Vehicular Negligence: The Social and Criminal Patterns of Auto Traffic Fatalities

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BY

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CHAPTER I

INTRODUCTION AND OVERVIEW

This report presents an exploratory study of the ecological, demographic and criminological patterns of fatal traffic accidents in an urban community. Focusing upon traffic accidents as a form of violence, the study sought to determine if traffic accidents, particularly those resulting from driver negligence, are sociologically similar to other forms of violence. This question is based upon the supposition that social perceptions conducive to conventional crimes of violence may extend to areas of human behavior other than face-to-face interaction, contributing to "violence on the road" as well as "violence in the streets." If this supposition is valid, fatal traffic accidents involving negligence should demonstrate patterns of distribution and victimization not dissimilar from those of other violent crimes.

While traffic accidents and fatalities are perceived as a problem, they are given relatively low priority in comparison with other forms of violence, despite the fact that they constitute the most extensive and common form of violent death in America. This general perception of traffic fatalities as a low priority problem has had its effect upon the direction of accident research. Although many traffic researchers have argued that the causal sequence leading to accidents is not intrinsically different from those leading to other everyday events frequently studied by sociologists, sociological analysis is seldom applied to traffic problems (Haddon, 1964).

The bulk of existing traffic research can be divided into two broad categories: those studies concerned with the engineering aspects of accidents, and those concerned with the "human element" in accidents. The former is relatively unconcerned with the role of sociological factors and the latter, for the most part, has focused on individual psychological characteristics or syndromes such as "accident proneness" which operate beyond the realm of sociological influence. Little attention has been given to traffic accidents as a type of violence, problematic in its consequences and socially influenced in its causation. Sociologists, while they have devoted considerable energy to studying the causes and control of other forms of violence, have largely stayed away from the area of traffic accidents.

Our research is an attempt to counteract this pattern, and to determine whether urban traffic fatalities exhibit patterns of distribution and victimization similar to another major urban social problem --violent crime. If they do, it would indicate that traffic accidents represent a potentially meaningful area for future sociological and criminological research.

As a study of vehicular negligence, this research applied a criminological perspective to the study of traffic accidents. Negligent

operation of an automobile, despite its ubiquity, is no less a violation of law than any other form of criminal behavior. Where it results in death or injury, it is clearly also a violent form of behavior. Criminologically, the central theses of this study, based on the fact that negligent accidents involve a violation of law, are: (1) that such violations of law are related to socially shared perceptions conducive to violence and (2) that these perceptions are more prevalent among certain identifiable social groupings.

As a study of the overall urban accident picture, the research applied a sociological perspective similar to that used to study other social problems. The ecological, demographic and social characteristics of fatal traffic accidents were examined to determine if the patterns of distribution and victimization were similar to those of urban crime. If such a similarity were found it would suggest that the two phenomena may be different products of the same social forces.

The study itself encompassed the universe of fatal traffic accidents occurring during a three-year period in Columbus, Ohio. During this period, 1969 to 1971 inclusive, there were 223 fatal accidents involving 429 persons. Data were gathered concerning both the accident event and the persons involved, and these data were analyzed in the following manner:

1 The ecological distribution of fatal accidents and involved persons was identified according to census tracts, and compared with the social characteristics of the census tract areas.

2. The total sample of involved persons was divided into two subsamples; those who violated the law at the time of the accident (violators), and those who had not violated the law at the time of the accident (victims). The social and demographic characteristics of the total sample and of the violator and victim subsamples were compared with those of the population at risk to identify significant differences.

3. The social and demographic characteristics, and the prior offense records of the violator and victim subsamples were compared to identify significant differences.

In addition to these quantitative techniques, each accident was evaluated qualitatively and, based upon this, a typology of accidents was constructed.

Predictions

After reviewing the available literature concerning both traffic accidents and urban crime, several predictions were made regarding the fatal urban traffic accidents. These predictions were based on two

assumptions regarding urban traffic accidents. If the predictions could be substantiated by the data, it would increase the validity of the assumptions and provide a strong basis for further research devoted to urban traffic accidents as a social problem. The assumptions utilized and the predictions made from them were as follows:

Assumption I: The fatal urban traffic accident represents a social problem not dissimilar from other urban social problems.

Predictions:

1. Fatal urban traffic accidents will not distribute themselves in an ecologically random fashion. Instead, certain areas will have higher, and other areas lower, accident rates than would be predicted from the distribution of the population.

2. Higher rates for fatal accidents will be found in the more densely populated areas surrounding the central business district.

3. Areas of low socio-economic status will tend to have fatal accident rates higher than areas of high socio-economic status.

4. A disproportionate number of involved persons will be of lower socio-economic status.

5. A disproportionate number of involved persons will be black.

Assumption II: For a considerable number of individuals, involvement in a fatal urban traffic accident is not a random occurrence, but part of a general behavior pattern related to subcultural patterns and criminal aggressivity.

Predictions:

1. A relatively high percentage of involved persons will have prior police records for criminal offenses.

2. Those with prior records will have a greater propensity to be violators when involved in fatal urban traffic accidents than those without prior records. The latter will more likely be victims.

3. Those with prior records for traffic violations only will tend to be violators somewhat more frequently than those with no records, and somewhat less frequently than those whose prior records also include criminal violations.

4. Those with prior criminal records will be characterized by a disproportionate number of individuals with records for crimes against the person.

The Findings

Some of the ecological and demographic findings reported here have been previously shown by other researchers. However, when these were combined with the criminological findings of this research, an important characteristic of the fatal urban traffic accident emerged: The fatal urban traffic accident represents but another facet of urban violence, and is, in many respects, sociologically and criminologically similar to conventional crimes of violence. This statement is based on the following major findings:

1. The ecological distribution of fatal urban traffic accidents was characterized by a gradient, decreasing with distance from the center of the city, and featured a disproportionate number of accidents occurring in areas of low socio-economic status.

2. The ecological distribution of involved persons was characterized by a gradient, decreasing with distance from the center of the city, and revealed that the majority of involved persons lived in lower socio-economic status areas.

3. The ecological and demographic distribution of victims and violators showed that the relationship between offender and victim for fatal urban traffic accidents was essentially intra-class.

4. Nearly half of all violators had prior police records for either criminal or traffic offenses, while a significantly smaller proportion of the victims had prior police records.

5. Over one-third of all violators had prior police records for criminal offenses--twice the proportion of criminal offenders among the victims.

6. The violators with criminal records were disproportionately characterized by persons having committed personal crimes. Victims with criminal records reflected a more random distribution of criminal offenses.

7. Violators with criminal records represented a far more criminal population than victims with criminal records. Violators with criminal records accounted for nearly eight times as many separate offenses as did victims with criminal records.

8. Violators with criminal records were representative of a subculture of violence. Over half of all the criminal offenses attributable to this group were personal crimes.

Discussion

A comparison of the predictions made and the findings obtained demonstrates strong support for the assumptions that fatal urban traffic accidents represent a social problem not dissimilar from other urban social problems and that for some individuals, involvement in a fatal traffic accident is part of a general behavior pattern related to subcultural learning and criminal aggressivity.

The ecological distribution of fatal urban traffic accidents was not random but described the same distribution pattern as conventional urban crimes. The distribution of both the accident events and involved persons was found to be largely concentrated in the lower socio-economic census tracts, and to feature a decreasing gradient with distance from the center of the city. Additionally, there was also a strong positive correspondence between the percentage of blacks residing in a census tract and that tract's liability as a location for fatal urban traffic accidents. These findings parallel what is known about the distribution of conventional urban crime.

Accident participants were disproportionately males, blacks and persons of lower socio-economic status. Furthermore, males, persons between the ages of 18 and 35, and single or divorced individuals had a statistically significant propensity to be involved as negligent participants.

A positive relationship between a history of criminal law violations and involvement in a fatal traffic accident was found. Those with criminal records had the highest probability of being negligent participants. Furthermore, those with criminal records were disproportionately characterized by individuals having committed crimes of violence.

All of these findings confirm the predictions and support the assumptions made regarding the phenomenon of fatal urban traffic accidents. Given the empirical regularities in the distribution of urban traffic fatalities and urban crime, one must begin to look beyond the data presented here for an explanation of these similarities.

Sporadically, various researchers have suggested that culturally learned perceptions may play an important role in influencing an individual's liability for both accident involvement and traffic law violation. Over 30 years ago DeSilva said:

> Although our present roads have not been designed from the safety point of view, they can be driven on with impunity. The automobile also, in most respects a safe piece of machinery, can be used with a minimum of danger. It is

the driver to whom we must impute responsibility for the hazards presented in these instruments.

In an attempt to identify those individual factors which would account for the varying accident liability among individuals, DeSilva identified a factor called safety-mindedness which he described as:

> . . . a complex state of mind involving a recognition of inherent hazards of driving and their relation to the lives of those who use the roads. Among its basic constituents are caution and consideration for the lives, property and comfort of others . . .

Implicit in DeSilva's description of the components of "safety-mindedness" is the fact that the perceptions related to it are socially learned.

In 1949 Tillman and Hobbs concluded from their comparison study of high and low risk drivers that "a man tends to drive as he lives." This statement, although often quoted by accident researchers, has led to little development of any theoretical explanation of the relationship between the way one learns to live and the way one drives.

In 1960, Porterfield stated:

> Drivers who have little regard for their own lives or the lives of others, or both (other things being equal) will have higher rates of accidents than drivers who place a high value on human life. As a corollary, if the populations of some areas have a higher ratio of persons who do not value life than have other areas, it may be predicted that the former populations will experience more motor vehicle fatalities.

Porterfield's finding that areas with a lower regard for human life (as measured by homicide and suicide rates) had the highest traffic accident rates strongly suggests the influence of cultural factors upon the rate of motor vehicle accidents. This relationship is further strengthened by the fact that both at the time of Porterfield's study, and now, the highest auto fatality rates, when controlling for exposure, are found in the southern states (Reese, 1970), which also tend to have the highest homicide rates.

Although the research conclusions presented above suggest that (1) socially learned perceptions influence an individual's accident liability and (2) the nature of these socially learned perceptions is influenced by the subcultural context in which the learning takes place, there remains the need to integrate these factors into a useful socio-cultural explanation of traffic accidents.

Sociologists, and particularly criminologists, should give greater attention to socio-cultural factors which affect an individual's driving behavior, and thereby increase or decrease his chances of causing an

accident. Of the fatal accidents examined in this study, 97 percent resulted from some violation of traffic law, and those committing these violations were two times as likely to have a prior criminal history than those not guilty of such accident-causing negligence. Given the fact that there were twice as many individuals with criminal records among those guilty of such violations as among those not guilty of negligence, it is reasonable to conclude that perceptions favorable to criminal violations play an important role in shaping our accident problem.

Criminal violators responsible for fatal traffic accidents are best characterized by the violent personal offender associated with a subculture of violence. Given this fact, there is strong support for future research more specifically designed to determine to what extent exposure to a subculture of violence plays an important role in increasing an individual's liability for both violations of traffic law and involvement in traffic accidents.

CHAPTER II

A SOCIOLOGICAL PERSPECTIVE ON TRAFFIC ACCIDENTS

The motor vehicle accident, like pollution, hypertension and ulcers, has become a commonplace by-product of our mechanized way of life. Seldom does a major American city endure a week without at least one traffic fatality (Reese, 1970). Almost never will a daily newspaper, in any city large enough to have one, fail to report at least one serious-injury accident. Every holiday weekend the news media ritually report and update the increasing death toll, constantly measuring its progress towards the projected total. There are few people who do not know at least one person who has been involved in a serious automobile accident, and the extent of the automobile insurance business is testimony to the likelihood of becoming involved in an automobile mishap of some type. Each time one pays his auto insurance bill he consciously or unconsciously reaffirms the belief that he may become an accident victim or an accident perpetrator. The traffic accident has become a very familiar part of our daily life, so much so that as a nation we have become relatively insensitive to the severity of the problem.

In the short period of 18 years, from 1950 thru 1967, nearly three quarters of a million people died in motor vehicle accidents in the United States (Reese, 1970). The population-based rate increased from 21.5 in 1959 to 27.9 in 1969--an increase of 30 percent. The increase in the gross number of deaths for the same period was 49 percent. Although the mileage- and registration-based rates have remained relatively stable since the mid-1950's [The rate per 100,000,000 vehicle miles traveled was 5.41 in 1959 and 5.30 in 1969, with a high of 5.70 being recorded in 1967 and a low of 5.16 in 1961 (National Safety Council, 1970)] and are substantially lower than during the early history of automotive travel, they do not represent a real lessening or even a stabilizing of the actual problem posed by motor vehicle accidents. Although these statistical calculations provide important insights into the nature of the accident problem, they are primarily a measure of the <u>efficiency</u> of travel, not of the actual <u>consequences</u> of it. While particularly valuable in measuring the relative safety of various forms of travel, mileage- and vehicle-based rates do not reflect the increasing number of violent traffic deaths. While a mileage-based rate of 5.41 may not sound impressive, at the current level of travel, it represents over 50,000 deaths a year. These deaths are especially untimely because the majority of people who die in motor vehicle accidents are young persons, the highest death rate characterizing those between 15 and 24 years of age (National Safety Council, 1971).

It should be noted that recent statistics show motor vehicle deaths decreased by 2 percent in 1970 from 1969. There was also a concomitant reduction in the rate-per-population from 27.7 to 26.9, and in the rate-per-mileage from 5.23 to 4.91 (National Safety Council, 1971). This slight reduction in the gross number of motor vehicle deaths and the variously

computed death rates occurred despite the fact that the total number of accidents increased by nearly 50,000 in 1970 from 1969. It is reasonable to speculate that the Federal safety standards requiring both seat belts (1964) and shoulder harnesses (1968) would have some effect on reducing the proportion of accidents which result in fatalities. The reduction in fatality rates in 1970 may reflect these measures; however, it is too early to determine the actual overall effectiveness of such safety measures.

What these figures do not reflect is the number of people who are injured yearly in traffic mishaps. In both 1969 and 1970 approximately 1.3 million people suffered either temporarily or permanently disabling injury due to motor vehicle accidents. The enormous amounts of property damage combined with the great numbers of deaths and injuries make the motor vehicle accident a most significant form of violence.

Traffic Accidents as a Social Problem

A social problem is any reoccurring pattern of events caused by human behavior and perceived as having negative social consequences. Death, in itself, is not a social problem, but a natural and vital phenomenon. Yet, the normality of death does not extend to preventable or untimely death. It is this preventable aspect which makes traffic accidents a serious social problem.

Few would dispute that untimely death is socially undesirable and most would agree that efforts should be made to reduce the number of such occurrences. Personally, locally, and nationally, we subscribe to and underwrite a wide variety of life-protecting efforts; e.g., locks for our doors, police and fire departments, hospitals, food and drug control agencies, etc. Considerable effort has been directed at the reduction of automobile fatalities and accidents, but when compared with the enormity of the accident problem, public concern and governmental action appear limited. This seems particularly true if one compares the societal response to the accident situation with the response toward other perceived social problems involving death or injury.

Although it may be inaccurate to claim that the general population accepts the severity of traffic violence with complete equanimity, it is fair to say that the response to this source of life-threat is considerably less vocal and less demanding of amelioration than the response to other perceived social problems. Many of the same individuals who would buy double locks for their doors and demand stricter law-and-order measures from their legislators, actively avoid wearing safety belts when driving or riding in an automobile, or foregoing a drink or two before driving. In this, as with all things, the perception of the problem is the real determinant of action, or, as W. I. Thomas has said, "If men perceive situations as real, then they are real in their consequences."

The motor vehicle accident, although it represents a significant source of violent death and injury, does not receive as much attention

as do other problems, some of which are much less severe in numerical and social cost accounting terms. The traffic accident, while the most common form of violence, is not generally perceived as a high priority social problem, despite the public's fear of violence.

Crimes of violence are considered by the American people to be one of the most serious problems facing the society. Numerous public opinion polls during the 1972 election campaign found this to be the case, and prior to the ascendency of crime to the number one spot, the Indochina war was considered the most serious problem facing the nation. Yet, while 17,630 persons were murdered criminally in the United States during 1971 (Uniform Crime Reports, 1972), over 55,000 persons died in automobile accidents during the same year (National Safety Council, 1972). Stated in more personal terms, an individual's chances of dying in an automobile accident are more than three times his chances of being murdered. Another example of the low priority accorded automobile accidents is provided by the Indochina war. A considerable amount of attention and vocal opposition was directed against this war, particularly once American involvement and American casualties rose sharply after the 1964 Gulf of Tonkin resolution. However, the 55,000 motor vehicle casualties which occurred in the United States during 1971 alone exceeded the total number of American combat fatalities in Vietnam by more than 10,000.

It is the mode of dying which is relevant in determining whether any given category of death is more socially problematic than any other. Whether or not a particular mode of death is perceived as a social problem is related to two factors: (1) the perceived deviance attached to that mode of dying, and (2) the inevitability of that mode of dying.

The traffic accident, in contrast to murder or aggravated assault, is less of a perceived social problem, measured by the strength of social reaction, because the context in which it occurs is defined as the more normal. The traffic accident itself is not a criminal occurrence. However, according to the National Safety Council's figures (1971), over 82% of all traffic deaths involve negligence, making the traffic fatality as nearly a uniformly criminal occurrence as murder. Like white collar crime, however, traffic accidents occur during the performance of normal, everyday activities (Sutherland, 1949).

In 1971 over 80% of all American households possessed at least one car, and over half of the nation's population were licensed automobile drivers (Automobile Manufacturers Association, 1970). This leaves very few people who are physically capable, and of legal driving age, who do not drive. In addition, the violation of traffic regulations is only a slightly less ubiquitous phenomenon than driving itself. Thus, the negligent operation of an automobile, the behavior from which traffic fatalities generally arise is a common, acceptable and normal behavior in our society. This correspondence with normal behavior results in a failure to perceive the automotive negligence as criminal behavior and a reluctance to initiate strong social control measures against it.

In contrast, the killing of another, when defined as murder, is an inherently illegal phenomenon, and more importantly, the context in which it arises is defined as not being within the realm of normal everyday activity. Murder is most commonly the culmination of some altercation or verbal hostility, just as the traffic facality is frequently the culmination of the negligent operation of the motor vehicle. The hostilities leading to murder, however, are perceived as abnormal, particularly by those with the power to define law, while the antecedents to traffic fatalities are not. Therefore, murder is socially perceived and defined as the far more serious and threatening problem. Interestingly enough, the behaviors leading to murder, particularly the simple verbal exchanges between victim and perpetrator, are not necessarily illegal, while the negligent driving resulting in a fatality is always illegal. This suggests that it is not the formal definition but informal conduct norms which determine the perception of a behavior as problematic, even where two behaviors may have equally violent conclusions.

When comparing behaviors which may have undesirable consequences, it is also important to consider the relative social utility of behavior sets as well as their degree of perceived normalcy. The former plays a significant role in determining the latter. In a society oriented toward efficiency, speed and technological advancement, the motor vehicle is a transportation godsend. Over 90% of all intercity travel is by motor vehicle (Automobile Manufacturers Association, 1970). This represents a critical flow of men, materials and machinery necessary to keep a technocracy in operation. In addition, the automotive industry itself is a mainstay of the American economy. Thus, the motor vehicle, perceived as a positive good in itself, is also seen as a crucial element in achieving other socially defined goals. It is for this reason we are too willing to tolerate and accept the automobile and its consequences. On the other hand, a society which strongly desires at least the form of social and domestic tranquility will inevitably view social hostility, the antecedent of murder, as having no utilitarian contribution whatsoever. This further tips the scales of social control away from the motor vehicle accident and towards violent crimes, even when the undesirable violent consequences of the former may exceed the latter.

The degree to which a given event or condition is perceived as inevitable is generally a good measure of the social response that event will evoke. Human beings do not characteristically struggle against those factors or conditions perceived as inevitable. Only when a degree of control is perceived possible do individuals struggle to attain this control. The unwillingness to struggle with the inevitable becomes a critical variable in the framing of social problems within any society.

Inevitability plays its part in making violent crimes appear to be more serious a social problem than traffic accidents. The very fact that violent crimes are <u>crimes</u> and traffic accidents are <u>accidents</u> indicates the differential inevitability of the two phenomena: Crimes are the result of willful human behavior and are, therefore, controllable. Accidents are almost acts of God and, thus, are uncontrollable. The motor vehicle accident, while not perceived completely as an act of God, is generally seen

as the result of an uncontrollable series of singularly harmless events, while crime is the result of deliberate behavior.

Here the concept of mens rea plays an important role in determining the societal response to these two types of events. Crimes involve mens rea, and therefore within our perceptual framework it becomes legitimate to direct stringent social control measures against those who commit them. The accident, even the clearly negligent homicide by vehicle, does not directly involve specific mens rea regarding the outcome. Individuals may speed or violate some other traffic law with premeditation, but it is safe to say that with the exception of the vehicular suicide, drivers seldom premeditate accidents. Thus, the accident is seen to pass further out of the realm of controllable behavior, even though the severity of the accident problem would seem to warrant more active control efforts. Human beings do not seek to alter the inevitable, and the degree to which automobile accidents are perceived as inveitable results in an equivalent reduction in efforts to control them.

In sum, automobile accidents are perceived as (1) arising from "normal" behavior, (2) related to socially utilitarian activity, and (3) inevitable. Murder and violent crimes, on the other hand, are perceived as (1) arising from "abnormal" behavior, (2) related to actions which have no social utility and (3) anything but inevitable. It is these distinctions which account for the active social support to suppress violent crimes, and the frequent social resistance to measures to control traffic accidents and lessen the number of fatalities.

The Sociology of Accidents

There has been relatively little research into the sociology of traffic accidents. This fact is noted by Haddon in the introduction to the "Social and Oultural Factors" chapter in his volume Accident Research:

> Social factors related to accidents may be studied on the societal or on the individual level. From the societal point of view, broad social forces influence the ways in which the community or group views and deals with hazards in its environment . . . Although much research has been done on the influence of social factors on a wide range of individual behavior--voting, for example, or purchasing habits--few studies have been done on accidents.

What work has been done in this area has been primarily concerned with the ecological and demographic distributions of accidents rather than the socio-cultural influences upon accidents.

In the area of the ecological and demographic distribution of accidents the work of DeSilva (1942) and of Iskrant and Joliet (1968) has provided valuable information. Despite the 26 years separating their

publication dates, both studies report similar findings, suggesting that the factors influencing the distribution of accidents are relatively stable. Most of their findings have also been corroborated at one time or another by other research efforts. From these two works, a number of seemingly stable distribution characteristics can be specified.

Demographic Distribution of Traffic Accidents

1. Men are involved in fatal and injurious motor vehicle accidents in far greater proportion than women. This is true for both pedestrian and moving motor vehicle accidents, and for all ages with the exception that past the age of 65 the injury rates for females due to moving motor vehicle accidents exceed those for males.

2. The elderly (over 65) and the young (2-14 years of age) contribute the bulk of pedestrian deaths. Men over 65, comprising less than 5 percent of the population, account for 25 percent of the pedestrian fatalities. Death from motor vehicles are the greatest single cause of death to children after the first year of life up to age 14.

3. Rates are higher for non-whites for pedestrian fatalities, while rates are higher for whites for non-pedestrian auto fatalities.

   [Regarding this DeSilva, however, comments that while non-whites are not overrepresented on the basis of licensed drivers, their annual mileage is much less than whites making their accident rate actually higher than that of whites.]

4. Pedestrian deaths are about three times as high for foreign-born whites as for native-born whites, with the differences greatest for children and the elderly.

5. Among non-whites, American Indians have the highest motor-vehicle death rate, nearly three times that of blacks. Chinese and Japanese have the lowest motor-vehicle death rates among non-whites.

6. The motor-vehicle death rate is higher for whites ages 15-24 than for non-whites of the same age group. Access to motor vehicles at an earlier age among whites may account for this (Iskrant and Joliet).

7. People who live alone, or with others not related to them have the highest death and injury rates resulting from motor vehicle accidents.

Ecological Factors Related to Traffic Accidents

1. The highest moving motor vehicle death rates occur on main rural roads, with straight level stretches of such roads having higher accident and death rates than curvy or hilly sections.

2. The greatest actual number of deaths by automobile occurs in the Eastern states.

3. Basing death rates on number of miles traveled, or number of vehicles registered, the Southern states have the highest traffic death rates. When based on population the highest vehicular death rates are recorded for the Western states.

4. The majority of pedestrian deaths occur in urban rather than rural areas.

5. Individuals from lower socio-economic census tracts are overrepresented among urban pedestrian fatalities.

6. Census tracts having the highest proportion of the drivers in accidents are located in portions of the city surrounding the downtown business district. (DeSilva)

Regarding this last point DeSilva reports an analysis of traffic accidents in St. Paul, Minnesota which found that the overall ratio of accident-involved to accident-free drivers was one in 21 for the entire city, one in 13 in the lower income areas and one in 30 in the higher income suburban areas.

Although other ecological and demographic patterns of traffic accidents have been identified, the ones cited above appear to be the most consistent. This is demonstrated by the fact that the 1942 analysis of DeSilva and the 1968 work of Iskrant and Joliet concur on nearly all the points mentioned, and that they can be re-substantiated from current 1972 accident data.

Of particular interest for this study are those accident patterns which indicate that socio-cultural variables may explain part of the variance in the distribution of traffic accidents. The indications that non-whites have higher pedestrian death rates than whites, that foreign-born white have higher pedestrian rates than native-born whites, that individuals from the poorer socio-economic areas are overrepresented among traffic fatalities, and that the traffic death rates for miles traveled and number of vehicles registered are higher for the Southern states than for other parts of the country suggest that socio-cultural differences may play some role in the distribution of accident involvement and fatalities.

Given the overrepresentation of certain identifiable social groups in various categories of accidents it is not unwarranted to question whether or not the same sociological variables which influence the distribution of other social problems such as crime, disease, alcoholism and delinquency may have similar influence upon the distribution of traffic accidents and fatalities. This question is of particular importance for the study of urban traffic fatalities. It may be the case that the urban traffic accident represents a somewhat different phenomenon than those which occur on rural roads, and are influenced to a greater degree by the same variables which effect other urban social problems than are rural road accidents. To assess the validity of this notion it is necessary to examine the possible relationship between cultural or subcultural experience and driving behavior.

Culture, Subculture and Accidents

A number of researchers have found some correlation between the propensity for accidents and other forms of social deviance (Tillman and Hobbs, 1949; Willet, 1964; Barmack and Payne, 1961a, 1961b; McFarland, 1964; Beamish and Malfetti, 1963; Coppin, 1964; Shaw and Sichel, 1971). Furthermore, most of these researchers found that the propensity to have accidents correlated with a tendency to be involved in various types of non-motoring offenses. Other researchers have identified social perceptions particularly among youthful drivers which are related to high accident and high violation rates (DeSilva, 1942; Conger, 1957, 1959; Rommel, 1969; Beamish and Malfetti, 1962). These two bodies of findings suggest that (1) social perceptions do effect driving behavior, and (2) the crucial perceptions influencing driving behavior may not be wholly distinct from those influencing other spheres of daily conduct.

These studies into the perceptual and behavioral correlates of accidents were primarily psychological in orientation, and as such were not concerned directly with the relationship between perceptions influencing driving behavior and social variables. Modern criminological research, on the other hand, has frequently focused upon the relationship between criminal involvement and social variables such as race, economic status, family experience and social background, and has repeatedly demonstrated that involvement in conventional crime is significantly related to these variables. Other criminologists have attempted to explain the relationship between criminal behavior and these variables through the development and application of theories of culture and subculture. Insofar as previous accident research has demonstrated a correlation between accident involvement and other forms of deviance, and criminological researchers have developed culture-oriented explanations of involvement in deviant behavior, it may be fruitful to consider whether such theories can explain at least part of the variance in the distribution of traffic accidents.

The basis of cultural theory is the concept that individuals are socialized to perceive and react to the world on the basis of the shared meanings of the group to which they belong, and that the variations in

shared perceptions among groups are the result of the different social experiences to which each has been exposed. In the area of criminological theory this broad notion of culture has given rise to three explanatory models.

The first model, best typified by the work of Sellin (1938), is based upon the conflict inevitably engendered when two pre-existing ethnic cultures are somehow brought into contact with one another, and individuals from one cultural group are subjected to the laws derived from the cultural experiences of another group. The second is based upon the cultural differences resulting from the economic and social stratification of society. The "focal concerns" theory of Walter Miller (1958) and the "subculture of violence" thesis of Wolfgang and Ferracuti (1967) represent this orientation. The third model is that of the reactive subculture, the subculture which forms in reaction to and in rejection of the values of the dominant culture in a society. Cohen (1955) is the principal founder of this approach.

The models are not wholly exclusive of one another and share certain concepts. The conflicting ethnic culture of the Sellin model may also be located in the lower class culture of Miller's model, just as the "subculture of violence" may reflect certain ethnic inputs, particularly in the case of blacks. Yet, while there do exist similarities, each of these models can make an independent contribution to understanding the accident problem.

Sellin indicates that when individuals are evaluated by laws based on a culture other than their own they run a significantly higher risk of violating these laws. This may be for two reasons. First, to obey the law to which they are subject may require a violation of their own normative system, an act which the individual may perceive as having informal consequences more severe and more certain than the formal sanction risked through violation of the law. Second, the differences in cultural perception may make the formal law difficult to comprehend. The law may prohibit acts which are neither forbidden nor denigrated in his own culture, and so the law is dismissed as irrational.

In the area of traffic accidents this approach may explain to a certain degree the overrepresentation of foreign-born whites among accident statistics, particularly those for pedestrian fatalities. Ethnic patterns of child-rearing may be inconsistent with contemporary traffic patterns, just as certain traffic regulations may have varying importance depending upon cultural background. These explanations, however, would not seem to explain a great deal of the variance in accident distribution. With the exception of pedestrian fatality rates for foreign-born whites, there is little empirical verification of significant ethnic differences among accident victims, and the fact that Orientals have a rather low rate of involvement in traffic mishaps suggests that ethnic difference alone is not a sufficient cause for high accident liability.

The works of Cohen, Miller and Wolfgang and Ferracuti differ from Sellin's thesis in that the parameters around the subculture whose

behavior is to be explained are socio-economic rather than strictly ethnic. However, like Sellin, they view deviant behavior as arising from values and patterns of behavior normal for the subculture in which they are located.

Cohen's model identifies the delinquency of working-class youths as a reaction to perceived social blockage. Working class youths, socialized to accept and desire middle class standards of achievement, experience blockage from the means to achieve these goals. Realizing this, they attempt to compensate for their inevitable failure by rejecting these secretly held goals and uniting with similarly frustrated youths to express their rejection. Behavior contrary to accepted standards becomes the norm by which the youths reject their rejectors.

For individuals desiring to reject the standards of behavior of the dominant culture, the automobile provides a ready tool. It is possible that aggressive and negligent operation of a motor vehicle may express the same rejection of society as does juvenile vandalism (Martin, 1956). Insurance companies have long identified young drivers as a high risk group. Certainly, a percentage of young drivers have accidents as a result of their lack of skill, although as a group they have been found to be more skillful than adults due to quicker reaction times. However, it is interesting to consider that although young drivers are considered a high risk group, many insurance companies also provide insurance discounts for students with high scholastic averages and young drivers in college, indicating that this particular segment of young drivers is a lower risk group than young drivers generally. This suggests that other variables intervene in the relationship between age and driving risk, and that the automobile may be less important as a form of aggressive release for young persons who have access to culturally prescribed and acceptable demonstrations of status.

Walter Miller suggests that much lower-class gang delinquency is a reflection of certain basic "focal-concerns." These include "fate," "physical toughness," "smartness" (the ability to con or dupe) and the desire for "excitement." These concerns, particularly "fate," "toughness" and "excitement" are likely to affect attitudes towards driving. Individuals for whom the concept of "fate" is salient are less likely to view the negative consequences of their own behavior as subject to their control. If one relies on "fate" there is less reason to take precautions against accidents, since one will believe there is little that can be done to prevent their occurrence. The desire for "excitement" can also lead to aggressive, chance-taking driving, and certainly placing one's life in jeopardy through deliberately aggressive or reckless driving provides an opportunity to demonstrate "toughness."

There exists an interesting correspondence between Miller's "focal concerns" and attitudes identified as significantly related to high accident and traffic violation records. Rommel (1959) identified attitudes such as viewing driving as a means of compensating for youthful status, the desire for danger, the wish to demonstrate one's confidence in his

ability through driving and an emphasis on the power of the vehicle as significantly related to accident involvement. The desire for danger represents "excitement." Demonstrating confidence in one's ability is similar to Miller's definition of smartness, particularly where this ability takes the form of outmaneuvering and outwitting other drivers. And certainly emphasizing the power of one's vehicle can be a susbtitute expression of "toughness."

Similarly, the attitudes discussed by McFarland and Moore (1955)--the desire to use an auto to enhance one's chances in sexual competition, the desire to "get even" with other drivers, and the tendency to express hostility through driving--bear a correspondence to excitement, smartness and toughness respectively.

While the theories of Cohen and Miller provide valuable concepts for traffic research, the work of Wolfgang and Ferracuti offers what is perhaps the most useful perspective for understanding traffic violence. The "subculture of violence" thesis states that a readiness to express violence through overt aggression among certain groups of people is part of a subcultural normative system that defines the life-style, the socialization process and the interpersonal relationships of individuals living in similar conditions. Individuals exposed to this subcultural experience will have a greater willingness to engage in aggressive behavior than those exposed to a different subculture and, furthermore, may suffer social censure for failing to be aggressive in situations perceived as requiring an aggressive response.

This theory, however, is oriented towards explaining interpersonal violence such as homicides and assaults. Traffic accidents, on the other hand, represent an <u>impersonal</u> rather than an <u>interpersonal</u> form of violence. While the willingness to bring harm to others and one's self through vehicular negligence suggests that traffic accidents may be related to the subculture of violence, the fact that the harm caused is relatively impersonal argues against such a perspective.

While social scientists have long been concerned with the patterns and causes of violence, aggressive behavior directed at a specific individual or group has been the usual starting point. Instances of randomized violence, such as mass murders, have been generally treated as a separate category of behavior thought to be--precisely because of its random character--the product of severe psychological disturbance. Vehicular negligence and the accidents which result from it fall somewhere between conventional crimes of violence and purely random violence. It lacks both the specific orientation of conventional violence and the intense motivations associated with randomized mass violence. Vehicular negligence, if at all related to a subculture of violence, would seem to represent a free-floating willingness to risk violent outcomes, rather than a desire to bring physical harm to either some specific individual, or to people in general.

Combining suicide and homicide rates into an overall measure of violence, Porterfield (1960) found that the rate of fatal accidents

correlated significantly with the rate of violence in the 39 metropolitan areas having the highest and lowest rates of personal violence. This finding supported Porterfield's hypothesis that:

> Drivers who have little regard for their own lives and the lives of others . . . will have higher rates of accidents than drivers who place a high value on human life. As a corollary, if the populations of some areas have a higher ratio of persons who do not value life than have other areas, it may be predicted that the former will experience more motor vehicle fatalities.

Although not expressly concerned with the subculture of violence thesis, Porterfield's findings offer at least indirect support for the idea that subcultural groupings with a high rate of interpersonal violence will also exhibit high rates of traffic violence.

Although the subculture of violence theory focuses upon interpersonal violence, its formulators refer to the "penetrating and diffusive character of this cultural theme." Is it possible that this subcultural theme of violence can influence impersonal as well as interpersonal conduct? We suggest three mechanisms through which a "subculture of violence" can influence an individual's driving behavior.

First, two obvious components of a subculture of violence are the willingness to cause physical harm to others, and the willingness to risk physical harm to one's self in the form of retaliation for one's own aggressivity. This reduced concern about possible harm to both self and others will influence the manner in which one drives. That is, perceptions favorable to aggressive behavior will extend themselves to driving as well as face-to-face interactions inasmuch as the desire to avoid harm to self and others is one of the basic controls upon an individual's manner of driving.

Secondly, individuals socialized into aggressive patterns of behavior will be more likely to utilize an automobile as a substitute form of agressive release in those situations where direct aggressivity is not possible than those who do not accept overt expressions of hostility as normative.

Third, the manner in which one drives can function as an alternative mechanism for demonstrating the qualities of physical prowess, "toughness" or "smartness" associated with lower-class or working-class culture which, as Wolfgang and Ferracuti indicate, is the basic milieu for a subculture of violence in America.

If these relationships between subcultural experience and driving behavior do exist, homogeneous subcultural groups with high rates of interpersonal violence should exhibit high rates of automotive violence, and as a corollary, the ecological, demographic and prior offense patterns of vehicular negligence should parallel those of interpersonal crimes of violence. Subcultural influences, of course, cannot explain the totality of traffic violence, just as they cannot explain the totality of interpersonal

violence. Our question rather is, do the patterns of vehicular negligence resulting in traffic accidents bear sufficient similarity to the patterns of conventional violent crime to support the hypothesis that a subculturally learned willingness to engage in overt aggressivity will influence the manner in which one drives as well as the manner in which one behaves interpersonally?

Alcohol and Traffic Accidents

Numerous studies have related alcohol in the blood to an increased accident liability. These studies have been primarily of two types: those which have investigated the incidence of alcohol consumption among individuals actually involved in accidents, and laboratory research which has attempted to demonstrate the effect of alcohol consumption upon the ability to effectively perform various motor and perceptual tasks. The National Safety Council has long reported the number of accidents involving alcohol consumption, and current statistics show alcohol consumption involved in approximately 50 percent of all traffic accidents (National Safety Council, 1972). These statistics, derived from police reports, however, do not provide any information regarding the patterns of alcohol consumption related to accidents or the actual role of alcohol in accident causation. Although such statistics make reasonable the inference that alcohol increases one's liability to have an accident, they do not provide information regarding the dynamics of alcohol consumption and driving behavior.

There is now a large body of research, both field and experimental, on the role of alcohol in the accident picture. The amount of research in this area is far too considerable to review each endeavor separately, and since the findings are generally consistent, there is little reason to do so. Field research in the area of alcohol and accidents has consistently demonstrated that:

1. Alcohol consumption is related to a significant proportion of all traffic accidents, both fatal and non-fatal. The actual percentage of alcohol-related accidents varies from 30 percent to 65 percent of samples studied.

2. Men are more frequently involved in alcohol-related accidents than women.

3. Alcohol-related accidents occur most frequently in the late evening or early morning hours, with weekends having a slightly higher percentage of alcohol-related accidents than weekdays.

4. Variables such as road condition, age of automobile, weather conditions and amount of traffic are much less important than alcohol consumption.

5. Alcohol consumption is significantly more common among drivers responsible for accidents than drivers involved but not responsible.

6. Alcoholism is significantly related to a poor accident record.

Experimental research projects on the relationship between alcohol and driving ability, or the performance of motor and perceptual functions critical to driving, consistently demonstrate:

1. Alcohol consumption increases an individual's reaction time.

2. An individual's ability to correctly perceive distance and speed are impaired by alcohol consumption.

3. While an alcohol blood content of .10% or more generally results in severe impairment of motor and perceptual efficiency and actual driving behavior, alcohol consumption in any amount reduces one's driving ability.

4. Alcohol consumption, for certain types of persons (particularly the inexperienced drinker or the introverted), results in a greater tendency to take risks and to violate traffic laws.

5. The effects of alcohol, both behavioral and psychological, on various individuals are not uniform.

The work of Haddon, et al., has provided a novel approach to better determining the actual role of alcohol usage in the overall traffic picture. In three studies, one concerned with single-car fatalities in Westchester county (1959), one of pedestrian fatalities in Manhattan (1961) and one concerned with vehicular deaths in Manhattan (1962), Haddon and his co-workers constructed control groups from a random sample of either pedestrians or drivers passing the site of a fatal traffic mishap at approximately the same day of the week and time of day as the actual accident. The control subjects were tested for alcohol consumption and also interviewed to gather information on other significant variables. Through this method the researchers were able to document suppositions regarding alcohol consumption and traffic accidents which previously could only be inferred from statistical analysis of accident groups. The findings indicate that a significantly greater percentage of fatally involved drivers and pedestrians were intoxicated or had been drinking than members of the non-involved control groups, a notion which had long been held but never clearly demonstrated.

Despite the methodological soundness of Haddon's work, and his clear demonstration that alcohol is present in those involved in accidents significantly more often than those not involved, the dynamics of the relationship between accident involvement and accidents was not substantially

illuminated. Does the alcohol cause the accident, or is driving after drinking a manifestation of some antecedent variable which increases the individual's accident liability? Little is known about the interaction between the alcohol-reduced capacity of the driver and the actual driving behavior. Do intoxicated drivers as a group drive more recklessly than sober ones, or do they drive in their normal manner but simply incur a somewhat greater risk due to slower reaction time, decreased motor control and attenuated visual capacity? Does the knowledge that one is intoxicated tend to increase or reduce normal risk-taking? What factors differentiate between the individual who knows he is intoxicated and therefore refuses to drive, and one who readily drives despite his intoxication?

Carpenter (1968), after an extensive review of the research literature relating alcohol to accident involvement concludes that research does not support the belief that alcohol produces uniform effects on driving behavior. Instead, he concludes that an individual's driving behavior is a result of his "response to alcohol" and that this response is determined by the individual's personality, skill, experience, and age. This position is given further support by the finding of Carlson (1972) that individuals who drink in bars as opposed to private residences are disproportionately represented among night-time drivers, and subsequently among drinking drivers involved in traffic accidents. On the surface, this finding may seem only to corroborate the common-sense logic that those who drink in bars must transport themselves home eventually and, therefore, are on the road in greater numbers than those who drink in private residences. However, if one considers that drinking in a bar is a more prevalent pattern for certain subcultural groups than for others, and that individuals arrested for non-traffic alcohol offenses are most frequently individuals who have been drinking in a tavern (Stinchcombe, 1963), the effect of both personality and cultural experience upon one's liability to an alcohol-related accident becomes clearer.

Cohen, Dearnaley and Hansel (1958) used professional bus drivers to determine the effects of alcohol consumption on an individual's willingness to take risks. The drivers were asked at various stages from sober to clearly intoxicated to identify the smallest gap between two moveable stanchions through which they could drive their bus. After identifying the smallest size gap with which they felt confident, the drivers were then asked to perform the task. As drivers consumed more alcohol they were prepared to drive through narrower gaps than when sober, while at the same time needing a wider gap before they could succeed. As the level of alcohol consumption increased the drivers became more willing to expose themselves to hazards they would not have attempted when sober, despite the fact that their ability to negotiatate the hazard was reduced. The generalizability of this finding, however, is significantly moderated by their finding of broad individual differences. In their own words:

> . . . the variation in the margin of hazard within groups is so large as compared with the variation between them that a knowledge of the blood alcohol of any individual driver tells us little about the degree of hazard in which he might become involved.

Cohen, et al., do not attempt to explain the individual differences except to say that it is a widely known fact that individuals vary considerably in their reaction to the same amount of alcohol. Whether this variation is psychologically or physiologically induced is unknown.

Thus, while research has demonstrated that alcohol consumption is involved in more than half of all traffic accidents, and that alcohol consumption definitely affects one's driving capabilities, there is significant indication that it is not the alcohol consumption alone which causes accidents, and that a given level of intoxication will not produce identical driving behaviors in various individuals. There apparently exist other variables which affect an individual's "response to alcohol."

Criminologists have frequently demonstrated that alcohol consumption is related to the commission of many types of criminal behaviors. Among these, the violent crimes of murder, aggravated assault and robbery are significantly related to the consumption of alcohol (Wolfgang, 1957, 1967; Amir, 1967). Furthermore, it has long been known that involvement in conventional criminal activity, particularly of the violent type mentioned above, is more frequent among members of the lower socio-economic groups, and among certain ethnic groups. Does the consumption of alcohol itself lead to involvement in conventional crimes? If one answers in the affirmative, one must also then assume that alcohol consumption is much more frequent among lower socio-economic status (SES) groups than among others, for how else can one explain the over-representation of these groups in conventional crime? Given the business and social patterns of drinking among the middle and upper classes, it is unreasonable to contend that the lower classes engage in far more drinking and, therefore, are more criminally involved. If a blue-collar worker is more likely to be involved in conventional criminal activity after the consumption of alcohol than is the middle-class businessman after an intoxicating lunch, one must look to variables other than the consumption of alcohol to explain the differences in their liability to crime.

Where conventional crime is concerned, it is an individual's <u>response to alcohol</u> rather than merely the consumption of alcohol which is important. Since one's response to alcohol is, in part, a learned response, the cultural context in which one learns this response must be seen as a critical antecedent variable in any analysis which attempts to relate alcohol consumption to behavior. That is, the increase in accident liability due to alcohol consumption may vary markedly among individuals who have learned different cultural modes of responding to intoxication.

Summary

The previous discussion has explicated the reasons why the fatal traffic accident warrants consideration as a <u>social</u> problem, and has presented a sociological perspective on accidents. Sociological accident research so far has been based upon gross statistical compilations (generally, national in scope), and does not provide an adequate portrait of the accident problem within a specific social and structural context.

The exploratory accident analysis presented in the following sections will consider many of the same ecological and demographic variables employed by other accident researchers. The value of this research, however, lies not in variables employed, but in its attempt to develop an overall contextual portrait of the fatal urban traffic accident. By focusing upon the traffic accident as an urban social problem, it will hopefully provide sensitizing concepts regarding the urban accident problem--a critically important step in the development of any theoretical formulation.

The essential research question asked is, "As an urban social problem, what ecological and demographic characteristics do fatal traffic accidents share with other urban social problems, particularly crime?" Since little viable sociological theory regarding traffic accidents exists, the research must be exploratory in nature. This approach is consistent with Blumer's (1968) admonition that sociological researchers should devote considerable energy toward understanding and developing sensitizing concepts about a particular social phenomenon before attempting to develop theories and test hypotheses regarding that phenomenon.

CHAPTER III

METHODOLOGY

Nature of the Data

A fatal injury accident in Ohio can result in a charge of manslaughter by vehicle in either the first (felony) or second (misdemeanor) degree (O.R.C. 4511.18, 4511.181). For this reason, fatal accidents are investigated to a far greater extent than accidents involving only injury or property damage. Those involving no fatalities are investigated by the uniform subdivision officer(s) responding to the accident call, and a standardized accident report form is filed. If a fatality, or a possible fatality is involved, a member of the Accident Investigation Squad (AIS) is called in to conduct further investigation, both at the scene of the accident and during subsequent days, to determine if a charge of manslaughter by vehicle should be brought against an involved driver.

This study focused upon fatal accidents for two reasons. First, in an urban environment which is highly traffic-controlled, a fatal accident is generally the result of a significant violation of traffic regulations. Secondly, the selection of fatal accidents enabled the utilization of the rather extensive data gathered by the AIS, in contrast to the limited accident reports available for non-fatal accidents.

In addition to the basic accident report form completed for all accidents, each fatal accident packet included the following: (1) A written, chronologically presented report of the investigation process. This report, compiled by the investigating AIS officer(s) begins with the initial investigation at the scene of the accident and includes all subsequent investigations and contacts made leading to the disposition of the case. (2) Written statements from survivors involved in the accident and witnesses to the accident. These statements are generally obtained either at the scene of the accident or during subsequent contacts with survivors or witnesses. (3) Photographs of the accident scene. (4) Death certificates for those fatally injured. (5) Lab reports on the alcohol content of the blood taken from those fatally injured. (6) The results of breathalizer tests given to surviving drivers. (7) A diagram of the accident showing the direction of vehicle travel, point of impact with either a pedestrian, another vehicle or a fixed object and the final attitude of the vehicles and individuals involved. (8) A special accident report form which included information regarding the condition of various vehicle components, and information regarding estimated speed of the vehicle derived through a computation involving length of skid marks and the coefficient of friction for the particular type of road surface involved. (9) A list of personal effects found either on the fatally injured individual or in the vehicle of a person killed in the accident. (10) A list of prior police contacts involving traffic and non-traffic offenses for the fatally injured, surviving drivers and passengers. (11) A copy of the arrest warrant issued for

those charged with manslaughter by vehicle. (12) Miscellaneous communications between the AIS officer(s) and individuals involved in the accident, survivors of individuals involved, attorneys for those charged with manslaughter by vehicle or some other related offense, and the city prosecutor were also included. The above-described information occurred consistently where the logic of the accident dictated that it should be included, and the consistency of information available eliminated many research problems frequently associated with non-comparability of data.

It was decided to group the data into several separate units. The first unit included all data relevant to the accident itself. These data, including type, location, date, time and season of the accident, weather, light, road and traffic control conditions, and whether or not a citation was involved were obtained from the initial accident report form completed at the scene.

Subsequent data units concerned information regarding the individuals involved. Information regarding age, sex, race, address, physical condition and contributing driving behavior was generally available from the initial accident report form. In certain instances, however, information regarding race and address had to be derived from either death certificate or the written report of the investigating officer.

Information regarding an individual's marital status and occupation was generally the most difficult to locate since it was not consistently presented in any single place. Fortunately, however, such information was available for most of the individuals involved. The written reports of investigating officers and statements by survivors, along with the death certificate, where included, generally provided the information sought. Notification of next of kin, frequently included in the written report, provided an excellent indication of marital status, and death certificates generally included the individual's usual occupation. In their written statements, survivors also frequently indicated their own occupations and that of the fatally injured party.

Information regarding citations issued and the disposition of these was normally found in the written report or on the exterior of the pocket. In several instances no indication of disposition was included in the information available. In the majority of these cases, however, members of the AIS were more than willing to contact the clerk of courts or other sources of information to determine the disposition.

Information regarding prior contacts with police for either traffic or non-traffic offenses was also obtained. In many instances, arrest and disposition records were included in the case file. For those cases where it was not, or where it was included for only one of the drivers or pedestrians, a form indicating the subject's name, race, age and social security number was submitted to the record office of the police department, and a complete record check was done.

A pretest revealed that many accidents involved circumstances not easily recorded in a standardized and uniform manner but, nevertheless, important in sensitizing one to the types of behaviors related to many

fatal urban traffic accidents. This information was recorded in prose format for case-study analysis.

Exposure to Risk

Exposure to risk has been identified as an important variable in accident research. The concept of "exposure" suggests that the greater number of risks an individual is exposed to, the greater will be his liability to accident. In both industrial research (Newbold, 1926; Vitles, 1932) and in traffic research (Coppin, et al., 1956; Hakkinen, 1963; Shaw and Sichel, 1971), the variable of exposure has been given considerable attention.

It has been shown that those drivers who have higher annual mileage rates also have higher rates of accident involvement. This factor has been used frequently to explain the overinvolvement of men and the underinvolvement of older persons in traffic accidents. Unfortunately, the data available for this study did not make possible any control for exposure to risk. In a retrospective analysis of this type, it is extremely difficult to determine annual miles driven by persons involved.

A major focus of this research is the role of the negligent driver in fatal traffic accidents. As Coppin's research indicates, while exposure is important in explaining and predicting repeated accident involvement, it is less significant where patterns of repeated law violation are involved. As Willet (1968) has said:

> . . . it is possible that while exposure to risk may be a powerful influence on the propensity to have accidents, it may not be so relevant to the propensity to commit offences. . .

The present study focuses upon the characteristics of drivers who commit traffic offenses resulting in fatal accidents. We are primarily concerned with the risks <u>created</u> by the driver himself, rather than those presented to him by the environment. While the inability to control for exposure to risk is regrettable, we feel it is unlikely that significant <u>social</u> differences which exist between those responsible for traffic fatalities and those not responsible are simply a spurious artifact of differing exposures to risk.

Data Parameters

After examining the rates of fatal accidents for the city of Columbus for a number of years, it was decided that the universe of fatal accidents occurring over a three-year period would provide a sufficient number of cases for analysis. Data were gathered for the universe of fatal accidents occurring on public roadways in Columbus, Ohio during the years of 1971, 1970 and 1969 inclusive. Although this sample was based on

the number of fatal accidents occurring within the three-year period from 1969 to 1971, it includes all involved drivers, regardless of injury, pedestrians fatally injured, and vehicle passengers injured. Omitted were passengers of involved vehicles not injured. This selection produced a total of 223 accidents and 429 individuals killed, injured, or responsible.

It should also be noted that the number of accidents and the number of individuals is not evenly distributed among each of the years selected. When questioned about these yearly fluctuations, members of the AIS indicated that they are not attributable to any significant factors related either to weather, number of vehicles or varying levels of traffic enforcement. Rather, indicating the patterns of fatal accidents over a long period of years, they suggested that such fluctuations are normal occurrences. This coincides with national accident figures which also reveal minor upward or downward fluctuations in successive years. For this reason it was felt that combining the three years into a single grouping posed no severe methodological problems, nor would it mask any significant variations in the accident problem from year to year.

Constructed Data and Coding

The AIS information gave accident location by cross streets, and individual residences by addresses. These were translated into their corresponding census tracts. To determine the socio-economic character of the various census tracts, the 1970 census of population and housing was utilized. For each census tract within the corporation limits of Columbus, information was obtained relevant to the socio-economic characteristics of that census tract. From the first count tape of the 1970 census information was obtained regarding the percent of black population, the average value of housing and the average rent. From the fourth count tape of the 1970 census, information was obtained regarding the mean income of families, the mean income of individuals, the percent of high school graduates, the percent unemployed, the percent of families with public assistance, the percent of individuals receiving public assistance, the percent of families below the poverty level, the percent of unmarried individuals below the poverty level, and the percent of individuals in each tract living in the same house in 1970 that they did in 1965. Each census tract was assigned a rank for each of these twelve variables. These ranks were summed and then divided by twelve to determine the average overall rank score. On the basis of these average ranks the census tracks were re-ranked and divided into three categories. For the purpose of analyses those census tracts falling in the upper third of the final ranking are identified as high socio-economic status, those in the middle third as middle socio-economic status and those in the bottom third as low socio-economic status.

The individual subject's occupation was coded according to the seven-point occupational scale devised by Hollingshead (1957) as a part of his "Index of Social Position."

Certain other variables such as vehicle make, violation for which an individual was cited, sentence received, state in which the driver was licensed, and sentencing judge were identified on the basis of a code derived directly from the available data. For these variables the various alternatives and combinations of alternatives which appeared in the data were listed and assigned a value.

Collection of the Data

The data from the AIS files was collected during the period from July, 1972 through September, 1972. The period of data collection also provided a valuable opportunity to interact with members of the AIS. After an initial period of familiarization, the various AIS members tended to ignore, in a very positive sense, the presence of a researcher in their midst. Conversation was both free and open, providing an opportunity to view the normal operation of the AIS, and members of the AIS responded willingly to questions about various accidents either included in the study or currently under investigation.

During this time topics frequently discussed included the problem of obtaining convictions for manslaughter by vehicle for various legal reasons, the role of alcohol and racial background in the causation of accidents, the problems of establishing responsibility for accidents, methods of locating hit-skip drivers and numerous anecdotes regarding unusual accidents investigated by the AIS. Of particular importance was conversationally derived information regarding methods of assigning responsibility for accidents.

The two most frequently assigned contributing behaviors were intoxication and excessive speed. It was learned that a fatally injured individual was listed as being intoxicated only if his blood alcohol content was measured; otherwise, his physical condition was listed as unknown. For those surviving drivers intoxication was determined by a breathalizer. Those registering over 0.10% alcohol were listed as intoxicated, and those less than 0.10% but more than 0.01% were identified as drinking but not intoxicated.

The question of whether an individual was driving at speed in excess of the law was generally determined from a coefficient of friction applied to length of the skid mark adjusted for type of road and condition of tires, if such a mark was made. If such information were not available for measurement, witness' statements were used to establish excessive speed. Lacking either one of these information sources, no judgment regarding speed was made.

Such information lends credibility to data found in the accident records, and numerous conversations both with and among AIS officers indicated that they generally refrained from *ad hoc* determinations based on little or no information.

CHAPTER IV

ECOLOGICAL CHARACTERISTICS OF URBAN TRAFFIC FATALITIES

The Ecological Distribution of Fatal Accidents

During the three years studied (1969, 1970 and 1971) there were 223 fatal accidents occurring on public roads within the corporation limits of Columbus, Ohio. These 223 events ranged from single-car mishaps involving one individual to four- and five-car collisions involving as many as ten persons. Included in this figure were 36 accidents (17.5 percent) which occurred on divided, six-lane, limited-access interstate highways. When discussing the ecology of urban traffic fatalities, it is necessary to take into consideration that Columbus, like most major American cities, has within its boundaries an extensive system of interstate highways. Accidents occurring on these roads, although under the jurisdiction of the city's police department and included in the accident total for the entire city, represent a different type of accident from those occurring on city streets. For this reason the following discussion of the ecological distribution of urban traffic accidents does not, for the most part, include accidents occurring on six-lane divided highways.

All accidents occurring on city streets were plotted using census tracts as the areal unit. An area was considered a low-accident tract if, during the three years studied, there had been one fatality or less occurring within its boundaries. Medium-liability tracts were those with two or three fatal accidents during the study, and high-accident tracts were those with four or more accidents resulting in death.

The city of Columbus contains 161 census tract divisions within its corporation limits. Of these, the 12 high-accident tracts (7.4 percent of the total number of tracts) accounted for 34.2 percent of the total number of fatal accidents. An additional 24 medium-accident tracts (14.9 percent of the total number) contributed 30.5 percent of the fatal accidents. Thus, only slightly more than 22 percent of the total number of tracts accounted for approximately two-thirds of the fatal accidents (see Table 1).

When considering the population contained within the various census tract groups, the proportions remain much the same. The 12 high-accident tracts (8.9 percent of the total population) contributed 34.2 percent of the accidents. An additional 18.4 percent of the population lived in the medium-accident tracts and accounted for another 30.5 percent of the accident total. Taken together, the high and medium tracts contained 27.3 percent of the total population, yet accounted for 65 percent of all fatal accidents in the city (see Table 1). Using either the number of census tracts or the population contained in each category to determine expected frequencies, the above distribution of accidents differed significantly ($p. < .001$) from chance.

TABLE 1

DISTRIBUTION OF FATAL URBAN ACCIDENTS
AMONG HIGH, MEDIUM AND LOW ACCIDENT LIABILITY TRACTS

Liability	No. of Tracts	% of Pop.	Multiple Vehicle	Pedestrian Accident	Single Vehicle	Total
High	12	8.9	30.9% (17)	36.0% (27)	35.1% (20)	34.2% (64)
Medium	24	18.4	25.5 (14)	36.0 (27)	28.1 (16)	30.5 (57)
Low	125	72.7	43.6 (24)	28.0 (21)	36.8 (21)	35.3 (66)
Total	161	100.0	100.0% (55)	100.0% (75)	100.0% (57)	100.0% (187)

From a sociological perspective this information strengthens the hypothesis that fatal urban traffic accidents do not distribute themselves in a geographically random fashion, but it alone fails to identify either predictive or explanatory variables which can account for this differential distribution. Although the question of demographic variables will be taken up extensively later, it is necessary to mention that the distribution of blacks does bear some relationship to the distribution of traffic fatalities in an urban setting. While the 12 high-accident tracts contained only 8.9 percent of the total city population, they contained 17.5 percent of the black population, and the medium-accident tracts contained 18.4 percent of the total but 34.2 percent of the black residents. Taken together the high- and medium-accident tracts contained 27.3 percent of the total population but 51.7 percent of the black population and only 21.9 percent of the white residents. It is clear from these figures (see Table 2) that blacks are overrepresented and whites underrepresented in those census tracts where 65 percent of all the fatal accidents occurred. This distribution of blacks among the various census tract groups differs significantly ($P < .001$) from expected frequencies based upon their representation in the population.

Urban blacks, due to their generally lower socio-economic status, have traditionally been forced to cluster in the more deteriorated center-city areas characterized by what human ecologists called indicators of "social disorganization." As a result, the presence of a high proportion of blacks in any particular area of a city has been found to correlate significantly with numerous social problems, particularly crime and disease. It is interesting to note that fatal traffic accidents, a phenomenon which would appear to be relatively random in its selection of involved persons, exhibits a similar relationship to the presence of a high proportion of black residents as do other social problems. This fact becomes even more interesting if one considers that blacks are also overrepresented as involved persons. While they

TABLE 2

COMPARISON OF ACCIDENT DISTRIBUTION WITH PERCENTAGE OF TOTAL BLACK POPULATION IN VARIOUS LIABILITY TRACTS

Liability	No. of Tracts	% of Total Population	% of Black Population	Accidents % (N)
High	12	8.9	17.5	34.2 (64)
Medium	24	18.4	34.2	30.5 (57)
Low	125	72.7	48.3	35.3 (66)
Total	161	100.0	100.0	100.0 (187)

constituted 18.5 percent of the total population of the city, 25.8 percent of the involved persons were black. This suggests that the distribution of urban traffic fatalities bears a similarity to the distribution of conventional crime.

To further investigate the possible similarity between the ecological distribution of fatal urban traffic accidents and other urban social problems, a concentric zone model was applied to the geographic distribution of fatal accidents.

The fatal accident rate per 10,000 population for concentric zones radiating at one-mile intervals from the central business district decreased steadily from zone one through zone six, with a range of 5.35 per 10,000 to 2.12 per 10,000. The rates for each zone and the percentage difference between them are as shown in Table 3.

TABLE 3

FATAL ACCIDENT RATE PER 10,000 POPULATION FOR CONCENTRIC ZONES OF 1-MILE INCREMENTS

	Rate per 10,000	Percent Lower
Zone 1	5.35	
Zone 2	4.88	8.7%
Zone 3	3.69	24.3%
Zone 4	2.86	22.4%
Zone 5	2.33	18.5%
Zone 6 (balance of city)	2.12	9.0%

Although the range is not so broad as that found for the zonal distribution of crime and delinquency, there does exist a clearly decreasing gradient from the center of the city outward, similar to that which exists for the distribution of conventional crimes. Furthermore, the distribution of accidents through the various zones differs significantly from the expected frequencies based upon the population in each zone at a probability level between .01 and .001.

The importance of this decreasing trend is further heightened by the fact that the percentage of high-speed roads increases as the distance from the city center increases. Thus, unlike conventional crimes for which opportunity is more readily available in the center-city, the risks of high-speed collisions resulting in death are greater near the boundaries of the city.

It may be the case, however, that the population density of the center city area results in a high proportion of pedestrian deaths occuring there, thus accounting for this seemingly decreasing rate despite increasing opportunity. If this assumption is correct the steadily decreasing accident rate found when all accidents are taken together should not appear for rates computed according to type of accident. Table 4 shows the rates per 10,000 population for each zone by type of accident.

TABLE 4

FATAL ACCIDENT RATE PER 10,000 POPULATION
BY TYPE OF ACCIDENT FOR CONCENTRIC ZONES
OF 1-MILE INCREMENTS

	Multiple	Pedestrian	Single Car
Zone 1	.446	2.67	2.23
Zone 2	1.22	2.80	.854
Zone 3	.979	1.62	1.41
Zone 4	.573	1.52	.382
Zone 5	.954	.742	.848
Zone 6	.921	.425	.779

As these rates show, the smoothly decreasing trend away from the center city found for all accidents taken together, does alter somewhat. However, it did not reverse itself either for moving vehicles or single-car accidents. In fact, for all types of accidents, the more centrally located zones have the higher rates. If the opportunity for fatal high-speed collision afforded by the roads located nearer the perimeter of the city were a crucial variable in the distribution of such accidents, one

would expect to find that for these types of collisions the highest rates would be in zones 5 and 6. However, in only one case did the rates in these two zones exceed the rate for similar accidents in zones one or two.

For multiple-vehicle accidents the central business district, which is the major component of Zone 1, recorded the lowest rate. This zone also recorded the highest single-car rate and the second highest pedestrian rate. Zone 2 had the highest rates for both moving and pedestrian accidents, and a moderate rate (third highest overall) for single-car accidents. Ideally, the low rate for multiple-car accidents in zone 1, and the low rate for single-car accidents in zone 2, should not appear if the zonal hypothesis of distribution were perfectly represented.

Despite these two deviant cases, the highest rates for the three types of accidents analyzed were found in the more centrally located zones, with the peripheral zones not recording noticeably high rates for any category of accidents, and in a majority of instances recording the lowest rates. Given this general trend for those zones located nearer the center city to be highest for all types of accidents, the assumption that the decreasing accident gradient is an artifact of the predominance of pedestrian accidents in the central area cannot be maintained. Furthermore, the fact that zone 2, and not zone 1, recorded the highest rates for both moving and pedestrian accidents suggests that it is not simply density of traffic, but the type of traffic which is critical in the causation of fatal traffic mishaps. Zone 1, encompassing the central business district, is the most densely trafficed area of the city. Zone 2, primarily an area of lower-class residences, however, recorded the highest rates for moving and pedestrian accidents. Furthermore, although zone 1 had the highest rate for single-car accidents, the majority of these occurred not within the central business district itself, but on the edges of the central business district. Because they occurred near the boundaries, they fell into zone 1, but in actuality occurred in areas far more similar to the "zone of transition" than to the central business district.

The distribution of fatal accidents is not unaffected, of course, by population density, type of road, traffic control and other such variables. However, the influence of such variables does not diminish the significance of the ecological distribution any more than the predominance of taverns in the center city diminishes the significance of distribution of murder and assault rates.

Ecological Distribution of Involved Persons

During the three years studied, there were 429 individuals involved in fatal accidents as either drivers or injured non-drivers. Of these, 384 lived in the city studied. The residences of these individuals were plotted according to census tract, and further analysis was based upon this area unit. Census tracts were grouped as high-, medium-, and low-residence areas of involved persons, with those having less than 3 being low, those with 3 to 6 fatally injured persons as medium, and those with 7 or more

involved residents as high. The maximum number of involved persons from a single census tract was 14, and 34 percent of all census tracts had no residents involved in a fatal traffic mishap.

Those census tracts falling in the "high" group accounted for 39.4 percent of all involved persons residing in Columbus, while they constituted only 9.9 percent of the census tracts and contained 12.3 percent of the total population. Those falling in the "medium" range, 26.0 percent of the total number of tracts, accounted for 42.3 percent of involved persons while containing only 28.9 percent of the population. Thus, the high and medium tracts, containing 41.2 percent of the population contributed 82.7 percent of the individuals involved in fatal traffic mishaps (see Table 5).

TABLE 5

DISTRIBUTION OF VIOLATORS AND VICTIMS IN HIGH, MEDIUM AND LOW RESIDENCE LIABILITY TRACTS

Liability	Tracts	% of Pop.	Violators	Victims	Total
High	16	12.3	40.4% (80)	38.0% (63)	39.4% (151)
Medium	42	28.9	42.7 (93)	41.6 (69)	42.3 (162)
Low	103	45.4	16.9 (37)	20.4 (34)	18.3 (71)
Total	161	100.0	100.0% (218)	100.0% (166)	100.0% (384)

This distribution is significantly different ($p. < .001$) from expected frequencies based upon either the number of tracts or the population in each category.

The relationship between the percentage of blacks and the number of individuals involved in fatal accidents appeared weaker than that found for the distribution of accidents (see Table 6). Overall, the tracts high and medium on the number of involved persons contained 41.2 percent of the total population and 47.9 percent of the black population. This 6.7 percent overrepresentation of blacks was substantially lower than the 24.2 percent overrepresentation of blacks in tracts high and medium for the number of accidents occurring there.

This finding suggests that while the percent of the census tract population which is black, and the other social and structural variables known to co-vary with this, may have an effect on the selection of census tracts as high- or low-accident liability areas, the power of this variable to predict or explain the ecological distribution of involved individuals is

TABLE 6

COMPARISON OF INDIVIDUAL DISTRIBUTION
WITH PERCENTAGE OF TOTAL BLACK POPULATION IN
VARIOUS RESIDENCE LIABILITY TRACTS

Liability	No. of Tracts	% of Total Population	% of Black Population	Individuals
High	16	12.3	13.2	39.4% (151)
Medium	42	28.9	34.7	42.3 (162)
Low	103	58.8	52.1	18.3 (71)
Total	161	100.0	100.0	100.0% (384)

clearly less. That is, those social and structural characteristics which predominate in census tract areas with a high proportion of black residents appear to have more influence on the occurrence of accidents than on the selection of individuals involved in them.

The residential distribution of involved persons was also examined on the basis of concentric zones extending at one-mile radius intervals from the downtown business district. The overall distribution of involved persons per 10,000 inhabitants for the six zones is as shown in Table 7.

TABLE 7

FATALITY RATE PER 10,000 POPULATION FOR
CONCENTRIC ZONES OF 1-MILE INCREMENTS

	Rate per 10,000
Zone 1	5.80
Zone 2	8.79
Zone 3	6.96
Zone 4	6.50
Zone 5	5.50
Zone 6	6.39

While the zonal gradient here is not as regular as that found for the distribution of accidents, the overall trend is toward reduced rates as one moves away from the center of the city. This distribution of involved

individuals through the various zones is significantly different ($p. < .001$) from expected frequencies. The two deviant cases were zone 1, nearest the center city, and zone 6, farthest from it. The fact that the rate for zone one was considerably smaller than that for zone 2 is understandable in that zone one is the least residential of all 6 zones. The total population of this zone is only 22,409, while the next smallest zone has a population of nearly four times as great (zone 2, 81,859). Thus, while zone 1 is a heavily traveled area, it is very sparsely populated. Most important is that zone 2, which had the highest rate for both multiple vehicle and pedestrian accidents also had the highest rate for involved individuals.

Socio-Economic Factors and the Urban Traffic Fatality

Taking all traffic accidents together the percentage distribution by socio-economic status was: 17.1 percent of all accidents occurred in the upper third, 31.6 percent in the middle third and 51.3 percent in the lowest third. These figures indicate that by far the greatest proportion of accidents occur in those census tracts falling lowest on the socio-economic ladder, and do so with a statistically significant ($p. < .001$) regularity.

Even when controlling for type of accident, this over-representation of accidents in the lower socio-economic tracts remained (see Table 8).

TABLE 8

DISTRIBUTION OF FATAL URBAN TRAFFIC ACCIDENTS BY TYPE IN HIGH, MEDIUM AND LOW SES CENSUS TRACTS

SES	Tracts	% of Total Population	% of Black Population	Multiple Vehicle	Pedestrian Accident	Single Vehicle	Total
High	54	34.0	5.6	18.2% (10)	10.7% (8)	24.6% (14)	17.1% (32)
Middle	53	28.5	19.8	34.5 (19)	30.7 (23)	29.8 (17)	31.6 (59)
Low	54	37.5	76.6	47.3 (26)	58.6 (44)	45.6 (26)	51.3 (96)
Total	161	100.0	100.0	100.0% (55)	100.0% (75)	100.0% (57)	100.0% (187)

For multiple-vehicle accidents, 18.2 percent occurred in the highest third, 34.5 percent occurred in the middle third and 47.3 percent in the lowest third. Pedestrian accidents distributed themselves so that 10.7 percent were in the upper third, 30.7 percent in the middle third and 57.3 percent in the bottom third. For single-car accidents, the distribution was

24.6 percent in the upper third, 29.8 percent in the middle third and 45.9 percent in the bottom third. Thus, for all three types of accidents, the middle and upper third were underinvolved and the bottom third overinvolved. The overinvolvement of the lowest socio-economic tracts was found to be greatest for pedestrian accidents and the least for single-car accidents. The converse was also true; the upper third was least involved in pedestrian accidents and most involved in single-car accidents. The reason for this difference lies in the structural and physical arrangements which predominate in each of the different socio-economic groups of census tracts. Lower ranked socio-economic tracts are generally characterized by relatively high population density and a subsequently greater amount of pedestrian traffic. The higher ranked census tracts, on the other hand, are less dense, with lighter pedestrian activity and a high percentage of the high-speed roads which provide greater opportunity for the single-car mishap. It must be remembered, however, that these differences are in the underinvolvement of the upper socio-economic tracts, and that in no case does their contribution to the overall accident picture exceed, or even approach, that of the lower SES tracts.

The relationship between involved individuals and the socio-economic characteristics of the census tract reveals the same overinvolvement of individuals from the lower socio-economically ranked tracts. As Table 9 shows, there is a clear bias for involved individuals to reside in the lower third of the tracts. Of all persons, 48.7 percent lived in the poorest census tract group, 28.6 percent lived in the middle status group, and 22.7 percent lived in the upper third of the census tract groups. This distribution was significantly ($p. < .001$) different from expected frequencies based on the proportion of the population residing in each socio-economic group of tracts.

TABLE 9

DISTRIBUTION OF INVOLVED PERSONS BY STATUS AS VIOLATOR OF VICTIM IN HIGH, MEDIUM AND LOW SES CENSUS TRACTS

SES	No. of Tracts	% of Total Population	% of Total Population	Violators	Victims	Total
High	54	34.0	5.6	22.0% (48)	23.5% (39)	22.7% (87)
Middle	53	28.5	19.8	28.9 (63)	28.3 (47)	28.6 (110)
Low	54	37.5	76.6	49.1 (107)	48.2 (80)	48.7 (187)
Total	161	100.0	100.0	100.0% (218)	100.0% (166)	100.0% (384)

Controlling for individual involvement as either violator or victim resulted in no marked change in the percentage distributions. The upper third of the tracts contributed 22.0 percent of the violators and 23.5 percent of the victims. The middle third accounted for another 28.9 percent of the violators and 28.3 percent of the victims. The bottom third once again contributed the largest amount with 49.1 percent of the violators and 48.2 percent of the victims residing in lower ranked tracts. The distribution of both victims and violators are statistically different from expected frequencies at a probability level falling between .01 and .001. Thus, the greatest percentage of both victims and violators lived in the lower ranked tracts. This suggests that involvement in a fatal traffic accident may very well be an intra-class phenomenon. That is, since individuals are involved in traffic accidents generally near their own residence area, the likelihood that one will be involved in a traffic mishap with an individual of similar socio-economic standing is increased.

In sum, census tracts with the greatest predominance of those characteristics repeatedly shown to correlate with conventional crimes, particularly crimes of violence represented, (1) over half of all the fatal accidents on city streets and (2) nearly half of all the individuals involved in such accidents. Yet, these tracts constitute only a third of all the census tracts in the city. Further, this overinvolvement of the lower ranked tracts was slightly greater for accidents than for individuals, suggesting that the relationship between socio-economic characteristics and fatal accidents may be somewhat stronger for the selection of accident sites than for accident-involved persons.

Physical Variables

In addition to ecological and demographic data concerning fatal accident and involved individuals, data were gathered concerning certain physical variables which are known to be related to the occurrence of accidents. These variables fall into two categories, meteorological and engineering.

Season

Each accident was seasonally identified using the dates for the summer and winter solstice, and the vernal and autumnal equinox as the dividing points. Of the 223 accidents, 21.1 percent occurred in the spring, 30.0 percent in the summer, 25.1 percent in the autumn and 23.8 percent in the winter. This relatively even distribution was not statistically significant ($p. < .30$).

Day and Time

All accidents were distributed by day and time as follows: weekday morning, weekday afternoon and evening, weekend morning and weekend afternoon and evening. This categorization yielded the following results: weekday AM 24.7 percent; weekday PM, 36.3 percent; weekend AM, 19.3 percent; weekend PM, 19.7 percent. Adjusting for the greater number of hours during the week than on the weekend, this distribution was statistically significant ($p. < .01$). The direction of this significance was toward a greater number of accidents occurring on weekends than would be predicted if accident occurrences were randomly distributed throughout all the hours of the week.

Light Conditions

All accidents were further identified as having occurred during either daylight, darkness, or dusk, and the distribution showed a higher rate during the hours of darkness. Some 36.3 percent of the accidents occurred during the daylight hours; 5.8 percent during dusk, and 57.8 percent during darkness. This distribution was statistically significant ($p. < .01$). The general direction of this significance was toward the hours of darkness as one would suspect, and as the National Safety Council has repeatedly demonstrated. However, contrary to NSC findings, our rate during the twilight fell below the expected frequency.

Road Conditions

The condition of the road, whether dry, wet, or covered with snow or ice, was determined for each case. The 223 accidents distributed themselves by road condition as follows: 78.9 percent occurred on dry roads, 16.6 percent on wet roads and only 4.5 percent on snowy or icy pavement. This distribution was statistically significant ($p. < .05$). A greater number of accidents occurred on dry roads than expected. While inclement weather may increase the total number of accidents, it appears to have a beneficial effect for fatal accidents in an urban environment. That is, while wet or snowy road conditions may increase property damage and personal-injury-only accidents, they also limit driving speed, thereby reducing the likelihood of a fatal accident.

Weather

In addition to the condition of the roadway, information was also obtained regarding weather conditions at the time. These figures are very similar, as would be expected, to those for the road conditions reported above, with 82.5 percent of the accidents occurring during clear weather,

13.5 percent during rain and 4.0 percent during snow. Once again, however, it is apparent that inclement weather is not positively related to the causation of fatal traffic accidents.

Other Variables

Data pertaining to three other variables--the type of area in which the accident occurred, the number of lanes, and the presence of traffic control devices--were also gathered. These variables indicate that fatal traffic accidents are more than just a rural-road phenomenon. A sufficient proportion occur within urban environments--on city streets as well as expressways contained within the city's limits--to warrant their consideration as an urban social problem, as well as a national concern.

CHAPTER V

CHARACTERISTICS OF INVOLVED PERSONS

In addition to information concerning the accident event, data were gathered concerning all drivers involved, whether fatally injured or not, and injured non-drivers. The overall distribution of the demographic and social status characteristics of victims and violators is presented in summary Tables 10 and 11. Information specific to the accident occurrence such as injury sustained, physical condition at the time of the accident and contributing behavior of the driver or pedestrian, will also be discussed in this chapter.

TABLE 10

DISTRIBUTION OF VIOLATORS AND VICTIMS BY
SELECTED DEMOGRAPHIC AND SOCIAL STATUS VARIABLES

Variables	Violators	Victims	Total
Race and Sex			
Both Races:	100.0% (240)	100.0% (189)	100.0% (429)
Male	78.3 (188)	68.8 (130)	74.1 (318)
Female	21.7 (52)	31.2 (59)	25.9 (111)
Black:	100.0% (59)	100.0% (52)	100.0% (111)
Male	78.0 (46)	73.0 (38)	75.6 (84)
Female	22,9 (13)	27.0 (14)	24.4 (27)
White:	100.0% (181)	100.0% (137)	100.0% (318)
Male	78.5 (142)	67.1 (92)	73.6 (234)
Female	21.5 (39)	32.9 (45)	26.4 (84)
Age			
under 16	9.6% (23)	5.3% (10)	7.7% (33)
16 to 20	10.0 (24)	20.1 (38)	14.5 (62)
21 to 35	39.2 (94)	41.3 (78)	40.1 (172)
36 to 65	30.0 (72)	28.6 (54)	29.4 (126)
over 65	11.3 (27)	4.8 (9)	8.4 (36)
Total	100.0% (240)	100.0% (189)	100.0% (429)

TABLE 11

DISTRIBUTION OF VIOLATORS AND VICTIMS BY SELECTED DEMOGRAPHIC AND SOCIAL STATUS VARIABLES (CONTINUED)

Variables	Violators	Victims	Total
Marital Status			
Single	31.4% (69)	31.8% (51)	31.6% (120)
Married	49.1 (108)	58.8 (94)	53.2 (202)
Divorced or Sep.	19.5 (43)	9.4 (15)	15.2 (58)
Total	100.0% (220)	100.0% (160)	100.0% (380)
Occupation			
Unskilled Labor	70.4% (147)	55.2% (96)	63.4% (243)
Craft or Clerical	25.8 (54)	37.9 (66)	31.3 (120)
White Collar	3.8 (8)	6.9 (12)	5.3 (20)
Total	100.0% (209)	100.0% (174)	100.0% (383)
Residence			
High SES	22.0% (48)	23.5% (39)	22.7% (87)
Middle SES	28.9 (63)	28.3 (47)	28.6 (110)
Low SES	49.1 (107)	48.2 (80)	48.7 (187)
Total	100.0% (218)	100.0% (166)	100.0% (384)

Sex

Males are involved in fatal traffic accidents significantly more often than women. Males constituted 74.1 percent of the accident sample studied, significantly ($p < .001$) exceeding their proportion of the population at risk. This finding is consistent with national accident data, and is generally explained by the fact that males drive more and, as a result,

have a greater exposure to risk. This explanation is supported by our finding that while males constituted 81.4 percent of all the drivers involved in fatal accidents, their proportion of the pedestrians involved dropped to 57.8 percent (see Table 12).

TABLE 12

SEX DISTRIBUTION OF INVOLVED PERSONS FOR SELECTED IMPROVEMENT CATEGORIES

Sex	Driver Violator	Driver Victim	Pedestrian Violator	Pedestrian Victim	Total
Male	83.8% (145)	78.0% (96)	64.2% (43)	51.5% (34)	74.1% (318)
Female	16.2 (28)	22.0 (27)	35.8 (24)	48.5 (32)	25.9 (111)
Total	100.0% (173)	100.0% (123)	100.0% (67)	100.0% (66)	100.0% (429)

$x^2 = 30.50407$ $p. < .001$

As drivers, males were violators only slightly more often than women. Males constituted 81.4 percent of all drivers and 83.4 percent of the driver violator subsample. Females accounted for 18.5 percent of all drivers involved and 16.2 percent of the violator subsample. Thus, although males clearly constitute the bulk of the driver violators, this appears to be a result of their greater involvement in accidents generally. While this would seem to indicate that sex is not a critical variable in distinguishing between violators and victims, it is no less significant for traffic accidents than for crimes of violence.

Criminologists have always considered it significant that males commit violent crimes substantially more often than women. Yet, males are also victims more often than women. For example, it is extimated that males constitute approximately 80 percent of all homicide victims (Dept. of Justice, 1973). Similarly, males constituted 78 percent of the driver victims studied. The sex distribution of violators for both traffic accidents and homicides is also nearly identical. In 1972 males accounted for 84.6 percent of all homicide arrests, and in this study they accounted for 83.8 percent of the negligent drivers.

Although there certainly exist differences between traffic accidents and homicides, this similarity in the sex distribution of violators and victims suggests that antecedent sociological factors which determine the types of situations men and women are most commonly exposed to may play a significant role in determining the sex characteristics of both criminal and traffic violators. The same social roles which determine the fact that men argue more often and feel they must defend honor more often than women, may also determine the fact that men drive more often. For

example, the fact that men gather together in bars more often than women and the fact that when a man and a woman are traveling together in an automobile it is more likely that the man will be driving, are related to the same assumptions underlying sex-role performance. In short, cultural emphasis upon male dominance and aggressivity influences the sex characteristics of both accidents and crimes.

Race

An analysis by race resulted in a distribution of 74.1 percent (N = 318) white and 25.9 percent (N = 111) black, which differed significantly ($p. < .001$) from expected frequencies based upon the racial composition of the population at risk. Although blacks were significantly overrepresented among involved persons, there existed no direct relationship between race and involvement category; e.g., driver violator, driver victim, etc., nor did one appear when controlling for type of accident.

Thus, while blacks were overinvolved in fatal urban traffic accidents, as they are in conventional violence, their involvement in any particular category is not statistically significant (see Table 13), although there appeared a slight bias towards involvement in pedestrian accidents as both victims and violators.

TABLE 13

RACIAL DISTRIBUTION ACCORDING TO INVOLVEMENT CATEGORY

Race	Driver Violator	Driver Victim	Pedestrian Violator	Victim	Total
White	76.9% (133)	74.0% (91)	71.6% (48)	69.7% (46)	74.1% (318)
Black	23.1 (40)	26.0 (32)	38.4 (19)	30.3 (20)	25.9 (111)
Total	100.0% (173)	100.0% (123)	100.0% (67)	100.0% (66)	100.0% (429)

$x^2 = 1.57535$ $p. < .05$

Age

The continuous variable of age was collapsed into five categories: under 16 (those unable to hold valid driver's licenses), teenagers (16 to 20), young adults (21 to 35), middle aged (36 to 65), and finally, those 66 and over. For pedestrians, expected frequencies were based upon all five categories; but for drivers, the youngest group, those under 16,

were eliminated, since they are not part of the population at risk. For pedestrians and passengers, the age distribution was: under 16, 22 percent (N = 30); 16 to 20, 11.0 percent (N = 15); 21 to 35, 19.9 percent (N = 27); 36 to 65, 28.7 percent (N = 39); and over 65, 18.4 percent (N = 24). This distribution was statistically significant ($p. < .01$). Of the five age categories, it was the disproportionate involvement of the two oldest categories, particularly the high involvement of those over 65 as pedestrians, which accounted for the significance of the age distribution among pedestrians and passengers.

For drivers, the age distribution was: 16 to 20, 16.0 percent (N = 47); 21 to 35, 49.5 percent (N = 145); 36 to 65, 29.7 percent (N = 87); and over 65, 4.8 percent (N = 14). This distribution was also statistically significant ($p. < .001$). The first three age categories were all overinvolved, with the most significant overinvolvement occurring for the 21 to 35 age group. In direct contrast to pedestrians, those over 65 were the only age group underinvolved as drivers.

When comparing age categories with the four possible types of involvement, the relationship is statistically significant ($p. < .001$) as demonstrated in Table 14. The direction of the relationship identifies the

TABLE 14

AGE DISTRIBUTION ACCORDING TO INVOLVEMENT CATEGORY

Age	Driver Violator	Driver Victim	Pedestrian Violator	Ped.-Pass Victim	Total
under 16	1.7% (3)	0.0% (0)	29.9% (20)	15.2% (10)	7.7% (33)
16 to 20	12.7 (22)	20.3 (25)	3.0 (2)	19.7 (13)	14.5 (62)
21 to 35	50.3 (87)	47.2 (58)	10.4 (7)	30.3 (20)	40.1 (172)
36 to 65	28.9 (50)	30.1 (37)	32.8 (22)	25.8 (17)	29.4 (126)
over 65	6.4 (11)	2.4 (3)	23.9 (16)	9.1 (6)	8.4 (36)
Total	100.0% (173)	100.0% (123)	100.0% (67)	100.0% (66)	100.0% (429)

$x^2 = 123.75346$ $p. < .001$

21 to 35 age group as disproportionately involved as driver violators. While the teenage group (16 to 20) were involved frequently in fatal accidents, their involvement as driver victims substantially exceeded their involvement as driver violators. This distribution differs noticeably from the age characteristics of conventional violent offenders. In 1972, for example, 33.5 percent of those arrested for Part I crimes of violence were under the age of 21, while only 12.7 percent of the driver violators in the accident sample fell into this age category. The single most represented age group among accident violators consisted of those

between 21 and 35. The primary reasons for this difference between interpersonal and traffic violence are (1) individuals cannot be licensed to drive until the age of 16, (2) many young persons, although old enough to drive have only limited opportunities to do so, and (3) negligent operation of an automobile represents a form of aggressive behavior which lacks the self-extinguishing character associated with interpersonal violence. Wolfgang and Ferracuti (1967, p. 259) state, "the young male is better equipped physically than the very young, the middle aged or the very old to manifest this form (physical combat) of masculinity." Since the expression of aggressivity through driving does not bring with it the threat of immediate retaliation, it lacks the age limitations upon interpersonal violence and, in fact, may represent a type of substitute aggressive release for those whose physical combat skills or nerve has deteriorated with age.

In summary, age proved to be a relatively discriminating variable producing the following findings:

1. Those over thirty-five and, particularly, those over sixty-five were overrepresented among the pedestrians involved in fatal traffic mishaps. Young persons under 16 were not overrepresented in the pedestrian group.

2. All three categories between 16 and 65 were overinvolved in fatal accidents, but the 21 to 35 group were the most involved.

3. Those between 21 and 35 were more involved in negligent driving actions, and those between 16 and 20 were less involved than would be predicted from their proportions of the sample.

4. Those under 16 and those over 65 were most significantly overinvolved as negligent pedestrians, with a very limited involvement as such for those in the intermediate age groups.

Marital Status

To be consistent with census data, marital status was identified as single, married, widowed and divorced or separated. For involved persons over the age of 16, the distribution was: single, 31.5 percent (N = 120); married, 50.5 percent (N = 192); divorced or separated, 12.6 percent (N = 48) and widow(er), 5.3 percent (N = 20). This distribution differed significantly ($p. < .001$) from the population at risk with the single and divorced or separated overinvolved and the married and widowed underinvolved. This finding is consistent with numerous other accident analyses which have identified the single and divorced as high liability groups.

When controlling for type of accident, the relationship between marital status and involvement based on expected frequencies was different. For multiple vehicle accidents, the relationship was not statistically significant ($p. < .30$); for pedestrian accidents, significant ($p. < .02$); and for single vehicle accidents, significant ($p. < .001$). Among those groups involved in multiple vehicle collisions, only the "widow" group differed from the expected frequency to any noticeable degree. Widows were underinvolved in multiple vehicle accidents, a fact which can be accounted for by higher age and lesser amount of driving. For pedestrian accidents, single individuals were most clearly underrepresented. In one-car accidents single and divorced or separated individuals were clearly overinvolved and married and widowed persons decidedly underinvolved.

When considering involvement as either a victim or a violator, there was a statistically significant ($p. < .02$) relationship between marital status and involvement category (see Table 15). As this table shows, single persons were nearly identically represented in both the victim

TABLE 15

DISTRIBUTION OF MARITAL STATUS FOR VIOLATORS AND VICTIMS

Marital Status	Violator	Victim	Total
Single	31.4% (69)	31.8% (51)	31.6% (120)
Married	49.1 (108)	58.8 (94)	53.2 (202)
Divorced or Separated	19.5 (43)	9.4 (15)	15.2 (58)
Total	100.0% (220)	100.0% (160)	100.0% (380)

$x^2 = 7.911$ $p. < .02$ $df = 2$

and the violator categories. Married individuals constituted 49.1 percent of the violators and 58.8 percent of the victims--a slight overrepresentation in the victim category. Divorced and separated persons, however, were 19.5 percent of the violators and only 9.4 percent of the victims. Further, when controlling this relationship for sex of the involved person (see Tables 16 and 17), the statistically significant relationship between sex and involvement category disappears for females but remains ($p. < .01$) for males. Although divorced or separated females are involved as violators slightly less than the other marital categories, the divorced or separated males were negligent participants to an inordinately high degree; 82.6 percent of divorced or separated males involved were violators while only 56 percent of the single and 55.6 percent of the married men were violators.

TABLE 16

DISTRIBUTION OF MARITAL STATUS FOR MALE VIOLATORS AND VICTIMS

Marital Status	Violator	Victim	Total
Single	30.8% (52)	36.0% (40)	32.9% (92)
Married	46.7 (79)	56.8 (63)	50.7 (142)
Divorced or Separated	22.5 (38)	7.2 (8)	16.4 (46)
Total	100.0% (169)	100.0% (111)	100.0% (280)

$x^2 = 11.408$ df = 2 p. < .01

TABLE 17

DISTRIBUTION OF MARITAL STATUS AMONG FEMALE VIOLATORS AND VICTIMS

Marital Status	Violator	Victim	Total
Single	27.7% (13)	29.6% (16)	28.0% (28)
Married	61.7 (29)	57.4 (31)	60.0 (60)
Divorced or Separated	10.6 (5)	13.0 (7)	12.0 (12)
Total	100.0% (47)	100.0% (54)	100.0% (100)

$x^2 = .2263$ df = 2 p. < .05

In summary, analyses of the marital status of involved persons provided the following major findings:

1. Single and divorced or separated individuals were over-involved in fatal urban traffic accidents.

2. The above relationship does not hold for multiple vehicle accidents, but does remain for both pedestrian and single-car accidents.

3. Males either divorced or separated are extensively overinvolved as violators in urban traffic accidents.

Occupation

The occupation of involved individuals was identified, and the individual placed in one of three categories: laborer (unskilled), blue collar or sales and white collar. The percentage distribution for these three categories was: laborer, 63.4 percent (N = 243); blue collar and sales, 31.3 percent (N = 120); and white collar, 5.2 percent (N = 20). This distribution differs significantly ($p. < .001$) from expected frequencies based on census distributions, with both the white collar and blue collar groups underinvolved and the unskilled labor group highly overinvolved. This finding is of particular interest since it demonstrates an occupational distribution similar to conventional crimes of violence.

Further, the relationship between occupation and involvement as either victim or violator is statistically significant ($p. < .01$) with a larger proportion of the unskilled laborer group being involved as violators than either the blue collar or white collar groups (see Table 18). If this relationship is expanded to the four-fold involvement

TABLE 18

DISTRIBUTION OF OCCUPATIONAL STATUS AMONG VIOLATORS AND VICTIMS

Occupation	Violators	Victims	Total
Unskilled Labor	70.3% (147)	55.2% (96)	63.4% (243)
Craft or Clerical	25.8 (54)	37.9 (66)	31.3 (120)
White Collar	3.8 (8)	6.9 (12)	5.2 (20)
Total	100.0% (209)	100.0% (174)	100.0% (383)

$x^2 = 9.58531$ $p. < .01$

categorization, the relationship remains significant at the same statistical level (see Table 19). The direction of this relationship shows the unskilled labor group to be overrepresented among both driver and pedestrian violator groups, while the blue collar and white collar categories are overrepresented only among the driver victim and pedestrian victim groups. This finding demonstrates that individuals from lower SES categories are more likely to be the negligent party in a fatal urban traffic accident than those from other SES groups.

TABLE 19

DISTRIBUTION OF OCCUPATIONAL STATUS
AMONG SELECTED INVOLVEMENT CATEGORIES

Occupational Status	Driver Violator	Driver Victim	Pedestrian Violator	Ped.-Pass. Victim	Total
Unskilled Laborer	65.5% (106)	53.7% (65)	87.2% (41)	58.5% (31)	63.4% (243)
Craft or Sales	29.6 (48)	38.0 (46)	12.8 (6)	37.7 (20)	31.3 (120)
White Collar	4.9 (8)	8.3 (10)	0.0 (0)	3.8 (2)	5.3 (20)
Total	100.0% (162)	100.0% (121)	100.0% (47)	100.0% (53)	100.0% (383)

$x^2 = 18.8792$ $p. < .01$

When the relationship between occupational status and involvement as a victim or violator was controlled for sex, the relationship disappeared for females, but remained for males (Table 20). Thus, it would appear that the tendency for lower occupational status individuals to be in violation of traffic law applies only to males, as was the case with marital status. Controlling occupational status by race produced no further specification of the relationship between occupational status and involvement category.

Analysis of the occupational status of involved persons produced the following summary findings:

1. Lower occupational status individuals were significantly overinvolved in urban traffic fatalities.

2. Lower occupational status individuals were more frequently involved in a violation of traffic law at the time of the fatal accident whether their involvement was as a pedestrian or as a driver.

3. This overinvolvement of lower occupational status individuals in traffic law violation applied only to males.

Residence

The residence of each involved person was identified as either high, middle or low socio-economic status based on the census tract rankings

TABLE 20

DISTRIBUTION OF OCCUPATIONAL STATUS
AMONG VIOLATORS AND VICTIMS BY SEX

	Males			Females		
Occupation	Violators	Victims	Total	Violators	Victims	Total
Unskilled Labor	73.8% (121)	56.4% (66)	66.5% (187)	57.8% (26)	52.6% (30)	54.9% (56)
Craft or Clerical	23.8 (39)	35.9 (42)	28.8 (81)	33.3 (15)	42.1 (24)	38.2 (39)
White Collar	2.4 (4)	7.7 (9)	4.6 (13)	8.9 (4)	5.3 (3)	6.0 (7)
Total	100.0% (164)	100.0% (117)	100.0% (281)	100.0% (45)	100.0% (57)	100.0% (102)

$x^2 = 10.64732$ $p. < .01$ $x^2 = 1.10908$ $p. < .01$

discussed in Chapter 3. The percentage distribution was: from high SES tracts, 22.7 percent (N = 87); from middle SES tracts, 28.6 percent (N = 110) and from low SES tracts, 48.7 percent (N = 187). This distribution differs significantly ($p. < .001$) from expected frequencies based on the population residing in each of these SES tract categories. This finding corresponds to the status distribution by occupation, and is also consistent with what is known about the socio-economic distribution of individuals involved in crimes of violence. Furthermore, this over-representation of individuals residing in lower socio-economic status tracts corresponds to the ecological distribution previously discussed, which identified lower SES tracts as overrepresented as accident sites.

Although SES of residence demonstrated the significantly greater proportion of involved persons residing in lower-ranked tracts, it was not significantly related to the distribution of victims and violators (see Table 21). Further, controlling for the variables of race,

TABLE 21

RESIDENCE CHARACTERISTICS OF VARIOUS INVOLVEMENT CATEGORIES

SES Residence	Driver Violator	Driver Victim	Pedestrian Violator	Ped.-Pass. Victim	Total
High	24.8% (38)	26.7% (28)	15.4% (10)	18.0% (11)	22.7% (87)
Middle	32.7 (50)	30.5 (32)	20.0 (13)	24.6 (15)	28.6 (110)
Low	42.5 (65)	42.9 (45)	64.6 (42)	57.4 (35)	48.7 (187)
Total	100.0% (153)	100.0% (105)	100.0% (65)	100.0% (61)	100.0% (384)

$x^2 = 12.47154$ $p. < .05$

age, and marital status produced no additional specification on the relationship between SES of residence and involvement category. The implication of this finding is that fatal urban traffic accidents tend to be an intra-class phenomenon with roughly similar proportions of victims and violators being drawn from the same SES categories. This contention is given further credibility by the fact that there existed a statistically significant ($p. < .001$) relationship between the occupational status of the violator and that of the victim when considering the dyadic victim-violator relationship (see Table 22). The intra-class nature of this phenomenon parallels that of crimes of violence, and suggests that the same social and ecological patterns of selection operative for violent crimes are also operative in the fatal urban traffic accident.

In summary, the SES of involved persons based on residence area demonstrated that:

TABLE 22

COMPARISON OF OCCUPATIONAL STATUS FOR THE DYADIC VIOLATOR-VICTIM RELATIONSHIP

	Occupation of Violator			
Occupation of Victim	Unskilled Laborer	Craft or Sales	White Collar	Total
Unskilled Laborer	68.2% (73)	52.0% (26)	43.0% (3)	62.2% (102)
Craft or Sales	28.0 (30)	42.0 (21)	14.0 (1)	31.7 (52)
White Collar	3.7 (4)	6.0 (3)	43.0 (3)	6.1 (10)
Total	100.0% (107)	100.0% (50)	100.0% (7)	100.0% (164)

$x^2 = 21.16705$ $p. < .001$

1. Individuals from lower socio-economic status areas are far more frequently involved in fatal traffic accidents than would be predicted from their proportion in the population at risk.

2. Individuals from lower SES areas are violators significantly more often than their proportion of the accident sample would predict.

3. The urban traffic fatality is essentially intra-class phenomenon.

Interaction Variables

In addition to the demographic characteristics of involved persons, information was obtained on the contributing behavior of involved persons, the physical conditions at the time of the accident and the injury sustained. These variables were analyzed in relationship to the demographic variables and to each other to get a clearer picture of factors and processes influencing urban traffic fatalities.

Contributing Behavior

Contributing behavior refers specifically to actions by the driver of a vehicle in violation of traffic law at the time of the accident in

question. The possible contributing behaviors taken from the accident investigation form were collapsed into five categories: excessive speed; a speed violation in conjunction with some other violation; a failure to yield violation, an error of judgment, e.g., left of center, following too closely, etc.; and no traffic law violation. An individual was assigned to one of these categories only where a clear determination of contributing behavior was possible. As a result, 19 of the 296 drivers in the sample were listed as unknown because the circumstances surrounding the accident made it impossible to determine if or what contributing behavior was involved.

Of those drivers for whom determinations were made, 24.6 percent (N = 68) committed a speed violation; 6.1 percent (N = 17) were involved in at least one violation in addition to a violation of speed law; 14.8 percent (N = 41) committed a failure to yield violation and 11.9 percent (N = 33) violated the law through some error of judgment. The remaining 42.6 percent (N = 118) were involved in no violation of traffic law. Thus, 57.4 percent of all those drivers involved in fatal urban traffic accidents were violating some traffic regulation at the time of involvement and, of these, 53.5 percent were violating speed regulations.

Furthermore, of the 223 fatal accidents studied, only 7 (3.0 percent) occurred in such a manner or under such conditions that they could be identified as essentially unrelated to human error constituting a violation of traffic law. Conversely, in 97 percent of all the fatal urban traffic accidents, the human error of at least one of the participants was such that the absence of it would have most likely prevented the accident from occurring. Certainly strong arguments can be made for improvement of roads, automobiles, and traffic control devices as means of reducing traffic accidents. Still, the failure of some individuals to effectively negotiate these potentially dangerous situations must also be considered in addition to the defect itself. The traffic accident results from an interaction between individuals and their environment and it must be asked what factors account for the differential ability to successfully negotiate the environment, in addition to asking what problems exist in the environment.

Although a large proportion of individuals involved in fatal accidents were engaged in some violation of traffic law at the time of the accident, the type of violation (speed, failure to yield, judgment error, etc.) was not found to correlate significantly with the demographic variables of race, sex, age, occupation or residence. Nor did any relationship appear when controlling for type of accident. Thus, although some demographic variables were significant in their relationship to whether or not an individual was a traffic law violator, they seem to have limited bearing upon the type of violation committed. The variable of marital status, however, did produce one significant ($p < .001$) relationship. Those who were divorced or separated were overrepresented among those with violations of speed laws and underrepresented among those with no violations (see Table 23). Single drivers were slightly overinvolved in speed violations and married individuals were overrepresented in the

TABLE 23

CONTRIBUTING BEHAVIOR BY MARITAL STATUS

Contributing Behavior	Marital Status: Single	Married	Div.-Sep.	Total
Speed	38.2% (34)	18.6% (27)	55.5% (20)	30.0% (81)
Failure to Yield	7.9 (7)	17.2 (25)	19.4 (7)	14.4 (39)
Judgment Error	10.1 (9)	14.5 (21)	8.4 (3)	12.2 (33)
None	43.8 (39)	49.7 (72)	16.7 (6)	44.4 (120)
Total	100.0% (89)	100.0% (145)	100.0% (36)	100.0% (270)

$x^2 = 28.7928$ $p. < .001$

failure to yield and the error judgment groups. If one accepts that speeding is a somewhat more deliberate violation than judgment error or failure to yield, it would appear that both divorced-separated and single persons violate traffic law in a more conscious and serious manner than married drivers involved in traffic accidents.

Physical Condition

The variable of physical condition refers to alcohol usage. Individuals were identified as either intoxicated, drinking or normal (see Methodology for explanation), and alcohol consumption was not included among the categories of contributing behavior. That is, although operation of a vehicle while intoxicated is a violation of traffic law, for purposes of analysis, this variable was separated from violations involving actual operation of a vehicle or specific pedestrian actions in violation of the law. An individual who was intoxicated or drinking was identified as a driver victim or a pedestrian victim if his behavior violated traffic law in no other manner. If the categories of victim and violator were contaminated with the variable of physical condition, it would be difficult to determine the effect of alcohol consumption upon driving or pedestrian behavior.

Of those individuals for whom a clear judgment of alcohol consumption was made, 20.5 percent (N = 86) were intoxicated, 13.4 percent (N = 56) had been drinking and 66.1 percent (N = 277), had not consumed any recordable amount of alcohol prior to the accident. Although data are not available for the amount of alcohol consumption among the driving popu-

lation in general, Haddon (1962) using a control sample of individuals passing the site of a fatal accident at the same time and day of the week of the accident found that 76 percent of the non-accident group had not consumed alcohol. On the basis of these data, it appears that the accident sample's consumption of alcohol was somewhat greater than the population at risk.

There was a statistically significant ($p. < .001$) relationship between involvement category and alcohol consumption (see Table 24). It

TABLE 24

DISTRIBUTION OF PHYSICAL CONDITION AMONG SELECTED INVOLVEMENT CATEGORIES

Physical Condition	Driver Violator	Driver Victim	Pedestrian Violator	Ped.-Pass. Victim	Total
Intoxicated	31.7% (52)	1.6% (2)	25.4% (17)	23.1 (15)	20.5% (86)
Drinking	15.5 (27)	8.9 (11)	13.4 (9)	13.8 (9)	13.4 (56)
Normal	51.8 (85)	89.5 (110)	61.2 (41)	63.1 (41)	66.1 (277)
Total	100.0% (164)	100.0% (123)	100.0% (67)	100.0% (65)	100.0% (419)

$x^2 = 50.8713$ $p. < .001$

is among the drivers that the difference is most notable; 31.7 percent of the driver violators versus 1.6 percent of the driver victims were intoxicated. An additional 16.5 percent of the driver violators had been drinking while only 8.9 percent of the driver victims had consumed alcohol prior to the fatal accident. The difference between pedestrian violators and pedestrian and passenger victims is nil. This is in part an artifact of combining the two categories of passenger victim and pedestrian victim which was necessitated by the small number (N = 10) of pedestrian violators are intoxicated far more frequently than driver victims, strengthening the relationship between traffic negligence and the consumption of alcohol.

The physical condition of the involved persons was not significantly related to the variables of sex, age, or race. It was, on the other hand, related to both marital status and occupation. There was a significant ($p. < .001$) relationship between physical condition and marital status (see Table 25) with the category of divorced and separated persons overrepresented among those intoxicated and underrepresented among the alcohol-free.

TABLE 25

PHYSICAL CONDITION BY MARITAL STATUS OF INVOLVED PERSONS

Physical Condition	Marital Status: Single	Married	Divorced or Separated	Total
Intoxicated	19.1% (29)	15.7% (35)	51.1% (24)	21.1% (85)
Drinking	12.5 (19)	13.7 (28)	14.9 (7)	13.4 (54)
Normal	68.4 (104)	70.6 (144)	34.0 (16)	65.5 (264)
Total	100.0% (152)	100.0% (204)	100.0% (47)	100.0% (403)

$x^2 = 31.4262$ p. < .001

There was also a statistically significant (p. < .001) relationship between physical condition and occupational status (see Table 26) when

TABLE 26

PHYSICAL CONDITION BY OCCUPATIONAL STATUS OF INVOLVED PERSONS

Physical Condition	Unskilled Laborer	Other	Total
Intoxicated	25.6% (60)	10.9% (15)	20.2% (75)
Drinking	15.4 (36)	12.4 (17)	14.3 (53)
Normal	59.0 (138)	76.7 (105)	65.5 (243)
Total	100.0% (234)	100.0% (137)	100.0% (371)

$x^2 = 13.8805$ p. < .001

comparing the unskilled laborer group with all others. (The small number of white collar workers in the sample, and the fact that all of these for whom determinations regarding physical condition could be made were alcohol-free, necessitated combining this group with that of blue-collar and sales workers). On this basis, the laborer group recorded observed

frequencies of both intoxication and drinking considerably greater than would be expected, and the blue collar/white collar group considerably less.

In summary, analysis of the alcohol involvement of accident subjects produced the following findings:

1. The incidence of alcohol usage among individuals involved in fatal urban traffic accidents was somewhat higher than that for the general urban driving population.

2. Alcohol usage was far more common among drivers violating the law at the time of the accident than for those drivers not violating the law.

3. Alcohol usage was far more common among pedestrians violating the law at the time of the accident than for pedestrians not violating the law.

4. Divorced or separated individuals involved in fatal traffic accidents had a statistically greater propensity for alcohol involvement than either married or single individuals.

5. The unskilled laborer group had a statistically greater propensity for alcohol involvement than all other involved persons taken together.

Injury

Drivers in violation of the law at the time of the accident die significantly ($p. < .001$) more often than non-violating drivers (see Table 27). The reason for this is two-fold. First, since it is the secondary impact of the individual with the interior of the vehicle which kills, and the most common law-violation is excessive speed, the liability of such violators is greater than for those traveling slower. Second, for the violator, the accident is nearly always a head-on one, with the front of his vehicle striking another car or some fixed object. The non-violating driver, on the other hand, is just as likely to be struck from behind or from the side as he is to be struck head-on. Such side or rear-end collisions do not propel him against the front of his own vehicle with the same force as would a head-on collision. Thus, the speeding driver in violation of the law significantly increases his liability to be fatally injured if he should have an accident.

In summary, analysis of injury demonstrated that violators, in general and driver violators in particular, have a statistically greater propensity to be killed in fatal traffic accidents than persons not violating the law at the time of the accident.

TABLE 27

DISTRIBUTION OF FATAL INJURIES AMONG
DRIVER VIOLATORS AND DRIVER VICTIMS

Injury Sustained	Driver Violator	Driver Victim	Total
Fatal	53.8% (93)	18.7% (23)	39.2% (116)
Other	46.2 (80)	81.3 (100)	60.8 (180)
Total	100.0% (173)	100.0% (123)	100.0% (296)

$x^2 = 35.61902$ $p. < .001$

CHAPTER VI

CRIMINAL HISTORY AND ACCIDENT INVOLVEMENT

This chapter focuses on two aspects of the urban accident problem. First, it is concerned with the prior criminal and traffic histories of both victims and violators. Second, it presents a typology of urban traffic accidents in an attempt to demonstrate the various types of circumstantial and personal factors which combine to cause fatal urban traffic accidents.

Criminal Histories of Victims and Violators

As Table 28 shows, 46.2 percent of the violators (N = 102) had no

TABLE 28

PRIOR POLICE RECORDS OF VIOLATORS AND VICTIMS

Prior Record	Violators	Victims	Total
None	46.2% (102)	73.7% (123)	58.0% (225)
Traffic Only	14.9 (33)	10.8 (18)	13.1 (51)
Traffic and Criminal	38.9 (96)	15.6 (26)	28.9 (112)
Total	100.0% (221)	100.0% (167)	100.0% (388)

$x^2 = 32.50720$ $p. < .001$

prior record for either criminal or traffic offenses; 14.9 percent (N = 33) had prior records for traffic violations only; and 38.9 percent (N = 96) had prior police records, including criminal as well as traffic violations. In contrast, 73.7 percent of the victims (N = 123) had no prior police records; 10.8 percent (N = 18) had traffic-only prior records; and 15.6 percent (N = 26) had prior records which included criminal as well as traffic violations.

Thus, there is a statistically significant difference in the distribution of prior criminal records between victims and violators. Most important is the fact that while 38.9 percent of the violators had records involving criminal violations, only 15.6 percent of the victims had criminal histories. These data indicate that those with criminal records constitute a substantial proportion of persons responsible for fatal

traffic accidents.

Combining criminal and traffic records revealed that while 53.8 percent (N = 129) of all violators had some prior record, only 26.4 percent (N = 44) of the victims had any previous record. This 2-to-1 ratio in favor of violators having prior records strongly supports the hypothesis that perceptions favorable to violations of law extend to driving behavior as well as face-to-face interactions.

As a corollary of the finding that violators tend far more frequently to have had prior criminal and traffic records than auto accident victims, it can also be asked to what extent an individual's prior criminal and traffic history act as an effective predictor of whether he will be a victim or a violator if involved in a fatal urban traffic accident. As Table 29 shows, 45.3 percent (N = 102) of those with no record, 64.7 percent (N = 33) of those with traffic records only, and 78.7 percent of those with records including criminal violations (N = 122) were guilty of negligence.

These findings, shown in Tables 28 and 29, highlight an important aspect of traffic violence. A significant proportion of the violators in fatal urban traffic accidents have prior records for criminal violations.

TABLE 29

NATURE OF INVOLVEMENT ACCORDING TO PRIOR RECORD

Involvement	No Record	Traffic Only	Traffic and/or Criminal	Total
Violators	45.3% (102)	64.7% (33)	78.7% (96)	57.0% (221)
Victims	54.7 (123)	35.3 (18)	21.3 (26)	43.0 (167)
Total	100.0% (225)	100.0% (51)	100.0% (122)	100.0% (388)

$x^2 = 32.5072$ $p. < .001$

It has previously been shown that individuals involved in fatal accidents, particularly those involved in negligent behavior, exhibit demographic characteristics similar to individuals involved in criminal law violations (see Chapter 5). The findings presented here show that violations of traffic laws are closely related to violations of criminal laws, and that for a sizable proportion of the violators, negligent traffic behavior is part of a behavior pattern and is not a random, circumstantially induced event. These data lend further weight to the hypothesis that the socially derived perceptions conducive to involvement in criminal activity extend to traffic law violations as well.

Types of Criminal Violations

As shown in Table 30, 9.3 percent (N = 8) of the violators with criminal records were guilty of property crimes; 29.1 percent (N = 25) had criminal records including both personal and property crimes; and 61.6 percent (N = 53) had prior records involving personal crimes only. The victims with criminal records showed 3.8 percent (N = 1) with property crimes only; 11.5 percent (N = 3) with personal and property crimes, and 84.6 percent (N = 22) with prior records for both personal and property crimes.

TABLE 30

TYPES OF PRIOR RECORDS FOR VICTIMS AND VIOLATORS WITH CRIMINAL HISTORIES

Criminal Record	Violators	Victims	Total
Property Only	9.3% (8)	3.8% (1)	8.0% (9)
Property and Personal	29.1 (25)	11.5 (3)	25.0 (28)
Personal Only	61.6 (53)	84.6 (22)	67.0 (75)
Total	100.0% (86)	100.0% (26)	100.0% (112)

$x^2 = 28.7146$ $p. < .001$

The importance of these data is clearly self-evident. Among involved persons with criminal records, there is an inordinately high percentage of records for crimes against the person. Among the violators with criminal records, 61.6 percent had previous records for personal crimes only. Adding to this those violators with records, including both personal and property crimes brings to 90.7 the percent of violators with criminal records who had committed a prior crime of violence. This finding

indicates that not only are individuals with criminal records over-represented among the violators, but that if a violator in a fatal urban accident has a criminal record, it will most likely include violent crime(s).

Previously, we have suggested that for a significant proportion of violators, negligent involvement in a fatal urban traffic accident is not a random event, but an extension of a life style which includes a tendency toward law violation. This fact has been noted by other researchers (see Chapter 3). The findings presented here, corroborated this observation, and clearly specifies that it is those individuals with a tendency to commit personal crimes who have the greatest propensity for negligent traffic involvement. Thus, among violators with criminal records, it is not simply the tendency to violate the law which correlates with negligent traffic involvement, but the tendency to commit crimes of violence which is most strongly related to negligent traffic behavior. The tendency to behave aggressively in face-to-face interaction appears to extend to traffic behavior as well.

To further investigate the relationship between involvement as a violator and a prior history of personal crimes, individual criminal histories were evaluated for misdemeanor and felony violations according to type of crime, and for gross number of offenses committed. Table 31 presents the distribution of felony and misdemeanor offenses for violators, and Table 32 presents the same distribution for victims.

TABLE 31

DISTRIBUTION OF OFFENSES BY TYPE AND SERIOUSNESS FOR VIOLATORS WITH CRIMINAL RECORDS

Offense Type	Felony	Misdemeanor	Both	Total
Property Only	3.5% (3)	4.7% (4)	1.2% (1)	9.3% (8)
Property and Personal	7.0 (6)	16.2 (14)	5.8 (5)	29.1 (25)
Personal Only	7.0 (6)	51.1 (44)	3.5 (3)	61.6 (53)
Total	17.5 (15)	72.0 (62)	10.5 (9)	100.0 (86)

Due to the small observed frequencies in many of the cells in these tables, they are presented for their informational, rather than statistical, utility. It is interesting to note that the violators had committed serious violations of criminal law less frequently than the victims. Among the violators, 17.5 percent had felony arrests only, and 10.5 percent had arrests for both felony and misdemeanor offenses, for a total of

TABLE 32

DISTRIBUTION OF OFFENSES BY TYPE AND SERIOUSNESS FOR VICTIMS WITH CRIMINAL RECORDS

Offense Type	Felony	Misdemeanor	Both	Total
Property Only	3.9% (1)	0.0% (0)	0.0% (0)	3.8% (1)
Property and Personal	7.7 (2)	0.0 (0)	3.9 (1)	11.5 (3)
Personal Only	34.6 (9)	34.6 (9)	15.3 (4)	84.6 (22)
Total	46.2 (12)	34.6 (9)	19.2 (5)	100.0 (26)

28 percent of the violators who had committed a felony. The victims, on the other hand, recorded 46.2 percent with felony records only and 19.2 percent with both felony and misdemeanor records--a total of 65.4 percent with felony involvement. However, what is critical is the fact that over half (51.1 percent) of the violators had records, including personal misdemeanors, while only 34.6 percent of the victims fell into this category. These personal misdemeanors included simple assaults, assault and battery against a female, and carrying concealed weapons. The large number of violators with records for such offenses indicates that it is primarily the situationally aggressive individual, and not the hard-core property offender, who accounts for the positive relationship between negligent driving and personal crimes. It is those individuals prone to momentary violent eruptions, as indicated by the types of crimes most strongly represented among the violators, who are most prone to negligent traffic involvement.

While these findings strengthen the hypothesis that for some individuals the traffic situation represents merely another forum for the expression of violent tendencies, it is important to also show the frequency of various types of crimes for violators and victims. Table 33 presents the gross number of offenses of various types, the number of individuals responsible for that number of offenses, and the rate per offense for both victim and violator groups.

As Table 33 shows, the violator group constitutes a far more criminal population than the victims. As a group, violators with criminal records tend to commit more crimes per person than do the victims. When considering specific categories of crimes, it is interesting to note that for property crimes (both felony and misdemeanor) the rates for the victim group exceed that of the violator group. However, for personal crimes, the violator rates (for both felony and misdemeanors) greatly exceed those in the victim category. Of all the crimes accounted for by the violator group, 43.6 percent were for personal misdemeanors, while only 22.7 percent of the crimes accounted for by the victims were for such crimes.

TABLE 33

NUMBER OF OFFENSES AND RATES FOR VIOLATORS AND VICTIMS WITH CRIMINAL RECORDS

Offenses	Violators				Victims			
	No.	No. of Persons	Rate	%	No.	No. of Persons	Rate	%
Prop. Fel.	39	15	2.6	7.8	17	4	4.2	25.8
Prop. Mis.	50	24	2.1	10.0	3	1	3.0	4.5
Pers. Fel.	55	20	2.8	11.0	17	16	1.1	25.8
Pers. Mis.	219	64	3.4	43.6	15	14	1.1	22.7
Intox (non-traffic)	139	41	3.4	27.6	14	6	2.3	21.2
Total	504	164	3.1	100.0	66	41	1.6	100.0

While the personal-property distribution of offense types among the victims is more nearly even, it is clear from these data that the violators with criminal records seem to have been drawn from the subculture of violence. Among the victims, 30.3 percent of all the crimes committed were property crimes, while among the violators, property crimes accounted for only 17.8 percent. This fact, combined with the overrepresentation of personal misdemeanors in the violator group, clearly substantiates the hypothesis that many individuals responsible for fatal urban traffic accidents have histories of repeated violent eruptions. For these individuals the automobile is not merely a means of transportation; it is a weapon--a tool with which to release hostility.

Another fact which strengthens the link between violators with criminal records and the subculture of violence is the pattern of alcohol usage represented by the two groups. The violator group had a much higher frequency of repeated arrests for public intoxication than the victim group (3.4 per person versus 2.3 per person). It has long been known that violent crimes, particularly those not associated with monetary gain (simple assault resulting from domestic quarrels, Saturday night tavern brawls, etc.) are frequently preceded by drinking. Thus, among the violators with criminal records, there is a history of both minor personal crimes and intoxication, a pattern frequently associated with the subculture of violence.

In summary, these data suggest that:

1. Persons with criminal records are significantly over-represented among those responsible for fatal urban

traffic accidents.

2. Those with no criminal or traffic histories have the lowest statistical propensity to be violators in fatal urban traffic accidents.

3. Those with prior records for traffic violations only are overrepresented among the violators in fatal urban traffic accidents, but their representation is not as disproportionate as those whose prior records include criminal as well as traffic violations.

4. An individual involved in a fatal urban traffic accident who has a criminal record will in all probability have committed and been recorded for a personal crime at some time in the past.

5. Of those with criminal records, a substantially larger proportion of violators have prior records including personal misdemeanors than do victims.

6. Violators with criminal records account for a larger gross number of crimes than do victims with criminal records.

7. Violators with criminal records commit more personal crimes per individual than do victims.

8. Violators with criminal records are arrested for public intoxication more frequently per individual than are victims.

9. Violators with criminal records, as a group, represent a more criminal population than victims with criminal records.

10. Violators with criminal records exhibit criminal patterns similar to persons identified with a subculture of violence.

A Typology of Fatal Urban Traffic Accidents

Our analysis of fatal urban traffic accidents up to this point has been strictly statistical in nature. While such empirical data are essential for a sociological portrait of the problem, they do not provide a comprehensive understanding of the traffic accidents quantified.

In addition to the statistical analyses, each accident event, and the circumstances surrounding it, was closely studied to derive an overall understanding of the complex interaction of variables culminating

in the fatal traffic accident. In this qualitative context, there began to emerge four distinct types of urban traffic accidents: the simple error judgment accident, the simple alcohol accident, the violent eruption, and the subcultural accident, or, more graphically, the "Saturday night special."

Presented below is a description of the critical components of each accident type followed by an illustrative case. The cases presented are actual accident events in the sample studied. They were chosen as being characteristic of a given type, rather than as a composite of all the components of a particular type. The utility of this typology lies not in the exact correspondence between the accident categories and actual accident events, but in the sensitizing value of "ideal types." Such a presentation can provide an appreciation for the dynamic factors which are difficult to capture through purely quantitative analysis.

The Simple Error Judgment Accident

These accidents are distinguished by (1) a clear lack of contributing motivational factors on the part of the violating driver, and (2) the relatively chance or "accidental" concurrence of several accident-related factors. Although such accidents frequently occur because of some unwise or negligent act on the part of the driver, this behavior is essentially unrelated to individual psychological or subcultural factors. The simple error judgment accident is the type of accident which, given a moment of inattention, could happen to almost any driver.

Case #1

The Simple Error Judgment Accident

Description

Driver #1 was proceeding, within the posted speed limits, on a two-lane, undivided road in a sparsely settled portion of town. Draped across the seat on the passenger's side was a suit, just picked up at the cleaners. The weather was warm and the car windows open. A strong gust of wind blew the newly cleaned suit from the front seat-back onto the floor in the back seat section of the car. The driver leaned back and attempted to reach behind the seat to pick up the suit from the floor. In so doing he took his eyes off the road causing his car to drift left of center. He failed to see a car approaching in the opposite direction and a head-on collision followed killing the driver of the approaching car and injuring the negligent driver. The violating driver was cited for being left-of-center and also charged with homicide by vehicle in the second degree. He was found guilty on the homicide charge and sentenced to 30 days in jail (suspended) and a $200 fine ($100 suspended).

The negligent driver in this accident was a white male, 27 years of age and married. He was employed as a sales representative for an oil firm and had no prior record, with the exception of a traffic citation for having an improper taillight.

The victim was a white male, age 35, married, and employed as a carpenter. He had no prior record for either traffic or criminal violations.

The Simple Alcohol Accident Type

The critical components of simple alcohol accidents are (1) impaired judgment and driving ability following the excessive consumption of alcohol, (2) the volitional decision to drive after drinking, and (3) a failure to compensate for the impaired driving skill. In these cases it is not the mere consumption of alcohol which is responsible for the accident, but the alcohol-induced tendency to drive in a more careless manner, and generally at a somewhat higher speed than would normally be the case. Thus, the majority of these accidents involve a violation of one or more traffic laws in addition to driving while intoxicated. Additionally, in many cases the tendency toward intoxication is the result of other antecedent variables such as personality and life-situation problems.

Case #2

The Simple Alcohol Accident

Description

Driver #2 had spent the majority of a Thursday evening in a bowling alley drinking, socializing and attempting to locate a woman willing to spend the night with him. At about 1:00 in the morning (noticeably intoxicated), he left the bowling alley. Approximately one mile from the bowling alley he lost control of his car and sideswiped a telephone pole. However, he did not stop his car and continued on toward home. A half mile beyond this first accident he rounded a curve on the wrong side of the road. An older Volkswagen was approaching from the opposite direction. The driver of this second car swerved to miss the vehicle on his side of the road, but was stuck in the left front fender. The impact sent the smaller car off the road and into a tree, killing the innocent driver. The drunken driver, either failing to be fully aware of the accident or fearing the consequences, continued homeward.

The negligent driver was a white male, age 30 and divorced. At the time of the accident he was employed as an unskilled factory laborer. His prior record, although having no criminal violations, included two

convictions for operating a motor vehicle while intoxicated and three other moving violations, two for excessive speed and one for failure to yield at a stop sign.

The victim was a white man, age 45, married and employed as a truck driver. He had no prior record, either traffic or criminal at the time of the accident.

After a rather lengthy investigation, sufficient information was obtained to charge the negligent driver with operating a motor vehicle while intoxicated and vehicular homicide in the first degree. He was found guilty by a judge after pleading "nolo contendere." He was sentenced to one year of probation and a $75 fine.

The Violent Eruption Accident

These incidents (1) follow shortly after a hostile and aggression-provoking personal interaction episode which (2) transforms the automobile into a means for releasing or expressing this aggression. Alcohol usage may or may not be involved prior to the accident, and the specific hostile interaction frequently stems from some other antecedent condition making the individual prone to such eruptions. These accidents have the additional characteristic that in some cases they may be related to suicidal motivations. Although fully intended and conscious suicide does not appear to characterize these accidents, the "I don't really care what happens to me," or "Won't she(he) be sorry then" attitude associated with many of the antecedent hostile interactions may induce the driver to take risks greater than normal.

Case #3

The Violent Eruption Accident

Description

Driver #3 had recently been fired from his position as a machine operator in a factory. On the night of the accident, his wife returned home from her job as a waitress to find her husband watching television and drinking a beer. A violent argument ensued centering around their lack of money, and his present lack of employment. After about 20 minutes of violent argumentation, the husband left the house saying that he was "going for a ride to cool off." Since it was winter, it can be assumed that "to cool off" was a reference to his emotional rather than physical state. He drove away from the house abruptly, leaving tire marks (rubber). Approximately a half mile from his home, he failed to negotiate a left hand turn at a cross street and first struck a telephone

pole and then several trees. Tire marks at the scene of the accident indicated that the automobile had been traveling at a high rate of speed, and that this was the reason for his failure to negotiate the turn. The tire marks further indicated that the driver attempted to avoid the accident.

The driver was a white male, aged 37 and married by common-law. He was unemployed at the time of the accident, but had previously been an unskilled machine operator. His prior record included two convictions for assault and battery on a female, one arrest for investigation in connection with an aggravated assault, and three moving violations, all for excessive speed.

Since the negligent operator in this accident was killed, no charges were filed.

The "Saturday Night Special"

These accidents are distinguished by (1) their correspondence to subcultural patterns of behavior, (2) their similarity to situational circumstances surrounding conventional crimes of violence and (3) the similarity of individuals involved with those persons prone to commit conventional crimes of violence. These accidents generally involve alcohol use and occur in the context of weekend-evening entertainment. While these accidents do not constitute the majority of urban traffic accidents, incidents of this type accounted for approximately 15% of the accidents studied. Because of their subcultural aspects, they provide a particularly interesting focus for the criminologist concerned with the auto accident phenomenon.

Case #4

The Saturday Night Special

Description

On the night of the accident (Saturday) two men in separate cars along with several passengers (1 male and 3 females) began barhopping in a lower SES inner-city area. After several stops at taverns and one private party, they stopped for gasoline at a service station in an industrial and warehouse area near the section where they had been barhopping. While at the station an argument erupted between the two drivers, apparently concerning in whose car one of the female passengers would ride. The two cars left the filling station at a high rate of speed with

all of the passengers in the lead car with the other driver by himself. It appeared to the filling station attendent that the latter was chasing the former's car. Approximately one and a half miles from the filling station the first car failed to negotiate a left-hand turn leading into a concrete railroad underpass. His vehicle struck the bridge abutment killing the driver and one female passenger. The driver in the second car, following close behind, managed to avoid the first car, but in doing so also struck the bridge abutment. However, although his car was damaged, he was unhurt, and the car remained drivable. Seeing that the accident to the first car was very serious, he became frightened and left the scene of the accident and returned home.

It was later learned that the second driver feared the consequences of carrying a concealed weapon and returned home to hide the unlicensed pistol which he had been carrying during the evening. Also, not wanting to be implicated in the accident, he hid his own car in the garage and returned to the scene of the accident in his mother's automobile. Once at the scene of the accident, he posed as the husband of one of the injured females. It was not until several days after the accident that the investigating officers were able to determine that the supposed husband of one of the injured victims was in actuality the driver of the mysterious second car known to have been at the scene of the accident.

The first driver, the one who died, was a black male, age 32. At the time of the accident, he was separated from his wife and employed as a construction laborer. His prior record included two convictions for assault and battery, one weapons charge, and three disorderly conduct convictions. His traffic record included four moving violations (one for operating a vehicle while intoxicated).

The surviving driver was a black male, aged 29. At the time of the accident he was unmarried and was employed as a laborer. His prior record included several unspecified juvenile violations, and two arrests for disorderly conduct as an adult. His traffic record included one citation for failure to yield at a stop signal, and one citation for failure to display proper license tags--both citations being given at the same time.

The passengers included one black male, aged 17, and three black females aged 17, 20, and 21.

Survivors' statements indicated that all those involved had been drinking heavily prior to the accident, though only the fatally injured driver and one female passenger were of legal drinking age. The deceased was legally intoxicated (blood alcohol in excess of 0.10%) at the time of the accident. Since he was killed, and the other driver had not struck the first vehicle, no charge for manslaughter by vehicle could be made against either driver.

The typology presented here is "ideal typical" in nature. Although no particular traffic accident will necessarily demonstrate all of the components of any single category, sufficiently strong similarities will

exist to warrant its location in one of the four accident categories.

The first category, the simple error-judgment accident, corresponds most closely to the term "accident" and accounts for approximately 30 percent or the accidents studied. The second category, the simple alcohol accident, accounts for approximately 35 percent of the accidents studied, and is a type given considerable attention by those concerned with the accident problem. The last two categories, the violent eruption and the "Saturday night special," account for approximately 20 percent and 15 percent respectively. These two categories, clearly important elements of the overall traffic picture, have received far less research attention.

It is hoped that this typology will stimulate further research focused upon those traffic accidents which are clearly influenced, in part, by subculturally learned patterns of behavior.

CHAPTER VII

CONCLUSION

The findings presented here indicate that for many variables considered important by sociologists and criminologists, the patterns of fatal traffic accidents and traffic negligence are markedly similar to the patterns of violent crimes. The sex, race, age, marital status, socio-economic and criminal offenses characteristics as well as the ecological distribution of both forms of violence, although not always identical, are sufficiently similar to hypothesize that both forms of violence arise from the same social forces.

Of course, accidents differ from violent crimes in that the former is an impersonal form of violence and the latter an interpersonal form, and causal sequence leading to each is somewhat different. What, then, do the sociological similarities between these two forms of violence mean? How important is the fact that one is directed at specific persons and the other may result from a more generalized willingness to risk violent outcomes? There exist three alternatives for explaining the similarities found.

First, it could be concluded that the sociological characteristics identified influence both phenomenon similarly, and that impersonal violence is produced by the same social forces as interpersonal violence.

Second, it could be concluded that, while similar, the sociological characteristics identified are meaningful indicators of social forces for one phenomenon, but not the other.

Third, it could be concluded that the sociological characteristics identified are meaningful for neither phenomenon, and that each is the product of different factors not even yet considered by social scientists.

Of these, the first explanation offers the most fruitful ground for future investigation of traffic accidents and traffic behavior. The second and third alternatives require drastic paradigm shifts while offering no direction in accomplishing this task. The first conclusion, however, does demand an extensive re-evaluation of our contemporary notions regarding traffic accidents. There is a need to consider whether broad sociological forces may be sufficiently diffuse in their impact upon human behavior as to influence a number of seemingly disparate phenomena.

The tendency to risk harm to self, others or both may have as critical an impact upon a person's traffic behavior as it has upon his interpersonal conduct. If this is the case, then socio-culturally learned perceptions and the sociological factors which underlie these may be as much a part of violence on the road as violence in the streets.

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