Freeway Pedestrian Accidents: 1958-1962

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•FREEWAYS are not designed to accommodate pedestrians and for this reason most freeway ramps are posted to inform pedestrians that they are prohibited from entering. Dismounted vehicle occupants, persons who drive onto the freeway and dismount from their vehicle for some reason, are not specifically prohibited from walking along the freeway.

In addition, all freeways are fenced to prevent entry by pedestrians, animals, and vehicles. In urban areas, a 6-ft chain link fence is placed along the right-of-way. In rural areas, a 4-ft wire fence is used. Pedestrian barriers consisting of 4- or 6-ft chain link fence are often placed in the median within interchange areas to prevent pedestrians from crossing the freeways. A cable chain link median barrier, installed on approximately 150 mi of freeway, also serves as a continuous pedestrian barrier and 50 mi of blocked-out metal beam median barrier act as a lesser deterrent.

In spite of fences, signs, and barriers, there are still approximately 130 pedestrian accidents on freeways each year. Of these, approximately 55 are fatal, comprising 13 percent of all freeway fatal accidents.

STATISTICAL BREAKDOWN OF PEDESTRIAN ACCIDENTS

Freeway fatal accidents in California between 1958 and 1962 can be classified as indicated in Table 1. The Division of Highways is doing research on both cross-median and wrong-way accidents on freeways and the California Highway Patrol is studying this seemed to be a type of accident for which specific preventatives could be devised.

Table 2 gives the number of pedestrian and total freeway accidents by severity for the 5 yr included in this study (1958-1962) and for 1963. The 416 pedestrian accidents were widely scattered throughout the freeway system with no locations having a concentration of pedestrian accidents.

Table 3 indicates why each pedestrian was on foot on the freeway and what he was doing when struck. Other tables, made to determine whether there were differences between urban and rural pedestrian accidents, indicate that the numbers of rural and urban pedestrian accidents are almost equal; they are distributed throughout the various classifications in Table 3 in a similar manner.

Table 4 summarizes the location of each pedestrian accident, regardless of why the pedestrians were on the freeway. It is obvious that one should stand as far away from the main stream of traffic as possible. Some pedestrians, such as those working on the freeway, have little control over where they stand. However, most pedestrians do have a choice and yet some stand on the traveled way.

TABLE 1

ACCIDENTS, 1958-1962

Type	% of Total
Single vehicle	50.5
Pedestrian	12.7
Head-on (cross-median and wrong-way)	15.8
Rear-end and sideswipe	21.0

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TABLE 2

SEVERITY OF PEDESTRIAN AND ALL FREEWAY ACCIDENTS

Year	No. Pedestrian Accidents				All Freeway Accidents			
	Fatal	Injury	PDO	Total	Fatal	Injury	PDO	Total
1958	32	20[a]	0	52	170	3,339	4,913	8,422
1959	18	14[a]	0	32	215	4,172	5,623	10,010
1960	36	47	0	83	259	5,902	7,871	14,032
1961	36	83	0	119	267	7,160	9,136	16,563
1962	51	79	0	130	390	9,081	11,350	20,821
Total	173	243	0	416	1,301	29,654	38,893	69,848
1963	55	115	0	170	400	10,511	13,756	24,667

[a]Does not include urban freeways.

TABLE 3

NUMBER OF FREEWAY PEDESTRIAN ACCIDENTS, 1958-1962

What Pedestrians Were Doing When Struck	Why Pedestrians Were on Freeway						Total	
	Disabled Veh.	Prior Acc.	Working[a]	Trying to Cross	Hitch-hiking	Reason Unknown or not Stated	No.	%
Walking parallel to centerline on:								
Traveled way	1	1	0	0	2	11	15	3.5
Shoulder	5	0	0	0	0	1	6	1.4
Median	0	0	0	0	0	1	1	0.2
Ramp	3	0	0	0	5	5	13	3.1
Total	9	1	0	0	7	18	35	8.2
Standing on:								
Traveled way	18	25	15	0	0	9	67	16.2
Shoulder	10	9	15	0	2	2	38	9.2
Median	1	4	5	0	0	0	10	2.4
Ramp	5	4	3	0	1	4	17	4.1
Total	34	42	38	0	3	15	137	31.9
Working on vehicle on:								
Traveled way	38	0	0	0	0	0	38	9.2
Shoulder	29	0	0	0	0	0	29	7.1
Median	3	0	0	0	0	0	3	0.7
Ramp	0	1	0	0	0	0	1	0.2
Total	70	1	0	0	0	0	71	17.2
Crossing freeway	13	5	0	138	11	3	170	40.8
Unknown or not stated	2	2	0	0	1	3	8	1.9
Total								
No.	128	51	38	138	22	39	416	—
%	30.8	12.4	9.1	33.2	5.2	9.3	—	100.0

[a]Breakdown of those working on freeway:

Div. of highway personnel	10
Contractor's personnel	4
Police officers	21
Tow truck operators	3
Total	38

TABLE 4

LOCATION OF PEDESTRIANS WHEN STRUCK

Location	No. Ped. Acc.	% of Total
Traveled way	290	69.7
Shoulder	73	17.6
Ramp traveled way	26	6.2
Ramp shoulder	5	1.2
Median	14	3.4
Unknown	8	1.9
Total	416	100.0

WHY PEDESTRIANS WERE ON FREEWAY

Disabled Vehicles

Persons who dismounted from a disabled vehicle accounted for 30.8 percent of all pedestrian accidents. Quite often the drivers of these disabled vehicles parked on the traveled way rather than on the shoulder or median. Some freeway sections, such as viaducts and long bridges, do not have a shoulder or median, and disabled vehicles must park on the main traveled lanes. However, some drivers let their disabled vehicles coast to a stop and make no attempt to park in a safe place.

Once the vehicles come to a stop, the drivers and passengers generally do one of three things: (a) walk off the freeway to solicit assistance; (b) work on their vehicle; or (c) stand around and wonder what to do.

Working on a vehicle on or near the main traveled lanes is, or course, very hazardous. However, over one-half of the disabled vehicle operators were doing this when struck.

Prior Accident

Persons involved in a prior accident accounted for 12.4 percent of the pedestrian accidents. These persons very seldom walk off the freeway, nor do they work on their vehicles. They usually stand and wait for a police officer and tow truck or they try to flag traffic. The ones who stand on or near the main stream of traffic are more often struck by a vehicle than those who stand as far away from traffic as they can.

Working

Persons who are working on the freeway are there legally and are usually protected by signs, barriers, flashing lights, or flags. In spite of this protection, many workers are not very careful about where they stand. For instance, although police officers can stand almost any place to issue a citation or talk to motorists, many stand on the shoulder only a few inches from the main traveled lanes.

As indicated in Table 3, police officers constitute over one-half (21 of 38) of the workers involved in pedestrian accidents. Since these officers, as well as other workers, are necessary on freeways, it is unfortunate that some lose their lives, regardless of where the fault lies.

Trying to Cross Freeway

Of all pedestrians involved in accidents, more were on the freeway for the specific purpose of crossing than for any other reason (33.2 percent). There are many structures on freeways built especially so pedestrians can cross safely (pedestrian overcrossings and undercrossings). Pedestrians can also cross safely at most structures built for vehicle crossings.

To walk onto a freeway, pedestrians must climb a wire fence or walk along a ramp past a sign which informs them that they are prohibited from entering the freeway. Most pedestrians who cross a freeway know that they are violating the law and endangering their lives, yet they do it anyway.

Hitchhiking

It long been thought that hitchhikers constituted a major portion of pedestrian victims on freeways. However, they comprise only 5.2 percent of all pedestrian victims, and

half of them were crossing the freeway and were not actually in the act of hitchhiking when struck. In fact, only 3 of the 22 hitchhikers were standing along the freeway when struck. One reason that hitchhikers are not struck very often may be that they stand off of the main traveled lanes and face oncoming traffic while they are actually hitchhiking.

WHAT PEDESTRIANS WERE DOING WHEN STRUCK

Walking Parallel to Centerline

People walking along the freeway comprise only 8.2 percent of the freeway pedestrian accidents. It is hard to believe that anyone would walk on the main traveled lanes (assuming a shoulder is available), yet it is done. Transients are seen walking along freeways and other roads quite frequently. Most of them probably do not know the difference between freeways, expressways, and other multilane roads, nor do they care.

Although hundreds of vehicles are disabled on freeways in California every day and hundreds of thousands of pedestrians, including disabled vehicle operators, walk along freeways during the course of a year, only six persons were struck in 5 yr while walking on the freeway shoulders in California. This is less than 2 percent of all freeway pedestrian accidents and it implies that walking to the nearest exit for professional aid is not nearly as hazardous as previously supposed.

Standing

Persons standing within the freeway right-of-way constituted 31.9 percent of all freeway pedestrian accidents. In 114 of 132 of these accidents, the pedestrians were on the freeway because their vehicles were disabled, they were involved in a prior accident, or they were working. These people were on the freeway for reasons over which they had no control. Most of them did have some control over where they stood, yet in 67 of 132 accidents they stood on the main traveled lanes.

An edge of pavement stripe and/or diagonal shoulder striping might help pedestrians to realize where they are standing.

Working on Vehicle

In 17.2 percent of the pedestrian accidents, the victim was working on his vehicle. Apparently a large number of people will work on a vehicle when it is obviously unsafe to do so.

An 8-ft shoulder with a dike or guardrail does not provide enough room to change a tire on the left side of the vehicle without the pedestrian encroaching on the main traveled lanes. To change a tire on the right, the vehicle must encroach on the traveled lanes to allow room between the vehicle and the dike or guardrail.

Crossing Freeway

One hundred seventy pedestrians were struck while actually crossing the freeway. Of these, 138 were on the freeway for the specific purpose of crossing. The remainder were crossing to or from their vehicles or were hitchhikers crossing the freeway.

TABLE 5

ACCIDENTS OF PEDESTRIANS CROSSING FREEWAY

Location of Accident	No. Ped. Acc.	% of Total
Interchange area	63	37.1
Between interchanges	105	61.7
Unknown	2	1.2
Total	170	100.0

Table 5 shows that 37 percent of the pedestrian accidents occurred within interchanges. Approximately 40 percent of all freeway mileage is within interchanges. Of the 63 pedestrian accidents which occurred within an interchange, 10 occurred at locations with a pedestrian barrier or deterrent in the median (Table 6).

High traffic volumes seem to act as pedestrian barriers. The ADT was not tabulated at each pedestrian accident,

TABLE 6

RELATION OF PEDESTRIAN ACCIDENTS TO BARRIERS AND DETERRENTS

Type	No. Ped. Acc.
Cable chain link median barrier	5
Double blocked-out metal beam barrier	4
48-in. chain link fence	1
72-in. chain link fence	0
None	53
Total	63

TABLE 7

LIGHTING CONDITION VS FREEWAY PEDESTRIAN ACCIDENTS

Condition	% of Total Acc.	
	Ped.	All
Daylight	30.5	52.2
Dusk or dawn	2.7	2.5
Dark:	66.8	45.3
No highway illumination	40.4	25.4
Highway illumination	26.4	19.9

but it appears that the higher volume freeways have a higher proportion of dismounted motorist accidents and that the lower volume freeways have a higher proportion of pedestrians crossing the freeway. The high volumes seem to act as a pedestrian barrier, although increasing the number of dismounted motorists.

MISCELLANEOUS FACTORS

Lighting

Table 7 presents the lighting condition at the time of the accident for pedestrian and for all freeway accidents. Two-thirds of all pedestrian accidents occurred at night. It is not known how much pedestrian activity there is on freeways at night as compared to daytime.

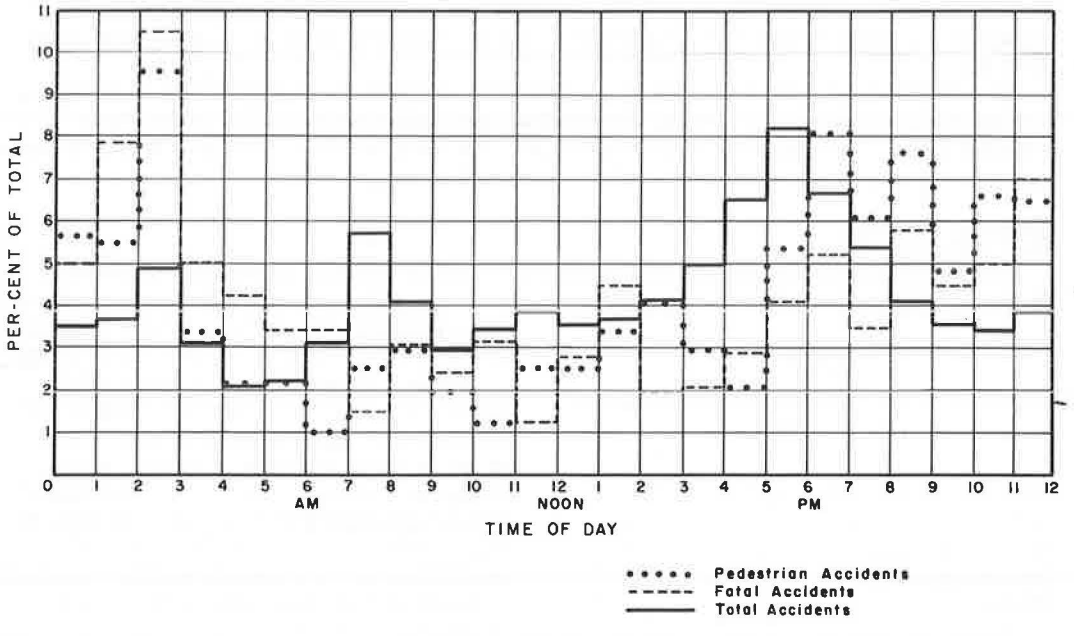

Figure 1. Hour of occurrence, pedestrian, fatal and all accidents, California freeways, 1958-1962.

TABLE 8

PEDESTRIAN ACCIDENTS ON VIADUCTS WITHOUT SHOULDERS

Freeway	No. of Ped. Acc.				MVM	Ped. Acc./100 MVM
	1960	1961	1962	Total		
Nimitz (Cypress St. to distr. struct.)	4	0	1	5	151	3.31
Central	0	0	0	0	106	0.00
Embarcadero	2	0	0	2	42	4.76
Total	6	0	1	7	299	2.34
Remainder of freeway system	77	119	129	325	36,069	0.90

Hour of Day

Figure 1 shows the relationship between pedestrian and all accidents during each hour of the day. Again, there is a greater frequency of pedestrian accidents at night, particularly between 6 PM and 3 AM.

Fifty-seven percent of the pedestrian accidents occurred between 8 PM and 6 AM, and 58 percent of the freeway fatal accidents occur during these hours. Therefore, pedestrian accidents do not account for the increase in freeway fatal accidents at night, but they contribute proportionally as much as the other types.

Viaducts

When a vehicle becomes disabled on a viaduct or long bridge without shoulders, the operator and the vehicle must remain on the main traveled lanes simply because there is no place else to go. Table 8 indicates the pedestrian accidents on some viaducts for a 3-yr period.

All pedestrians struck on the viaducts were disabled vehicle operators. Pedestrians rarely cross a viaduct, since they can walk underneath at almost any point. The viaducts had a higher rate of pedestrian accidents even though the only pedestrians on them were disabled vehicle occupants.

SUMMARY AND CONCLUSIONS

1. Approximately 130 pedestrian accidents occur on California freeways each year; of these 55 involved fatalities and 75 involved injuries.
2. Walking along the shoulder on a freeway is not nearly as hazardous as previously supposed. Only 6 persons were struck while walking along the freeway shoulder in 5 yr on all California freeways. During this same period, 8,813 pedestrians were struck in incroporated areas while crossing at signalized intersections with the green light, and 13,075 pedestrians were struck in incorporated areas while crossing at nonsignalized intersections.
3. Thirteen percent of all freeway fatal accidents involve a pedestrian.
4. Forty-three percent of all pedestrians struck are on the freeway because their vehicles are disabled or were involved in a prior accident.
5. Thirty-three percent of all pedestrians struck are on the freeway for the specific purpose of crossing the freeway.
6. Only 5.2 percent of the pedestrians struck are hitchhiking. It appears that present controls of hitchhiking or walking on freeways are effective and that further efforts in this regard would be relatively fruitless.

7. Of the remaining 18 percent, 9 percent were working on the freeway and it was undetermined why the other 9 percent were on the freeway.
8. Two-thirds of all pedestrian accidents on freeways occur during hours of darkness.
9. Seventy percent of the pedestrians are struck while on the main traveled lanes, 18 percent were on the shoulders, 7 percent were on ramps, 3 percent were in the median, and the position of 2 percent remains undermined.
10. Forty-two percent of freeway pedestrian accidents are fatal.