

STRUCTURAL CORRELATES OF CRIME REPORTING:

A MINI-LONGITUDINAL ANALYSIS

by

MEI-LYN KU

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Supervisor: Dr. Daniel J. Koenig

ABSTRACT

It is the purpose of this study to examine whether certain structural characteristics are significantly related to crime rates and whether the relationships between those structural characteristics and crime rates are constant over time. This is done by investigating the relationship between specific structural indicators and crime rates using multivariate analysis for data from 1960 and 1970. Two hypotheses are tested:

1. That structural characteristics are significantly related to crime rates; and
2. That the relationships between structural characteristics and crime rates are constant over time.

Eight structural variables that have most frequently been found to be associated with crime rates in previous research are used as independent variables in this study. These are: (1) age; (2) sex; (3) race; (4) population density; (5) urbanization; (6) unemployment; (7) mobility; and (8) socioeconomic status. The data gathered in the present thesis include information from all 50 states in the United States for both 1960 and 1970.

It was found that only urbanization and percent black are significantly related to three categories of crime rates (property crime rates, violent crime rates and total crime rates). It was also found that the relationships between structural characteristics and crime rates are not constant over time. It is suggested that future studies on structural correlates of crime should carefully control the related variables in order to more clearly establish the relationship between structural characteristics and crime rates.

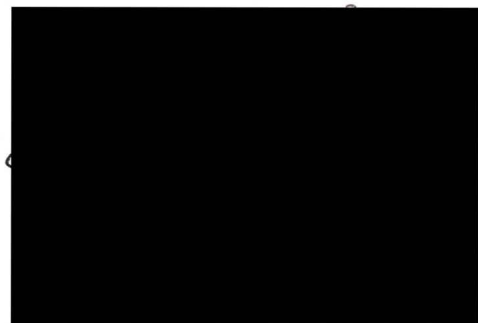


TABLE OF CONTENTS

ABSTRACT.....	ii
LIST OF TABLES.....	v
CHAPTER	
I. INTRODUCTION.....	1
II. REVIEW OF THE LITERATURE.....	6
III. METHODOLOGY.....	24
IV. RESULTS.....	40
V. DISCUSSION AND CONCLUSION.....	45
BIBLIGRAPHY.....	53

LIST OF TABLES

TABLE	Page
I. CORRELATIONS FOR STRUCTURAL VARIABLES, USING COMBINED DATA 1960 AND 1970.....	27
II. THE BETA WEIGHTS AND SIGNIFICANCE TEST OF THE REGRESSION COEFFICIENTS FOR STRUCTURAL AND TIME VARIABLES, USING COMBINED DATA 1960 AND 1970.....	41
III. THE SIGNIFICANCE TEST OF THE REGRESSION COEFFICIENT, B, FOR INDIVIDUAL STRUCTURAL VARIABLES IN 1960 AND 1970.....	44

CHAPTER I

INTRODUCTION

In recent years, crime has become a serious concern to North Americans. Since the late 1950's many countries in the world, especially in the United States, have reported great increases in the rates of juvenile delinquency and crime. Newspapers, television and other mass media have given much prominence to these phenomena. Violence, riots and crimes have frequently been reported in newspapers and periodicals. Some of these reports, television shows, and movies undoubtedly may have exaggerated the situation, but they have aroused public concern.

Through several surveys and public opinion polls commissioned by the President's Commission on Law Enforcement and the Administration of Justice (1967), it was found that crime was mentioned by the general public as the second most pressing problem in the United States, second only to the problem of race relations. A more recent survey also reveals that, in 1975, 70 percent of Americans felt that crime in their home areas had increased in the past year, compared to 46 percent who believed this in 1967 (Roper Public Research Center, 1975:32). Another 1975 survey also shows that 45 percent of Americans are afraid to walk in their neighborhood at night, compared with 31 percent in

1968 (Roper Public Research Center, 1975:84).

The study of crime attracts the attention of many sociologists, partly because of public apprehension about crime. Generally, the study of crime can be classified into studies which take as units of analysis: individuals, geographical areas (such as census tracts, cities, standard metropolitan statistical areas, and states), or entire societies. The study of individuals focuses on the characteristics of criminals (Sutherland, 1931; Zeleny, 1933; Ferentz, 1954; Woodward, 1955). The study of geographical areas and societies focuses on the societal and geographical structural conditions in which crime occurs (Boggs, 1965; Chilton, 1964; Schmid, 1960; Schussler and Slatin, 1965; Polk, 1967; Quinney, 1966; Wellford, 1974; Wolf, 1971). It is sometimes difficult to obtain information at the individual level. Consequently, the study of crime at the levels of geographical areas or societies is often used because of relative completeness of the data gathered at geographical or societal levels.

The study of crime at the societal level is less frequent than the study of crime at the geographical area level. Not only is it more difficult to collect data from different societies than from different geographical areas of the same society, but also the particular definition of

crime is more consistent within any one society than in different societies. However, there are still some problems concerning the consistency of definitions of crime at different points of time even within the same society. Nevertheless, those problems are not as extensive as the problems which exist in comparing different societies.

Much of the past research on the study of the relationship between structural characteristics and crime rates used only simple correlations or other univariate statistical methods. For example, many researchers have found that unemployment is positively related to crime rates. But we also find that people who are unemployed are usually young, male, black and poor. Thus without controlling the variables of age, sex, race and socio-economic status, the real relationship between unemployment and crime rates may not be established. Further, most research has examined the relationships between structural characteristics and crime rates only at a specific point in time. This kind of one-shot study tells us only part of the story. Because no comparison group is used, Campbell and Stanley (1972:6) state that: "Any appearance of absolute knowledge or intrinsic knowledge about singular isolated objects, is found to be illusory upon analysis."

It is the purpose of the present study to examine

whether structural characteristics that have most frequently been found to be associated with crime rates, are significantly related to crime rates when multivariate statistical techniques are used. In addition, whether the relationships between structural characteristics and crime rates are constant over time is also examined. Specifically, two hypotheses are tested. The first hypothesis is that structural characteristics are significantly related to crime rates. The second hypothesis is that the relationships between structural characteristics and crime rates are constant over time. The structural characteristics indicated here are those social and demographic characteristics of a geographical area. They include age, sex, race, population density, urbanization, mobility, unemployment and socio-economic status.

The data gathered in the present thesis include information from all 50 states in the United States for both 1960 and 1970. The United States was chosen for this study primarily because of the availability of relatively complete and consistent measures for both structural indicators and crime rates. Secondly, the United States is a society that has experienced substantial changes in officially reported crime rates.

The independent (structural) variables employed

in the present thesis are constructed primarily from information provided from the 1960 and 1970 United States Censuses. Additional data about these independent variables were taken from the 1960 and 1970 Statistical Abstracts of the United States.

The dependent variables were crime rates. For each of the 50 states a crime rate was constructed from the Uniform Crime Reports for 1960 and 1970. According to the Uniform Crime Reports (UCR), crimes are defined as "offenses known to the police". This definition of crime is used in the present study. Crime rates are studied under three broad categories: (1) violent crime (including homicide, forcible rape, robbery, and aggravated assault); (2) property crime (including burglary, larceny, and auto-theft); and (3) total crime (including both violent and property crimes).

In this chapter, we have provided an orientation to what follows. In the second chapter, the relevant literature is reviewed. The third chapter contains a discussion of methodology, while the fourth chapter reports results of the data analyses. Finally, in the fifth chapter is found a discussion and interpretation of the findings.

CHAPTER II

REVIEW OF THE LITERATURE

A population aggregate has been defined by Theodorson and Theodorson (1970:8) as " a number of persons who share certain social characteristics but are not socially organized". A subset of a population aggregate is a "collectivity" which is a number of persons who share certain social characteristics and are socially organized (i.e. interaction among members). Although the concern of this study is with population aggregates as a unit of analysis, there are common features to both population aggregates and collectivities as a unit of analysis. Both are concerned with a large number of individuals generally sharing certain collective representations and having some social characteristic or characteristics in common and both are concerned with stochastic relationships involving a number of individuals.

The study of a number of persons as the unit of analysis has a rich sociological heritage, which includes Durkheim. For Durkheim, social facts are the subject matter of sociology. Social facts are different from individual facts. A "social fact" is defined as "every way of acting, fixed or not, capable of exercising on the

individual an external constraint" (Durkheim, 1966:13). Several individuals generate a social fact only when they contribute their action to a joint activity. This joint activity differs from individual action. It consists of ways of acting, thinking, and feeling external to the individual. So social facts can not be understood by simply referring to the nature of human beings. Social facts can only be understood by reference to social interaction among people. The study of human nature is the study of the individual and this is the subject matter of psychology. The study of interacting human beings is the study of collectivities and this is the major concern of sociology. Durkheim was concerned with collectivities rather than with individuals.

For Durkheim, a hypothesis is sociological when it establishes a connection between characteristics of human collectivities (that is, collective properties), on the one hand, and observed regularities of human conduct, on the other. The major point involved in this conception is that collective properties are factors that produce uniform effects under specified conditions. The study of these effects is the main task of sociology. This view is stated in Durkheim's Suicide. In Suicide, Durkheim (1966:

208-209) formulates what has come to be known as the "law of suicide". This law states that suicide varies with the degree of integration of the social groups of which the individual is a part. The degree of integration is a characteristic of a group, and the suicide rate is not only a statistical construct, but it also expresses a certain state of the group mind (Durkheim, 1966:299). Therefore, both the degree of integration and the suicide rate represent group traits. As traits, they pertain to a group of people collectively, not distributively. Hence, they are social facts.

Durkheim's special contribution to sociology is his finding that collective properties function as independent variables and constitute one class of specifically social factors. The implications drawn from Durkheim's study can be schematically presented as follow:



This means that "social factors" as items requiring explanation and, in turn, as a source of explanation, are the focus of sociological analysis.

Durkheim's view apparently has influenced many later sociologists including those who have undertaken ecological studies on crime rates. In the United States, ecological theories originated from the work of the early Chicago School (1900-1930). The first ecological study in the United States was conducted in 1921 by Clifford Shaw (1929) to investigate regularities in the variation of crime rates within the city of Chicago. Following this, a series of ecological studies were conducted in Chicago and other cities. In general, there has been a considerable amount of agreement among the various studies as to the social and demographic characteristics of areas which are most closely associated with crime.

The early ecological studies focused upon cities or neighbourhoods within cities. Later, ecological studies extended to states and other geographical areas as well. For example, Lottier (1938:329) reported that specific offenses have a gradient pattern throughout the country and Shannon (1954:264) found a similar pattern of offense rates in the United States. The results of these ecological studies suggest that crime rates have a geographical distribution according to states and regions in the United States and that crime rates vary with the structure of geographical areas. The assumption underlying those ecolo-

gical studies was that "the structural characteristics of population aggregates are causally related to criminal behavior (Quinney, 1966:46). Thus, ecological studies can be extended to studies focusing upon states as the unit of analysis.

There are many structural variables that have been studied. In the present thesis, eight of these structural variables were included because they have most frequently been studied and have been found to be most consistently related with crime rates. The eight structural variables are: (1) age; (2) sex; (3) race; (4) population density; (5) urbanization; (6) mobility; (7) unemployment; (8) socio-economic status.

(1) AGE

Generally, researchers have found that young persons have higher crime rates than older persons (the President's Commission on Law Enforcement and Administration of Justice, 1967a:207-210, 1967b:56; Wolfgang, 1961; Deiker, 1974; Sagi and Wellford, 1968; Ferdinard, 1970; Wellford, 1973; Vinson and Marshall, 1973:207). For example, the age group under twenty-five years of age constituted only 43 percent of the population of the United States in 1960, whereas it accounted for almost 90 percent of the arrests

for auto theft and over 60 percent of the arrests for the remaining property crimes. As the President's Commission on Law Enforcement and Administration of Justice (1967b:56) also reported, persons 11-24 years of age in 1965 constituted only 23.4 percent of the total population, but they accounted for 50 percent of violent crimes and 75.2 percent of property crimes.

The excess crime rates in younger age categories compared to that in older age categories may be explained by differences in physical ability. Young people are generally stronger and more vigorous than older people. Therefore, young people can be expected to commit more crimes than older people (Sutherland & Cressey, 1970:125).

From official statistics, young people appear more inclined to commit crimes. Consequently, a change in the age composition of the population can be expected to have an influence on crime rates. For this reason, the age composition of the population has been seen as an important factor affecting crime rates.

(2) SEX

One of the most consistent correlates of crime is that the crime rate for men is considerably higher than the crime rate for women (Lunden, 1967:101-2; Sutherland

and Cressey, 1970:126; the President's Commission on Law Enforcement and Administration of Justice, 1967:44; Short and Nye, 1958; Haggart, 1970; Hoffman, 1973). Lunden (1967) compiled sets of statistics into two tables and found that, with few exceptions, about 90 percent of all people arrested in 1963 in the United States were men, while only 10 percent were women. The Uniform Crime Reports (1976:187) also indicates that in 1975 about 80 percent of all people arrested were male while only 20 percent were female.

There are a variety of explanations for the higher crime rates among men than among women. These include biological, psychological and sociological explanations. The sociological explanation (Sutherland & Cressey, 1970:127; Parsons, 1949:219, 257-9; Haggart, 1970:44) suggests that the vast difference in arrest rates between males and females is accounted for by differential socialization and differential supervision.

With the development of women's liberation, the traditional roles of women have been changing. Women have more legal rights than before. Though there is still inequality between men and women, the trend (at least in the Western countries) is toward similar treatment of women and men in all human activities. So we would anticipate that the crime rate of females would approach that of males as

women's rights are expanded.

There is strong evidence to show that the female crime rate is increasing more rapidly than the male crime rate. For example, the Uniform Crime Reports (1939, 1948, 1958, 1965, 1968, 1971) show that in the United States females were 5 percent of the persons under 18 whose arrests were reported to the FBI in 1938; 10 percent in 1947; 12.7 percent in 1957; 16 percent in 1964; 18 percent in 1967; and 20 percent in 1970. Between 1960 and 1970, the male arrest rate for serious crimes increased by 72.7 percent, but the female rate increased by 201.6 percent.

We also find that the female crime rate most closely approaches the male crime rate in countries where females have the greatest degree of freedom and equality with males (Sutherland & Cressey, 1970:127). Thus, western European countries and the United States have higher crime rates among women than countries such as Japan, where women are more closely supervised. Thus, the sex ratio can be expected to influence crime rates.

(3) RACE

Statistical records often indicate that blacks are disproportionately arrested, convicted, and imprisoned (Wolfgang, 1961; Beasley & Antunes, 1974:446; Boggs, 1965: 906; Chilton, 1964:73; Schuessler & Slatin 1964:130; Quinney,

1966:50; Schuessler, 1962:316-322; Sutherland & Cressey, 1970:130-7; the President's Commission on Law Enforcement and Administration of Justice, 1967a:78; Kephart, 1954; Fox and Volakakis, 1956; Voss and Hephurn, 1968; California Prisoners, 1967:26-7).

For example, Wolfgang (1961) studied all criminal homicides occurring in Philadelphia between January 1, 1948, and December 31, 1952 and reported that the rate per 100,000 by race and sex of offenders showed the following rank order: black males, 41.7; black females, 9.3; white males, 3.4; and white females, 0.4. From the above data, on a per capita basis it can be seen that the black homicide rate is over 10 times higher than the white homicide rate.

Beasley & Antunes (1974:446) studied the 1970 crime rates in Houston and found that the percentage of the population that is black was highly correlated with crime. The correlation coefficient of the percentage of the population that is black with violent crime was .74; with total crime rates, .49; and with property crime rates, .47.

However, some people argue that those statistics do not show the true story, because certain factors or variables associated with crime are also associated with race (Green, 1961; Forslund, 1970; Beasley & Antunes, 1974: 458). Still other researchers have asserted that it is the

transformation of racial prejudice into racial discrimination in the enforcement of the law that is responsible for the higher black crime rates (Sellin, 1939; Sellin, 1928; Black & Reiss, 1967; Green, 1961, 1964). But no matter what the explanation is, we would anticipate that blacks have higher official crime rates than do whites. Thus the variable of race is included in this study.

(4) POPULATION DENSITY

Higher population density has often been cited as a cause of criminal behavior because in overly crowded areas accumulated tensions and frustrations often find an outlet which does not conform to social norms. There is much empirical research to support a hypothesis that population density is positively related to crime rates (Schmitt, 1957; Chilton, 1964; Schmid, 1960; Wallis and Maliphant, 1967; Turner, 1969; Galle et al. 1972; Choldin and Roncek, 1975; Bordua, 1958; Bloom, 1966; Factor & Waldron, 1973). For example, Schmitt (1957) studied the relationship of population density with juvenile delinquency and adult crime in Honolulu and he found that population per net acre and per cent of units with 1.51 or more persons per room showed a consistent and strongly positive correlation with juvenile and adult offender rates.

However, other studies have found no direct relationship between population density and crime rates (Schmitt, 1963; Freedman, 1972; Winsborough, 1965; Gillis, 1974). Schmitt (1963) investigated the relationship between population density and crime in Hong Kong, while Freedman (1972) looked at the effect of population density on delinquency in New York city. Both failed to find sufficient evidence linking population density with crime. The conflicting findings of the relationship between population density and criminal behavior may be attributed to the differences between the populations examined, differences between researchers' indicators of density, and/or differences between researcher's use of statistics.

Though there are controversies over the relationship between population density and crime rates, the positive relationship between population density and crime rates has been the subject of considerable research. Therefore, population density is included in the present thesis.

(5) URBANIZATION

Urbanization has been defined by Theodorson and Theodorson (1970:453) as "the movement of population from rural to urban areas, and the resulting increase in the proportion of a population that resides in urban rather than

rural places". The relationship of urbanization with crime has been studied by many researchers. The studies performed by Marshall Clinard (1942, 1960, 1964) in both the United States and Sweden are among the better known pieces of research on the relationship between urbanization and crime. He concluded that the level of urbanization is related to property crimes and that the characteristics of an urban dweller (high horizontal mobility, nonattachment to community, and impersonal contacts) are also found in offenders from rural environments. The presumed relationship between urbanization and crime has also been supported in research conducted by Venter (1962) in South Africa, Christiansen (1960) in Denmark, Lodhi and Tilly (1973) in an historical study of France.

However, a study by Hagedorn et al. (1971) investigated the relationship between urbanization and crime rates in the United States and found an inconsistent relationship between urbanization and crime rates. A positive relationship was found between urbanization and rape, burglary, robbery and auto theft, but a negative relationship was found between urbanization and homicide, aggravated assault, and larceny. Possibly, these inconsistent findings are attributable to differences in researchers' measures of crime and such findings further suggest that structural indicators may be related differently to various specific types of crime.

(6) MOBILITY

Geographical mobility has been defined by Theodorson and Theodorson (1970:259) as "the movement of persons from one physical location to another, usually with reference to a change in residence". Mobility has been frequently found to be associated with delinquency rates (Stuart, 1936; Chilton, 1964; Green, 1970; McKenzie, 1921:166; Sullenger, 1950; Carpenter and Haenszel, 1930). In his study of Berkeley, Stuart (1936) found that delinquents lived in areas which had high rates of mobility. Chilton (1964) also showed that rates of delinquency were higher in less stable communities than in stable communities. Green (1970) studied a small industrial city in Michigan from 1950 to 1965 and found that the arrest rates of migrants (non-residents) for both whites and Negroes were 3 to 5 times more than that of nonmigrants (residents of Michigan). For example, personal crime rates per 100,000 were 10.0 for white nonmigrants and 36.9 for white migrants; 41.9 for black nonmigrants and 187.5 for black migrants.

The explanation for these findings is probably attributable to social support and informal social control provided by friends, neighbors, and relatives. Frequent changes of residence may insulate people from normal social relationships. Thus, some migrants become "outsiders" of

the society in which they live and have little or no sense of loyalty to groups or to the community. These people may have a weak attachment to accepted conduct norms or to other people, resulting in disrespect for laws. Therefore it is likely that migrants commit more crimes than nonmigrants and the variable of mobility is included in this study.

(7) UNEMPLOYMENT

Usually, people who are unemployed are those who are young male, black and poor. Thus, we usually find that unemployment is closely related to these factors which are closely related to crime rates. However, we find that unemployment alone is also related to crime rates above and beyond this spurious influence. Thus, scholars have often noted that crime varies with fluctuations in the economic cycle of a country (Radzinowicz, 1941). Many researchers have found that there is a direct relationship between unemployment and crime (Fleisher, 1963, 1966; Phillips et al. 1972).

However, Glaser and Rice (1959) found that such a relationship differs for adults and children. They found that for adults there was a positive relationship between unemployment and crime, whereas for juveniles a negative relationship was found. The interpretation suggested by

Glaser and Rice was that juveniles were accorded more attention by unemployed than by employed fathers and that this decreased the rate of juvenile delinquency. Fleisher (1963) argued that the inverse relationship between unemployment and juvenile delinquency rates found in Glaser's and Rice's research resulted from the effect of war. The increase of juvenile delinquency rates during the war years could be attributed to the absence of fathers, the increased labour force participation rate of mothers, and the increasing family mobility (Fleisher, 1963:549). Thus in a re-examination of the Glaser and Rice data, Fleisher found that if the analysis took into account the war years, the relationship between unemployment and juvenile delinquency rates is in a positive direction. Thus the variable of unemployment is included in this study.

(8) SOCIO-ECONOMIC STATUS

Socio-economic status is often used to deal with stratification in a society. Any one, or more, of several characteristics (family background, educational attainment, income, occupational prestige, etc.) have been used as indicators of socio-economic status, and many studies have been conducted on the relationship between crime and socio-economic status. Those studies generally report an inverse

relationship between socio-economic status and criminal behavior (Beasley and Antunes, 1974:447; Quinney, 1966:47; Schmid, 1960:538; Schuessler, 1962:316; Schuessler and Slatin, 1964:130; Chilton, 1964:73; Polk, 1967; Eberts and Schwirian, 1968). In Houston, Beasley and Antunes (1974) used median income as the indicator of socio-economic status in a study of crime rates and they found that median income and three crime rates (property crime rates, violent crime rates and total crime rates) were negatively correlated. The simple correlation coefficient of median income with violent crime rates was $-.78$; with property crime rates, $-.55$; and with total crime rates, $-.58$. Thus they concluded that there is an inverse relationship between income (socio-economic status) and crime rates.

However, Gibbons (1970), in reviewing many of the earlier studies, concluded that for serious offenses there is an inverse relationship between socio-economic status and criminal behavior, whereas no significant relationship is found for petty offenses. Williams and Gold (1972), in a nationwide study of delinquency, found that for both serious and petty offenses there was no significant relationship between socio-economic status and delinquency.

The controversy over the relationship between socio-economic status and criminal behavior results from

different operational definitions of crime. If "crime" is operationalized in terms of official data, an inverse relationship is very likely to be found between socio-economic status and criminal behavior. However, when "crime" is operationally defined in terms of self-report data, the results are not as clear-cut, and sometimes no direct relationship exists. In the present thesis, crime is operationalized in terms of official data and "socio-economic status" is included as a variable since it is expected to be related to official crime rates.

MULTIVARIATE ANALYSES

Most of the research examined in this chapter has been either univariate or limited to one point in time. There have, however, been a number of exceptions to this generalization. In addition to some of the research already cited, such exceptions would include Sjoquist (1973). Sjoquist (1973) tested Becker's and Fleisher's economic theory of property crime. He ran several equations and found that both an increase in the probability of arrest and conviction and an increase in the cost of crime (punishment) will result in a decrease in the number of major property crimes committed. Several structural variables are included in his equations. The results of the t tests

show that at the .1 level and with a one-tailed test, percent nonwhite and unemployment are significantly related to major property crimes (robbery, burglary and larceny over \$50), while population density is not significantly related to such major property crimes.

We turn now to a methodological discussion of how the present research will undertake a mini-longitudinal multivariate analysis of three separate measures of official crime reporting.

CHAPTER III

METHODOLOGY

This chapter describes the sources of data used in this study and the statistical methods used to analyze these data. In the present study, crime rates obtained from the Uniform Crime Reports (UCR) are treated as the dependent variables and the eight structural characteristics mentioned in the last chapter are used as independent variables. Thus, the crime rates are expressed as functions of these eight independent variables. In what follows, we will discuss the sources of the variables used, limitations of Uniform Crime Reports, and the statistical methods to be used in data analysis.

Independent Variables

The data gathered for this thesis include information from all 50 states in the United States. Except for data on per capita income, which have been obtained from the 1960 Statistical Abstract of the United States and the 1970 Statistical Abstract of the United States, all other primary data for the independent variables are taken from the 1960 United States Census and the 1970 United States Census.

The variables to be included as indices of structural characteristics, for reasons discussed in the preceding

chapter, are: (1) age; (2) sex; (3) race; (4) population density; (5) mobility; (6) urbanization; (7) unemployment; (8) socio-economic status. The operational definitions for those variables are:

- (1) Age--percent of persons 15 to 24 years of age.
- (2) Sex--males per 1,000 total population.
- (3) Race--percent black in the total population.
- (4) Population Density--population per square mile.
- (5) Mobility--percent interstate migrant within the preceding five years.
- (6) Urbanization--percent of the population residing in or near cities with 50,000 or more inhabitants.
- (7) Unemployment--total civilian unemployment rate.
- (8) Socio-economic Status--per capita income.

Dependent Variables

The sources for the crime data used in this study are taken from the Uniform Crime Reports (UCR). Since 1930, Uniform Crime Reports have been compiled by the FBI and published annually. The crime data employed in the current thesis represent crimes known to the police. For purposes of analysis, three broad measures of crime have been used. There are: violent crime (consisting of homicide,

forcible rape, robbery and aggravated assault); property crimes (consisting of larceny, burglary and auto theft); and total crimes (consisting of violent crimes and property crimes). For each category (property crimes, violent crimes and total crimes), crime data are expressed as the total incidence of crime per 100,000 population.

The zero-order correlations for all structural variables used in the present thesis can be found in Table I.

Shortcomings of the Uniform Crime Reports

The extensive use of the Uniform Crime Reports in criminological research has drawn many criticisms from various scholars (Douglas, 1971; Skogan, 1974, 1975; Black, 1970; Beattie, 1960; Tittle, 1969; Kitsuse & Ciccourel, 1963; Rudoff, 1971; Chambliss & Nagasawa, 1969; Geis, 1966; Robison, 1966; Schumach, 1965; Price, 1966). Those criticisms can be divided into two general categories: (1) criticisms of the conceptual definition of crime; and (2) criticisms of discrepancies in the reporting and recording of crime. The criticism of the conceptual definition of

Table I
 Correlations for Structural Variables,
 Using Combined Data 1960 and 1970.

	1.	2.	3.	4.	5.	6.	7.	8.
1. % 15 to 24	1							
2. Males Per 1,000	-.256	1						
3. Percent Black	-.204	.175	1					
4. Population Density	.206	.262	.007	1				
5. Urbanization	.037	.506	-.158	-.539	1			
6. Interstate Migrant	.039	-.375	-.211	-.244	.016	1		
7. Unemployment	-.034	-.069	-.093	-.202	-.211	.434	1	
8. Per Capita Income	.190	.240	-.203	.287	.464	.113	-.192	1

crime questions whether the officially defined crime categories represent categories of crime generally accepted by sociologists. The criticism of discrepancies in the reporting and recording crimes is directed to the question of whether the official crime statistics accurately represent the total number of the incidents of the officially defined crimes.

(1) Criticisms of Conceptual Definition of Crime

These criticisms are based on the assumption that the official categories of crime are established by a minority of people; specifically, those who are of the middle and upper classes and who are in possession of political power. Those upper and middle income people own or control a disproportionate share of the resources of a society. For this reason they have an interest in preventing lower income people from attempting to appropriate their property and power. In order for them to control lower income people, and to maintain their superior position, they use the law in an attempt to control the behavior of lower income individuals with regard to potential actions directed against either their authority and property or against themselves. Thus, those acts defined as "crimes" will almost always be precisely the kinds of activities committed by lower income

individuals. Many sociologists have come to see that the official definitions of "crimes" are themselves the outcome of a political struggle (Turk, 1966; Quinney, 1970). Since sociologists are examining crime from a sociological point of view, some raise the question of whether it is appropriate to use official crime statistics for analyses of crime.

However, other criminologists have noted that the Uniform Crime Reports are useful sources of data (Kitsuse & Cicourel, 1963). They base this argument on a shift in focus from the definition of crime as a behavioral act to that of a structural response. Thus, official crime statistics offer quantitative evidence of a societal response to a given set of conditions. Consequently, they can contribute meaningfully to sociological inquiry.

(2) Discrepancies in Reporting and Recording Crime

Even if there were no disagreement about the officially defined crime categories, there would still be uncertainty in the Uniform Crime Reports due to the fact that there are discrepancies in crimes being reported to and recorded by police department across the country. Because there are other variables that may influence crime reporting, the validity and reliability of the UCR are serious ques-

tioned. Three major factors that may affect the UCR are:

(i) underreporting by citizens; (ii) underreporting by police departments; and (iii) the problem of classification.

(i) Underreporting by Citizens

Citizens do not report all crime to the police. In the Dayton-San Jose pilot surveys (1974), conducted in 1972, victims recalled that about 60 percent of all robbery, 56 percent of all larceny, and 40 percent of all household burglaries were not reported to the police. Thus, underreporting by citizens resulted in the number of crimes reported in the Uniform Crime Reports being less than the actual number of crimes committed.

(ii) Underreporting by Police Departments

Even if crimes are reported by citizens, all crimes are not necessarily reported by police departments. This is evidenced in research conducted by Wolfgang (1968) who observed that police departments will resort to not reporting crime in order to protect their reputations. As one Chicago police officer noted, "It is impossible under the present system to write factual and honest official reports and stay out of the commander's office very long (Chicago Tribune, 1973). Wolfgang (1968) points to

New York City as an example. He stated that in 1966, a department audit of stationhouses in New York City revealed 20-90 percent underreporting of events in their files. Thus, underreporting by police departments becomes an important factor in shaping Uniform Crime Reports.

Both the individual underreporting component (a citizen not reporting a crime to the police) and the police underreporting component (the police department not reporting a crime to the FBI) are substantial in shaping the Uniform Crime Reports. In order to measure underreporting, several surveys of criminal victims were undertaken, and the victimization rates were then compared with those published in the Uniform Crime Reports.

The President's Commission on Law Enforcement and the Administration of Justice initiated a major survey of criminal victimization (Ennis, 1967). Ten thousand American households were questioned by the National Opinion Research Center of the University of Chicago (NORC) about whether any member of the household had been a victim of crime during the preceding year, and whether the crime had been reported to the police. More detailed surveys were made of high and medium crime rate precincts of Boston, Washington D.C. and Chicago (Biderman, et al., 1967; Reiss, 1967). These surveys revealed that the amount of crime in the United

States is several times that reported in the UCR. The NORC survey found, for example, that forcible rapes were three and a half times the reported rate, burglaries three times, aggravated assaults and larcenies of 50 dollars and over more than double, and robbery 50 percent greater than the reported rate. The overall violent crime reported to NORC was almost twice as high as reported in the UCR.

Three factors may be identified which have served to increase the number of crimes reported. These are, (1) the changing expectations of the poor and segregated minority groups; (2) the professionalization of the police which result in more formal actions, more formal records; and (3) increasing insurance against theft and the belief of many citizens that they must reports a crime to the police in order to collect insurance (President's Commission on Law Enforcement and Administration of Justice, 1967a). We might suspect that these have provided a more accurate picture of crimes committed. Although the problem of under-reporting may be improved, they cannot be easily solved.

iii) Classification Problem

Because crime categories are not uniformly applied from police department to police department, the problem of comparability will occur. For example, Beattie (1965: 55) believes that data inconsistencies are common. A

police department may classify an attempted rape as assault, breaking and entering as robbery, or burglary as larceny. Thus, the comparability of the UCR is seriously questioned.

However, the problem of inconsistency in the definitions of crime categories of police departments can largely be circumvented by employing rather broad categories. In the present thesis, this problem is diminished by dividing the seven serious crimes into property crimes and violent crimes. For example, though burglary could be called larceny, it is difficult to believe it would be classified as a violent crime.

Although there are substantial shortcomings to the Uniform Crime Reports, they remain the most useful source of information concerning historical trends in crime at the national level, both as to the extent of reported crime and the characteristics of arrested persons. As Tittle (1969:411-2) observes, "The unreliability of crime statistics is well known, but the lack of other sources of data precludes alternative approaches. We must continue to work with these records and alter the conclusions, if necessary, when more reliable information becomes available." Of necessity we are thereby actually examining correlates of police processing of crime. Given the lack of alternatives mentioned above, this may nevertheless contribute

substantially to our knowledge and understanding of crime as a social fact.

Statistical Methods

In this study, two questions are asked. The first question is whether certain structural characteristics are significantly related to crime rates when several other variables are simultaneously controlled. The second question is whether any relationship between a structural characteristic and crime rates is constant over time. Two hypotheses are drawn from these two questions.

(1) Hypothesis One: That structural characteristics are significantly related to crime rates.

In order to determine whether structural characteristics are significantly related to crime rates, the significance of the regression coefficient, b , of the structural variables is tested. The regression coefficient, b , is the slope of the regression line and indicates the expected change in the dependent variable with a change of one unit in the independent variable. The regression used in this hypothesis can be stated as follows:

$$Y' = a + b_1X_1 + b_2X_2 + \dots + b_8X_8 + b_9X_9$$

Y' is the dependent variable, estimated crime rates.

X_1, X_2, \dots, X_8 are structural variables.

X_9 is the time variable.

a is a constant.

b_1, \dots, b_9 are regression coefficients.

We anticipate that those variables which are related to time are also related to crime rates. Thus the time variable is included in this regression.

Since the time variable (X_9), with categories 1960 and 1970, is at the nominal level of measurement, the variable must be converted to the interval level of measurement to be used in a regression equation. Fortunately, since we are dealing with only two time periods, the time variable can be treated as a dichotomous dummy variable.

The formula (Nie et al., 1975:326) to test for statistical significance of the regression coefficient, b , can be stated as follows:

$$F = \frac{\sum (Y' - Y) / 1}{\sum (Y - Y') / N - 2}$$

For the present data, the degrees of freedom (1 and $N - 2$) are 1 and 98. Thus, if the computed F value is larger than the critical value for a certain level, the null hypothesis that $b = 0$ would be rejected. Otherwise, it would be concluded that the observed b is not significant at the critical level. In this study, the .05 significance level is chosen because the power of the test varies directly with sample size; that is, as N increases there is a greater probability of correctly rejecting the null hypothesis. Moreover, the standard error varies inversely with sample size. Consequently, with a large N a small difference is likely to be statistically significant, while with a small N even large differences may not reach the predetermined level. Therefore, a small critical region (.01 or .001) should usually accompany a large sample, while a larger critical region (.05) may be more appropriate with a small sample--all other things being equal (Blalock, 1972: 160-161; Labovitz, 1968:323). Because the sample size used in this study is relatively small (100), the .05 significance level is used. Moreover, the .05 significance level is a conventional level of significance used by sociologists and as Labovitz (1968:324) observes: "If most results are applied to a similar standard, readers have some idea of the comparability of results from one study to another".

The significance test for the regression coefficient b --the F ratio--only indicates whether a certain structural variable is significantly related to crime rates, but it does not indicate the strength of the relationship. Beta weights are used in the current research for this purpose.

Beta weights indicate how much change in a dependent variable is produced by a standardized change in one of the independent variables when other variables are controlled. The beta weight can be obtained by multiplying the comparable b by the ratio of the standard deviation of the independent variable (not controlled) to that of the dependent variable. The formula (Blalock, 1972:453) can be stated as follows:

$$B_{ij.kl} = b_{ij.kl} \frac{S_j}{S_i}$$

$B_{ij.kl}$ is the beta weight.

$b_{ij.kl}$ is the regression coefficient of the independent variable j in a prediction equation in which the variable i is taken as the dependent variable and which involves two controlled variables k and l .

S_j is the standard deviation of the independent variable j .

S_i is the standard deviation of the dependent variable i .

(2) Hypothesis Two: The relationships between structural characteristics and crime rates are constant over time.

In order to test whether there is a significant difference in the relationship between individual structural characteristics and crime rates at different points in time, the regression coefficient of each structural variable in 1960 is compared with the regression coefficient of the same structural variable in 1970. Specifically, the working hypothesis is that there is no significant difference between the regression coefficients of individual structural variables in 1960 and 1970.

As mentioned previously, the estimated crime rate Y'_1 for 1960 is given by

$$Y'_1 = a_1 + b_{11}X_{11} + b_{12}X_{12} + \dots + b_{18}X_{18}$$

Where $X_{11}, X_{12}, \dots, X_{18}$ are independent variables, a_1 is the constant, and $b_{11}, b_{12}, \dots, b_{18}$ are regression coefficients. The values of these coefficients (b_{11}, b_{12}, \dots) are found through the least squares method by minimizing the residual $\sum (Y_1 - Y'_1)^2$ where Y_1 is the reported crime rate. Similarly, the estimated crime rate Y'_2 for 1970 is

given by

$$Y'_2 = a_2 + b_{21}X_{21} + b_{22}X_{22} + \dots + b_{28}X_{28}$$

Where $X_{21}, X_{22}, X_{23}, \dots, X_{28}$ are independent variables. and b_{21}, \dots, b_{28} are also calculated by the least squares method. The statistical significance of the regression coefficient, b , can be calculated by comparing the corresponding values of the above two years (eg. comparing b_{1i} and b_{2i}). The procedure for comparing the regression coefficient is the t test (Blalock, 1972:224-6).

This chapter has discussed operational measures and methodological concerns. These are the tools with which the hypotheses will be tested in the following chapter.

CHAPTER IV

RESULTS

The results of the data analysis are discussed in this chapter. Two hypotheses are to be tested:

- (1) That the structural characteristics are significantly related to crime rates;
- (2) That the relationships between structural characteristics and crime rates are constant over time.

With regard to the first hypothesis, the beta weights and statistical significance tests of b for the structural and time variables, using combined data for 1960 and 1970, are shown in Table II. At the .05 level of statistical significance, with 1 and 98 degrees of freedom, the F ratio must be 4.0 or greater for the null hypothesis to be rejected.

Thus from the results in Table II, percent black (race), population density, urbanization, percent interstate migrant (mobility), per capita income (socio-economic status), and time are significantly related to total crime rates, whereas the results show that percent 15 to 24 years of age (age), males per 1,000 (sex) and unemployment are not significantly related to total crime rates. In terms of the subcategory of violent crimes, males per 1,000 population,

TABLE II

The Beta Weights and Significance Tests of the Regression Coefficients for Structural and Time Variables, Using Combined Data 1960 and 1970.

	Total Crime Rates		Violent Crime Rates		Property Crime Rates	
	F Ratio	Beta Weights	F Ratio	Beta Weights	F Ratio	Beta Weights
% 15-24	.012	-.00548	3.086	.11315	.051	.11110
Males Per 1,000	.088	.02024	8.997*	.26576	.109	-.02235
Percent Black	7.982*	.14925	31.026*	.38107	4.320*	.10885
Population Density	4.405*	-.12613	2.322	-.11859	4.363*	-.12446
Urbanization	35.000*	.42109	7.454*	.25167	37.856*	.43778
Interstate Migrant	4.388*	.14038	3.180	.15476	3.730	.12831
Unemployment	3.397	.09772	.249	.03427	4.175*	.10741
Per Capita Income	4.583*	.30870	.980	.18484	5.155*	.32456
Time	13.343*	.47627	7.256*	.45486	12.815*	.46273
R ²		.843		.736		.846

* Significant at the .05 level

percent black, urbanization, and time are significantly related, whereas percent 15 to 24 years of age, population density, percent interstate migrant, unemployment and per capita income are not significantly related to violent crime rates. Percent black, population density, urbanization, unemployment, per capita income and time are significantly related to property crime rates, whereas percent 15 to 24 years of age, male per 1,000 population and percent interstate migrant are not significantly related to property crime rates.

If we look at each independent variable separately, we find that percent black, urbanization and time are significantly related to the three categories of crime rates (total, violent and property crime rates), but percent 15 to 24 years of age is not significantly related to any of these three crime rates. Per capita income and population density are significantly related to both total and property crime rates but not to violent crime rates. Percent interstate migrant is significantly related only to total crime rate. On the other hand, unemployment is significantly related to property crime rates but not significantly related to total and violent crime rates. Males per 1,000 population is significantly related to violent crime rates but not significantly related to total and property crime

Among those independent variables, the time variable has the highest beta weights for three categories of crime rates. Among the structural variables, the highest beta weights for total and property crimes is urbanization; while percent black appears to be most strongly related to violent crime rates.

In testing the second hypothesis whether relationships between structural characteristics and crime rates are constant over time, the regression coefficients, b's, for 1960 and 1970 are tested for statistically significant differences. These results of these tests are shown in Table III. From the results in Table III, this hypothesis can be rejected for all eight structural variables. The relationships between the structural indicators examined and official crime rates are not consistent over time.

In this chapter, we have reported the results of our analyses. The interpretation of these results will be discussed in the following chapter.

TABLE III

The Significance Test of the Regression Coefficient b for Individual Structural Variables in 1960 and 1970.

	Total Crime Rates	Violent Crime Rates	Property Crime Rates
	t	t	t
% 15 to 24	3.21*	4.15*	2.22*
Males Per 1,000	3.01*	2.68*	5.38*
Percent Black	10.65*	7.35*	15.65*
Population Density	2.01*	2.56*	3.09*
Urbanization	25.74*	4.12*	13.53*
Interstate Migrant	7.01*	3.16*	3.40*
Unemployment	12.22*	6.29*	6.64*
Per Capita Income	10.01*	4.23*	7.68*

* Significant at the .05 level

CHAPTER V

DISCUSSION AND CONCLUSION

Discussion

The results of our analyses show that percent black, urbanization and time are significantly related to the three categories of crime rates (total, violent and property crime rates), but percent 15 to 24 years of age is not significantly related to any of these three categories of crime rates. Per capita income, population density and unemployment are significantly related to property crime rates but not to violent crime rates. On the other hand, males per 1,000 population is significantly related to violent crime rates but not significantly related to property crime rates. The results also show that the relationships between the structural indicators examined and official crime rates are not stable over time.

These findings indicate that the two hypotheses tested in this thesis are not fully supported. Does this mean that these two hypotheses are wrong? At this stage, we cannot provide any adequate answer to this question, because there are some problems that might be confounding our findings. The possible effects of multicollinearity, variability and model misspecification will be discussed here.

The first problem is multicollinearity. This problem occurs when independent variables are highly inter-correlated. For example, small differences in total correlations with the dependent variable imply rather large differences in partial correlations and slope estimates, so that if one relies on the relative magnitudes of these partial coefficients, one can expect to find rather large differences from one sample to the next, or among replications that utilize somewhat different measuring instruments. The implication is that whenever independent variables are highly correlated, it will be necessary to have both large samples and accurate measurement (Blalock, 1972:457). Since the sample size is rather small in this study, the problem of multicollinearity must be taken into account. The correlations of independent variables from Table I show that only four zero-order correlations approach .5, while all others are slightly correlated. Thus the problem of multicollinearity is not so serious in this study.

The second problem is the problem of variability. Suppose that percent 15 to 24 years of age is identical for all 50 states, that is, the variability of the data is small. Then with the independent variable being constant for 50 states, we would not be able to find the expected relationship between age and crime rates. Due to the data gathered and the use of computer, the range of the data

for 50 states cannot be easily shown. But we suspect that the absence of many expected relationships could have resulted from the lack of variability of the data at the state level.

The third problem is the specification problem; i.e. some important variables such as police per capita, war, the use of drugs, or capital punishment may be missing from the analysis. For example, the police per capita could probably explain part of the inconsistent relationship between structural indicators and crime rates over time. As mentioned in the previous chapter, the crime rates examined in this study are those resulting from the police processing of data. With increasing police expenditure, and the concomitant increase in absolute numbers of police officers, the police practice becomes more efficient, and more crimes are discovered. Therefore, more crimes are recorded. Uniform Crime Reports show that police employees per 1,000 inhabitants has increased from 1.9 in 1964 to 2.4 in 1974 (Michalos, 1974:77). With more full-time personnel employed by police departments, the efficiency of police practice increases. Taking the auto theft statistics as an example, the police departments in cities with more employees are inclined to list cars as stolen immediately when reporting missing rather than several days later (Beattie, 1960:57); thus, "joyrides" and mistaken loss

are included in auto theft rates for these cities but not for cities with less police employees. The increased number of personnel employed by police departments may also result in the increase of police officers on the street, thus increasing the likelihood of an offender being arrested at the scene of the crime. Therefore we suspect that the unstable relationship between structural variables and crime rates over time could be partly attributed to police per capita. There are probably many other variables that have important effects on crime rates but we have neglected to take them into consideration. The search for these variables is an important and necessary work for interested sociologists.

From the results of this study we also find that the effect of structural variables on violent and property crimes might be different. For example, males per 1,000 population is significantly related to violent crime rates, but not to property crime rates; unemployment is significantly related to property crime rates but not to violent crime rates. The results suggest that the causes of violent crimes and property crimes might be different, that is, the two types of crime are inherently different in terms of offender's motivations. Generally, people who commit violent crimes are motivated by psychological reasons; people who

commit property crimes are motivated by economic reasons. Thus, we suggest that we should adopt different variables to study violent and property crimes. It would also be advisable to separate the different sub-categories of violent and property crimes in studying the causation of crimes. In this way, we might be able to find the factors that may result in the occurrence of any specific crime. Thus, the use of the total crime rate is not of great importance, and sometimes it is not necessary to include the total crime rate.

Conclusion

Social sciences are different from natural sciences in the way that natural sciences can be studied with full experimental control (i.e. controlling all the extraneous and disturbing factors). Social sciences cannot be studied by controlling all the intervening factors. Every factor studied in the social sciences is interrelated with each other. For example, when a physicist wants to explore the relationship between the temperature, the pressure, and the volume of a mass of gas he can go into the laboratory, exclude all of the extraneous and disturbing factors of the real world, and conduct a carefully controlled experiment. In this way the physicist can establish quite an

exact relationship between pressure and volume of a mass of gas. When the sociologist, on the other hand, wishes to establish the relationship between, say, the structural characteristics of a population aggregate and the crime rates of that aggregate, he cannot conduct a controlled laboratory experiment. Thus, in order to understand social phenomena, multivariate analyses are often used to control those factors which are interrelated. This was one of the main objectives of the present thesis.

There are still some weaknesses in this study. One that might draw the most criticism is the ecological fallacy. The ecological fallacy is operating when "properties found to be correlated at the higher level are assumed correlated, i.e. found within the same unit, at the lower level" (Galtung, 1967:46). This occurs particularly when inferences are made from geographical units to individuals. As mentioned in chapter II, one of Durkheim's main contributions was his treatment of the collectivity as a unit of analysis. But Durkheim avoided the ecological fallacy by emphasizing that social factors instead of individual factors are the causes of suicide rate. Thus, for example, he formulated the law of suicide that "suicide rate of a social group varies with the degree of integration of that group".

In this study, "state" was chosen as the unit of analysis, but the explanations were offered at the individual level. Thus, our analysis may suffer from the ecological fallacy. The types of explanations sought and the data available have forced us into this type of argument.

Ecological fallacy is the usual criticism of a sociological study which uses population aggregates as units of analysis and tries to make inferences to the individual level. The only solution is to carry out replications at the level of individuals. Since the individual data are sometimes difficult to obtain, it is extremely difficult to carry out these replications. However, it is worthwhile for the dedicated sociologists to undertake this task in order to have a better understanding of the structural correlates of crime.

The other caution that we should keep in mind is that the crime data used here is the police processing data. The shortcomings of police processing data have been discussed at length in the previous chapter. We suggest that future studies should use victimization data instead of police processing data in order to have more reliable results.

The study of the structural correlates of crime

by using multivariate analyses at two points in time is only the first step in the sociological study of crime. There are still many improvements that can be made. For example, the choice of the unit of analysis, the avoidance of the ecological fallacy, the use of victimization data, the use of more sophisticated multivariate analyses, the separation of types of crime, and the adoption of the suggested missing variables all could be improved in future research. It is suggested that interested researchers in this area would be well advised to direct their efforts in these directions.

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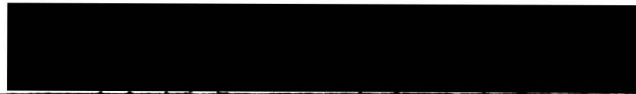
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