

# **Economic Cost of Traffic Accidents in Relation to the Human Element**

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Extensive use of traffic accident cost data developed by the Massachusetts Department of Public Works and by the Massachusetts Registry of Motor Vehicles in cooperation with the U. S. Bureau of Public Roads was made in the Congressional report, "The Federal Role in Highway Safety." (House Document No. 93, 86th Congress, 1st Session, 1959.) These data have also been used as the basis of other reports relating economic costs to accident types, characteristics of the street and highway systems, and to the characteristics of motor vehicles. This article, using data from the same source, relates the economic cost of motor-vehicle traffic accidents to persons.

Comparisons involving passenger cars of Massachusetts registry in 1953 are made of the accident experience of automobile drivers, passengers, pedestrians, and other persons involved in motor-vehicle traffic accidents. The number of accidents, the number of persons involved, the number of persons injured fatally, seriously, and superficially, the number hospitalized, and the number permanently and temporarily disabled are discussed. Equally important, the cost of accidents and injuries is revealed.

Injury rates and injury cost rates, number of persons injured per 100,000 population, and the per capita cost of their injuries show the relative economic importance of the accidents and injuries experienced by each class of persons.

The Massachusetts study of the economic cost of motor-vehicle accidents encompassed the total driving experience of all licensed operators of passenger cars and cargo-carrying vehicles of Massachusetts registry including those who experienced accidents and those who did not, in the operation of passenger cars during 1953, within or outside the state, and in the operation of cargo-carrying vehicles during 1955. However, the discussion in this paper is confined to the accident experience of Massachusetts licensed passenger-car operators and persons in motor-vehicle traffic accidents involving passenger cars on public streets and highways of the state. This paper excludes accident experience of truck operators, the number and cost of accidents occurring on private property, and the number and cost of mishaps involving acts of vandalism and acts of God.

● **STATISTICAL STUDIES** of the motor-vehicle accident costs were based on the probability sample designed to be accurate within 10 percent. To determine the number of persons involved in fatal accidents, original accident reports were reviewed and the number of persons reported represents a firm figure. The number of drivers in-

volved in non-fatal-injury and property-damage-only accidents was unavoidably slightly inflated because a driver who was involved in more than one accident during the year was counted as one driver each time he was involved in an accident. The number of passengers involved in accidents was estimated on the basis of an average passenger-car occupancy of 1.6 persons. The number of pedestrians and "other" persons non-fatally injured, however, was obtained from the original accident reports.

Costs reflected in this article are direct costs and consist exclusively of the money value of damage to property, injuries to persons, worktime lost, loss of use of vehicle, legal and court costs, damage awards in excess of actual cost, and small miscellaneous items. The number of persons losing worktime includes only those employed in gainful occupations. The number of workdays lost includes time lost for treatment of injuries, for convalescence, and for settlement of claims.

The activity class, "others," used throughout this article, consists of persons using conveyances other than motor-vehicles—such as bicycles, horsedrawn vehicles, and trolley cars.

Physical injury that impaired earning capacity is referred to as disability. The degree of disability as used is a measure of the extent to which persons injured in motor-vehicle traffic accidents were handicapped in making a living. There are two classes of disability—temporary disability and permanent disability. Under the temporary disability class, there are two degrees of disability—total and partial. The degree of permanent disability is expressed in percentages of 25, 50, 75, and 100.

The data regarding persons permanently and temporarily disabled as a result of motor-vehicle traffic accidents in Massachusetts appeared to be incomplete and therefore not usable in this analysis. However, rather than include no information on this important part of the problem, an approximation was derived by applying to the number of persons injured in Massachusetts, the percentage of persons injured that were disabled in the State of Utah, where a similar study was being conducted.

### PERSONS IN ACCIDENTS

In 1953, the population of Massachusetts was 4,773,000. Of this total, 362,280 persons were involved in 131,536 motor-vehicle traffic accidents. Table 1 gives the number of accidents and their severity, the number of persons in accidents, the severity of their injuries, and their activity at the time of the accident.

TABLE 1  
NUMBER OF PERSONS IN TRAFFIC ACCIDENTS INVOLVING PASSENGER CARS, CLASSIFIED BY SEVERITY OF ACCIDENT AND ACTIVITY

Item of Comparison	Severity of Accident							
	Fatal		Non-Fatal Injury		Property-Damage Only		All Accidents	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
<b>Involvements:</b>								
<b>Severity of injuries:</b>								
Persons fatally injured	421	58.6					421	0.1
Persons non-fatally injured	168	23.4	44,883	47.9			45,051	12.4
Persons not injured	129	18.0	48,751	52.1	267,928	100.0	316,808	87.5
Total persons involved	718	100.0	93,634	100.0	267,928	100.0	362,280	100.0
<b>Activity of persons:</b>								
Drivers	344	47.9	54,260	57.9	167,455	62.5	222,059	61.3
Passengers	206	28.7	32,556	34.8	100,473	37.5	133,235	36.8
Pedestrians	158	22.0	5,735	6.1			5,893	1.6
Others	10	1.4	1,083	1.2			1,093	0.3
Total persons involved	718	100.0	93,634	100.0	267,928	100.0	362,280	100.0
<b>Accidents:</b>								
Number of accidents	315		33,270		97,951		131,536	
Persons per accident	2.3		2.8		2.7		2.7	
Persons injured per accident	1.9		1.3				0.3	

The most significant point drawn from Table 1 was the great number of persons involved and the relatively small number of persons killed and injured in motor-vehicle traffic accidents. The 362,280 persons involved in motor-vehicle traffic accidents during 1953 represented one out of every 13 persons, or 7.6 percent of the total population. However, of all the persons involved in motor-vehicle traffic accidents only 45,472, or 12.5 percent, were either fatally or non-fatally injured. The vast majority of persons involved, 316,808 (87.5 percent), experienced no injury whatever.

In the distribution of persons involved in motor-vehicle traffic accidents by their activity at the time of accident, there were more drivers involved in accidents than there were persons in the other three activity classes combined. Of the total persons involved in accidents 61.3 percent were drivers, 36.8 percent were passengers, 1.6 percent were pedestrians, and 0.3 percent were others.

An interesting distribution (Fig. 1) is the makeup of accidents of different severity. All persons in fatal-injury accidents were not killed and all persons in non-fatal-injury accidents were not injured. (For example, two cars, each with two occupants, may have collided. One occupant may have been fatally injured, another non-fatally injured, and the other two occupants may have avoided injury entirely.) Of the 718 persons involved in fatal-injury accidents, 59 percent were killed, 23 percent were non-fatally injured, and 18 percent sustained no injuries whatever. Of the 93,634 persons involved in non-fatal-injury accidents, 48 percent were injured and 52 percent were not injured.

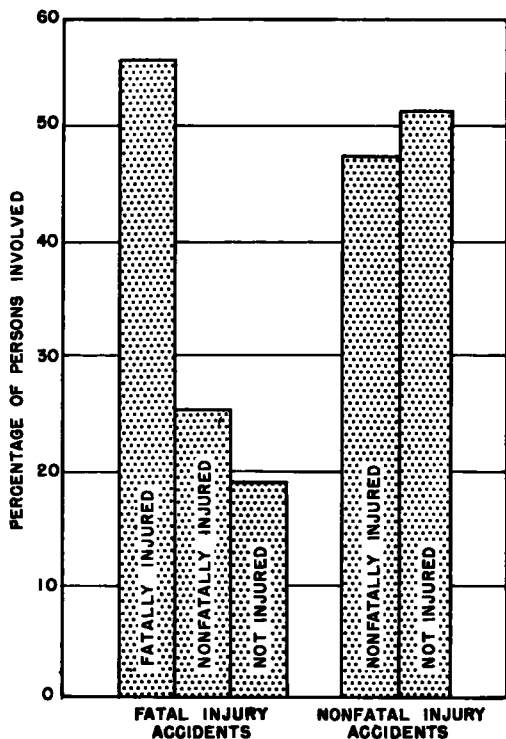


Figure 1. Percentage distribution of persons involved in accidents, classified by severity of injury.

In terms of number of accidents rather than involvement of persons, it may be noted from Table 1 that of the 131,536 accidents reported 75 percent were property-damage-only accidents, and only 0.2 percent were fatal-injury accidents.

#### PERSONS INJURED AND INJURY RATES

In Table 2 it is found that only 1 out of 8 persons involved in motor-vehicle accidents was injured and that more than one-half of those injured were not seriously injured. In terms of numbers, there were 421 persons fatally injured and 45,051 persons non-fatally injured. Of the persons non-fatally injured 27,006 experienced only superficial injuries such as mild shock, bumps, scratches, and bruises. The remaining 18,045 experienced serious injuries such as concussions, fractured bones, internal injuries, deep cuts, and dismemberment of body extremities.

Data from Table 2 indicate that more than 1 out of every 3 persons killed in traffic accidents was a pedestrian. It is significant, too, that more passengers than drivers were killed in traffic accidents, since on the basis of average car occupancy of 1.6 persons, the relative exposure of drivers as compared to that of passengers was in a ratio of 5 to 3. As to the number of persons non-fatally injured in traffic accidents, drivers constituted approximately one-half of the total.

In Figure 2, the fatal injury rate—persons fatally injured in traffic accidents per 100,000 population—relates the high incidence of pedestrians and passengers in fatal

TABLE 2  
NUMBER OF PERSONS IN TRAFFIC ACCIDENTS AND NUMBER PER 100,000 POPULATION,  
CLASSIFIED BY SEVERITY AND ACTIVITY

Activity of Persons	Persons Injured						Total Involved in Accidents
	Fatally	Non-Fatally			Total Injured	Total Not Injured	
		Seriously	Superficially	Total			
<b>Involvements:</b>							
Drivers	102	12,800	9,434	22,234	22,336	199,723	222,059
Passengers	151	4,275	12,914	17,189	17,340	115,895	133,235
Pedestrians	158	770	3,775	4,545	4,703	1,190	5,893
Others	10	200	883	1,093	1,093	-	1,093
<b>Total persons</b>	<b>421</b>	<b>18,045</b>	<b>27,006</b>	<b>45,051</b>	<b>45,472</b>	<b>316,808</b>	<b>362,280</b>
<b>Involvements per 100,000 population:</b>							
Drivers	2.1	268	198	466	468	4,194	4,652
Passengers	3.2	89	271	360	363	2,428	2,791
Pedestrians	3.3	16	79	95	99	25	124
Others	0.2	5	18	23	23	-	23
<b>Total persons</b>	<b>8.8</b>	<b>378</b>	<b>566</b>	<b>944</b>	<b>953</b>	<b>6,637</b>	<b>7,590</b>

accidents. Figure 3 shows the rate at which persons in traffic accidents were seriously and superficially injured and points up the superficial nature of the majority of traffic accident injuries and also shows that a much higher percentage of drivers were seriously injured than any other activity group. Furthermore, it shows that most pedestrians not fatally injured were only superficially injured.

#### Age and Sex of Persons Injured

Table 3 gives the number of persons and the number per 100,000 population in each age and sex group that were injured in traffic accidents, classified by severity of injury. Of every 100,000 persons in the state, 953 were injured in a traffic accident during the year and the majority of those injured were male persons. A total of 25,579 males were fatally and non-fatally injured, or 1,107 males per 100,000 male persons.

Categorized by age groups, more persons from 30 to 39 years of age were injured than in any other age group, and the next largest category was the 20-29 age group. Of all persons injured 43 percent were in these two age groups. However, of more importance from the economic point of view, 70 percent of the persons injured were from 20 to 59 years of age—the ages supplying most of the labor force of the state.

In every age group except one, male persons had a higher fatal-injury rate than females; and in the one exception the rate was the same for both sexes. In the 20-29 age group for males and in the 50 and over age groups for both males and females, a relatively high fatal-injury rate occurred. The higher rates in the older age groups were believed to have been largely brought about by pedestrian deaths.

Turning to the non-fatal injuries per 100,000 in each age and sex group (Table 3), males had a higher rate at every age, with only the youngest age group evidencing a

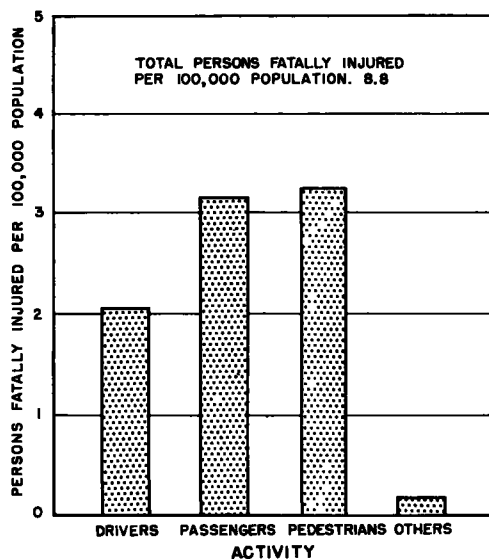


Figure 2. Fatal-injury rate, classified by activity.

closeness. Males in the 20-29 and 30-39 age groups had the highest injury rate, and females 60 and over had the lowest non-fatal-injury rate.

**Persons Hospitalized**

Table 4 gives the number of persons non-fatally injured in traffic accidents that were hospitalized. One of the most remarkable items derived from the 1953 Massachusetts accident study was evidence of the relatively small number of non-fatally-injured persons that required hospitalization. Only 15 percent of the persons non-fatally injured spent time in the hospital as a result of their injuries. Table 4 also shows that the 6,647 persons confined to the hospital remained there a total of 62,148 days or an average of 9.4 days per person.

During 1953, of the 45,051 persons non-fatally injured, 16,204, or 35.9 percent were examined in a hospital after the accident. Of those examined, 6,647 were confined while 9,557 persons were released from the hospital immediately after receiving emergency treatment. There were 28,847 persons, or 61.4 percent of all the persons non-fatally injured, that were either treated outside hospitals or received no professional treatment. These figures are additional evidence of the superficial nature of a large majority of traffic accident injuries.

Only 10 percent of the passengers that were injured required hospitalization, as compared with 16 percent of the drivers and 25 percent of the injured pedestrians. Persons in the "other" category that were hospitalized had the highest percentage rate,

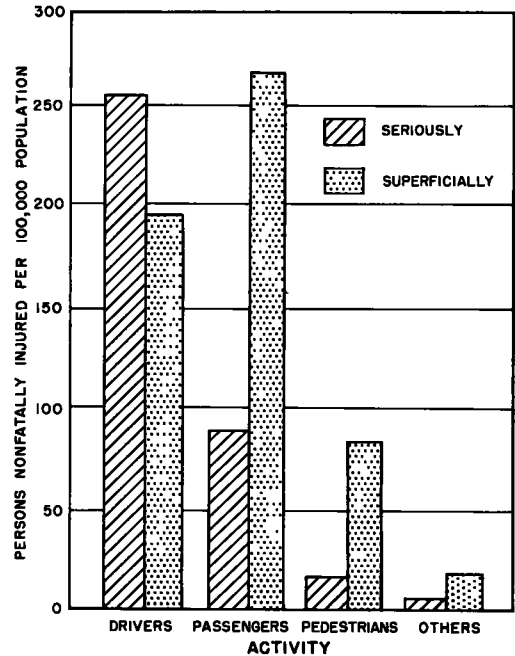


Figure 3. Non-fatal-injury rate, classified by activity and severity.

TABLE 3  
NUMBER OF PERSONS INJURED IN ACCIDENTS AND NUMBER INJURED PER 100,000 POPULATION, CLASSIFIED BY AGE, SEX, AND SEVERITY

Age of Persons	Males Injured			Females Injured			All Persons Injured		
	Fatally	Non-Fatally	Total	Fatally	Non-Fatally	Total	Fatally	Non-Fatally	Total
<b>Number injured:</b>									
Under 10	25	2,993	3,018	12	2,238	2,250	37	5,231	5,268
10 - 19	26	3,070	3,096	6	1,694	1,700	32	4,764	4,796
20 - 29	59	5,187	5,246	13	4,542	4,555	72	9,729	9,801
30 - 39	25	5,579	5,604	7	4,297	4,304	32	9,876	9,908
40 - 49	22	3,668	3,690	6	2,741	2,747	28	6,409	6,437
50 - 59	36	2,958	2,994	41	2,776	2,817	77	5,734	5,811
60 and over	75	1,856	1,931	68	1,452	1,520	143	3,308	3,451
<b>Total</b>	<b>268</b>	<b>25,311</b>	<b>25,579</b>	<b>153</b>	<b>19,740</b>	<b>19,893</b>	<b>421</b>	<b>45,051</b>	<b>45,472</b>
<b>Number per 100,000:<sup>1</sup></b>									
Under 10	5	653	658	3	510	513	4	583	587
10 - 19	8	965	973	2	548	548	5	759	764
20 - 29	19	1,673	1,692	4	1,402	1,406	11	1,535	1,546
30 - 39	7	1,631	1,638	2	1,161	1,163	4	1,387	1,391
40 - 49	7	1,207	1,214	2	818	820	4	1,003	1,007
50 - 59	14	1,160	1,174	14	951	965	14	1,048	1,062
60 and over	23	575	598	17	369	386	20	462	482
<b>Total</b>	<b>12</b>	<b>1,095</b>	<b>1,107</b>	<b>6</b>	<b>801</b>	<b>807</b>	<b>9</b>	<b>944</b>	<b>953</b>

<sup>1</sup> Number of persons injured per 100,000 in each age and sex group.

but the number of persons in this category represented less than 3 percent of the total number of persons injured.

Considered by activity class, over one-half of the persons requiring hospitalization were drivers, one-fourth were passengers, and one-sixth were pedestrians.

### Worktime Lost

The number of non-fatally-injured persons losing worktime and the amount of worktime lost as a result of motor-vehicle traffic accidents (Table 5) revealed the interesting point that more than one-half of the persons injured did not lose

time from work. This situation appeared to be brought about by two factors: First, many injured persons were not members of the labor force, and second, three-fifths of the non-fatal injuries were of a superficial nature. The average number of work days lost per person was 19 days.

Of the 22,234 drivers non-fatally injured, 60 percent lost time from work, whereas a similar comparison for passengers and pedestrians shows percentages of 28 and 23, respectively. Of the 19,405 persons losing worktime, drivers accounted for 68 percent; passengers, 25 percent;

pedestrians, 6 percent; and others, 1 percent.

TABLE 5  
NUMBER OF PERSONS NON-FATALLY INJURED IN ACCIDENTS AND WORKTIME LOST FROM SUCH INJURIES

Activity	Total Persons Non-Fatally Injured	Persons Losing Worktime	Total Work-days Lost	Average Work-days Lost Per Person
Drivers	22,234	13,261	271,170	20.4
Passengers	17,189	4,880	70,795	14.5
Pedestrians	4,545	1,053	23,107	21.9
Others	1,083	211	4,200	20.0
Total or Average	45,051	19,405	369,272	19.0

### PERSONS DISABLED

Table 6 gives the number of persons injured in traffic accidents that were disabled, and the disability rate per 100,000 population. As mentioned earlier, the distribution made according to degree of disability was based on percentage data provided by Utah. On this basis, of the 45,051 persons non-fatally injured in traffic accidents in Massachusetts, 2,117 were permanently disabled to some degree, and 3,514 were temporarily disabled either totally or partially. It is important to note that of all those persons non-fatally injured only 225 suffered total permanent disability, or a rate of less than 5 persons per 100,000 population.

Table 6 also indicates the relative importance of temporary and permanent disabilities in the over-all traffic-accident injury picture. Numerically, disabilities are relatively small but from an economic point of view they account for a sizeable portion of every accident direct cost dollar. Considering the permanently disabled, only a small proportion had total disability. In contrast, almost 65 percent of the permanently disabled group were in the 25 percent disability group.

### TOTAL DIRECT COST OF ACCIDENTS

The total direct cost of motor-vehicle traffic accidents is summarized in Table 7 by severity of accident and by cost elements. In considering the direct cost of motor-vehicle accidents it is necessary to distinguish between property-damage costs, which may occur in any type of accident, and property-damage-only accidents. Property damage relates to an element of cost of an accident whereas the property-damage-only accident refers to the severity class of an accident where no injuries were sustained. Total property-damage costs of property-damage-only accidents amounted to \$17,900, -000, which was almost twice the property-damage costs in total-injury accidents.

TABLE 4  
NUMBER OF PERSONS NON-FATALLY INJURED IN ACCIDENTS AND TIME IN HOSPITAL AS THE RESULT OF SUCH INJURIES

Activity	Total Persons Non-Fatally Injured	Persons Hospitalized	Days In Hospital	Average Days In Hospital
Drivers	22,234	3,624	33,804	9.3
Passengers	17,189	1,630	15,020	9.2
Pedestrians	4,545	1,115	10,580	9.5
Others	1,083	278	2,744	9.9
Total or Average	45,051	6,647	62,148	9.4

TABLE 6  
NUMBER OF PERSONS NON-FATALLY INJURED  
AND THE EXTENT OF THEIR DISABILITY

Degree of Disability	Number of Persons Non-Fatally Injured <sup>1</sup>	Persons Non-Fatally Injured Per 100,000 Population
<b>Permanent disability:</b>		
Total	225	4.7
75 percent	180	3.8
50 percent	360	7.5
25 percent	1,352	28.3
Subtotal	2,117	44.3
<b>Temporary disability:</b>		
Total	2,435	51.0
Partial	1,079	22.6
Subtotal	3,514	73.6
Total disabled	5,631	118.0
Total not disabled	39,420	826.0
Total injuries	45,051	944.0

<sup>1</sup> Distribution of persons according to degree of disability was derived from data provided by the State of Utah, where a similar accident cost study was conducted.

the overriding economic importance of damage awards and settlements, which in this instance largely represents the value of human life. The "fatal-injury-accident dollar" also shows that there is a fairly large element of property-damage cost even in this most serious severity class of accident.

The "non-fatal-injury-accident dollar" represents the \$28,688,000 spent on non-

This, however, was to be expected because of the much greater number of property-damage-only accidents. When all the other elements of cost were considered with the property-damage costs, all injury accidents cost 52 percent more than the property-damage-only accidents.

The average accident cost dollar shown in Figure 4 for each severity class and for each of the elements of cost, describes the makeup of the \$50,224,000 spent on accidents in Massachusetts during 1953. A most significant fact is that the cost of property damage was greater than that of all other elements of accident cost combined. The minor economic role of the treatment of injuries as a cost element is also indicated.

The "fatal-injury-accident dollar" is representative of the \$1,642,000 spent on fatal accidents during 1953. It illustrates

TABLE 7  
TOTAL DIRECT COST OF TRAFFIC ACCIDENTS BY COST ELEMENTS  
AND SEVERITY OF ACCIDENT

Cost Elements	Severity of Accident				
	Fatal Injury	Non-Fatal Injury	Total Injury	Property-Damage-Only	All Accidents
Property damage: (\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)
Vehicle	238	9,352	9,590	17,722	27,312
Other property	2	102	104	204	308
Subtotal	240	9,454	9,694	17,926	27,620
<b>Injury treatment:</b>					
Doctors and dentists	25	2,038	2,063	-	2,063
Hospital	24	1,117	1,141	-	1,141
Ambulance	2	56	58	-	58
Miscellaneous	3	139	142	-	142
Subtotal	54	3,350	3,404	-	3,404
<b>Incidental costs:</b>					
Loss of vehicle use	6	105	111	248	359
Value of time lost	32	4,061	4,093	473	4,566
Legal assistance and court fees	293	4,338	4,631	558	5,189
<b>Damage awards and settlements</b>					
Settlements	1,017	7,380	8,397	689	9,086
Subtotal	1,348	15,884	17,232	1,968	19,200
<b>Total</b>	<b>1,642</b>	<b>28,688</b>	<b>30,330</b>	<b>19,894</b>	<b>50,224</b>

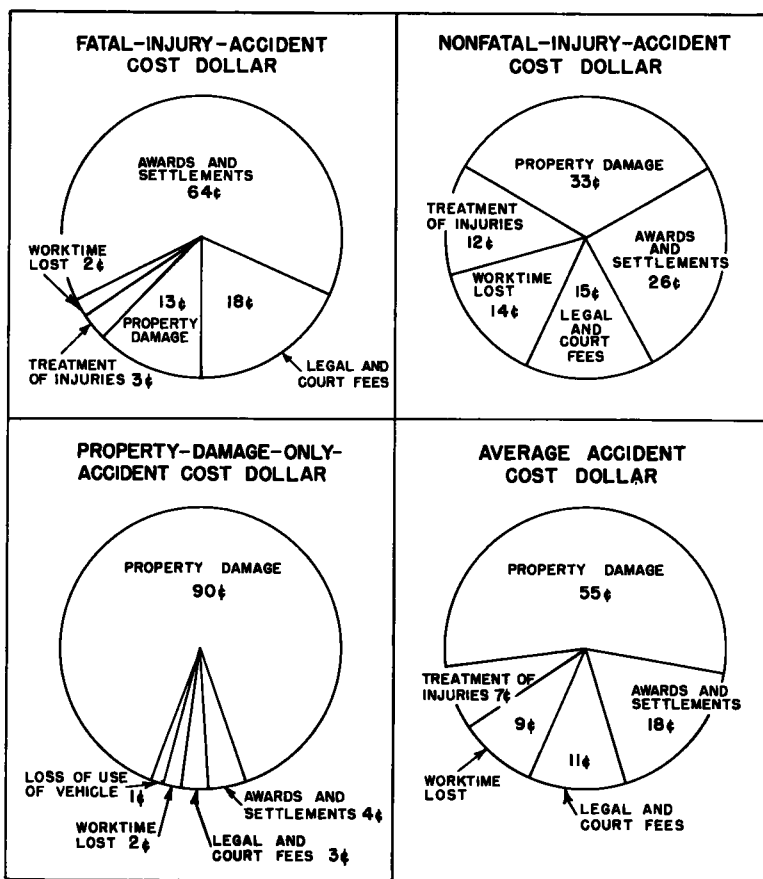


Figure 4. Direct cost of traffic accidents shown as fractional parts of a dollar.

fatal-injury accidents during the 12-month period. In the breakdown of this cost dollar the worktime loss cost more than the treatment of injuries, and property damage accounted for one-third of the total cost of non-fatal-injury accidents. Also, legal and court fees (15 cents out of the dollar) cost more than one-half as much as awards and settlements (26 cents out of the dollar).

The "property-damage-only-accident dollar" is representative of the \$19,894,000 spent on property-damage-only accidents during the year. The significant thing about this diagram is that there were elements of cost other than property damage which accounted for 10 cents out of every property-damage-only-accident dollar.

### Cost of Injuries by Activity

The direct cost to persons fatally and non-fatally injured in motor-vehicle traffic accidents is given in Table 8 by activity. The study did not provide a breakdown of costs for seriously and superficially injured persons according to their activity, but in total the amounts were \$13,906,000 and \$5,328,000, respectively. The \$20,636,000 cost of injuries is the total direct cost of fatal and

TABLE 8  
DIRECT COST OF INJURIES BY SEVERITY OF  
INJURY AND ACTIVITY

Activity of Persons Injured	Fatally Injured	Non-Fatally Injured <sup>1</sup>	All Persons Injured
	(\$1,000)	(\$1,000)	(\$1,000)
Drivers	156	11,552	11,708
Passengers	378	5,046	5,424
Pedestrians	824	2,305	3,129
Others	44	331	375
<b>Total</b>	<b>1,402</b>	<b>19,234</b>	<b>20,636</b>

<sup>1</sup> \$13,906,000—cost of seriously injured; \$5,328,000—cost of superficially injured.



non-fatal accidents, less the cost of property damage incurred in them, as given in Table 7.

Over one-half of the total traffic-accident-injury cost was borne by drivers, who experienced approximately twice as much injury cost as passengers. Average injury costs per person involved are calculated to be \$524 for drivers, \$313 for passengers, \$665 for pedestrians, and \$343 for all other injured persons.

The average direct cost of injuries sustained by persons in traffic accidents, classified by the severity of injury, is shown in Figure 5. The average cost of a fatal injury was \$3,300, which was 4 times the amount expended for the serious non-fatal injury, and 17 times the cost for the superficial non-fatal injury. However, this comparison gives an erroneous idea of the economic importance of fatal injuries unless the total costs and number of persons are considered. The serious non-fatal injuries, in total, cost almost 10 times as much as fatal injuries. Referring to Table 2, there were 18,045 persons seriously injured, as compared to 421 persons fatally injured.

**Cost of Injuries by Age and Sex**

Table 9 gives the direct cost of injuries to persons in accidents by the severity of their injuries and by their age and sex. It also gives the injury cost rate per 100,000 population for the different groups. Among the important facts observed was that non-fatal injuries, \$403,000 per 100,000 persons, cost approximately 14 times as much as

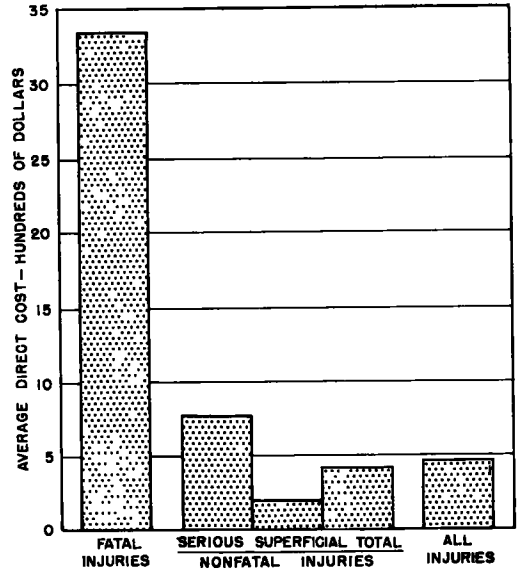


Figure 5. Average direct cost of injuries sustained in accidents, according to severity of injury.

TABLE 9  
DIRECT COST TO PERSONS INJURED IN ACCIDENTS AND COSTS PER 100,000 PERSONS, CLASSIFIED BY AGE, SEX, AND SEVERITY OF INJURY

Age of Persons	Males Injured			Females Injured			All Persons Injured		
	Fatally	Non-Fatally	Total	Fatally	Non-Fatally	Total	Fatally	Non-Fatally	Total
<b>Cost to persons injured:</b>	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)
Under 10	112	539	651	50	424	474	162	963	1,125
10 - 19	87	739	804	19	619	638	86	1,356	1,442
20 - 29	147	1,766	1,913	44	1,594	1,638	191	3,360	3,551
30 - 39	96	2,333	2,429	10	1,591	1,601	106	3,924	4,030
40 - 49	81	1,678	1,759	30	905	935	111	2,583	2,694
50 - 59	141	2,074	2,215	42	3,324	3,324	183	5,356	5,539
60 and over	370	1,009	1,379	193	683	876	563	1,692	2,255
<b>Total</b>	<b>1,014</b>	<b>10,136</b>	<b>11,150</b>	<b>388</b>	<b>9,098</b>	<b>9,486</b>	<b>1,402</b>	<b>19,234</b>	<b>20,636</b>
<b>Cost to persons per 100,000:<sup>1</sup></b>									
Under 10	25	118	142	11	97	108	18	107	125
10 - 19	21	232	253	6	200	206	14	216	230
20 - 29	48	570	617	14	492	505	30	530	560
30 - 39	28	682	710	3	430	433	15	551	566
40 - 49	27	552	579	9	270	279	17	404	422
50 - 59	55	814	869	14	1,124	1,138	33	979	1,012
60 and over	115	312	427	49	174	223	79	236	315
<b>Total</b>	<b>44</b>	<b>439</b>	<b>483</b>	<b>16</b>	<b>369</b>	<b>385</b>	<b>29</b>	<b>403</b>	<b>432</b>

<sup>1</sup> Direct cost per 100,000 persons in each age and sex group.

fatal injuries, \$29,000 per 100,000 persons; and that the cost of injuries to males exceeded the cost of injuries to females by 11.4 percent. In the injuries of males, the non-fatal cost was 10 times as great as the cost of their fatal injuries; while in the injuries of females, the non-fatal-injury cost was 23 times as great as the cost of their fatal injuries.

The per capita cost of fatal injuries resulting from motor-vehicle traffic accidents, calculated by dividing injury cost by the number of persons (total population) in each age and sex group, shows that the age groups of 20-29 and over 50 had the highest injury cost rates. The high cost rate in the 20-29 year group would appear to reflect the high injury rate and the greater exposure to accidents of this age group. The extremely high rates for persons over 50 years of age reflects two things: increased earning power that comes with age and experience, and failing physical characteristics that come with age.

The per capita costs of non-fatal injuries resulting from traffic accidents are shown in Figure 6, calculated in exactly the same way used for calculating the per capita cost of fatal injuries. The cost of injuries to males generally increased with age—the 40-49 and the over 60 age groups being the only exceptions. The higher value of worktime lost and the slower rate of recovery in the 50-59 age group are clearly reflected in this Figure.

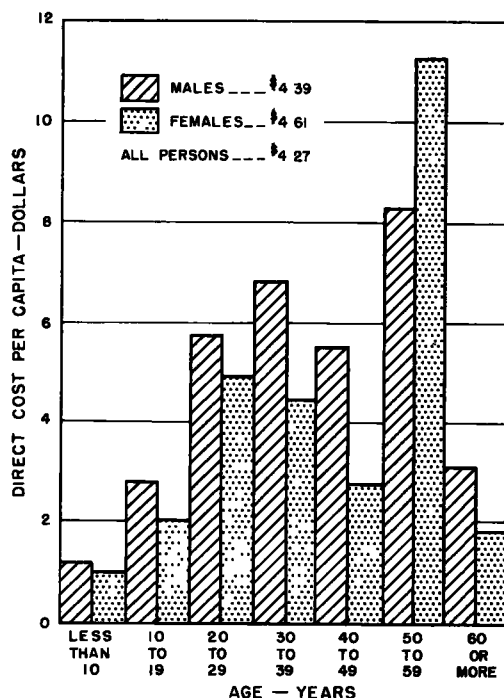


Figure 6. Per capita direct cost, within each age and sex group, of non-fatal injuries.