

**THE EFFECTS OF SOCIAL CAPITAL ON THE DISTRIBUTION OF CRIME IN
AUSTIN, TEXAS, 1996**

THESIS

**Presented to the Graduate Council of
Southwest Texas State University
in Partial Fulfillment of the
Requirements**

For the Degree

Master of APPLIED GEOGRAPHY

By

Neil Kucera, B.A., J.D.

**San Marcos, Texas
May 2001**

COPYRIGHT

By

Neil Kucera

2001

ACKNOWLEDGEMENTS

I wish to thank Drs. Day, Bryan and Caldwell for their patience and constant pursuit of excellence.

I would also like to thank Kara for her unwaivering support and companionship that has meant the world to me.

I want to thank Elizabeth Harsh, who has given me the time to complete this thesis.

Neil Kucera
Southwest Texas State University
March 31, 2001

TABLE OF CONTENTS

	Page
I. LIST OF TABLES.....	viii
II. LIST OF FIGURES.....	ix
III. INTRODUCTION.....	1
IV. STATEMENT OF THE PROBLEM.....	4
Subproblems	
Purpose	
V. THEORIES OF CRIME.....	6
Classical Criminology	
Biological Theories	
Social Process	
Social Reaction	
Social Structure	
VI. THE SOCIAL CAPITAL MODEL.....	18
VII. THE GEOGRAPHY OF CRIME.....	23
VII. METHODOLOGY.....	25
Study Area	
Data	
Multiple Regression Analysis	
Map Analysis	
IX. RESULTS OF MULTIPLE REGRESSION ANALYSIS.....	46
Violent Crime Rates	
Property Crime Rates	
Summary of Regression Results	

TABLE OF CONTENTS
(continued)

X. RESULTS OF MAP ANALYSIS.....	55
Violent Crime Rates	
Property Crime Rates	
Human Capital	
Economic Capital	
Race/Ethnicity	
Social Capital	
Residuals	
Summary of Map Analysis	
XI. CONCLUSIONS.....	78
Policy Implications	
Research Implications	
XII. APPENDIX.....	82
Correlation Matrix	
Multiple Regression Output	
XIII. BIBLIOGRAPHY.....	92

LIST OF TABLES

Table	Page
1. Complete list of conceptual and operational variables.....	35
2. The independent variables and their hypothesized association with the dependent variables.....	47
3. Summary of regression results for violent crime rates and property crime rates relative to all independent variables.....	50
4. Summary of regression results for violent crime rates and property crime rates relative to social capital independent variables.....	51

LIST OF FIGURES

Figure	Page
1. Census Tracts in Travis County, 1990.....	27
2. Violent Crime Rate, Travis County by Census Tract, 1996.....	29
3. Property Crime Rate, Travis County by Census Tract, 1996.....	30
4. Proportion of College Graduates, Travis County by Census Tract, 1990.....	58
5. Proportion of Persons in Poverty, Travis County by Census Tract, 1990.....	59
6. Proportion of Hispanic Population, Travis County by Census Tract, 1990.....	61
7. Proportion of Black Population, Travis County by Census Tract, 1990.....	63
8. Proportion of Persons in Shelters, Travis County by Census Tract, 1990.....	64
9. Proportion of Persons on the Street, Travis County by Census Tract, 1990.....	65
10. Proportion of Vacant Units, Travis County by Census Tract, 1990.....	67
11. Proportion of Duplex Units, Travis County by Census Tract, 1990.....	68
12. Proportion of Single with Children Households, Travis County by Census Tract, 1990.....	70
13. Proportion of Persons Age 35-54, Travis County by Census Tract, 1990.....	71
14. Proportion of Persons Age 15-20, Travis County by Census Tract, 1990.....	73

**LIST OF FIGURES
(continued)**

15. Violent Crime Residuals, Travis County by Census Tract, 1990.....	74
16. Property Crime Residuals, Travis County by Census Tract, 1990.....	75

INTRODUCTION

Crime and the prevention of crime consume an inordinate amount of America's time, attention and resources. In 1992, it was estimated that total Federal and State government expenditures on crime and the justice system totaled almost \$94 billion, an increase of 161% since 1982 (U.S. Department of Justice 1996). The city of Austin not only spends large amounts of money on crime-related matters, but also regularly conducts operations and initiatives in efforts to reduce local crime. While the overall crime rate has purportedly been declining nationwide and in the Austin area, many credit this to robust economic conditions and changes in age structure rather than any true decrease in long-term delinquency rates (Steffensmeier and Harer 1999). It goes without saying that as the U.S. economy is being transformed from its traditional manufacturing base into a service-oriented society, the typology and distribution of crime will change accordingly (Ackerman 1998). The reality, though, is that the specter of crime will continue to be a pressing concern to most individuals, communities, and policy makers. This is especially true for business oriented Austin, which strives to represent itself as one of the safer communities in the U.S.

The subject of crime has been approached from a number of distinct theoretical perspectives. One of these frameworks, *social structure*, seeks to

explain the variations in crime patterns as a product of certain societal deficiencies. These inadequacies, which have been the subject of prior research, include poverty, limited educational levels, and racism. Within the social structure paradigm, one of the most influential notions has been the concept of social ecology introduced by Shaw and McKay (1942). Based on a model from environmental biology, these researchers posited that a disorganized community would be susceptible to crime due to a lack of stability. This emphasis on the local environment of communities has inspired the collateral development of a *geography of crime*, which is predicated upon the assumption that delinquency cannot be understood without first ascertaining the *spatial context* in which it occurs. Criminal geography analyzes not only the location of offenses, but also incorporates many of the traditional socio-economic factors of social geography investigation. Shaw and McKay's notion of social disorganization with its inherent spatial emphasis has provided researchers with the conceptual framework for the empirical testing of numerous structurally based hypotheses in local community settings. In recent years, however, many criminologists have concluded that social disorganization is no longer a legitimate contributing theory (Unnever 1987). Such being the case, it is perhaps time for a fresh theoretical and spatial framework in the social ecology tradition.

In the context of social disorganization research, several scholars have favorably mentioned the presence of *social capital* as a possible determinant of community organization. Social capital, which involves a series of relationship networks, facilitating trust and cooperation, is a recent sociological phenomenon

beginning to be discussed by social scientists. Recent articles and books, however, only speculate on its use as a predictor of crime. This paper identifies the relationship between certain socio-economic variables and crime rates among Austin census tracts in a spatial context. It hypothesizes an inverse relationship between census tract crime rates and levels of social capital.

Previous research has shown the value of studying crime patterns throughout a city on a census tract level (Schmid 1960a, 1960b). Austin, a mid-sized, dynamic city, appears to be ideal for this type of analysis. While promoting a better insight into the social and spatial environment of crime in Austin, this research may additionally serve as an impetus for subsequent quantitative testing of social capital and its relationship to crime.

STATEMENT OF THE PROBLEM

Are there distinctive spatial patterns of crime within the city of Austin?

Does the concept of *social capital* help explain variations in Austin crime rates?

Are there other variables that better explain the distribution of crime? This problem was broken down into four specific subproblems.

The Subproblems

SUBPROBLEM #1: Do the crime rates throughout Austin exhibit a pattern based on human capital?

SUBPROBLEM #2: Do crime rates throughout Austin exhibit a pattern based on economic capital?

SUBPROBLEM #3: Do crime rates throughout Austin a pattern based on race or ethnicity?

SUBPROBLEM #4: Do crime rates throughout Austin exhibit a pattern based on social capital?

Purpose

This research examines the interpretive strength of social capital as a predictor of violent and property crime rates. The purpose of this study is to reveal a spatial pattern of crime in Austin and to operationalize a model of social capital in order to test its strength in explaining particular crime patterns. To better understand the evolution of the social capital model it is first necessary to examine the traditional theories of crime.

THEORIES OF CRIME

Like any potential set of scientific explanations, hypotheses regarding crime must be tested against the observed world of facts. Criminal theories have emerged from the repeated testing of such hypotheses. Before the modern era, spiritual explanations were given in response to the problems of crime and deviance. While there can be certain merit in the study of such explanations, they cannot be observed, falsified or empirically tested, and therefore are not scientific affirmations. The key to any scientific proposition, physical or social, is that it must be clear, unambiguous and subject to negation under a certain set of empirical conditions (Hoover and Donovan 1995). Each of these theories of crime has been approached in the positivist tradition, wherein knowledge regarding a subject can only be discovered by methods such as observation and experimentation. The issue for positivists in the field of criminology has been to identify individual or societal determinants affecting propensity for crime.

Classical Criminology

Classical criminology originated as a liberal and rational response to the spiritual explanations that had dominated European adjudications for many centuries. Influenced by the naturalistic philosophies of his day, Beccaria (1963)

proposed a series of reforms to the criminal justice system. These reforms were primarily based on the concept of a social contract as envisioned by Hobbes. Among the other items in his treatise, Beccaria endorsed the notion that violations of law should be known, promptly punished and in proportion to the seriousness of the offense. Subsequent modifications to the classical model provided for individualization of cases and the exercise of sound discretion in criminal adjudications. In the classical paradigm, also known as deterrence theory, crime is seen as the product of individuals making free and rational choices after assessing the consequences of their decisions. Classical theorists, in the best Hobbesian tradition, assume that all people would commit crime if left to their own devices. A strong third party, who is capable of rendering a set of swift and sure punishments, must enforce the social contract in order to maintain social control. With minor variations, the classical model has been endorsed and utilized by agencies of social control in almost all advanced industrial societies. For the past two decades, proponents of higher degrees of official control have dominated public discourse (Sampson 1995). This is evident during most contemporary political campaigns, especially at the local levels. Since classical criminology does not typically view the causes of crime outside the control of the actor, it has not been adequately tested in the positivist mode as other crime theories.

Biological Theories

As positivism and the identification of causal factors in deviant behavior began to assume more importance in criminology, the biological perspective replaced the classical criminology that had previously dominated the field. With the publication and intellectual acceptance of the works of Charles Darwin, humans were viewed as creatures whose conduct patterns were predetermined by influences other than self-determination. Many of the early biological theories endorsed the notion that the physical structure of individuals determines their later functions and behaviors. Some of the more amusing physical causes for crime included excessive hairiness, a cleft palate, and shifty eyes. Lombroso (1911), the father of criminal anthropology, claimed that the natural history of a criminal “embraces his organic and psychic constitution and social life just like anthropology does in the case of *normal* human beings and the different races.” In order to avoid the criticism endured by their predecessors, most contemporary biological theorists have avoided making broad sweeping characterizations about criminal behaviors. Instead they maintain that certain biological conditions increase the likelihood that individuals will engage in deviant conduct. Contemporary criminal-biological research includes family studies, genetic influences, steroid hormone functioning, autonomic nervous systems, neurotransmitters, brain dysfunctions, cognitive disorders and nutrition (Brown, Esbensen, and Geis 1998).

Social Process

The processes that individuals experience in becoming law violators are the primary foci of social process theories. The strength of these micro-level theories is that they seek to explain the totality of collective influences on the individual. The *learning perspective* maintains that values, norms, motivations, skills and techniques are acquired through interaction with others. Constant interactions throughout an individual's lifetime tend to evidence themselves in certain lifestyle patterns, which can include criminal behavior.

Among the learning perspective theorists, the most eminent is Sutherland (1939), who is associated with the theory of differential association. Differential association hypothesizes that people of certain communities are more likely to have associations and interactions that encourage criminal behavior. Sutherland focused not only on the content of what is learned by lawbreakers, but the process by which the learning occurs. This process often entails associations with other individuals. A person becomes delinquent if, in their life experiences, there is an excess of definitions favorable to violation of the law over definitions unfavorable to violation of the law. While Sutherland's work helped bring a sociological emphasis to the forefront of criminology, it has been criticized as untestable, and overly broad.

The *conflict perspective* focuses on how members of certain subcultures are trained and receive their norms through a particular learning process. When subculture values and behaviors conflict with those of society at large, criminal behavior is often the result. This perspective has lost popularity in recent years

amid criticisms that it prejudges certain subcultures as inferior and encourages intellectual racism (Maxim and Whitehead 1998).

The *control perspective* focuses on special controlling forces that restrain individuals from committing crimes. Hirschi (1969) maintains that people who were closely bonded to social groups such as family and peers would be less likely to commit deviant acts. While social control research has generated large numbers of empirical studies, the results have been mixed.

Social Reaction

Social reaction theorists deem crime to be a socially constructed phenomenon that often engenders inconsistent official responses. While previous explanations focused on offenders and crime areas, social reaction theory is more interested in the ways authorities and society respond to crime and its actors. Social reactionists are concerned with matters such as basic definitions of deviance, the timing of deviant actions, the labeling of deviance, the post reaction of the labeled offender, the retrospective interpretation of the labeled offender, and the possibilities of secondary deviation (Brown, Esbensen, and Geis 1998). It is often maintained that existing laws and enforcement procedures are structured to benefit the rich while punishing the poor and disadvantaged. This belief is the basis for contemporary conflict theory as originated by Karl Marx. Although social reaction theory has caused traditional criminologists to question their underlying assumptions, research from this theoretical perspective has often failed to substantiate its claims.

Social Structure

In social structure theory, individual problems are linked to their societal origins. Crime is seen as the product of societal characteristics such as poverty, poor education and racism. In the macro-theory tradition, social structure explanations attempt to account for variations in crime rates among groups, without focusing on individual level criminality. Social structure theorists tend to support liberal governmental policies that identify and correct deficiencies in the social fabric. The Chicago area project and the programs of the Great Society are just two examples of initiatives pioneered by social structure proponents. After an apex of research and field activities in the 1950's and 60's, social structure began to lose popularity due to a resurgence of classical criminology beginning in the early 1970's (Brown, Esbensen, and Geis 1998). The two perspectives of social structure are strain theory and social ecology.

Strain theories originated in the research of Durkheim (1951), an early French sociologist, who posited that stress, frustration and strain generally increase the possibility that individuals will violate norms. This presented a different aspect of positivism than that explored earlier by Lombroso. Durkheim's focus was on how societal organization can influence individual determinations, and his initial research entailed a study of suicide. Durkheim managed to explain this most individual form of deviance in terms of various social configurations. It was this research on suicide that formed the basis of the revival of the anomie concept. Anomie can be described as a disturbance or disruption of the

collective order, which is the external regulating force defining norms and goals, and which governs behavior. Durkheim reasoned that each society possesses a certain uniformity of belief, termed the *collective conscience*. Constantly in opposition, however, to collective uniformity, is a degree of individual diversity, which often expresses itself in delinquent behavior contrary to societal norms. Durkheim argued that in organic societies, rapid social change creates periods of normlessness, leading to an increase in criminal activities. Anomie is that state of society in which norms are no longer effective in regulating behavior. This state of normlessness occurs during periods of crisis or turmoil. Durkheim conceptualized a potential gap between peoples' aspirations and the opportunities to achieve these goals as given by society. Unlimited aspirations create pressure for deviant solutions, forming the basis for anomie. This, of course, was a radical notion at the time, since the prevailing paradigm in criminology was that the individualistic forces of volition and biology were the primary determinants of deviant behavior (Vold, Bernard and Snipes 1998).

Durkheim's contribution to criminology enabled later researchers to focus on the role that *social forces* play in human conduct. Subsequent research has taken the basic assumptions of strain theory and applied them to deviant behavior in American society. Merton (1938) believed that the United States had an inequitable social structure that evaluated success in a similar way at all social levels, hypothesizing that individuals respond to this inequity and social stress in five different ways. These modes of adaptation are *conformity* (accepting cultural goals and the institutional means of obtaining them),

innovation (accepting cultural goals, but not accepting the legitimate means of obtaining them), *ritualism* (abiding by the rules, but abandoning the pursuit of cultural goals), *retreatism* (not aspiring to society's goals and abandoning pursuit of these goals), and *rebellion* (rejection of both goals and rules for attainment, along with substitution of a new set of values). Merton stated that from a criminal justice perspective, it is the innovators, retreatists and rebels who get in trouble with law enforcement. Cloward and Ohlin (1960) argued that the delinquent opportunities in which one becomes immersed are a function of the delinquent opportunities that are available to that person. Cohen (1955) extended strain theory to explain the origin of delinquent gangs. This explanation resulted in a process called *reaction formation*, which is characterized by exaggerated efforts to deny that for which one actually yearns. Agnew (1992) has recently addressed some of the perceived shortcomings in traditional strain theory by proposing a general strain theory that broadens the perceived sources of strain. Although measures of general strain theory empirically can help explain delinquency (Agnew and White 1992), the majority of the programs initiated in the 1960's to enhance opportunities and decrease anomie, are perceived to have failed in their implementation.

Social ecology focuses on an individual's relationship to the social environment. The environmental approach to crime began in early nineteenth century Europe. As the first annual national crime statistics were published in France in 1827, it became apparent that crime was being influenced by factors within the larger society. Andre-Michel Guerry, a French lawyer, published the

first true scientific work in the field of criminology in 1833. As a part of his research, Guerry shaded ecological maps to represent differing crime rates in relation to various social factors. Subsequent research tended to confirm the validity of this ecological approach to deviance. In England, Fletcher (1848) used simple correlation techniques to show associations between certain neighborhoods and crime. Mayhew (1861) noted that high crime areas of London were associated with poor physical and environmental conditions. These early studies began the tradition in criminology of conducting cartographic, social geography or social area studies.

With refinements in the level of aggregation at which statistics were collected, researchers were better able to focus on crime zones. Park (1936) envisioned the conceptual parallel between biological ecology and human societies, pioneering the concept of *human ecology*. As a branch of biology, standard ecology entails a study of the relationships between plants and animals. This web of corresponding relationships and dependencies forms a delicate balance that must constantly be maintained. Species may appear in an area and dominate the other life forms in a process of invasion, dominance and succession. Utilizing the physical ecological model, Park hypothesized that an urban area constitutes an organic state of symbiotic relationships, consisting of multiple *natural areas*. Natural areas are the components of an organized city. Park and Burgess (1925) conceived the concentric zone model of city growth, which has been used in urban social science. Park and Burgess maintained that each time the human processes of invasion, dominance and succession occur,

the social equilibrium and stability of an urban neighborhood is disturbed. It then becomes necessary for the area to make a transition in search of stability. This neighborhood transition period was hypothesized to correlate with an increase in criminal activity.

Shaw and McKay (1942) expanded on the ecological concept by pioneering research on *environmental factors* related to crime. Subsequently, the Chicago School of Human Ecology was developed, which focused on rapid socio-economic changes in *individual neighborhoods or populated areas*. Using pinpoint mapping, Shaw and McKay plotted rates of male delinquency in Chicago from 1900 to 1933, finding that higher delinquency areas were characterized by factors such as decreasing populations, number of families on relief, low rental values, and large foreign-born populations. Based on their findings, Shaw and McKay concluded that the three structural factors of low economic status, ethnic heterogeneity, and residential mobility could lead to disruptions within the social organization of a community. Constant community disruptions were hypothesized to positively correlate with delinquency. In disruptive communities, primary relationships and the communication leading to common goals are not allowed to fully develop. Shaw and McKay also discovered a centrifugal gradient pattern, which indicated that there was a tendency for most crimes to decrease in direct proportion to the distance from the center of the city. This pattern appeared to remain geographically consistent over time, in spite of residential ethnic composition. Accordingly, the impetus of Shaw and McKay's crime research became the ecological characteristics of places, instead of the

individual characteristics of the residents. In this paradigm, delinquency became associated with the social structure and organization of a place.

Shaw and McKay viewed their efforts as more than mere academic endeavors, and in 1932 began a program to implement positive changes within high crime neighborhoods in Chicago. As a result, the Chicago Area Project was developed, which coordinated community resources and activity programs in an attempt to lower delinquency rates among the juvenile population. Although the project operated for 25 years, its actual effects on delinquency were never adequately measured or analyzed. Miller (1958), assessing the results of a similar project in Boston, concluded that although worthwhile goals were accomplished, there was little direct impact on delinquency rates. Although the patterns produced by Shaw and McKay in Chicago have been difficult to replicate, spatial analyses of crime rates have been analyzed by researchers.

Based on the pioneering work of Shaw and McKay, criminologists have continued to test the complex relationship between the community, social disorganization and crime. *Social disorganization* is defined as the inability of a community structure to realize the common values of its residents and maintain effective social controls. This condition is assumed to increase the likelihood of crime since social control institutions are difficult to establish when the residents of a neighborhood have no interest in a community they wish to leave at the first opportunity. Sampson (1995) maintains that the goal of community level research is to identify characteristics, structures and cultures influencing criminal opportunity, and has been instrumental in the recommendation that places must

be changed instead of people. Stark (1987) found that five structural aspects of urban neighborhoods (density, use, poverty, transience, and dilapidation) increase the levels of crime by heightening moral cynicism. In recent times, the social disorganization approach has been marginalized and criticized as being an outdated approach to crime research. The basic research model of Shaw and McKay, based on a large urban area in the 1930's has not been substantially updated in many contemporary macrosociological models.

THE SOCIAL CAPITAL MODEL

Key portions of contemporary social disorganization theory are entwined in the notion of *social capital*. Sampson (1995, 199) stated that, “a lack of social capital is one of the primary features of socially disorganized communities.” Vold, et al (1998) maintains that many communities fail to realize their common values due to a deficiency of social capital. Social capital, which is a conceptual wealth of relationships, mutual obligations, trust and organization, is assumed to have a general positive effect on society. If economic capital can be defined as the accumulation of money and goods, and human capital is conceptualized as the accumulation of education and talent, social capital can be seen as an *accumulation of relationships*.

As an intellectual concept, social capital was first used by Jacobs (1961) to explain the networks of neighborhood cooperation. Later, Bourdieu (1986) employed the term to emphasize the social resources embodied in social networks, with an emphasis on strategies for maintaining or changing one's position in hierarchal social structure. Bourdieu saw social capital as the result of privileges that come from being a member of a group. In other words, people of similar position, who share mutual attitudes, outlooks and dispositions, can help one another mobilize other forms of capital. Bourdieu maintained that social capital was, by its nature, unmeasurable.

Coleman (1988) uses the term to highlight the social context of education. Coleman views social capital as a morally neutral resource available in social structures. This commodity acts as a facilitator for certain actions, both good and bad. As a bridge between sociology and economics, Coleman's concept of social capital envisions it as a raw resource for the production of economic and human capital. In this context, information channels, norms and sanctions are created. Social contexts produce closure, insuring participant accountability. As participants are linked in more than one context and multiplex relationships, social capital will be produced in greater degrees. In his initial model involving high school dropouts, Coleman operationalized social capital into several factors. These factors were: the presence of parents in a home, number of children and siblings in a family, maternal educational expectation for the children, family mobility, and religious affiliation. Coleman concluded that the presence of social capital tended to decrease the dropout rate.

Putnam (1993a, 1993b, 1996, 2000) began to identify social capital with socio-psychological variables, stressing the moral and ethical values inherent in the concept. Putnam posits that social capital results in certain habits of the heart that propel individuals into civic life. Putnam also hypothesizes that the presence of social capital will minimize the risk of deviance by maintaining strong networks of norms and reciprocal engagement.

In addition to his other contributions to the conceptual framework of social capital, Putnam makes the distinction between vertical and horizontal forms of social capital. *Vertical social capital*, which is found in communities with a

powerful city government, involves unequal agents, and creates a dependency that cannot sustain social trust and cooperation. Conversely, the presence of *horizontal social capital* indicates mutuality among those of relatively equal status. This type of social capital fosters the robust norms needed in Putnam's ideal paradigm. In most of his research, Putnam operationalizes social capital in terms of voting patterns, newspaper readership, and participation in voluntary associations.

Edwards and Foley (1998) openly question Putnam's moralization of a traditionally neutral concept, maintaining that social capital can just as easily enhance the operation of a drug gang or death squad as it could community goodwill. Portes and Landolt (1996) dispute the notion that social capital is a panacea for social research, and maintain that, "the more social capital is celebrated for a growing list of wonderful effects, the less it has any distinct meaning." Greeley (1997, 593) adds that "this brilliant and potentially useful concept could be blurred and perverted as a weapon for those who wish to indulge in the popular game of lamenting all the things that are allegedly wrong with this country is a depressing commentary on just how ill suited many social scientists are to take up the roles of biblical prophets or puritan divines."

Finally, Warner (1999) posits that social capital in a community can play a vital role in *creating* excluded groups, instead of *enhancing the involvement* of excluded groups. Accordingly, certain individuals will get the benefit of social capital at the expense of others. Membership in a community often brings conformity and stifles the individuality needed to resolve social problems. High

levels of social capital might be characteristic of a highly polarized or fragmented society rather than a smoothly functioning one.

While it is true that social capital as a theory has been undeveloped compared with its use in research (Wall, Ferrazzi, and Schryer 1998), it retains a useful purpose in this present study as a neighborhood-based concept with potential predictive value for crime. There is little in the literature regarding social capital and crime. Aside from Putnam's social capital index that shows vicinities with high social capital are less pugnacious, there has been no empirical study of the effects of social capital on crime rates. Although Sampson (1995) comes close, he does not use a social capital model in his research.

The goal of this paper is to begin a refining process for the purpose of moving the study of crime and social capital from generalities to a set of initial generalizations. The notion of social capital as I have conceptualized it for this research can be expressed in the following terms: community field, community activeness, community solidarity, community cohesion, structural solidarity, embeddedness, and integration (Wall, Ferrazzi, and Schryer 1998). It is hypothesized that with high levels of horizontal social capital present in a neighborhood, potential lawbreakers will be hesitant to violate the personal or property rights of their fellow residents.

As individuals become more engaged with each other, social capital will be fostered by an abiding continuity and commonality present within the neighborhood. Continuous and generous amounts of social capital allow an area to develop tolerance for dealing with conflicts and varying interests. The element

of trust inherent in social capital envisions a willingness to take certain risks in a social context, with the expectation that there will be some type of reciprocation in kind. The norms provided by social capital provide a kind of informal social control. Areas lacking sufficient levels of social capital will be deficient in the foundations and structural frameworks through which desired outcomes may be achieved, resulting in the constant state of flux (Brown and Oldakowski 1986). Neighborhoods lacking in social capital are more susceptible to crime since this deficiency amplifies the social processes contributing to delinquency.

Social capital, like its ecological sister, social disorganization, is not evenly distributed across the landscape. Social capital, in the tradition of social ecology, appears to be an ideal subject matter for geographic research. Edwards and Foley (1998) have suggested that the distribution of social capital can be patterned along spatial lines. The appeal of social capital as a research concept in geography is that it is a sociological concept with spatial implications.

THE GEOGRAPHY OF CRIME

Social geography is concerned with the relationships between human activities and processes related to distance, culture and environmental factors. As such, it is valuable as a means of finding out what goes with what and where it goes. The concentration within social ecology on location and environment seems central to aerial studies of crime. Place is the discrete location in time and space where the offender and the target intersect, resulting in a crime being committed (Evans and Herbert 1989). Public perceptions of crime vary according to the place of occurrence.

Geography, of all the academic disciplines, is best positioned to study the environment of crime. Delinquent behavior cannot be separated from the setting in which it occurs. The local crime setting is a function of physical features, neighborhood type, neighborhood function, neighborhood perceptions and social context. Each type of crime has set of environmental hypotheses that explain spatial variation. Offenders have an awareness space that often determines the particular location of the offense, as they interact with and receive their stimuli from the environment. The offender's action space is a function of the crime location and characteristics. The spatial pattern of crime is determined in large part by the spatial pattern of the *opportunity* for crime.

The geography of crime can utilize standard criminology for basic theory, while relying on geography for analysis of distinct patterns and variations in space. This has been done quite successfully in previous studies involving spatial distribution of crime phenomena (Schmid 1960a, 1960b; Ackerman 1998). While no geographical study can explain why crime occurs or how to control it, geography aids in the understanding of crime by an examination of the factors underlying its spatial distribution (Harries 1974). This can be done by *description* (GIS, computer cartography), *analysis* (testing hypotheses and developing interpretive bases), and *prediction* (modeling and similar operations which allow the researcher to predict the location of criminal activity based on variations and changes within the socio-economic data). Accordingly, there has been an ever-increasing amount of literature on the applications of geography to crime (Ackerman 1998, Brown 1986, Evans and Herbert 1989, George-Aberjie and Harries 1980, Harries 1985, 1989, and Harries and Powell 1994).

METHODOLOGY

Two methods were used in the study. First the spatial distribution of crime and several socio-economic variables was mapped and visually inspected. Next, a series of stepwise multiple regression analyses were run. Each of these methods corroborated the other and helped to better understand 1996 crime patterns in Austin and the potential locations of social capital.

Study Area

The study area is Austin and Travis County, Texas. Austin, as the capital of Texas and the home of the University of Texas, has been traditionally sustained by the twin pillars of government and education. Recent developments within the region have resulted in Austin becoming one of the premiere national hubs for the high tech industry. The combined effects of high tech business along with the bases of education and government, have resulted in rapid and sustained growth for the area. Overall, Austin can be characterized as a fairly affluent and educated community with a relatively low crime rate. Since a peak of 110.2 crimes per 1000 in 1990, the total crime rate has been steadily dropping and was at 78.66 crimes per 1000 in the study year of 1996.

Data

The units of analysis for this study were the 146 census tracts constituting the city of Austin (Figure 1). Although it is possible to test this theory at different geographic scales, such as counties, states, or regions, the census tract provides a compelling unit of analysis.

The census tract also helps diminish the problem of the *ecological or aggregative fallacy* by analyzing the variables at a smaller aggregation. Most macro-sociological concepts refer to the properties of groups. Social structure theories assume that there are important community level dynamics related to crime. Robinson (1950), however, noted the problematic nature of ecological correlation, specifically questioning the validity of individual level inferences made on the basis of aggregate data. This so-called aggregative fallacy is the error of assuming that associations found among events when describing aggregates will also be found to the same degree and in the same direction when the association between actions and situations are examined individually. The aggregation error occurs because proportions and rates are summarizing statistics, single numbers abstracted from a collection of numbers that are supposed to describe the behavior of individuals in that population. Such statistics tend to lose information. The loss of information and aggregating error become greater as larger variations in the population are described. Also, the more varied the people for whom a summarizing statistic is abstracted, the greater the aggregating error.

Figure 1. CENSUS TRACTS,
TRAVIS COUNTY, 1990



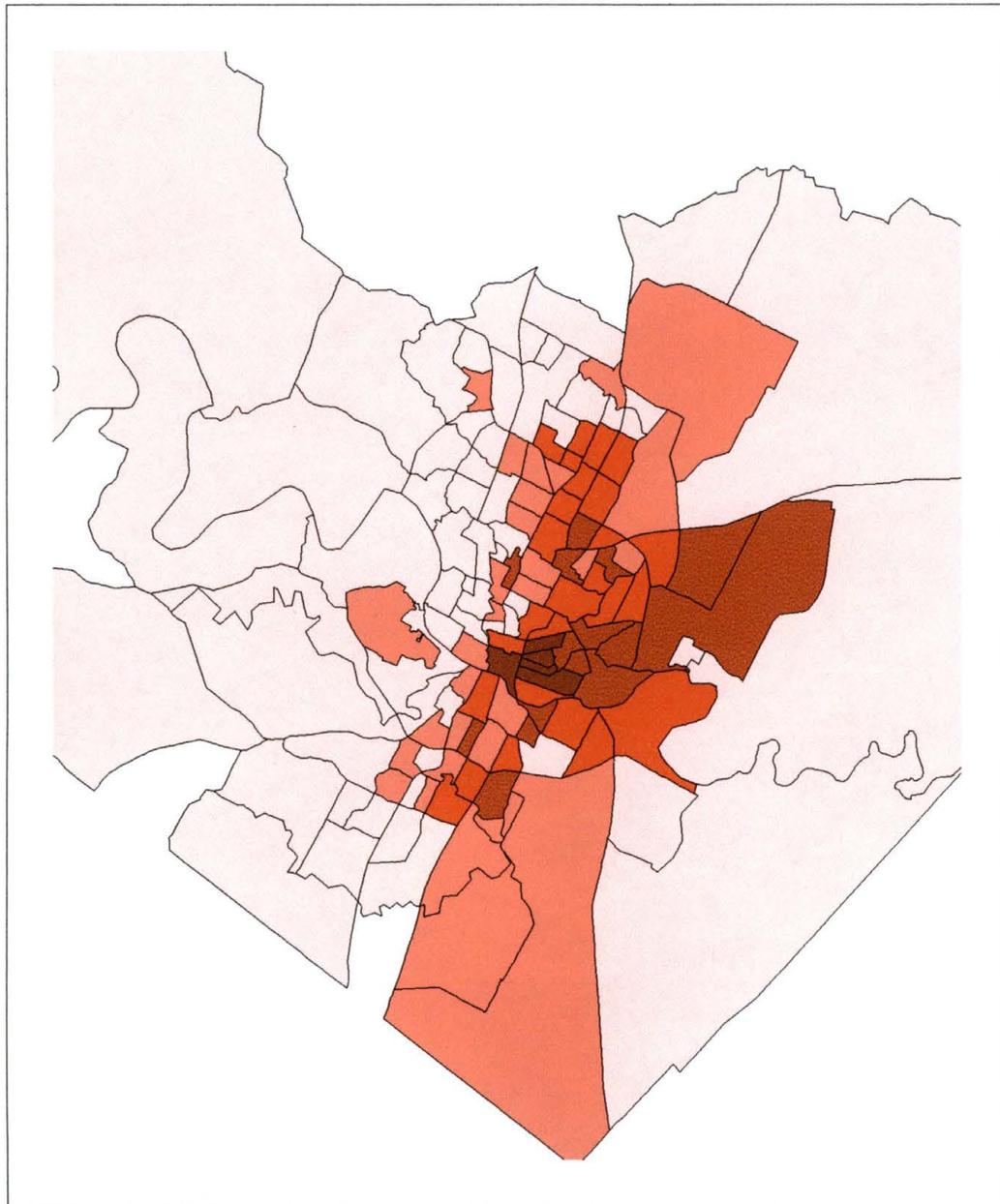
These considerations show why the use of smaller aggregate units, such as census tracts, often provides a better basis for geographic research. In this paper, Austin is treated as a series of local homogenous communities via census tract units instead of a single more heterogeneous entity. It is believed that both social capital and crime are best measured and analyzed at this level.

Unfortunately, some have concluded that social structure macro-research is meaningless. For a period of time after the 1960s, group aspects of criminal behavior ceased to be examined on a regular basis, leading many to maintain that group characteristics should always assume a secondary position in research even when neighborhoods are the unit of analysis. A full understanding, however, of many issues in criminology is possible only through a linkage of individual motivational processes and community characteristics. By examining the community context, it is possible to explain the actions of aggregates without reference to the actions of their individual components.

Crime data by census tract came from the City of Austin (2000). These crime data were initially saved as text files, edited in an excel worksheet, and ultimately placed in a data base file. The data base file format serves two purposes. First it can be utilized in the SPSS program for statistical analyses. Secondly, it can be imported into Arcview 3.2, and joined to the shapefile attribute tables of census tracts (Figures 2 and 3) obtained from ESRI (2000) and the University of Texas Planning Department (2000).

Several categories of crime data were available. *Serious crimes*, also known as *index crimes*, constituted specifically chosen violent crimes (murders,

Figure 2. VIOLENT CRIME RATE:
TRAVIS COUNTY BY CENSUS TRACT, 1996



Violent Crime Rate per 1000 Persons

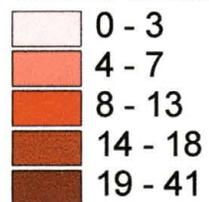
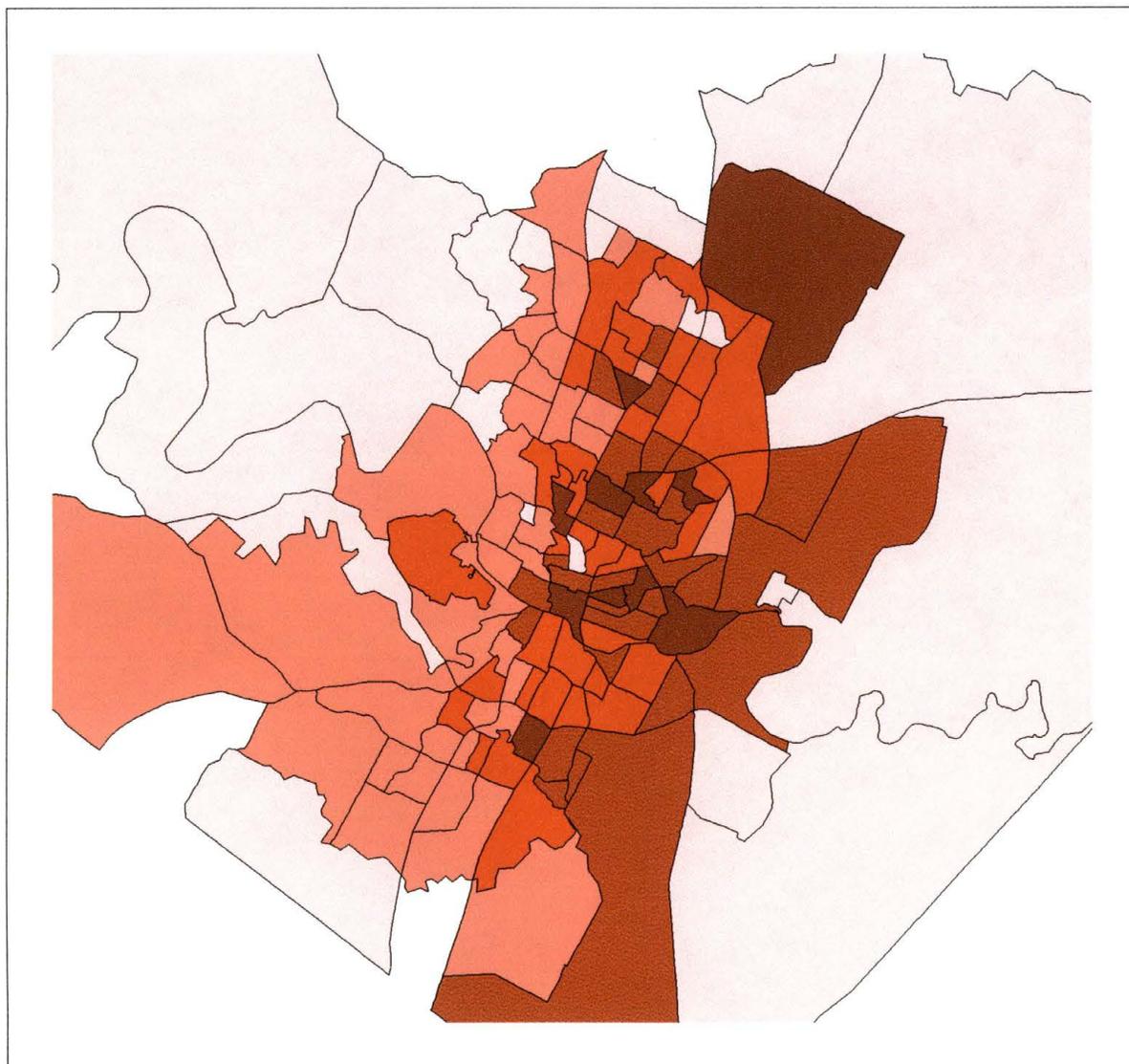
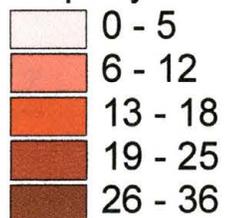


Figure 3. PROPERTY CRIME RATE:
TRAVIS COUNTY BY CENSUS TRACT, 1996



Property Crime Rate per 1000 Persons



rapes, robberies, and aggravated assaults), and property crimes (burglaries, larcenies, motor vehicle thefts and arsons). *Non-index crimes* (typical misdemeanor offenses) formed the rest of the recorded criminal activities for the crime data tables. In this paper, only violent crime and property crime data were used. Due to the overwhelming commercial nature of larceny, burglary was chosen as a surrogate for neighborhood property crimes in this study. These crime figures represent offenses reported to the police, and therefore serve as indicators or relative measures of crime. It cannot be assumed that actual arrests or subsequent convictions resulted from these reported crimes. Any research in this area must ultimately be wary of over reliance on official crime statistics. It is evident that official crime statistics often tend to reflect certain ecological biases inherent in the official response to criminal behaviors (Sampson and Groves 1989). This structural bias is also reflected in the very activities that society defines as crime or delinquent behavior (Lowman 1986). Some of the limitations in the use of official crime statistics involve issues of non-reported crimes, differential reporting for different crimes and different areas, and unequal law enforcement attitudes, policies and responses (Schmid 1960b).

In this paper, by using numbers of crimes reported to the police, much of the subjectivity surrounding arrests and prosecutions can be removed. Since these crime data indicate *where* the crime was committed instead of the characteristics of the offender, it was impossible to determine whether the reported crime was from *internal sources* (actual residents of the census tract unit), or *external sources* (non-residents committing crime in the unit). There is

obviously a discernable difference between an area that produces offenders and one that is merely attractive to offenders. Social ecology emphasizes deviant places instead of deviant people.

A rate involves the comparison between the number of actual cases and the number of potential events. Crime rates are calculated by taking the number of crime events and dividing by the resident population. These numbers are then multiplied by an index multiplier in order to standardize the results. For Austin census tract rates, 1000 was chosen for the index multiplier and thus, a crime rate of 100 represented 100 criminal events per 1000 residents. Census tracts with unreliable rates were eliminated from the analysis. These included the following census tracts: 11.99 (unknown population), 18.31 (Well's Branch area with unknown population), 18.36 (a part of Pflugerville with an extremely low population), 18.98 (a part of Manor with no reliable crime figures), 22.04 (Travis State School), 24.16 (a section of Moore's Crossing with unclear crime figures), and 203.09, 204.02, 204.04 (all outside of Travis County).

The quantification of social capital was problematic. Some sociologists believe that social capital can never be adequately operationalized due to its ambiguous nature (Edwards and Foley 1998). Temporal and financial limitations place practical prohibitions on a qualitative approach to data collection in this type of study. In the few quantitative studies of social capital that currently exist, the primary source of data has been responses to survey questions. Some groups have constructed their own survey questions, and both Putnam and Sampson utilized data from the GSS (General Social Survey). While the results

of large-scale non-parametric survey data are useful in a broad sociological context, they are often geographically deficient. In order to emphasize the spatial aspects of social capital, this current research relied upon data derived from the 1990 Census of Population and Housing publications and tapes produced by the U.S. Bureau of the Census. Although the census derived variables were not necessarily ideal for measuring social capital, they proved to be relatively specific and tangible, roughly reflecting the subtle conditions required for social capital. Most importantly, census data are spatial in nature, and therefore convenient to manipulated in GIS and SPSS programs. Since social capital can produce various results in different circumstances and settings, any assumptions made while operationalizing this concept must constantly be questioned (Edwards and Foley 1998). Because it is difficult to speak authoritatively in terms of declining or increasing social capital levels, researchers should be very cautious about sweeping generalizations (Greeley 1997). There is a need to distinguish between the indicators that reflect the level of social capital and the determinants of such a measure. In this paper, the operational definitions chosen to operationalize social capital may actually reveal the *opportunities* to produce social capital instead of the phenomenon itself.

Social capital can be conceptualized as consisting of two structural components: 1) continuity; and 2) commonality. **Continuity** represents the most intense structural component of social capital, and is suggested by the transience status, the age status and the housing status of particular census tracts. The transience status indicators chosen for this analysis were: proportion of persons

in homeless shelters, and proportion of persons living on the street. The age status indicators were: proportion of persons 35-54 years old, and proportion of persons 15-20 years old. The housing status indicators are: proportion of housing units vacant, proportion of housing units that are duplexes, proportion of housing units that are apartments, and percentage of housing units for migratory workers. Table 1 shows the complete list of conceptual and operational (dependent and independent) variables. The variables can be justified as follows: *Proportion on the street* and *in proportion in homeless shelters* designate the homeless population of an area, whether they are in a type of housing unit or not. These categories were enumerated during "Shelter and Street Night" operations conducted by the Census Bureau. *Persons on the street* is defined as persons who are visible in street locations or places designated by city officials as places where the homeless congregate at night. *Emergency shelters for homeless persons* is defined as permanent and temporary emergency housing, missions, hotels/motels, and flophouses for the homeless charging \$12 or less per night.

Also included in the definition were Salvation Army shelters, hotels, and motels used entirely for homeless persons regardless of the nightly rate charged, and similar places known to have persons who have no usual home elsewhere staying overnight. Finally, this definition includes shelters and group homes that provide temporary sleeping facilities for runaway, neglected and homeless children. These variables were selected by the author in order to reveal short-term transience and provide the antithesis of a stable long-term neighborhood.

Table 1: Complete list of conceptual and operational variables

<i>Conceptual Variables</i>	<i>Operational Variables</i>
Violent Crime*	Reported murders, rapes, robberies and aggravated assaults per 1000 population
Property Crime*	Reported burglaries per 1000 population
Transience**	Proportion of persons in homeless shelters Proportion of persons on the street
Age**	Proportion of persons, aged 35-54 Proportion of persons, aged 15-20
Housing**	Proportion housing units vacant Proportion housing units owner occupied Proportion housing units, duplexes Proportion housing units, apartments Proportion housing units for migratory workers
Family**	Proportion single with child families Proportion of single persons
Proximity**	Proportion of persons with a commute less than 15 minutes Proportion of persons working at home Proportion of persons working outside the county
Race/Ethnicity	Proportion of Black persons Proportion of Hispanic persons
Human Capital	Proportion of persons who are college graduates Proportion of persons employed as managers and professionals
Economic Capital	Proportion of persons in poverty

Dependent variables *

Social Capital variables **

Transience is posited to be positively correlated with crime. Even though these variables affect relatively few census tracts, they are hypothesized to have an enormous influence on the types and amounts of crime in an area. Rapid population turnover, measured by high mobility and rapid population change, has been associated with a deficiency of friendship and social networks and is often a common positive correlate in community based crime theories (Messner 1983, Sampson 1995). Violent crime rates are especially high in high mobility areas with decreasing populations. With aggregate data from 65 large American MSAs, Crutchfield, Geerken and Gove (1982) found that measures of geographic mobility correlate significantly with both property and violent crime.

The development of social capital and participation in local networks is also a function of the length of residence in a community (Bursik and Webb 1982; Wall, Ferrazi, and Schryer 1998). Increasing levels of mobility result in a lack of attachment of people to places and people to other people. In other words, for social capital to develop, individuals must live together for a substantial enough period of time in order to allow norms and patterns to emerge. Although it is somewhat problematic that Putnam (1996) concluded that residential mobility has marginal value in predicting the presence of social capital, the basis for his conclusion can be distinguished. Because Putnam conducted a longitudinal study with highly aggregated data from the General Social Survey, he was not able to conduct a spatial analysis. Any conclusions from non-spatial research do not necessarily apply to spatial analyses of crime utilizing smaller units. Prior

criminological research of local areas has consistently made the connection between residential transience and crime.

Proportion of persons aged 35-54 is a variable created by the author to represent persons of middle age status and is posited to be a good representation of the relative stability of a neighborhood. Putnam (1996) maintains that mature Americans seem to be more engaged with their community than others.

Proportion vacant is defined as the proportion of units that are unoccupied. A housing unit is vacant if no one is living in it at the time of the census enumeration, unless its occupants are only temporarily absent. Units temporarily occupied at the time of the enumeration entirely by persons who have a usual residence elsewhere are also classified as vacant. *Proportion owner occupied* is defined as the proportion of housing units lived in by the owner or co-owner, even if the unit is mortgaged or not fully paid for. In this definition, the unit is also considered owned with a mortgage if it is built on leased land and there is a mortgage on the unit. *Proportion of duplexes* and *proportion of apartments* are defined as the proportion of housing units within a census tract that can be characterized as duplex or apartment dwelling. Finally, *proportion migrant units* is defined as the proportion of migratory worker units within a census tract. The prevalent type of housing within a neighborhood can have profound effects on continuity and opportunities for crime. Occupied housing tends to be conducive to overall stability. High vacancy rates,

conversely, can produce structural and social vacuums, that are often filled by delinquent activities.

A combination of variables can be used to measure *commonality*, and the resulting mutual participation. Communities predominantly made up of families with children, tend to have numerous common activities, centering on recreational organizations, schools or churches. Sampson (1995) maintains that family disruptions decrease the networks of social control needed for the development of social capital. Family stability can increase the responsibility in a neighborhood, allowing for greater observation of activities. Few criminologists would dispute the contention that the family represents one of the key socializing agencies in our society. *Proportion of persons aged 15 to 20* is an age group variable created by the author and can be deemed to represent the presence of the common activities previously mentioned. Children of this age group are frequently engaged in extracurricular activities that provide opportunities for commonality, although in some settings this variable can be a positive predictor of criminal activity.

Proportion single with children is defined as the proportion of households with a single parent as the head householder, and can be deemed to represent an aspect of family disruption. *Proportion single* is defined as individuals who have never been married, including persons whose only marriage was annulled.

Proportion with a commute less than 15 minutes is defined as all workers above the age of 16 who drive less than 15 minutes to get to their place of employment. Travel time to work refers to the total number of minutes that it

usually takes the person to get from home to work during the week. The elapsed time includes time spent waiting for public transportation, picking up passengers in carpools, and time spent in other activities related to getting to work.

Proportion working outside of the county is defined as workers who have their employment in a county different than their county of residence. *Proportion working at home* is defined as individuals who do not commute to work and therefore do not have to leave their homes for employment purposes. Larger proportions of people working closer to where they reside will foster the formulation of social capital, since more time can theoretically be spent with neighbors. Close proximity in space, whether it is physical, economic or social fosters an overlapping and interaction in situations involving work, school or recreation. Social capital can be thought of as the raw material of civil society and can be visualized in the *space* between people (Warner 1999). While the family and proximity variables have been chosen as a measure of commonality, it remains a difficult concept to quantitatively conceptualize. Although Verba, Schlozman, and Brady (1995) maintain these traditional, nostalgic forms of participation are outdated, family and proximity seem appropriate for this present research.

It is necessary in a study such as this, to *control* for variables that others have suggested to have a positive effect on crime rates. Controlling in a statistical study means isolating the effects of the social capital model variables, absent the influence of other variables that could be significant. Controlling can test the interpretations of the relationship between crime and social capital while

looking at the broader context of other related factors. The control variables are broadly categorized as human capital, economic capital and race.

Human capital, an accumulation of past investments in education and training that raises the productive capacity of people, has been hypothesized to have explanatory value in analysis of the crime rate. In this proposal, human capital is operationalized with variables reflecting education and career status. *Proportion of individuals having a bachelors degree* is defined as the proportion of adults over the age of 25 who have graduated from college with a bachelors degree. *Proportion of executives or professionals* is defined as the proportion of persons, 16 years or older, employed in an executive, administrative or managerial capacity.

Economic capital has traditionally been correlated with crime rates. *Proportion of persons in poverty* is defined as the sum of the number of persons in families with incomes below the poverty level and the number of unrelated individuals with incomes below the poverty level. In 1990 the poverty threshold annual income was \$6,310 for a single individual and \$12,674 for a family of four. Portes and Landolt (1996) maintain that the success of a community can only be truly measured in terms of its objective economic resources. Among the oldest theories in criminology have been those that attempt to explain criminal behavior in terms of economic differences. Simply put, if crime is caused by poverty, then there should be higher crime rates in places and times where there are more poor people. Most recent studies, however, have shown that the general crime rate does not necessarily increase during economic recessions. Overall, the

research in this area has been inconclusive. Sampson (1995) notes that while some studies have shown a direct relationship between poverty and violence, others have shown a weak or insignificant independent relationship. Sampson and Groves (1989) suggest that although there is often a clear association between poverty and violent crime, poverty itself does not cause crime. This is evidenced by the fact that crime rates do not typically increase and decrease with levels of poverty. It is posited that the direct effect of poverty on the crime rate is weak and conditional on other community-based factors. Warner (1999) warns that it is not feasible to link the economic well-being of a place with social capital. While it is true that there is a relationship between these two phenomena in that social capital is a vital ingredient for true economic development (Putnam 1993a), and that lower economic status often denies the opportunity to create social capital, one variable is not necessarily indicative of the other. Coleman (1988) states that gains in economic and human capital often come at the expense of social capital.

Shaw and McKay (1942) posited in their early research that *heterogeneity* can provide a key determinant in the stability of an area. While many studies show that rates of violence had significant correlations with the black percentage of population, race itself should not be an independent explanatory factor of crime rates (Sampson 1995). Albeit, the racial characteristics of an area can often be insightful. *Proportion Black* is defined as the percentage of the tract population who indicated their race was Black, Negro, African- American, Afro-American, Black Puerto Rican, Jamaican Nigerian, West Indian or Haitian. *Proportion*

Hispanic is defined as the percentage of the tract population that classified themselves as being of Hispanic origin. Hispanic origin includes those who indicated they are Mexican, Puerto Rican, Cuban, as well as those who indicated that they were of Other Spanish/Hispanic origin. Persons of Other Spanish/Hispanic origin are those with origins from Spain, the Spanish speaking countries of Latin America or those who identify themselves generally as Spanish, Spanish-American, Hispanic, Latino, etc.

Multiple Regression Analysis

For a relationship to be causal three conditions must exist:

- 1) a statistically significant relationship between the cause and the effect;
- 2) the cause must precede the effect;
- 3) the relationship must be non-spurious.

After the initial map analysis, a stepwise multiple regression analysis was run on the data, using SPSS 10.0. This regression analysis was performed in order to test their combined relationships and predictive ability on the various crime rates. Variables entered the equation at the .05 level of significance and were removed at the .10 level of significance. After the regression analysis, the spatial patterns of Austin crime were re-interpreted and explained.

Map Analysis

1996 crime data and 1990 census data were overlaid on maps containing census tract boundaries and major road networks. The following data were employed:

- 1) violent crime rate consisting of the combined rates of murder, rape, aggravated assault, robbery and arson;
- 2) property crime rate consisting of the burglary rate;
- 3) proportion of persons living in homeless shelters;
- 4) proportion of persons living in the street;
- 5) proportion of vacant units;
- 6) proportion of duplex units;
- 7) proportion of single with children households;
- 8) proportion of persons aged 35-54;
- 9) proportion of persons aged 15-20;
- 10) proportion of residents that are Black;
- 11) proportion of residents that are Hispanic;
- 12) proportion of college graduates;
- 13) proportion of persons living in poverty;
- 14) violent crime model residuals;
- 15) property crime model residuals

Variables 1-2 are indicators of crime. Variables 3-9 are indicators of social capital. Variable 10 and 11 are indicators of ethnic status. Variable 12 is an

indicator of human capital and variable 13 is an indicator of economic capital. Variables 14 and 15 show underpredicted and overpredicted areas with the social capital model. Analyses of the census tracts on these bases show the differences between neighborhoods in terms of violent crime rates, property crime rates, and capital. The various rates and proportions of each census tract unit were categorically mapped through Arcview 3.2 in order to show the emerging distributions and patterns of crime throughout the city of Austin.

Census tracts were grouped as follows. The distribution was divided into five classifications based on natural breaks. Individual map layers were analyzed in a graduated color scheme in order to determine the spatial distribution of the corresponding variable. The census tract layers were then superimposed on the layer containing major road networks. The maps were used to delineate high and low crime areas of Austin. Once these crime areas were defined, they were compared to areas that were delineated with high or low levels of social capital. Patterns of crime or social capital development were then identified and analyzed. The residuals maps were divided into four categories in order to show standard deviations above 1 and below -1 . The purpose of the analyses were to determine:

- 1) what is the pattern of violent crime in Austin?
- 2) what is the pattern of property crime in Austin?
- 3) what is the pattern of human capital in Austin?
- 4) what is the pattern of economic capital in Austin?

- 5) what is the pattern of race in Austin?
- 6) what is the pattern of social capital in Austin?
- 7) how are the independent variables related to the crime patterns?
- 8) if the residuals reveal other variables that could serve as better predictors of crime in Austin.

RESULTS OF MULTIPLE REGRESSION ANALYSIS

A stepwise regression analysis was conducted for the two dependent variables. Table 2 shows the dependent variables and their hypothesized association with the independent variables. A detailed analysis of the social capital model and the control variables follows. A summary of all the regressions is condensed into two tables at the end of this section. Complete regression analysis output and a covariance matrix can be found in the appendix.

Violent Crime

An initial stepwise regression of 136 census tracts was performed, with 10 variables representing social capital, and a number of control variables representing race, human capital and economic capital. The initial model with all 15 of the variables entered explained 77% of the variance in violent crime rates. When both racial and human capital variables were excluded from the analysis, the model explained 69% of the variance in violent crime rate. When all control variables, including economic capital variables were excluded, the final model still managed to explain 65% of the variance in violent crime across the city of Austin. Four variables entered into this final social capital equation. The first variable to enter the equation was *proportion in shelters*. Its Beta of .467 indicates that the increase of one standard deviation for proportion of homeless

Table 2: The independent variables and their hypothesized association with the dependent variables

Independent Variables	Hypothesized Association	
	V	P
Proportion of persons in homeless shelters	+	+
Proportion of housing units for migratory workers	+	+
Proportion of persons on the street	+	+
Proportion of persons, aged 35-54	-	-
Proportion of persons, aged 15-20	-	-
Proportion housing units vacant	+	+
Proportion housing units owner occupied	-	-
Proportion housing units duplexes	+	+
Proportion housing units apartments	+	+
Proportion single with child families	+	+
Proportion of single persons	+	+
Proportion of persons with a commute less than 15 minutes	-	-
Proportion of persons working outside county of residence	+	+
Proportion of persons working at home	-	-
Proportion of Black persons	+	+
Proportion of Hispanic persons	+	+
Proportion of persons college graduates	-	-
Proportion of persons occupied as managers and professionals	-	-
Proportion of persons in poverty	+	-

V = violent crime rate; P = property crime rate

shelters increases the standard deviation of violent crime rate by .467 standard deviation units. The second variable to enter the equation was *proportion of vacant units*, with a Beta of .325. *Proportion of households single with children* was the next variable to enter the equation, with a Beta of .375. The final variable entering, with a Beta of -.237, was *proportion ages 35-54*.

Property Crime

As with the violent crime variable, a stepwise regression of 136 census tracts was performed, with 9 variables representing social capital, and a number of control variables representing race, human capital and economic capital. The initial model with all 14 of the independent variables explained 47% of the variance in violent crime rates. When the racial variables and human capital variables were excluded from the analysis, the model explained 51% of the variation in property crime rates, proving the strength of poverty as a predictor of crime. When all the control variables were excluded from the analysis, the remaining social capital variables still managed to explain 44% of the variance in property crime throughout the city of Austin. Five variables entered into this final social capital equation. The first variable to enter the equation was *proportion ages 35-54*. Its Beta of -.558 indicates that the increase of one standard deviation for proportion ages 35-54 decreases the standard deviation of property crime rate by .558. Next, *proportion of persons on the street* entered the equation with a Beta of .305, while *proportion ages 15-20* entered with a Beta

coefficient of $-.307$. Fourth, *proportion of vacant units* entered the regression equation with a Beta of $.226$. The last variable to enter the equation was *proportion of duplexes*, with a Beta of $.133$.

Summary of Regression Results

A summary of the regression results (Table 3) lists all the significant independent variables in the order that they entered the stepwise regression equation. The variables representing human capital never entered into the equation, bringing into question their usefulness in a structural study of violent crime. Race, economic capital, and social capital were found to be important with respect to *violent crime rates*. Neighborhoods with higher concentrations of minorities and poverty tend to have higher violent crime rates. This tendency is amplified in transient and areas with more vacant units.

It is significant however, that after the control variables representing race, human capital and economic capital are dropped from the analysis, the remaining social capital variables managed to explain almost 65% of the variation in violent crime rates across the city of Austin (Table 4). Within this model, all of the conceptual variables associated with social capital are utilized. The proportion of vacant units within a census tract explains 30% of the variation. In order to capitalize on social capital, it has been noted that a neighborhood must have eyes (Jacobs 1961). Increasing numbers of vacant housing units tends to create vacuums of surveillance, decreasing the informal social controls needed to deter violent crime within a neighborhood.

Table 3. Summary of regression results for violent crime rates and property crime rates relative to all independent variables

Dependent Variable	Cumulative R Squared	Beta	Independent Variables
Violent crime rate	.341	.178	in poverty
	.501	.405	in shelters
	.646	.389	black
	.733	.349	hispanic
	.765	.225	vacant units
	.774	.110	working at home
Property crime rate	.360	.491	in poverty
	.409	.251	on the street
	.444	.175	in duplexes
	.474	.188	black

NOTE: Independent variables were measured as proportions
 Variables are listed in the order of their entrance into the equation; p = .05.

Table 4. Summary of regression results for violent crime rates and property crime rates relative to social capital independent variables

Dependent Variable	Cumulative R Squared	Beta	Independent Variables
Violent crime rate	.300	.325	vacant units
	.466	.467	in shelters
	.601	.375	single w/children
	.651	-.237	ages 35-54
Property crime rate	.220	-.558	ages 35-54
	.312	.305	on the street
	.385	-.307	ages 15-20
	.424	.226	vacant units
	.440	.133	duplex units

NOTE: Independent variables were measured as proportions

Variables are listed in the order of their entrance into the equation; $p = .05$.

Even though the proportion of persons in homeless shelters only affects 6 of the 136 census tract units, it still managed to explain almost 17% of the variation in the violent crime rate. Homeless persons are transient by their very nature. Transient areas often have difficulties in establishing sufficient levels of knowledge, cohesion and cooperation required for safe neighborhoods. Social capital tends to decrease with residential anonymity and mobility.

Equally significant in the social capital model was the proportion of families characterized by single heads of households with children. Single parent families tend to be more mobile than two parent families. High mobility, combined with less parental supervision, makes this variable a good predictor of crime rates.

The significance of proportion aged 35-54 show the significance of middle age stability in the social capital model. Neighborhood welfare is often dependent upon mature individuals who take on the responsibility of neighborhood maintenance. These individuals become the eyes of the neighborhood previously mentioned. While it was initially hypothesized that the elderly population over 55 years old would be a good social capital based predictor of crime, this variable actually had the opposite effect. Older persons tend to become victims of crime instead of a bulwark against criminal activity.

The cumulative R square result of .651 indicates that the social capital model could serve as an important predictor for violent crime rates. In the final social capital model, only the variable single with children shows high correlations with proportion black or proportion Hispanic, while proportion aged

35-54 shows a significant negative correlation with the poverty variable.

Accordingly, future researchers must remain cautious in maintaining that social capital as a violent crime predictor crosses economic and racial boundaries.

The variation in property crime rates was more difficult to explain (Table 3). In the initial run with all of the independent variables, which explained 47% of the variation in property crime rates, the only non-social capital variables to enter the equation were proportion in poverty and proportion black. As with violent crime rates, human capital variables never entered into the equation.

Interestingly, the proportion black variable had a relatively weak Beta value and only explained an additional 3% of the variation. Once again, it appears that poor neighborhoods with declining levels of social capital are more susceptible to property crimes.

When the poverty variable is excluded from the equation, the social capital variables manage to explain 44 % of the variance (Table 4). In this social capital model, the age variables proved to be most important. Proportion of age 35-54 and proportion of age 15-20, both negatively correlated with property crime, managed to explain more than 29% of the variability in property crime rates. Once again, both the continuity and commonality aspects of social capital are emphasized. When a neighborhood has a sufficient number of mature, middle-aged individuals, teenage residents have the proper neighborhood supervision necessary for social capital to exist. In this context, young people are seen as an asset to a community instead of positive predictors of crime. The contributions of transience and neighborhood housing conditions are shown by the presence of

persons on the street, vacant units and duplexes in the social capital equation. Together these variables explain almost 15% of the variation within the equation. Only the variable ages 35-54 is significantly correlated positively with proportion of college graduates, and negatively with poverty. The social capital model appears to do only an adequate job as a predictor of property crime, leaving 56% of the variation unexplained.

RESULTS OF MAP ANALYSIS

The results of the map analysis largely support the findings of the regression analysis and help to illustrate the distribution of crime in Austin and its relationship to social capital. In addition, by mapping residuals of both violent and property crime models, additional variables for future study were suggested.

Violent Crime Rates

The map of the violent crime rate across the city of Austin reveals that the majority of higher rates are occurring east of Interstate 35 (Figure 2). The core area of downtown Austin (tract 11.00) is the focal point for the highest crime rates. From this core, the areas of higher rates (tracts 8.03, 8.04, 9.01 and 9.02) continue to extend into the eastern sections of Austin proceeding along FM 973. The 12th Street/Capitol area on its north, and the Colorado River on its south define tract 11.00. Its east and west borders are Shoal Creek and Interstate 35, respectively. Tract 12.00, just west of this area is, ironically, one of the safer areas for violent crimes. The reason for this appears to be the fact that some of the older established neighborhoods begin at this location. West of MoPac, violent crime appears to be virtually nonexistent. Both North and South Austin show lesser concentrations of higher crime rates. In the north, a triangle of tracts (18.12, 21.05, and 21.12) anchors a contiguous sector of higher rates. In the

south, the triangle of tracts 13.08, 24.02 and 24.11 form a distinct, but less concentrated area of higher rates. Both sectors extend to either side of Interstate 35. Violent crime rate anomalies are: tracts 2.03, 17.22, 19.04 and 13.08 with higher than expected rates, and tracts 5.00, 6.01, 6.04, 18.24, 18.25, 18.32, 18.35, 20.02, 23.06, and 24.09 showing lower rates than expected.

Property Crime Rates

Unlike the concentrated patterns shown by the violent crime rates, property crime rates (Figure 3) appear to be more evenly dispersed through out the city of Austin, although located disproportionately north of the Colorado River. Tracts 2.04, 3.01, 21.05, 21.11, 21.12 and 11.00 form the borders of a higher rate sector, which proceeds east toward FM 973. East of FM 973, the rates dramatically decrease. As with violent crime, there are less concentrated sections of higher rates in the north and south parts of the city. In the north, a contiguous sector of higher rates has tract 18.05 as its apparent core area. In the south, tract 24.03 serves as the core of a contiguous sector of higher rates. These sectors stretch along both sides of Interstate 35. As with the violent rates, property crime rates are lower west of MoPac, although not as low. Property crime anomalies are: tracts 18.04, 18.05, 18.38 and 24.03 with higher than expected rates and tracts 6.01, 16.06, 18.19, 18.24, 18.25, 18.32, and 21.08 showing lower than expected rates.

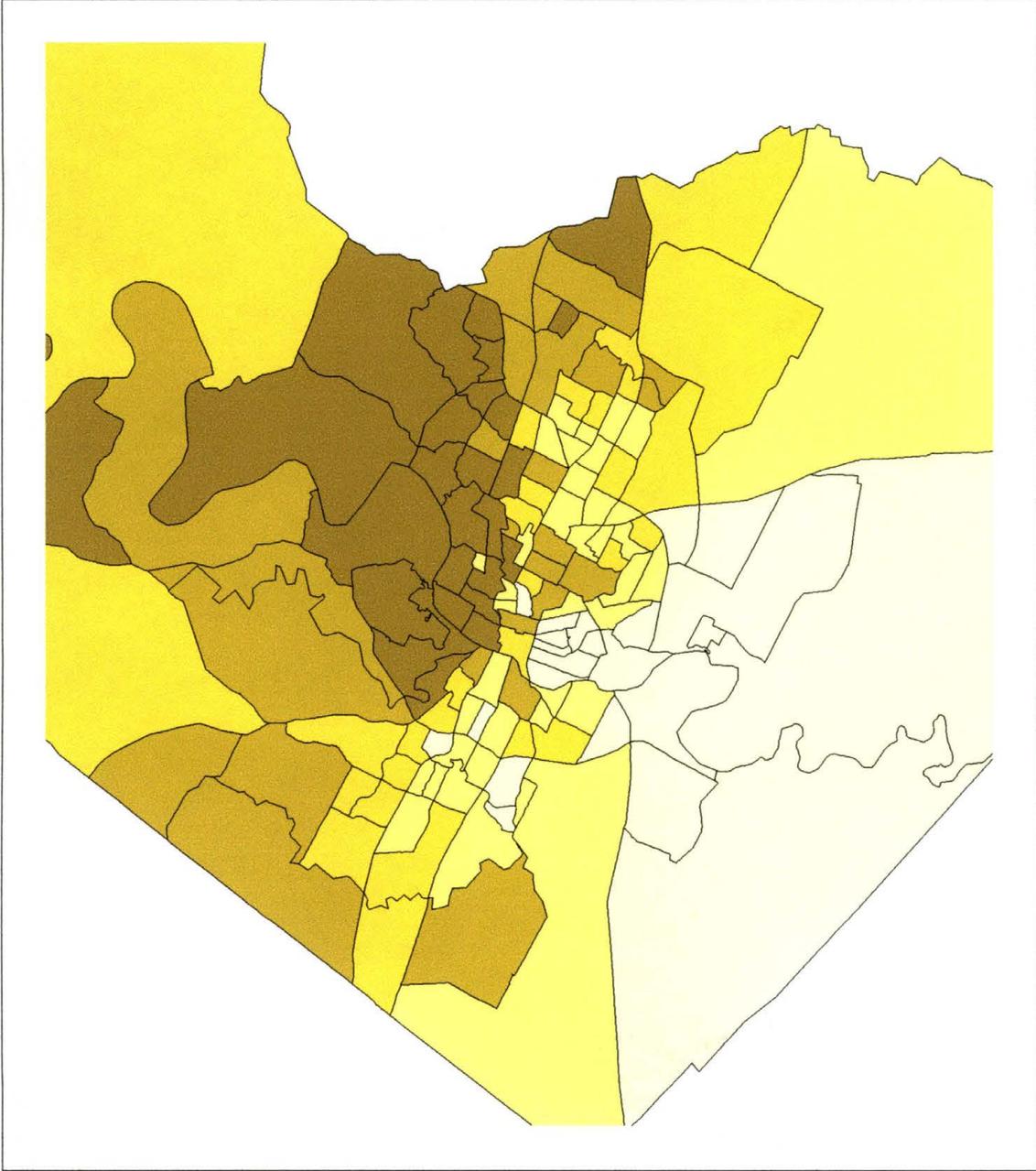
Human Capital

Figure 4 shows the proportion of college graduates, representing human capital levels. Human capital appears to be disproportionately high in the western parts of Austin. The largest contiguous block of high proportions (22-37%) stretches from tracts 17.10 in the north, to 19.01 in the south, and 17.25 in the west to 2.04 in the east. West Austin is showing itself to be the destination of choice for college-educated professionals, especially those who are migrating from other areas of the country. The less educated areas appear to be directly east of downtown, expanding north and south to the county line. The mid-range level of college graduate proportions proceeding north and south of Interstate 35 show why this variable is a poor predictor of crime rates. Many of the tracts exhibiting higher crime rates in the north and south and particularly tract 11.00 (downtown Austin) have respectable numbers of college graduates. These numbers apparently do not serve as a deterrent to crime. Human capital anomalies are: tract 24.18 with a higher than expected proportion of college graduates, and tracts 6.01, 13.06, 16.06 and 20.02 with lower than expected proportions of college graduates.

Economic Capital

Figure 5 shows the proportion of households that are living in poverty, representing the deficiencies in economic capital. The areas of greatest poverty are disproportionately located in east Austin, both north and south of the

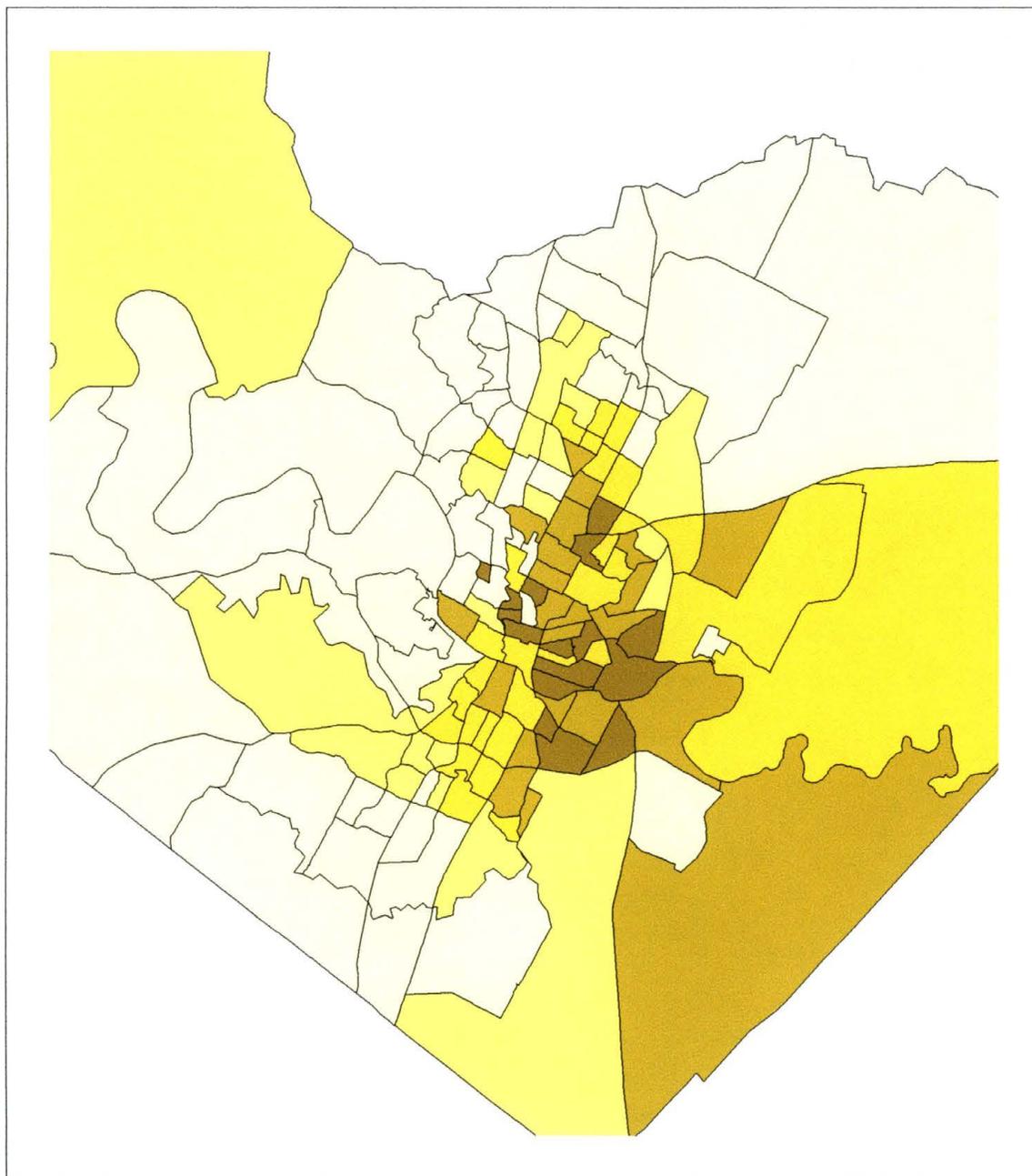
Figure 4.
PROPORTION OF COLLEGE GRADUATES: TRAVIS COUNTY
BY CENSUS TRACTS, 1990



College Graduates

0.004 - 0.048
0.048 - 0.1
0.1 - 0.155
0.155 - 0.219
0.219 - 0.368

Figure 5.
PROPORTION OF PERSONS IN POVERTY:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Poverty

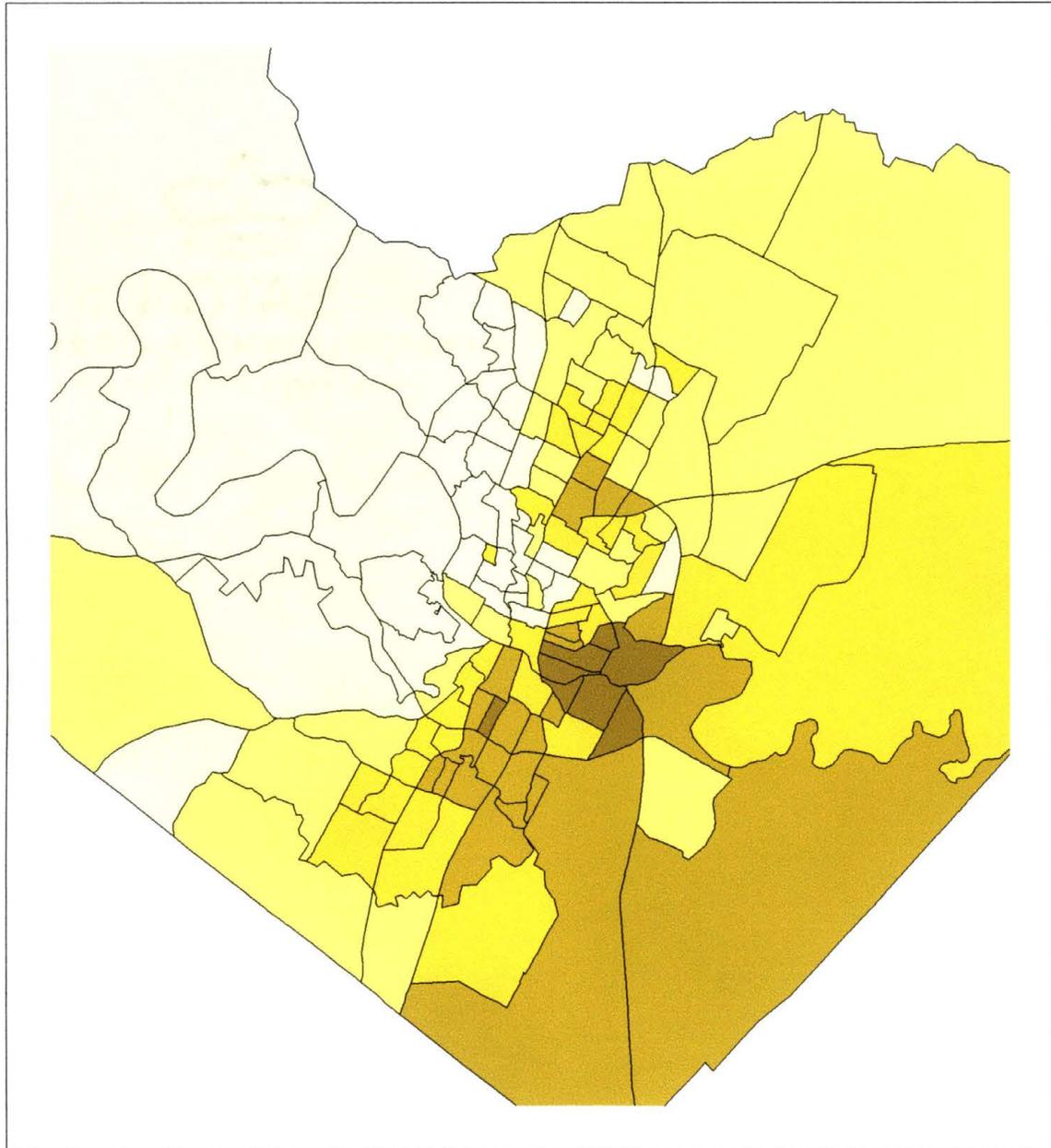
0 - 0.075
0.075 - 0.142
0.142 - 0.232
0.232 - 0.329
0.329 - 0.526

Colorado River. The contiguous core of higher poverty begins with tracts 6.03 and 6.04 northwest of downtown proceeding southeast to tracts 23.06 and northeast to tract 18.12. There are large sectors of relative affluence located to the north, south and west of this sector. When comparing the location of poverty with the locations of crime, it is easy to ascertain why the poverty variable is always the first entry into both regression equations. The predictive strength of this variable is especially noticeable with property crime rates. Maps of both of these variables are virtually indistinguishable. Anomalies for poverty proportions are: tracts 16.06, 17.04, 17.26, and 19.02 with higher than expected proportions and tracts 2.02, 2.03, 6.01, 15.04, 21.08, 21.13, 22.04, 23.03, and 24.09 showing lower than expected proportions.

Race/Ethnicity

Located southeast of the downtown area is a distinct area of Hispanic population (Figure 6). There are two additional sections in Austin with sizeable Hispanic populations. In the north, a contiguous area consisting of tracts 15.03, 18.04, 18.11 and 18.12, forms a section with 30-50% Hispanic population. In the southwest, there is a larger and more concentrated area of Hispanic population, centering on tract 13.08 (Havana Street just west of St. Edwards University). Aside from west Austin, Hispanic populations are spreading throughout the city in fairly large numbers. When compared with the crime rate maps, proportions of Hispanic population seem to be highly correlated with violent crime rates and less with property crime rates. Anomalies for Hispanic proportions are: tract 16.06 with a higher than expected proportion and tracts 21.08 and 23.06 with

Figure 6. PROPORTION OF HISPANICS:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Hispanic

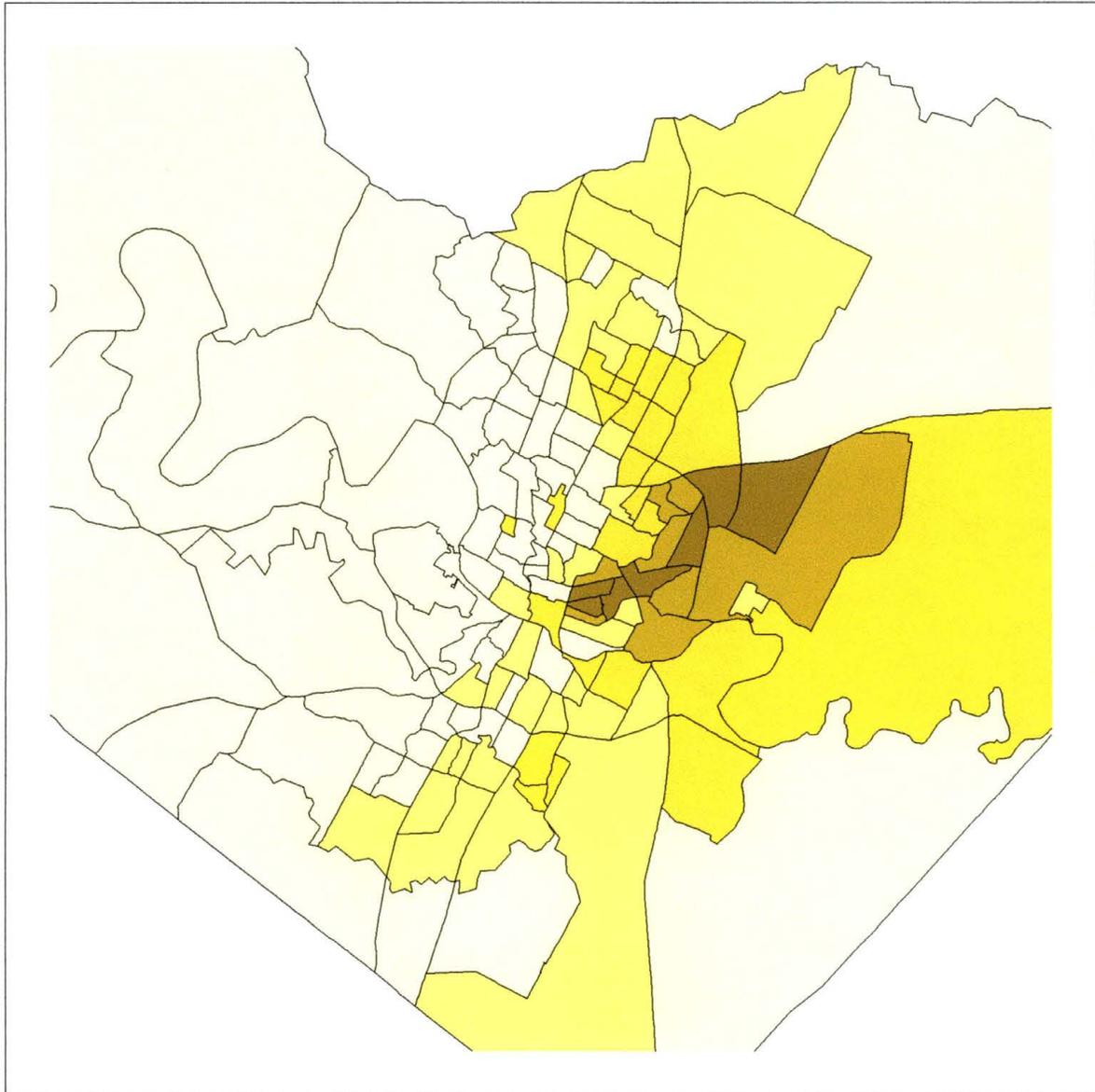
0.024 - 0.098
0.098 - 0.175
0.175 - 0.306
0.306 - 0.506
0.506 - 0.88

lower than expected proportions. The distribution of black population indicates census tracts with a majority of black residents. The higher black population groups form a narrow sector emanating from Interstate 35 just east of downtown, directly northeast, ending with tracts 22.01 and 22.02 (Figure 7). A contiguous area of tracts surrounding tract 18.19 represents a moderately sized black populated area in north Austin. As expected there are few blacks population in west Austin. Like the proportion of Hispanic population, black population proportions seem to be highly correlated with violent crime rates and less with property crime rates. Anomalies for black proportions are: tracts 2.03, and 16.06 which have higher than expected proportions and tracts 10.00, 14.00, 18.24, 18.26, 18.29, and 22.04 which show lower than expected proportions.

Social Capital

Seven variables were chosen to represent social capital for this map analysis. Figure 8 shows the proportions of persons living in homeless shelters. Only six census tracts (4.02, 9.02, 11.00, 13.00, 11.00, 21.10, and 22.06) show any amounts of homeless population. With the exception of 22.06 (the Garden Valley area), the remaining tracts have extremely high violent crime rates. The area with the highest violent crime rate in Austin, tract 11.00 has a disproportionate number of individuals in homeless shelters. This explains the staying power of this variable in the violent crime regression equation. Figure 9 depicts the proportion of persons living on the street. Only ten census tracts (2.04, 3.01, 6.04, 9.02, 11.00, 12.00, 13.03, 13.05, 13.08, and 14.00) contain

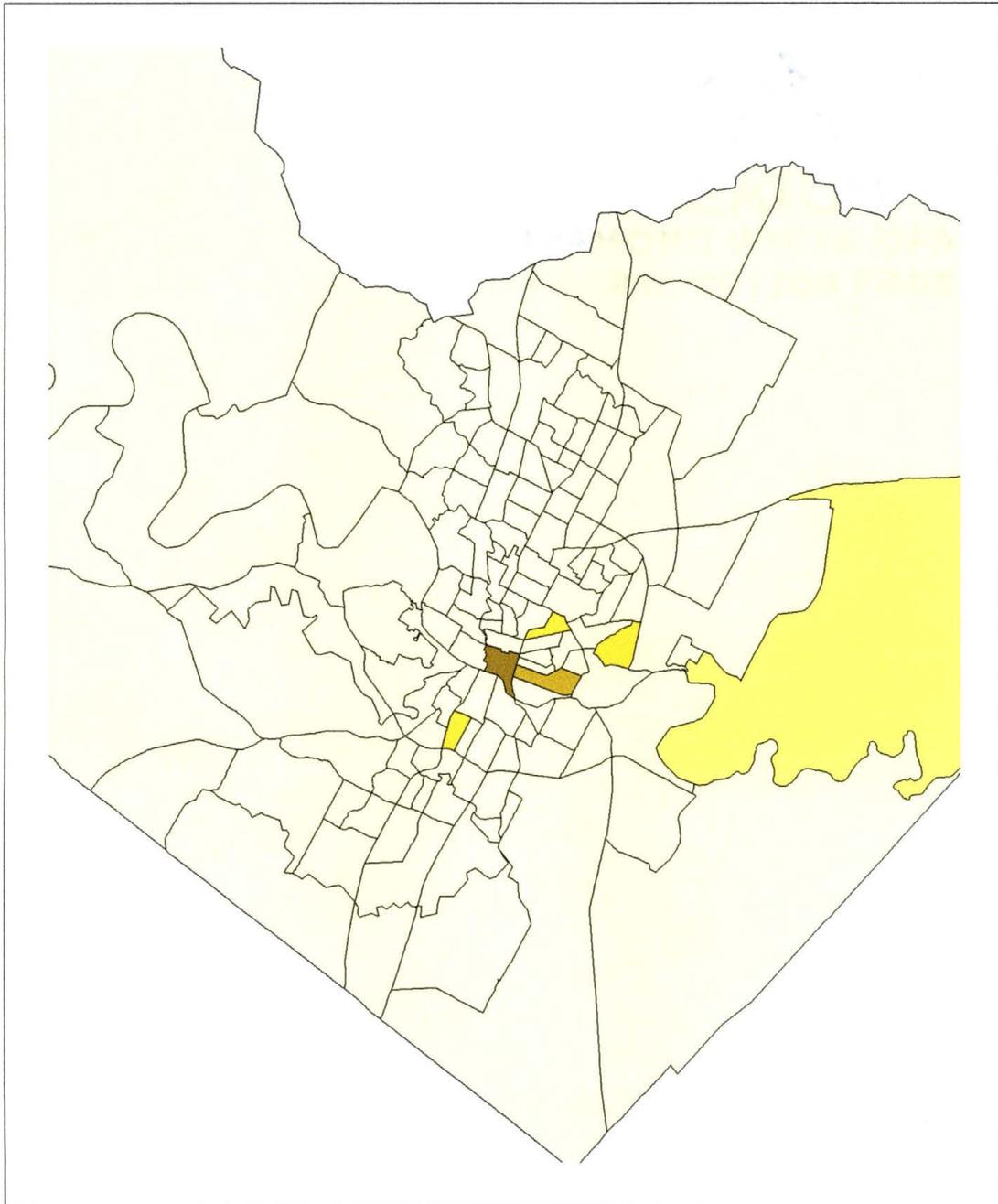
Figure 7. PROPORTION OF BLACK POPULATION:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Black

0.001 - 0.054
0.054 - 0.142
0.142 - 0.326
0.326 - 0.566
0.566 - 0.873

Figure 8.
PROPORTION OF PERSONS IN SHELTERS:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Persons in Shelters

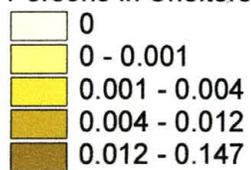
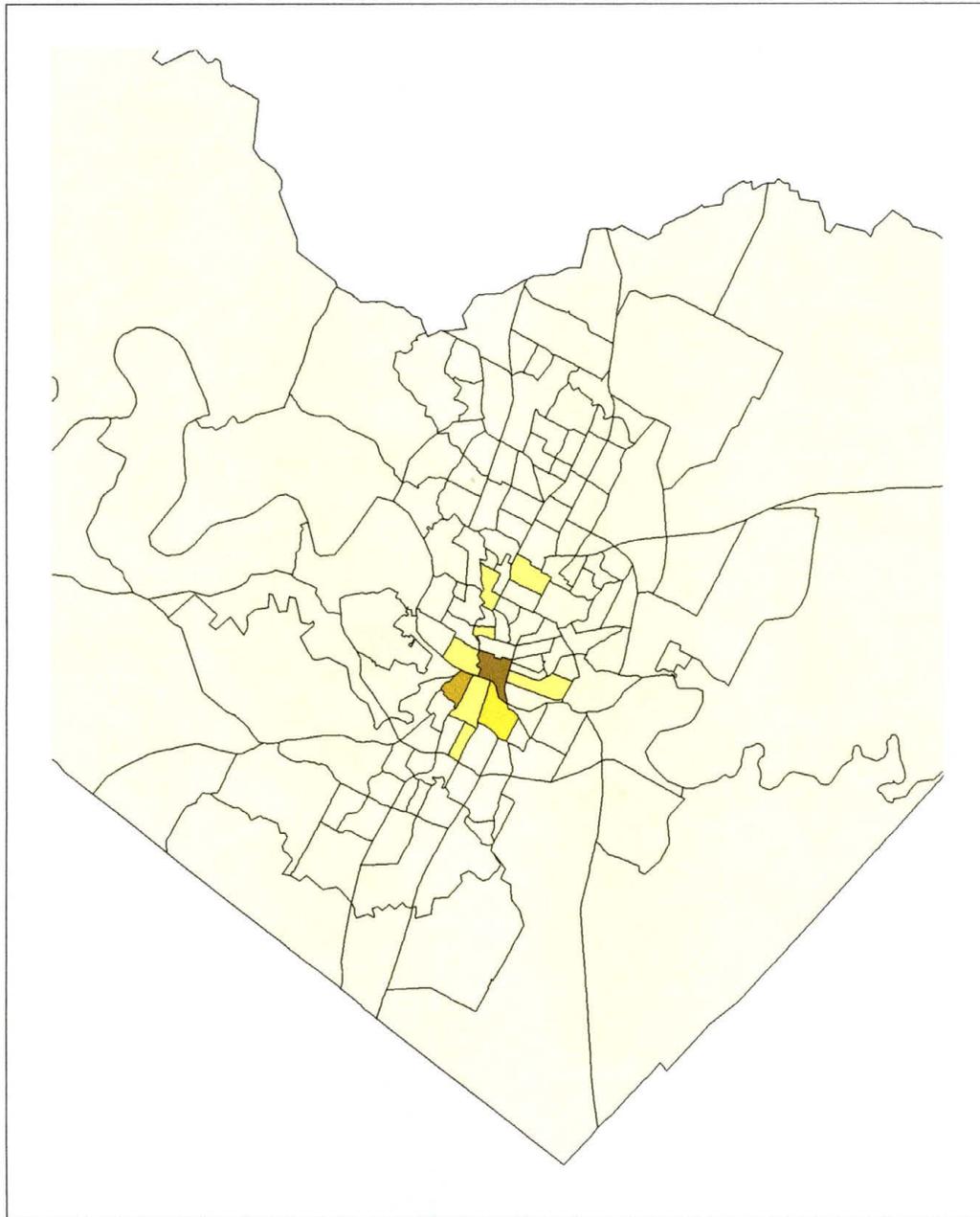
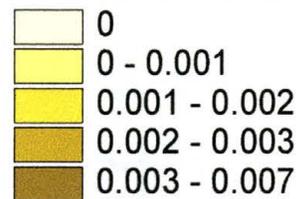


Figure 9.
PROPORTION OF PERSONS ON THE STREET:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Persons on the Street

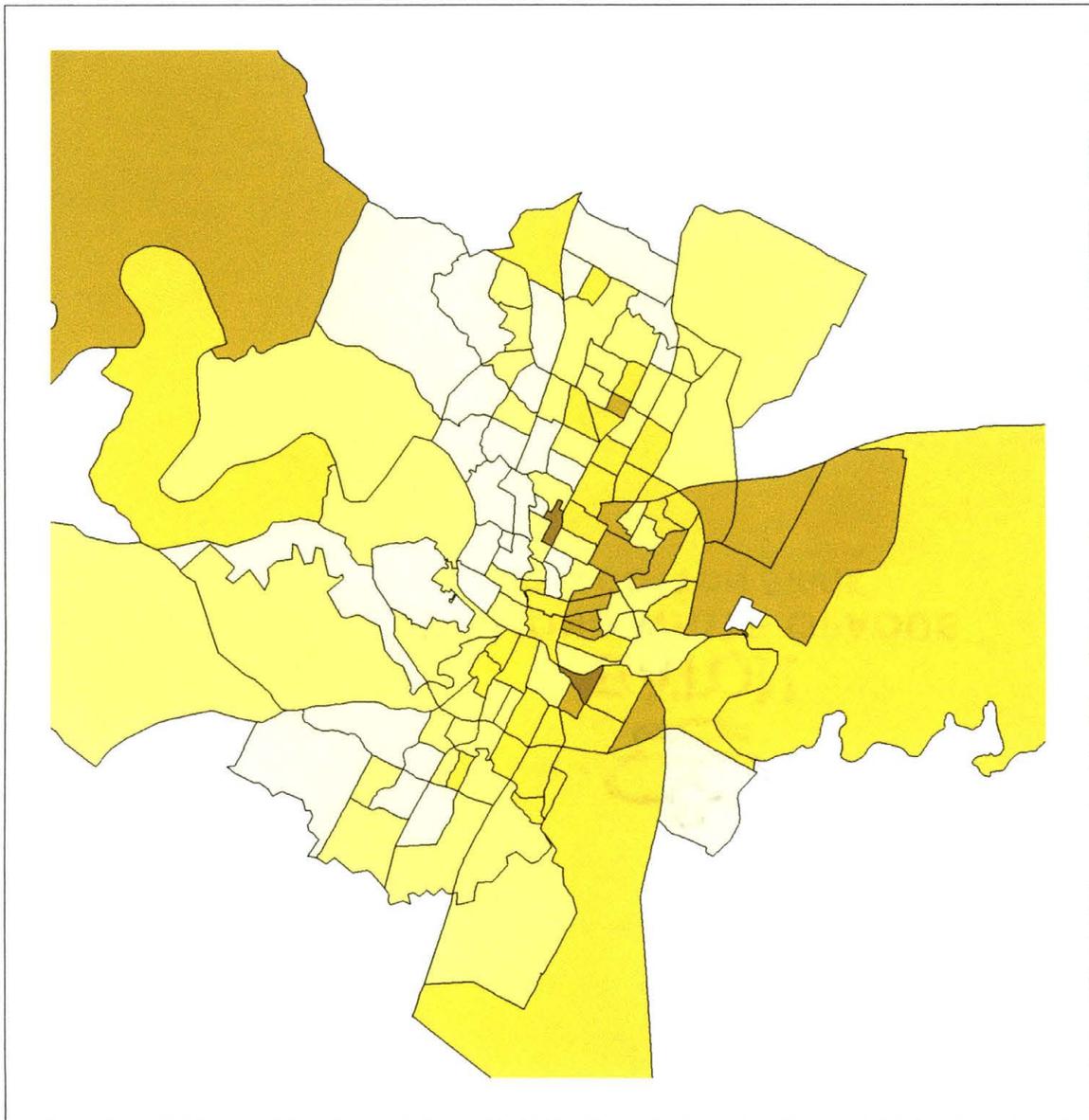


these homeless people. As with the homeless shelter variable, these ten census tracts are areas with high property crime rates. Once again, tract 11.00 contains one of the highest property crime rates in the city, as well as the largest populations of street people. This is one of the primary reasons that this variable entered into the regression equation for property crime across the city of Austin.

The highest areas of vacancy appear to be located in east Austin, mirroring the pattern seen with the violent crime rate (Figure 10). Aside from the high core area of east Austin and northwest Austin, levels of vacant housing seem to be dispersed somewhat uniformly across the city of Austin. This areal association is somewhat consistent with the dispersion of property crime rates in Figure 3. There is a large contiguous area of low to non-existent vacancy proportions located in northwest Austin, beginning from tract 16.03, and proceeding northwest to tract 17.10. Anomalies for proportion of vacant units are: tracts 2.03 and 23.04 which show higher than expected vacancy proportions and tracts 5.00, 6.01 and 22.04 that reveals lower than expected proportions.

Apart from west Austin, and a smaller area southeast of downtown, the proportion of duplex units appears to be the most equally dispersed of the social capital variables (Figure 11). Three contiguous areas in the north (core tract 18.19), central (core tract 5.00), and south (core tract 13.04) parts of the city, west of Interstate 35 form the highest areas duplex housing units. These patterns explain this variable's entrance into the regression equation for property crime rates, as a predictor of moderate to high property crime rates occurring north and south of the downtown area. Anomalies for proportion of duplex units

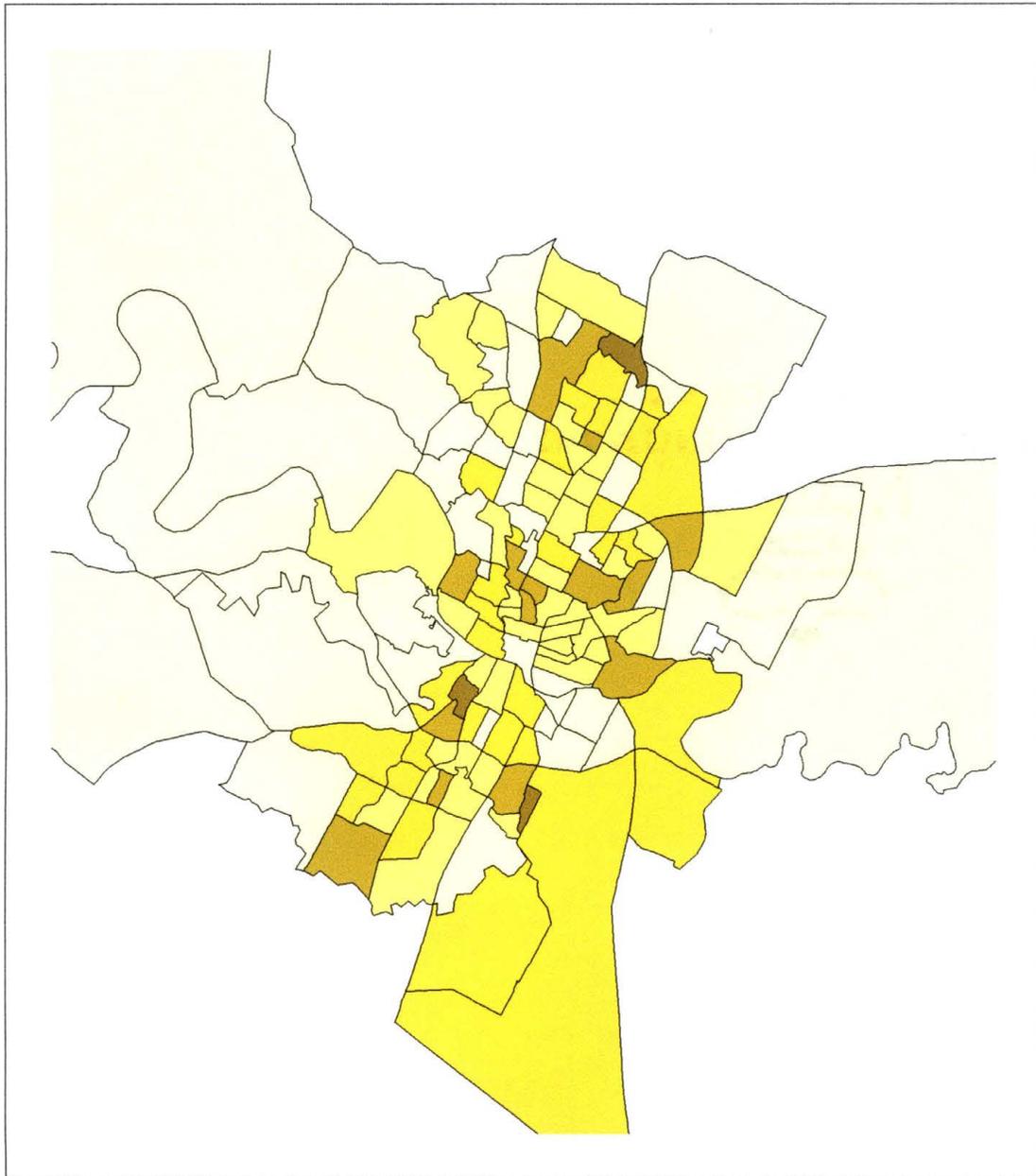
Figure 10. PROPORTION OF VACANT UNITS:
TRAVIS COUNTY BY CENSUS TRACT, 1990



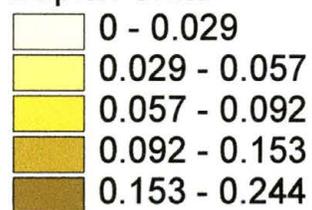
Vacant Units

0 - 0.071
0.071 - 0.116
0.116 - 0.183
0.183 - 0.306
0.306 - 0.5

Figure 11. PROPORTION OF DUPLEX UNITS:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Duplex Units

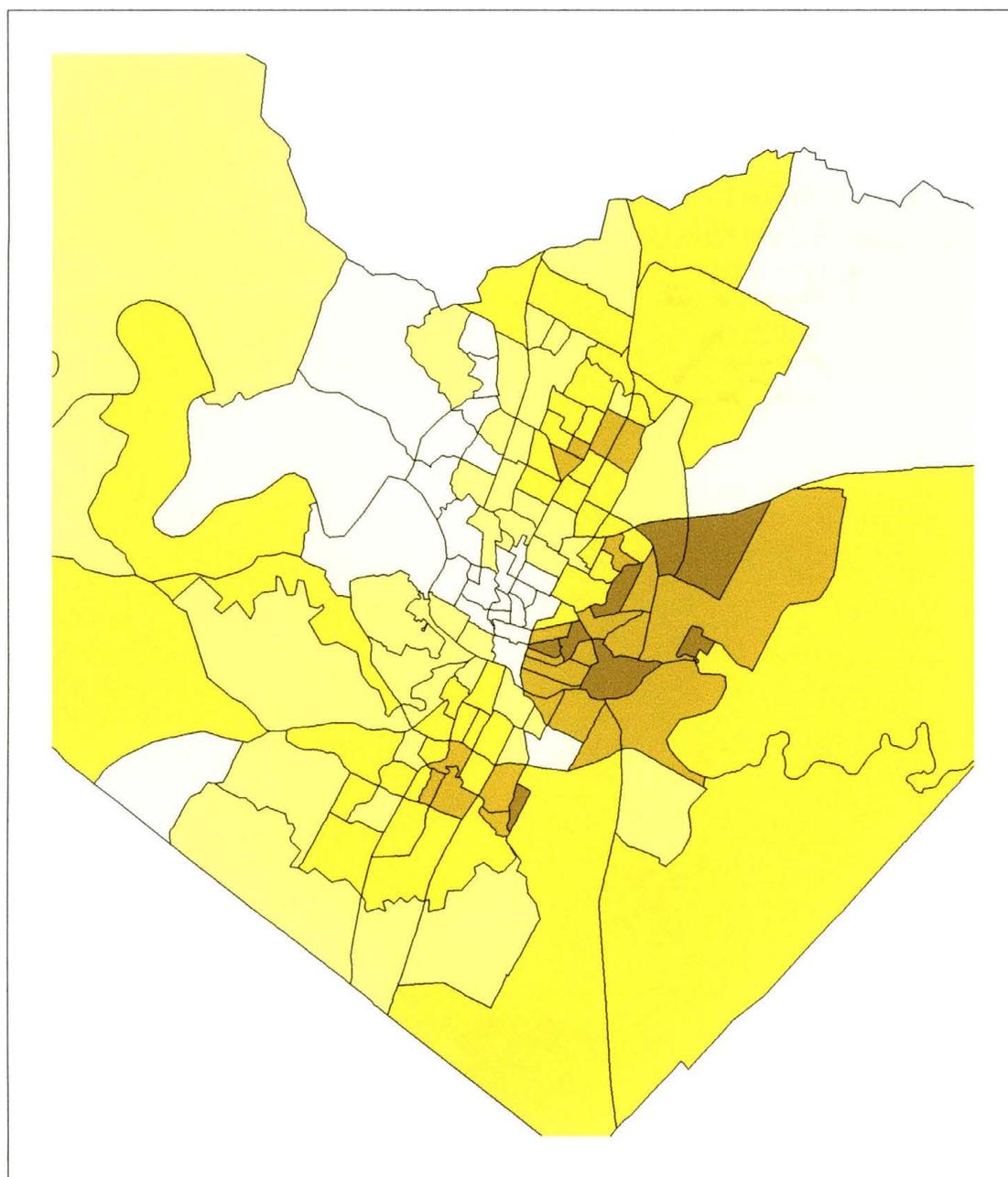


are: tracts 17.18, 18.26, and 24.13 which show higher than expected proportions, and tracts 2.01, 2.03, 13.08, 18.11, 18.13, 21.05, 22.04, and 24.05 which show lower than expected proportions.

Although moderate proportions of single with children families are dispersed fairly evenly in north and south Austin, the largest contiguous area of high proportions is found in east Austin, northeast of downtown (Figure 12). This appears to mirror the pattern found with violent crime rates and black population. This makes it a significant predictor of high violent crime rates occurring in east Austin. Lower proportions of single with children families are found in the central Austin sector, north of the Colorado River and a contiguous section northeast of this area. Anomalies for proportion of single with children families are: tracts 22.04 and 24.13, which show higher than expected proportions and tract 23.06 that shows a lower than expected proportion.

Figure 13 shows the proportion of persons ages 35-54. The largest sector of this middle age variable is found west of MoPac proceeding from tract 16.04, indicating a distance decay from the center of the city. While the rest of Austin has a somewhat equal dispersion of this variable, there are two pockets of lower proportions. The first is located just north of downtown Austin, beginning with tract 16.01 and extending northeast to tract 18.12. The second contiguous sector consists of four tracts (23.04, 23.05, 23.06, 23.07) in the southeast portion

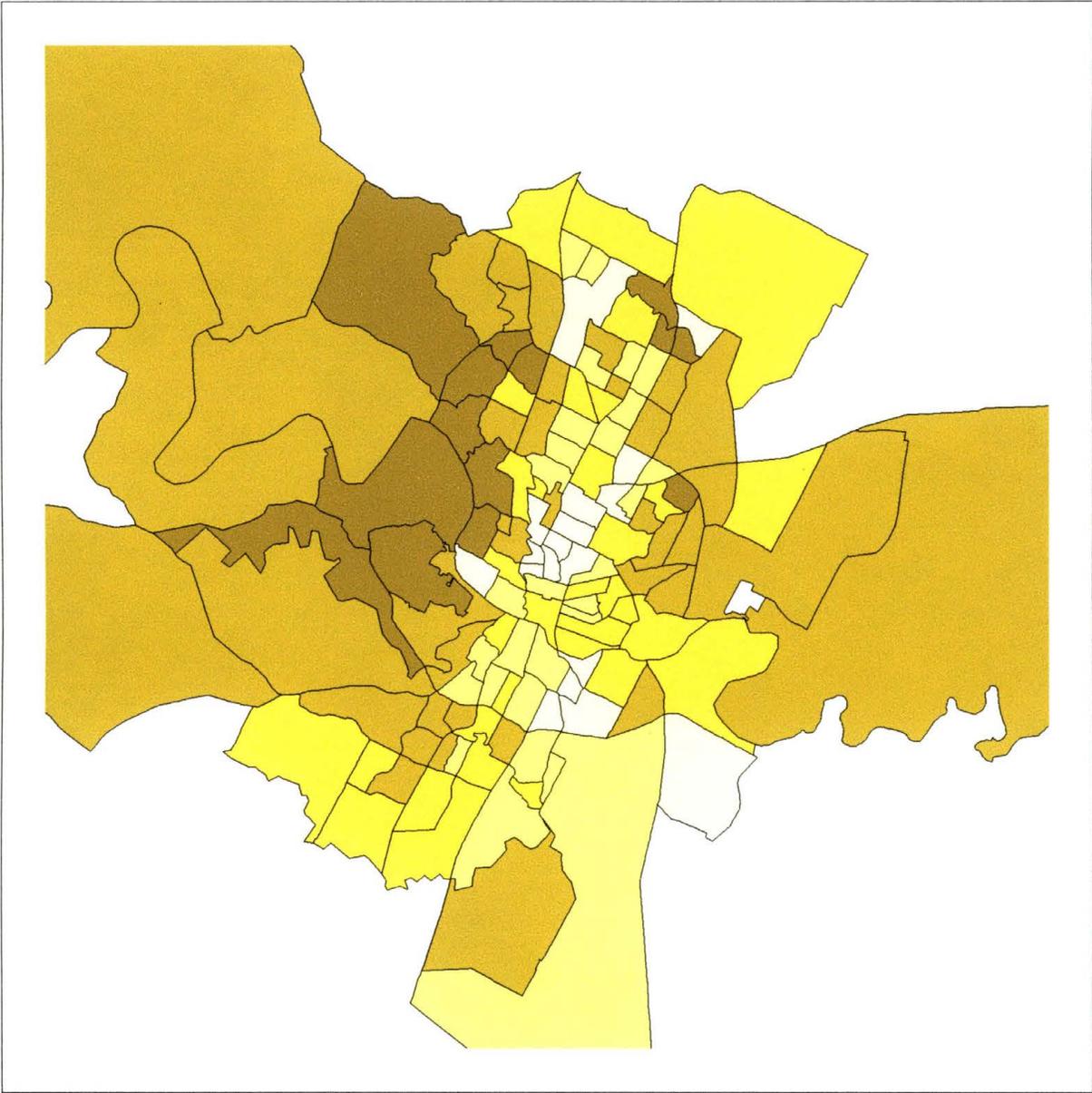
Figure 12. PROPORTION OF SINGLE WITH CHILDREN HOUSEHOLDS:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Single with Children

0 - 0.043
0.043 - 0.084
0.084 - 0.137
0.137 - 0.213
0.213 - 0.327

Figure 13. PROPORTION AGED 35-54:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Age 35-54

0.003 - 0.048
0.048 - 0.07
0.07 - 0.088
0.088 - 0.126
0.126 - 0.181

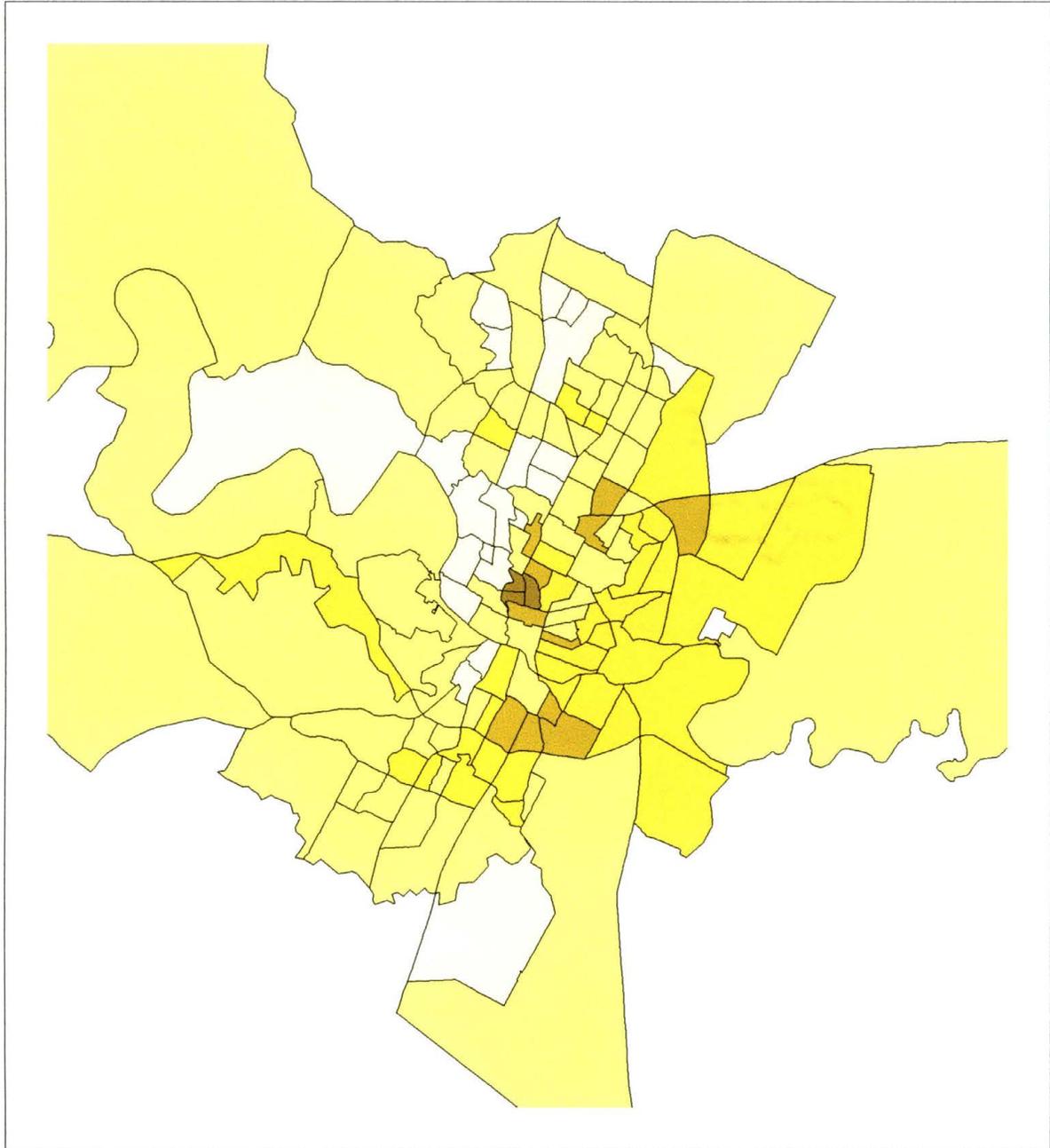
of the city. Large proportions of this variable in west Austin, accompanied by lower crime rates, assures this variable's entry into both regression equations. Anomalies for proportions of persons aged 35-54 are: tracts 18.24, 18.26, 18.32 and 21.13 which show higher than expected proportions, and tracts 16.02, 18.27, 18.35 and 22.04 which show lower than expected proportions.

Figure 14 shows the proportion of persons aged 15-20. The area with the largest proportions of youth appears to be appears to be a section north of downtown, consisting of tracts 2.03, 5.00, 6.01, 6.03, 6.04 and 7.00. Another contiguous sector with higher levels of youth is located in the south, comprised of tracts 23.05, 23.06, 23.07, and 23.08. The main area with lower levels of youth is located just northwest of central Austin, along North MoPac. When compared with the map of property crime rates, it is apparent that the aforementioned areas with high proportions of youths constitute the lower property crime rate sectors, explaining the negative correlation youth has with property crime.

Residuals

To better understand variations in the violent and property crime rates which were not adequately explained by the social capital model, standardized residuals were calculated and mapped for each census tract unit (Figures 15 and 16). Over 100 of the 136 census tract units produced standardized residuals between -1.0 and $+1.0$ standard deviation units. These counties were left blank on the map in order to highlight all census tracts falling outside of this general range. For violent crime rates the social capital model was a poor predictor in

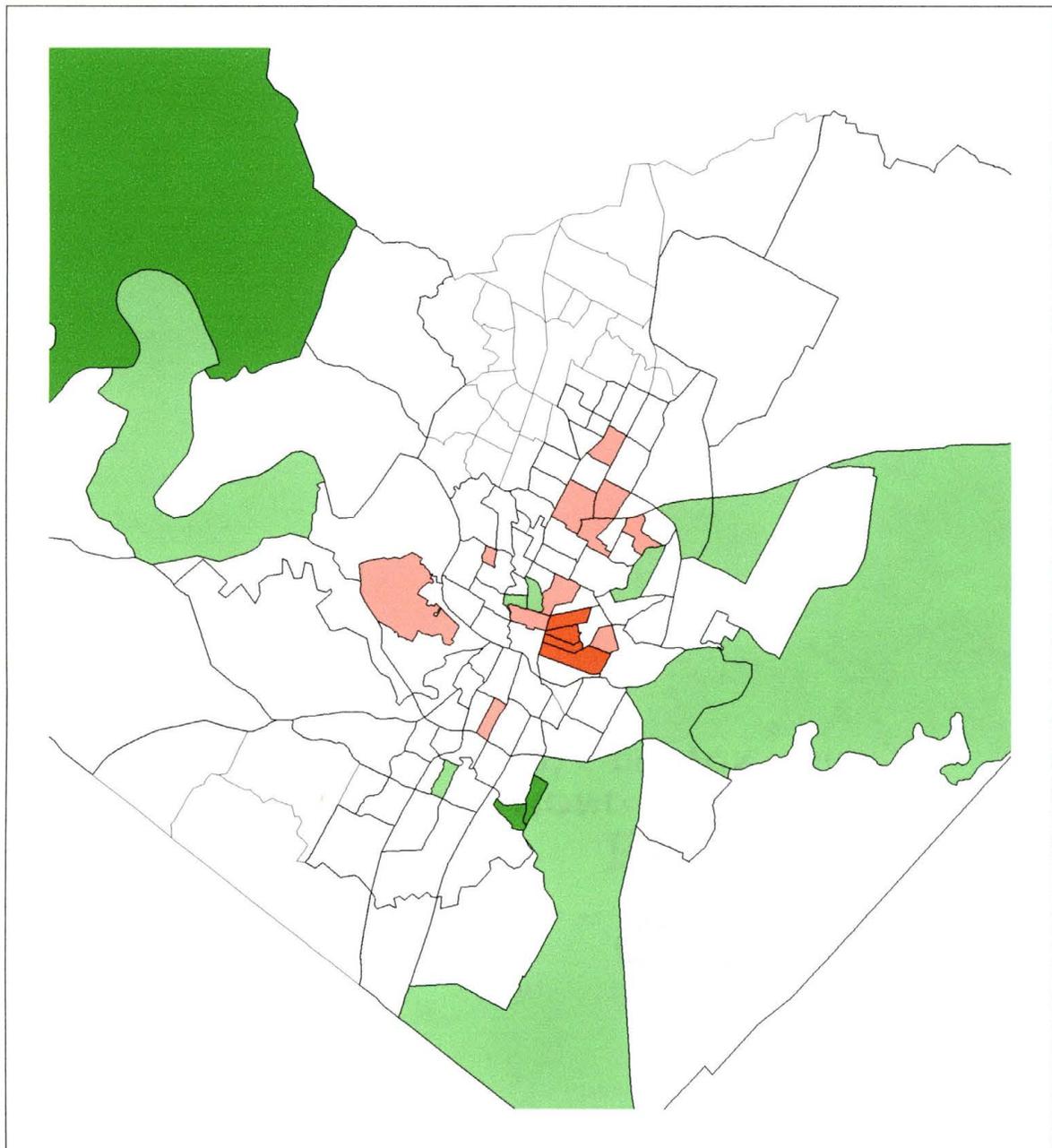
Figure 14. PROPORTION AGED 15-20:
TRAVIS COUNTY BY CENSUS TRACT, 1990



Age 15-20

White	0.023 - 0.061
Light Yellow	0.061 - 0.091
Yellow	0.091 - 0.136
Orange	0.136 - 0.267
Dark Brown	0.267 - 0.818

Figure 15. VIOLENT CRIME RESIDUALS

**Violent Crime Residuals**

-2.5 - -1.5

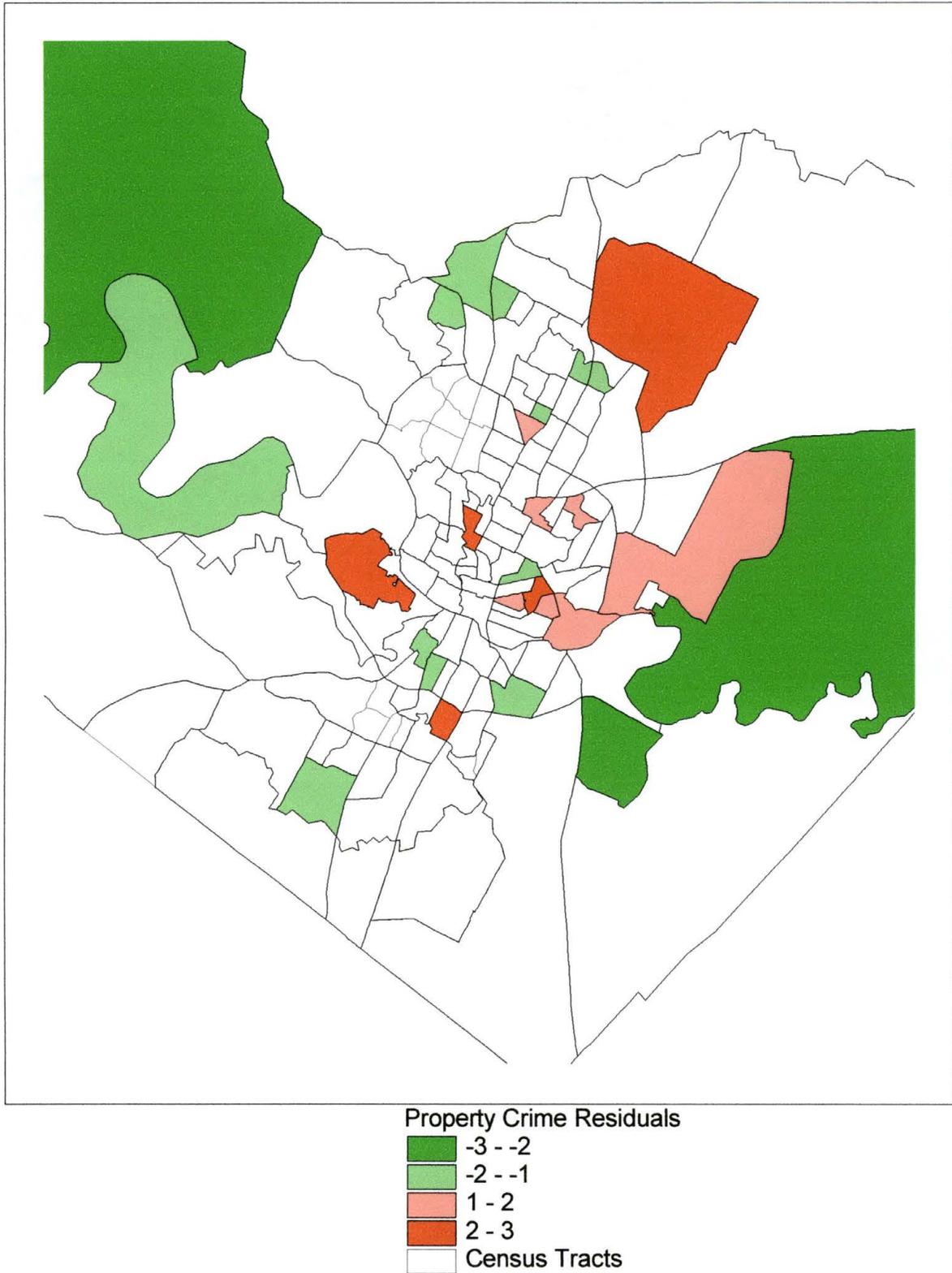
-1.5 - -1

1 - 2.5

2.5 - 4.5

Census Tracts

Figure 16. PROPERTY CRIME RESIDUALS



parts of central Austin, especially in the high crime areas of tracts 8.03, 8.04, 9.01 and 9.02 east of downtown. The larger positive standardized residuals were a result of the underprediction of violent crime rates. Conversely, the larger negative standardized residuals in many of the larger tracts located in east and west Travis county indicated that the actual crime rates in those tracts was smaller than the value predicted by the regression equation. There does not seem to be the same contiguous pattern of residuals for property crime rates. The residuals, both positive and negative appear to be dispersed throughout Travis County, except for a narrow sliver of tracts showing higher positive residuals (tracts 8.01, 8.02, 21.11 and 22.05). These four tracts were underpredicted by the social capital model.

Summary of Map Analysis

Contrary to Shaw and McKay's (1942) findings in Chicago, Austin crime exhibits a modified sectoral pattern instead of a pure centrifugal gradient pattern. The map analysis suggests that the social capital model does an adequate job as a predictor of crime in most sections of the city of Austin. The presence of sizeable positive residuals on the east side, however indicates that social capital is not adequately predicting crime in some of the highest crime areas of the city. Because violent crime is more concentrated and sectoral, it is easier to predict than property crime rates that are somewhat dispersed throughout the city. Western portions of Travis County appear to be immune from many of the crime and social problems plaguing other sections of the city. The nucleus of many of

these problems in Austin appears to be downtown (tract 11.00). Although not plagued by excessive economic or human capital problems, this tract is the epicenter of crime in Austin. It is for downtown and the rest of north-central Austin that social capital becomes a more significant predictor of crime rates.

CONCLUSIONS

This study confirms the necessity for social geographers to transcend the social disorganization paradigm of Shaw and McKay. Although it is valuable as a starting point, researchers must begin to study the core components of neighborhood and community organization in a 21st century context. Social capital has the potential to become one of these core components. This study tested the applicability of the social capital as defined by census data. The results indicate that neighborhood based social capital has great potential in the study of crime. While the value of social disorganization, with its emphasis on race and income cannot be discounted, social capital has shown the capacity to transcend race and poverty as the traditional causes of high crime in neighborhoods. As a new framework in the tradition of social ecology, social capital appears relevant as a predictor of both violent and property crime in most sections of Austin. With proper refinement, social capital might someday serve as a constraining barrier to the attainment of criminal opportunities.

Policy Implications

The deficiency of social capital in the downtown area has been shown to have a high positive correlation with crime. This high degree of correlation appears to justify recent efforts in Austin to revitalize downtown areas. Large

social vacuums of non-attachment and anonymity often characterize urban downtown areas, which have been traditionally associated with high crime rates. As they begin to restore vital businesses to downtown areas, cities are also beginning to see the wisdom of encouraging long-term and stable residential growth. For a number of years, city leaders have implicitly believed that an increase of homeownership in the downtown area will result in stabilization, and revitalization, decreasing the potential of crime. This cooperative network of stabilization, coveted by city leaders, can be achieved by large doses of social capital.

The implications of this study may also have an impact on the decisions the city makes regarding the feasibility and location of homeless shelters. It may be the case that the presence of homeless shelters within an area only encourages an overall feeling of transience and anonymity which breeds crime. The homeless can be both the perpetrators and victims of crime. Once adequately defined and refined, social capital development should be encouraged within urban core areas. As inner city problems become less concentrated they can be dispersed into other areas of the city that already possess adequate levels of social capital needed to deal with the potential of crime.

Other areas of the city should be encouraged to engage in activities that increase levels of social capital. Measures that increase neighborly association and cooperation such as crime watches or neighborhood association meetings bring a stabilizing effect to high-risk areas. It must be noted that neo-traditional

community planners, such as Andres Duany and Elizabeth Plater-Zyberk, have implicitly recognized the concept and goals of social capital. The vernacular architecture of communities such as Seaside, Florida encourages a friendly stimulating, and cooperative atmosphere that allows the development of a sense of place. This concept, in a neighborhood context, is the very essence of social capital. One of the worthwhile results of such community creating efforts is the reduction of criminal opportunities and targets.

Research Implications

Although this paper has taken an initial step toward identifying a social capital model, the operationalization of this concept continues to be troublesome. An excellent topic for further research would be the construction of a social capital index. The creation of such an index would dispense with the need to measure 5 or 6 different variables in an attempt to find the presence of social capital. While survey data shows promise for a more refined social capital concept, the data contain a spatial element in order to benefit researchers who study social capital at the local level.

Once refined it would be valuable to study the effects of social capital on crime rates in several different contexts, such among minorities, the poor and uneducated. Only by doing this can researchers test the true significance of this concept without undue concern over collinearity problems between social capital variables and traditional socio-economic variables.

An interesting aspect of this research appears to be the effects of a city's homeless population on crime and the general welfare. Even as this paper is being completed, the city of Austin is moving forward with plans for a \$5 million homeless shelter to be located in the downtown area. These plans are being initiated despite concerns by many citizens that more transients will hurt business and public order in the central area. The knowledge gained by this study would perhaps be helpful in ascertaining the effect of transience on crime in other U.S. Sunbelt cities like Austin.

No single theory of crime from a particular sociological perspective will ever be able to adequately explain the causes of crime. Recognizing this reality, many criminologists are advocating the use of integrated theories that combines macro and micro approaches to crime (Vold 1998). This approach is feasible, because while it is true that the actual decisions to commit delinquent acts are ultimately *individual* in their nature, motivations and opportunities for delinquency can be produced or discouraged by the *external social environment*. It is hoped that the notion of social capital can help contribute to a better understanding of the external social environment.

APPENDIX

Correlation Matrix

Multiple Regression Output

	Violence Rate	Property Rate	Shelters	Migrant units	Persons on street	Age 35-54	Age 15-20	Vacant units	Owner occupied	Duplex	Apts	Single with child	Single	Commute < 15 min	Works outside county	Works at home	Black	Hisp	Col Grad	Exec or Prof	Poverty
Violence Rate	1 000	0 644	0 435	-0 034	0 389	-0 391	0 096	0 548	-0 308	-0 007	0 156	0 473	0 135	-0 265	-0 213	-0 340	0 573	0 529	-0 562	-0 131	0 584
Property Rate	0 644	1 000	0 217	-0 150	0 297	-0 469	0 070	0 372	-0 295	0 193	0 200	0 357	0 178	-0 064	-0 111	-0 245	0 376	0 359	-0 396	-0 013	0 600
Shelters	0 435	0 217	1 000	-0 020	0 850	0 042	-0 010	0 050	-0 103	-0 059	0 139	-0 102	0 071	-0 086	-0 030	-0 095	0 014	0 038	-0 026	0 009	0 061
Migratory workers	-0 034	-0 150	-0 020	1 000	-0 044	0 142	-0 044	0 019	0 035	-0 074	-0 016	0 021	-0 086	-0 038	-0 035	0 146	-0 004	-0 081	-0 002	0 020	-0 075
Persons on street	0 389	0 297	0 850	-0 044	1 000	0 016	0 020	0 050	-0 165	-0 031	0 189	-0 159	0 149	0 004	-0 055	0 013	-0 059	0 056	0 018	0 018	0 127
Age 35-54	-0 391	-0 469	0 042	0 142	0 016	1 000	-0 592	-0 334	0 673	-0 164	-0 565	-0 173	-0 565	-0 004	0 185	0 320	-0 235	-0 412	0 546	-0 012	-0 664
Age 15-20	0 096	0 070	-0 010	-0 044	0 020	-0 592	1 000	0 158	-0 376	0 032	0 362	-0 092	0 671	-0 147	-0 081	-0 029	0 052	0 060	-0 324	-0 098	0 282
Vacant units	0 548	0 372	0 050	0 019	0 050	-0 334	0 158	1 000	-0 358	-0 055	0 193	0 321	0 160	-0 325	-0 112	-0 346	0 430	0 292	-0 426	-0 472	0 399
Owner occupied	-0 308	-0 295	-0 103	0 035	-0 165	0 673	-0 376	-0 358	1 000	-0 158	-0 798	0 048	-0 733	-0 297	0 143	0 359	-0 060	-0 224	0 302	0 169	-0 554
Duplexes	-0 007	0 193	-0 059	-0 074	-0 031	-0 164	0 032	-0 055	-0 158	1 000	-0 051	0 257	0 000	0 178	-0 139	-0 008	0 075	0 050	-0 118	0 109	0 024
Apartments	0 156	0 200	0 139	-0 016	0 189	-0 565	0 362	0 193	-0 798	-0 051	1 000	-0 201	0 600	0 309	-0 033	-0 176	-0 112	0 033	0 005	0 106	0 418
Single with children	0 473	0 357	-0 102	0 021	-0 159	-0 173	-0 092	0 321	0 048	0 257	-0 201	1 000	-0 364	-0 376	-0 015	-0 384	0 695	0 533	-0 655	0 126	0 327
Single	0 135	0 178	0 071	-0 086	0 149	-0 565	0 671	0 160	-0 733	0 000	0 600	-0 364	1 000	0 278	-0 193	-0 125	-0 037	-0 024	-0 139	-0 164	0 497
Commute less than 15 minutes	-0 265	-0 064	-0 086	-0 038	0 004	-0 004	-0 147	-0 325	-0 297	0 178	0 309	-0 376	0 278	1 000	-0 105	0 154	-0 283	-0 226	0 379	0 249	-0 010
Working outside county	-0 213	-0 111	-0 030	-0 035	-0 055	0 185	-0 081	-0 112	0 143	-0 139	-0 033	-0 015	-0 193	-0 105	1 000	0 031	-0 133	-0 185	0 164	0 041	-0 245
Working at home	-0 340	-0 245	-0 095	0 146	0 013	0 320	-0 029	-0 346	0 359	-0 008	-0 176	-0 384	-0 125	0 154	0 031	1 000	-0 337	-0 420	0 510	0 142	-0 313
Black	0 573	0 376	0 014	-0 004	-0 059	-0 235	0 052	0 430	-0 060	0 075	-0 112	0 695	-0 037	-0 283	-0 133	-0 337	1 000	0 144	-0 530	-0 034	0 386
Hispanic	0 529	0 359	0 038	-0 081	0 056	-0 412	0 060	0 292	-0 244	0 050	0 033	0 533	-0 024	-0 226	-0 185	-0 420	0 144	1 000	-0 692	0 023	0 502
College graduates	-0 562	-0 396	-0 026	-0 002	0 018	0 546	-0 324	-0 426	0 302	-0 118	0 005	-0 655	-0 139	0 379	0 164	0 510	-0 530	-0 692	1 000	0 065	-0 560
Executives or Professionals	-0 131	-0 013	0 009	0 020	0 018	-0 012	-0 098	-0 472	0 169	0 109	0 106	0 126	-0 164	0 249	0 041	0 142	-0 034	0 023	0 065	1 000	0 104
Poverty	0 584	0 600	0 061	-0 075	0 127	-0 664	0 282	0 399	-0 554	0 024	0 418	0 327	0 497	-0 010	-0 245	-0 313	0 386	0 502	-0 560	0 104	1 000

Correlation Matrix of All Variables

Model Summary^a

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.584 ^a	.341	.336	5.89
2	.708 ^b	.501	.493	5.15
3	.804 ^c	.646	.638	4.35
4	.856 ^d	.733	.725	3.79
5	.875 ^e	.765	.756	3.57
6	.880 ^f	.774	.763	3.52

Model Summary^a

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	.341	69.217	1	134	.000	1.430
2	.160	42.658	1	133	.000	
3	.146	54.370	1	132	.000	
4	.086	42.401	1	131	.000	
5	.032	17.729	1	130	.000	
6	.009	4.985	1	129	.027	

a. Predictors: (Constant), % in poverty

b. Predictors: (Constant), % in poverty, % in shelters

c. Predictors: (Constant), % in poverty, % in shelters, % black

d. Predictors: (Constant), % in poverty, % in shelters, % black, % hispanic

e. Predictors: (Constant), % in poverty, % in shelters, % black, % hispanic, % vacant units

f. Predictors: (Constant), % in poverty, % in shelters, % black, % hispanic, % vacant units, % working at home

g. Dependent Variable: Violence rate

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	1.294	.835		1.550
	% in poverty	33.181	3.988	.584	8.320
2	(Constant)	1.241	.729		1.702
	% in poverty	31.782	3.490	.559	9.107
	% in shelters	229.239	35.098	.401	6.531
3	(Constant)	.601	.622		.966
	% in poverty	22.692	3.196	.399	7.101
	% in shelters	231.609	29.652	.405	7.811
	% black	15.734	2.134	.414	7.374
4	(Constant)	-.886	.589		-1.505
	% in poverty	12.549	3.194	.221	3.929
	% in shelters	230.242	25.872	.403	8.899
	% black	16.493	1.865	.434	8.842
	% hispanic	14.251	2.188	.341	6.512
5	(Constant)	-2.326	.651		-3.570
	% in poverty	10.221	3.058	.180	3.342
	% in shelters	226.865	24.376	.397	9.307
	% black	13.851	1.865	.364	7.426
	% hispanic	12.985	2.083	.310	6.235
	% vacant units	21.156	5.024	.209	4.211
6	(Constant)	-4.203	1.058		-3.974
	% in poverty	10.136	3.012	.178	3.365
	% in shelters	231.373	24.096	.405	9.602
	% black	14.803	1.886	.389	7.848
	% hispanic	14.587	2.173	.349	6.712
	% vacant units	22.811	5.004	.225	4.558
	% working at home	31.997	14.331	.110	2.233

Model Summary^g

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.562 ^a	.316	.311	6.00
2	.703 ^b	.494	.486	5.18
3	.773 ^c	.597	.588	4.64
4	.795 ^d	.631	.620	4.46
5	.809 ^e	.654	.641	4.33
6	.807 ^f	.651	.640	4.34

Model Summary^g

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	.316	62.003	1	134	.000	1.222
2	.177	46.529	1	133	.000	
3	.104	34.037	1	132	.000	
4	.034	12.094	1	131	.001	
5	.023	8.689	1	130	.004	
6	-.004	1.448	1	132	.231	

a. Predictors: (Constant), % college graduates

b. Predictors: (Constant), % college graduates, % in shelters

c. Predictors: (Constant), % college graduates, % in shelters, % vacant units

d. Predictors: (Constant), % college graduates, % in shelters, % vacant units, % single with children

e. Predictors: (Constant), % college graduates, % in shelters, % vacant units, % single with children, % ages 35-54

f. Predictors: (Constant), % in shelters, % vacant units, % single with children, % ages 35-54

g. Dependent Variable: Violence rate

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	13 605	1.003		13.562
	% college graduates	-50 835	6.456	-.562	-7 874
2	(Constant)	13.174	.869		15.160
	% college graduates	-49 860	5.579	-.552	-8.936
	% in shelters	240 762	35.296	.421	6 821
3	(Constant)	7.143	1.294		5.522
	% college graduates	-36 150	5.519	-.400	-6.550
	% in shelters	232.706	31.620	.407	7.359
	% vacant units	36.122	6 192	.357	5 834
4	(Constant)	2.549	1.814		1.405
	% college graduates	-21.942	6 692	-.243	-3 279
	% in shelters	249 811	30 765	.437	8 120
	% vacant units	34.690	5 961	.342	5 820
	% single with children	28.505	8 197	.248	3 478
5	(Constant)	5 191	1.977		2 625
	% college graduates	-9 362	7 779	-.104	-1.204
	% in shelters	261.330	30 155	.457	8 666
	% vacant units	31 810	5 875	.314	5.414
	% single with children	36.421	8 407	.317	4 332
	% ages 35-54	-19 469	6.605	-.194	-2.948
6	(Constant)	4 218	1 808		2.333
	% in shelters	266 954	29.841	.467	8 946
	% vacant units	32.881	5.817	.325	5 652
	% single with children	43.087	6.334	.375	6.802
	% ages 35-54	-23.830	5 532	-.237	-4 308

Model Summary^e

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.600 ^a	.360	.355	6.36
2	.640 ^b	.409	.400	6.13
3	.666 ^c	.444	.431	5.97
4	.688 ^d	.474	.458	5.83

Model Summary^e

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	.360	75.286	1	134	.000	
2	.050	11.176	1	133	.001	
3	.035	8.236	1	132	.005	
4	.030	7.363	1	131	.008	1.425

a. Predictors: (Constant), % in poverty

b. Predictors: (Constant), % in poverty, % in street

c. Predictors: (Constant), % in poverty, % in street, % duplexes

d. Predictors: (Constant), % in poverty, % in street, % duplexes, % black

e. Dependent Variable. Burglary rate

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	8.162	.902		9.054	.000
	% in poverty	37.371	4.307	.600	8.677	.000
2	(Constant)	8.103	.869		9.321	.000
	% in poverty	35.600	4.186	.571	8.505	.000
	% in street	2537.956	759.168	.225	3.343	.001
3	(Constant)	6.258	1.063		5.888	.000
	% in poverty	35.269	4.078	.566	8.648	.000
	% in street	2609.859	739.747	.231	3.528	.001
	% duplexes	35.785	12.469	.186	2.870	.005
4	(Constant)	6.051	1.041		5.812	.000
	% in poverty	30.603	4.339	.491	7.053	.000
	% in street	2838.436	727.430	.251	3.902	.000
	% duplexes	33.524	12.208	.175	2.746	.007
	% black	7.844	2.891	.188	2.714	.008

Model Summary^f

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.469 ^a	.220	.214	7.02
2	.559 ^b	.312	.302	6.62
3	.620 ^c	.385	.371	6.28
4	.651 ^d	.424	.406	6.11
5	.664 ^e	.440	.419	6.04

Model Summary^f

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig F Change	
1	.220	37.732	1	134	.000	1.423
2	.093	17.930	1	133	.000	
3	.072	15.540	1	132	.000	
4	.039	8.806	1	131	.004	
5	.017	3.926	1	130	.050	

a. Predictors: (Constant), % ages 35-54

b. Predictors: (Constant), % ages 35-54, % in street

c. Predictors: (Constant), % ages 35-54, % in street, % youth 15-20

d. Predictors: (Constant), % ages 35-54, % in street, % youth 15-20, % vacant units

e. Predictors: (Constant), % ages 35-54, % in street, % youth 15-20, % vacant units, % duplexes

f. Dependent Variable: Burglary rate

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	27.096	2.154		12.577	.000
	% ages 35-54	-51.653	8.409	-.469	-6.143	.000
2	(Constant)	26.748	2.032		13.165	.000
	% ages 35-54	-52.191	7.924	-.474	-6.586	.000
	% in street	3440.948	812.626	.304	4.234	.000
3	(Constant)	35.107	2.867		12.247	.000
	% ages 35-54	-73.987	9.337	-.671	-7.924	.000
	% in street	3552.669	772.066	.314	4.602	.000
	% youth 15-20	-30.414	7.715	-.334	-3.942	.000
4	(Constant)	30.178	3.243		9.305	.000
	% ages 35-54	-65.388	9.524	-.593	-6.866	.000
	% in street	3417.151	751.590	.302	4.547	.000
	% youth 15-20	-29.198	7.508	-.321	-3.889	.000
	% vacant units	23.260	7.838	.210	2.968	.004
5	(Constant)	27.507	3.479		7.906	.000
	% ages 35-54	-61.441	9.628	-.558	-6.382	.000
	% in street	3443.875	743.455	.305	4.632	.000
	% youth 15-20	-27.909	7.454	-.307	-3.744	.000
	% vacant units	25.134	7.809	.226	3.218	.002
	% duplexes	25.578	12.908	.133	1.982	.050

BIBLIOGRAPHY

Ackerman, William V. 1998. Socioeconomic correlates of increasing crime rates in smaller communities. *Professional Geographer* 50(3): 372-387.

Agnew, Robert. 1992. Foundations for a general strain theory of crime and delinquency. *Criminology* 30(1): 47-87.

Agnew, Robert and H.R. White. 1992. *An empirical test of general strain theory*. *Criminology*. 30(4): 475-499.

Beccaria, Cesare. 1963. *On crimes and punishments*. Translated by Henry Paolucci. Indianapolis: Bobbs-Merrill.

Bellair, Paul E. 1997. Social interaction and community crime: Examining the importance of neighborhood networks. *Criminology* 35(4): 677-703.

Bernard, Thomas J. 1990. Twenty years of testing theories: What have we learned and why? *Journal of Research in Crime and Delinquency* 27(4): 325-47.

Brown, Marilyn A. 1982. Modeling the spatial distribution of suburban crime. *Economic Geography* 58(3): 247-61.

Brown, Marilyn A., and Raymond K. Oldakowski. 1986. The changing morphology of suburban crime. *Urban Geography* 7(1): 46-62.

Brown, Stephen E., Finn-Aage Esbensen, and Gilbert Geis. 1998. *Criminology: Explaining crime in its context*. Cincinnati, OH: Anderson Publishing Company.

Bourdieu, Pierre. 1986. The forms of capital. In *Handbook of theory and research for the sociological education*, ed. John G. Richardson, 241-58. New York: Greenwood.

Bursik, Robert J. Jr. 1998. Social disorganization and theories of crime and delinquency: Problems and prospects. In *The Criminology Theory Reader*, ed. Stuart Henry and Werner Einstadter, 156-76. New York and London: New York University Press.

Bursik, Robert J. Jr. and Jim Webb. 1982. Community change and patterns of delinquency. *American Journal of Sociology* 88(1): 24-42.

City of Austin, available from <http://www.ci.austin.tx.police/96.censustract.htm>; accessed 12 November 2000.

Cloward, Richard A., and Lloyd E. Ohlin. 1960. *Delinquency and opportunity: A theory of delinquent gangs*. New York: The Free Press.

Cohen, Albert K. 1955. *Delinquent boys: The culture of the gang*. New York: The Free Press.

Coleman, James. 1988. Social capital in the creation of human capital. *American Journal of Sociology* 94 (Supplement): 95-120.

Crutchfield, Robert D., Michael R. Geerken and Walter R. Gove. 1982. Crime rate and social integration: The impact of metropolitan mobility. *Criminology* 20(3):467-78.

Durkheim, Emile. 1951. *Suicide: A study in sociology*. Translated by J.A. Spaulding and G. Simpson. New York: The Free Press.

Edwards, B. and M.W. Foley. 1998. Civil society and social capital beyond Putnam. *American Behavioral Scientist* 42(1): 124-39.

Environmental Systems Research Institute, available from

<http://www.esri.com/data/online.html>; accessed 12 November 2000.

Evans, David J., and David T. Herbert, ed. 1989. *The geography of crime*. London: Routledge.

Felson, Marcus. 1993. Social indicators for criminology. *Journal of Research in Crime and Delinquency* 30(4): 400-11.

Fletcher, J. 1848. Moral and educational statistics of England. *Journal of the Statistical Society* 10:193.

George-Abeyie, Daniel E., and Keith D. Harries, eds. 1980. *Crime: A spatial perspective*. New York: Columbia University Press.

Greeley, Andrew. 1997. Coleman revisited: Religious structures as a form of social capital. *American Behavioral Scientist* 40(5): 587-94.

Harries, Keith D. 1974. *The geography of crime and justice*. New York: McGraw-Hill.

Harries, Keith D. 1985. The historical geography of homicide in the U.S., 1935-1980. *Geoforum* 16(1): 73-83.

Harries, Keith D., 1989. Homicide and assault: A comparative analysis of attributes in Dallas neighborhoods, 1981-1985. *Professional Geographer* 41(1): 29-38.

Harries, Keith D., and Andrea Powell. 1994. Juvenile gun crime and social stress: Baltimore, 1980-1990. *Urban Geography* 15(1): 45-63.

Hirschi, T. 1969. *Causes of delinquency*. Berkeley, CA: University of California Press.

Hoover, Kenneth, and Todd Donovan. 1995. *The elements of social scientific thinking*. New York: St. Martin's Press.

Jacobs, Jane. 1961. *The death and life of great American cities*. New York: Random House.

Johnstone, J.W.C. 1983. Recruitment to a youth gang. *Youth and Society* 14 (3):281-300.

Lombroso, Cesare. 1911. *Crimes: Its causes and remedies*. Boston: Little, Brown.

Lowman, John. 1986. Conceptual issues in the geography of crime: Toward a geography of social control. *Annals of the Association of American Geographers* 76(1): 81-94.

Maxim, Paul S. and Paul C. Whitehead. 1998. *Explaining crime*. Boston: Butterworth-Heinemann.

Mayhew, Henry. 1861. *London labor and the London poor*. London: Griffin.

Merton, Robert K. 1938. *Social structure and anomie*. *American Sociological Review*. 3:672-682.

Messner, Steven F. 1983. Regional differences in the economic correlates of the urban homicide rate. *Criminology* 21(4): 477-88.

Miller, W.B. 1958. Lower-class culture as a generating milieu of gang delinquency. *Journal of Social Issues* 14(3): 5-19.

Park, Robert E. 1936. *Human ecology*. *American Journal of Sociology*. 42(1):1-15.

Park, Robert E. and Ernest W. Burgess. 1925. *The city*. Chicago: University of Chicago Press.

Portes, Alejandro, and Patricia Landolt. 1996. The downside of social capital. *The American Prospect* 26 (May-June): 18-21.

Putnam, Robert D. 1996. The strange disappearance of civic America. *The American Prospect* 24 (Winter): 664-83.

Putnam, Robert D. 1993. The prosperous community: Social capital and public life. *The American Prospect* 13 (Spring): 35-42.

Putnam, Robert D. 2000. *Bowling alone: The collapse and revival of American community*. New York: Simon and Schuster.

Putnam, Robert D. 1993. *Making democracy work: Civic traditions in modern Italy*. Princeton, NJ: University Press.

Robinson, W.S. 1950. Ecological correlation and the behavior of individuals. *American Sociological Review* 15 (3): 351-57.

Sampson, Robert J. 1995. The community. In *Crime*, ed. James Q. Wilson and Joan Petersilia, 193-216. San Francisco: ICS Press.

Sampson, Robert J. 1985. Race and criminal violence: A demographically disaggregated analysis of urban homicide. *Crime and Delinquency* 31(1): 47-82.

Sampson, Robert J., and W. Byron Groves. 1989. Community structure and crime: Testing social disorganization theory. *American Journal of Sociology* 94(4): 774-802.

Shaw, Clifford R., and Henry D. McKay. 1942. *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press.

Schmid, Calvin F. 1960. Urban crime areas: Part I. *American Sociological Review* 25(3): 527-42.

Schmid, Calvin F. 1960. Urban crime areas: Part II. *American Sociological Review* 25(4): 655-74.

Stark, Rodney. 1987. *Deviant places: A theory of the ecology of crime*. *Criminology* 25(4):893-911.

Steffensmeier, Darrell and Miles D. Harer. 1999. Making sense of recent U.S. crime trends, 1980 to 1996/1998: Age composition effects and other explanations. *Journal of Research in Crime and Delinquency* 36(3): 235-274.

Sutherland, E.H. 1939. *Principles of criminology*. Philadelphia, PA: J.B. Lippincott.

Taylor, Ralph B. 1997. Social order and disorder on street blocks and neighborhoods: Ecology, microecology, and the systematic model of social disorganization. *Journal of Research in Crime and Delinquency* 34(1): 113-55.

University of Texas, Department of Planning, Available from <http://www.ar.utexas.edu/planning/data.html>; accessed 12 November 2000.

Unnever, James D. 1987. Review of James M. Byrne and Robert J. Sampson, "The social ecology of crime." *Contemporary Sociology* 16:845-846.

U.S. Department of Justice. 1996. *Justice expenditure and employment extracts*. Washington, D.C.: Government Printing Office.

Verba, Sidney, Kay Schlozman, and Henry Brady. 1995. *Voice and equality: Civic volunteerism in American politics*. Cambridge: Harvard University Press.

Veysey, Bonita M. and Stephen F. Messner. 1999. Further testing of social disorganization theory: An elaboration of Sampson and Groves's "Community structure and crime." *Journal of Research in Crime and Delinquency* 36(2): 156-74.

Vold, George B., Thomas J. Bernard, and Jeffrey B. Snipes. 1998. *Theoretical criminology*. New York and Oxford: Oxford University.

Wall, Ellen, Gabriel Ferrazzi, and Frans Schryer. 1998. Getting the goods on social capital. *Rural Sociology* 63(2): 300-22.

Warner, Mildred. 1999. Social capital construction and the role of the local state. *Rural Sociology* 64(3): 373-93.

VITA

Neil Kucera was born in Victoria, Texas, on March 6, 1961. He attended William Offer Elementary School, Patti Welder Junior High School and Victoria Stroman High School. He received the degree of Bachelor of Arts from Southwest Texas State University, in May 1983. He received the Doctor of Jurisprudence from the University of Houston in May, 1986. During the following years he was employed as an attorney in Marshall, Texas until 1991. He taught in the Czech Republic in 1992-1993, and has been employed as an attorney in Austin, Texas since 1994. In September, 1997 he entered the Graduate School of Southwest Texas State University.

Permanent Address: 501 Oakland Avenue
 Austin, Texas 78703

This thesis was typed by the author. All maps and figures were produced by the author.