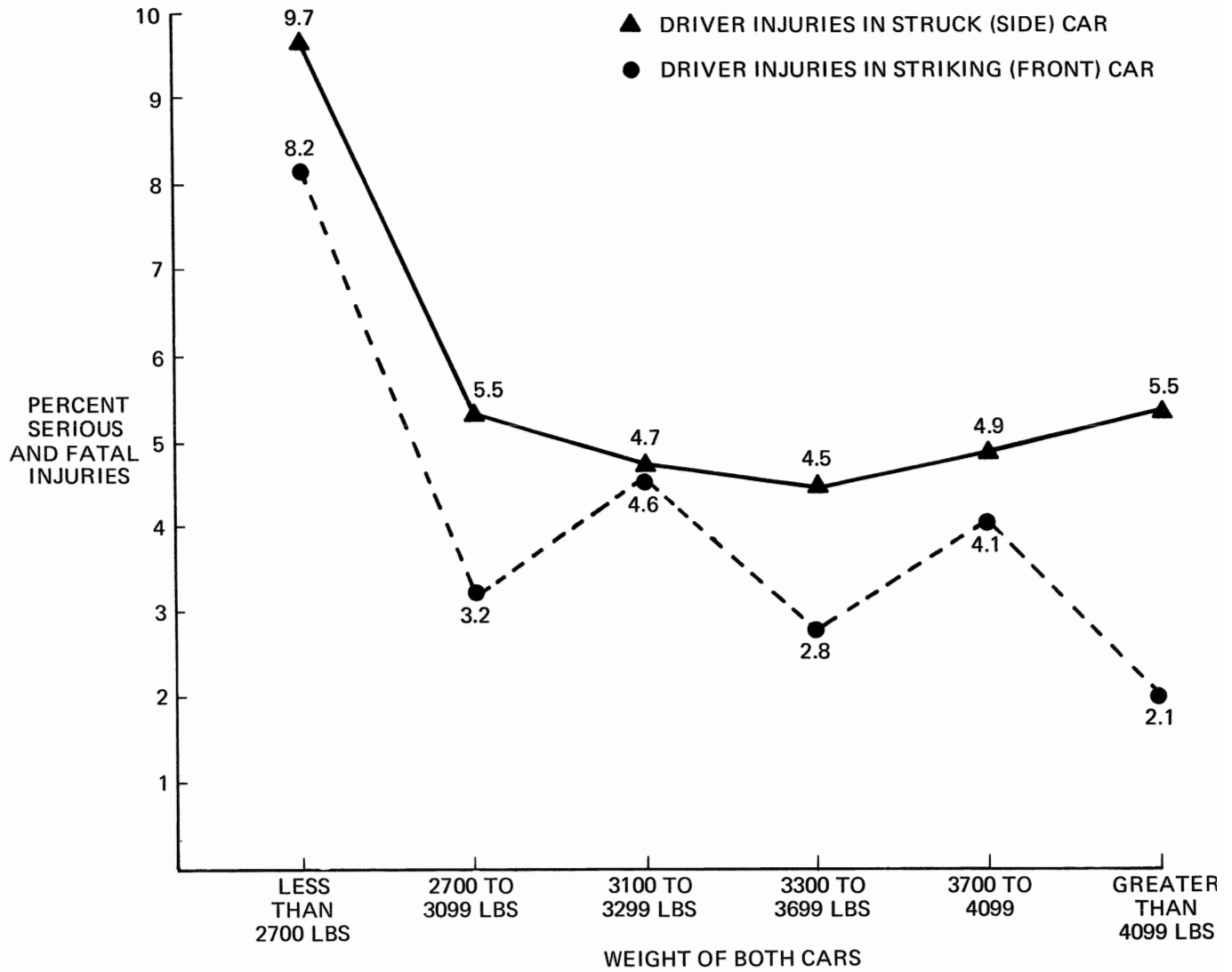
Using the injury data developed in the study, the researchers suggest that "if a hypothetical fleet of current standard sized cars were being operated but the drivers rarely used belts, and this fleet were converted to sub-compacts, and then somehow universal belt use were achieved, it would be possible to 'hold the line' on injury. However, if belt wearing rates stayed the same, the resulting injuries would increase by half or more."

"Projected onto a national scale these additional injuries will too soon mount up to hundreds of thousands." (Injury experience of belted and unbelted drivers in large and small cars is compared in a chart on page 12.)

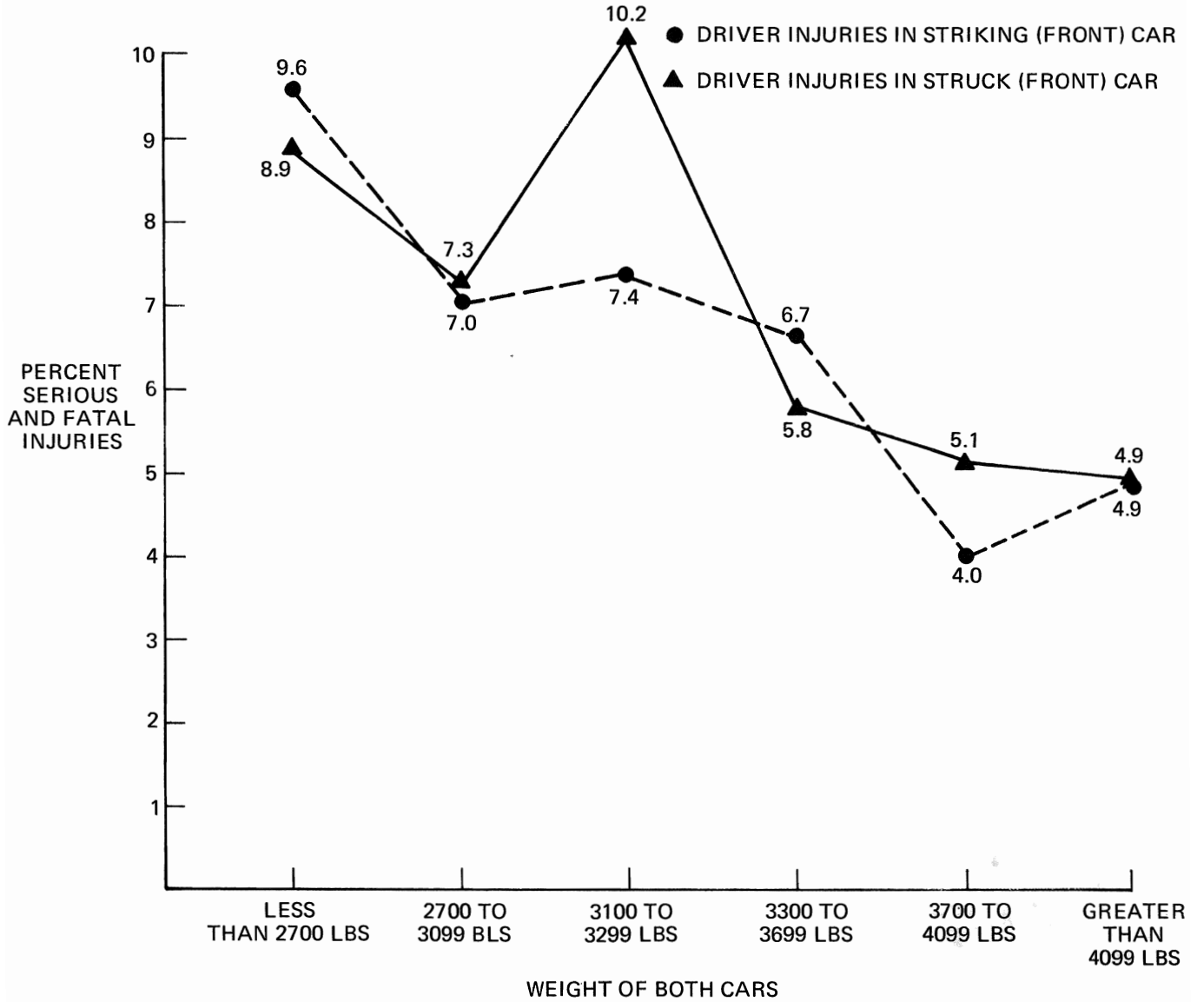
Information on obtaining copies of both studies is available from the University of North Carolina Highway Safety Research Center, Craige Trailer Park, Chapel Hill, North Carolina 27514.



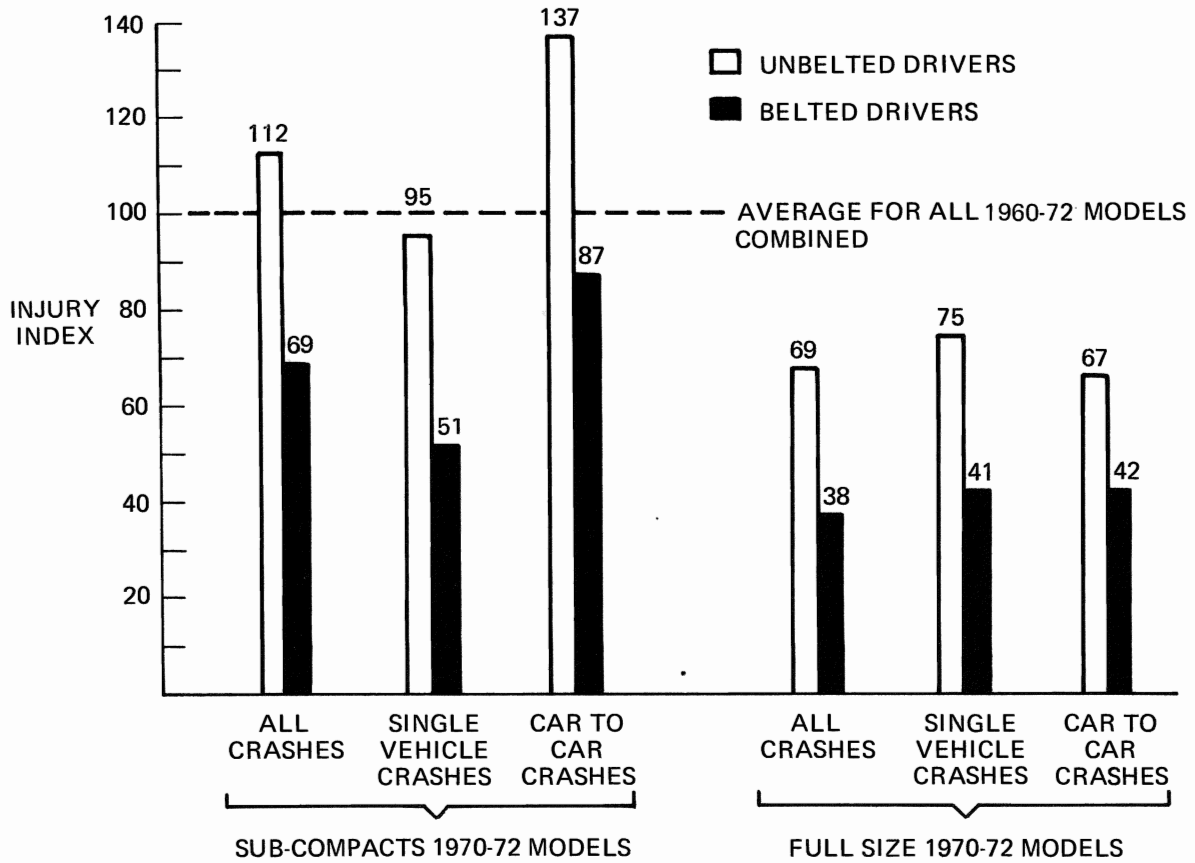
SEVERE AND FATAL INJURIES TO UNBELTED DRIVERS IN FRONT-INTO-SIDE CRASHES
OF CARS OF EQUAL WEIGHT



SEVERE AND FATAL INJURIES TO UNBELTED DRIVERS IN FRONT-INTO-FRONT CRASHES OF CARS OF EQUAL WEIGHT



SEVERE AND FATAL DRIVER INJURIES IN FULL SIZE AND SUB-COMPACT AUTOMOBILES



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the highway
loss reduction

STATUS REPORT

Ralph W. Hoar, Jr., Editor

INSURANCE INSTITUTE for HIGHWAY SAFETY
WATERGATE SIX HUNDRED • WASHINGTON, D.C. 20037
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