Theses and Dissertations

Theses, Dissertations, and Senior Projects

January 2014

Homicides And The American Dream: An Empirical Application Of Institutional Anomie Theory At The Census Tract Level

Stacie Jergenson

Follow this and additional works at: https://commons.und.edu/theses

HOMICIDES AND THE AMERICAN DREAM: AN EMPIRICAL APPLICATION OF
INSTITUTIONAL ANOMIE THEORY AT THE CENSUS TRACT LEVEL

by

Stacie Jergenson
Bachelor of Arts, St. Cloud State University, 2005
Master of Science, St. Cloud State University, 2008

A Dissertation
Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota
Fall
2014

This dissertation, submitted by Stacie Jergenson in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done, and is hereby approved.

_____
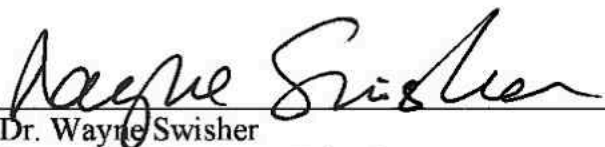Dr. Michael E. Meyer, Chairperson

_____
Dr. Bruce DiCristina

_____
Dr. Martin Gottschalk

_____
Dr. Roni Mayzer

_____
Dr. Devon Hansen

This dissertation is being submitted to the appointed advisory committee as having met all of the requirements of the Graduate School at the University of North Dakota and hereby approved.

_____
Dr. Wayne Swisher
Dean of the Graduate School

_____
September 9, 2014
Date

Title: Homicides and the American Dream: An Empirical Application of
              Institutional Anomie Theory at the Census Tract Level

Department: Criminal Justice

Degree: Doctor of Philosophy

In presenting this dissertation in partial fulfillment of the requirements of a graduate degree from the University of North Dakota, I agree that the library of this University shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised my dissertation work. It is understood that any copying or publication or other use of this dissertation or part thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of North Dakota in any scholarly use which may be made of any material in my dissertation.

                                   Stacie Jergenson
                                   Date: August 25, 2014

TABLE OF CONTENTS

VI.   DISCUSSIONS, LIMITATIONS, AND CONCLUDING COMMENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGMENTS

As a doctoral student, you hope, but don't know if, you will get another change to thank those who have shaped your development. So, here it goes!

To my chair and advisor, Dr. Meyer, thank you for the countless hours so unselfishly "donated" to mold me into a better researcher and teacher. When asked "Got a second?", your door opened up for a chat that sometimes consumed half of your eight-hour (yah, right!) day. You provided an outstanding example of ceaseless professional growth and achievement, while also solidifying the importance of finding a balance for family. Sincere thanks to the rest of my dissertation committee, as well: Drs. DiCristina, Gottschalk, Mayzer, and Hanson. Your feedback and support has been invaluable. You are exceptionally bright, and it has been a privilege to study under you. Heartfelt thanks to Dorothy (our department secretary) and her husband, Bob, for creating a spirit that so much reminded me of home, giving me a sense of belonging at UND from the get-go. To Ziwei, Lisa, Matt, Sarah, Nick, Moussa, and Jason, by sharing each other's *pain* we have a special bond, which I hope will not be broken. Go knock their socks off!

To Drs. Campbell, Hennessy, Gilbertson, Andzenge, Nelson and Grinde, thanks for making me believe I could actually succeed in higher education and for showing me that above all this journey is about learning and growth. With every opportunity you held out for me, including studying abroad in 18 countries, you expanded my realm of possibilities. Without your influence and dedication to my self-actualization, a doctoral degree would not have come to fruition! You planted the seeds.

Finally, my most heartfelt remarks belong to family, who undoubtedly traveled with me every single step of this journey. Mom & Dad, who knew your mantras would echo through my head as a *college* student: where there's a will, there's a way; keep your chin up; this, too, shall pass; you can do anything you set your mind to. See, I *did* listen! I haven't outgrown the need to hear you say "we have faith in you" and "we believe in you"... or to receive more stoic messages like sending me back to UND with leftover mashed potatoes and gravy, canned garden goods, lefse, and rollapulsa!

You taught me right from wrong. You taught me no matter what challenges life hands out to have the strength, courage, and character to not only survive it, but to (try) endure gracefully. You allowed me freedom to make missteps in life, granted me the space to pick myself up when I fell, and humbly and patiently lent your hand up when I couldn't find the way on my own. You taught me the value of a very hard-earned dollar but, more importantly, stressed one's family and integrity are to be among the most valued treasures in life! With each passing day, the life lessons you've taught hold ever more significant meaning in my life.

To my brothers and "sister", thank you for continually showing an interest in what I'm doing in far-off places and making me feel like my pursuits truly mattered to you too. Your uncanny ability to call or text when I needed your support the most has been treasured. You've kept my ego in check by consistently treating me like the same little sister I've always been, no matter how many years of college I've accumulated. Hey, it

doesn't take a Ph.D. to figure out how to enjoy ditch banging with family and friends! I recognize that you've repeatedly paved the way for me, making sure I didn't fall too far behind. No matter how old I get, I will have so much to learn about life from you!

To Todd, "brother" Mikey (posthumously) and Julie, thanks for the enduring legacy of our team mantra: "You can do it!" Yet, individual success had no meaning without each other. And, despite our sanguine refrains and duct-taped speedometer notes, we've agonizingly learned the lesson that we can't always control our own destiny. So laugh, live, and love like there's no tomorrow! May I never forget a doctoral degree is but a piece of paper.

To all of my family and friends, you are my counterbalance to the anomic pressures of life. Without you, none of my "successes" would have been possible. Success would not be success without you.

Hearing "Live Like You Were Dying", a song made popular by singer Tim McGraw (2004), instantly takes me back to when one of you had touch-and-go days in a hospital. It nicely sums up a journey when all of *you* were teaching *me* to focus on what's most important in life.

> "He said, I was in my early forties, with a lot of life before me, and a moment came that stopped me on a dime. I spent most of the next days looking at the x-rays, talking about the options and talking about sweet time. I asked him when it sank in that this might really be the real end, how does it hit you when you get that kind of news? Man, what did you do? He said, I went skydiving. I went Rocky Mountain climbing. I went 2.7 seconds on a bull named Fu Man Chu. And I loved deeper, and I spoke sweeter, and I gave forgiveness I'd been denying. And he said someday I hope you get the chance to live like you were dying. He said I was finally the husband that most of the time I wasn't, and I became a friend a friend would like to have. And all of the sudden going fishing wasn't such an imposition, and I went three times that year I lost my dad… And I took a good long hard look at what I'd do if I could do it all again…like tomorrow was a gift, and you've got eternity to think about what you do with it. What did you do with it? What did I do with it? And what would I do with it?"

What if just a little bit more of this could be woven into our culture? What *could* we do with it? What *would* we do with it?

ABSTRACT

Guided by the Institutional Anomie Theory (IAT) of Steven F. Messner and Richard

Rosenfeld (2007), this study examines the strength and interaction of social institutions

(economy, education, family and polity) in relationship to homicides occurring in

Minneapolis, Minnesota between 2007 and 2011. It utilizes census tracts as the units of

analysis, an attempt to extend IAT from the cross-national to the local level. Rather than

focusing on specific offenders, it explores broader cultural and structural characteristics

employing exploratory, ordinary least squares (OLS), and geographically weighted

regressions (GWR). Although interactions did not reach statistical significance,

relationships were found between homicides rates and the institutions of family and

education.

CHAPTER I

INTRODUCTION

"Crime has an inherent geographical quality" (Chainey & Ratcliffe, 2005, p. 1). The overall distribution of crime is not random; rather it is clustered. Clustering suggests linkages between socio-ecological conditions and criminal behavior. Knowing *where* crime is clustered on a crime map is helpful; however, it does not produce a complete picture. It is critical that we go beyond simple pushpin or dot density crime maps if we are to comprehensively understand what influences local crime rates. The incorporation of criminological theories, such as the Institutional Anomie Theory (IAT) used herein, to more thoroughly analyze crime clusters may provide cues as to *why* crime may be occurring. Of particular interest to this study is the spatially differentiated distribution of violent crime, specifically homicide.

Compared to other nations, "violent crime in the United States is more likely to assume a deadly form" (Messner & Rosenfeld, 2007, p. 22). According to the Centers for Disease Control and Prevention (2012), in 2009, homicide was the second leading cause of death for individuals of all races and genders aged 15 to 19 years in the United States. The same was true for 20 to 24 year olds, accounting for 15.6% of all deaths.

These statistics are even more troublesome if one hones in on the homicide data involving African American males. For black males aged 15 to 34 years, homicide was the number one cause of death. Approximately half of all deaths of black males aged 15 to 24 year olds were attributed to homicide, with the rate dropping to 32.8% for 25 to 34

year olds. It was not until black males reached 45 years of age that homicide dropped out of the top five causes of death.

Like black males aged 15 to 34, Hispanic males in the same age group also faced homicide as the second leading cause.   Homicide is the third ranking cause of death of Native American or Alaska native males in the same age grouping. For Asian or Pacific Islander males aged 15 to 19 and 20 to 24, the homicide ranking is fourth and third respectively. Non-Hispanic white males between 10 and 34 years of age show lower homicide deaths, with fourth and fifth place rankings.

Black females between 15 and 24 years old face homicide as the second leading cause of death. For Hispanic females, the homicide ranking shifts between second and third. Homicide fluctuates between the fourth and sixth ranking cause of death for non-Hispanic white females.

The current study focuses on homicides occurring in Minneapolis, Minnesota. Minnesota's rate of homicides was highest for 20 to 24 year olds at 6 deaths per 100,000. Between 2001 and 2005, homicide was the third leading cause of death for all individuals aged 15 to 24 years, behind unintentional injury and suicide. This is somewhat better than the national second-place ranking. By the age of 25, the homicide death ranking drops to fifth. By the age of 34, homicide dropped out of the top 10 causes of death in Minnesota.

Drilling down to the city level, a City of Minneapolis Health Department (2013) fact sheet noted that in Minneapolis homicide is the number one cause of death for those aged 15 to 24, with 60% of those victims being African American. From 2001 to 2003, more than one-third of the deaths for Minneapolis residents aged 15 to 24 years were by

homicide, a figure the Minneapolis Health Department (2013) points out is almost three times the number of youth lost to auto accidents. Minneapolis Uniform Crime Reports for the years 2005 through 2011 indicated an average of 41 homicides per year. A high mark of 97 homicides per year was established in Minneapolis in 1995.   In 2009, the Minnesota Department of Health, Center for Health Statistics (2013), estimated 1,072.5 and 1,366.5 years of potential life lost to age 65 and 75, respectively, due to homicides within Hennepin County, of which Minneapolis makes up a large share. Years of potential life lost is calculated by subtracting the age at death from an actuarial estimation. Such a calculation lends deeper comprehension of the impacts of homicide.

The City of Minneapolis, briefly, is a major Midwestern city that had a population of 382,578 in 2010 (U.S. Census Bureau, 2013). In that year, almost two-thirds (63.8%) of its population identified themselves as being white, with 18.6% of the population identifying as Black or African American. Two percent of the population was Asian, and 2% were American Indian or Alaska Native. Further, 4.4% of the population was of two or more races. The median age in Minneapolis was 31.4, with nearly three-quarters (73.67%) of the population 21 years of age and over. For the population aged five and older, 19.9% reported a language other than English spoken at home.   Regarding place of birth, 85.4% of the population were native born and 14.6% were foreign born. Relative to education, 88% of those aged 25 years or more had obtained at least a high school diploma, and nearly half of males (45.5%) had obtained at least a Bachelor's degree. Workers aged 16 years or more had an average commute time to work of 22.2 minutes. Between 2008 and 2012, almost one-quarter (22.5%) of residents lived below the poverty level. Just over half of males (54.8%) and just under half of females (48.0%)

who were 15 years of age or older had never been married. Additionally, 8.5% of males and 11.7% of females reported their marital status as divorced.

Minneapolis and its twin city of St. Paul anchor a metropolitan area with a population of 671,015. Using 2000 census data, The Brookings Institution highlighted some of the significant demographic changes experienced by the Minneapolis-St. Paul Twin Cities area. For example, the foreign-born population in the Twin Cities of Minneapolis and St. Paul increased by 127% in the 1990s, making its "immigrant community one of the most diverse in the U.S" (The Brookings Institution, 2003). It also found that, while incomes in the Twin Cities "are among the highest in the Midwest", median incomes of blacks are about $17,000 less than it is for whites. Additionally, while 42% of whites in the Twin Cities have obtained a bachelor's degree, only 15% of blacks and 13% of Hispanics have done the same. The Brookings Institution also detailed many overall trends across the metropolitan areas that have been positive; however, it cautions that such trends may conceal important issues related to race and ethnicity.

Guided by Institutional Anomie Theory of Steven F. Messner and Richard Rosenfeld (2007), this study considers the influence of the institutions of economy, education, family, and polity on the distribution of homicides in Minneapolis. Using exploratory methods and secondary data, this study was undertaken to consider potential spatial variation to the relationships between institutional balance and homicides. This study does not examine why a particular individual might have engaged in criminal activity. Rather, it explores the broader cultural and structural characteristics in areas where the homicides occurred.

IAT is a distinctive theory of serious crime. While it is compatible with many elements of existing cultural-social learning, disorganization-control, and anomie-strain perspectives, as discussed in the next chapter, it provides a more complete explanation of serious crime by examining the interactions that occur between culture and social structure, rather than the traditional practice of emphasizing one or the other. Focus on this interaction is apparent in Messner and Rosenfeld's (2007, p. 67) recurring argument that in the United States "the anomic pressures inherent in the American Dream are nourished and sustained by a distinctive *institutional balance of power* [original emphasis] dominated by the economy". A more detailed theoretical explanation of IAT is presented in the next chapter.

This study seeks to add to the existing body of IAT research that examines the relationship between culture, institutional structures, and homicide rates. It includes many operational definitions used in previous studies in an attempt to provide for meaningful comparisons. Because this study uses census tracts as the unit of analysis, it also makes an original contribution to IAT research by attempting to apply the theory at the local level. The analysis of data is also distinctive in that it applies geographically weighted regression (GWR) contained within geographic information system (GIS) software to better understand how the relationships between homicide rates and institutions can vary spatially in the context of IAT.

Although analysis of institutional data produced mixed results, overall, a positive relationship was found between homicides rates and the percentage of individuals 15 years and older in the census tract who reported their marital status as divorced, the percentage of children residing in single female-headed households, and the percentage

of individuals over the age of 18 who have less than a high school education. These findings suggest that where the family and education institutions are weakened, higher homicide rates would be expected. Hence, this study provides partial support for IAT.

In Chapter 2, a more detailed description of IAT, predominantly based upon the theoretical writings of Steven F. Messner and Richard Rosenfeld, is presented. It also addresses more recent elaborations of IAT that they, along with colleague Helmut Thome, have set forth. Chapter 3 summarizes the major empirical tests and applications of IAT conducted by other researchers, as well as an additional study completed by Messner and Rosenfeld. The specific research design and statistical methods utilized within the current study are set forth in Chapter 4, including data sources and the operationalization of variables. This chapter also examines some of the methodological literature that informs the current study, such as that relating to geographic information systems (GIS), geographically weighted regression (GWR), and census tract units of analysis. Chapter 5 presents a detailed analysis of the data, complete with GIS-generated maps to assist in deeper comprehension of the spatial distribution of homicides in relationship to statistically significant independent variables. The overarching conclusions and contributions of the current study are set forth in Chapter 6, along with a discussion of the study limitations.

CHAPTER II

INSTITUTIONAL ANOMIE THEORY

Introduction

Steven F. Messner and Richard Rosenfeld posit that crime, and particularly violent crime, in America can be explained through Institutional Anomie Theory (IAT). Briefly, IAT can be described as a sociologically-oriented, macro-level theory that considers the relationship between crime, anomie, and the cultural and structural frameworks of a given society. The primary cultural component of the theory is comprised of the "American Dream", which instills the belief that all individuals should strive to achieve success. While it provides individuals with the inspiration to better themselves and become successful, primarily through their own hard work and determination, it also has a downside in that the society comes to view a person's value based upon whether or not that success is actually achieved. In America, success is predominantly measured in monetary terms. In the present study, the structural side of IAT is composed of the institutions of economy, education, family, and polity.

According to the theory, the American Dream allows for and supports a specific arrangement of institutions that is conducive to producing violent crime. More precisely, in America it creates an arrangement where the economic institution dominates all other institutions. When this occurs, the non-economic institutions are less effective at fulfilling social control functions and providing support to members of society. As a

result of these roles being weakened and/or unfulfilled, individuals are freed to achieve success through whatever means are necessary, including violent crime. Whether these means are legitimate or not matters less than whether they are the most efficient means.

This chapter is organized as follows. Initially, the linkages between IAT and other criminological theories are discussed. Next, for clearer understanding of IAT as a whole, attention will shift to a dissection of IAT into its cultural and structural components. Thereafter, the focus will be on the interactions that occur between the culture and the institutional structure. While IAT was offered to explain different types of serious crimes, a later section addresses the more specific application of IAT to homicide offending. More recent clarifications and elaborations of IAT made by Messner and Rosenfeld along with colleague Helmut Thome (2008) conclude this chapter. This elucidation explores the subjective and objective manner in which individuals can be influenced by culture and institutional forces, especially when the economic institution is dominant over other institutions.

Crime and the American Dream

The main body of work relative to IAT was produced by Messner and Rosenfeld in their book entitled *Crime and the American Dream*. It was first published in 1994, and in 2012 it was printed in the fifth edition. Messner and Rosenfeld readily acknowledge that their positions relative to institutional anomie stem from the early sociological works of Emile Durkheim, Robert Merton, and Karl Marx. Their approach to institutions was further broadened by the writings of Talcott Parsons, Robert Bellah, and C. Wright Mills.

Messner and Rosenfeld also link existing individual-level theories of crime with compatible macro-level sociological theories: social learning theory with cultural

deviance theory, social control theory with social disorganization theory, and strain theory with anomie theory. This linkage results in what they designate as cultural-social learning, disorganization-control, and anomie-strain perspectives. Messner and Rosenfeld (2007, p. 51) contend:

> "Each of the perspectives is associated with a dimension of social organization. Cultural-social learning explanations emphasize how crime varies with the strength of criminal subcultures. Disorganization-control explanations emphasize the structural dimension, specifically, how crime rates vary with the strength of social relationships and social controls. Finally, anomie-strain theory unites the two dimensions of social organization in its explanation of crime. "

Messner and Rosenfeld go on to elaborate on the strengths and limitations of these perspectives, as well as the way in which they are compatible with IAT. More importantly, they distinguish IAT from these perspectives and argue it more completely explains serious crime using a macro psycho-social approach.

The cultural-social learning perspective purports to explain why crime can vary depending upon the subcultural influences in one's life. For example, Edwin Sutherland's (1947, p. 7) differential association theory suggests that deviant behavior is learned, just as conforming behavior is learned, and criminal behavior occurs when there is "an excess of definitions favorable to violation of law". These definitions are shaped by the interactions one has with others in society, producing "social reinforcement and cultural validation" (Messner & Rosenfeld, 1997, p. 51) of such behaviors. In other words, criminal behavior can become normalized "in the sense that it requires socially learned motivations and socially structured supports. Crime is normal, in a word, because it is social, and it is no less social than conformity" (Messner & Rosenfeld, 1997, p. 51).

To illustrate the point that crime can actually be viewed as conformity to social norms, consider the act of stoning to death adulterous women in some other countries. Americans may view such as act as barbaric and criminal. However, for someone socialized into this, the stoning may be viewed as something expected by society. Stoning in that context is not criminal; rather it is normal. Those casting stones are conforming to, not violating, the norms of the group to which they belong, and they are attempting to impose consequences on others for violating local customs. The act of stoning then is only a violation of norms inasmuch as it is viewed negatively, to a greater or lesser extent, by the larger global community.

In short, the cultural-social learning perspective enriches the cultural aspect of IAT. But cultural explanations alone are not sufficient enough to explain crime. In fact, such an approach can result in circular reasoning in that it only explains crime that has cultural support (Messner & Rosenfeld, 1997, p. 52). Culture does not exist in a vacuum; it interacts with social structures. Consequently, to support the incorporation of structural elements in the explanation of serious crime, Messner and Rosenfeld review assertions from the disorganization-control perspectives that are consistent with IAT.

In doing so, Messner and Rosenfeld (2007, p. 53) review Hirschi's (1969) argument that social controls restrain some individuals from committing violations of law. However, having weak bonds to society can diminish these social controls and lead to criminal behaviors. Pointing out the criticisms of others that social control theory does not fully address the fluctuations in bonds, Messner and Rosenfeld (2007) draw the social disorganization theory of Clifford R. Shaw and Henry D. McKay (1969) into their discussions in an attempt to address this gap.

Shaw and McKay found that under certain conditions the social control mechanisms of institutions can become weakened, meaning they lose influence over the behaviors of residents. Shaw and McKay (1942, p. 165) suggested that in middle class areas "the similarity of attitudes and values as to social control is expressed in institutions and voluntary associations designed to perpetuate and protect these values". This appears consistent with the line of thought later set forth by Messner, Thome, and Rosenfeld (2008) that collective values and norms can influence an individual's perception as to what means are acceptable in the pursuit of goal accomplishment.

Shaw and McKay also point out that, because the strength of these institutions will vary depending upon the prosperity of a particular area of the city, the relationships between crime and institutions may not be stationary across space. The relationship may vary by geographical area. They suggest communities that have strong organizations, institutions, and collective influences are more likely to have lower crime rates. Theoretically, crime should be higher in communities where the amassed social control is low, such as those communities with high unemployment rates, high ethnic heterogeneity, and low socio-economic status.

In many respects, this line of thought meshes well with both the cultural and structural aspects of Messner and Rosenfeld's IAT. Each area will have its own unique institutional balance and, therefore, differing crime rates as well. According to IAT, where institutions are balanced, there should be lower rates of violence. For example, these may be areas where families are strong and can provide both social control and support for individuals, minimizing the anomic pressures to seek monetary success through criminal acts. On the other hand, where the economic institution is dominant,

families and communities are less able to serve as counterbalances and crime may become viewed as an attractive means to goal achievement. This linkage will be explained in further detail below.

Messner and Rosenfeld (2007, p. 54) maintain that the disorganization-control perspective explains crime by answering the question of why some people violate group norms. This approach has commonalities with IAT in that it binds together social and environmental conditions. However, like the exclusion of structural influences in the cultural-social learning perspective, the disorganization-control perspective has excluded cultural influences. These exclusions are influenced, at least in part, by turf battles that have formed between the perspectives (Messner & Rosenfeld, 2007, p. 54). Messner and Rosenfeld, on the other hand, argue that the explanatory power of IAT lies in joining the strengths of these two areas. In creating such a bridge, they draw heavily from the existing anomie-strain perspective.

The general anomie-strain perspective incorporated a combination of cultural and structural elements, including the examination of both goals and means. Anomie results when culture and social structures conflict (Messner & Rosenfeld, 2007, p. 57). As with IAT, anomie theory highlights that everyone in society is expected to pursue the culturally defined goals of success. However, according to Merton's version of anomie theory, differential access to opportunities and means limits some segments of the population from reaching their goals. In other words, as Messner and Rosenfeld (2007, p. 58) posit, "[c]ulture promises what social structure cannot deliver – success, for all". Messner and Rosenfeld would later tweak this theory when developing IAT, morphing

Merton's focus on stratified opportunities to one more concerned with institutional structures and balances.

Although Messner and Rosenfeld tend to draw heavily from the work of Merton, they also reiterate highlights from the works of Emile Durkheim. Durkheim considered societies to be anomic when they were unable to regulate the desires of citizens. In *Suicide*, he posited that it is part of man's composition to never be satisfied or fulfilled; man will continually pursue higher, and then higher, goals. For Durkheim, there is no end to this continual desire for more. In fact, he suggests it can become "a mark of moral distinction" (Durkheim, [1897] 1966, p. 257). Given that industrialization of society was accompanied by a reduction in social controls over the desires and longings of individuals, Messner and Rosenfeld are even more direct. They refer to this incessant state of desire as "morally obligatory" in today's society (Messner & Rosenfeld, 2007, p. 61). Consequently, in a modern capitalistic society, anomie can result in a criminogenic environment, unless it is offset by alternative definitions of success by strong non-economic institutions.

Because people are not constrained and continually want what they cannot have or cannot achieve, they become frustrated. They are continually unsatisfied and unhappy, which Durkheim believed could lead to suicide. In similar ways, Rosenfeld and Messner (2007) link the anomic cultural nature of the American Dream to higher crime rates. Persons who are strained and frustrated may be susceptible to goal attainment by any means.

It is imperative to highlight the linkage of such desires and frustrations of individuals with broader cultural and structural properties, as anomie and IAT are macro-

level theories. Merton, with his focus on legitimate opportunity structures, deliberately diverts emphasis away from the idea of intrinsic character flaws within individuals (Messner & Rosenfeld, 2007, p. 11). Like Merton, Messner and Rosenfeld also deflect the notion of individual defects and concentrate on the anomic pressures produced by the top-heavy cultural emphasis of achieving monetary success in American society (Messner & Rosenfeld, 2007, p. 11; Messner, Thome, & Rosenfeld, 2008, p. 178).

However, instead of more narrowly focusing on class and legitimate opportunity structures as Merton did, Messner and Rosenfeld look more toward the role of structure or institutional balance in producing crime (2007, pp. 11, 62). Their viewpoint of social structures, like Durkheim's, is much broader. They posit that the role of social structures is to counterbalance these cultural and anomic pressures. They maintain a macro-level structural approach to understanding anomie and its impact on social control functions, without casting shadows on individuals.

In summation, IAT is a distinctive theory of serious crime. While it is compatible with many elements of existing cultural-social learning, organization-control, and anomie-strain perspectives, it provides a more complete explanation of serious crime by examining the interactions between culture and social structure. Messner and Rosenfeld (2007, p. 67) argue that "the anomic pressures inherent in the American Dream are nourished and sustained by a distinctive *institutional balance of power* [original emphasis] dominated by the economy".

To better understand Messner and Rosenfeld's conceptualization of culture and structure, the following sections address each of them separately. Thereafter, attention will shift to the interaction between culture and institutional structures. That will be

followed by more recent theorizing by Messner, Thome, and Rosenfeld that expands and clarifies IAT.

Culture – The American Dream

Messner and Rosenfeld (2007, p. 49) define culture as "values, beliefs, goals and norms". Borrowing from Talcott Parsons (1951, Chapter 14) they also include the symbolic meaning behind behaviors as an element of culture. They refer to the American Dream as the "dominant cultural ethos", one predicated upon strong cultural pressures to achieve monetary success accompanied by weak social controls relative to the means of accomplishing those goals (Messner & Rosenfeld, 2007, p. 9). It is the American Dream that produces anomic pressures and emboldens individuals to achieve culturally-constructed goals with a mindset of "anything goes" (Messner & Rosenfeld, 2007, p. 67). These anomic pressures are "nourished and sustained" by the unique institutional balance within American society that favors the economic institution (Messner & Rosenfeld, 2007, p. 67). Social control and social support functions of non-economic institutions are weakened when culture and structure interact within such an anomic environment.

The expression "American Dream" did not originate with Messner and Rosenfeld. Rather, they trace it back to the writings of James Truslow Adams (1931) during the Great Depression. They also recognize the claims of subsequent researchers such as Charles Hearn (1977) and Elizabeth Long (1985) that, while the concept of the American Dream has become more complicated over the years, it nonetheless remains a steadfast part of American culture and consciousness. To buttress this point, Messner and Rosenfeld (2007, p. 6) provide a number of wide-ranging undertakings that are associated with attainment of the American Dream. For example, the purchase of one's own home

is often viewed as fulfillment of the American Dream. For others, both in historical and current contexts, the American Dream can mean immigrating to America with the hopes of building a better life. Messner and Rosenfeld (2007, p. 7) contend that the American Dream's emphasis on an individual's pursuit of success, which is measured primarily in monetary terms, acts like a "cultural compass guiding Americans in their everyday lives."

The foundation of the American Dream is based upon several cultural value commitments: individualism, universalism, achievement, and materialism (Messner & Rosenfeld, 2007, pp. 68-70). American culture universally socializes and pressures individuals to believe in and to strive for success. Absent success, the person's social worth will be viewed as low. Driven by a seemingly sacred American principle of individual rights and autonomy, each person is adjudged by his/her own individual efforts.

Given the disproportionate distribution of wealth and high levels of inequality in modern American society, this universalistic pressure to succeed as an individual may result in viewing others as competitors in the contest of success. Such strains can lead to criminal behaviors. More specifically, Messner and Rosenfeld (2007, p. 10) point out that this universalism:

> "…actually *presupposes* [original emphasis] high levels of inequality. A competitive allocation of monetary rewards requires both winners and losers, and winning and losing have meaning only when rewards are distributed unequally. The motivation to endure the competitive struggle is not maintained easily if the monetary difference between winning and losing is inconsequential. In short, the very fabric of the American Dream weaves a fundamental tension. It provides the cultural foundation for a high level of economic inequality, yet a high level of inequality relegates large segments of the population to the role of 'failure' as defined by the standards of the very same cultural ethos.
>
> The American Dream thus has a dark side that must be considered in any serious effort to uncover the social sources of crime. …it helps

create and sustain social structures incapable of restraining criminogenic cultural pressures."

As just noted, the American Dream has been woven into the very fabric of American society, so much so that "[a]nomie is considered a virtue" (Messner & Rosenfeld, 2007, p. 87). It essentially describes who we are and what it means to be American. The American Dream has been praised as being one of the driving forces behind progress and success. At the same time, it has produced pressure to innovate in order to succeed and achieve, at any cost.

Although all societies experience crime, America is distinguishable from that of other societies in that it takes on the character of being "by any means necessary"; it has an "unrestrained and dangerous character" (Messner & Rosenfeld, 2007, p. 21). What also distinguishes American society is its *extreme* focus on material gain and accumulation as a *measurement* of success; it has been afflicted with the "fetishism" of money (Messner & Rosenfeld, 2007, p. 70). No matter how much a person has, he/she may always desire more.

This culture is "expressed in, reproduced by, and occasionally impeded by social structure" (Messner & Rosenfeld, 2007, p.71). The pervasive and competitive pursuit of more in America is criminogenic (Messner & Rosenfeld, 2007, p. 71) when there are comparatively weaker counterbalancing forces from non-economic institutions. High crime rates in America, therefore, are rooted in its culture and institutional structure. Hence, it is imperative to also understand the institutional structure side of IAT, which is where attention is now turned.

Structure - Institutions

For Messner and Rosenfeld, "[s]ocial structure consists of the patterned relationships among persons and groups defined and organized through social institutions" (2007, p. 49). They concur with Bassis, Gelles, and Levine's (1991, p. 142) definition of institutions as "relatively stable set of norms and values, statuses and roles, and groups and organizations that regulate human conduct to meet the basic needs of society". Messner and Rosenfeld (2007, p. 35) added "[l]ocal institutions provide order, meaning, purpose, and protection to area residents". In his 2010 address to the American Society of Criminology entitled "The Big Picture", then-President Rosenfeld (2011, p. 11) clarified that institutions are not single entities, such as a church, a school, or a political party. Rather, following Parsons (1951), an institution is "a system of rules for governing the operation of social positions, the roles connected to them, and the organization in which roles are enacted and goals are achieved (Messner and Rosenfeld, 2004)".

The cultural value commitments, discussed previously, exist within this institutional structure of American society. To Messner and Rosenfeld (2007, p. 71) these institutions provide controls on human behavior in fulfillment of the basic needs of members within a society. Each institution plays important roles. For example, the economic institution exists to provide for basic human necessities such as food, clothing and shelter. The institution of family plays several roles, including population replacement and socialization of children to cultural expectations. In addition, it has the potential to serve as a safe haven from the stresses in other aspects of life. While the institution of education also plays a socialization role, it further serves to foster

knowledge and human development. The institution of polity plays a social control role, helping to ensure the collective good.

While these four institutions comprise the main institutional focus for Messner and Rosenfeld, they readily acknowledge that there are other institutions, such as those of religion and mass communication, which may also prove to be fruitful grounds for future research. Further, institutions may not be totally separate and distinct from each other, and one institution may rely upon another in order to function effectively (Messner & Rosenfeld, 2007, pp. 72-73). In other words, their roles interplay. For example, when discipline and child development are lacking within the institution of family, the institution of education may need to first address those issues before there can be learning of tangible subject matter materials. Without the support of parents and families, teachers may find it difficult to fulfill their prescribed responsibilities in the area of academic learning.

Each society has its own unique institutional balance (Messner & Rosenfeld, 2007, p. 74). American society, as noted previously, has a distinctive balance of power in which the economic institution is dominant over non-economic institutions. Messner and Rosenfeld suggest that when this economic dominance occurs, the ability of non-economic institutions to fulfill socialization and social control functions that counter an "anything goes" mindset is hindered. Unrestrained, this can put in motion a seemingly perpetual downward spiraling. The non-economic institutions become devalued and are relegated to a position of accommodation toward the economy. They, in turn, are not able to provide individuals with alternative, non-economic measurements of success. The economic, or monetary, measure of success prevails in the means-ends process.

This unique institutional balance in America is shaped by the country's distinctive private ownership characteristics. It has a capitalist economy that encourages and rewards competition and innovation (Messner & Rosenfeld, 2007, p. 75). Piquero and Piquero (1998, p. 64) bolster this idea, adding "capitalism legitimizes selfishness and develops egoism at the expense of altruism", as originally avowed by Bonger (1916). Yet Messner and Rosenfeld urge that one should not be too hasty as to unequivocally pin the culpability for high crime rates on a capitalist economy. Rather, they highlight the words of Heilbroner (1991, pp. 539-540) that "'*American* capitalism, not American *capitalism*' is responsible for the features of our society that distinguish it, for better or worse, from other capitalist societies". They also agree with Elkins (1968, p. 43) that, from its early days, American capitalism was free from institutional constraints as it took its shape, including its arrangement of economic domination; this was not the environment in other societies (Messner & Rosenfeld, 2007, p. 76). Capitalism was an integral part of how society came to be structured in America. It was not a movement that was later wedged into an existing framework. For example, rather than being subjected to the edicts of feudalism or monarchies, Americans could have private ownership and reap the profits. Each person could rise or fall on their own.

Currie (1991, p. 255) posits that "the pursuit of private gain becomes the organizing principle of all areas of social life – not simply a mechanism that we may use to accomplish certain circumscribed ends." These entrenched drives that are produced in an American capitalistic environment may remain in motion even after one's initial goals have been achieved. Recall the incessant desire for more. Pursuing monetary success is

expected, but not everyone is able or disposed to achieving it through legitimate means; therefore, crime becomes the means to those ends.

Again, Messner, Thome, and Rosenfeld (2008, p. 178) emphasize that the focus should not be on particular individuals and their specific behaviors. Rather, one must examine why crime results from socialization processes within an economically-dominated environment. Likewise, Messner and Rosenfeld suggest that we must look beyond explanations of crime that are based solely on cultural aspects or solely on the structural conditions that exist within a given society. Instead, we should examine the roles and interactions between culture and social structure that produce a criminogenic environment. The next section discusses how culture influences and is sustained by institutional structures.

Devaluation, Accommodation, and Penetration

Rosenfeld and Messner posit that economic dominance within a society may be manifested in at least three ways: devaluation of non-economic institutions, accommodation to economic institutions, and penetration of economic values into non-economic institutions. Each of these is described more fully below.

Devaluation

Non-economic institutions become devalued in an environment where the institutional balance of power is tipped in the favor of the economy. For example, Messner and Rosenfeld (2007, pp. 76-77) state that the institution of education is devalued when society loses appreciation for the value of intrinsic learning and instead seeks to bolster monetary benefits for businesses, employers, and employees.

Devaluation can also be discerned when one considers that teachers, in comparison to those employed in the business sector, often receive relatively low salaries. They further point out that the characterizations of being a "good student" or "master teacher" are not held in highest regard.

Relative to the institution of family, they highlight that society now values home*owners* more than home*makers*. So that parents may work, they entrust daycare providers with the safety and socialization of their children, at low wages. They emphasize that just under one-quarter of all children between the ages of 3 and 5 are being raised by their parents alone, without the assistance of childcare (Messner & Rosenfeld, 2007, p. 8).

Regarding polity, Messner and Rosenfeld draw attention to the fact that not voting in an election is regarded uncritically; it is not viewed as a major character flaw in America. However, if a person is able but unwilling to work, he/she may be quickly and negatively judged. In other words, some roles and functions are valued more than others. In particular, they are making the point that economic roles have come to carry more weight, or value, than those in the non-economic realm, including that of polity. Messner and Rosenfeld (2007, pp. 78-79) mention that one polity exception may be Americans' desire to have the government become increasingly more involved in crime control functions. However, they also clarify that while, in general, citizens may want the government to stay out of their private business, crime control efforts protect their property and monetary possessions (or economic well-being) from loss.

Accommodation

If a non-economic institution finds itself in competition with the economy, the former will often yield to, or accommodate, the latter (Messner & Rosenfeld, 2007, pp. 79-81). For instance, family time is often dictated by the hours of employment. Further, only those American businesses with more than 50 employees are required to follow laws with regard to *unpaid* parental leave (Messner & Rosenfeld, 2007, p. 79). This makes it financially challenging for working-class parents to stay at home with their newborns.

Other industrialized countries, such as those in Scandinavia, rank ahead of the United States when it comes to financial support and leave time for parents. In a study of 17 globally competitive countries with low unemployment rates, Earle, Mokomane and Heymann (2011) indicated that the United States does not require *paid* parental leave policies for mothers or fathers. Norway guarantees mothers and fathers 90-100 and 87-97 weeks, respectively, of paid parental leave, at the rate of 80 to 100 percent, flat rate, wage replacement. Likewise, Sweden guarantees 69 and 67 weeks of paid leave, while Finland specifies 164 and 154 weeks. Germany, a highly industrious country, offers mothers 66-118 weeks and fathers 52-104 weeks of paid leave. The United States was the only country in their study that did not universally guarantee some type of paid leave for mothers, and it was the only other country in the study, besides Switzerland, that did not provide fathers with such a policy.

Regarding the institution of education, Messner and Rosenfeld (2007, p. 80) argued it is geared more toward achieving occupational attainment than producing intrinsic knowledge and understanding. In addition, time-flexible course schedules have emerged to allow workers to supplement their skills without jeopardizing their

employment status. Further, since educational institutions may rely upon private funding,
for a multitude of undertakings, school administrators may be quick to ensure their
donors receive benefits in return.

Messner and Rosenfeld (2007, pp. 81-82) acknowledge a similar situation can
arise between politicians and their donors and/or constituents, such that one must either
be independently wealthy to run for public office or run the risk of later finding
themselves in a compromising position in order to repay one's debt. Messner and
Rosenfeld (2007, pp. 81-83) refer to the enormous costs of modern-day campaigning in
America. If these funds would be directed to the strengthening of the polity, rather than
potentially buying political offices that result in personal economic gain, the goal of
serving the collective good may be more attainable. In other words, while some
politicians may have genuine intentions of strengthening the polity institution, they may
find themselves overcome by and yielding to anomic pressures that, instead, favor the
economic institution. Financial connections (beyond mere salaries) and the status that
one achieves by holding public office becomes the overriding factor when decisions are
made.

Penetration

Economic influences may also penetrate or permeate non-economic institutions.
Non-economic institutions may take on the cost-benefit foci and processes preeminent
within the economic institution. For example, Messner and Rosenfeld point out that
schools and government offices are increasingly being managed through business models
focused on efficiencies and streamlining strategies, rather than being driven by sharp
attention to the changing needs of the collective good. The institution of family, Messner

and Rosenfeld (2007, p. 83) assert, may be the institution most resilient to penetration by economic norms; however, they also point out that the realm of the family institution has become more business-oriented, as evidenced by emerging terminology such as partners, division of labor, and marriage contract.

With non-economic institutions weakened by devaluation, accommodation, and/or penetration, the dominance of the economic institution grows. This hinders and inhibits the ability of non-economic institutions to fulfill social control functions or provide support. As a result, non-economic institutions are no longer able to counter the "by any means" pursuit of culturally-prescribed goals. In other words, the influence of the economic institution overpowers the ability of non-economic institutions to keep anomic pressures in check. The use of illegitimate and illegal means becomes a more attractive and/or efficient way of achieving goals and defining oneself as successful. The anomic environment, coupled with weak controls and support, becomes conducive to crime.

Institutional Anomie Theory and Homicides

Messner and Rosenfeld (2007) offered IAT as an explanation for "serious" crime in America, with subsequent studies applying IAT to violent, property, and white-collar crimes. Serious crimes are defined as those "involving significant bodily injury, the threat of bodily injury, or, in the case of nonviolent offenses, significant economic harm to victims, both individual and collective" (Messner & Rosenfeld, 2007, p. 47). Specifically related to homicides, Messner and Rosenfeld (2007, p. 20-27) compared rates in the U.S. between 1996 and 2000 to those of fifteen other "advanced" and "post-industrial" countries. The United States had the highest homicide rate of the sixteen

25

countries at 5.9 homicides per 100,000. At less than half that rate, Sweden had the

second highest rate at 2.6 homicides per 100,000. The next six countries (Australia,

Canada, The Netherlands, Italy, Sweden, and Switzerland) had rates between 1 and 2 per

100,000, and the remaining eight countries (Ireland, Denmark, Austria, Germany,

Norway, France, Japan, and England-Wales) had homicide rates less than 1 per 100,000.

It should be noted that the Russian Federation and South Africa, which have substantial

homicide rates, were not included within this comparison (Messner & Rosenfeld, 2007,

p. 21).

Homicide rates within the United States have ebbed and flowed through the years.

However, Messner and Rosenfeld underscore that even when its rates were lowest, those

rates were still higher than the rates found in nearly all other advanced societies. Going

beyond these mere comparisons of crime "levels", or rates, Messner and Rosenfeld

(2007, p. 21) emphasize the importance of further examining the "*form*" (original

emphasis) of crimes. The United States is characterized by crimes that tend to take the

form of "by any means". In other words, crimes in America have a particularly

"unrestrained and dangerous character".

Messner and Rosenfeld acknowledge that gun ownership rates are exceptionally

high in the United States. However, even if one were to exclude gun-related homicides

from the equation, they submit the United States would still have homicide rates much

higher than those found in "most other developed nations" (Messner & Rosenfeld, 2007,

p. 24). Consequently, without taking the gun control debate head on, they do infer that

such measures would not be a panacea for eradicating homicide. Their argument is that,

with or without firearms, crime in America takes the form of "by any means". Factors other than firearms must be considered in explaining high homicide rates.

A deeper understanding of homicide rates in the United States also requires that the question of race be addressed. Official statistics shows that African American males are disproportionately represented in homicide offending and homicide victimization. Their risk of homicide as a cause of death is noticeably higher than that of white males. In Minneapolis, homicide was the number one cause of death for black males between 15 and 34 years of age and approximately half of all deaths of black males between 15 and 24 years of age were attributed to homicide. In comparison, homicide ranks between fourth and fifth cause of death for non-Hispanic white males. In Minneapolis, it was not until black males reached 45 years of age that homicide dropped out of the top five causes of death. However, that being said, if one were to compare the rate at which only whites across America commit homicide to the rates of the fifteen countries previously noted, America would still have a higher homicide rate than all of those countries except Finland (Messner & Rosenfeld, 2007, p. 27).

Another area Messner and Rosenfeld consider is variance in the quality of life, not only across nations, but also across the United States. While some areas of the United States are relatively safe and calm, other areas, such as those with high homicide rates, can resemble war zones. They accentuate that quantitative cross-national studies can sometimes hide irregularities, such as the reality of "acute pockets of fears" (Messner & Rosenfeld, 2007, p. 33) that exist within certain areas of most urban American cities. In such pockets, the fear and risk of crime can be omnipresent. To solidify this point, they include narratives from people living in such areas. There are certain unwritten rules to

living in these areas, such as knowing when it's safe to go outside and where within a home is the safest place to avoid being shot in your sleep.

Messner and Rosenfeld (2007, p. 35) suggest that "warlike conditions not only kill and maim individuals; they also destroy institutions." The damage to institutions is perpetual in nature, meaning after the institution's social control function is diminished, crime rates go up, further diminishing the institution's influence. This condition has implications for institutions and individuals alike. Consequently, for Messner and Rosenfeld (2007, p. 35), "[m]uch of the terror surrounding crime is due not simply to the threat of individual victimization but to the sense that the protective cover of institutions has collapsed, exposing individuals to all manner of unpredictable and uncontrollable dangers." For example, in addition to socialization, schools and families also play protective and supportive roles. When these institutions are invaded by violence, such as a shooting in the school hallway or the burglary of a home, the effects can be devastating as fears are multiplied. If one cannot feel safe in their school or home, where is it safe? Hence, the perception that some communities are like war zones.

Recent Theoretical Clarification and Expansion

Unquestionably, IAT is a macro-level theory that is highly abstract in nature. To one not highly informed about the theory, and perhaps even to those who are, it can be perplexing to understand how something as broad as culture and institutional structure exerts pressures on individuals to commit violent crimes. This is an additional reason why IAT is a theory that can be challenging to empirically test. Some relief from this confusion and frustration is provided in a more recent article written by Messner and Rosenfeld along with colleague Helmut Thome (2008). It adds and links micro-level

application to the grander, overarching macro-level foundation. It clarifies and expands how culture and social structure are exhibited within institutions.

Using Parsons' Work to Clarify the Conceptualization of Institutions

Institutions influence behaviors in different ways. For Rosenfeld, Thome, and Messner (2008), two ways of understanding these influences can be found in Talcott Parsons' (1990[1934], p. 319) "subjective" and "objective" approaches to institutional research. Briefly, the subjective approach relates to the viewpoint of an actor and enhances the ability to explain the behavior of an individual. On the other hand, the objective approach describes the individual as a "sociological observer" and relates more to the explanation of "institutional order" (Messner, Thome, and Rosenfeld, 2008, p. 165). This two-pronged approach to studying institutions sets the stage for understanding how norms and values of the collective are key to comprehending "institutional dynamics" and social controls (Messner, Thome, and Rosenfeld, 2008, p. 165).

Messner, Thome, and Rosenfeld (2008) assert that behaviors of individuals are influenced by institutions on the subjective level, often as they navigate means-ends judgments. To reach goals, or ends, the individual will consider the "suitability" of the means to achieve those goals, and that "suitability" is not a constant across all decisions or goal attainments (Messner, Thome, Rosenfeld, 2008, p. 165). Rather, "suitability" is based upon a "specified standard of rationality". In each situation, a different weight or "standard of rationality" is applied to the process. In other words, what might be acceptable means for reaching one goal may not be acceptable, or "suitable", for achieving another goal.

This creates a rather complicated picture of the means-goals connection. How does each individual assess the "suitability" and "standard of rationality" to be used in their unique situations? Following Parsons (1990 [1934]), Messner, Thome, and Rosenfeld posit that decisions are influenced and based upon the general consensus that a collectivity has towards the ends. Further complicating matters is that such consensus may not exist within a society. Parsons, and subsequently Messner, Thome, and Rosenfeld (2008, p.165), conveys that divergent values within the collectively can create a "highly unstable" environment. On the other hand, when values are shared within a collective, there can be social order. In other words, if there is consensus on what means are and are not acceptable toward achievement of each specific goal, there is stability. The values and norms of the collective guide the "suitability" and selection of means in achieving ends, and members of the collective are obligated and pressured to follow these norms of society. If they do not, there will be consequences for their actions. For Parsons, this is what institutions are built upon. Messner, Thome, and Rosenfeld (2008, p. 166) state that Parsons "restricts his conceptualization of institutions to the rules that contribute to the emergence of these regular patterns of behavior."

Further, the number of norms and values within a society can be copious, each applying to specific courses of conduct. However, these norms and values can be grouped together based upon their similarities. For example, some pertain to the institution of families, while others may be tied more closely with the institution of education. Recall that institutions can and do overlap. Sometimes this overlap is complementary in nature. At other times, conflict can arise.

Besides sanctions, why do individuals follow the norms of society? Why don't some people use whatever means are available? Parsons stated there are at least two "sources of compliance": moral and utilitarian authority. With moral authority, individuals may consider the greater good of society in choosing the means to their ends. In other words, when the individual himself/herself is contemplating available means to achieving their goal, his/her personal view and valuing of institutional norms plays a role. In this way, institutions exert significant influence and control, or moral authority, over the behaviors of individuals. Individuals are likely to follow the prescribed rules when pursuing their goals. The utilitarian approach, however, is more in line with a cost-benefit analysis conducted by the individual.

In contrast with the subjective approach, Messner, Thome, and Rosenfeld (2008, p. 166) state Parsons "argues that institutions themselves can be thought of as constituting a collective system. Each institution has implications for others." As mentioned above, each institution has particular functions and roles; however, these institutional roles can, and often do, overlap. For example, the institution of education carries out, at least to some extent, the socialization and disciplinary roles that families play during a child's development. Although the functions are often complementary, they may at other times conflict, such as when parents accommodate the economic institution by working during time periods when their children are not in school and they could otherwise be spending time together as a family. Each society handles these dilemmas differently and, therefore, can be described as having a different institutional balance. In clarifying these points, Messner, Thome, and Rosenfeld (2008, pp. 168-9) offer the example of the former Soviet Union, which is characterized by a balance of power in favor of the political

institution, not the economic institution. To explain weak structural integration, Parsons (1990[1934] p. 332) provided the example of medieval church and state relations, where each institution "claimed an allegiance which inevitably encroached on the requirements of the other".

Likewise, each society will have differing levels of "regulatory integration" (Parsons (1990[1934], p. 332). Messner, Thome, and Rosenfeld (2008, p. 166) state, "this refers to the degree to which and the means by which institutional norms govern behavior in practice." When regulatory integration is high, individuals are more likely to conform to norms because of the moral authority attributed to them. On the other hand, when regulatory integration is low, individuals may no longer feel obliged to follow these institutional norms. This was likened to a state of anomie.

Further Elucidation of the Relationship Between Institutions and Crime

In America, dominance of the economic institution is manifested through devaluation, penetration, and accommodation, as noted in an earlier section. This economic dominance can lead to criminal behaviors through "internalized normative controls and informal social controls" (Messner, Thome, and Rosenfeld (2008, p. 168). Individuals are subject to many demands at the same time and may choose different actions and means based upon what specific institution is involved and the authority it exerts. Further, the process of cost-benefit analysis that is prevalent (and successful) in the economic sphere can become dominant and "spill over" into other realms of decision making (Messner, Thome, and Rosenfeld, 2008, p. 169). In this setting, the norms of a society, and consequently the influence of the corresponding institutions, bear less weight and have less control over behaviors; the moral authority of these norms are overridden

by the pressure to use the most efficient means. More specifically, the norms embedded within non-economic institutions lose their authority and/or attractiveness. During periods of chronic anomie, bonds and restraints relative to the individual are weakened and they are freed to commit an illegal act as a means to their achieving goals.

The foundation of IAT is also built upon Durkheim's (1964[1893]) contention that due to the extensive division of labor an advanced society will depend less on "mechanical solidarity" and far more on "organic solidarity", where the emphasis on collectivity gives way to an emphasis on individualism. According to this view, and if one looks back far enough, they will find that violence has actually decreased because of this shift. Rather than being concerned, for example, with defending the norms and honor of a clan or family, today there is more respect for the lives of individuals. As one interacts within society, people are viewed more as individuals than as members of a collective group, such as their family.

However, although we can rise to and fall from success on our own today, at least according to cultural beliefs, that does not prohibit an individual from acting in ways congruent with and supportive of the greater good. This moral or "cooperative individualism" can account for the willingness of individuals to allow the state, or "the organ of moral discipline" in Durkheim's (1958 [1950], p. 72) words, to manage aspects of the greater good without regard to the personal cost-benefit analysis. According to Durkheim, in a fair and just society, the state must have priority over the economic institution, in part to ensure that very same individual freedom. When it is the individual who is valued, rather than the collective, there should be a corresponding decrease in the

level of violence experienced by that society, other things being equal (e.g. absent anomie).

However, Durkheim believed that egoism where decision-making is self-centered and not altruistic also emerges in advanced societies. Messner, Thome, and Rosenfeld (2008, p. 172) extend his work by positing that egoism is consistent with the economic dominance that is prevalent in American society today, more so than "moral" or "cooperative" individualism. Non-economic institutions, such as family, education, and polity are not able to effectively carry out their roles of providing moral foundations and social controls in society. For Messner, Thome, and Rosenfeld (2008, p. 172), egoism "provides the cultural foundation for economic dominance in the institutional balance of power and widespread anomie".

Whether an individual decides to commit a crime in furtherance of goal achievement is dependent upon that individual's perception of institutional norms and how the various institutions should be valued, as well as the options that are available to them (Messner, Thome, and Rosenfeld, 2008, p. 173). The most efficient means may be the option selected when non-economic institutions do not hold a particularly strong moral authority for that individual. Again, this relates to the "spillover effect" that Messner, Thome, and Rosenfeld outline. When there is heightened anomie, the cost-benefit analysis prominent in the economic realm bleeds over into other institutional domains. The extent of this spillover effect is actualized in higher or lower crime rates.

In other words, if individuals strongly value non-economic institutions, they may be less susceptible to the spillover influences. The institutions are more in balance and social controls remain in tact. On the flip side, those who do not place strong emphasis

or value on non-economic institutions may be more likely to pursue their goals by any means necessary, including violent crime. Following Hirschi's (1969) social bonding theory, these individuals are not as attached to the broader society and the controls on their behaviors are weakened.

Messner, Thome, and Rosenfeld (2008, p. 174) tap the "marketness" continuum set forth by Fred Block (1990) to further solidify their argument. The continuum has at one end instrumental sentiments and expressive motives at the other. Like the distinction between instrumental and expressive crimes, it can be said that one is propelled by emotion and the other is driven by a cost-benefit analysis. Individuals make economic decisions differently, with some being driven more by cost-benefit analysis and others by a sense of greater good instilled by non-economic institutions. In line with an analogy provided by Messner, Thome and Rosenfeld, this could be likened to the strong conviction of some individuals who choose to boycott the new chain discount store built within their communities and instead opt to continue their patronage of the locally-owned hardware and grocery stores, pharmacy, etc., even though they know full well that that patronage will personally cost them more money in their business transactions. In their eyes, it is more important to be supportive of other people living within their communities than it is to gain a "deal" from a discount chain with corporate offices out of state. Individuals exhibiting this type of decision-making process would, according to IAT, be less likely to use crime as a means to an end.

Putting this analogy into the context of criminal offending, Messner, Thome, and Rosenfeld (2008, p. 174) reiterate that those who are at high risk of using violence and crime as a means to an end would place greater emphasis on the monetary value of a

35

transaction, giving the economic institution a higher ranking than the non-economic institution. The views of these individuals regarding non-economic institutions has become secondary to their prioritization of the economic institution. Further, their perception of the moral authority of non-economic institutions would also be low. In these situations, there are weak internal and external controls.

This recent publication by Messner, Thome, and Rosenfeld (2008) is of particular significance to the current study in that they call for more research to address both micro- and macro-level factors relative to IAT. This seemingly opens the door to studying IAT at a more local level. While they still do not specifically address what micro units of analysis are appropriate for applying and testing IAT, it appears from their work that census-tract level studies would constitute an appropriate unit of analysis.

While the recent work of Messner, Thome, and Rosenfeld (2008) clarifies and elaborates on both the cultural and structural underpinnings of IAT and connects macro-level theory to micro-level processes in meaningful theory, it is also important to take note of other, older, developments relating to IAT, which are the focus of the next chapter.

CHAPTER III

LITERATURE REVIEW OF
THEORETICAL AND EMPIRICAL STUDIES

Introduction

In Chapter 2, the Institutional Anomie Theory of Messner and Rosenfeld was described in detail. This chapter describes and summarizes a chronological review of research on IAT since *Crime and the American Dream* was first published in 1994. It should be noted at the outset that because many concepts of IAT are largely abstract in nature, Messner and Rosenfeld and other researchers have found it challenging to empirically test (Chamlin & Cochran, 1995, pp. 414-415; Savolainen, 2000; Schoepfer & Piquero, 2006; Bjerregaard & Cochran, 2008). The availability and cost of directly collecting complete data to more thoroughly analyze IAT adds to these challenges (Sampson & Groves, 1989; Chamlin & Cochran, 1995, p. 415). This could, for example, require extensive survey sampling or longitudinal studies that capture copious amounts of data pertaining to various aspects of a subject's life. Therefore, most prior tests of IAT have used secondary data and indirect approaches to measuring the relationship between various social institutions and crime rates. All of the studies reviewed in this chapter (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Hannon & DeFronzo, 1998; Piquero & Piquero, 1998; Savolainen, 2000; Batton & Jensen, 2002; Stucky, 2003; Maume & Lee, 2003; Schoepfer & Piquero, 2006; and Bjerregaard & Cochran, 2008) have found at least partial support for IAT.

Previous Applications of Institutional Anomie Theory

Chamlin & Cochran (1995)

Researchers, including Chamlin and Cochran (1995, p. 426), call for continuing the exploration of more empirical measures of institutional strength, rather than acquiescing to critics who propose IAT is not falsifiable. They conducted the first test of IAT, wherein they examined the role of institutions relative to the crimes of robbery, burglary, larceny and auto theft offenses per 1,000 population using state-level data extracted from the U.S. Census Bureau and Uniform Crime Reports. They viewed these as instrumental offenses, meaning those driven by profit. Using weighted least squares regression, they sought to understand the interactive nature of institutional variables.

As their measure of the economic institution, and more specifically absolute economic deprivation, Chamlin and Cochran (1995) used data on the percentage of families living below the poverty level. Highlighting Messner and Rosenfeld's (1994) posit that non-economic institutions may provide "alternative definitions of self-worth", they looked at whether family, religion, and the polity institutions could serve as "countervailing forces" against anomic pressures (Chamlin and Cochran, 1995, p.417). As a measure of family disruption, they utilized a ratio of yearly divorce rates per 1,000 to the yearly marriage rate per 1,000, reasoning that family disruptions, such as divorce, can hinder informal social controls that can, in turn, lead to higher levels of economic crime (Blau & Blau, 1982; Blau & Golden, 1986; Felson & Cohen, 1980; Sampson, 1986, 1987; Sampson & Groves, 1989; Chamlin & Cochran, 1995; see also Braithwaite, 1989; Sampson & Laub, 1993). Following Messner and Rosenfeld (1992), Chamlin and Cochran (1995) set forth the principle that involvement in the polity can "produce a sense

of public altruism" that combats anomic pressures. They operationalized polity as the percentage of individuals voting in congressional elections, believing congressional contests may have a more intimate connection between citizens and local polity than would a presidential contest. Religion was measured as church membership, noting that these entities can spread accepted norms and values to its members. Lastly, they utilized race and age control variables, consistent with prior research (Devine, Sheley, & Smith, 1998; Felson & Cohen, 1980; Sampson, 1987), operationalized as the percentage of the population that was black and the percentage of the population aged 18 to 24 years.

Examining the extent to which the economic institution impacted property crime rates contingent upon the strength of non-economic institutions, Chamlin and Cochran (1995, pp. 420-421) found support for their measures of family (positive) and religion (negative); however, their economic deprivation variable did not show a significant main effect on crime. Overall, the model produced an adjusted R^2 of .96. They further examined interaction effects between poverty and church membership, family disruption, and voting participation. All were found to be significant. The models indicated a positive relationship for the poverty-family interaction, while the poverty-church and poverty-voting interactions were negative. They conclude that culture, structure, and crime are interrelated. More specifically, they found that the level of crime experienced in a society is impacted not by economic conditions alone but by the interaction that occurs between economic and non-economic institutions.

Chamlin and Cochran (1995, pp. 423-424) also ran alternative models substituting unemployment data and Gini indexes as measures of the economic institution, replacing poverty as the measure. The Gini index, as defined by the U.S. Census Bureau, measures

economic inequality, with values ranging from 0 (perfect equality) to 1 (perfect inequality). The Gini-family interaction was not significant; however, the remaining interactions were found to be consistent with the original models. The unemployment-family interaction in the alternative model also produced a significant outcome; however, the coefficient sign was contrary to the theorized direction. Chamlin and Cochran suggest that increased levels of divorce actually decreased the harmful effects that unemployment had on crime. In other words, at least with their measurements, a weakened family institution buffered the relationship between the economic institution and crime, contrary to IAT. Chamlin and Cochran (1995, p. 424) conclude that the criminogenic nature of economic inequality (Gini) and unemployment may be mitigated by stronger levels of church membership and voter participation. Further, they substituted presidential election voter participation, instead of congressional-level voting, in an alternative model and found similar results between these operationalizations.

Overall, Chamlin and Cochran find support for the IAT of Messner and Rosenfeld. They conclude non-economic institutions may mitigate the criminogenic effects that the economic institution has on crime rates. Even though their study provided "no direct measures of anomie and institutional controls", they reiterate the statements of Messner and Rosenfeld (1994) that strong non-economic institutions may decrease anomic pressures, resulting in lower crime rates.

Messner & Rosenfeld (1997)

Messner and Rosenfeld provided the second partial test of IAT in 1997. They examined the impact of decommodification on homicide rates on a cross-national scale, guided by a previous decommodification study conducted by Gosta Esping-Andersen in

1990. Decommodification refers to the extent to which a government shields and insulates its citizens from the adverse impact of market fluctuations and pressures. Messner and Rosenfeld indicate that decommodification can influence decisions such as getting married, having children, and pursuing an education, depending upon how "free" individuals feel they are from reliance upon the market. At least in the context of Esping-Andersen's approach, decommodification is connected to the institution of polity and goes beyond the mere existence of government programs and welfare policies, reflecting "the quality as well as the quantity of social rights and entitlements" (Messner & Rosenfeld, 1997, p. 1395). Low decommodification can result when there are impediments to receiving entitlements; whereas, high decommodification signals a stronger buffering of market vacillations in an attempt to provide for a more compassionate standard of living (Messner & Rosenfeld, 1997, pp. 1394, 1397). This study indicates that the United States, in comparison to the other nations included in the study, has a low decommodification value.

Messner and Rosenfeld (1997, p. 1397) take Esping-Andersen's foundational work to the next level by integrating it with IAT, indicating that weak decommodification can signal the dominance of the economic institution over the polity institution. When economic dominance occurs, non-economic institutional roles become less desirable and their social control functions become hindered. Thus, in those environments, it would be reasonable to anticipate higher crime and homicide rates according to IAT. While several prior studies found support for a negative relationship between welfare expenditures and homicides (Fiala & LaFree, 1988; Gartner, 1990; Pampel & Gartner, 1995), Messner and Rosenfeld apply macro-level IAT and the concept of decommodification in their cross-

41

national study of homicide rates (1997, p. 1397).   They constructed a proxy

decommodification index, taking into consideration factors such as "average annual

benefits per household, expenditures as a percent of GDP, and the percent of benefit

expenditures allocated to employment injuries" (Messner & Rosenfeld, 1997, p. 1409).

In their analysis, Messner and Rosenfeld used ordinary least squares regression

techniques. They note that homicides can vary drastically from year to year. Also when

comparing the homicide rates from various countries, there can be much variance

between homicide totals. To avoid the potential pitfalls of skewness and heterogeneity,

they employed natural logarithms of multi-year average homicide levels.

Two measures of economic inequality were established as control variables,

including the Gini coefficient index of household income distribution. A measure of

economic discrimination, as set forth more fully in the work of Gurr and Scarritt (1989),

was also used. This latter measure is a value assigned to a nation that "represents the

most extreme level of economic discrimination experienced by any minority group in that

nation" (Messner & Rosenfeld, 1997, p. 1403). Further, one of the control variables they

included was percentage of population over 64 years of age, based on the common

finding that younger individuals tend to commit more crimes (Krahn, Hartnagel &

Gartrell, 1986).   The bivariate relationship between Gini values and homicides rates did

not reach statistical significance. The economic discrimination index was found to be

positively related to homicide rates. Overall, a significant and moderate negative

relationship between decommodification and homicide rates was found. In other words,

lower homicide rates were observed in nations having higher decommodification values.

This finding supports previous research that has drawn links between homicides and

welfare expenditures. While findings are also supportive of the more general polity-economic relationship described in IAT, Messner and Rosenfeld are keen to point out that this does not diminish the importance of analyzing the relationships between the economic and other non-economic institutions.

Hannon & DeFronzo (1998)

Building off of Messner and Rosenfeld's 1997 study, Hannon and DeFronzo (1998) utilized data from 406 large American metropolitan counties to probe the potential moderating influences of welfare assistance on the effect of economic deprivation on property crime (burglaries, larcenies, and motor vehicle thefts per 100,000) and violent crime (homicides, aggravated assaults, robberies and rapes per 100,000) rates. In other words, they explored whether receiving welfare benefits buffers, or moderates, feelings of economic deprivation that can lead to criminal behaviors. They echo the question whether government (or polity) can effectively play a role in diminishing the harsh impacts that a market economy can have on individuals, especially those who reside in disadvantaged communities.

Uniform Crime Reports and U.S. Census Bureau data were used to establish their variables. Like Messner and Rosenfeld (1997) before them, they performed natural logarithms of violent crime rates to reduce variance and more appropriately utilize ordinary least squares regression techniques. They note Land, McCall, and Cohen's (1990) posit that inconsistent findings relative to the relationship between deprivation and crime in past studies were most likely due to excessive collinearity, as well as differing samples sizes and units of analysis. To partially combat this issue, Hannon and DeFronzo suggest that researchers could create indices. They did not identify

multicollinearity issues in their data given low bivariate correlations and variance inflation factors (VIFs) under zero (1998, p. 387).

The welfare payment level used in their study was determined by the average public assistance income per below-poverty line recipient, consisting mostly of Aid to Families with Dependent Children (AFDC) and General Assistance benefits. To adjust for localized cost of living differentiations, they relied on average gross rent amounts, which also included utility expenses. That amount was then divided by the national average.

They also examined welfare participation, defined as the percentage of families who lived below the poverty line and received public assistance funds. Their deprivation index was comprised of the family poverty rate, percent of female-headed families, and percent of the population that was black (Cronbach's alpha = .85). Also included were numerous control variables, including divorce, mobility over five years, female labor participation, unemployment rate, single households, age, and an urbanism index which included natural logged values for the size and density of population.

Their resource deprivation index exhibited the strongest influence over property crimes, violent crimes, and property and violent crimes combined. Other variables found to have a significant relationship with violent crime included divorce, urbanism, and welfare index. The same variables were significant with regard to property crimes, as were percent of women in the civilian work force, unemployment, and residential mobility. While the percentage of one-person households did not reach statistical significance for property or violent crime, it was found to be significant when all crimes were totaled.

Ultimately, Hannon and DeFronzo concluded that welfare assistance can mitigate the linkage between disadvantaged populations and crime rates. In other words, those populations that are disadvantaged receive at least some buffering advantages from the anomic influences of direct market forces when they receive welfare assistance from the polity institution. They suggest that this is supportive of IAT in that having the ability to achieve monetary goals can reduce frustrations, which in turn allows non-economic institutions to fulfill social control functions that keep criminal behaviors at bay.

Piquero & Piquero (1998)

Piquero and Piquero (1998) conducted a state-level examination of violent crime (murder, forcible rape, robbery and aggravated assault) and property crime (burglary, larceny-theft and motor-vehicle theft) rates, including a model that considered moderating effects. Like other researchers before them, they highlighted that outcomes of IAT studies can be sensitive to operationalization of variables. Their findings relative to IAT were mixed.

These researchers appear to be in agreement with Messner and Rosenfeld that "culture should largely be regarded as a constant", but they also point out that structure can vary not just across nations but states as well (Piquero & Piquero, 1998, p.68). They further note that IAT has many commonalities with other macro-sociological theories, including social disorganization (Shaw & McKay, 1969), routine activities (Cohen & Felson, 1979), and Sampson & Laub's (1993) family structure hypothesis. Indeed, many different theories lay claim to variables such as economic deprivation and family disruption to explain crime. However, Piquero and Piquero point out that with IAT the difference lies in the interactions between economic and non-economic institutions, as

well as the degree to which non-economic institutions "are able to offer alternative definitions of success to that of material wealth" (Piquero & Piquero, 1998, p. 71).

They operationalized the institution of economy as the percentage of persons below the poverty level. To control for urban differences, they also used the percentage of population residing in those areas. Indicating that the institution of education had not been measured in prior research, Piquero and Piquero (1998, p. 69) operationalized education through three different variables: proportion of population enrolled full-time in college, percentage of high school dropouts, and teacher's salary relative to average annual pay of citizens. In providing their rationale for these measures they briefly allude that these measures may be problematic. Education not only enhances knowledge, which would be a goal given institutional balance per IAT, but it may also be a means to becoming gainfully employed in a well-paying career. For them, gaining an education, as measured by their high school and college variables, also does not necessarily mean that the education institution is somehow providing alternative definitions of success.

Family was operationalized as the percentage of single-parent families (Piquero & Piquero, 1998, p. 70). This decision was supported by prior research findings that single-parents may not provide for adequate socialization and supervision of their children, in part because the parent is away from the home while working (Messner & Rosenfeld, 1997; National Research Council, 1993). Further, the percentage of single-parent families provide a measurement of family disruption (Sampson & Lauritsen, 1994).

Polity was operationalized two different ways: first, the percentage of population receiving public assistance including Aid to Families with Dependent Children (AFDC) and Federal Supplemental Security Income (SSI) and; second, the percentage of

population casting a vote in the presidential election. Data for all variables were obtained

through the U.S. Census Bureau. The public assistance operationalization appears

consistent with Messner and Rosenfeld's research on decommodification, that

government may be able to provide a buffer against negative market influences, although

Piquero and Piquero (1998, p. 69) note that this operationalization "is amenable to a

number of different interpretations". One could perhaps infer it fits more squarely with

measures of the economic institution rather than polity. The latter operationalization,

voter participation, aligns more strongly with the view of polity as government

involvement, which may result in increased altruism.

Using generalized least squares estimator, Piquero and Piquero found that

education (college enrollment) and polity (public aid) had significant negative effects on

property crime; whereas, the relationships relative to the economic institution (poverty),

family institution (single parents), and urban living were significant and positive.

Further, they found that the economy-education interaction relative to property crimes

was significant and negative; however, economy-family and economy-polity interactions

did not reach statistical significance. The economy-education interaction was significant

and negative, meaning having higher levels of college education diminished the effects of

poverty on property crime. The R^2 values for the models that included different

interactions relative to property crime ranged from .64 to .67.

Regarding violent crime rates, the economy-education interaction was statistically

significant and negative, as it was for property crimes. Additionally, the economy-polity

interaction relative to violent crime rates was significant and negative; however, the

economy-family interaction did not produce statistically significant results. Violent

crime models produced R^2 values between .87 and .89. In comparing the property crime

models to those of violent crime, Piquero and Piquero noted that the effect of single-

parent families was much stronger relative to violent crime and was in a positive

direction, meaning higher rates of violent crime were positively associated with higher

rates of single-parent families. In addition, they found that urban areas with higher

poverty levels had higher rates of violent crime, with lower violent crime rates in areas

receiving more public assistance and having higher levels of college.

Exploring alternative operationalizations of variables, they found that the

economy-polity interaction, substituting presidential election voting data, was not

significant relevant to property crimes. However, the economy-education interaction

using teacher salary to average annual citizen pay ratio was found to be positive and

statistically significant. Further supplementing high school dropout percentages for the

institution of education did not produce any significant results. R^2 values for property

crime dipped to .59 to .62. Regarding interactions relative to violent crime rates, only the

economy-education interaction using the teacher salary to citizen income ratio was

statistically significant. Including alternative measures for polity (presidential election

voting) did not produce significant results. Using high school dropouts as an alternative

variable for the institution of education produced no significant interactions. R^2 values

for the models containing alternative operationalizations and interaction terms ranged

from .84 to .86.

Overall, their study offered mixed support for IAT. Piquero and Piquero (1998,

pp. 79-80) concluded their findings by suggesting that the influence of institutions may

be different depending upon the type of crime involved. They also found that the operationalization of variables when testing IAT is very sensitive.

Savolainen (2000)

Savolainen (2000) also explored decommodification, or the protection of citizens from the pressures of a market economy, using cross-national data and ordinary least squares regression. At least part of his analysis was based upon the same data as Messner and Rosenfeld's 1997 work on decommodification. He found that the effect of inequality, as measured by the Gini index, on homicides depends on the level of decommodification, as measured by level of welfare spending. This interaction was negative and statistically significant.

The study followed the practice of creating indexes of control variables to address multicollinearity concerns. Savolainen includes life expectancy, GNP per capita, infant mortality, elderly population, population growth, and urban development. Further, a sex ratio was logged transformed and applied separately. The findings in this cross-national study are supportive of IAT.

Batton & Jensen (2002)

Batton and Jensen utilized time series regression in their analysis of the effect of the decommodification of labor on homicides using states as units of analysis. While they did not find a significant relationship between decommodification and homicides over the entire time period of 1900 to 1997, they did find a relationship for the more condensed period of 1900 to 1945. Their research suggests that causality may have temporal variations.

Stucky (2003)

Noting a shortage of local-level studies, Stucky (2003) applied IAT and social disorganization theory to city-level data, comparing the effects of local political structures on violent crime (murder, rape, robbery, and aggravated assault) across 958 American cities with populations over 25,000 using negative binomial regression analysis. Because his initial data analysis showed signs of "severe multicollinearity", as evidenced by variance inflation factors (VIF) over 10, he created a deprivation index using principal component analysis, comprised of percent poor, percent unemployed, percent owner-occupied homes, and percent female-headed households. Separately, Stucky also created two independent variables for the percentage of the total population that were Black and Hispanic, having natural logged these to reduce skewness. Control variables included regional location and age, as determined using the natural log of the percentage of the population aged 18 to 24 years.

He found that "local politics had direct and conditional effects on violent crime" (Stucky, 2003, p. 1123). For example, through the political institution decisions are made with regard to zoning, business licensing, placement of recreation centers, etc. This, in turn, can affect patterns of risk and offending. He suggests that even local politics, and not just national politics as previously studied, can institute protective decommodification measures. Using a deprivation index consisting of percent poor, percent unemployed, percent owner-occupied homes, and percent female-headed households, he found that the relationship between deprivation and crime can be moderated by local political structures. Further, a negative relationship was found between overall city expenditures and violent

crime rates. He suggested that future IAT studies take into account the differences in local political structures when measuring the strength of institutions.

Maume & Lee (2003)

Published in the same volume of *Criminology* as was Stucky's research, Maume and Lee's (2003) study addressed mediating and moderating influences. Maume and Lee also laid additional groundwork for applying IAT at less than a cross-national level by using counties with populations of 100,000 or more as units of analysis. Negative binomial regression techniques were used in this analysis.

Maume and Lee (2003, p. 1154) operationalized dominance of the economy as the Gini coefficient of family income inequality, as had Chamlin and Cochran (1995) before them. Maume and Lee (2003, p. 1154) argued that this measure captures Merton's emphasis on social stratification, as well as Messner and Rosenfeld's focus on economic dominance. The institution of family was operationalized as the rate of divorce for persons over 15 years of age.   They opted to not measure family using data on female-headed households, as the data was "highly collinear" with other variables in their model. Similar to Chamlin and Cochran (1995) and Piquero and Piquero (1998), Maume and Lee operationalized polity as voter turnout, using presidential election data. Education was operationalized as the average educational expenditures per person of school age over a five-year period.   They controlled for age (15-29 years) and percentage black population across a final sample of 454 counties having populations over 100,000. Following from the work by Hannon and DeFronzo (1998), Maume and Lee (2003, p. 1156) devised a social welfare generosity index measuring "the average monthly welfare payments per

poor person adjusted for cost of living (as the average proportion of local incomes devoted to rent), and the proportion of poor families receiving welfare."

Maume and Lee (2003, pp. 1163-1164) found that non-economic institutions (using voter turnout, civilly engaged religious adherents, divorce rates, and welfare expenditures) mediated the effect of economic inequality on both instrumental and total homicides. In contrast, their measure of educational expenditures did not produce statistically significant results. In analyzing moderating effects, they found the effect of the Gini coefficient on instrumental and total homicides to be moderated by welfare expenditures; however, the other non-economic institutions were not found to produce significant moderating effects. Therefore, welfare payments appear to play both mediating (attenuating) and moderating roles. While their mediating models relative to instrumental and total homicides produced similar pseudo R^2 values, non-economic institutions produced a 43.2% reduction in the effect of the Gini coefficient on instrumental homicides compared to a 34.38% reduction in the total homicide model. Maume and Lee conclude this was "strong support for a partial mediating effect of noneconomic institutions on instrumental homicide rates" (2003, p. 1164). Their models relative to expressive homicide produced a 30.92% reduction in the effect of the Gini coefficient.

Maume and Lee (2003, p. 1166) concluded by indicating their "reading of the theory suggests that the effects of economic inequality on homicide will be attenuated in the presence of non-economic institutions (the mediation effect), which is different from the more popular explanation of prior research positing that the effects of economic

inequality (or poverty) in crime varies according to the level of noneconomic institutions (the moderating effect)".

Schoepfer & Piquero (2006)

Schoepfer and Leeper Piquero (2006) pioneered the application of IAT to white-collar crime, and more specifically embezzlement. Using states as units of analysis, they used FBI Uniform Crime Report and U.S. Census Bureau data for their analysis. Their study provided mixed support for IAT.

Like Chamlin and Cochran (1995) before them, they operationalized family as the ratio of yearly marriage rates to divorce rates. For education, they used the percentage of population that had not graduated from high school, following Piquero and Piquero (1998). Polity was operationalized as the percentage of registered voters who voted in general state and local elections. Economy consisted of the percent of population unemployed.

Although Schoepfer and Piquero (2006, p. 232) found no multicollinearity concerns with the bivariate correlations relative to their data, they caution that researchers should not rest at that point. One must also check for multicollinearity when multivariate models with interaction are used. They addressed this concern by following Jaccard, Turrisi, and Wan (1990, p. 31), using mean-centering of variables involved in interaction.

Using Poisson regression, Schoepfer and Piquero (2006) found that polity, education and economy were all significantly correlated with embezzlement; however, family was not. The polity and economy relationships were negative, while the relationship with education was positive. In other words, higher voting levels and unemployment levels were associated with lower embezzlement rates; whereas, higher

rates of high school drops outs were related with increased embezzlement rates. When examining interactions, they only found statistical significance for economy-polity (voter turnout), which was in the anticipated negative direction. While not all of the relationships studied were significant, much of Schoepfer and Piquero's findings are supportive of IAT. They highlight that IAT research thus far has assumed culture is a constant, and they further suggest that researchers consider adding a measure of culture in their future studies.

Bjerregaard & Cochran (2008)

Bjerregaard and Cochran (2008) conducted a cross-national study that delved deeper into the issues of mediating versus moderating effects of variables, including dependent variables of both homicides and thefts. Crime rates were averaged over multiple years and log transformed to address skew and heteroscedasticity concerns. Ordinary least squares regression techniques were utilized in the analysis.

Bjerregaard and Cochran use three indicators of economic conditions, including two indices. The first, economic freedom, was based upon several factors that indicate very little government interference in economic affairs. The second index was economic obstacles, operationalized by Gini coefficient of household income index values. A third measure of economic dominance was social security spending as a percentage of gross domestic product values. Family was measured as a factor variable including divorce rates and percentage of females in the labor force. Education was operationalized as a factor variable including pupil-to-teacher ratios and illiteracy rates. Polity consisted of lack of voter turnout.

The Gini coefficient was the only economic indicator to have a significant direct effect on homicides. Family disruption had a significant positive relationship to homicides only when the economic measure was economic freedom, not Gini or social security, in both mediating and moderating models. Education did not rise to significant levels, regardless of the economic measure applied in either mediating or moderating models. Polity had a significant positive relationship to homicides when economy was operationalized as social security in mediating models and a positive relationship to homicides when Gini and social security measures were used in moderating models. Bjerregaard and Cochran (2008) found limited support for both mediating and moderating models with regard to homicide rates. For thefts, there is more support for moderating models. On the balance, in their study, measuring the economy by the Gini index appeared to be most fruitful.

In summary, Bjerregaard and Cochran (2008) submit their findings are "consistently inconsistent" and analyses are very sensitive to how the economic institution is operationalized. No clear line was drawn as to whether the effects on crime were mediating or moderating. For them, the challenge for future researchers is to refine operationalizations and to determine whether non-economic institutions mediate or moderate the effects of the economy on crime.

Census Tracts as Units of Analysis

Maume and Lee (2003, p. 1151) point out that "Messner and Rosenfeld (2001) are never completely clear on the appropriate level of analysis for testing their theory" (see also, Chamlin & Cochran, 1995; Piquero & Piquero, 1998; Schoepfer & Piquero, 2006). Prior studies of IAT have been conducted at the cross-national, state, county, and city

levels. That being said, controversy remains whether IAT can be tested at anything less

than the cross-national data level. For instance, Bjerregaard and Cochran (2008, pp. 184-

5) emphasized that the intent was for IAT to be tested at a cross-national level. However,

other researchers believe that smaller geographic units of analysis are appropriate for this

purpose. Case in point, Chamlin and Cochran (1995, p. 426) suggest that city-level data

be included in future research designs. Piquero and Piquero (1998, p. 68) also address

smaller units of analysis, arguing that culture should be fairly constant across different

states. There may, however, be differences in their respective structural arrangements at

the state level. The current study also hypothesizes that the relationship between

homicides and structural, or institutional, arrangements will continue to be measurable at

the census tract level.

Messner and Rosenfeld (2007, p.44) themselves suggest that research should

focus on the question "why do levels of crime vary across social systems (for example,

nations, cities, neighborhoods)?" Whether their intention was to leave the door open for

future researchers to explore different units of analysis in IAT research is unknown. In

expanding the application of IAT to county-level data, Maume and Lee (2003, pp. 1138,

1150) indicated that to limit IAT studies to states and nations underestimates "the

explanatory power and analytical flexibility of the theory".   Given that "smaller

aggregate units such as counties also exhibit their own institutional characteristics", they

further posit that IAT is a valid theory for use at the local county level (Maume & Lee,

2003, p. 1138).

Stucky (2006, p. 1124), after examining polity structures at the local level,

suggested "future institutional anomie research should focus on *local* variation in the

strength of economic and noneconomic institutions". For him, politics at the local level can have a bearing on violent crime. These local institutions can make decisions about zoning, business licensing, placement of recreation centers, etc., providing buffers for its citizens and potentially changing the patterns of risk and offending within a community.

Shaw and McKay (1942 p. 165), although applying social disorganization theory, discuss the similarity of outlooks that can exist within smaller geographic areas within a particular city and that these attitudes can be sustained in institutions. They posit, therefore, that the relationships that exist between crime rates and institutions may not be constant across large geographical areas. Applying this view more specifically to IAT, in local areas where the family institution is strong, family members receive greater support and are influenced more strongly by social control functions. These areas would theoretically have lower homicide rates.

Since it is more likely that homicides occur in urban, as opposed to rural, areas, Maume and Lee (2003) suggest that state-level analyses may not appropriately address heterogeneity. They argued for even smaller units, such as counties. One advantage of utilizing GWR in statistical analyses is that it takes into consideration spatial heterogeneity. Deane, Messner, Stucky, McGeever, and Kubrin (2008, p. 367) indicated that "[s]patial models address the interdependence of place to partially accommodate the mismatch between the scale of units of observation and the scale of social processes." Graif and Sampson (2009) analyzed census tract level data utilizing GWR to examine the relationships between homicides and other variables related to the current study, such as socioeconomic disadvantage, percentage of foreign-born population and language diversity.

Other homicide research has also utilized census tracts as units of analysis. For example, Morenoff and Sampson (1997) used census tracts as units of analysis to study the relationship between homicides and population change in the context of social disorganization and neighborhood residential mobility. It is recognized that census tract boundaries are arbitrary in the sense that social phenomena, such as homicide rates or poverty levels, are not defined by or constrained within those borders. This is also true for other units of analysis, such as cities, counties, and states. For example, one would not see varying divorce rates on one side of the street or the other simply because that is where the census tract boundary is located. Rather, there can be a contagion effect across this demarcation, which can be accounted for within geographically weighted regression. For example, a census tract will have a stronger likelihood of experiencing homicides if it is in close proximity to another census tract that has had high frequency of homicides.

In comparing 169 publications, Weisburd and Piquero (2008) found that R^2 values varied according to the units of analysis employed, with neighborhood or census tract units having higher R^2 values (.621) than those produced by country (.568), state (.566), or city/county (.302) units of analysis. Hipp (2007) also points out that the relationships between variables can be hidden if the units of analysis are overly large. Hence, there is indirect support within the literature for using smaller units of analysis, such as census tracts, to study homicides.

Moreover, Messner and Rosenfeld (2007, p. 35) acknowledge the "struggle for institutional control" occurs at the local level, indicating "local institutions provide order, meaning, purpose, and protection to area residents". IAT has also been linked with social disorganization theory, with researchers of that theory indicating that local institutions

have a mediating effect on social conditions, economic deprivation, and violent crime (Peterson, Krivo & Harris, 2000, pp. 32, 34). Further, the impact of institutions as neighborhood social control mechanisms differs by the strength of the institutions (Triplett, Gainey, and Sun, 2003, pp. 442-3). When local institutions fall apart or move out of an area, it may leave citizens feeling abandoned and alone in their struggles. Messner and Rosenfeld further note that when local institutions disappear these areas may appear war-torn which, in turn, may bring out a "warlike mentality" by the police. There can also be a weakening of informal social controls when citizens lack the ability to connect to broader social institutions through these local institutions (Hagedorn, 1991; Wacquant, 1993; Peterson et al., 2000).

In their elaboration and expansion of IAT, Messner, Thome, and Rosenfeld (2008) address both macro- and micro-level elements that are relative to IAT. They offer encouragement for additional studies that are focused on micro-level influences. Messner (2012) further suggests that there may be value in future multilevel theorizing, including the potential of integrating IAT with, for example, situational action theory (SAT). This would acknowledge the micro-level symbolic interaction and environmental influences, such as an individual's perception of institutional functioning. For example, the extent to which an individual views an institution as being legitimate can impact how much credence they give to its social control directives. Messner (2008, p. 168) submits that "[e]conomic dominance in the institutional balance of power can be linked specifically with criminal behavior via both internalized normative controls and informal social controls". Drawing from Merton (1964, p. 226), Messner (2012, p. 10) suggested that when there is "extreme anomie", individuals are not guided by morality so much as they

are with "pure technical expediency" of the means. The current research takes the position that these processes can be distinguishable at the census tract level.

However, finding support for testing IAT at the census tract level is not as simple as conducting a literature review of studies that have utilized census tracts relative to other criminological theories. IAT is unique in its explanation of crime in that it addresses cultural and structural elements, as well as the interaction between the two elements. More current elaborations of IAT have also emphasized the linkages between micro and macro processes. Previous IAT research suggests perceptions of institutional authority and support may vary across geographical areas such as nations, states, counties, and cities. Given the lack of studies to date, it remains unclear whether these principles of IAT will hold true at the census tract level. However, following Hipp's (2007) logic, smaller units of analysis may uncover relationships that were previously obscured when using larger units. In other words, it is fruitful to determine whether perceptions of institutional salience, moral authority, and support continue to vary across smaller census tract units.

Conducting research at the census tract level could provide for closer examination of the linkages between micro and macro processes. Beyond addressing the question of how crime can become a means to an end, shifting to smaller units of analysis may also provide insights as to why certain "war-like" areas experience more homicides. These nuances may be obscured if larger units of analysis are used.

In summary, while Messner and Rosenfeld are ambiguous in their original research as to how to operationalize and study IAT, their more recent work suggests that future applications of IAT that are sensitive to micro-level processes are not only

acceptable but also encouraged. Using census tracts as units of analysis provides for the aggregation of this micro data, keeping that data in the context of the geographical area from which it was collected.

<div align="center">**Summary of Empirical and Theoretical Literature**</div>

The extant literature has found the variables of poverty and deprivation, including the Gini index (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Piquero & Piquero, 1998; Stucky, 2003; Maume & Lee, 2003; Bjerregaard & Cochran, 2008); divorce (Chamlin & Cochran, 1995; Hannon & DeFronzo, 1998; Bjerregaard & Cochran, 2008); female-headed or single-parent households (Hannon & DeFronzo, 1998; Piquero & Piquero, 1998); women in the workforce (Bjerregaard & Cochran, 2008); percentage of population that is black (Hannon & DeFronzo, 1998); urbanism (Hannon & DeFronzo, 1998); voting (Chamlin & Cochran, 1995; Schoepfer & Piquero, 2006; Bjerregaard & Cochran, 2008); church membership (Chamlin & Cochran, 1995); decommodification and welfare expenditures (Messner & Rosenfeld, 1997; Hannon & DeFronzo, 1998; Piquero & Piquero, 1998; Batton & Jensen, 2002); high school education (Schoepfer & Piquero, 2006); college enrollment (Piquero & Piquero, 1998); local political structures (Stucky, 2003); and unemployment (Schoepfer & Piquero, 2006) to be significant for testing IAT and crime.

There is, however, a lack of consensus among IAT researchers regarding the appropriate units of analysis. Researchers have studied crime at the level of nations (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Bjerregaard & Cochran, 2008), states (Piquero & Piquero, 1998; Schoepfer & Piquero, 2006), counties (Hannon & DeFronzo, 1998; Maume & Lee, 2003), and cities (Stucky, 2003). Such a diverse body

of literature suggests IAT should be studied across various levels. Stucky (2006) advocates for future IAT studies that incorporate measures at the local level. Messner and Rosenfeld (2007) at times acknowledge there are differences in the strength of local institutions. Further, Messner, Thome and Rosenfeld (2008) encourage more research with linkages between micro- and macro-level processes. It is unknown, or at least unclear, what unit of analysis in future studies will be most significant.

Overall, research has found, at least, partial support for IAT (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Hannon & DeFronzo, 1998; Piquero & Piquero, 1998; Savolainen, 2000; Batton & Jensen, 2002; Stucky, 2003; Maume & Lee, 2003; Schoepfer & Piquero, 2006). In past IAT studies, variables such as the Gini Index, divorced, and female-headed households have been found to be significant across multiple units of measurement, including counties.

Hypotheses

The research questions within the present study are shaped by the aforementioned literature. By employing exploratory spatial data analysis techniques, the relationships and spatial variations between the dependent variable of homicide rates and the independent variables representing the four institutions of economy, education, family, and polity are examined. Comparing results across various census tracts can provide insights as to the spatially-differentiated influences institutions have on homicides. Following the recent trend, both OLS regression and GWR are employed and compared to address the following hypotheses.

Hypothesis 1

It is hypothesized that homicides are not randomly distributed across census tracts in Minneapolis, rather they are clustered. This determination is based on the presence or absence of homicides in each census tract; it does not factor in the influence of any independent variables. For example, a statistically significant cluster exists when a census tract having high homicides is surrounded by other census tracts that have high homicides, utilizing a 95% confidence level. The null hypothesis would be there is no pattern in the distribution of homicides locations across all Minneapolis census tracts. In other words, homicides are randomly distributed.

Hypotheses 2 Through 4

It is hypothesized that non-economic institutions moderate the relationship between the economic institution and homicide rates in Minneapolis census tracts. Null Hypotheses 2 through 4 state that there are no interactions and that the non-economic institutions of education (2), family (3), and polity (4) do not moderate the relationship between the economic institution and homicide rates.

Hypotheses 5 Through 8

It is hypothesized that there are significant relationships between the strength of social institutions and the rates of homicides in Minneapolis census tracts. Null Hypotheses 5 through 8 state that there are no relationships between homicide rates and the strength of the institutions of economy (5), education (6), family (7), and polity (8).

CHAPTER IV

RESEARCH DESIGN AND METHODS

Introduction

This study seeks to add to the existing body of literature relative to IAT examining the relationship between culture, instructional structures, and homicide rates. It incorporates operationalizations of the economic, education, family, and polity institutions similar to definitions used in previous studies to provide for more meaningful comparisons. This study also makes two distinctive contributions to IAT research. First, it utilizes geographically weighted regression within GIS software to more closely examine the relationships between institutions and homicides across space. Secondly, and most uniquely, following IAT research applied at the state, county, and city levels, this study extends questions regarding IAT to census tract units of analysis. Originally exercised at the cross-national level, IAT has subsequently been applied at the state, county, and city levels by other researchers.

Units of Analysis

Following the logic set forth in the previous chapter, this study uses census tracts as the unit of analysis. There are 116 census tracts across the city of Minneapolis. Sixty of those census tracts experienced at least one homicide over the study period. Individual census tract populations ranged from 1,163 to 10,346, with a total population of 382,578

(U.S. Census Bureau, 2013). Variables are normalized to account for the population differences between census tracts.

It is hypothesized that homicide distribution will vary across the census tracts of Minneapolis. It is also hypothesized that the extent to which non-economic institutions provide alternative measures of achievement will vary across geographical units as small as census tracts. Levels of altruism, providing residents with relief from anomic pressures, may also fluctuate at the census tract level.

Census tracts exhibiting weaker strength in their non-economic institutions will, theoretically, experience a decrease in the moral authority of their non-economic institutions. According to IAT, these areas likely have decreased social controls and are less able to provide positive support, creating an environment that is conducive to a "by any means" mindset. Therefore, these census tracts are likely to experience higher homicide rates, per IAT.

Data Sources

The Minneapolis Police Department provided access to violent crime data collected by the department for the years 2007 through 2011. Data used in the operationalization of independent variables are derived from the U.S. Census Bureau's American Community Study (ACS), using five-year estimates for the years 2007 to 2011. Thus, the census data used within this study covers the same time period as the police department's homicide data.

All data received from the Minneapolis Police Department has been handled with extreme care and confidentiality. Data included latitude and longitude coordinates indicating where homicides occurred, as well as where the victims of these homicides

resided. In some cases, these coordinates are the same. Although point data maps of all homicide locations created in GIS are heavily utilized during the research process, such maps do not appear within the pages of this study. This omission is intentional, recognizing the possibility that these maps could be used for nefarious purposes, including the revictimization of others who resided with the homicide victim.

Homicide Rates as Dependent Variable

In the current research, the dependent variable is homicide rates. The term homicide, as used herein, is comprised of murder, as well as negligent and non-negligent manslaughter. FBI NIBRS-based supplemental homicide report forms that are submitted through the Minnesota Bureau of Criminal Apprehension (2014) define these crimes as "the willful (non-negligent) killing of one human being by another" and "the killing of another person through negligence, with no willful intent". In this study, homicide counts ranged from 0 to 31 per census tract.

Messner and Rosenfeld (1997, p. 1401) discuss the popular practice in previous research of using "multi-year averages" of homicides to avoid methodological concerns regarding random fluctuations (Kick & LaFree, 1985; Krahn et al., 1986; Baller, Anselin, Messner, Deane, & Hawkins, 2001; Cahill & Mulligan, 2007; McCall, Land & Parker, 2010). Accordingly, the current study utilizes homicide rates over a five-year period from 2007 to 2011. Further, natural logarithms of homicide rates "reduce skewness and induce homogeneity in error variance", following Messner and Rosenfeld (1997, p. 1401).

Operationalization of Independent Variables

Challenges and Insights from Previous IAT Studies

As many researchers have pointed out, Messner and Rosenfeld do not provide clear direction as to how institutional strength should be operationalized and measured (Chamlin & Cochran, 1995; Piquero & Piquero, 1998; Maume & Lee, 2003; Schoepfer & Piquero, 2006). Since IAT is a highly abstract theory, past studies have relied upon proxy, or indirect, measures of structural elements. While this is not an ideal condition in a scientific sense, there are no simple solutions.

A main task for researchers in IAT includes overcoming issues related to operationalization sensitivities that result in inconsistent findings across studies. Future research should focus on increasing the validity of the proxy measures of the strength or weakness of institutions. Piquero and Piquero (1998) offered many insights in this regard. In their study, they operationalized the education institution as the proportion of the population enrolled full-time in college and the percentage of high school dropouts. They acknowledge that such measures may be problematic. Is one measuring the value individuals place on acquiring knowledge (education emphasis) or the fact that individuals are banking on an education to gain employment that carries higher status (economic emphasis)? To what extent, if any, is the education institution providing an alternative definition of success to one that is monetary in nature?

Schoepfer and Piquero (2006) also point out ambiguities arise when divorce is used as a measure of the family institution. They recognize the common interpretation of this operationalization relates to family disruption, which infers divorce should be viewed unfavorably, or as criminogenic. However, they also bring to light the fact that divorce

can actually be a *termination* of family disruptions. In other words, if one breaks from a toxic relationship, he/she may also be breaking free from stresses, abuses, and/or violence. This has implications for adults and children alike.

Piquero and Piquero (1998, p. 69) noted that the use of public assistance as a variable "is amenable to a number of different interpretations". Some may argue this pertains to the economic institution. In their study of the effects of decommodification, Messner and Rosenfeld (1997) associated this variable with the polity institution. There, public assistance was viewed as one way governments are able to buffer citizens from market forces, freeing them to make decisions without regard to purely economic pressures.

Many of the variables used to test IAT, such as economic deprivation and family disruption, have also been utilized in the testing of other criminological theories. Piquero and Piquero (1998) emphasize that IAT, however, is distinctive in that it addresses the interactions between institutions, as well as the degree to which non-economic institutions are able to provide alternative definitions of success and self-worth. The explanation of *how* these variables explain crime, through main and interaction effects, is different from other criminological theories. This goes along with the posit by Messner and Rosenfeld that simply increasing or decreasing the strength of one institution will not necessarily have the effect of reduced crime rates. If those changes are not also accompanied by curtailment of cultural emphasis on monetary success, crime rates may not be reduced.

The more recent work of Messner, Thome, and Rosenfeld (2008) seems to pave the way for a better understanding of the interactions between the cultural and structural

components of IAT.   Their further clarification and elaboration of the linkage between micro and macro processes serves as a catalyst for taking a fresh look at IAT, yielding new operationalizations that are innovative, effective, and replicable.

The focus of Messner and Rosenfeld's own cross-national study in 1997 was limited to an examination of the economic and polity institutions. Therefore, the operationalization of variables for the current study is noticeably influenced by definitions provided by previous tests of IAT. Only the Gini index (economic) and public assistance (polity) variables follow directly from those variables employed by Messner and Rosenfeld. It is acknowledged that operationalization of variables remains a challenge in the current study.

Economy

The role of the economy institution is to provide for one's food, shelter, clothing, and other necessary needs. However, America is characterized by the dominance of the economic institution over other institutions, which can result in reduced social controls and support (Messner and Rosenfeld, 2007). Following the lead of previous research (Land et al., 1990; Chamlin & Cochran, 1995; Maume & Lee, 2003; Bjerregaard & Cochran, 2008), and perhaps even more importantly Messner and Rosenfeld's own 1997 study, the current research operationalizes the institution of economy by using Gini index of income inequality data.

Gini index values range from zero to one, with zero indicating perfect equality and one corresponding to perfect inequality. In other words, if the value is zero, income is distributed equally to everyone. If the value is one, then one person has possession of all income shares. High values are indicative of greater economic inequality. For the five-

year period of 2007 to 2011, the American Community Survey reported a national Gini

index average of 0.4695 (U.S. Census Bureau, 2013). It had remained relatively stable

since 1993, but between 2010 and 2011, it increased 1.6% to .477 (U.S. Census Bureau,

2013). The American Community Survey five-year estimate (2007-2011) of the Gini

index in Minneapolis was .5018, and its statewide estimate for Minnesota was .4408

(U.S. Census Bureau, 2013).

Land et al. (1990, pp. 943-944) speak to the relevance of including both an absolute

and relative deprivation measure. The Gini index is a measure of relative deprivation.

As an absolute deprivation measurement, the current study also includes the variables of

median annual household income and the percentage of families who were living below

the poverty level in the past 12 months, as included in previous research (Chamlin &

Cochran, 1995; Piquero & Piquero, 1998; Hannon & DeFronzo, 1998).

The income and poverty variables both serve as proxies of the economic footing

upon which individuals exist. These are not *direct* measures of how prominently

individuals place the economic institution above non-economic institutions. That data is

not readily available, and it would be a daunting task to create such a direct measurement.

Thus far, however, these are the types of indirect measures that have been used in prior

IAT research, as well as other sociological studies.

The Gini index addresses the distribution of resources within a society. High values

indicate more inequality, or disparity, which theoretically links to higher homicide rates

as IAT suggests that individuals may feel greater pressure to use whatever means are

necessary in order to reach the same level of success as those positioned above them.

Being harbored from the effects of market forces would also free them to make decisions

found in the non-economic realm, without the pressure to give greater weight to the economic factors.

Education

The role of the education institution is to foster knowledge and human development, as well as to provide further socialization of students. In the current study, education was measured through the use of three variables. The first operationalization includes the percentage of individuals over the age of 18 who have less than a high school diploma or its equivalent, which is in line with prior IAT research (Piquero & Piquero, 1998; Schoepfer & Piquero, 2006). Piquero and Piquero (1998, p. 69) were the first to use this operationalization, arguing strong education institutions can reduce crime "by creating an increase in the percentage of people who through their education, can become productive, non-criminal members of society".   Piquero and Piquero (1998, p. 69) further argue that the percentage of high school dropouts is an indicator of such "vitality" of the education institution.   Likewise, in the current study, having a high percentage of adults with less than a high school education is, theoretically, indicative of a weakened education institution. It is anticipated, therefore, that those areas of the city with a high percentage of individuals with less than a high school education would experience higher homicide rates.

The second measurement of education is the percentage of individuals aged 18 to 24 years who were not enrolled in college or graduate school, following in the footsteps of Piquero and Piquero (1998). Low educational attainment and low college enrollment would indicate a weak education institution. Piquero and Piquero (1998, p. 79) found that college may have the socializing effect of creating "respect for formal learning and

the pursuit of knowledge in such a way that such values are transmitted to others in the population".

Third, median earnings in the past 12 months for full-time civilians aged 16 years or over employed within the educational services field is included. This variable is incorporated following the logic laid out by Maume and Lee (2003), who used a ratio of average educational expenditures per person of school age over a five-year period. Piquero and Piquero (1998) also included a ratio of teacher salaries to overall salaries, arguing "in a market society, the status of institutional roles is reflected in their market values". The offering of higher teacher salaries indicates more value is given to the education institution. Such areas would theoretically experience fewer homicides.

It is recognized that the educational attainment and enrollment measurements could be problematic, as Piquero and Piquero (1998) allude. Education, for example, not only enhances knowledge, which would be a goal when institutions are balanced, but it can also lead to becoming gainfully employed in the future. The latter outcome could be associated with a commitment to monetary rewards. If that is the case, then some may argue these measures are invalid. A high rate of high school educational attainment could signal high commitment to the economic system, rather than the education institution. However, if individuals are staying in high school, and even later pursuing a college education, this means they continue to be attached to the educational institution. With this connection, therefore, they may still be subject to at least some social control or support functions offered by the education institution. Dropping out of high school, on the other hand, would be associated with a disconnection with the education institution. Termination of educational pursuits could be due to pressures to place employment and

economic needs first. Therefore, being engaged in education indicates priority being given to the education institution, not acquiescence to the economic institution. Education is a socially-acceptable means of achieving one's goals.

Education is not *just* a means to achieving success; it may be endorsed as a *suitable* means of achieving success according to the collective. Further, the vast majority of people end their formal academic studies at some point. It is the exception, rather than the rule, that individuals pursue degree after degree after degree. This is implied, for example, when references are made to a doctoral degree being a terminal degree.

Family

The role of family includes population replacement and socializing children to cultural expectations. It also serves as a safe haven to family members against stresses that occur in other aspects of their lives (Messner and Rosenfeld, 2007). To measure the strength of the institution of family, this study includes the percentage of the population over 15 years of age who were divorced, shadowing past research (Chamlin & Cochran, 1995; Maume & Lee, 2003; Schoepfer & Piquero, 2006; and Bjerregaard & Cochran, 2008.) Where the family institution is strong, family members develop definitions of success beyond those of an economic nature, diminishing anomic cultural pressures (Messner and Rosenfeld, 2007). Past research has viewed divorce as a family disruption, which hinders informal social controls and diminishes support, leading, in turn, to higher levels of economic crime (Blau & Blau, 1982; Blau & Golden, 1986; Felson & Cohen, 1980; Sampson, 1986, 1987; Sampson & Groves, 1989; Chamlin & Cochran, 1995;

Braithwaite, 1989, Sampson & Laub, 1993). Therefore, it is expected that areas with high divorce rates will be characterized by higher homicides rates.

A second operationalization includes the percentage of children under 18 years of age who are living in single-female headed households. This operationalization is based upon prior research that has indicated single-parents may not be able to provide for adequate socialization and supervision of their children, in part because the parent may be away from home while working (Messner & Rosenfeld, 1997: 78; National Research Council, 1993: 155-156; Piquero & Piquero, 1998, p. 69). This operationalization is informed by that used in prior studies (Sampson & Lauritsen, 1994; Piquero & Piquero, 1998; Hannon & DeFronzo, 1998; Stucky, 2003).

The third measure of the family institution is the percentage of children under 18 years of age residing in single male-headed households, which is a parallel measure to single female-headed households. In recent years, more fathers have been assuming the responsibility of caring for their offspring. Hofferth, Pleck, Goldscheider, Curtin and Hrapczynski (2013) indicate that between 1996 and 2008 there has been a 40% increase in the proportion of children residing with single fathers, increasing from 2.5% to 3.5%. If single-parent households without a father being present is theorized to have a detrimental effect on child development and the weakening of social control mechanisms, then it seems to logically follow that single-parent households without a mother being present would experience negative consequences as well. A fourth variable is the percentage of children residing with a householder who is someone other than their parent. Non-parent householders would include grandparents, other relatives, foster parents, or someone who is unrelated to the child.

Polity

The role of the polity institution is to ensure attainment of collective goals (Messner & Rosenfeld, 2007). A strong polity institution is characterized by a sense of altruism and the freedom to make decisions based on non-economic reasoning, thereby offsetting anomic cultural pressures. In the current study, polity is measured by the percentage of the population employed as government workers at the local, state, or federal level. These individuals would have a better grasp of governmental policies and procedures. By making decisions and carrying out directives, they may also have a stronger voice in what happens within their community and how funds are disbursed. The decision to include such a measure was informed by Stucky's (2003) finding that responsiveness of different forms of local governmental structures can have an influence on rates of violent crime. Bursik and Grasmick (1993, pp. 17-18) define public control as "the ability of neighborhoods to secure external resources through ties with the local government and police". Velez (2001, p. 858) surveyed citizens regarding their satisfaction with local services across 60 neighborhoods in three cities and found that high values for these public social control measures reduce "household and personal victimization risk", especially in structurally disadvantaged neighborhoods.

Messner and Rosenfeld (1994, pp. 106-108) contend that being involved in the polity can create a sense of altruism, curbing anomic pressures. Citizenship status was also considered for inclusion in this study, with the thought that non-citizens may not have the same rights for involvement in governmental affairs. Although non-citizens may be able to voice their opinions on issues, they are not able to vote for elected officials or other referendums that influence local-level institutions. However, Graif and

Sampson (2009, p. 245) argue that immigration status may actually have a protective effect against involvement in criminal events.

Important to this study, Graif and Sampson (2009) point out that language diversity is an area not yet undertaken by many researchers. Therefore, the percentage of the population 18 years and over that did not speak English well is included as a variable. The rationale behind this choice is that the inability to speak the dominant language may place barriers to involvement in the local polity, at least at the official level. The voices of non-English speakers may not be readily heard and, therefore, may not be considered or given due weight during decision-making processes. This variable is limited to responses from those 18 years and older, the legal voting age in America.

Available response options regarding one's own perception of their ability to speak English were: very well, well, not well, and not at all. The American Community Survey Subjects Definitions document indicates that some researchers will condense the data by combining well, not well, and not at all and then report the compilation as not very well. However, for this study, only "not well" and "not at all" responses constituted a positive response for this variable.

An additional operationalization of polity is the percentage of households receiving public assistance, food stamps or supplemental security income, following the logic set forth in prior studies (Messner &Rosenfeld, 1997; Piquero & Piquero, 1998; Hannon & DeFronzo, 1998; Maume & Lee, 2003). While at first glance this may appear to be an economic measure, it belongs in the polity realm if one follows the logic of Messner and Rosenfeld (1997) in their research on decommodification. Public assistance disbursements are an example of what Messner and Rosenfeld (1997) refer to as

"indicators of expenditure patterns", which in part are predicated upon the "ease of access to welfare benefits". In other words, this measure goes to how well governments buffer its citizens from the effects of market forces, such as the freedom to make decisions based on non-economic factors. Hannon and DeFronzo (1998) and Savolainen (2000) found that welfare expenditures diminish the impact of economic deprivation on crime. Additional support for this operationalization can be found in the work of Esping-Andersen (1990), which preceded and informed Messner and Rosenfeld's 1997 study.

To further clarify, the operationalization of polity through the variable of public assistance funds is distinct from the variable of the percentage of families living below poverty level. The latter variable is meant to be a measurement of the economic institution, as set forth previously. The public assistance variable is meant to measure the extent to which the government buffers market forces, shielding members of society from having to make decisions based solely on economic reasons. Living below the poverty level is likely a situation where decisions are first and foremost based on economic reasoning if one recalls that the economic institution is designed to provide for basic necessities such as food, shelter and clothing. In other words, public assistance, or decommodification, should act as a counter-measure to the anomic pressures of the economic institution. If decommodification levels are higher, then it would follow that the influences of the economic institution would be lower. Consequently, homicides should also be lower.

Homoscedasticity/Heteroscedasticity and Log Transformations

Homicide rates vary drastically from one geographical area to another, which may produce a skewed data distribution. To address the presence of heteroscedasticity in past

research, many researchers have opted to log transform crime rates and other variables (Baller, et al., 2001; Messner, Baumer & Rosenfeld, 2004; Cahill & Mulligan, 2007; Deane et al., 2008; McCall et al., 2010). Doing so brings the data closer to a linear distribution. While some researchers have opted to log transform all of their variables, there is debate regarding this practice. Suggesting a mixed model is acceptable, Land et al. (1990) point out that if skewness and heteroscedasticity are not found for a given variable, then log transformation should not be automatically employed across the board to all variables. By transforming a variable that is already linear, you may actually introduce "artificial nonlinearities" into your model (Land et al., 1990, p. 938). In the current study, only homicide rates are log transformed, as log transforming independent variables produced little, if any, advantage.

Geographic Information Systems (GIS) and Regression Models

Introduction

As noted earlier, "crime has an inherent geographical quality" (Chainey & Ratcliffe, 2005). Geographic Information Systems (GIS) allows researchers to more closely examine that geographical, or spatial, quality. For example, they may want to know if homicides are unequally distributed across the census tracts of a particular city, in this case Minneapolis. This particular study utilizes ArcGIS software, which is produced by Esri. Initially, Exploratory Spatial Data Analysis (ESDA) tools found within the GIS software will be used to obtain overall descriptive and graphic descriptions, as well as preliminary information as to potential clusters, hot spots, and spatial heterogeneity (see Messner & Anselin, 2004). These measures provide important

information, such as skewness, data distributions, and local data variability. Histograms and scatterplots are utilized to identify and address outliers. Other general descriptive statistics, such as central features and median centers, are also obtained to gain a general sense of the distribution of the data. With the assistance of Esri's ArcGIS 10.1, many statistical analysis techniques are utilized, including various regression models (exploratory, ordinary least squares, and geographically weighted regression), to better understand the relationships between crime and the various institutions across space.

Kernel Density

Density maps allows for visual understanding of spatial patterning. The steps used in creating these maps take into account the occurrence of other homicides around each individual homicide using a weighting function (see Fotheringham et al., 2002, pp. 44-51). Greater weight is given to an individual homicide when it occurs at or near another homicide. Using a color ramp, these maps indicate the magnitude of offense locations, showing the estimated proportion of total homicides that can be expected to occur in a specific area. Effectively, an area near a known homicide location would have increased probability of experiencing a homicide. In some cases, distinct patterns or clusters will be visible.

Regression (Exploratory, OLS, and GWR)

As noted previously, exploratory regression, ordinary least squares (OLS) regression, and geographically weighted regression (GWR) are utilized to examine the relationships between dependent and independent variables in this study. Exploratory regression is a tool included in ArcGIS 10.1 that provides considerable assistance to a

researcher in determining which variables significantly contribute to successful model building. Rather than going through the time consuming process of drawing out and calculating a correlation for every possible combination of variables, a researcher can utilize exploratory regression to systematically narrow the number of passing models for any given set of independent variables.

One key purpose of exploratory regression is to ascertain whether any passing models exist using the given data. In order to be considered a passing model, a total of five tests or criteria must be satisfied when using ArcGIS. Esri (2010), the manufacturer of ArcGIS, strongly cautions that it is unwise to proceed to further analysis until a passing model is achieved. Otherwise, the validity of any subsequent findings and inferences cannot be assured. These five tests include: Jarque-Bera (JB) p-value, variance inflation factor (VIF), Koenker's studentized Breush-Pagan p-value (K(BP)), a spatial autocorrelation test (SA, the Global Moran's I p-value), and Adjusted R^2.

A statistically significant Jarque-Bera score indicates that model predictions are biased. In other words, the residuals are not normally distributed. To pass the JB test, its value must be more than .05.

Variance inflation factor values relate to the redundancy, or multicollinearity, amongst independent variables. As previously noted, multicollinearity may be, at least in part, responsible for producing inconsistent findings across previous studies (Land et al., 1990). In the current study, maximum VIF values were set at 7.5, which is the value recommended by Esri. Although consensus is lacking, some researchers have offered a VIF of 10 as the maximum threshold (Myers, 1990; Stucky, 2003; Pallant, 2007), while others suggest a more restrictive maximum VIF of 4 (Champion & Hartley, 2010).

The Koenker (Breusch-Pagan) test addresses the concern of non-stationarity or heteroscedasticity, and its limit was set to the recommended maximum of .05. A value that is statistically significant ($>.05$) indicates that the model is not consistent and, therefore, is not reliable. The spatial autocorrelation threshold was set to the Esri-recommended minimum value of .10, which signifies that regression residuals are distributed randomly and are not clustering.

The minimum Adjusted R^2 for this study was set at .4, which is more relaxed than the Esri-recommended .5 minimum. This setting increased the likelihood of obtaining a passing model despite the downward pull from a skewed dependent variable. An R^2 value indicates how much of the variance in the dependent variable is explained by a specific model. In other words, in this research, if a model did not explain at least 40% of the variance in homicide rates, it would not be considered as a passing or sound model. Although the interpretation of Adjusted R^2 is very similar to that of R^2, the former is preferred since it takes into account the complexity of the model, including the number of variables used.

The results of these five tests are produced in summary tables within the exploratory regression output file. Researchers should carefully inspect these test values to troubleshoot possible causes of model failure. The process of exploratory regression can be extremely time-consuming and, at times, frustrating. However, it can meaningfully strengthen the analysis. If the data does not produce a passing model, you cannot be confident that you have a stable model and, thus, it would not be appropriate to proceed to the utilization of OLS and/or GWR. Hence, exploratory regression is vital to selecting a well-specified regression model, a step not universally proffered and advised

81

with other statistical analysis software. For example, many researchers start at the OLS stage when building models.

Once a passing model is identified through exploratory regression, the researcher may proceed to OLS. OLS is a commonly used technique that allows the researcher to examine the relationship between dependent and independent variables. This approach assumes that data are normally distributed and variances are equal. OLS produces singular results that pertain to the entire study area, thus it is referred to as a global (versus local) model.

Since Messner and Rosenfeld's first works on IAT, much has changed in the area of geospatial analysis. For example, the OLS regression technique has been subjected to scrutiny. Ratcliffe (2010) addressed the inability of OLS regression models to identify potential interaction effects of spatially proximate phenomenon, since these models do not take into account that factors in one geographical area can affect relationships in other geographical areas. Geographically weighted regression (GWR) is one potential solution to this concern.   According to Chainey and Ratcliffe (2005), it was developed at Newcastle University, UK and was first mentioned by Brunsdon, Fotheringham and Charlton in 1996.

While some studies have used GWR in statewide comparisons, it can also reveal strong spatial heterogeneity influences at the census block level per Cahill and Mulligan (2007). From one location to another within a single city, the relationship between dependent and independent variables(s) can be different (Baller, et al., 2001; Fotheringham, Charlton, & Brunsdon, 2001; Cahill & Mulligan, 2007; Graif & Sampson, 2009). In other words, the relationship may not necessarily function in a uniform way or

with the same strength across the entire geographical area under analysis. For example, homicide locations may be clustered, and a more robust and geographically-sensitive method may be desired to identify these clusters. Failing to take this into account can produce flawed models (Baller et al., 2001; Cahill & Mulligan, 2007) and, subsequently, faulty findings (Baller et al., 2001, p. 562). Deane et al. (2008, p. 364) add "if spatial dependence violates the regression assumption that the error of prediction for an observation cannot be predicted by its value on an independent variable, sample estimates of the population regression coefficients will be biased." Furthermore, this omission may also be a contributing factor to why researchers produce inconsistent findings even when they are using comparable variables (Graif & Sampson, 2009).

In the general sense of regression techniques, GWR is very similar to OLS. However, to allow relationships between variables to vary spatially, it calculates a spatially weighted regression equation for each unit of analysis (census tract), hence the classification as a local (versus global) model (Esri, 2010). OLS, on the other hand, is a global model that produces one regression equation for the entire study area. GWR requires an N of more than 40. This is satisfied within the current research by including all 116 census tracts across Minneapolis, as well as limited models that used only the 60 census tracts that experienced at least one homicide during the study period.

GWR is also set apart from OLS in that the researcher can use coefficient surface maps to visualize how well each independent variable is predicting homicides in a particular census tract, as well as any overall patterns or clusters that are occurring across the entire study area. In other words, one can visualize where the models are best performing. These maps help the researcher understand criminogenic influences at a

much deeper level. This could provide significant empirical support for more effective

policymaking tailor-made to specific geographic areas within the city.

To explain the unique contributions of GWR, Fotheringham, Brunsdon and

Charlton (2002, p. 1) use the analogy of someone reading a book to understand the

climate of a particular country. In that book, only one quantity, the national average, was

included to describe certain characteristics of the nation, such as annual rainfall, hours of

sunshine, etc. When you think about it, the reader may be only slightly more informed

after reading the book. It tells us something, but it doesn't help us predict differences in

phenomenon within smaller units of measurement. If that book pertained to the United

States, for example, undiscovered would be distinctions such as the drastic variance in

the amount of rainfall and hours of sunshine experienced between, say, the states of

Washington and North Dakota. These northern border states may share similar

latitudinal characteristics, but weather patterns are substantially different for a variety of

reasons. In the same way, OLS can sometimes fall short of providing us with rich

information. GWR holds the potential of telling us more about how relationships are

different across space. Continuing with the same analogy, it may be beneficial if we

were able to compare relationships from one state to another, from one city to another,

and the in case of the current research one census tract to another.

The paragraphs above have set forth some of the advantages of using GWR over

OLS. However, this does not mean that OLS should be omitted or that analysis should

begin with GWR. Rather, researchers and criminologists, such as Cahill and Mulligan

(2007), have begun to compare OLS and GWR regression models. They found that

GWR models can be more robust, providing deeper comprehension as to why crime may

be occurring in one area and not another. While most assumptions of OLS and GWR are equivalent, the importance of comparing results from OLS and GWR techniques stems from the unique and divergent assumption of each approach regarding stationarity versus nonstationarity of variable relationships. Charlton and Fotheringham (2007) point out that OLS assumes a variable is constant across space; however, a more realistic approach may be to assume that variables vary across an areal unit. The latter approach is consistent with GWR.   A basic premise of GWR is that closer neighboring points can have a stronger influence than do distanced neighboring points. In a nutshell, the closer homicides are to each other, the more weight those events are given in analyses. Conversely, if homicides are greatly dispersed, it is less likely that the homicides are impacting each other.   This is reflected in the unique GWR regression equation for each unit of analysis. Without spatial weighting, we know little about the heterogeneity across the areal unit.

That being said, Charlton and Fotheringham (2007) caution researchers not to routinely assume that GWR would be a better measure than OLS; instead, both models should be analyzed and then compared. Therefore, in the current study, once OLS and GWR processes are complete, then comparisons are made between the various models, paying particular attention to the respective dependent-independent variable relationships. To determine which technique is most appropriate given the specific data in this study, Akaike's Information Criterion (AICc) and Adjusted R^2 values are compared.   In general, it is preferable to have higher Adjusted R^2 values and lower AICc values, which indicates a better fitting model for a specific set of data. Fotheringham, et al. (2002, p. 69) indicate that AICc can be used to determine "which of the two models

approximates reality more closely" by taking into consideration the differences in the

degrees of freedom between the models (Fotheringham, et al., 2002).

As background, R^2 values provide an indication of model performance, ranging

from 0 (no fit) to 1.0 (perfect fit). This value is used to specify what percentage of the

variation in a dependent variable is explained by an independent variable (Esri, 2010).

When GWR is used, a Local R^2 value is also provided for each case or observation (here,

by census tract) within the data. Adjusted R^2 values are similar measures, however, they

take into account the complexity of the model being used by considering degrees of

freedom and normalizing the numerator and denominator (Esri, 2010). Therefore, this

value will always be less than the R^2 value (Esri, 2010).

One additional step at this point is also to conduct a Local Moran's I, sometimes

known as Anselin Local Moran's or LISA. This tool indicates if there is statistically

significant clustering of a phenomenon, such as hotspots or coldspots. This means that

the distribution is not random, but patterned. This type of analysis is one of the first steps

in spatial analysis, and usually you would want to find clustering, not randomness. For

example, in the current study if homicides were distributed equally across all census

tracts, with no variance, it is unlikely that the model would produce significant

relationships between crime and institutional measurements. A Global Moran's I tool, on

the other hand, is utilized to determine spatial autocorrelation and whether a model is

misspecified. An html results window includes z-scores and p-values. This is utilized

during the examination of regression residuals, and you would prefer to see residuals

distributed randomly, or without clustering. If that is not the case, the model is not stable.

Distinctive Contributions of This Study

This study adds to the body of research that examines the relationship between culture, institutional structures, and homicide rates. It incorporates operationalizations similar to those in previous studies in an attempt to provide meaningful comparisons, as well as new measures of commonly-used variables such as parentless households (family) and percentage of population employed by the government to better understand the strength of institutions at the local level. Additionally, prior assessments of IAT have been conducted at the cross-national, national, state, and county levels. This study attempts to extend the application of IAT to the census tract level within one major metropolitan city.

It is also distinctive in that it utilizes and compares both a typical OLS regression technique and GIS-based geographically-weighted regression. While GWR appears to be gaining popularity among criminal justice researchers, an EBSCO Academic Search Premier publication inquiry for "institutional anomie" plus "geographically weighted regression" produced no results. Even the more generic and liberal search engine Google Scholar yielded only two articles, Messner, Teske, Baller, and Thome (2013) and Deller and Deller (2012), at the time the literature review was commenced. Expanding the search to include anomie, in more general terms, produced only 11 articles. The research undertaken herein is distinctive in the use of GWR in the context of IAT.

CHAPTER V

RESULTS

Introduction

Employing the research methods and design described in the previous chapter, analysis was conducted to examine the relationship existing between homicide rates and economic, education, family and polity institutions. There are 116 census tracts across the City of Minneapolis. Each of these tracts is labeled within *Figure 1*. Because approximately half of the census tracts experienced no homicides during the study period of 2007 to 2011, the data was highly skewed. This is a substantial limitation of the study. None of the interaction term were found to be significant. Consequently, many of the findings of this chapter relate to subsequent analysis conducted using data from only those 60 census tracts that experienced at least one homicide during the study period. Overall, the data provides mixed support for IAT. More specifically, institutions found to have significant relationships with homicide rates included the family (percentage divorced, percentage of children living in single-parent households) and education (less than high school attainment) institutions.

Descriptives

The data for the 2007 to 2011 study period included 258 homicides across the City of Minneapolis, averaging between 51 and 52 homicides per year, with a range of 21 to 63 homicides. *Figure 2* provides a visualization of the distribution of homicide rates

Figure 1. Map of Minneapolis Census Tract Boundaries
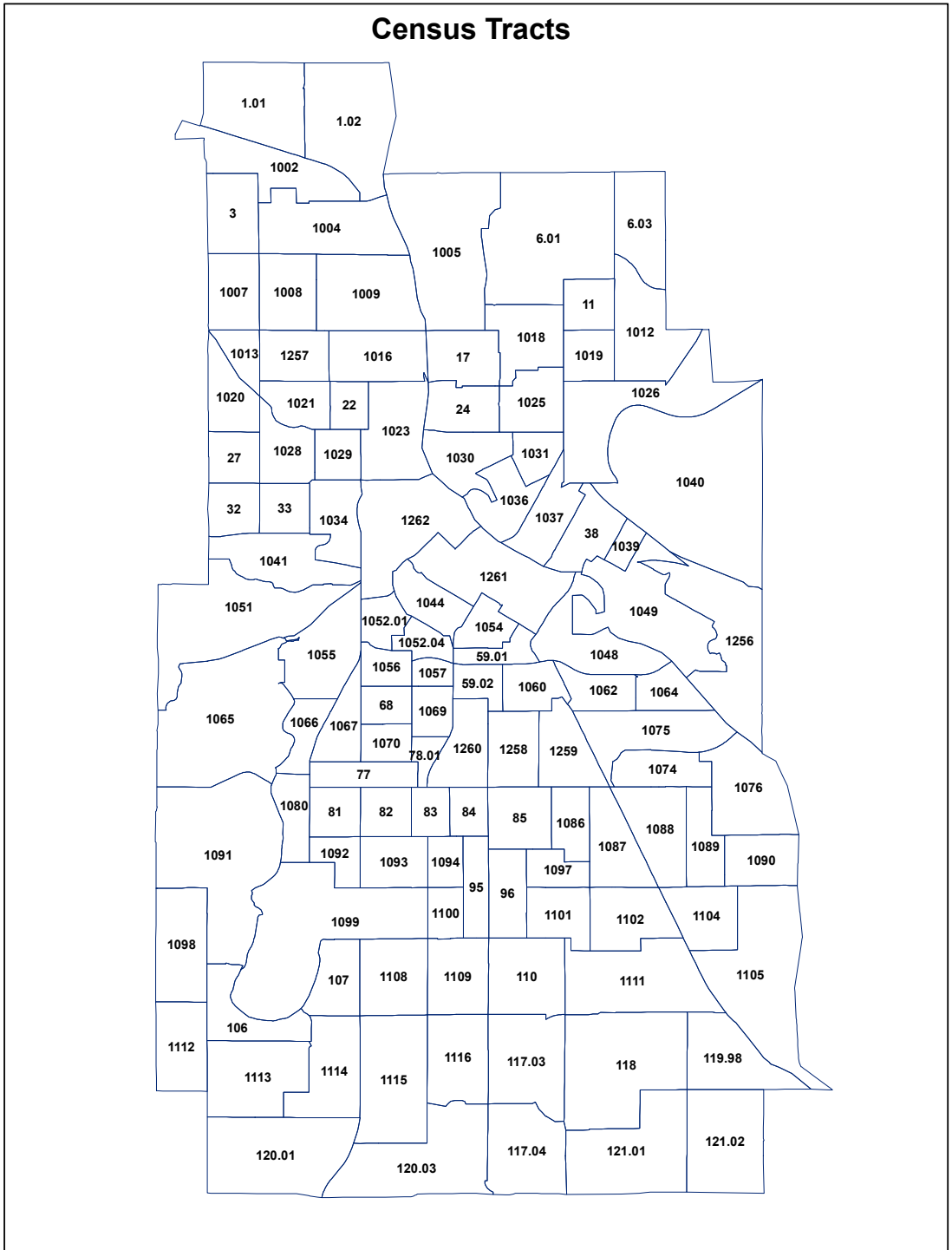
Census Tracts

Figure 2. Logged Homicide Rates Per Census Tract, 2007-2011
(Note: Digits on the map indicate the census tract number.)
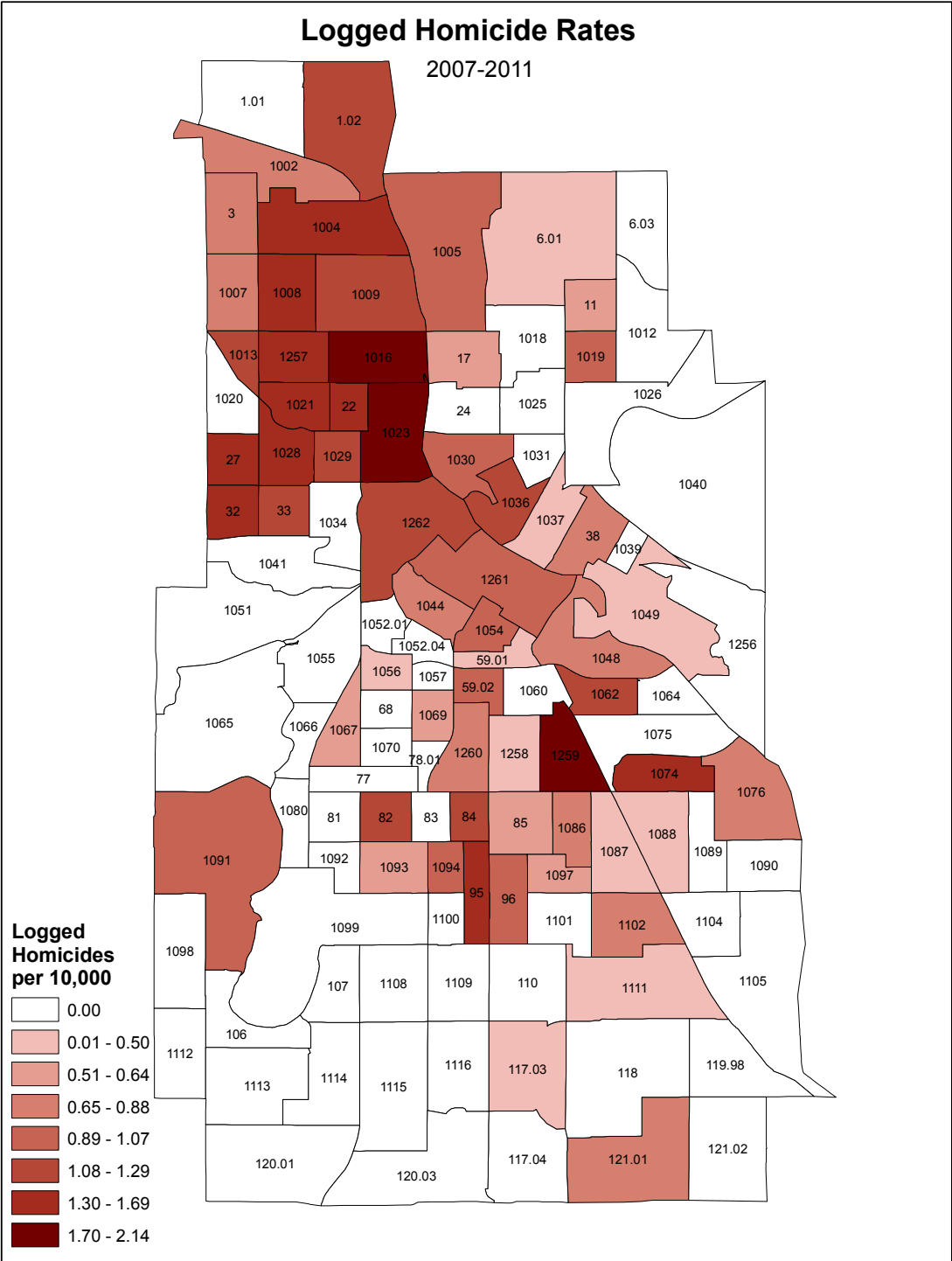
per census tracts in Minneapolis. One alternative research hypothesis was that

homicides would not be randomly distributed across census tracts, but rather would be

clustered. As hypothesized, a Local Moran's I (z = 5.70, p. < .01) indicates that the

clustering of these homicides is not random. A pattern exists. There is less than a 1%

chance that the clustered pattern in the distribution of homicides occurring across the city

of Minneapolis is due to random chance. Areas with high homicides are surrounded by

other areas of high homicides. Therefore, Null Hypothesis 1, which stated there would

be no pattern in the distribution of homicide rates, can be rejected. This non-random

distribution supports further inquiry into explanation of homicide through IAT.

Table 1 presents rankings of the ten census tracts with the highest logged

homicides rates, as well as corresponding values and rankings of selected independent

variables. Census tract 1023 had the highest logged homicide *rate* of 2.139 homicides

per 10,000 population. In absolute terms, this census tract had the third highest *frequency*

of homicides (16) across all census tracts during the study period. Census tract 1023 had

an average population of 1,163 and a median annual income of $18,750, the 108th highest

income among all tracts given that a ranking of 1 indicates the highest median annual

income. Further, 19.29% percent of its population over the age of 25 has less than a high

school or GED education (Column E), ranking 83rd. Over half (55.47%) of the

population between the ages of 18 to 25 years in this particular census tract were not

enrolled in college or graduate school (Column F), ranking 38th out of 116. Column G

indicates that 24.49% of the population over 15 years of age reported their marital status

as being divorced, ranking 116th. It had the highest percentage of divorced population

Table 1. Ranking of census tracts with the highest logged homicide rates and corresponding rankings on demographic indicators

A) Rank by Rate *(Count)*	B) Logged Rate	C) Pop.	D) Income	E) High School	F) College	G) Divorced	H) Single Mother
1. 1023 (3)	2.139 (16)	1,163	$18,750 (108)	19.29 (83)	55.47 (38)	24.49 (116)	98.66 (115)
2. 1259 (1)	1.940 (31)	3,560	$23,581 (100)	40.15 (115)	80.29 (90)	8.13 (29)	5.01 (83)
3. 1016 (4)	1.879 (13)	1,719	$21,369 (103)	33.50 (110)	100 (116)	17.47 (109)	37.39 (65)
4. 1257 (2)	1.692 (17)	3,452	$40,792 (67)	22.72 (95)	68.38 (64)	9.53 (50)	60.87 (102)
5. 1028 (6)	1.634 (10)	2,324	$25,772 (97)	18.91 (81)	93.96 (112)	16.65 (106)	66.36 (111)
6. 1021 (9)	1.567 (8)	2,167	$30,900 (91)	26.34 (100)	87.50 (102)	10.44 (64)	41.37 (72)
7. 22 (16-17)	1.514 (5)	1,532	$27,805 (95)	22.67 (94)	97.30 (115)	20.93 (114)	39.41 (68)
8. 1004 (7-8)	1.474 (9)	3,019	42,733 (63)	25.28 (98)	73.12 (70)	7.66 (26)	71.64 (112)
9. 1008 (5-6)	1.454 (10)	3,515	32,750 (85)	21.10 (88)	78.57 (85)	10.11 (57)	55.16 (93)
10. 32 (18-23)	1.404 (4)	1,577	44,917 (58)	16.07 (75)	6.00 (44)	11.94 (75)	46.15 (77)
Average for all tracts	.507		$49,243	13.61	62.85	10.82	34.24
Average for tracts having homicide	.980		$40,415	16.81	65.99	11.22	39.63

Columns Include:

- A) Rank by Logged Homicide *Rate,* Census Tract Number, (Rank by *Count*)
- B) Logged Homicide *Rate,* (*Count*)
- C) Population
- D) Median Household Income
- E) % Less Than High School Education
- F) % 18-24 year olds not enrolled in college/graduate school
- G) % of Population who claim Divorced status
- H) % of Children in Single Mother-Headed Household

(Ranks out of 116 census tracts are indicated in parentheses. Rank of 1 = highest income, lowest less than high school education attainment, lowest not enrolled in college, lowest divorce, and lowest single female-headed household.)

across the entire study area, and was the second highest tract with children living in single-female headed households (Column H).

Across all 116 census tracts there was an average logged homicide rate of .507 per 10,000 population. Considering only those census tracts that experienced at least one homicide, the average logged homicide rate was .980 per 10,000 population. Over the study period, the City of Minneapolis averaged a total population of 381,833 (U.S. Census Bureau, 2013) and an annual median income of $49,243. With regard to its total population, 13.61% had less than a high school education, 62.85% of 18 to 24 year olds were not enrolled in college or graduate school, 10.82% of those aged 15 and over reported marital status as presently divorced, and 34.24% of all children were residing in single female-headed households. With the exception of census tract 1259, the ten highest homicide rates are all located in the northwestern quadrant of Minneapolis. Although census tract 1259 had the highest count of homicides (31) during the study period, its homicide rate was second highest.

Density/Hot Spot Mapping

Counts and rates only provide a partial picture of the distribution of homicides across the study area. Density maps, such as provided in *Figure 3*, are used to further indicate the magnitude of homicide locations and to estimate the proportion of total homicides that can be expected to occur in a specific area. This is accomplished through GIS tools that apply statistical weighting techniques related to distance decay. In other words, close proximity to homicides increases the risk of experiencing a homicide. Conversely, when there are no nearby homicides, an area's risk of experiencing homicides is lower. In *Figure 3*, areas shown in yellow, and to a lesser extent pink, have

Figure 3. Density/Hot Spot Map.

Kernel Density - Homicides 2007-2011

Legend
Lowest Density

Highest Density
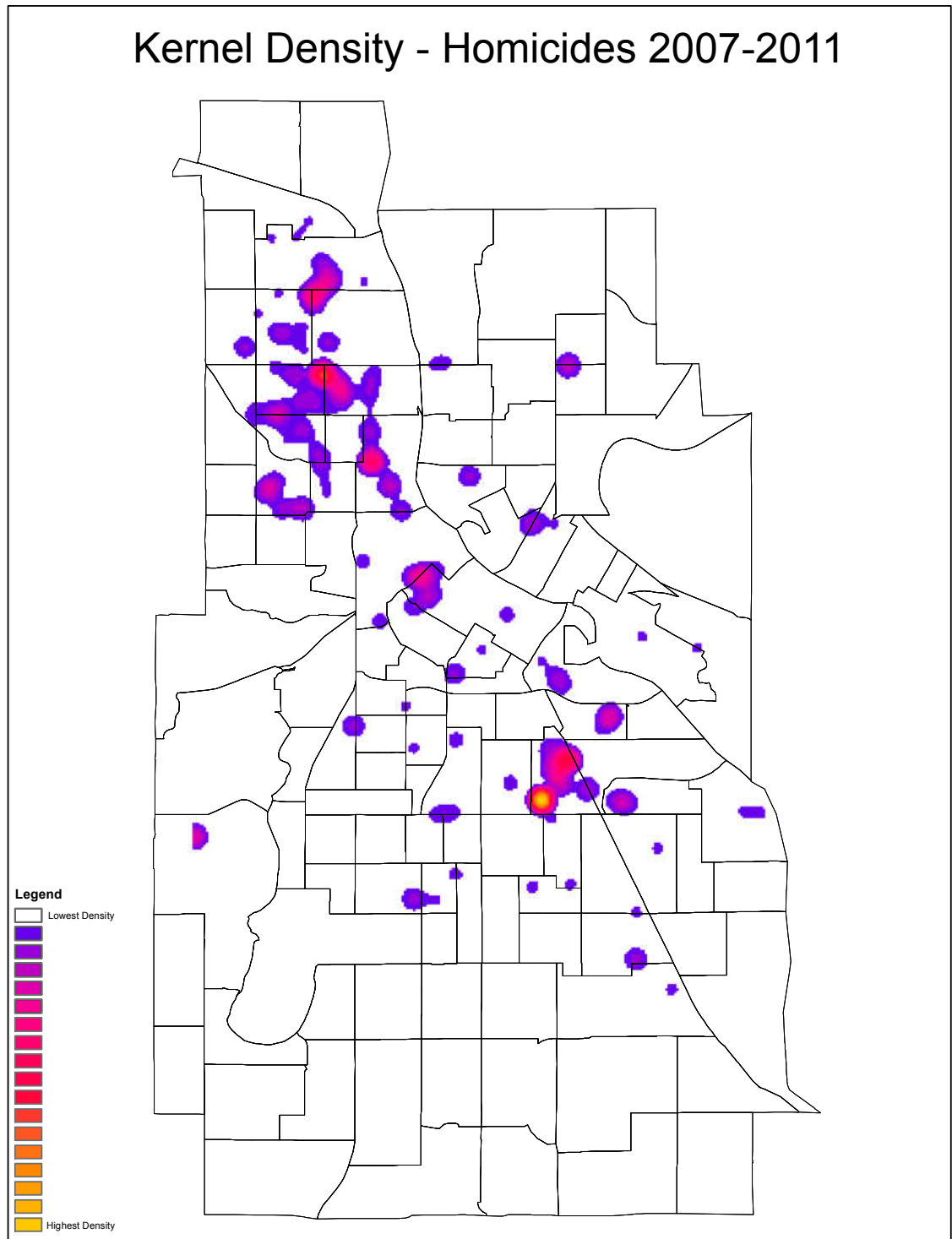
disproportionately high rates of homicides. That is, the density of homicides is high. Overall, these maps allow researchers to identify where crime events are clustering. At least two areas of Minneapolis exhibit high homicide density. These are located in the east central (most specifically, census tract 1259) and the northwest areas (including census tracts 1004, 1008, 1009, 1257, 1016, 22, and 1023). A third area, which exhibited somewhat less intensity than the two areas just mentioned, is located in the center of the map. This area straddles census tracts 1261 and 1262. These are the areas that are most likely to experience future homicides.

Choropleth Maps of Significant Variables

Figures 4 through 15. Univariate choropleth maps display a value assigned to a specific geographic area such as a census tract. This promotes the detection of potential patterns. These maps were compared to those of homicide rates and homicide density to visually detect common patterns.

Analysis of Interaction Effects

Prior IAT studies have indicated the importance of considering interaction effects between economic and non-economic institutions (Chamlin & Cochran, 1995; Piquero & Piquero, 1998; Savolainen, 2000; Maume & Lee, 2003; Schoepfer & Piquero, 2006; Bjerregaard & Cochran, 2008). Interaction between institutions is, in fact, one of the elements of IAT that make it unique from other explanations of crime. It is hypothesized that non-economic institutions can moderate the relationship that exists between the economic institution and homicide rates. In other words, the effect of the economic institution on homicide rates will vary depending upon the strength of non-economic institutions.

This study examines the interaction effects between select indicators of economic and non-economic institutions in the explanation of homicide rates using three interaction, or product,

Figure 4. Choropleth Map of Less Than High School Educational Attainment

**Percentage of Population 25 Years and Over
with Less Than High School Education**

2007-2011

Percentage

- 0% - 3.232%
- 3.232001% - 6.824%
- 6.824001% - 12.094%
- 12.094001% - 16.681%
- 16.681001% - 22.72%
- 22.720001% - 31.157%
- 31.157001% - 42.998%
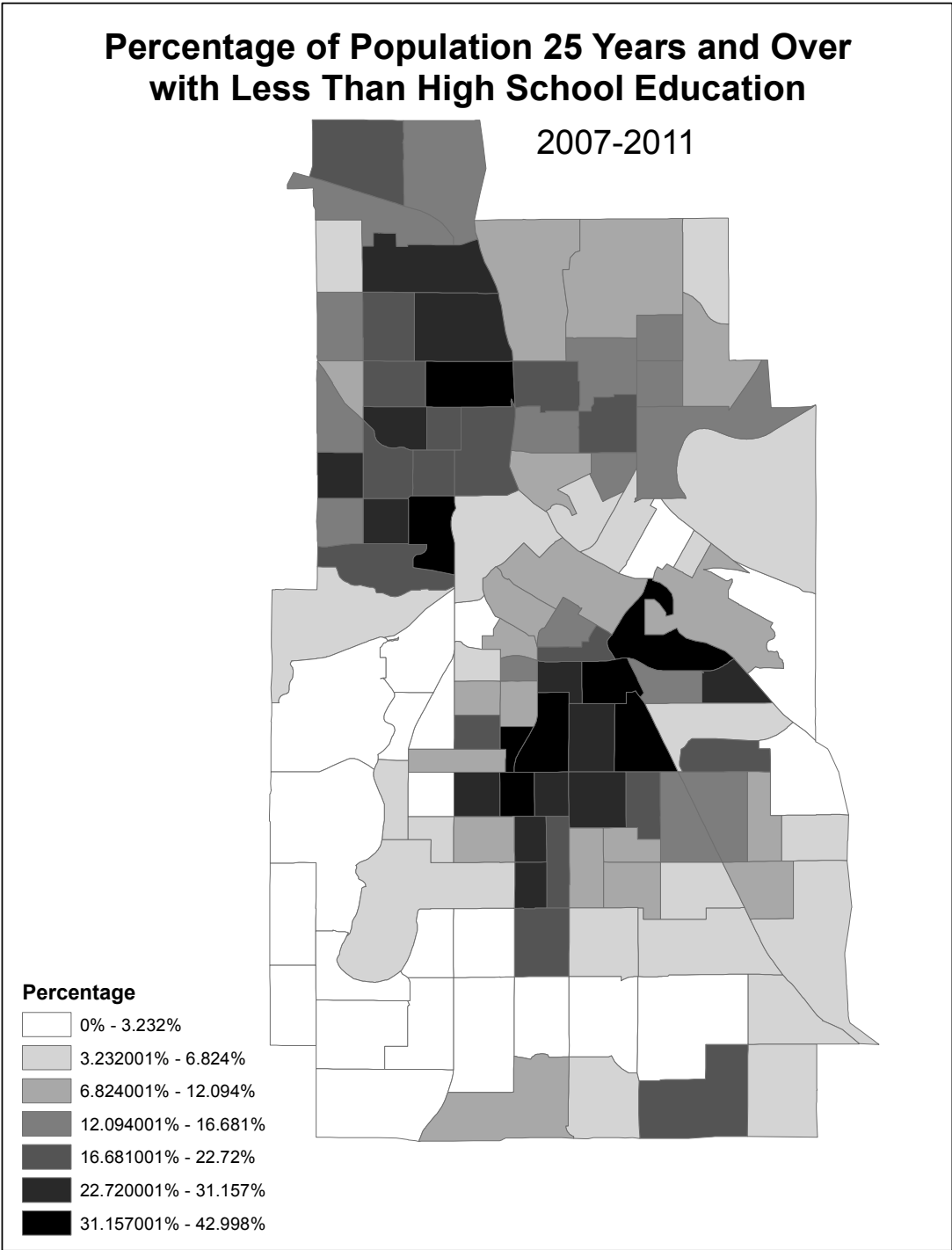
Figure 5. Choropleth Map of Non-Enrollment in College or Graduate School

Percentage of 18 to 24 Year Olds
Not Enrolled in College or Graduate School
2007-2011

Percentage

- 0% - 7.072%
- 7.072001% - 20.39%
- 20.390001% - 33.871%
- 33.871001% - 42.029%
- 42.029001% - 48.878%
- 48.878001% - 53.103%
- 53.103001% - 57.258%
- 57.258001% - 61.429%
- 61.429001% - 63.037%
- 63.037001% - 64.414%
- 64.414001% - 67.836%
- 67.836001% - 70.39%
- 70.390001% - 73.936%
- 73.936001% - 76.344%
- 76.344001% - 78.812%
- 78.812001% - 81.489%
- 81.489001% - 85.124%
- 85.124001% - 88.415%
- 88.415001% - 91.304%
- 91.304001% - 100%

Figure 6. Choropleth Map of Median Annual Income

Median Annual Income
2007-2011

Dollars

- $5,431.00 - $16,579.00
- $16,579.01 - $26,119.00
- $26,119.01 - $32,750.00
- $32,750.01 - $40,000.00
- $40,000.01 - $46,875.00
- $46,875.01 - $54,183.00
- $54,183.01 - $65,000.00
- $65,000.01 - $79,571.00
- $79,571.01 - $97,540.00
- $97,540.01 - $125,086.00
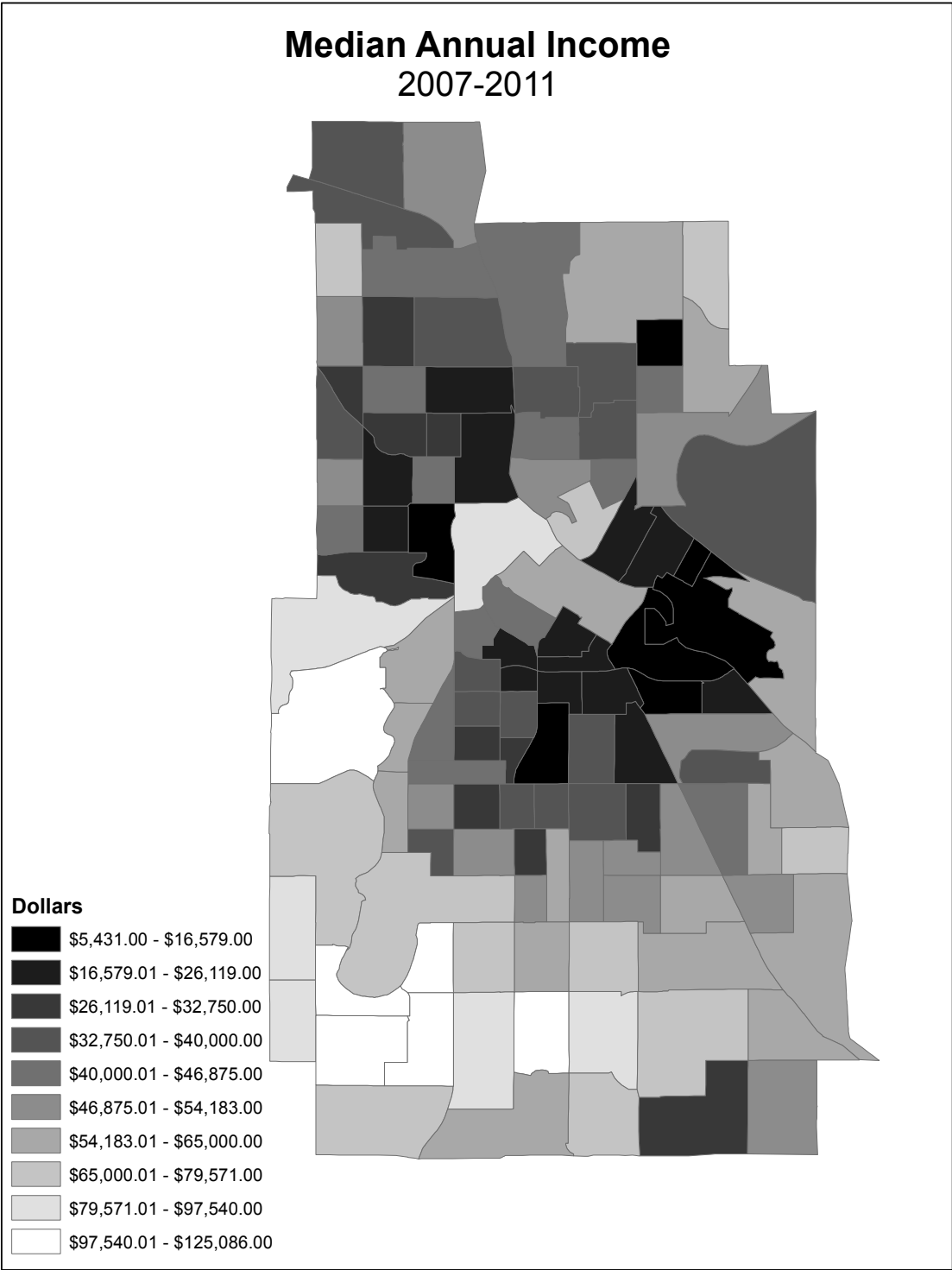
Figure 7. Choropleth Map of Percentage of Population Divorced

**Percentage of Population over 15 Years Old
Reporting Divorced Status**

2007-2011

Percentage

	0.564% - 3.182%
	3.182001% - 5.989%
	5.989001% - 7.66%
	7.660001% - 8.835%
	8.835001% - 9.85%
	9.850001% - 11.299%
	11.299001% - 13.555%
	13.555001% - 15.716%
	15.716001% - 19.236%
	19.236001% - 24.486%
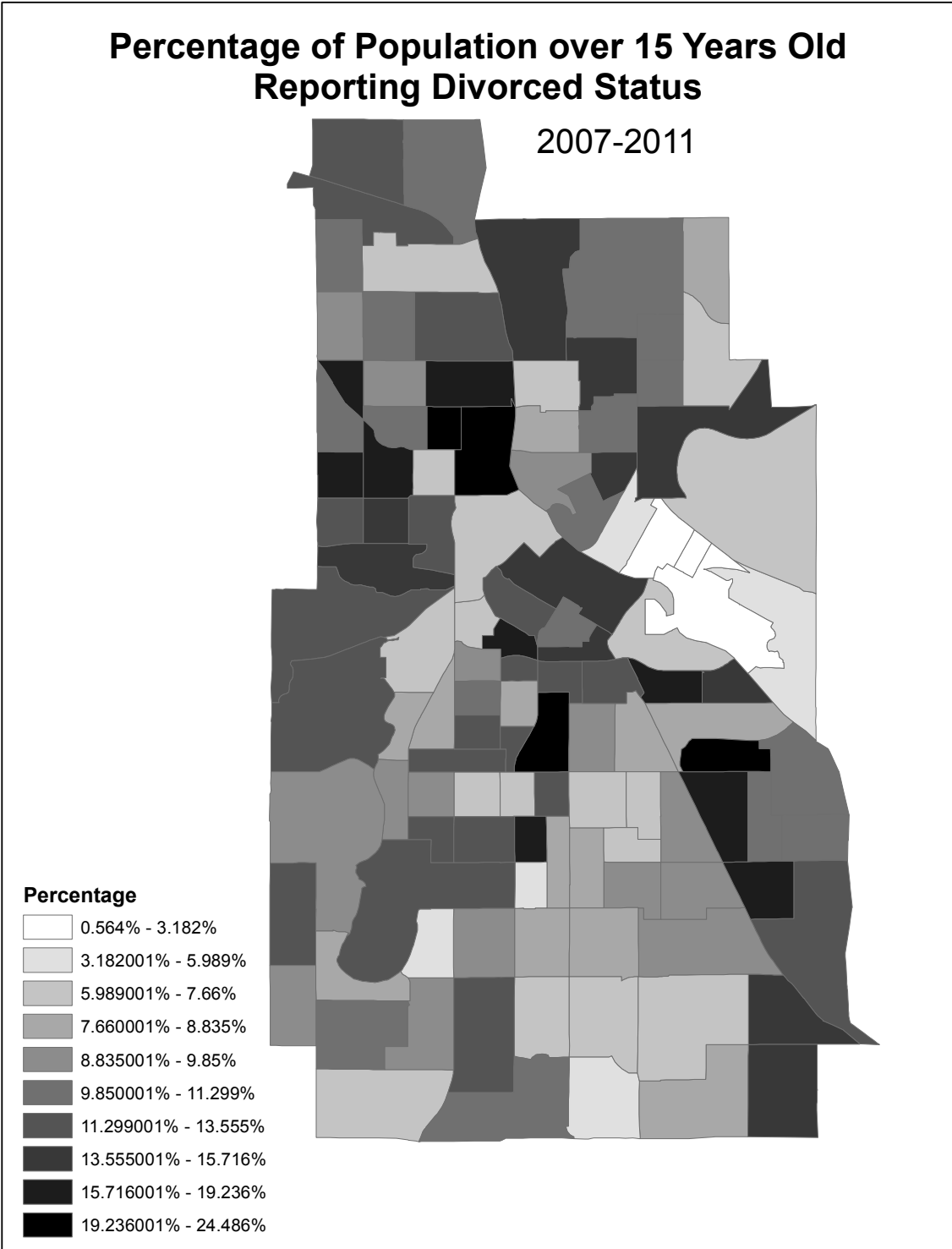
Figure 8. Choropleth Map of Children in Single Female-Headed Household

Percentage of Children 18 Years and Under Living with Single Female Householder

2007-2011

Percentage

- 0% - 10.116%
- 10.116001% - 20.202%
- 20.202001% - 30.38%
- 30.380001% - 43.313%
- 43.313001% - 56.322%
- 56.322001% - 74.565%
- 74.565001% - 100%
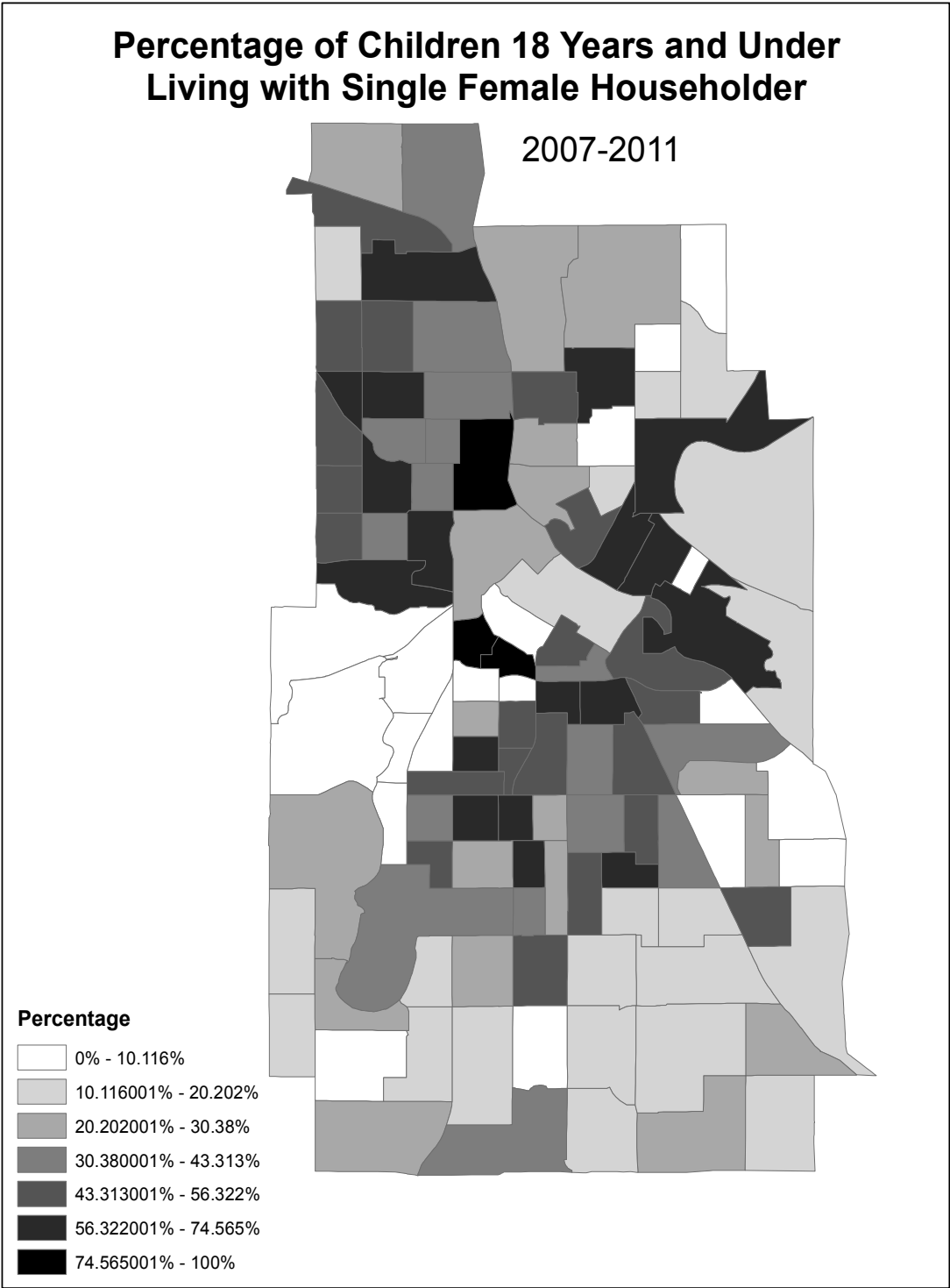
Figure 9. Choropleth Map of Children in Single Male-Headed Household

Percentage of Children 18 Years or Under
Living with Single Male Householder
2007-2011

Percentage
0.000 - 0.008
0.009 - 0.037
0.038 - 0.072
0.073 - 0.118
0.119 - 0.160
0.161 - 0.261
0.262 - 0.407

Figure 10. Choropleth Map of Percentage of Children Living with Householder Other Than Parent

Percentage of Children
Living with Householder Other Than Parent
2007-2011

Percentage
	0.000 - 0.010
	0.011 - 0.032
	0.033 - 0.052
	0.053 - 0.085
	0.086 - 0.110
	0.111 - 0.146
	0.147 - 0.190
	0.191 - 0.247
	0.248 - 0.357
	0.358 - 0.551
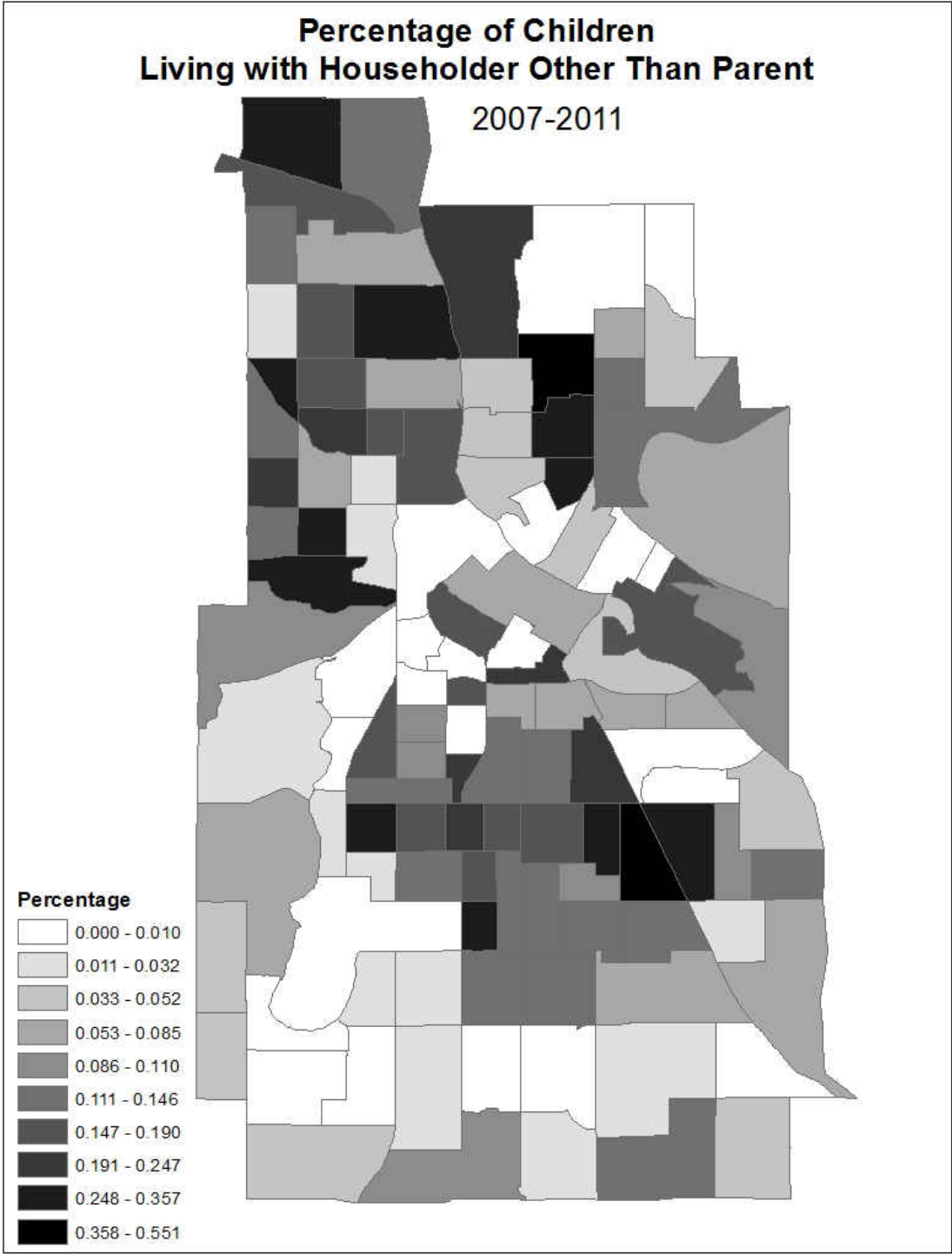
Figure 11. Choropleth Map of Gini Index of Income Inequality
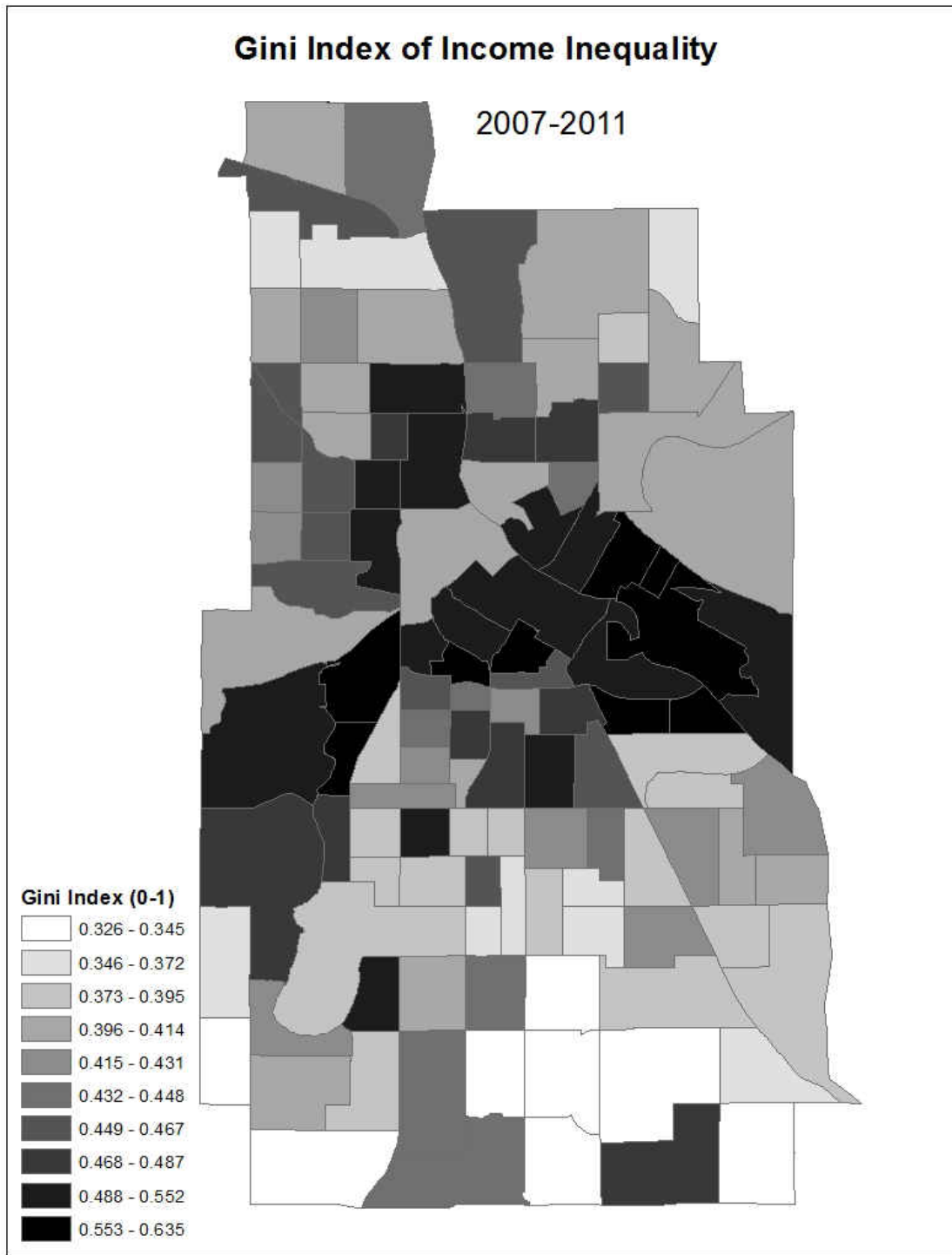
Figure 12. Choropleth Map of Percentage of Families Living Below Poverty Level

Percentage of Families Living Below Poverty Level

2007-2011

Percentage

	0.000 - 0.045
	0.046 - 0.081
	0.082 - 0.116
	0.117 - 0.161
	0.162 - 0.225
	0.226 - 0.287
	0.288 - 0.356
	0.357 - 0.446
	0.447 - 0.565
	0.566 - 0.727
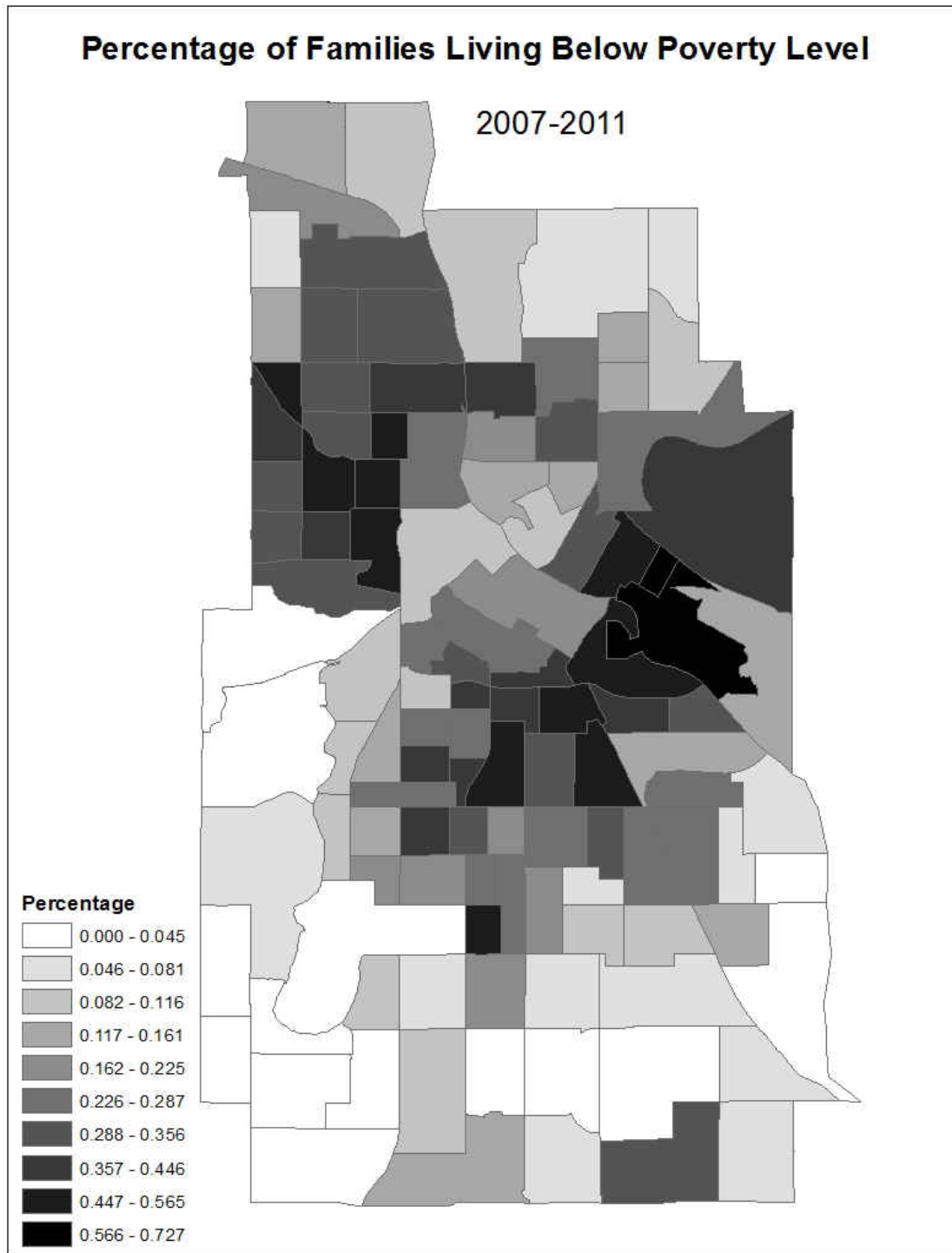
Figure 13. Choropleth Map of Percentage of Speaking English Less Than Well

Percentage of Population 18 Years Old and Over Speaking English Less Than Well

2007-2011

Percentage
- 0.000 - 0.008
- 0.009 - 0.020
- 0.021 - 0.035
- 0.036 - 0.056
- 0.057 - 0.077
- 0.078 - 0.119
- 0.120 - 0.166
- 0.167 - 0.240
- 0.241 - 0.317
- 0.318 - 0.485
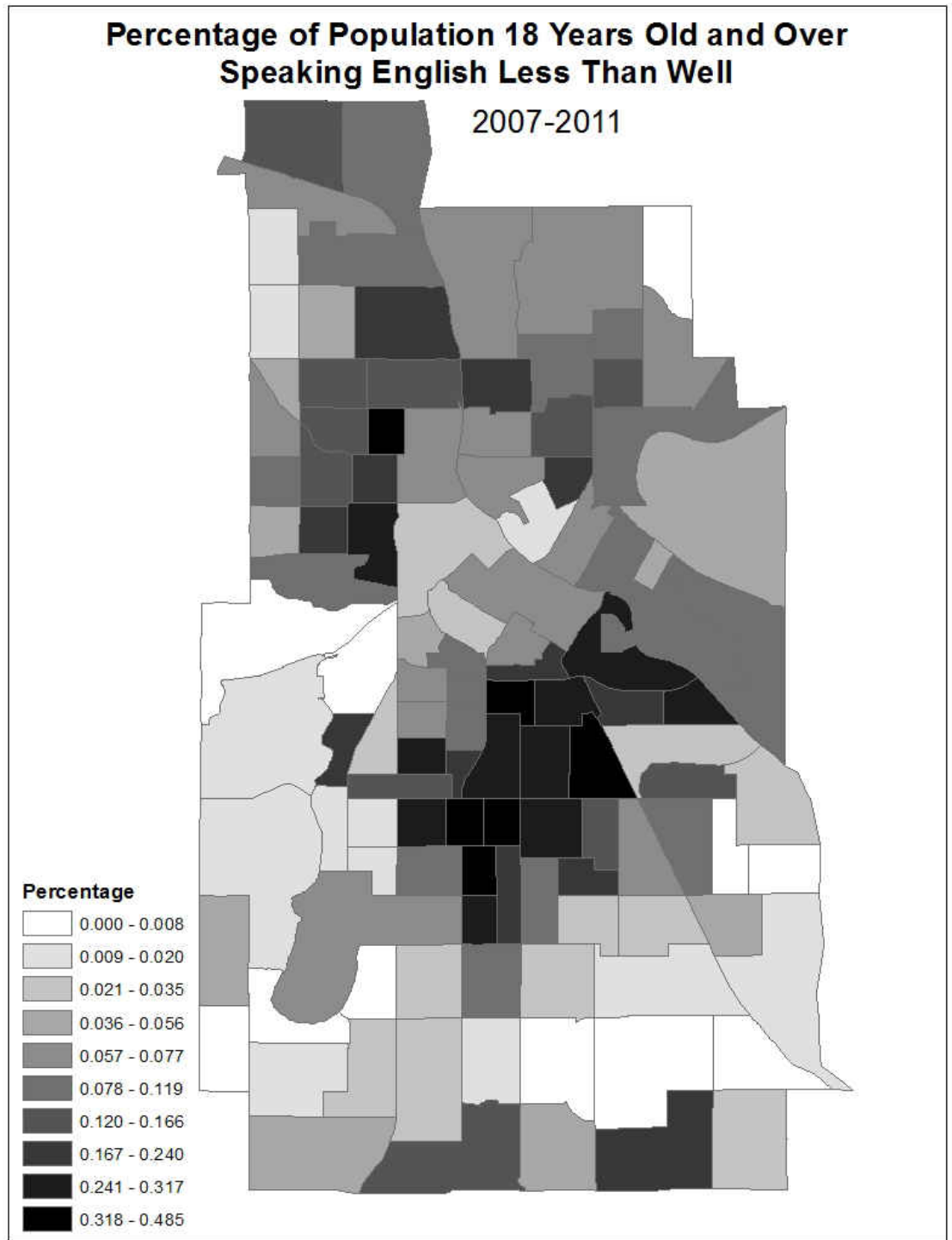
Figure 14. Choropleth Map of Percentages Receiving Public Assistance

Percentage of Households Receiving Public Assistance, Food Stamps, Social Security Income 2007-2011

Percentage

- 0.000 - 0.034
- 0.035 - 0.104
- 0.105 - 0.162
- 0.163 - 0.210
- 0.211 - 0.253
- 0.254 - 0.282
- 0.283 - 0.317
- 0.318 - 0.355
- 0.356 - 0.391
- 0.392 - 0.421
- 0.422 - 0.485
- 0.486 - 0.588
- 0.589 - 0.797
- 0.798 - 1.000
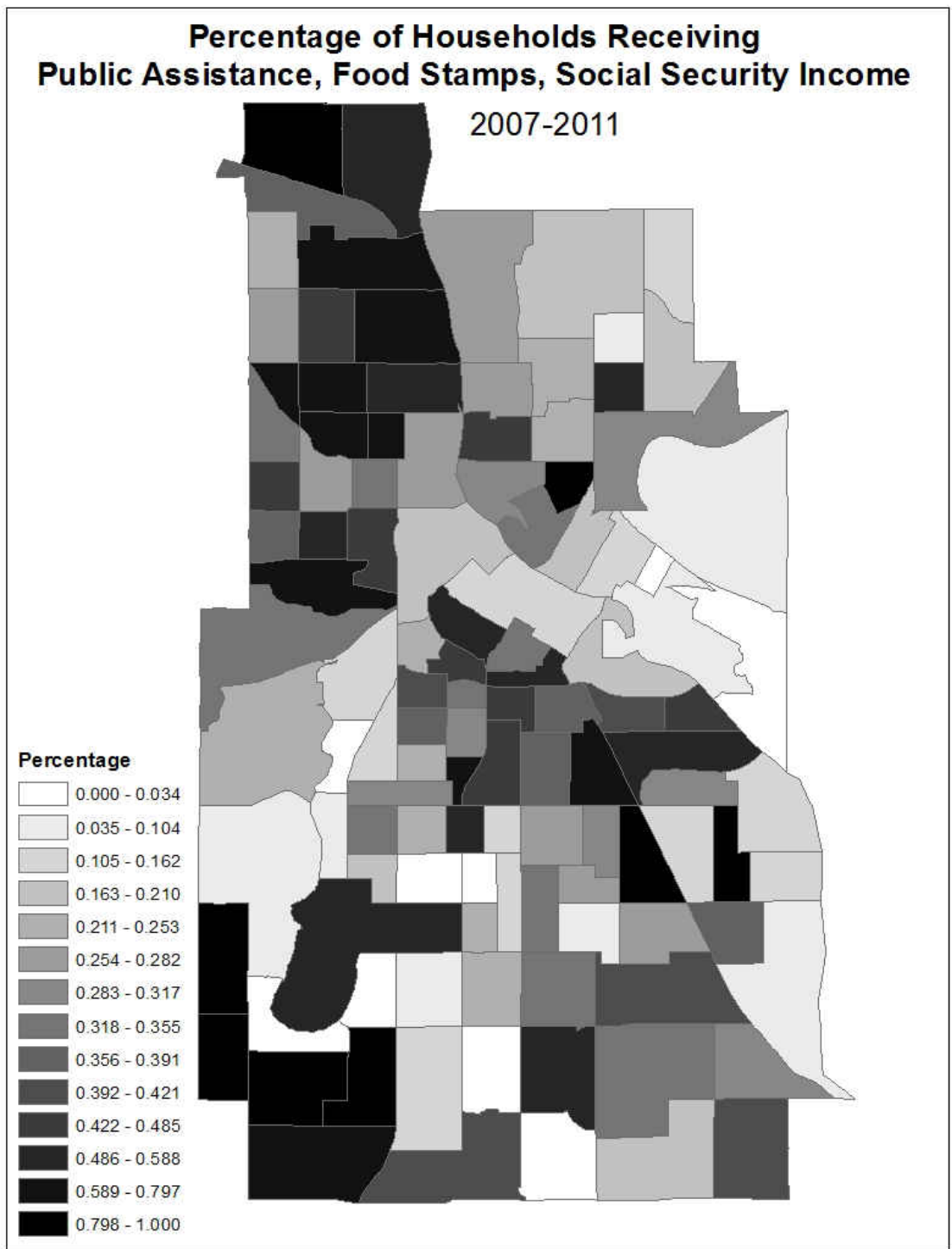
Figure 15. Choropleth Map of Percentage Employed by Government

Percentage Employed by Government

2007-2011

Percentage
	0.012 - 0.051
	0.052 - 0.080
	0.081 - 0.098
	0.099 - 0.111
	0.112 - 0.129
	0.130 - 0.146
	0.147 - 0.166
	0.167 - 0.208
	0.209 - 0.267
	0.268 - 0.409
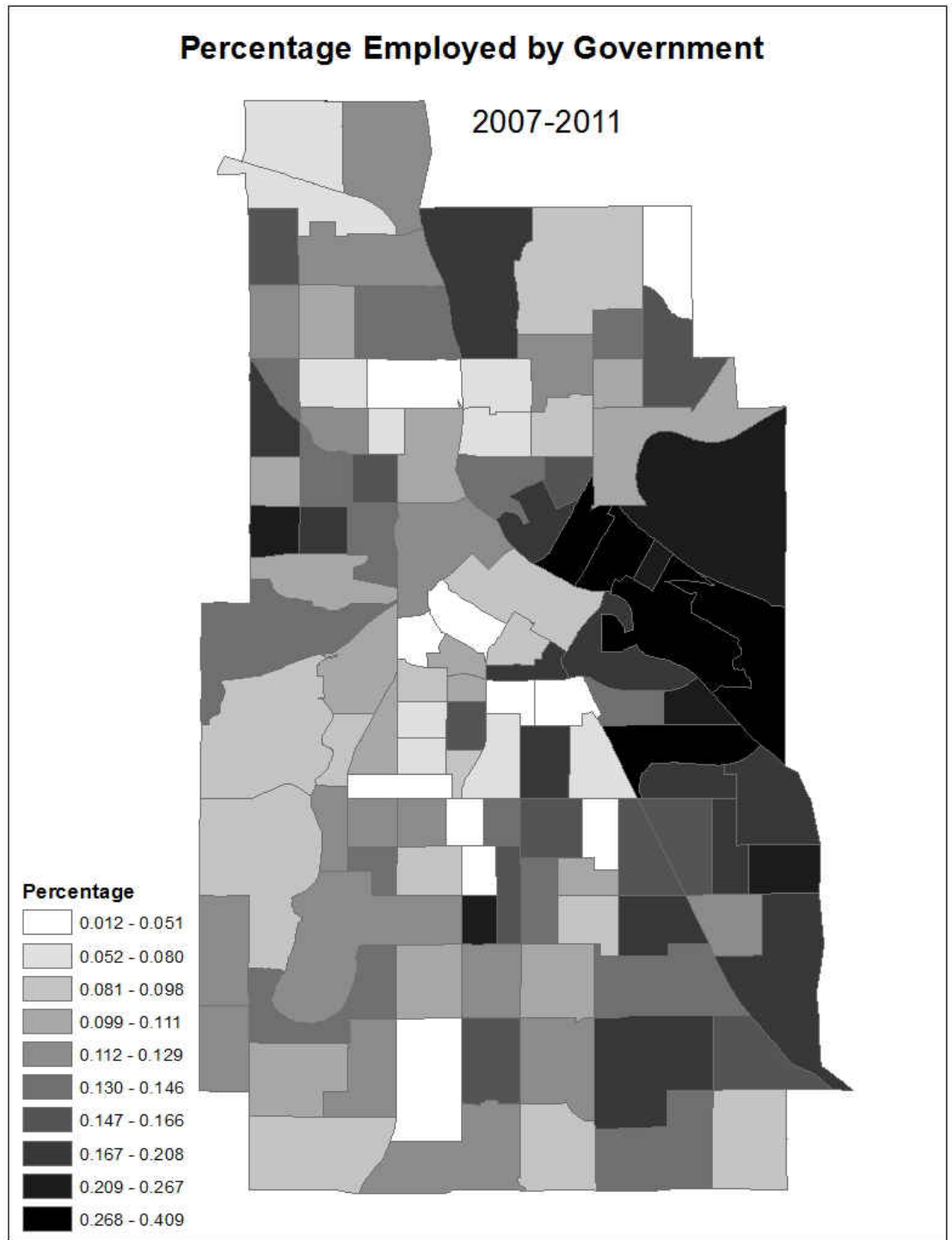
terms (economy x education, economy x family, and economy x polity). Variable selection is based upon those used in prior research. The Gini index and median annual household income variables serve as indicators of the economic institutions. While median annual income is a measure of absolute deprivation, the Gini index of income inequality provides a measure of relative deprivation and has been utilized in many past studies (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Piquero & Piquero 1998; Savolainen, 2000; Maume & Lee, 2003; Bjerregaard & Cochran, 2008). The percentage of the adult population having less than a high school education was selected as an indicator of the education institution, following prior studies (Piquero and Piquero, 1998; Schoepfer & Piquero, 2006). The percentage of the population that is divorced is included as an indicator of the family institution, following its inclusion in past studies (Chamlin & Cochran, 1995; Hannon & DeFronzo, 1998; Bjerregaard & Cochran, 2008). The percentage of the population receiving public assistance, food stamps, or social security funds is utilized as an indicator of the polity institution, following prior research that explored decommodification and welfare expenditures (Messner & Rosenfeld, 1997; Hannon & DeFronzo, 1998; Piquero & Piquero, 1998; Batton & Jensen, 2002).

In examining interaction effects, indicator variable values were mean centered to address multicollinearity concerns, following prior studies (Piquero & Piquero, 1998; Savolainen, 2000). *Table 2* contains results from OLS interaction analysis based upon inclusion of median annual household income as an indicator of the economic institution; whereas, *Table 3* contains results based upon Gini index values as an indicator of the economic institution. In each table, various models are performed to examine the contribution of each interaction, or cross-product, term. Model 1 contains only the main effects of the indicator variables, without interactions. Models 2 through 4 indicate the unique contributions of each interaction term. Model 5 simultaneously contains all indicator variables, as well as all three interaction variables.

As depicted in Model 2 in Table 2, the first interaction term for the effect of economy-education is examined. It is hypothesized that the effect of median income on homicides will

vary according to the percentages of adults with less than a high school education. In other words, where there is a low percentage of adults with less than a high school education, low median incomes should have less impact on homicide rates. Analysis indicated that the interaction was not statistically significant.

Model 3 examines the interaction term for economy-family. According to IAT, the effect of low median income on homicides should be diminished where there are lower percentages of divorced individuals. The economy-polity interaction is examined in Model 4. Theoretically, higher levels of public assistance, food stamps, and social security disbursements should reduce the effect that low income levels have on homicide rates. Model 5 simultaneously contains indicators of all four institutions, as well as all three interaction terms. None of the interaction terms in these models reached statistical significance.

Table 2. OLS Regression Analysis of Interaction Effects –Annual Median Household Income

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Median Income	-5.343	-2.629	-4.788	-4.426	-1.485
Less Than High School	**1.691***	**2.294***	**1.698***	**1.676***	**2.378***
Divorce	-.678	-.594	-.405	-.385	-.405
Public Assistance	.354	.346	.337	.349	.349
Economy x Education		4.432			5.110
Economy x Family			2.659		-1.601
Economy x Polity				-1.869	-2.167
R^2	.223	.238	.226	.239	.257

Values are unstandardized coefficients.
* $p < .05$

Additional interaction analyses were conducted by substituting Gini index values as the measure of the economic institution, instead of median annual household income. Recall that a Gini index score of 0 would mean all households within a census tract have an equal share of income; whereas, a Gini index value of 1 would mean one household has all of the income within a census tract, indicating the highest level of inequality. It is hypothesized that higher Gini index values will be related to higher homicide rates. The results are depicted in Table 3, following the

same model compilation as that in Table 2 relative to income.   As with the income models, using

Gini index values as an indicator of the economic institution did not produce any statistically

significant interactions.

Table 3. OLS Regression Analysis of Interaction Effects – Gini Index

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Gini Index	1.490	1.323	1.510	1.504	1.287
Less Than High School	**2.111***	**2.181***	**2.098***	**2.068***	**2.156***
Divorce	-.518	-.526	-.456	-.458	-.486
Public Assistance	.415	.413	.419	.409	.404
Economy x Education		-5.662			-7.128
Economy x Family			-1.907		.827
Economy x Polity				4.606	5.222
R^2	.264	.268	.265	.277	.283

Values are unstandardized coefficients.
* $p < .05$

As depicted in Model 2 in Table 3, the first interaction term for the effect of economy-

education is examined. It is hypothesized that the effect of a high Gini index value on homicides

will vary according to the percentages of adults with less than a high school education.   In other

words, where there is a low percentage of adults with less than a high school education, high Gini

values should have less impact on homicide rates. The economy-education interaction term was

not statistically significant.

Model 3 examines the interaction term for economy-family. According to IAT, the effect

of high Gini Index values on homicides should be diminished where there are lower percentages

of divorced individuals. The economy-polity interaction is examined in Model 4. Theoretically,

higher levels of public assistance, food stamps, and social security disbursements should reduce

the effect that high Gini index values have on homicide rates. Model 5 simultaneously contains

indicators of all four institutions, as well as all three interaction terms. None of the interaction

terms in these models reached statistical significance.

As noted in Tables 2 and 3, having less than a high school education was positive and

significant in all interaction models. This suggests that areas having higher levels of individuals

without a high school education are more likely to experience high homicide rates. With the exception of this indicator of the education institution, none of the indicators, including interaction effects, of the other institutions were found to be significant predictors of homicide using either the Gini index or median income as indicators of the economic institution. Consequently, this study does not find statistical support for a moderation hypothesis using the specific operationalizations as set forth above. The effects of the economic institution, as measured by annual median household income and Gini index, on homicide rates did not vary in a statistically significant manner depending upon the strength of non-economic institutions.

Additional Exploratory Analysis

Given that no significant interaction effects were found, further exploratory analysis was conducted utilizing exploratory, OLS, and geographically weighted regression tools within geographic information system (GIS) software. Before advancing to OLS or GWR analysis, one needs to determine which variables would soundly and meaningful contribute to model building. Beyond theoretical considerations, the exploratory regression tool within ArcGIS provides considerable assistance in this regard. This tool computes all possible correlations between all of the selected variables.

In doing so, it also performs a number of tests that indicate whether there are any potential models that meet minimum passing standards. These tests include the Jarque-Bera, Adjusted R^2, Koenker (Breusch-Pagan), variance inflation factor, and spatial autocorrelation. Passing threshold tests in exploratory regression is meant to strengthen subsequent model building in both OLS and GWR. While these steps may not be standard practice in the social sciences, they are supported within the realm of geographic sciences.

Esri (2010), the company who designs and produces ArcGIS software, provides many tools to assist researchers in interpreting these tests. For example, it posits that a statistically significant Jarque-Bera score indicates that model predictions are biased. In other words, the residuals are not normally distributed. To pass the JB test, its value must be more than .05.

111

For this study, the minimum Adjusted R^2 was set at .4, which is more relaxed than the Esri-recommended .5 minimum. Some researchers may argue that this modified minimum setting is still too stringent for the social sciences; however, the relaxed setting did allow for an increase in the likelihood of obtaining a passing model, despite the downward pull from a skewed dependent variable. An R^2 value indicates how much of the variance in the dependent variable is explained by a specific model. In other words, in this research, if a model did not explain at least 40% of the variance in homicide rates, it would not be considered as a passing or sound model. Although the interpretation of Adjusted R^2 is very similar to that of R^2, the former is preferred since it takes into account the complexity of the model, including the number of variables used.

Maximum VIF values were set at 7.5, which is the value recommended value by Esri. VIF relates to the redundancy, or multicollinearity, amongst independent variables. Although consensus is lacking, some researchers have offered a VIF of 10 as the maximum threshold (Myers, 1990; Stucky, 2003; Pallant, 2007), while others suggest a more restrictive maximum VIF of 4 (Champion & Hartley, 2010).

The Koenker (also known as Breusch-Pagan) test addresses the concern of non-stationarity or heteroskedasticity, and its limit was set to the Esri-recommended maximum of .05. A value that is statistically significant (>.05) indicates that the model is not consistent and, therefore, is not reliable. The spatial autocorrelation threshold was set to the Esri-recommended minimum value of .10, which signifies that regression residuals are distributed randomly and are not clustering.

Initial exploratory regression included the homicide rates of all 116 census tracts and values for all 13 independent variables. This did not produce any completely passing models, based on the criteria described in the paragraphs above, including low Breusch-Pagan and Adjusted R2 values. Even relaxing the minimum recommended criteria was not fruitful. None of the variable combinations yielded a sufficiently high Adjusted R^2 value, even though obvious

112

patterns could be discerned from univariate choropleth maps. An attempt to use homicide counts, rather than rates, also failed to produce any passing models.

As previously noted, 48.3% (56) of census tracts experienced no homicides during the five-year study period. Further, just over 60% of all census tracts had either zero or one homicide during the study period. This produced a drastic skew in the distribution of homicide rates. An examination of the scatterplots revealed that the inclusion of zero-homicide tracts was pulling the regression line downward. To counter the skew, homicide rates were logged transformed. Exploratory regression was attempted again, using the new logged homicide rates. This still did not produce a passing model, leading to the conclusion that neither OLS nor GWR would provide meaningful findings when including all census tracts.

Remaining Analysis Limited to Census Tracts That Experienced Homicides

The issue of heavily skewed rare event data was an obvious limitation of this study. To contribute to the broader realm of homicide study, this concern was addressed by hereafter focusing solely on those 60 census tracts that experienced at least one homicide within the study period. Certainly, subsequent findings do not directly address the original research questions. However, there may still be value to future researchers to highlight some of results of this later limited analysis.

A Local Moran's I ($z = 6.87$, p. < 01) indicated that homicides continued to be clustered, and not the result of random chance, across the census tracts experiencing homicides. Thus, it is appropriate to continue to the next steps. Recall that this analysis should be one of the first steps in spatial analysis, and usually you would want to find clustering, not randomness. For example, in the current study, if homicides were distributed equally across all census tracts, it is unlikely that the model would produce significant relationships between crime and institutional measurements.

In exploratory regression, the exclusion of the 56 census tracts with zero homicides during the study period increased the Adjusted R^2 value from .228 to .435, which met the stringent .40 threshold set for a passing model. Recall that exploratory regression computed correlations for all possible combinations of the 13 independent variables, yielding 63 potential models in the current study. This process produced two passing models, meaning the models passed all five of the threshold tests previously mentioned. Both passing models included the variables of less than high school education, divorce, single female-headed household, ability to speak English, and college enrollment. One of these models also included median income.

The "summary of variable significance" output table produced by ArcGIS provides a plethora of information to strengthen the modeling-building process, including indications of which variables are most significant and to what extent the independent-dependent variable relationship is positive or negative in direction. This summary relates to all of the 63 possible variable combinations, not just passing models. For example, the divorce and single female-headed household variables were significant in 100% of all possible models tested. Having less than high school education was significant in 90.62% of the models. Being enrolled in college or graduate school was only significant in about half of the models (53.12%). These three variables were all highly consistent in direction, each exhibiting positive relationships in 100% of the models. Median income was found to provide significant contribution in only 9.38% of all combinations, with about one-third of those being in a negative and two-thirds being in a positive direction. English speaking ability presented a very mixed result, being significant in 43.75% of variable combinations. Further, there was a large split in direction, with 53.12% being

negative and 46.88% being positive. Consequently, to avoid these ambiguities in interpretation, it was decided that English speaking ability would be eliminated from future models.

There were no multicollinearity violations, as evidenced by obtained VIF values under 4. Higher values would have indicated a redundancy amongst independent variables. To determine which of the two exploratory regression models provided the best fit, the R^2 and AICc values of each were compared. The final model was selected based on the fact that it had a higher R^2 and a lower AICc, as this indicates a better fitting model. The selected model included the independent variables of less than high school education, divorce, single female-headed household, college enrollment, and median annual income.

Ordinary Least Squares Regression

After a passing model was identified through exploratory regression, the research could reasonably progress to the next level of analysis. The five relevant independent variables and the logged homicide rates across those census tracts that experienced at least one homicide during the study period (hereinafter referred to as homicide-experiencing census tracts) were analyzed using OLS. The results are noted in *Table 4*.

Output indicates that the model is performing well. A non-significant Koenker studentized Bruesch-Pagan statistic (p = .138) suggests that the model is geographically consistent. Hence, nonstationarity and heteroscedasticity were not detected and it appears appropriate to proceed with further analysis. Accordingly, the Joint F-Statistic (prob. (>F), (5, 54) degrees of freedom: .000001*) was chosen for examination, and it

115

Table 4. OLS Regression Analysis – Homicide-Experiencing Census Tracts

Independent variable	Unstand. Coefficient (*b*)	Standard. Coefficient (B)	t-Statistic	Prob.	VIF	Part Corr²
Income	0.000006	.233	1.718	.092	1.897	
High School	1.385	.313	2.244	.029*	1.995	.0488
College	0.315	.180	1.549	.127	1.381	
Divorce	3.049	.321	3.017	.004*	1.165	.0888
Single Female	0.839	.399	3.454	.001**	1.368	.1163
N=60 R²=.4743 Adjusted R² = .4256 *=statistical significance (p < 0.05) **=statistical significant (p ≤ 0.001)						

showed to be a trustworthy measure of overall model significance. Therefore, variables within this model are considered effective. The Jarque-Bera statistic (.627) was also non-significant, indicating residuals were normally distributed and the model was unbiased. Finally, a Global Moran's I computation was conducted, confirming that the residuals were not significantly clustered.

Tolerance values ranged from .501 to .858, indicating that multiple correlations between variables did not appear to be an issue. Variance inflation factor (VIF) values ranged from 1.165 to 1.995, providing assurance that multicollinearity was not a concern. A visual inspection of the plot comparing residual to predicted values displayed a random pattern, indicating the model was properly specified. A systematic pattern in residuals would have suggested violation of assumptions, such as a curvilinear relationship.

The R^2 value for this OLS model was .474. In other words, approximately 47% of the variance in homicide rates in census tracts experiencing homicides was explained by the model that included the five independent variables of less than high school education, enrolled in college, divorced, single female-headed households and median

household income. Further, the Adjusted R^2 value, which takes into account model complexity, was .426. The income and college enrollment variables did not reach statistical significance.

A brief analysis of the same data was also conducted using SPSS software. The analysis-of-variance output table further indicated that the model achieved statistical significance ($p = <.001$) and implied that there was a linear relationship between the dependent and independent variables. Next, the coefficients output table was examined to determine which variables were contributing to the prediction of homicide rates in those tracts that experienced homicides. Standardized Beta values allow researchers to compare independent variables as though they were measured on the same scale. In this study, the single female-headed household variable exhibited the strongest unique contribution to the model (Beta = .399, $p < .05$). The divorced (Beta = .321, $p < .05$) and less than high school education (Beta = .313, $p < .05$) variables followed respectively in a predictive contribution. Median income and percent enrolled in college or graduate school did not reach statistical significance. Squaring part correlations values revealed the unique contribution that each variable makes to the explanation of homicide rates. This measure excludes any overlap or shared variance between the independent variables. The single female-headed household variable uniquely explained 11.63% of the homicide rates, while the divorced and less than high school education variables uniquely explained 8.88% and 4.88% respectively. In this OLS model, the single female-headed household variable was the best predictor of homicide rates.

Geographically Weighted Regression

As noted above, exploratory and OLS regression was conducted using data only from those census tracts that experienced at least one homicide. The next step is to analyze the same data using geographically weighted regression techniques found in ArcGIS software. Recall that GWR is a local model that facilitates examination of variable relationships at the census tract level, versus the global OLS model that addresses the relationship on a city-wide level. GWR accomplishes this by utilizing a separate regression equation for each feature (Esri, 2010), in this case each census tract. Thus, each census tract will have its own unique coefficient value, indicating the strength of the relationship between the homicide rate and each independent variable. The geographical distribution of these values can be visualized using coefficient surface maps.

In conducting GWR, the researcher has the option to customize analysis specifications, such as the kernel type (fixed or adaptive) and bandwidth (Akaike's Information Criterion, cross-validation, or some other user-specified value). In making this decision, many combinations of these settings were explored to determine the best-fitting model. Utilizing an adaptive kernel allows the bandwidth to fluctuate depending upon the density of data points (see Fotheringham, et al., 2002, p. 46). This process is further influenced by the AICc bandwidth which allows GWR to determine the optimal number of neighboring data points to consider within the analysis. This means the kernels were allowed to adapt according to the density of nearby homicides; the census tract's regression equation was based not on a fixed, but rather an adaptive, distance.

Where homicides are sparse, the kernels are small. When homicides are dense, the

kernels are larger.

As recommended by Esri, the GWR attribute, or data output, table was inspected

to ensure that condition numbers were not larger than 30. Values over 30 would have

indicated possible local multicollinearity concerns. A Global Moran's I was also

performed on GWR residuals to ensure that these values were distributed randomly (not

clustered) and that the model was not misspecified. The GWR with the lowest AICc

value of 45.36 was eliminated, as it exhibited clustering of residuals. The GWR model

selected to advance to the next stages of analysis had an AICc value of 47.73. After

completing these initial steps, it was appropriate to move forward to the comparison of

OLS and GWR models.

Comparison of GWR and OLS Results

After effectively completing both OLS and initial GWR analyses, the next task is

to compare the results of each and determine which is the most appropriate method to

use. Per Fotheringham, et al. (2002, p. 96), if the AICc value from the OLS model is

lower than that of the GWR model, then the extra effort of conducting GWR may not be

warranted. In this study, the AICc values produced by OLS (45.356) and GWR (47.726)

are similar. Likewise, the Adjusted R^2 values between the two approaches were almost

identical (.426 and .428, respectively). Nonetheless, GWR output is explored to gain a

sense of geographical relationships within this research.

Mapping of Residuals

The residual maps for both OLS and GWR are included below as *Figures 16 and*

17, respectively. These figures indicate areas of overprediction (blue) and

Figure 16. OLS Residuals
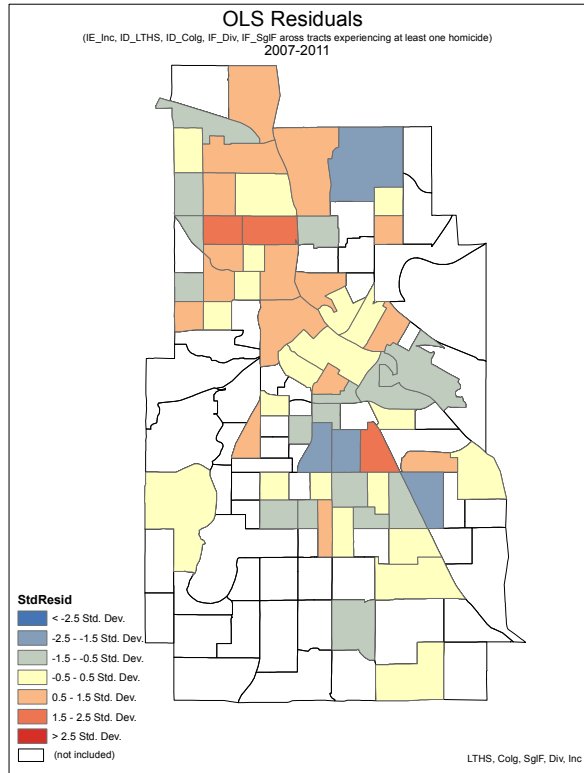
Figure 17. GWR Residuals
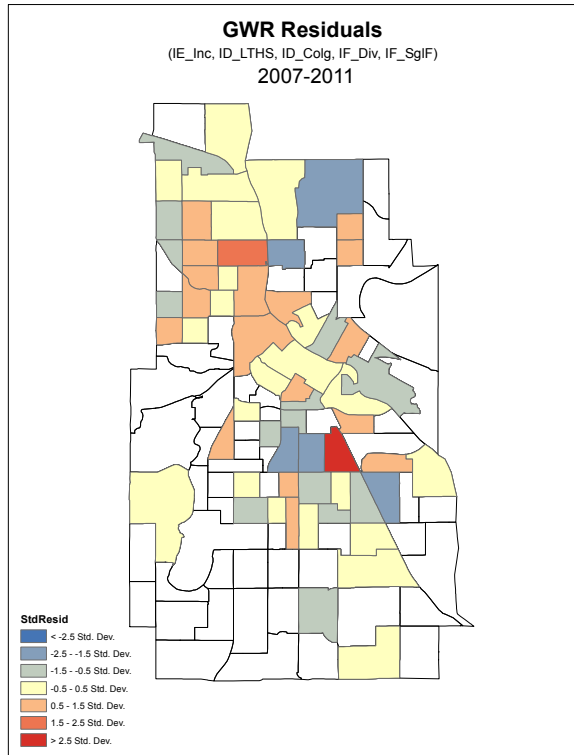
underprediction (red) within the regression model. This means the actual values are either higher (red) or lower (blue) than what the model estimated. In other words, it would be expected that the model in this study would underestimate or underpredict homicide rates in areas that have positive (red) residuals. Areas in yellow are those where the model is fitting well. Ideally, you will have a distribution with no patterns or clustering of residuals, as this would indicate that the model could be missing a key independent variable(s). As desired, a Global Moran's I value of -.0012 (p=.795) confirms that spatial autocorrelation was not detected and the model is unbiased; in other words, GWR residuals were randomly distributed.

It should be noted that OLS and GWR residual maps should not be directly compared; rather, each should be reviewed independently. Recall that the adaptive kernels used in GWR were allowed to vary according to the density of nearby homicides. Since OLS and GWR analyses were based on different kernel sizes, these comparisons would be invalid (Fotheringham et al., 2002, p. 45).

Discrete reviews of the OLS and GWR residual maps indicate that areas with some of the highest homicide rates also exhibit over- and under-prediction, suggesting the model is not performing uniformly in these census tracts. Examining only the census tracts with the ten highest homicide rates, the OLS and GWR models are either performing well or under-predicting homicides. Over-prediction is not an issue in those areas. While the overall model is performing acceptably and it is not unusual or alarming to find random distribution of over- and under-predictions, it hints there could be room for improvement in future research. It is unlikely a perfect model would ever be developed; however, if one can determine what variable(s) may be lacking, explanatory

power would increase. In other words, while these maps do not produce any substantial concerns for the current research, they can be used to enhance model development in future research.

Local GWR R^2 values are shown in *Figure 18*. This map shows where the model is performing best, with the darker coloring being preferred. Areas in white are census tracts that did not experience any homicides during the study period. The GWR model in this study better predicts homicide rates in northwestern Minneapolis than it does in the southern half of the city. Future research could focus on why the model is performing differently and what variables may differentially affect those areas.

GWR condition values are shown in *Figure 19*, indicating the stability of the model. Lower values (indicated by a darker color) are preferred. This map shows that stability is strongest in the northeastern and northern census tracts; therefore, there is more confidence in the ability of the model to predict homicides in those areas.

As is typically the goal in research, it may be beneficial to produce models that better explain homicides across all tracts. Perhaps even more beneficial may be the examination of each geographic area experiencing high homicides in order to determine, more specifically, what additional variables are most relevant to those specific environments. This has the potential to produce more effective local-level policy and decision-making.

GWR Coefficient Raster Surfaces

OLS is considered to be a global model; whereas, GWR is a local model. Fotheringham, et al. (2002, p. 51) posited that "global values are nothing more than spatial averages that can hide a great deal of information about the process being

Figure 18. GWR Local R^2 Values
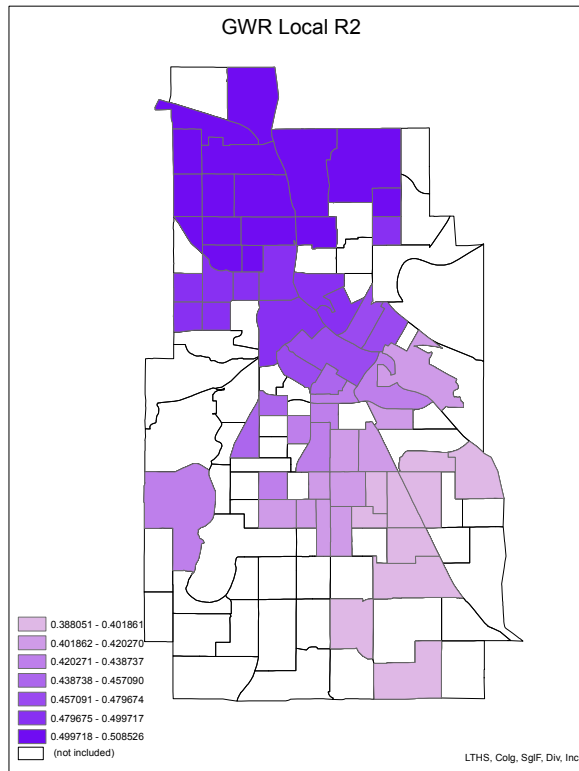
Figure 19. GWR Conditions Values
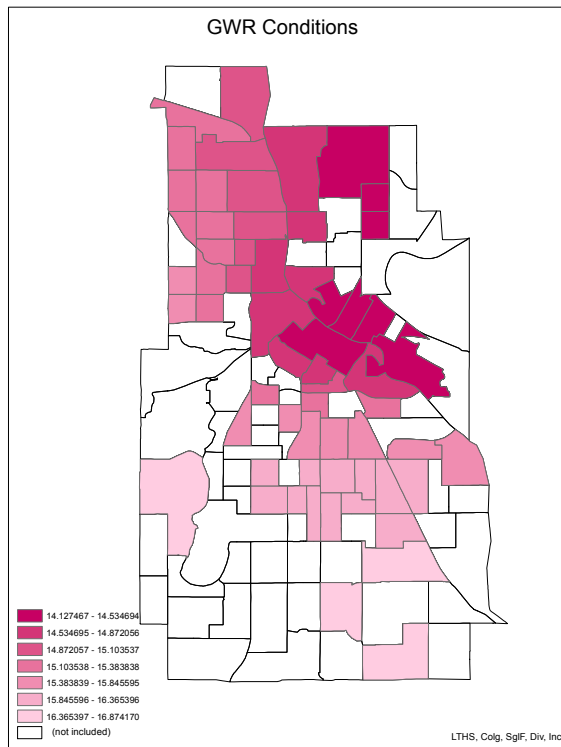
studied". Although OLS produces global coefficient values relative to the relationship between the dependent variable and each of the independent variables, these are singular values across the entire study area. GWR does not rely solely upon such a singular value. Rather, GWR produces local coefficient values for each census tract, providing much richer spatial information.

In GWR, these local coefficient values are used to create coefficient raster surface maps for each independent variable included in the model, as shown in *Figures 20 through 24*. These maps show changes and aerial variations across the study area, providing richer information than that produced by OLS. For this particular study, coefficients are larger in census tracts having darker coloring. In these areas, the independent variable is a strong predictor of homicide rates. Conversely, in census tracts that are shaded in light colors, the independent variable is not a strong predictor. For instance, the percentage of the population that is divorced is a stronger predictor of homicide rates in northern Minneapolis compared to those census tracts located in the southern area of the city. Again, areas in white are census tracts that did not experience any homicides during the study period and were, therefore, excluded from analysis.

A closer examination of the raster coefficient surface maps reveals some interesting differences amongst the census tracts with the highest homicide densities. Having a high percentage of adults who were divorced or who had less than a high school education appears to be a strong indicator of homicides particularly in the northern areas. These variables are comparatively weaker predictors of homicide in the south. Having more children residing in single female-headed households had highest prediction values around the center of the city, in and around the downtown (central) area. As one moves

Figure 20. Map of Income Coefficients
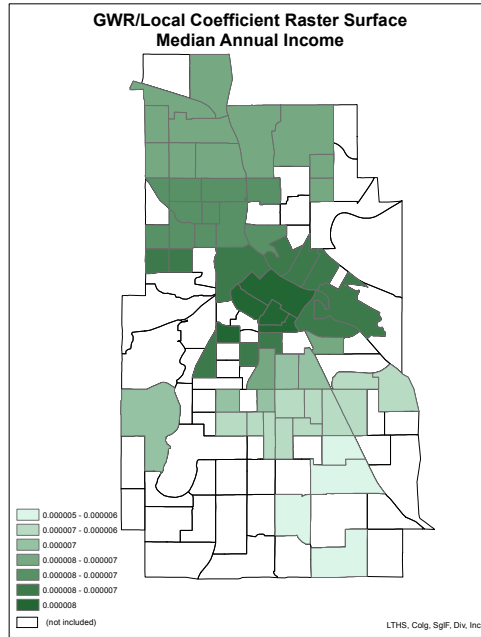
Figure 21. Map of High School Education Coefficients

GWR/Local Coefficient Raster Surface
Median Annual Income

0.000005 - 0.000006
0.000007 - 0.000006
0.000007
0.000008 - 0.000007
0.000008 - 0.000007
0.000008 - 0.000007
0.000008
(not included)

LTHS, Colg, SglF, Div, Inc

GWR/Local Coefficient Raster Surface
Less Than High School Education

1.186668 - 1.211867
1.211868 - 1.247389
1.247390 - 1.283886
1.283887 - 1.347049
1.347050 - 1.474026
1.474027 - 1.550673
1.550674 - 1.652521
(not included)

LTHS, Colg, SglF, Div, Inc

Figure 22. Map of College/Graduate School Non-Enrollment Coefficients
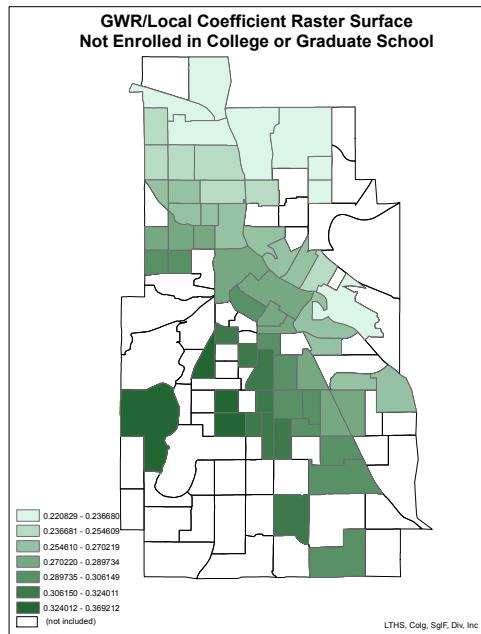
Figure 23. Map of Single Female-Headed Households Coefficients

GWR/Local Coefficient Raster Surface
Not Enrolled in College or Graduate School

0.220829 - 0.236680
0.236681 - 0.254609
0.254610 - 0.270219
0.270220 - 0.289734
0.289735 - 0.306149
0.306150 - 0.324011
0.324012 - 0.369212
(not included)

LTHS, Colg, SglF, Div, Inc

GWR/Local Coefficient Raster Surface
Single Female-Headed Household

0.760846 - 0.784738
0.784739 - 0.803818
0.803819 - 0.815783
0.815784 - 0.828881
0.828882 - 0.840831
0.840832 - 0.853796
0.853797 - 0.870836
(not included)

LTHS, Colg, SglF, Div, Inc

125

Figure 24. Map of Percentage Divorced
Coefficients

GWR/Local Coefficient Raster Surface
Percentage Divorced

2.570754 - 2.696981
2.696982 - 2.803784
2.803785 - 2.959069
2.959070 - 3.100187
3.100188 - 3.249902
3.249903 - 3.362717
3.362718 - 3.465750
(not included)

LTHS, Colg, SglF, Div, Inc
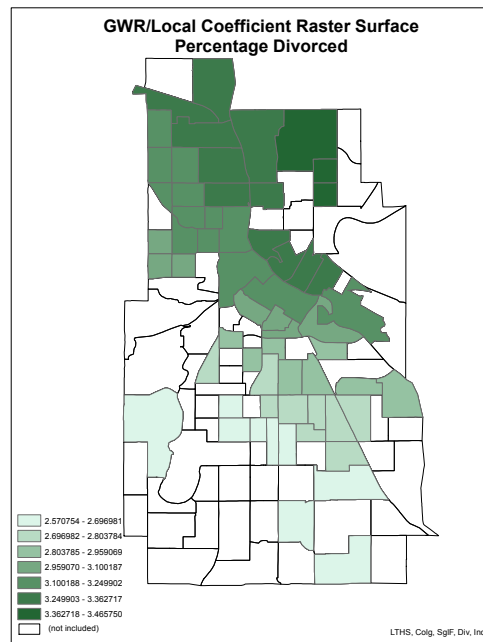
outward in a radius fashion, the prediction strength decreases. All of the high homicide
areas noted above are similarly situated on this variable.

OLS regression analysis in this study indicated that there were three independent
variables that reached statistical significance in homicide-experiencing census tracts.
Recall that OLS provides one coefficient value for all census tracts, single female-headed
households (b =.839, p<.05), divorce (b=3.049, p<.05), and less than high school
education (b=1.385, p<.05). To broaden the interpretation of GWR output regarding
these three variables, additional raster surface coefficient maps are shown in *Figures 25
to 27*. These are similar to those depicted in *Figures 20 to 24* above; however, here the
coefficient values are labeled directly upon the map within each census tract.
Additionally, imposed upon these raster coefficient surface maps is the homicide density
(hotspot) layer that was previously depicted in *Figure 3*. This should assist in

126

Figure 25. Composite Map of Percentage of Children Residing in Single
Female-Headed Household Coefficients
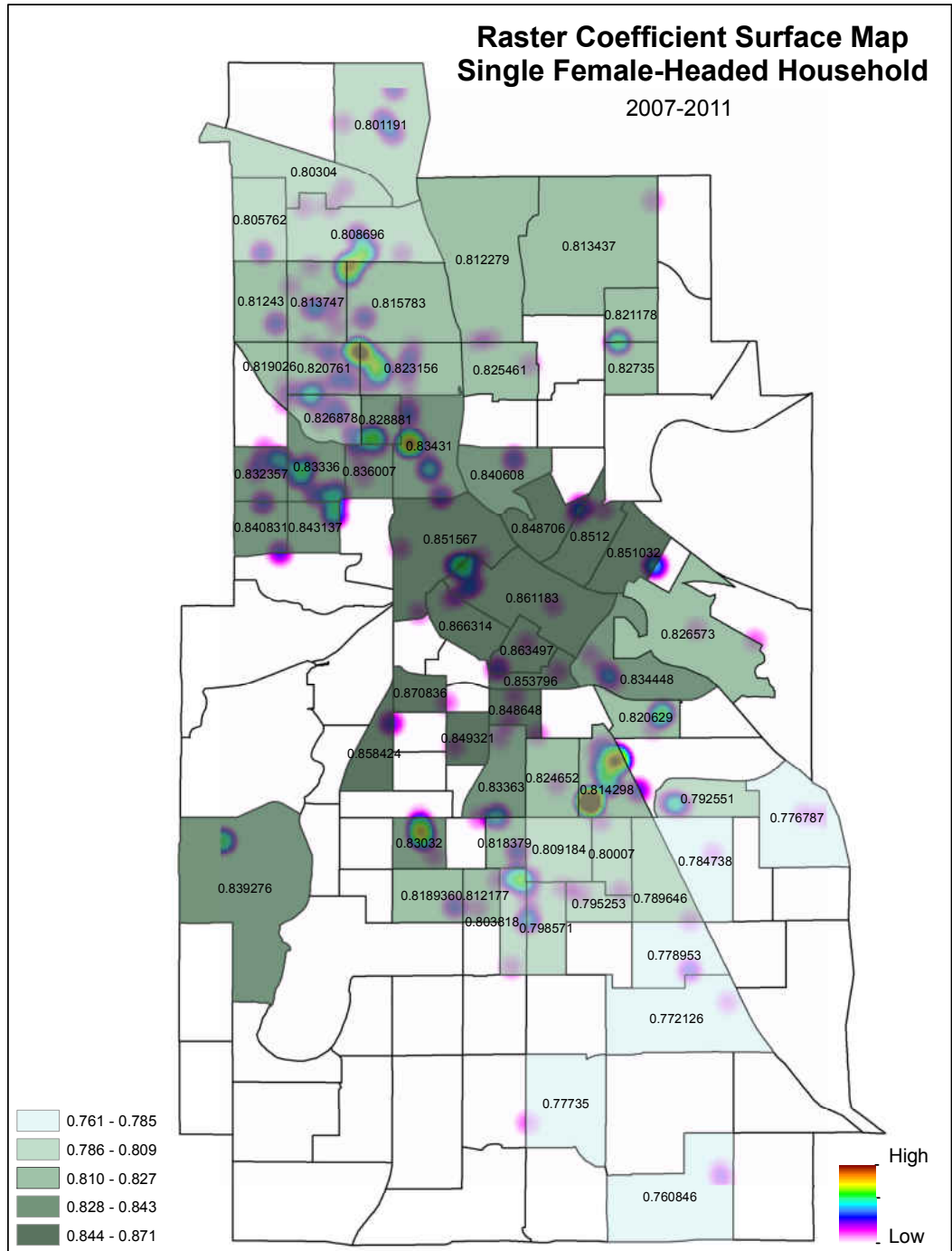
Figure 26. Composite Map of Divorced Coefficients

Raster Coefficient Surface Map
Percentage Divorced
2007-2011

3.325223

3.265915

3.227984

3.284084

3.362717

3.440926

3.197021 3.233686   3.289711

3.46575

3.17165   3.20908   3.273875

3.344944

3.457412

3.18620 3.225756

3.249902

3.094938   3.141827 3.184038

3.299393

3.046007 3.090899

3.18517

3.306755 3.336441

3.358536

3.204551

3.100187

3.193724

3.078052

3.007851

3.08109

2.888342

2.918517

2.959069

2.839061

2.752349

2.826374

2.803784

2.845275

2.852374

2.858849

2.696981

2.737534 2.752543 2.766754

2.786739

2.570754

2.666288 2.688678

2.759084

2.683996 2.690865

2.722218

2.710491

2.677522

2.618228

High

2.611846

Low

2.571 - 2.738
2.739 - 2.919
2.920 - 3.142
3.143 - 3.299
3.300 - 3.466

Figure 27. Composite Map of Less Than High School Education
Attainment Coefficients

**Raster Coefficient Surface Map
Less Than High School Education**
2007-2011

1.652521

1.643535

1.628151

1.60873

1.564686

1.581259

1.589168 1.580274 1.565094

1.507737

1.550673 1.53909 1.520633 1.498734 1.465172

1.503318 1.488795

1.452715

1.474026 1.466451 1.447899 1.403924

1.425608 1.410201

1.340639
1.347049 1.301165

1.265554

1.246523

1.240134

1.211518

1.196249

1.198523 1.21091

1.186668

1.206706

1.22901

1.207639

1.199639

1.229585

1.237981

1.255062

1.221938

1.267013

1.223955 1.235209 1.24326 1.250902

1.263

1.25956

1.211867

1.233483 1.240054

1.255119

1.247389 1.252083

1.268769

1.274559

1.269609

	1.187 - 1.233
	1.234 - 1.301
	1.302 - 1.426
	1.427 - 1.539
	1.540 - 1.653

High

Low

1.283886

understanding the relationship between prediction strength of the independent variables

in conjunction with where homicides are most significantly clustered.

Table 5 presents the coefficient values of the three significant independent

variables for the census tracts with the ten highest homicide rates. The coefficients are

the same values as those presented in the maps, *Figures 19 to 21*.

Table 5. GWR Coefficients in Census Tracts with 10 Highest Homicide
          Rates

Census Tract #	Coefficients (GWR)		
	Single Female-Headed Households (Average: .822)	**% Divorced (Average: 3.027)**	**% Less Than High School Education (Average:1.356)**
1023	.834	3.250	1.453
1259	.814	2.845	1.238
1016	.823	3.274	1.521
1257	.821	3.209	1.539
1028	.833	3.142	1.466
1021	.827	3.186	1.503
22	.829	3.226	1.489
1004	.809	3.284	1.609
1008	.814	3.234	1.580
32	.841	3.046	1.426

An examination of the single female-headed household coefficient surface map

(see *Figure 25*) indicates that the highest coefficients (.844 to .871) are located in and

around the downtown area (darkest shading at the center of the map), with a ring around

it wherein coefficients range slightly smaller at .828 to .843. In these two areas, the use

of this independent variable performs the best. In census tract 1259 (south central), the

single-female headed household variable is a weaker predictor (.814) of homicide in this

model.

The raster coefficient surface map for percentage divorced (see *Figure 26*) depicts the strength of this variable in predicting homicides to be strongest in the northern, especially north-eastern, census tracts. It is a weak predictor in the southern census tracts. Likewise, having less than a high school education *(see Figure 27)* is a stronger prediction of homicide rates in the northern portion of Minneapolis.

Zooming out to the bigger picture of this study, regression models found two of the family institution variables to be significant in predicting homicides. In fact, OLS indicated that single female-headed households and percentage divorced were the top two predictors of homicide rates. However, as can be deciphered from the GWR coefficient raster surface maps, the ability of these variables to predict homicide rates follow different patterns across the census tracts. The single female-headed household variable is strongest in the downtown (central) area and loses power to predict as it extends outward in a radius fashion. The percentage divorced variable, on the other hand, predicts homicides most strongly in the northern census tracts. This power diminishes as one moves in a southerly direction.

Alternative Models Used to Explore Gender Differences

To explore whether the educational attainment variable was impacted by gender, OLS and GWR models were repeated. Instead of using the percentage of all adults with less than a high school education, this variable was divided into male- and female-relevant variables. While this variable looked promising using exploratory regression, neither the male nor female less than high school variable achieved statistical significance in OLS.

To further ferret out gender differences, variables were created to signify the percentage of each gender that were living in poverty *and* had less than a high school education. Although it could be argued that these variables blur the lines between economic and educational institutions, the goal was to probe whether failure to achieve a high school education produced dissimilar economic pressures for males versus females. In OLS, the inclusion of these variables yielded statistically significant results for males ($p = .019$), but not for females. Consistent with the combined gender variable, the GWR coefficient raster surface map indicated a strong north to south direction. Again, this suggests that the male form of the variable was a stronger predictor of homicides in the northern census tracts.

Recall also that the percentage of children residing in single male-headed households did not reach statistical significance in the initial models. However, results were significant with regard to single female-headed households. Therefore, it appears males and females may experience different pressures or have different relationships with social institutions at the census tract level. The relationship between the family institution and homicides may be stronger regarding females; whereas, the education-homicide relationship may be stronger for males. Given that this research is limited to only those census tracts that experienced at least one homicides, versus all census tracts across the city, and that the difference in values between OLS and GWR was not large, these results need to be viewed very tentatively. However, this exploration could provide intriguing propositions for future research.

Summary of Findings

Revisiting the hypotheses, it was determined that the distribution of homicides
was clustered; therefore, the null hypothesis of a random distribution can be rejected.
Null hypotheses 2 through 4 could not be rejected, as non-economic institutions were not
found to have a statistically significant moderation effect on the relationship between the
economic institution and homicides rates. Hypotheses 5 through 8 hypothesized
significant relationships between the strength of social institutions and the rates of
homicides in Minneapolis census tracts. Since there were no passing models that
included all 116 census tracts, this study fails to reject the null hypotheses. However, by
limiting the statistical analysis to only those census tracts that experienced at least one
homicide, this research did produce statistically significant relationships between
homicide rates and the family and education institutions. This exploration provides a
contribution to the body of literature relating to homicides, institutional anomie theory,
and the utilization of GIS in criminology.

OLS and GWR essentially exhibited equivalent explanatory power for the data
examined in this study, as indicated by the adjusted R^2 and AICc values. In other words,
allowing the modeled relationships to vary spatially in the regression analysis did not, at
least in this case, enhance the ability to explain additional variance in overall homicide
rates. However, GWR raster coefficients surface maps were used to display the strength
of particular family and education variables in predicting homicides within each census
tract, as well as the overall distribution across the city.

Relative to census tracts that experienced at least one homicide, it was found that
three of the original 13 variables had a statistically significant relationship with homicide

133

rates. Two of these were measurements of the institution of family: percentage of

children living in single female-headed households and the percentage of the population

reporting divorced as their marital status. The other was having less than a high school

education, which related to the institution of education. Since the full dataset was not

utilized, findings should be viewed as tentative. Relationships between the independent

and dependent variables are only applicable to census tracts that had homicides; no

inference is made about corresponding relationships within census tracts having no

homicides. With these caveats, it appears that there may be some support, albeit mixed,

for IAT at the census tract level in Minneapolis, Minnesota.

CHAPTER VI

DISCUSSION, LIMITATIONS, AND CONCLUDING COMMENTS

Introduction

This study contributes to existing research by extending examination of the

relationship between homicides and institutions in the context of IAT to the census tract

level, which follows previous research conducted at sub-national levels. This chapter

includes a discussion of key findings in terms of conclusions, limitations, and suggestions

for future IAT study. Overall, higher homicide rates were found to be associated with

higher levels of divorce, the percentage of children residing in single female-headed

households, and census tracts having a higher percent of the population with less than a

high school education. It is also distinctive in that it includes the utilization of GWR to

determine, beyond mere statistical significance, where specific variables have the

strongest predictive power across census tracts.

Messner and Rosenfeld posit that crime, and particularly violent crime, in

America can be explained through Institutional Anomie Theory (IAT), which considers

the relationship between crime and the cultural and structural frameworks of a given

society. The primary cultural component of the theory is comprised of the American

Dream, which instills the belief that all individuals should strive to achieve success and

that such striving will be rewarded, with success being measured in monetary terms. In

contrast to Merton's focus on structural opportunities, Messner and Rosenfeld emphasize

institutions, such as the economy, education, family, and polity as constituting the structural side. They argue that the American Dream allows for and supports a specific arrangement of institutions that is conducive to producing violent crime. More precisely, in America it creates an arrangement where the economic institution dominates all other institutions. When this occurs, the non-economic institutions are less effective at fulfilling social control functions and providing support to members of society. As a result of these roles being weakened and/or unfulfilled, individuals are freed to achieve success through whatever means are necessary, including violent crime.

IAT is an abstract theory that has shown to be quite challenging to test. Further, Messner and Rosenfeld have not provided specific guidance relative to the measuring of institutions, the appropriate units of analysis, or whether non-economic institutions mediate or moderate the effects of the economic institution. In the limited number of studies that have attempted to test IAT, this lack of specificity has led to inconsistent findings. Until the theory has been better specified, empirical tests will likely continue to produce such inconsistencies. The current study provides no exception. That there were numerous variables that did not reach significance is not an unusual finding in IAT research. Like previous studies, the current study finds only limited support for IAT.

Contributions of Census Tract Analysis

Although the origins of IAT are linked to Messner and Rosenfeld's cross-national studies, it has subsequently been applied at the state, county, and city levels. Findings have been inconsistent within and between these units of analysis. The current study is distinctive in that it investigates the applicability of IAT at the census tract level, following previous studies of IAT conducted at subnational levels (Chamlin & Cochran,

136

1995; Hannon & DeFronzo, 1998; Piquero & Piquero, 1998; Stucky, 2003; Maume & Lee, 2003; and Schoepfer & Piquero, 2006).   Messner and Rosenfeld (2007, p.44) themselves suggest that research should focus on the question "why do levels of crime vary across social systems (for example, nations, cities, neighborhoods)?" Messner and Rosenfeld (2007, p. 35) also acknowledge the "struggle for institutional control" occurs at the local level, indicating "local institutions provide order, meaning, purpose, and protection to area residents." This study, therefore, considers each census tract to have its own unique institutional balance, as is the case for nations, states, counties, and cities in other studies.

In supporting subnational units of analysis, Chamlin and Cochran (1995) indicated that states were "adequate" for testing IAT, reasoning that it "focuses on social dynamics that are likely to operate across various levels of social aggregation (cf. Durkheim, 1858b; Messner and Rosenfeld, 1994)". Piquero and Piquero (1998, p. 68) argue "[i]nsofar as the structural level variables operate in a manner consistent with Messner and Rosenfeld across different types of social systems, a test of IAT with state-level data should be sensitive enough to detect differences in the impact of such variables on crime rates." Stucky (2006, p. 1124) further advocated that "future institutional anomie research should focus on *local* variation in the strength of economic and noneconomic institutions", since politics at the local level can have a bearing on violent crime. Shaw and McKay (1942 p. 165), although applying social disorganization theory, discuss the similarity of outlooks that can exist within smaller geographic areas within a particular city and that these attitudes can be sustained in institutions. They posit,

therefore, that the relationships that exist between crime rates and institutions may not be constant across large geographical areas.

Further, Maume and Lee (2003, pp. 1138, 1150) stated that to limit IAT studies to states and nations underestimates "the explanatory power and analytical flexibility of the theory". Given that "smaller aggregate units such as counties also exhibit their own institutional characteristics", they further posit that IAT is a valid theory for use at the local county level (Maume & Lee, 2003, p. 1138). Contrary to Bjerregaard and Cochran (2008), Maume and Lee (2003) argued for county units of analysis by stating state-level analyses may not appropriately address heterogeneity, since it is more likely that homicides occur in urban, as opposed to rural, areas. Additionally, one advantage of utilizing GWR in statistical analyses is that it takes into consideration spatial heterogeneity. Deane, et al. (2008, p. 367) indicated that "[s]patial models address the interdependence of place to partially accommodate the mismatch between the scale of units of observation and the scale of social processes."

Cross-national studies are based on aggregated data, as are census tract level studies. When data is aggregated to the national level, differences within and between smaller geographic areas are lost or obfuscated. While some seemingly argue this is precisely the reason why IAT should not be studied at the sub-national level, this study sets forth an argument that a deeper comprehension of the relationship between institutional structure and homicides can be gleaned only if researchers can discover how and why certain areas are more affected by homicides than others. That is, research should address why high homicide areas vary from low or no homicide areas. Therefore, this does not lead IAT away from its original purpose of explaining why America has

uniquely high homicide rates. To arrive at that overall understanding of the sum of parts, one must first understand the parts.

Recall the analogy of Fotheringham, et al. (2002, p. 1) that knowing national weather averages tells us *something* about the weather in a particular nation. However, it does not allow us to appreciate the temperature or snowfall differences between, say, North Dakota and Florida. Similarly, IAT explains serious crime by telling us something about America's anomic culture and its economically-dominate institutional balance. Subnational application of IAT has the potential to more precisely explain which areas of America are different and why those areas are less able to counterbalance the anomic pressures due to weakened non-economic institutions. Cross-national and subnational studies alike have assumed that culture is a constant across all units in America; everyone is expected to pursue the American Dream. However, the weaknesses of non-economic institutions are not constant across the country, nor are the access to legitimate means. These factors are not constant across census tracts either. It behooves us to understand how and under what circumstance non-economic institutions can impact the relationship between economic dominance and homicide rates.

For example, to say that homicides across the nation are, in part, due to a weakened family institution, tells us something. However, to implement cost-efficient and effective policy changes, policymakers would likely demand more detailed information. Implementing policies to strengthen the family institution with the specific objective of reducing homicides would, statistically speaking, have little or no effect in areas with low or no homicides compared to areas where homicides are densely clustered in space.   With limited taxpayer funds, this precision has value. Large units of analysis,

such as nations, do not provide this meaningful understanding. Census tract units allow researchers to zoom into areas with high homicide density and compare characteristics of those areas to areas with low or no homicide. Limiting the study to census tracts across one major metropolitan city reduced some of the fog of abstractness that surrounds IAT, although it certainly did not eliminate it.

Interactions

Prior IAT studies have indicated the import of considering interaction effects between economic and non-economic institutions (Chamlin & Cochran, 1995; Piquero & Piquero, 1998; Savolainen, 2000; Maume & Lee, 2003; Schoepfer & Piquero, 2006; Bjerregaard & Cochran, 2008). It is hypothesized that non-economic institutions can moderate the relationship that exists between the economic institution and homicide rates. In other words, the effect of the economic institution on homicide rates will vary depending upon the strength of non-economic institutions.

The current study examined the interaction effects between select indicators of economic and non-economic institutions in the explanation of homicide rates using three interaction, or product, terms (economy x education, economy x family, and economy x polity). Variable selection was based upon those used in prior research. The Gini index and median annual household income variables serve as indicators of the economic institutions. The non-economic institutions included in the interaction analysis were education (percentage having less than a high school education), family (percentage of population over 15 years of age who are divorced), and polity (percentage of households receiving public assistance, food stamps and/or social security funds). Contrary to expectations, none of the interaction terms were significant.

While median annual household income is a measure of absolute deprivation, the Gini Index provides a measure of relative deprivation and has been utilized in many past studies (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Piquero & Piquero 1998; Savolainen, 2000; Maume & Lee, 2003; Bjerregaard & Cochran, 2008). Interaction models based upon the

Gini Index produced higher R^2 values than the models utilizing median annual income as an indicator of the economic institution. In other words, at least with the variables used in this analysis, non-economic institutions appear to have more influence on the relationship between the economic institution and homicide rates when relative, as opposed to absolute, deprivation is the economic indicator.

As discussed in further detail in a section below, there are at least two potential reasons for the lack of finding statistical significance in the interactions. One reason pertains to the skew that results from rare event (homicide data), where the numerous census tracts with zero or one homicides is distorting the data and diluting the relationship. The other reason relates to operationalization sensitivities, especially those relevant to smaller units of analysis.

It may be that measures are not specific enough to produce statistical significance. Hypothetically, census tracts having a low percentage of divorced individuals may somewhat contribute to the ability of the family institution to moderate the linkage between the economic institution and homicide rates; however, it may be more effective to measure *how* divorce rates impact the strength of the family institution. In other words, what is needed is greater clarity and validity when deciding how to measure institutions.

It is not altogether surprising that statistical significance of interactions was not achieved in the current study. Most prior research also produced mixed results with regard to interactions. For example, of the 12 interaction tests by Piquero and Piquero (1998), only five were found to be statistically significant. Savolainen (2000) was successful in finding significance in four of the six models executed in that study. Maume and Lee (2003) prepared five interaction models for each type homicide grouping (total, instrumental, expressive), finding significance in only three of the 15 models. One of three interaction models reached significance in Schoepfer and Piquero's (2006) study. Bjerregaard and Cochran (2008) examined 18 moderation models, eight for homicide and eight for theft. For each crime type, only two of the nine models rose to

statistical significance. As expanded upon below, until IAT has been better specified, empirical tests will likely continue to produce mixed results.

Theoretical and Operationalization Concerns

Messner and Rosenfeld do not provide clear direction as to how to test IAT, which presents substantial challenges in conducting empirical research. First, operationalization of variables is not described in detail, leading researchers to use widely varied operational definitions, resulting in inconsistent findings. Second, there is no clear direction whether non-economic institutions are theorized to have mediating and/or moderating effects on homicide. Thirdly, while Messner and Rosenfeld state IAT is meant to address "serious crime", failing to differentiate instrumental from expressive crimes will likely continue to yield weaker linkages between IAT and crime. Each of these operationalization concerns is addressed in further detail below. The discussion in this section draws from the analysis conducted on homicide-experiencing census tracts.

Operationalization Sensitivity and Inconsistent Findings

First, prior studies have produced only mixed support for IAT since, as Bjerregaard and Cochran (1998, p. 41) indicate, findings are "consistently inconsistent". Inconsistency may be attributed to operationalization sensitivity (Piquero & Piquero, 1998). Researchers have used various operational definitions to indirectly and partially test IAT. None of the IAT studies discussed in Chapter 3 found all variables to be significant.   Combined with the fact that culture is not measured or included in analyses, a complete test of IAT has not been conducted.

The current study, which draws substantially on previous operationalizations in an effort to offer meaningful comparisons between studies, provides no exception. Of the

thirteen independent variables in this study, only three were found to be statistically significant in relationship to homicide rates. Although each independent variable was uniquely measured, the overall intent was to determine the strength or weakness of each of the four institutions in the context of IAT. For example, when the family institution is weakened, it is less able to counter the anomic pressures of achieving monetary success by any means. The number of non-significant variables does not necessarily indicate an inability of IAT to explain homicide at the census tract level. Rather, the operationalizations used in this particular study, in one specific city, did not predict homicides in a statistically significant manner.

Education. Piquero and Piquero (1998) found a significant and negative relationship between the percentage of the population enrolled in college and both property and violent crimes at the state level. The current study attempted to replicate this finding by measuring the percentage of the population aged 18 to 24 years who were not enrolled in college or graduate studies. This variable showed promise in the exploratory regression stage by being significant in 53.12% of passing models. Thus, it became one of the five independent variables to be analyzed in OLS and GWR. However, during these latter stages of analysis, it was not found to be statistically significant.

A comparison of the choropleth map for this variable (Figure 5) with the homicide rate map (Figure 2), and to some extent the homicide density map (Figure 3), provides some explanation for the non-significant finding. In the context of IAT, census tracts with high percentages of non-enrollment (dark shading) are hypothesized to have higher homicide rates (dark shading), as this indicates weak emphasis on the education institution. However, census tract 1023, which had the highest homicide rate, was also

characterized by moderate rates of non-enrollment. Census tract 1259, which had the second highest rate of homicide, likewise does not exhibit the highest levels of non-enrollment. Conversely, census tract 6.01 exhibits a lower homicide rate with a higher percentage of non-enrollment.

Regarding attainment of high school education, two previous state-level studies produced conflicting findings. The current study found statistical significance (b=1.385, p=.029) in the relationship between homicide rates and the percentage of the population over the age of 18 years who had attained less than a high school diploma or equivalent. This is consistent with Schoepfer and Piquero (2006), but contrary to Piquero and Piquero's finding (1998).

The raster coefficient surface map of less than high school attainment (Figure 27) depicts a strong north to south direction, indicating stronger predictive power in the north. This corresponds with the choropleth map (Figure 4) that depicts all ten census tracts with the highest homicide rates also having high or considerably elevated percentages of residents over 18 years of age without a high school education. Census tracts with the highest percentages of less than a high school education are clustered in two areas, one around the high homicide census tracts in the northwest and one around census tract 1259, which had the second highest homicide rate. Generally speaking, census tracts with lower homicides were also characterized by lower percentages of residents with less than a high school education. This finding is consistent with IAT. There is an appreciable difference between high and low homicide census tracts in relation to educational attainment.

Family. Consistent with Piquero and Piquero's (1998) state-level finding relative to single-parent households, the most significant relationship with homicides in the current study was the percentage of children living in single female-headed households (b =.839, p=.001). This finding supports the hypothesis that areas with high levels of single female-headed households are likely to be accompanied by high homicide rates. This operationalization is based upon prior research suggesting that single-parents may not be able to provide adequate socialization and supervision of their children, in part because the parent may be away from home while working (Messner & Rosenfeld, 1997: 78; National Research Council, 1993: 155-156; Piquero & Piquero, 1998, p. 69). In turn, there is less restraint from anomic pressures to achieve "by any means". This is not meant to suggest that single mothers do not care or do not attempt to provide a positive environment; they may simply be overwhelmed by compounding economic stresses given their socio-economic status and/or residency in areas of concentrated disadvantaged.

That the relationship between single female-headed households and homicides reached statistical significance and single male-headed households did not is deserving of closer examination. Historically, if custody of children went to only one parent, it was typically to the mother. However, there has been a trend in recent years toward more fathers gaining custody (Hofferth et al., 2013). A possible explanation for the non-significance of the single-father variable is a product of where these fathers live in relationship to where homicides are most frequently occurring. A comparison of the choropleth maps regarding the percentage of children residing in either single male- or female-headed households (Figures 8 and 9) reveals that there are distributional

differences in these variables. One example of this can be found in census tract 1023, which had the highest rate of homicides. A very high percentage of its children were residing in single female-headed households, as depicted by dark shading. Conversely, this census tract was characterized by a low percentage of children residing in single male-headed households, as shown by the lightest level of shading. This in part may be a statistical artifact, however, it is not safe to assume that a census tract with a high percentage of single female-headed households automatically corresponds to low percentage of single male-headed households; high-high and low-low distributions are certainly possible. These types of spatial differences further highlight the importance of clear operational definitions, as well as the exploration of potential interaction effects such as those between family structure and poverty.

Consistent with Chamlin and Cochran (1998) at the state level, Maume and Lee (2003) at the county level, and Bjerregaard and Cochran (2008) at the national level, but in contrast to Schoepfer and Piquero (2006) at the state level, the current study also found a statistically significant relationship between homicide rates and the percentage of the population over 15 years who indicated they were divorced (b=3.049, p=.004). This finding supports the hypothesis that areas with higher divorce rates will likely have higher homicide rates.

The GWR raster coefficient surface map of the percentage of those fifteen and older who were divorced (Figure 26) displays a strong northeast to southwest pattern in predicting homicides across Minneapolis. Divorce is a strong predictor of homicide in the nine census tracts with the highest homicide rates in the northwestern area of the city.

Only one of these nine census tracts had a low divorce rate depicted on the choropleth map. Therefore, significance would be expected.

Further, the census tract (1259) with the second highest rate of homicide across the city is located south of the downtown area, slightly southeast of the center of the map. However, the raster coefficient surface map shows considerably weaker predictive strength of divorced in that area. The choropleth map (Figure 7) also depicts a low divorce rate for that census tract, which logically corresponds with low predictive power in that area.

Polity. Following the logic set forth in prior studies (Messner &Rosenfeld, 1997; Piquero & Piquero, 1998; Hannon & DeFronzo, 1998; Maume & Lee, 2003), one operationalization of polity in the current study is the percentage of households receiving public assistance, food stamps or supplemental security income. This was one of only two variables in the entire study drawn straight from Messner and Rosenfeld's (1997) cross-national decommodification study. They utilized this variable as a measure of the polity institution, indicating public assistance was one way government is able to buffer citizens from market forces, freeing them to make decisions without regard to purely economic pressures. However, Piquero and Piquero (1998, p. 69) also point out that the use of a public assistance measure "is amenable to a number of different interpretations", and some may argue this variable actually is a measure of the economic institution.

In contrast to Messner and Rosenfeld's (1997) and Savolainen's (2000) cross-national findings, as well as Piquero and Piquero's (1998) state-level and Hannon and DeFronzo's (1998) county-level finding, the current study did not find public assistance to have a statistically significant relationship to homicide rates. In other words, higher

147

levels of public assistance were not associated with lower homicide rates. A comparison of the choropleth map depicting public assistance, food stamps, and supplemental security income (Figure 14) to the map of logged homicide rates (Figure 2) indicates that at least a couple of the census tracts with the highest homicide rates received lower levels of assistance. In hindsight, including supplemental security income recipients in public assistance may have confounded this variable by placing emphasis on areas with high retirement populations who are, according to the age-crime curve, less likely to commit a homicide.

The operationalization of polity through the level of public assistance funds is distinct from the percentage of families living below poverty level as an economic measure. The public assistance variable is meant to measure the extent to which the government buffers market forces, shielding members of society from having to make decisions based solely on economic reasons. Living below the poverty level is likely a situation where decisions are first and foremost based on economic reasoning if one recalls that the economic institution is designed to provide for basic necessities such as food, shelter and clothing. In other words, public assistance, or decommodification, should act as a counter-measure to the anomic pressures of the economic institution. According to IAT, if decommodification levels are higher, it would follow that the influences of the economic institution would be lower. Consequently, homicides should also be lower. However, such a relationship did not exist in the current study.

Additionally, the measure of the percentage of the adult population who spoke English less than well also did not reach statistical significance. The current study is the first to use this variable in the context of IAT, using the rationale that the inability to

speak the dominant language could place barriers on involvement in the local polity, at

least at the official level. It was postulated that voices of non-English speakers would not

be readily heard and, therefore, would not be considered or given due weight during

decision-making processes.

This variable was distinctive in that a choropleth map (Figure 13) depicts the

strongest clustering of census tracts with high percentages of those speaking English less

than well was located east and south of the downtown area (center of the map), as

opposed to the northwest area. Recall that the former area had only one census tract in

the top ten highest ranking census tracts; whereas, the northwest area contained nine of

the top ten. Although there is a visually observable pattern, the measure was not

sensitive enough to produce statistical significance.

This study also included an original measure of polity as the percentage of the

population employed as local, state, or federal government workers. This

operationalization was informed by Messner and Rosenfeld's posits that the role of the

polity institution is to ensure attainment of collective goals and that being involved in the

polity can create a sense of altruism, which curbs anomic pressures. It was also informed

by Stucky's city-level finding that responsiveness of different forms of local

governmental structure can have an influence on rates of violent crime. Further, although

not an IAT study, Bursik and Grasmick (1993, pp. 17-18) define public control as "the

ability of neighborhoods to secure external resources through ties with the local

government and police". Therefore, it was hypothesized that those who work within

government would have a stronger voice in what happens within their community and

how funds are disbursed, which would ultimately correspond with lower homicide rates.

However, results from the analysis did not provide empirical evidence to support the hypothesis.

Economic. None of the variables measuring the economic institution were found to have a statistically significant relationship to homicide rates in the current study. Of the three measures, only median annual income was selected during the exploratory regression phase for further consideration in OLS and GWR models. However, in that later analysis it did not reach statistical significance, as noted more fully below.

The current study only adds to the inconsistencies regarding the Gini index and crime. Some IAT research has produced significant linkages at the county (Maume & Lee, 2003), state (Chamlin & Cochran, 1995), and cross-national (Bjerregaard & Cochran, 2008) levels, while other studies have not found income inequality to be significant at the cross-national level (Messner & Rosenfeld, 1994; Savolainen, 2000). A census tract having a Gini value of 0 would indicate that every household within the census tract has the same income; whereas, a Gini value of 1 would indicate that one household has all of the income within a census tract. Therefore, values closer to 0 indicate less inequality within the bounds of a census tract.

The Gini index does not appear to be a particularly useful measure at the census tract level. Many of the areas with higher Gini values had no or low homicide rates, which would be contrary to IAT. This can be explained by the sensitivity of the Gini data collection, since a "relatively small number of cases (especially in the upper end of the income distribution) can affect these measures, while having virtually no effect on median income" (U.S. Census Bureau, 1996).

Areas of low or no homicide rates in west-central Minneapolis are characterized by having some of the highest annual median incomes, as well as higher Gini values. In other words, the Gini value indicates income is concentrated in fewer, not more, households. However, what the Gini value does not reveal is that actual income amounts are relatively high in that area, in comparison to other areas of the city. Areas of lower homicide rates in east-central Minneapolis are characterized by both high and low median annual incomes, as well as high Gini values. This general area is comprised of a complex mixture of pocketed influences, such as a high immigrant population in one area and a large research university in another where there would be significant disparity between student, faculty, and medical staff incomes. Such a confounding mixture of influences will produce higher Gini values that may or may not be related to elevated homicide rates. Analyses are further complicated by the fact that the census tracts where individuals work and reside may not be the same. The range of differences in income distribution within a census tract must be understood within the context of actual income levels.

Median annual income was found to be an influential variable in the exploratory regression process. It consistently exhibited both negative and positive directions in various attempts to produce a passing model. In the exploratory passing model that was adopted for GWR analysis, income levels within a given census tract was influential in 9.38% of all possible models, with directionality being split between negative (31.25%) and positive (68.75%) directions. In other words, in some census tracts income levels were negatively associated with homicide, which would be consistent with IAT. However, in other census tracts, income levels were positively associated with homicides.

151

Therefore, income, in and of itself, did not predict homicides. This highlights the challenge of finding significant differences amongst homicide-experiencing census tracts. An examination of Table 1 conveys that the census tracts with the ten highest homicide rates also exhibited some of the lowest incomes, yet it did not result in a finding of statistical significance. One explanation for this is that instrumental homicides, which are fewer in frequency, will be clustered where income and structural opportunities are low; whereas, expressive homicides, not closely tied to monetary factors, are more likely to be distributed randomly throughout the city. The differentiation of instrumental from expressive homicides will be described in more detail below. In short, however, the inconsistent relationship between income and total homicides contributed to a finding of non-significance in later OLS and GWR models.

Summary of Inconsistent Findings. Overall, these discussions highlight the challenge of operationalizing institutions in the context of IAT. Clearly, findings from prior studies have consistently produced inconsistent findings. This study, by using pre-existing definitions provided in other IAT studies, produced similarly limited findings of statistical significance. As posited by Bjerregaard and Cochran (1998), support for IAT will vary depending upon operationalizations and units of analysis. Without further theoretical and empirical design clarifications, it is unlikely that this will change.

Mediating versus Moderating Effects

The current study sought to find relationships, or main effects, between each of the institutions and homicide rates: economy-homicide, education-homicide, family-homicide, and polity-homicide. It was hypothesized, for example, that increased divorce rates and the rate of single-parent households will be associated with higher homicide rates. In the present study, no direct relationship between measures of the economic institution and homicide were found.

Where a significant relationship between the economic institution and crime has been observed, some researchers of IAT have also explored potential interactions between institutions. The current study examined interaction effects between the economic institution (using indicator variables of annual median household income and Gini index) and non-economic institutions (using indicator variables of less than high school attainment, divorce, and receipt of public assistance). This is an important direction for future IAT research. It is critical to understand how and why non-economic institutions affect the relationship between economic dominance and instrumental homicides.

However, the lack of clarity and specific direction from Messner and Rosenfeld with regard to potentially mediating and/or moderating effects of non-economic institutions has likely contributed to inconsistent findings. Bjerregaard and Cochran (1998, p. 42) articulate this well by indicating "it remains unclear, both theoretically and empirically, whether non-economic institutions moderate or mediate the effects of the economy on the rate of crime. The state of affairs may be due, at least in part, to the challenging and complex nature of this theory and the lack of systematically collected

cross-national data that properly operationalize its key concepts." Understanding the differences between mediating and moderating models can be perplexing, as evidenced by inadvertent transposing of labels by those who have taken on such a task (Maume & Lee, 2003, pp. 1147, 1149).

Even though some studies have conducted and compared both mediating and moderating models, findings have been inclusive. Further complicating this issue is that some studies have narrowed their dependent variables to instrumental homicides, while others have not. Bjerregaard and Cochran (2008) compared mediating and moderating effects using models for homicides and thefts. While they concluded that the debate between mediating and moderating remains unsettled, they highlighted that their theft models indicated greater predictive power of IAT than did their homicide models; however, the "nature of the relationships observed (i.e., the direction, statistical significance, and functional form of these associations)" was stronger in the homicide models than in the theft models (Bjerregaard & Cochran, 2008, p. 41).

However, what Bjerregaard and Cochran (2008) did not take into consideration is the differentiation between instrumental and expressive homicides. In a study that preceded theirs, Maume and Lee (2003) compared mediating and moderating models for total homicides, instrumental homicides, and expressive homicides. In the Maume and Lee study, separating homicide by types had the effect of increasing the ability of IAT to predict instrumental homicides; the R^2 value for expressive homicides was lower than the R^2 value for total homicides. It is conceivable, therefore, that Bjerregaard and Cochran (2008) may have come to different conclusions regarding mediating and moderating effects had they used instrumental, versus all, homicides as their dependent variable.

Theoretically, IAT should have more explanatory power relative to instrumental crimes, as described more fully in the next section. In short, researchers will continue to produce inconsistent findings until there is theoretical and empirical design clarity.

Instrumental Homicides; Linkages with Concentrated Disadvantage

Messner and Rosenfeld (2007, pp. 43, 47) focus on "serious crimes", which include acts resulting in, or threats of, bodily injury, as well as acts that cause "significant economic harm to victims". Such acts are viewed as means, albeit illegitimate, to achieving success goals. Some efforts have been made in previous IAT studies to differentiate serious crimes as being either violent crimes or property crimes (Piquero & Piquero, 1998; Hannon & DeFronzo, 1998).

Another suggestion for improving future IAT research, and subsequent policy-making processes, has been the separation of instrumental and expressive types of homicide as dependent variables (Maume & Lee, 2003). Following Block and Block (1991), Maume and Lee (2003, p. 1144) state that instrumental crimes carry motives of monetary acquisition or gain; whereas, expressive homicides may result from anger or passion. This is consistent with Messner, Thome, and Rosenfeld's (2008, p. 174) discussion regarding the "marketness" continuum set forth by Block (1990). The continuum has at one end instrumental motives and expressive motives at the other. Individuals make decisions differently depending on the motivation, with some decisions being driven more by cost-benefit analysis than a sense of greater good instilled by non-economic institutions.

Segregating instrumental from expressive homicides in research may yield different results compared to studying all homicides combined, as shown by Maume and

Lee's (2003) study of disaggregated homicides at the county level. While they found

support that IAT explains both instrumental and expressive homicides, they also found

that explanatory power is much stronger with regard to instrumental homicide (Maume

and Lee, 2003, p. 1137). To expand, Maume and Lee (2003) explain that, in Merton's

view, inequality is linked to the social stratification system, with those in lower

socioeconomic areas being more strongly subjected to anomic pressures. There are fewer

legitimate opportunities and means by which to achieve (monetarily-measured) success

goals in these areas. Therefore, individuals find other means of achieving success,

including instrumental homicide. Using this logic, one would expect to find more

instrumental homicides in disadvantaged neighborhoods than in affluent communities.

However, recall that Messner and Rosenfeld (2007) argue that merely increasing

structural opportunities will not solve the issue of high homicide rates. For them, the

problem is more complex. As described previously, one of the strengths of IAT is that it

takes into account the effects that non-economic institutions can have on the relationship

between the economic institution and homicide. Strong non-economic institutions can

serve to buffer or balance over-emphasis on monetary success, resulting in fewer

homicides. Weakened non-economic institutions, on the other hand, provide less

resistance to anomic pressures and manifestations of economic dominance. For example,

parents may feel compelled to accommodate their employer, leaving children alone or

with a non-parent. That, in turn, decreases the social control and supportive functions of

the family. Weakening of the family institution can become criminogenic in that

unsupervised children and adolescents may learn "an excess of definitions favorable to

violation of law" from their peers on the street (Sutherland, 1947, p. 7). In other words,

certain communities, such as those that are economically disadvantaged, can experience compounding weakening and stressors that lead to instrumental types of crime.

Applying the logic of Merton, areas such as Northwestern Minneapolis would be expected to have higher instrumental homicide rates because they are structurally disadvantaged. The northwestern quadrant of Minneapolis contains nine out of ten census tracts with the highest homicide rates. It is characterized by a high density of African American or Black population, low white population, loss of population of 500 or more between 2000 and 2010, high percentage of housing unit vacancies (City of Minneapolis, 2011), as well as higher density of low-wage workers, lower density of low-wage jobs, and a high percentage of racially concentrated areas of poverty (Metropolitan Council, 2013).

Although the relationship between structural disadvantage and instrumental homicide was not directly addressed in the current study, the study did build on the logic of Messner and Rosenfeld in theorizing that areas such as Northwestern Minneapolis, where descriptive choropleth maps depict similar patterns between homicide rates and indicators of weakened non-economic institutions, would be expected to have higher homicide rates. However, overwhelming statistical support was not found for this position. One explanation for this can be drawn from Maume and Lee's (2003) study, which applied IAT at the county level. While they determined that total homicide rates per county had a mean of 7.55, separating these by type revealed that substantially more homicides were expressive (4.75) than instrumental (2.8). Their study demonstrates that using combined homicides underestimates the power of IAT to explain instrumental homicide.

Expressive homicides are motivated by emotion, such as anger; they are not directly linked to achieving monetary success. In contrast, instrumental homicides are linked to areas with limited opportunities and legitimate means of achieving success. The distribution of expressive homicide is more random, meaning there is less patterning than would be expected with instrumental homicides. Further, at least in Maume and Lee's (2003) study, the frequency of expressive homicides is far greater than that of instrumental homicides, hiding the descriptive and explanatory power of IAT in regard to high homicide rates in America.

While efforts were made to acquire data that differentiated instrumental from expressive homicides for the current study, the necessity of requiring the assistance of a crime analyst in the data mining process was found to be cost prohibitive. Reasonable inference, however, can be made that the inclusion of expressive homicides obfuscated the relationship between instrumental homicides and weakened non-economic institutions. In other words, the noise from expressive homicides made it difficult to find relationships relative to instrumental homicides.

More specifically, when the distribution of homicides across the 116 census tracts of Minneapolis was examined, the overall relationship between homicide rates and the measures of institutions were not exceedingly dissimilar across census tracts, especially with regard to those census tracts that experienced zero homicides and constituted over half of all census tracts. Therefore, with the particular dependent and independent variables used within this study, exploratory regression did not produce statistically significant models that would predict homicides across all census tracts.

Concluding the study at that point with an indication that null hypotheses 5 through 8 could not be rejected was justified. However, given that this study was expanding the application of IAT to smaller units of analysis, the decision was made to remove from the study all census tracts that did not experience a homicide during the study period. This enabled the study to drill down deeper to determine if there were any significant differences between census tracts having low (at least one) homicide rates from those with high homicides rates. This approach yielded passing models in exploratory regression, which were then further analyzed through OLS and GWR regression.

However, removing non-homicide experiencing census tracts did not completely resolve the original concern. The high number of census tracts with only one (14) or two (16) homicides continued to influence significance testing. The combination of census tracts with zero, one, and two homicides constitutes 74.14% of all census tracts with homicides. Therefore, while three significant relationships were found across homicide-experiencing census tracts, it is not surprising that additional significant relationships were not found. The differences in measured characteristics that exist amongst census tracts with zero or low homicides, which constitute the bulk of census tracts, are far smaller than the differences between those tracts with the highest incidence of homicide. These differences could not be ferreted out by comparing all 60 census tracts that experienced at least one homicide.

It is unknown, but conceivable, that the homicides occurring in the census tracts with only one or two homicides were more often of the expressive type, not instrumental. The noise from expressive homicides would thus make it difficult to find statistically

significant relationships relative to instrumental homicides, which would be a truer test of IAT. Therefore, it is strongly recommend that future IAT studies of homicide consider instrumental homicides as distinctive from other types of homicide.

Census Tracts and Disadvantage. One benefit of the census tract unit of analysis is that the influence of structurally disadvantaged communities on crime is more apparent and easier to isolate. In some ways, IAT studies tend to move the discussion away from using the labels structural disadvantage and legitimate opportunities, perhaps in an effort to differentiate IAT from Merton's work. However, a review of the operationalization of the economic institution in previous studies shows many similarities with measures of disadvantage. Messner and Rosenfeld (2007, p. 35) also recognize that non-economic institutions in disadvantaged areas are hard hit; more specifically, they state "[w]arlike conditions not only kill and maim individuals; they also destroy institutions."

That being said, structural opportunities are not the only factors to be mindful of, as contended by Messner and Rosenfeld. One also needs to understand how and to what extent non-economic institutions are able to buffer the effects of disadvantage and economic dominance on crime. Further elucidation of IAT is needed. How weakened non-economic institutions and reduced social controls lead to serious crime is graspable in an over-arching sense. What that means in practice is murky. Continued efforts to partner IAT with micro-level theorizing may prove fruitful.

Using census tract units of analysis may be particularly advantageous in this respect as the relationships between disadvantage and non-economic institutions is not obfuscated or averaged out, as is the case with larger units such as states or nations.

Smaller units present even more potential for producing a richer understanding of how and why the weakness of non-economic institutions impact the relationships between the economic institution and crime rates. However, the smaller the units are, the more clear the theory needs to be in order to ferret out differences.

This may be met with resistance from those who believe IAT should not be tested at anything but the national level; however, there appears to be at least some promise that IAT also has explanatory power within smaller units (Hannon & DeFronzo, 1998; Piquero & Piquero, 1998; Stucky, 2003; Maume & Lee, 2003; and Schoepfer & Piquero, 2006). Regardless of the unit of analysis, IAT should remain a theory that supports the study of differences between groups of people and the cultural pressures and institutional influences they experience. Just as nations differ in this respect, so, too, do census tract units. Some census tracts experience greater anomic pressures and weakened non-economic institutions, coupled with characteristics of concentrated disadvantage, which can be compared and contrasted to census tracts having higher socioeconomic characteristics and more legitimate opportunities. In short, these pressures and balances, as well as characteristics of concentrated disadvantage, do differ from one census tract to another.

Future Operationalizations

In their cross-national comparison, Messner and Rosenfeld (2007) argue that the high rate of serious crime in America can be linked to the anomic pressures of the American Dream and an institutional balance of power that is dominated by the economic institution. When this dominance occurs, non-economic institutions are hindered in their ability to provide social controls and counterbalances to a by-any-means orientation.

Sub-national applications of IAT have attempted to determine whether these distinct characteristics and interactions hold true at the state, county, and city levels. The current study attempts to apply these principles of IAT at the census tract level. Like nations, these units exhibit unique institutional balances.

However, the level of abstraction and/or the lack of concise operational definitions have led to researchers employing different operational definitions across various units of analysis. Thus far, operationalizations have been very broad, which may not produce enough difference between units to find statistical significance, as the measurement simply does not drill down far enough theoretically or empirically. The current study suggests that an increase in the clarity of operational definitions is in order, especially when analysis is conducted using smaller units. More emphasis needs to be placed on effectively determining *how* strong non-economic institutions exert social control and lend support to individuals, or conversely, *how* weak institutions provide less resistance to anomic pressures.

Some may argue that these discussions and operationalizations lead IAT away from its original purpose, to explain serious crime in America at a macro level. That original purpose remains intact. What's being proposed herein is that IAT can also be a conduit for richer understanding of micro-level consequences of the American Dream.

The current general operational definitions of institutions are inadequate to ferret out these distinctions when smaller units of analysis are employed. New and narrowed operationalizations will take considerable thought. Primary data collection, rather than secondary analysis, would be most beneficial. Although these avenues are highly time-

and cost-consuming, there is benefit in at least discussing what the future application of IAT at a more local level might look like.

For example, involvement in the polity, as measured by voter participation, may show enough difference between nations to be significant. However, at the subnational level, operationalization of polity should more closely relate to *how* or *why* the polity can potentially develop a sense of altruism resulting in reduced homicides. Many Americans, and perhaps particularly those in areas of concentrated disadvantage, may not believe that the political system truly works in their favor or creates a greater good for their community as a whole. The African American community, in particular, has historically entrenched reasons for distrusting the polity institution.

The economic institution cannot be made a scapegoat as one of its roles is to provide for necessities in life, such as food, shelter, and clothing. It is, however, according to IAT, criminogenic when it dominates the institutional balance of power and sends the message that "anything goes" in achieving success. But what *is* economic dominance and how can it be operationalized in a way that captures its relationship to homicide rates? IAT posits that American society is inflicted with the fetishism of money; success is measured in monetary terms. Variables could be shaped around that concept. IAT also posits that economic dominance is manifested in three ways: devaluation, accommodation, and penetration (Messner and Rosenfeld, 2007, p. 78-84). These manifestations are criminogenic when they are unchecked by strong non-economic institutions. Operationalization could measure the extent to which these manifestations are occurring across the study area.

Another question to be addressed is how, and the extent to which, strong non-economic institutions impact the economic-homicide relationship. Here examples of buffering devaluation, accommodation, and penetration could be measured. For IAT to have explanatory power, such a measure would need to have a negative relationship with homicide: as mediating influences of non-economic institutions increases, homicides decrease. Or conversely, where non-economic institutions are unable to buffer the manifestations of economic domination, homicides will be higher.

Using the family institution as an example, an alternative research design can be envisioned. Economic dominance hinders the social control and support functions of non-economic institutions. Economic dominance, as manifested through accommodation, may be operationalized as the dictation of work schedules to maximize profit for the employer, without regard to the wellbeing of the employee and/or their family. In the harshest terms, the workplace comes first; if the worker wants family time with children, then that is for the employee to figure out when he/she is off the clock. Research can be conducted to determine what makes a family-friendly work environment and then measure it.

Accommodation should be measured in a way that captures *how* it leads to criminal behavior. Accommodation includes working hours that overlap with when children are being sent to school in the morning, when they get home in the afternoon, when they do their homework in the evenings, and when they are sleeping and need their parents on standby. Essentially, this encompasses most of the 24-hour day. But what needs to be captured or measured is the harm caused by accommodation to economic

dominance that can lead to crime and homicides; that is, if it's unchecked by non-economic forces.

One measure may be how many children and adolescents are left home alone while the parent(s) work. The time of day when they are left home alone may also be highly relevant. At this extreme, children are free to associate with delinquent others and accumulate "an excess of definitions favorable to violation of law", as Sutherland argued (1947, p. 7). This may set children and adolescents on the path to criminal behavior.

Argument has been made in previous studies that a weakened family institution (as measured by divorce and single-parent households, for example) has diminished capacity to provide socialization, social controls, and support. It may also be an indicator that the lack of a male role model in the home is criminogenic. Conversely, strong family institutions provide strong socialization, social controls, and support. The question is now *how* do strong socialization, social controls, and support buffer the economic dominance-crime relationship? More important to the question of measurement, *how* do the socialization, social control, and support *found in a strong family institution* buffer the criminogenic nature of accommodation, devaluation, and penetration?

First, there is need for understanding what strong socialization and social controls are. Strong families may socialize children to be mindful of the harms of economic dominance and to find balance. For example, they may send the message that working hard to provide for a family's food, clothing, and shelter needs is viewed as normal or expected behavior in American society. It is not inherently "bad" to achieve a minimum standard of economic wellbeing; however, allowing money and wealth to define who you or your family are can be problematic. This message signals that balance is important in

life; therefore, you are also to seek non-monetary ways of defining yourself as successful. Excessive emphasis on obtaining wealth, at the expense of one's family or community, is not acceptable and should not be the norm.

Looking at an extreme application of this line of thought, how do strong families, in practice, carry this out? In two-parent households, one parent is consistently at home with the children, indicating to the children that they have more value than the new boat they could have acquired with a second salary or a second shift. These *Ozzie and Harriett* or *Leave It To Beaver* types of households are becoming fewer, but that is not the question here. Today's family structure is what it is today. The question is not *really* whether divorced or single parents constitute weak family institutions, although certain linkages can be found. The question is how do *strong* families, in practice, show children that accommodation to economic dominance must be, and is, balanced.

A parent could simply commit to taking time off from work to attend the child's baseball game, band concert, or swim at the lake. However, economic dominance creates a pressure cooker for many parents. While some families can change their lifestyle to exist on less income, parents of lower socioeconomic status cannot. They may not be able to make ends meet as it is. The family institution must rely on the polity institution, as measured by the level of financial support, to remedy this situation and provide families with at least a minimal sense of financial wellbeing, such that decisions are not based purely on economic cost-benefit analysis. Polity, could for example, develop policies such as paid parental leaves in an effort to lessen the financial drawbacks that occur when a parent reduces works hours to concentrate on family bonding and support.

There are ways strong families instill family-friendly norms and provide alternative definitions of success. Strong families socialize children to the norms of society, exercise social control, and provide support. There are many non-economic ways that families exhibit strength, such as eating meals together, gathering to celebrate joyous occasions, gathering to comfort and support each other when one or more member faces adversities (i.e., death in family, addiction, financial hardships), and working together on projects. In essence, strong families indicate to members that their concerns are heard and they are cared about and loved. Strong families, therefore, can fulfill the role of providing members with shelter from an otherwise chaotic social environment. It is this sense of belonging, which you cannot put a price tag on. This strong sense of self and value as a family member is an alternative definition of success. An individual does not need to have a high salary or the ability to keep the family's head above water to have this type of success.

Strong families also set boundaries and enforce them. Children in strong families learn that it's important to consider how their actions affect others. It hurts others when you hit or bite them, so don't do it. It hurts others when you steal their comic book, so don't do it. When you cheat to get ahead, others won't trust you and you will be viewed as a bad person, so don't do it. There is honor in status achieved through legitimate means. You cannot take something, by any means, just because you want it. With age, these lessons involve more serious violations of norms and laws. Thus, a child learns what is and is not acceptable behavior.

One additional factor that may impact the strength of the family institution is the extent of its social network. Where strongly connected family members reside in

proximity to one another there may be an increased likelihood of supervision alternatives for children by vested individuals. Conversely, those who do not live near other family members or who have strained relationships with their family may find it challenging to find adequate supervision alternatives when they need to be away from home. Still, others in this situation may have ample connections within the community.

Whether these connections should be considered extensions of families within the family institution or part of the polity institutions is not clear-cut. Informal networking may relate more to the family institution. For example, parents from two or more households may agree to reciprocate supervision of all their children, ensuring children are still receiving what they deem to be appropriate and like-minded socialization and support. Formal networking efforts by the community, on the other hand, have more similarities with polity. For example, a community group or organization may be formed that connects suitable adults with children who may otherwise not have structure, supervision, or positive role models in their lives. Another example would be parents residing in a high-density housing complex who pool their resources to ensure adequate group supervision, support, and development of their children. The difference here is that someone other than a family member is providing the services. An argument could be made these connections relate to the community's ability to pull together in an effort to strengthen the family and education institutions, combatting the effects of economic dominance. In this way, there is a spirit of altruism, working together toward a greater good. Further, there may be ways to distinguish a community institution from a polity institution, at least at the local unit of analysis. The polity institution would be confined more to official policy and rule-making structures; whereas, the community or

networking institution would relate to how strongly local residents work together to accomplish mutual non-legal goals. In other words, the mere presence of high rates of divorce and single-parent households may not necessarily equate to high homicide rates. Strong networks and communities may be able to fill the gaps that may otherwise be criminogenic.

One final point of clarification should be made about the discussion above. Families are under stress, and they can hold up an umbrella against the prevailing economic downpour for so long. For families lacking a minimal sense of financial wellbeing, decisions may already be based solely upon economic, or cost-benefit, calculation. This discussion does not suggest families should continue to bend and find more and more creative ways of exercising counterbalancing social control and support functions with ever-diminishing amounts of time and support. Eventually, something has to give. That is precisely why non-economic institutions are struggling to buffer the anomic pressures of economic dominance. *If* crime is to be decreased, the ultimate change has to take effect at the front end of the equation, i.e. economic dominance. This is congruent with Messner and Rosenfeld's (2007) argument regarding institutional balance.

Summary Regarding Operationalization. The discussion above regarding the need for improved operationalizations stems from the progression of understanding that developed throughout the current study. At the census tract level, three statistically significant relationships using broad definitions were identified. Broad, sweeping measures may be sufficient to capture large differences that exist from one nation to the next. However, local application of IAT will require more precision.

Irrespective of the unit of analysis used in IAT studies, the inconsistencies in findings between studies can be reduced through the development of more precise operational definitions. The measurement of these concepts would be a considerable challenge. Secondary data sources do not provide this type of specificity. Applying IAT in this fashion at the local level will require ingenuity and effort.

Additional consideration should be given to the determination of if, or how much, interaction occurs between the non-economic institutions. It is important to understand these relationships as well. For example, to some extent, the family institution must ally itself with the polity institution to effect laws and policies that act as pressure release valves from the manifestations of economic dominance. In this regard, IAT continues to be a work in progress.

Limitations

This study has limitations. Most findings from this study are specific to the census tracts that experienced at least one homicide, in one major city. Further, the study relies on secondary data analysis. Despite these limitations, the study still presents value and contributes to the development of IAT.

Considering Only Homicide-Experiencing Census Tracts Across One City

With the operationalizations used in this study, a passing model that included all census tracts was not achieved in exploratory regression. Consequently, rather than concluding the study, the decision was made to attempt to discover statistically significant relationships across those census tracts that experienced at least one homicide. Although there was some improvement, as evidenced by the eventual finding of three

significant independent variables in OLS and GWR models, it appears other variables continued to be impacted by similarity across census tracts and the lack of complete linearity. Further, using only instrumental homicides in future studies, rather than combining all homicides, will also strengthen the design and substantially increase the likelihood of finding statistically significant relationships.

The current study examined homicides that occurred within one metropolitan city. Messner and Rosenfeld (2007, p. 74) indicate that each society will have a unique institutional balance, with the term society being extended here to mean the population residing within census tracts. It is clear that certain clusters of census tracts share distinct characteristics, including high homicide rates, which set them apart from other areas of the city. This can have policy implications specific to the city, and more specifically to those smaller geographic areas within the city that experienced high homicide rates. This, indeed, highlights the tenacity and advantages of using GWR.

Including census tracts from multiple metropolitan cities would result in more generalizable findings. However, the advantage of using GWR to inform policy development at the local level would be restricted, as findings no longer pertain to each city's unique institutional arrangement. Therefore, the researcher must be cognizant of what it is they are trying to explain during the research design stage. Census tracts units across multiple cities can be used to examine the applicability of IAT across America more generally. Census tract units can also be used to examine the applicability of IAT across one specific city, with the goal of developing a deeper understanding of what is occurring within that particular city. Both approaches have value and potential policy implications; the point is to be cautious and specific when designing future research.

Secondary Data

An additional limitation of the current study (as well as past IAT studies) is the use of secondary data. While data obtained from the Minneapolis Police Department and the U.S. Census Bureau offers convenience and cost containment, it provides only proxy, or indirect, measurements of institutions. The researcher is faced with the dilemma of matching pre-existing data to what it is they want to measure, rather than data collection efforts being driven by theoretical rationale. This is particularly critical when examining IAT at more local levels. It is recognized that to drill down and truly discover how individuals perceive and interact with their community's social institutions would require considerable time, effort, and expense.

Obtaining data that would allow the differentiation between instrumental and expressive homicide in this study proved to be cost prohibitive. It is reasonable to maintain that this lack of specificity contributed to difficulty in finding statistically significant relationships. An additional concern with secondary data analysis is the researcher has no control over data collection and cannot confirm complete accuracy.

Setting of Minimum Adjusted R^2 Value Relative to Limited Analysis of Homicide-Experiencing Census Tracts

During the exploratory regression phase of this study, the minimum adjusted R^2 value was set at .40. Models that did not meet this threshold were not considered to be passing and, therefore, were not considered in subsequent OLS and GWR analyses related to the 60 homicide-experiencing census tracts. This is a stringent test to pass, meant to produce only those models that are least biased. In an examination of past articles published in *Criminology*, Weisburd and Piquero (2008, p. 472) found that the

average R^2 value achieved across those articles was .389. The extant literature on what qualifies as an adequate or appropriate R^2 value, however, is not conclusive.

Concluding Comments

The current study was able to identify three statistically significant relationships using broad operational definitions. Future honing of other operational definitions may lead to finding other significant relationships. One recommendation for future IAT research is to differentiate between instrumental and expressive types of homicide, which theoretically should yield stronger and more statistically significant relationships relative to instrumental homicides. Implementing such changes in future IAT research will increase the likelihood of more consistent findings across studies.

The current study is distinctive in that it utilized GWR at the census tract level. Subsequent raster coefficient surface maps depict where variables are most strongly predicting homicides. Higher percentages of residents who are divorced and those with less than a high school education most strongly predict homicides in the northern areas of Minneapolis; whereas, the predictive strength of having high percentages of children residing in single-female headed household models has a radial pattern from the center of the city, with slightly greater predictive strength in the high homicide census tracts northwest of the city center than the high homicide census tracts to the southeast of the center.

Previous IAT studies have exhibited consistently inconsistent findings. The current study is no exception and, likewise, can only offer partial support for IAT. In furtherance of a solution to this dilemma, this study offers additional comments regarding operationalization sensitivities. In doing so, it also shows value in developing valid

applications of IAT at the census tract level. Using advanced statistical techniques at this level holds the potential for providing a richer understanding of how and why the strengths and/or weaknesses of non-economic institutions can impact the relationship between economic dominance and high instrumental homicide rates.

It seems IAT does tells us *something* about homicides across the census tracts of Minneapolis: the distribution of homicides and disadvantage appear to have similar patterns and higher homicide rates are associated with higher levels of divorce, single female-headed households, and having less than a high school education. But what does that mean? What do we do with it? Drawing from the literature of Messner and Rosenfeld, the answer would seemingly be to strengthen family and education institutions, which does have appeal. However, *if* it is disadvantage and economic stress that is weakening these non-economic institutions in the first place and then continues to perpetuate a circular motion from which individuals cannot free themselves, those well-intentioned efforts may be in vain. How does one focus on building a strong family, learn new things and discover self-potential, or develop hope in the future when economic pressures are so dominant? Hence, there is a need to more definitively understand the influential or causal flow between variables.

For researchers adhering to strict cross-national application of IAT, this argument may seem moot. At that level, the influence of disadvantage is blurred through the process of aggregation. They may argue that IAT was not intended to explain crime across smaller, subnational units of measurement. While it may be true that Messner and Rosenfeld have not definitively indicated IAT is exclusively applicable to cross-national study, it is also true that they have not definitively indicated that IAT cannot or should

not be applied to smaller, subnational units of analysis. Until there is theoretical and

empirical guidance, the door is open, and it will likely continue to produce consistently

inconsistent findings, regardless of the unit of analysis utilized.

REFERENCES

Adams, James Truslow (1931). *The epic of America*. Boston: Little, Brown.

Anselin, Luc, Jacqueline Cohen, David Cook, Wilpen Gorr, and George Tita (2000). Spatial analyses of crime. *Criminal Justice*, *4*, 213-262.

Baller, Robert D., Luc Anselin, Steven F. Messner, Glenn Deane, and Darnell F. Hawkins (2001). Structural covariates of U.S. county homicide rates: incorporating spatial effects. *Criminology*, 39(3), 561-590.

Bassis, Michael S., Richard J. Gelles, and Ann Levine (1991). *Sociology: An introduction*. 4th ed. New York: McGraw-Hill.

Batton, Candice and Gary Jensen (2002). Decommodification and homicide rates in the 20th-Century United States. *Homicide Studies*, 6(1), 6-38.

Bjerregaard, Beth and John K. Cochran (2008). A cross-national test of institutional anomie theory: Do the strength of other social institutions mediate or moderate the effects of the economy on the rate of crime? *Western Criminology Review*, 9(1), 31-48.

Blau, Judith R. and Peter M. Blau (1982). The cost of inequality: metropolitan structure and violent crime. *American Sociological Review*, 47, 114-129.

Blau, Peter M. and Reid M. Golden (1986). Metropolitan structure and criminal violence. *The Sociological Quarterly*, 27, 15-26.

Block, Fred (1990). *Postindustrial possibilities: A critique of economic discourse.* Berkeley: University of California Press.

Block, Carolyn Rebecca and Richard L. Block (1991). Beginning with Wolfgang: An agenda for homicide research. *Journal of Crime and Justice*, 14, 31-70.

Bonger, Willem ([1916](1969)). *Criminality and economic conditions*. Indiana University Press: Bloomington.

Braithwaite, Richard B. (1989). *Crime, shame and reintegration*. New York: Cambridge University Press.

Brookings Institution, The (2003). Minneapolis/St. Paul in focus: A profile from census 2000. Retrieved June 17, 2014 from http://www.brookings.edu/research/ reports/2003/11/livingcities-minneapolis-stpaul.

Brunsdon, Chris, A. Stewart Fotheringham, and Martin Charlton (1998). Geographically weighted regression. *Journal of the Royal Statistical Society: Series D (The Statistician)* 47.3, 431-443.

Bureau of Criminal Apprehension (2014). Supplemental homicide report. Retrieved June, 2014 from https://dps.mn.gov/divisions/bca/bca-divisions/mnjis/ Pages/uniform-crime-reports.aspx.

Bursik, Robert J., Jr. and Harold Grasmick (1993). *Neighborhoods and crime: the dimensions of effective community control*. New York: Lexington Books.

Cahill, Meagan and Gordon Mulligan (2007). Using geographically weighted regression to explore local crime patterns. *Social Science Computer Review*, 25, 174-193.

Centers for Disease Control and Prevention (2012). Deaths: leading causes for 2009. *National Vital Statistics Reports,* 61(7), October 26, 2012.

Chainey, Spencer and Jerry Ratcliffe (2005). *GIS and crime mapping*. Chichester, West Sussex, England: John Wiley & Sons, Ltd.

Chamlin, Mitchell B. and John K. Cochran (1995). Assessing Messner and Rosenfeld's Institutional Anomie Theory: A partial test. *Criminology*, 33(3), 411-429.

Champion, Dean John and Richard D. Hartley (2010). *Statistics for criminal justice and criminology*. Upper Saddle River, New Jersey: Prentice Hall.

Charlton, Martin and A. Stewart Fotheringham (2007). *Geographically weighted regression: A tutorial on using GWR in ArcGIS 9.3*. Kildare, Ireland: National Center for Geocomputation, National University of Ireland Maynooth.

Cohen, Lawrence E. and Marcus Felson (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 588-608.

Currie, Elliott (1991). Crime in the market society: From bad to worse in the nineties. *Dissent*, Spring, 254-259.

Deane, Glenn, Steven F. Messner, Thomas D. Stucky, Kelly McGeever, and Charis E. Kubrin (2008). Not 'islands, entire of themselves': Exploring the spatial context of city-level robbery rates. *Journal of Quantitative Criminology*, 24, 363-380.

Deller, Steven and Melissa Deller (2012). Spatial heterogeneity, social capital, and rural larceny and burglary. *Rural Sociology*, 77(2), 225-253.

Devine, Joel A., Joseph F. Sheley, and M. Dwayne Smith (1998). Macroeconomic and social-control policy influences on crime rate changes, 1948-1985. *American Sociological Review*, 53, 407-420.

DiCristina, Bruce (Ed.)(2012). *The birth of criminology: Readings from the eighteenth and nineteenth centuries*. New York: Wolters Kluwer.

Durkheim, Emile (1964 [1893]). *The division of labor in society*. New York: Free Press.

Durkheim, Emile (1966 [1897]). *Suicide: A study in sociology*. New York: Free Press.

Durkheim, Emile (2012 [1907]). The rules of sociological method. In Bruce DiCristina (Ed.), *The Birth of Criminology*. Wolters Kluwer Law & Business: New York.

Durkheim, Emile (1958 [1950]). *Professional ethics and civic morals*. Glencoe, IL: Free Press.

Earle, Alison, Zitha Mokomane, and Jody Heymann (2011). International perspectives on work-family policies: Lessons from the world's most competitive economies. *The Future of Children*, Fall 2011, 21(2), 191-210.

Elkins, Stanley M. (1968). *Slavery: A problem in American institutional and intellectual life*. 2d ed. Chicago: University of Chicago Press.

Esping-Andersen, Gosta (1990). *The three worlds of welfare capitalism*. Princeton University Press.

Esri, Inc. (2010). ArcGIS 10.0 Help. Retrieved April, 2012 from http://www.esri.com.

Felson, Marcus and Lawrence E. Cohen (1980). Human ecology and crime: A routine activity approach. *Human Ecology*, 8, 389-406.

Fiala, Robert and Gary LaFree (1988). Cross-national determinants of child homicide. *American Sociological Review*, 53, 432-445.

Fotheringham, A. Stewart, Martin E. Charlton, and Chris Brunsdon (2001). Spatial variations in school performance: A local analysis using geographically weighted regression. *Geographical and Environmental Modeling*, 5(1), 43-66.

Fotheringham, A. Stewart, Chris Brunsdon, and Martin E. Charlton (2002). *Geographically weighted regression: The analysis of spatially varying relationships*. West Sussex, UK: John Wiley.

Gartner, Rosemary (1990). The victims of homicide: A temporal and cross-national comparison. *American Sociological Review*, 55, 92-106.

Graif, Corina and Robert J. Sampson (2009). Spatial heterogeneity in the effects of immigration and diversity on neighborhood homicide rates. *Homicide Studies*, 13, 242-260.

Gurr, Ted Robert and James R. Scarritt (1989). Minorities at risk: A global study. *Human Rights Quarterly*, 11, 375-405.

Hagedorn, John M. (1991). Gangs, neighborhoods, and public policy. *Social Problems*, 38, 529-42.

Hannon, Lance and James DeFronzo (1998). The truly disadvantaged, public assistance and crime. *Social Problems*, 45(3), 383-392.

Hearn, Charles R. (1977). *The American Dream in the Great Depression*. Westport, CT: Greenwood.

Heilbroner, Robert (1991). A pivotal question unanswered. *The world & I: A chronicle of our changing era,* November, 538-540.

Hipp, John R. (2007). Block, tract, and levels of aggregation: Neighborhood structure and crime and disorder as a case in point. *American Sociological Review*, 72(5), 659-680.

Hirschi, Travis (1969). *Causes of delinquency*. Berkeley: University of California Press.

Hofferth, Sandra, Joseph H. Pleck, Frances Goldscheider, Sally Curtin, and Katie Hrapczynski (2013). Family structure and men's motivation for parenthood in the United States. *Handbook of Father Involvement: Multidisciplinary Perspectives*, 57.

Jaccard, James, Robert Turrisi and Choi K. Wan (1990). *Interaction effects in multiple regression*, 07-072. Thousand Oaks, CA: Sage

Kick, Edward L. and Gary D. LaFree (1985). Development and the social context of murder. *Comparative Social Research*, 8, 37-58.

Krahn, Harvey, Timothy F. Hartnagel, and John W. Gartrell (1986). Income inequality and homicide rates: cross-national data and criminological theories. *Criminology*, 24, 269-295.

Land, Kenneth C., Patricia L. McCall, and Lawrence E. Cohen (1990). Structural covariates of homicide rates: Are there any invariances across time and social space? *American Journal of Sociology*, 95(4), 922-96e).

Long, Elizabeth (1985). *The American Dream and the popular novel*. Boston: Routledge & Kegan Paul.

Maume, Michael O. & Matthew R. Lee (2003). Social institutions and violence: A sub-national test of institutional anomie theory. *Criminology*, 41(4), 1137-1172.

McCall, Patricia, Kenneth C. Land, and Karen F. Parker (2010). An empirical assessment of what we know about structural covariates of homicide rates: A return to a classic 20 years later. *Homicide Studies*, 14, 219-243.

Merton, Robert K. (1964). Anomie, anomia, and social interaction. In *Anomie and deviant behavior*, ed. Marshall Clinard, 213-242. New York: Free Press.

Messner, Steven F. (2012). Mortality, markets, and the ASC: 2011 presidential address to the American Society of Criminology. *Criminology*, 50(1), 5-25.

Messner, Steven F. and Luc Anselin, (2004). Spatial analyses of homicide with areal data. *Spatially Integrated Social Science*, 127-144.

Messner, Steven, Eric P. Baumer, and Richard Rosenfeld (Dec. 2004). Dimensions of social capital and rates of criminal homicide. *American Sociological Review*, 69(6), 882-903.

Messner, Steven F. and Richard Rosenfeld (1997). Political restraint of the market and levels of criminal homicide: a cross-national application of Institutional-Anomie Theory. *Social Forces*, 75(4), 1393-1416.

Messner, Steven F. and Richard Rosenfeld (2004, 2007). *Crime and the American Dream*. Belmont, CA: Wadsworth Cengage Learning.

Messner, Steve. F., Raymond HC Teske Jr., Robert D. Baller, and Helmut Thome (2013). Structural covariates of violent crime rates in Germany: Exploratory spatial analyses of Kreise. *Justice Quarterly*, *30*(6), 1015-1041.

Messner, Steven F., Helmut Thome, and Richard Rosenfeld (2008). Institutions, anomie, and violent crime: Clarifying and elaborating institutional-anomie theory. *International Journal of Conflict and Violence*, 2(2), 163-181.

Metropolitan Council (2013). Low-wage jobs and low-wage workers, 2010. Accessed June 27, 2014: http://giswebsite.metc.state.mn.us/mapgallery/pdfs/ThriveMSP/ Low%20Wage%20Jobs%20and%20Workers%202010.pdf.

Minneapolis Health Department (2013). *Minneapolis blueprint for action to prevent youth violence, 2013 fact sheet*. Accessed August 6, 2013: http://www.minneapolismn.gov/www/groups/public/@health/documents/webcontent/wcms1p-111268.pdf.

Minneapolis, City of (2011). *2010 census redistricting summary*. Accessed June 27, 2014: http://www.ci.minneapolis.mn.us/www/groups/public/@cped/documents/webcontent/wcms1q-068924.pdf.

Minnesota Department of Health (2013). Ten leading causes of mortality by age group, Minnesota residents 2001-2005, Appendix B. Accessed August 6, 2013: www.health.state.mn.us/injury/docs/appendixB_leadingcauses.xls.

Morenoff, Jeffrey D. and Robert J. Sampson (1997). Violent crime and spatial dynamics of neighborhood transition: Chicago, 1970-1990. *Social Forces*, 76(1), 31-64.

Myers, Raymond H. (1990). *Classical and modern regression with applications (2nd ed.)*. Boston, MA: Duxbury Press.

National Research Council (1993). *Losing generations: Adolescents in high-risk settings*. Washington, D.C.: National Academy Press.

Pallant, Julie (2007). *SPSS survival manual* (3rd ed.). New York, NY: McGraw-Hill, Open University Press.

Pampel, Fred and Rosemary Gartner (1995). Age, structure, socio-political institutions, and national homicide rates. *European Sociological Review*, 11, 243-260.

Parsons, Talcott (1951). *The social system*. New York: Free Press.

Parsons, Talcott (1990 [1934]). Prolegomena to a theory of social institutions. *American Sociological Review*, 55, 319-333.

Peterson, Ruth D., Lauren J. Krivo, and Mark A. Harris (2000). Disadvantage and neighborhood violent crime: do local institutions matter? *Journal of Research in Crime and Delinquency*, 37, 31-63.

Piquero, Alex and Nicole Leeper Piquero (1998). On testing institutional anomie theory with varying specifications. *Studies on Crime and Crime Prevention*, 7(1), 61-84.

Ratcliffe, Jerry H. (2010). Crime mapping: spatial and temporal challenges. *Handbook of Quantitative Criminology*, ed. A.R. Piquero and D. Weisburd, 5-24.

Rosenfeld, Richard (2011). The big picture: 2010 presidential address to the American Society of Criminology. *Criminology*, 49:1, 1-26.

Sampson, Robert J. (1986). Crime in cities: The effects of formal and informal social control. In Albert J. Reiss, Jr., and Michael Tonry (eds), Crime and Justice. Chicago: University of Chicago Press.

Sampson, Robert J. (1987). Urban black violence: The effect of male joblessness and family disruption. *American Journal of Sociology*, 93, 348-382.

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

Sampson, Robert J. and John H. Laub (1993). Crime in the making: Pathways and turning points through the life course. Cambridge, Mass.: Harvard University Press.

Sampson, Robert J. and Janet L. Lauritsen (1994). Violent victimization and offending: Individual-, situational-, and community-level risk factors. In A. Reiss and J. Roth (eds.), *Understanding and Preventing Violence: volume 3 Social Influences*. Washington, D.C.: National Academy Press.

Savolainen, Jukka (2000). Inequality, welfare state, and homicide: Further support for the institutional anomie theory. *Criminology*, 38(4), 1021-1042.

Schoepfer, Andrea and Nicole Leeper Piquero (2006). Exploring white-collar crime and the American Dream: A partial test of institutional anomie theory. *Journal of Criminal Justice*, 34, 227-235.

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

Shaw, Clifford R. and Henry D. McKay (1969). *Juvenile delinquency in urban areas*. Rev. ed. Chicago: University of Chicago Press.

Stucky, Thomas D. (2003). Local politics and violent crime in U.S. Cities. *Criminology*, 41(4), 1101-1136.

Sutherland, Edwin (1947). *Principles of Criminology*. Philadelphia: Lippincott.

Triplett, Ruth A., Rand R. Gainey, and Ivan Y. Sun (2003). Institutional strength, social control and neighborhood crime rates. *Theoretical Criminology*, 7, 439-467.

United States Census Bureau (2013). http://www.census.gov.

United States Census Bureau (1996). *Current population reports: A look at postwar U.S. income inequality*, P60-191. Accessed June 30, 2104: https://www.census.gov/prod/1/pop/p60-191.pdf.

Vélez, María B. (2001). The role of public social control in urban neighborhoods: A
multilevel analysis of victimization risk. *Criminology*, 39:4, 837-864.

Wacquant, Lois J. D. (1993). Urban outcasts: Stigma and division in the black American
hhetto and the French urban periphery. *International Journal or Urban and
Regional Research*, 17, 366-83.

Weisburd, David and Alex R. Piquero (2008). How well do criminologists explain
crime? Statistical modeling in published studies. *Crime and Justice*, 37(1), 453-
502.