

WHAT CAN WE DO ABOUT PEDESTRIAN ACCIDENTS?

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SYNOPSIS

Against all other types of traffic the pedestrian comes out second best in any conflict. Whether the accident involves train, street-car, automobile, or bicycle it is the pedestrian who suffers injury or death. We face the task of increasing pedestrian recognition of responsibility for his own safety without reducing the driver's responsibility for pedestrian protection. It is imperative that the understanding and relationship between drivers and pedestrians be improved if we are to make the reduction that we should in this large part of the total accident problem.

It appears that educational efforts must be directed particularly at non-drivers of all classes and, especially, through the agencies which reach persons of the lower social and economic classes. Other serious pedestrian problems include the protection of elderly persons in traffic, and the menace of pedestrians under alcoholic influence. It is further believed that a high degree of pedestrian obedience to stop and go signals must be evolved.

The night accident problem is to quite an extent a pedestrian problem. Modern street lighting adequate for transportation protection is not a luxury but a necessity.

Considerable progress has been made in the development of methods of physical protection for pedestrians. Too often these advantages are disregarded by the persons whom they are intended to protect. Often, too, their advantages are frustrated by the careless consideration of drivers.

When we think of automobile accidents we probably envision piles of junk. We often think of cars telescoped with motors driven back into the drivers' seats, or drivers impaled on steering columns, or passengers horribly gashed on the jagged edges of broken windshields.

However, in 40 per cent of the cases involving death, the picture is entirely different. The car is damaged little if at all. It can be driven away as if nothing had happened to it. The victim is a pedestrian. The differential in weight between the colliding objects is about 25 to 1 and the differential in speed at least 10 to 1 in most cases. The collision is between steel and human flesh and bone.

In the large cities, where traffic is denser and the opportunities for conflict between vehicles and pedestrians are greater, this is true in 75 per cent of the cases rather than the average of 40 for the country. In 1937 some large cities, when compared with records for 1936, had

substantial increases in pedestrian fatalities and others had equally substantial decreases, but the fact remains that three quarters of the fatalities in the cities of more than 500,000 population were of this non-dramatic type and, hence, received all too little attention from those whose responsibility it is to prevent them.

In 1937, in spite of its being the peak year for traffic deaths for the country fatalities from non-pedestrian accidents in cities had been reduced 15 per cent under 1930 while pedestrian fatalities were reduced only 4 per cent. In the rural districts the fatalities from non-pedestrian deaths increased 31 per cent and the pedestrian deaths 66 per cent during the same time. It is obvious that the pedestrian problem is one of primary importance and an outstanding challenge to all who are interested in reducing traffic accidents.

What can we do about these pedestrian accidents? What is wrong with the attack which we have made in the past

that we have not been more successful? Are we in need of a new approach? Now, let us state some facts about the problem which we must recognize in attacking it.

First of all, walking is the primary mode of travel. It is not subject to licensing as is motor vehicle operation. It is a privilege which we can not deny the individual because there is no complete substitute for it and it is a means of travel to which all must resort at times. From the day when walking was the exclusive means of travel to the present when it supplements others, we have felt that as pedestrians we may go almost anywhere without restriction.

Another important fact which we must face is that regardless of how pedestrians appear to disregard their own safety, they do not want to be killed or injured and the risks which we see them take in traffic are risks which they do not recognize in the emergency decisions which they must make. If we do not start with the premise that the instinct of self-preservation exists in pedestrians, our cause is hopeless.

Still another important fact which we must face is that against all other types of traffic the pedestrian comes out second best in any conflict. Whether the accident involves train, street-car, automobile, or bicycle it is the pedestrian who suffers injury or death.

Pedestrian safety is a matter of reconciling these three facts and developing a program which will retain for the pedestrian all of the reasonable privileges and advantages of walking but will safeguard him against the dangers involved. We must subject him to no greater inconvenience than is necessary for his protection from other modes of travel which progress has developed.

The first job of pedestrian protection is one of teaching the pedestrians to exercise their instinct of self-preservation more effectively in the face of traffic conflicts and hazards and of aiding them

by physical means where the problems are too complex for them to negotiate successfully without such assistance. Enforcement is largely to be reserved for the few who are not sufficiently concerned about their protection to make them accept aid voluntarily.

Perhaps the biggest problem which confronts us is that of developing better understanding between pedestrians and those who operate other modes of travel, whether automobiles, street-cars, or bicycles. Up to this time we have charged the driver with the responsibility for protecting the pedestrian. We have told him that he had under his control the power and speed which no pedestrian could withstand in the event of a collision. In doing this, haven't we overlooked some of the pedestrian's responsibility for his own safety?

If we were to put the responsibility for the prevention of collisions between trains and automobiles at railway grade crossings upon the locomotive engineer, we would all revolt at the idea as ridiculous. We would say that the automobile can stop more easily and be more readily maneuvered to avoid collision than can the train.

The relation between the driver and the pedestrian is quite similar. There are limitations on what the driver can do to prevent collision with a pedestrian. Stopping cannot be instantaneous. Swerving from his path is not always possible, particularly if there are other moving or standing vehicles in the immediate vicinity. Pedestrians must recognize that the instant they step into the street they are entering a zone of traffic consisting of larger, faster, and more powerful units which cannot be maneuvered in the same fashion that pedestrians can turn or stop. We have the job of training pedestrians to consider the street a danger zone at all times, not to be entered except after making sure that it is safe to do so. This is not an easy task but it

is one which we must tackle by strenuous educational efforts directed at the people who are having the accidents

Outstanding evidence concerning this phase of the problem comes from Connecticut. During a recent five year period there were 1,231 pedestrian deaths in that state. Only 47 of the victims were registered automobile drivers. More than 95 per cent were persons who, it can be assumed, were not familiar with the limitations of the vehicles to which they subjected themselves and, consequently, may have contributed materially to the accidents in many cases by imposing impossible requirements on drivers.

Supporting the same conclusion is information obtained from several community safety studies in which the National Safety Council has engaged. Spot maps of the residence locations of pedestrians involved in accidents in several cities have shown that the spots were particularly numerous in certain areas of special racial, nationality, or social and economic characteristics which were not conducive to automobile ownership and operation. They were, likewise, areas to which the normal educational agencies would not especially appeal.

It appears, then, that our educational efforts must be directed particularly at non-drivers of all classes and, especially, through the agencies which reach persons of the lower social and economic classes. This is not merely a matter of general information broadcast through the usual agencies of propaganda for the entire community but, rather, a very definite concentration of effort through the agencies which reach these special groups and in which they have confidence. This means pedestrian education through the foreign language press, welfare agencies, clubs and organizations to which these persons who are susceptible to pedestrian accidents belong, or through which they can be reached.

A good example of this type of selec-

tive educational effort is taking place in Dallas, Texas. The population is composed of three important groups—whites, negroes, and Mexicans. The racial-pedestrian accident comparison for Dallas in 1935, 1936, and 1937 is as follows:

	White	Negroes	Mexicans
Population	88 9%	14 8%	2 3%
Pedestrian accident average	76 2%	19 3%	4 6%

The Mexican and negro accidents were found to have taken place almost entirely in the areas in which they live.

Further studies are being made in Dallas to find out what pedestrians of the different groups were doing that contributed to their accidents so that each group can be approached with specialized information and instructions in a selective educational program.

The first attack in Dallas was to conduct a meeting in "Little Mexico" where the program was entirely in Spanish and pamphlets were issued in that language giving instructions against the unsafe practices most commonly found among them. The Mexican consul was the principal speaker. The meeting was held in the Mexican park and approximately 2,500 of the city's 6,000 Mexicans were there.

Another serious pedestrian problem is the protection of elderly persons in traffic. A comparison of the death rates for different age groups shows that advancing age greatly increases the susceptibility to pedestrian accidents. The pedestrian death rate for persons over 65 years of age is 51 per 100,000 population. For those between 25 and 64 years the rate is only 11.8. For the age group, 15 to 24, it is 5.1, the lowest in all groups. For the group 5 to 14 it increases to 7.8 and for the children up to 5 years of age it is 8.0. From this it will be seen that the death rate of the age group over 65 years is ten times the rate for persons of the ages of 15 to 24. The rates which I have quoted are for the year 1937, but

those for the preceding two years vary only slightly from them

The responsibility for the protection of the aged pedestrian is at least three-fold. First of all, the driver must recognize that the aged person is not so able to protect himself as are those of practically all other age groups and he must remember that wherever he sees an aged pedestrian danger is at its peak. Then, younger kin folk accompanying the aged must help to protect them when they are approached, by foreseeing danger at a greater distance than they would ordinarily recognize it for themselves. To supplement these precautions, the aged should be taught to be unusually cautious in entering the street. They should be told again and again of the speed of approach of motor vehicles and the limitations which surround the driver in his operation.

Adding seriously to the pedestrian problem is the fact that intoxication is quite a factor in accidents. The 1938 edition of ACCIDENT FACTS showed 15 per cent of the pedestrians involved in fatal motor vehicle accidents classified as "had been drinking." Differences in accident reporting are so great that it is difficult to obtain complete and accurate data on the drinking pedestrian from ordinary accident reports. However, the development of chemical tests of body fluids has yielded more accurate information.

Two reports of tests taken of the percentages of alcoholic influence in pedestrian deaths have recently come to my attention. Such tests of the brain tissues of 814 pedestrians killed in motor vehicle accidents in New York City during three years showed that 33 per cent were "under the influence" of liquor, the alcoholic content being sufficient to warrant that conclusion in the opinion of the examiner. Data from Cuyahoga County, Ohio, for the first eight months of 1937 showed that 55 per cent of the

134 pedestrians who had been killed in traffic accidents "had been drinking." Forty-five per cent were definitely "under the influence" of liquor, according to the opinion of the examiner.

I am not here to advocate any particular type of liquor control or to discuss it as a social problem, but I am here to say that any abnormal condition which applies to even 15 per cent of fatal pedestrian accidents is a factor with which we must reckon in handling the problem. It is bad enough to ask drivers to watch out for unsafe practices of normal pedestrians without adding the uncertainties of intoxicated walking. If there is no other reason for keeping drunks off the street, the fact that each of them is a potential accident maker for someone else, if not for himself, should be sufficient.

A serious menace in traffic is the promiscuous use of the streets by pedestrians. We must curtail this and concentrate pedestrian movements at certain points. This is particularly necessary in business areas and on important residential streets. Pedestrians must be taught that attempting to cross a street in the middle of the block or emerging from between two closely parked cars and dodging between three or four lanes of vehicles can save a few steps only if it is successful. Too often the attempt is fatal.

When we urge pedestrians to cross only at cross walks because of dense traffic we must be sure that these crosswalks are not too far apart and not too inconvenient. Sometimes in extra long blocks it is desirable to have crosswalks between intersections, but only when they are adequately marked and properly protected. They must not only be marked so that the pedestrian can see where they are, but marked so conspicuously that drivers can see where they are too.

Denver has attacked the problem of reducing careless jaywalking by directing

enforcement against those violations of pedestrian regulations which involve them in accidents. Such persons are arrested and convicted if it is proved that their violations contributed to their accidents. In this way pedestrians are not told that they must not cross a street in the middle of the block or walk against a red signal, but they are impressed with the fact that they must not do so when it is dangerous.

Pedestrians crossing against the red light in a stop and go signal when vehicular traffic is moving, make it more difficult for drivers to watch the conditions which they must at such points. We must have a much higher voluntary obedience of stop and go signals and much less crossing of streets in the middle of the block.

I am convinced that we must come to a high degree of pedestrian obedience wherever there are stop and go signals. The effectiveness of this obedience is not confined alone to such points, however. The National Safety Council's Committee on Pedestrian Control and Protection recently made some very interesting studies of the relationship between pedestrian obedience of stop and go signals and pedestrian accidents, not only at such signalized locations but throughout cities. These studies show that in cities where pedestrian obedience of traffic signals is high the pedestrian accident rate averages lower than in others. Also, pedestrian accidents are a smaller percentage of the total.

In one of these studies the pedestrian obedience of stop and go signals was obtained from observations in eleven cities taken during 1937. Accident records for 1937 were used for comparison. The cities were divided into two groups—five cities having better than 85 per cent obedience of stop and go signals were averaged and compared to six cities where pedestrian obedience was lower than 85 per cent.

The cities having better than 85 per cent observance of the signals showed an average accident rate per 100,000 population of 173 as compared with an average rate of 298 for those not having such good observance. Likewise, pedestrian accidents averaged only 39 per cent of the total in the cities of better observance, but were 51 per cent in those places having less than 85 per cent observance.

Undoubtedly, the degree of pedestrian observance of traffic signals is not alone responsible for the difference in pedestrian accidents in the cities studied. It appears that the influence of such observance extends beyond the signalized intersections and encourages safer pedestrian walking practices everywhere.

Actual pedestrian control has worked out very well in most cases where it has been given a fair trial. By that I mean that an adequate job of public education must be done concerning the reason for such restrictions before they become effective. There have been numerous cases of attempts to make such control effective without any preliminary educational work, and failure has invariably been the result. We must make the stop and go signal as definitely a symbol of safety for the pedestrian as we have made it for the motorist.

When we try to improve such pedestrian observance or impose such restrictions we must be sure that all conditions are favorable. We must, for example, be sure that our stop and go signals have been properly engineered to avoid unnecessary delays or the problem of enforcement or of obtaining voluntary obedience will become insuperable. We must be sure, also, that the pedestrian has a proper signal indication before him so that he will know when he is supposed to cross, by providing a sufficient number of signal faces at each location where pedestrian traffic is dense. I believe that in an increasing number of cases

this will mean a separate pedestrian go signal displayed simultaneously with the green for all except the last few seconds when it is too late for pedestrians to clear the intersection before traffic starts in the opposite direction

The night accident problem is, to quite an extent, a pedestrian problem. Particularly is this true in urban areas in which street lighting is poor. If the lighting is inadequate the pedestrian too often assumes that the driver can see him as well as he can see the driver's headlights. He may, therefore, subject the driver to almost impossible situations. Street lights which merely mark the positions of the lightposts and do not furnish sufficient pavement surface brightness for showing the pedestrian in silhouette, are of little value for pedestrian protection.

Detroit has demonstrated on a large scale that good street lighting is substantial pedestrian protection and more and more must cities come to provide that protection. A study of motor vehicle fatalities on 31 miles of Detroit streets where improved lighting was placed during the latter part of 1936 showed a marked reduction in the average number of pedestrian deaths per year after the improvement. The average number of pedestrian deaths per year for 1934, 1935, and 1936, before the lighting was improved was 36 at night and six in the day time. The average per year since this installation has been nine at night and five in the day time.

Often the poorest lighting is in the most densely populated districts. I suppose this is because the homes there are of a poorer class and it is thought that the "luxury" of good lighting is not for them. However, with modern street transportation lighting which is adequate for traffic and pedestrian protection is no luxury—it is a necessity.

The rural highway pedestrian problem is somewhat different from that of urban

areas. Fewer facilities have been provided for keeping pedestrians off the pavement and out of traffic in such places. Obviously, walkways cannot be built along all rural highways for economic reasons. Neither can lighting be installed along all rural highways for the same reason. However, these are necessary at places where there are many pedestrians and considerable vehicular traffic, because both can not use the highway safely at the same time. There must be segregation.

In fairness to the pedestrians it must be admitted that in the absence of walkways with surfaces as comfortable for walking as the pavement, pedestrians will be found on the roadway. They cannot be expected to walk on rough shoulders or to wade through snow in unplowed paths. There must not only be good walkways where there is considerable pedestrian traffic but they must be properly maintained so that they are usable.

The poorest adaption of protective measures for pedestrians are often found in the transition zones between urban and rural areas. In such zones there are often urban conditions so far as traffic and pedestrian volumes are concerned. Often, this is complicated by the absence of walkways separate from the street. It is in such areas, in particular, that sidewalks and lighting are needed.

Crossing wide, densely traveled streets is usually a serious pedestrian problem. The pedestrian may frequently have to wait in the middle of the street for an opening in traffic to permit him to cross the rest of the way in safety. At such locations he should be protected by the installation of raised islands which separate different traffic movements and give him a place of refuge. Very often these islands are used at other locations in large street intersections for channelization of motor vehicle traffic as well as an aid to the pedestrian. The advantage of such

islands is that they minimize the distance which the pedestrian must travel in the street between points of safety. Every new street of more than two lanes of traffic in each direction should be provided with adequate pedestrian islands at the center lines.

Closely related to the protection of pedestrians by such means is the installation of barriers at some points where crossings are often attempted but with great hazard to pedestrians. Such barriers show pedestrians where they may not cross but on or near them should be appropriate notices for showing where crossing is allowable.

The separation of pedestrian and motor vehicular traffic by means of pedestrian tunnels and bridges is becoming more and more important as traffic increases. Express highways and streets carry high speed traffic and pedestrian travel must be given a place to make a safe crossing.

The best usage of tunnels, bridges and subways is naturally obtained when they are so placed as to be of the greatest convenience. They are most effective if the entrances are at different levels on opposite sides of the streets so that pedestrians can make the same changes in levels within the tunnel or bridge as they would make at street level and the work of climbing stairs both up to and down from a higher level is not imposed upon them.

The complete application of the separation of pedestrians and vehicular traffic is the elevated highway. It removes the pedestrian from the heavy flow of traffic

without subjecting him to the disadvantage of having to change levels as is often required by tunnels or bridges. At the same time it places the vehicles in the major traffic above the complications of normal street level and enables them to travel long distances without appreciable interruption. Undoubtedly we shall construct more of such elevated highways in dense traffic areas.

The problems which I have discussed are among the most difficult problems of traffic safety. Models of legislation have gone a long way in establishing reasonable relationships between drivers and pedestrians, but we have fallen far short of their intent in the interpretation which we have given them and in the degree of conformance which we have been willing to give.

Considerable progress has been made in the development of methods of physical protection for pedestrians but, too often, their advantages are disregarded by the persons whom they are intended to protect. Often, too, their advantages are frustrated by the careless consideration of these requirements of pedestrians safety by drivers.

We face the task of increasing pedestrian recognition of responsibility for his own safety without reducing the driver's responsibility for pedestrian protection. It is imperative that the understanding and relationship between drivers and pedestrians be improved if we are to make the reduction that we should in this large part of the total accident toll.

DISCUSSION ON PEDESTRIAN ACCIDENTS

PROFESSOR R. L. MORRISON, *University of Michigan*. I should like to ask Mr. Reeder if he knows of any adult use of a pedestrian tunnel or bridge which requires going from one level to another and back to the first level.

MR. REEDER. I do not, except where they have been installed for school children, directed by patrols. I have seen a few cases where this difficulty was even aggravated by the fact that a bridge was built where a tunnel would have

reduced the change of elevation, but I know of no case where they are generally used by adults, except where there is an actual change of elevation occurring between the entrance and the exit

MR C N CONNER, *U. S. Bureau of Public Roads*: Mr Delano of Massachusetts gave us some very interesting figures on reduction of accidents where 500 miles of highway sidewalks had been built. I wonder if there are records of similar results in other States?

MR REEDER. I do not have any information comparable with or at least as reliable as that from Massachusetts

MR BURTON W MARSH, *American Automobile Association*: What can we do about pedestrian accidents? In a two year study by the American Automobile Association on this subject, we found certain features of European practice more advanced in making proper provisions for pedestrian safety and convenience, than customary practice in this country. I shall refer to only three features

- 1 More isles of refuge for pedestrians in wide roadways and at complicated intersections. Properly designed and located, these aid both pedestrian and vehicular traffic
2. Pedestrian barriers or fences, which prevent pedestrians from crossing where they should not, but are tempted to try to cross
- 3 Crosswalks so designed and denoted that their presence attracts attention of drivers both by day and night. More than customarily visible markings are used on or in the road surface. A four inch painted crosswalk line is foreshortened to "hair-line" width as seen by a driver not very far

away. Under somewhat unfavorable conditions the four inch crosswalk line will not be seen soon enough, especially if the crosswalk is at an unexpected location, as in midblock

Also in England, distinctive yellow globed lights, mounted on paint-banded posts, advise the night motorist of the existence of mid-block crosswalks and of crosswalks at certain non-signalized intersections

I should like to bring out two or three more general points concerning pedestrian protection. The pedestrian is the most important factor in traffic at many urban locations. The number of pedestrians crossing some intersections during busy pedestrian hours, is as much as ten times as large as the number of vehicles using the intersection. Pedestrians also constitute the major factor in the traffic fatality toll of cities. In some cities, every person killed for several years has been a pedestrian. Yet cities in general do not know very much about their pedestrian traffic facts. The pedestrian is the "forgotten man"—the neglected factor. Very few cities are doing much to improve their pedestrian situation. There is a serious lack of understanding and acceptance of mutual rights and responsibilities as between drivers and pedestrians under a sensible, modern theory of street use.

Yesterday, the American Automobile Association announced a National Pedestrian Protection Contest in two parts, one for municipalities and the other for schools. The contest will involve awards and national recognition for the municipalities and schools which do the most to improve the lot of the person afoot. The contest will take account of both safety measures and developments which reduce delays and inconveniences for pedestrians and other street users.