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Social Disorganization, Institutional Anomie and the Geographic Patterning of Instrumental Crime: Progress Towards an Integrated Theory

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SOCIAL DISORGANIZATION, INSTITUTIONAL ANOMIE
AND THE GEOGRAPHIC PATTERNING OF INSTRUMENTAL CRIME:
PROGRESS TOWARDS AN INTEGRATED THEORY

By

Eric Ramsey Louderback

A THESIS

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      In comparison to other industrialized, capitalist societies, the United States is characterized by far higher rates of economically-motivated crime, also known as instrumental crime. These acts are directly harmful to immediate victims, are more than seven times more prevalent than violent crime, and they involve billions of dollars of economic losses yearly. Drawing from previous criminological research that shows that higher levels of social disorganization and institutional anomie are associated with higher rates of crime, the present study develops an integrated theoretical approach involving neighborhood-level measures of social disorganization and state-level indicators of the strength of economic and noneconomic institutions as predictors of macro-level instrumental crime rates. Geospatial analyses and multilevel analyses with concepts drawn from social disorganization theory and institutional anomie theory are used to explain instrumental crime in the U.S. between 1999 and 2001 with a representative sample of 9,593 neighborhoods from the National Neighborhood Crime Study and state-level data from the Uniform Crime Reports. The results indicate that social disorganization theory is supported at the neighborhood level and institutional anomie theory is supported at the state level. Support for the anomic disorganization integrated theory is mixed, and suggests the need for future theoretical and empirical research.

Dedication:

I dedicate this Master's thesis to my parents, Marianne and Terry, who have provided me with steadfast support in my studies and who have inspired me to spread goodness in the world in my personal and professional lives. I also dedicate this thesis to victims of crime who have been affected negatively or who have lost their lives due to senseless violence. I hope to reduce the suffering inflicted by crime through research and the influence of criminal justice policy with this work and in my future research agenda.

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I would like to acknowledge certain individuals who without their patient guidance, concerted effort and thoughtful comments, this thesis would not be possible.

Thank you to Dr. Amie Nielsen for overseeing this project, many corrections and drafts, pertinent ideas on the application of criminological theory, guidance on data analysis, and encouragement to keep making progress and to persevere in the writing process. Thank you to Dr. Roger Dunham for insight on theoretical background for social disorganization theory and institutional anomie theory, and emphasis on maximizing explained variance and not only worrying about statistical significance. Thank you to Dr. Shouraseni Sen Roy for graciously letting me take the advanced spatial statistics course during the spring semester of my first year in program, for access to Arc GIS software, and for the inspiration to use geospatial analyses in my thesis and future work on macro-level crime. Thank you to Dr. Olena Antonaccio for providing me with a strong foundation in criminological theory and for constant encouragement to succeed on this project during the rigorous process of graduate school. Thank you to colleagues, friends and family for helpful suggestions, input on the relevance of my research in contemporary society and for providing me with support and reassurance to consistently work on the drafts and to push until the finish line. Lastly, thank you to the Department of Sociology in the Graduate School at the University of Miami for allowing me to pursue my passion for sociology and criminology in the Ph.D. program.

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Chapter 1: Introduction

 1. *Contemporary Relevance and Purpose*

  The United States is characterized by far higher rates of instrumental crime than

the majority of other industrialized, capitalist nations (Messner and Rosenfeld 2001;

Maume and Lee 2003; Baumer and Gustafson 2007; Messner and Fornango 2007;

Messner, Thome and Rosenfeld 2008; UNODC 2013). Baumer and Gustafson (2007:

632) define this type of property crime as "crime [which is] geared primarily towards the

acquisition of money or goods that could be converted to cash." The study of

instrumental crime is important because it is far more prevalent than violent crime and

causes billions of dollars in economic losses yearly (FBI 2012). Demonstrating its vast

scope and impact, the FBI Uniform Crime Report estimates that property crime rates are

more than seven times greater than violent crime rates, and that the economic losses

incurred from property crime were approximately $15.5 billion in 2012 (FBI 2012).

Although American society has proven exceptional in its crime rates relative to similar

nations, very few studies have applied macro-level theories to explain differences in

instrumental crime rates across U.S. neighborhoods and states (e.g., Chamlin and

Cochran 1995; Maume and Lee 2003; Baumer and Gustafson 2007). For the purposes of

this thesis, the focus is on developing an integrated theory that explains a greater amount

of the variation in instrumental crime rates in the United States and testing this theory

with macro-level crime data.

  Two of the most prominent criminological theories that have been applied more

generally to explain crime rates at the macro-level are social disorganization theory and

institutional anomie theory (Messner and Rosenfeld 2001; Pratt and Cullen 2005; Baumer and Gustafson 2007; Steenbeek and Hipp 2011; Sampson 2012). In a comprehensive meta-analysis of the seven major macro-level theories of crime[1], Pratt and Cullen (2005) found major concepts from institutional anomie theory[2] and social disorganization theory[3] to be moderate to strong predictors of macro-level crime rates across geographical units. More specifically, Pratt and Cullen (2005:427-428) concluded that "social disorganization theory was designated as having strong empirical support…[and while institutional anomie theory]…has yet to be subjected to a large number of rigorous empirical tests…the few tests of the theory that have been conducted thus far have yielded fairly strong support for certain propositions made by the theory (e.g., the inverse effect of the strength of noneconomic institutions on crime)." While both theories have received substantial empirical support in previous studies, institutional anomie theory has only received scant attention in the literature. Therefore, the purpose of this thesis is to test the utility of social disorganization theory and institutional anomie theory for *instrumental crime* in two ways with nationally-representative data from the United States. This approach consists of: 1) a test of each theory independently, with social disorganization at the neighborhood level and institutional anomie on the state level, and

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[1] The authors include social disorganization theory, resource/economic deprivation theories, anomie/strain theories, social support/social altruism theories, deterrence/rational choice theories, routine activities theory and subcultural theories.

[2] The mean effect size estimate weighted by sample size for "Strength of noneconomic institutions" (Mz=-0.391), a primary variable from institutional anomie theory, was largest in magnitude among all concepts tested across all seven theories.

[3] The mean effect size estimate weighted by sample size for "Collective Efficacy" (Mz=0.303) was fourth largest in magnitude among all concepts tested across all seven theories, which is a primary variable from social disorganization theory. Additionally, the mean effect size estimate weighted by sample size for "Family disruption" was seventh largest (Mz=0.261) and the mean effect size estimate weighted by sample size for "Poverty" was eighth largest (Mz=0.250).

2) a test of a preliminary integrated multilevel model based on my proposed anomic disorganization theory.

2. *A Move Towards An Integrated Theory*

A general goal in the disciplines of academic sociology and criminology is the discovery of the etiology, or causes, of crime and delinquency through logical inductive and deductive reasoning, systematic observation, analysis of empirical data and theory testing (Hirschi 1969; Kornhauser 1978; Gottfredson and Hirschi 1990; Kubrin, Stucky and Krohn 2009; Cullen and Agnew 2011; Akers and Sellers 2013). Another more specific, recent and increasing trend in the criminological literature has been the development and empirical testing of integrated theories of crime, such as control balance theory, coercion-social support theory and situational action theory (Tittle 1995; Colvin, Cullen and Vander Ven 2002; Tittle 2004; Wikström 2004; Wikström et al. 2010). These complex theories each incorporate concepts from existing theories to explain a greater amount of the variation in crime across individuals (i.e., the micro-level) or across space (i.e., the macro-level) (Tittle 1995). They either integrate vertically, as in situational action theory which measures internal control at the micro-level and criminal opportunity at the macro-level (Wikström et al. 2010), or horizontally, as in coercion-social support theory which measures both main concepts on the macro-level (Colvin, Cullen and Vender Ven 2002).

The current state of the discipline of criminology coupled with the argument that "the results of meta-analysis are indispensable to theory construction" (Hunter and Schmidt 2004: 22) suggests that logically consistent theories with the strongest support

across replications and diverse contexts (i.e., as demonstrated in a meta-analysis) can and should be incorporated to better explain and predict crime (Tittle 1995; Wells 2009). The shift in theoretical focus towards integration across the discipline and the strength of empirical support for social disorganization and institutional anomie theory warrant the development of an integrated theoretical paradigm to explain instrumental crime. In this thesis, I propose an integrated theory entitled the anomic disorganization theory, which integrates the concepts of residential instability, economic disadvantage and racial/ethnic heterogeneity from social disorganization theory (Shaw and McKay 1942) with the concepts of the dominance of the economy and the strength of noneconomic institutions from institutional anomie theory (Messner and Rosenfeld 2001). I draw from findings from both theories and the broader empirical literature on the negative association between social support, social control, and crime, employing these two key concepts as intervening variables in a horizontally (i.e., both on the macro level) integrated theoretical model (Sampson and Groves 1989; Cullen 1994; Tittle 1995; Messner and Rosenfeld 2001; Colvin, Cullen and Vander Ven 2002; Antonaccio et al. forthcoming).

More specifically, I hypothesize that stronger noneconomic institutions within a larger social system (e.g., a state or country) increases social support and social control within that aggregate unit, which in turn lessens the criminogenic effects of social disorganization in smaller areas (e.g., neighborhoods or cities) contained within the larger social aggregate (Messner and Rosenfeld 2001). In contrast, a highly dominant economy within a social system should decrease social support and social control within that social aggregate, which in turn should increase the criminogenic effects of social disorganization in areas subsumed within that larger social aggregate (Messner, Thome

and Rosenfeld 2008). Therefore, the central purpose of this thesis is to test the effects of the predictors of from social disorganization theory on neighborhood-level instrumental crime and the effects of variables from institutional anomie on state-level instrumental crime. The secondary purpose is to provide a "structural integration…by theorizing [how] under some conditions the causal processes of one theory mesh in particular ways with those of other theories" (Tittle 1995: 116). This structural integration of both theories is then tested in a preliminary multilevel model. The theoretical integration in my proposed "anomic disorganization theory" is precursory and does not purport to incorporate all causal processes in a multivariate model with empirical indicators for each of these salient concepts. However, I am able to specify the hypothesized theoretical model of this integrated theory and to partially test the theory with crime data from a large, nationally-representative sample of 9,593 Census-tracts (proxies for neighborhoods) located within 28 U.S. states from the National Neighborhood Crime Study (Peterson and Krivo 2000; Hipp 2007).

Consequently, the present thesis seeks to fill a substantial gap in the extant literature by empirically testing fundamental concepts from two major contemporary criminological theories in an explanatory model of instrumental crime in the United States. The first chapter of this thesis has highlighted the substantive, practical and theoretical importance of the topic of instrumental crime and demonstrated the lack of recent empirical research on the topic. In addition, I have posited the theoretical rationale for investigating macro-level predictors of instrumental crime and forwarded some introductory arguments for the development of an integrated theory of anomic disorganization.

Chapter 2 will explain the theoretical background of social disorganization theory and institutional anomie theory, including the intervening processes and conditioning effects of concepts from each of the two theories as applied to instrumental crime and crime more generally on the macro-level. This chapter also includes a theoretical and empirical review of the current state of the extant literature on instrumental crime specifically, emphasizing the importance of structural predictors at different levels of analysis and illustrating the substantial gap in the literature on the application of integrated theories to research on instrumental crime. Chapter 2 concludes with a discussion of six major arguments that support the integrated anomic disorganization theory, an explication of how the two theories may be integrated, the development of a conceptual and theoretical model, and a statement of the three research questions that inform six empirically-testable hypotheses.

Chapter 3 discusses the data sources and research methods employed in subsequent analyses, and details the measurement and operationalization of each of the salient concepts. I also introduce the spatial component of the thesis and show the importance of geographical analyses when investigating crime on the macro-level. Next, I describe the two one-level models and the multilevel analytic strategy that I will employ to empirically test the direct, mediating and moderating effects of variables from social disorganization and institutional anomie theories based on the theoretical model. Lastly, Chapter 4 elucidates the empirical and theoretical findings at length, and Chapter 5 contains a discussion of the substantive, theoretical and methodological contributions of this thesis to the literature, limitations of the present study, directions for future research

on the macro-level anomic disorganization theory of crime, and finally, policy

implications for criminal justice policy and society at large.

Chapter 2: Background

In this chapter, I discuss the key concepts and historical development of social disorganization theory and institutional anomie theory, paying close attention to theoretical and empirical shortcomings of each theory. I then provide a more comprehensive synthesis of the sparse body of recent literature on instrumental crime in particular, demonstrating the study methodologies, empirical applications, operationalization of key concepts, practical and theoretical limitations, and significant findings. Next, I posit six arguments as to why social disorganization and institutional anomie theories of crime are suitable for theoretical integration. Finally, I conclude this chapter with a discussion of the conceptual and theoretical model of the anomic disorganization theory, which explicitly shows the abstract concepts and hypothesized causal relationships among these concepts, and informs the statement of the six study hypotheses.

1. *Theoretical Framework*

According to Pratt and Cullen (2005), seven primary theories of crime have been proposed and tested empirically with the ultimate goal of explaining macro-level crime rates. Macro-level crime rates refer to aggregated measures of different types of crime spatially distributed across ecological or geographical units such as Census tracts, neighborhoods, counties, cities, metropolitan areas, states or countries (Pratt and Cullen 2005). The primary macro theories of interest in this thesis are social disorganization theory and institutional anomie theory. Based on a thorough review of the current body of literature and empirical findings on macro-level theories of crime, I argue, consistent with Pratt and Cullen (2005), that social disorganization and institutional anomie theories

of crime are the most effective in their explanatory power more broadly. I also agree with Maume and Lee (2003: 1168) that the two theoretical approaches have the most promise for integration; they reason that institutional anomie theory "may be in fact well suited for integration with other macro-level theories, such as systemic social disorganization theory [and] that such integration might not only lead to a more comprehensive structural explanation of crime, but also may help crystalize policy implications at the macro-level as well." Additionally, although social disorganization has not been explicitly tested with instrumental crime as a single outcome, Grunwald et al. (2010: 1076) urge future research to examine the "impact of neighborhood processes on repeated involvement in instrumental crimes…and which are largely dependent on opportunity." Each of these two theories will be thoroughly reviewed and described in the following section.

Most existing literature concerning the theories either applies social disorganization theory alone to explain overall crime rates across ecological units, but mostly neighborhoods, or institutional anomie theory, which is used alone to predict instrumental crime rates across larger geographical areas such as states or countries (Pratt and Cullen 2005). Much like previous research, this study will first test social disorganization theory at the neighborhood level and institutional anomie theory at the state level. However, in contrast to past work, the current study will also employ both social disorganization theory and institutional anomie theory as macro-level predictors of *instrumental crime*. Below I describe the central components and empirical support for each theory, first examining social disorganization theory followed by institutional anomie theory. I then review recent literature on instrumental crime and elucidate the

theoretical and substantive rationale, proposed causal mechanisms and empirical significance of my preliminary anomic disorganization theory.

a. Social Disorganization Theory

One of the most important and well-studied criminological theories intended to explain and predict macro-level crime rates is social disorganization theory (Kornhauser 1978; Kubrin and Weitzer 2003; Pratt and Cullen 2005; Sampson 2012). The social disorganization theory of crime was originally articulated by Shaw and McKay (1942) to explain differences in neighborhood crime rates among juvenile delinquents in concentric zones in the Chicago metropolitan area. They found that some areas had consistently high crime rates and juvenile arrests over time despite population changes in race and ethnicity, suggesting that particular structural factors within a neighborhood were more important for crime than characteristics of individuals within that location. The original articulation of the theory implicated macro-level predictors of residential instability, racial and ethnic heterogeneity, and economic disadvantage as explanations for differing levels of crime in various neighborhoods (Shaw et al. 1929; Shaw and McKay 1942).

Higher levels of residential instability, ethnic/racial heterogeneity and economic disadvantage were theorized as creating social disorganization within neighborhoods (Shaw and McKay 1942). Social disorganization, or a breakdown in social control, prevents neighborhood residents from solving problems and realizing mutual goals within interpersonal social networks (Kornhauser 1978). The three structural factors were all hypothesized to be associated with the level of informal social control and social

cohesion of a neighborhood (Shaw and McKay 1942; Bursik and Grasmick 1993a;

Bursik and Grasmick 1993b).

High levels of residential instability, racial and ethnic heterogeneity, and

economic disadvantage are associated with low levels of neighborhood informal social

control and social cohesion for several reasons. First, when more residents are

consistently moving into and out of a particular community, the extent to which they

know and trust their neighbors and have concern for the neighborhood wellbeing is

reduced, making them less likely to intervene formally by calling police when witnessing

crime or informally by forming community organizations to improve neighborhood

conditions (Shaw and McKay 1942; Kornhauser 1978: 78; Bursik 1988). Second,

communities with greater racial and ethnic heterogeneity are less likely to develop

intimate social network ties among residents due to fewer shared values and common

interests. This can be criminogenic because of language barriers and cultural

disconnects, which can cause lower solidarity and thus lower informal social control

within a neighborhood (Kornhauser 1978; Sampson and Groves 1987).

Third, economic disadvantage can foster family disruption such as divorce and a

large number of female-headed households, which results in less supervision of youths in

social environments with unstructured socializing (i.e., greater criminal opportunity) and

a lack of material resources with which to engage social control within a neighborhood

(Sampson 1985; Sampson 1992). Sampson (1992: 81) summarizes this relationship,

asserting that among disrupted families, "the consequences of family structure are related

to macro-level patterns of social control and guardianship, especially regarding youths

and their peers."

As more recent work shows, these contextual factors in turn lead to several deleterious outcomes. These include less mutual trust among residents, diminished ability to utilize institutional resources to improve community welfare, a greater propensity for individuals to commit crime, increased neighborhood disorder, more legal cynicism (i.e., distrust of police) and the development of a neighborhood subculture that is supportive of crime and violence (Shaw and McKay 1942; Kornhauser 1978; Sampson and Bartusch 1998; Sampson, Morenoff and Gannon-Rowley 2002; Kubrin and Weitzer 2003). Instead of employing legitimate means to obtain economic resources, some residents of socially disorganized neighborhoods with criminal subcultures and legal cynicism instead commit instrumental crime to procure money and status (Sampson and Bartusch 1998; Sampson 2012). Overall, the synergistic effect of low levels of informal social control and social cohesion within an ecological unit creates an environment in which more crimes are likely to occur, yielding a higher crime rate within the particular area. These critical issues are addressed in more detail in the revised systemic social disorganization theory which is described in the next section and which will serve more generally as one of the two theoretical antecedents of this study.

The focus of empirical research in criminology shifted away from social disorganization theory as a macro-level perspective during the 1960s until the early 1980s (Kubrin 2009). This historical trend was due to scholarly attention placed on micro-level and macro-level opportunity theories of crime such as routine activities theory, among other issues such as criticisms leveled against the theory as ignoring individual-level factors (Kornhauser 1978; Kubrin 2009). However, published works on the topic in the mid to late 1980s renewed interest in a systemic theory exploring the role of mediating

factors in the theoretical relationship between social disorganization and crime (Hunter 1985; Bursik 1986; Wilson 1987; Bursik 1988; Sampson and Groves 1989). Specifically, a theoretical essay by Hunter (1985) which articulated a tripartite typology of social control into the private, public and parochial spheres laid the foundation for future empirical work within a systemic framework (e.g., Bursik and Grasmick 1993b).

Another important component of the recasting of social disorganization theory incorporated the concept of the minority racial underclass and urban subcultures in the United States to some extent, seeking to explain the stark disparities in crime rates among ecologically segregated and impoverished communities in major metropolitan areas (Wilson 1987; Sampson and Wilson 1995). The revised social disorganization theory integrated social and economic changes in the 1970s and 1980s, arguing that the development of an urban underclass, coupled with the decline in factory jobs for lower class minorities, contributed to structural segregation which prevented upward mobility and preserved social stratification. This structural isolation therefore geographically segregated disadvantaged sectors of the population, such as poor African Americans, in ecological locations with little to no access to legitimate employment opportunities (Sampson and Wilson 1995). Ecological segregation combined with low informal social control and social cohesion resulting from high residential instability, collective disadvantage and ethnic heterogeneity, further exacerbated the increase in property and violent crime rates (Sampson 2012).

In the last two decades, research on social disorganization theory has shifted in focus from the direct effects of structural social disorganization predictors on crime towards a more thorough investigation of the intervening mechanisms including informal

social control, social capital, social cohesion, family disruption and collective efficacy

(Sampson, Raudenbush and Earls 1997; Kubrin 2009; Sampson 2012). The theoretical

and empirical focus on these intervening mechanisms helped address some of the key

limitations in earlier critiques (e.g., Kornhauser 1978) leveled against the theory.

Theoretically, the work of Bursik (1988) and Bursik and Grasmick (1993) demonstrated

that both individual-level and contextual factors are salient in predicting crime within a

social disorganization framework, that victimization is important to assess in addition to

crime rates, and finally, that a community's crime rate may affect community levels of

social control and vice versa (i.e., community levels of social control affect crime rates).

In recent years, more developed empirical testing of the revised social disorganization

theory came about with the advent of new methodologies such as multilevel modeling

and social network analysis by Sampson and Groves (1989), Sampson, Raudenbush and

Earls (1997) and Sampson (2012) which made the statistical modeling of intervening

mechanisms possible methodologically. These new analysis techniques were used to test

collective efficacy as another salient intervening explanatory concept in addition to the

original predictors of residential instability, ethnic heterogeneity and economic

disadvantage.

In the revised systemic social disorganization theory, "collective efficacy" is

defined as "social cohesion among neighbors combined with their willingness to

intervene on behalf of the common good," and is seen as mediating factor in the

relationship between economic disadvantage, ethnic/racial heterogeneity, residential

instability, and property and violent crime rates (Sampson, Raudenbush and Earls 1997:

918-920; Sampson 2012). That is, higher levels of economic disadvantage, ethnic/racial

heterogeneity and residential instability have been found to reduce the social cohesion among neighbors and the probability that they will intervene for the wellbeing of the community as a whole, yielding higher neighborhood crime rates. Moreover, it is not merely the presence of strong social ties which increase social control, and in turn which reduces crime; residents must also be willing to take action on behalf of the collective benefit to the community to prevent crime when they witness it (Sampson 2012).

More recent research on social disorganization theory has explored other facets of the theory. These developments fall in several areas. They include a growing consensus of a negative statistical effect of recent immigration on homicide rates and crime in general (Nielsen, Lee and Martinez 2005), debates over what is considered a "neighborhood" (Hipp 2007), the exploration of social ties directly as a mediating variable (Mazzrolle, Wickes and McBroome 2010; Sampson 2012), replication of previous findings with longitudinal data (Steenbeek and Hipp 2011; Sampson 2012) and the integration of routine activities theory and social disorganization theory (Smith, Frazee and Davidson 2000). Geospatial analysis techniques have also been increasingly applied, investigating substantive topics such as the effect of race and measures of social disorganization on concentration of alcohol outlets (Nielsen et al. 2010), the moderating effect of social disorganization on the relationship between alcohol outlets and violent crime (Snowden and Pridemore 2013) and in a comprehensive, longitudinal analysis of the effects of collective efficacy on crime and health in the greater metropolitan Chicago area (Sampson 2012).

Although more recent studies described above have accounted for the possibility of mediating mechanisms of social ties, social control and collective efficacy, due to data

constraints on the macro-level in the present thesis, only direct measures of social disorganization operationalized as residential instability, ethnic/racial heterogeneity and concentrated disadvantage are available. This approach is not a significant limitation, however, for three reasons. First, I forward the first test of the effects of social disorganization predictors on neighborhood-level instrumental crime rates with a nationally-representative sample of Census tracts. Because of the previous findings on the negative association between the three predictors of social disorganization and collective efficacy, and the negative association between collective efficacy and total crime in smaller, non-representative samples, I would expect to find the same significant effects with a nationally representative sample.

Second, I am concerned with the conditioning effects of the strength of economic and noneconomic institutions on the relationship between social disorganization and crime. If I find statistically significant moderation present in the relationship as anticipated, then I would expect to also find this same moderating effect on the positive direct effect of the intervening variables on crime rates. In other words, if I find that the positive relationship between structural social disorganization predictors and neighborhood crime is less pronounced when noneconomic institutions are stronger within a state, then I would also hypothesize that the negative effect of high collective efficacy and extensive community social ties on crime would be *more pronounced* when the strength of noneconomic institutions is greater within a state. Accordingly, if the positive effect of social disorganization predictors on crime is *amplified* when economic institutions are more dominant (i.e., when economic inequality is greater), then I would

also expect to find that the protective effect of high collective efficacy on instrumental crime rates is *less pronounced* in a social context of economic dominance.

Third, this analysis is the first to propose an anomic disorganization theory and to present the first preliminary and partial test of the theory. If as hypothesized, institutional anomie theory concepts moderate the effects of variables from of social disorganization, this in and of itself would be an important contribution to the criminological literature on integrated theories. Future investigations could then further test this novel theory in empirical analyses by incorporating salient mediating variables such as collective efficacy, social control and social support to determine whether conditioning effects are still present. Consequently, the current analysis will apply the structural social disorganization theory predictors of residential instability, racial/ethnic heterogeneity and concentrated disadvantage to explain rates of instrumental crimes on the Census-tract level.

b. *Institutional Anomie Theory*

Social disorganization theory is one of the two primary theoretical frameworks for this study, and it will be integrated with the institutional anomie theory of crime to potentially explain instrumental crime rates in the United States (Messner and Rosenfeld 2001). Much like social disorganization theory, institutional anomie theory had its roots in late 19th century and early 20th century sociology, in this case from the theory of strain, anomie and social disintegration originally espoused by Emile Durkheim (1897 [1951]) and expanded on by Robert Merton (1938). Merton (1938) explained instrumental crime and criminal deviance in society as resulting from the condition of anomie, which is a

state of normlessness that occurs in highly disintegrated societies such as the contemporary United States. Merton (1938) argued that as modern society develops a greater division of labor and lacks universal socially integrating morals, norms and values, feelings of anomie and strain (i.e., constant psychological stress) are the consequence (Durkheim 1897 [1951]; Merton 1957). This macro-level strain is aggravated and compounded by the strong emphasis placed upon the attainment of material and monetary success goals as a sole end in modern Capitalist society, and yet with a lack of legitimate means to achieve these goals for a large percentage of citizens of the United States (Merton 1938; Cloward 1959).

Individuals in society may be unaware of the structural sources of strain, but they likely are aware of the resulting negative outcomes, psychological stress and anomie within their own lives. For those who do not or are unable to follow the dominant, conformist cultural goals in society of monetary success, and who may or may not possess the institutionalized means to achieve these goals, four adaptations can occur. These four possible patterns of behavior are ritualism, retreatism, rebellion and innovation[4]; innovation is most applicable as an explanation of crime and deviance (Merton 1938: 676). Innovation occurs when "the conflict and frustration [i.e., anomie and strain] are eliminated by relinquishing the institutional means and retaining the success-aspiration" (Merton 1938: 678). Innovators thus pursue economic success through non-conformist means such as deviance and instrumental crime. Instead of conforming to society's goals of economic success and pursuing this success through

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[4] The fifth and arguably most common adaptation is conformity, in which an individual accepts the cultural goals of monetary success and pursues these goals through legitimate means (Merton 1938).

legitimate means, these individuals instead often turn to instrumental crime to obtain financial resources.

Those who are innovators still maintain the cultural goals of monetary success and the 'American Dream,' as is dictated by ideology in American society, yet, they lack the institutionalized means to achieve these goals through legitimate means. These legitimate means can take on several forms, such as a post-secondary education, a middle/upper class upbringing, salable skills in the labor market (i.e., human capital), social networks which can provide access to upward mobility (i.e., social capital) or an availability of employment opportunities in one's community (Merton 1938; Messner and Rosenfeld 2001; Baumer and Gustafson 2007; Portes 2010). Strain, coupled with criminal opportunity, thus causes crime at the micro-level among individuals through innovation; individual acts of crime aggregated across ecological units such as the community, neighborhood, county, city, state or nation, consequently increase crime rates on the macro-level (Merton 1938).

While Merton's approach was limited and received little empirical support in formal tests of the theory, it did lead to the development of additional theories (Burton and Cullen 1992; Messner and Rosenfeld 2001; Pratt and Cullen 2005). Messner and Rosenfeld (2001) extended this initial notion of anomie and strain to explain serious crime[5], including instrumental crime, on the macro-level in the contemporary United States in their book *Crime and the American Dream*. Their fundamental argument is that

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[5] Although Messner and Rosenfeld (2001) primarily focus on homicide and other types of serious crime, their arguments can be extended to include any type of instrumental crime such as burglary, robbery, larceny and motor vehicle theft (Baumer and Gustafson 2007). These crimes are committed through a process of innovation as described in Merton's (1938) strain theory, and represent the four types of serious instrumental crime included in the FBI's Part I type of crimes from the Uniform Crime Report.

the United States is an advanced Capitalist society characterized by a strict division of labor, extreme economic inequality and strong emphasis placed on personal achievement (Messner and Rosenfeld 2001). The economy dominates over all other institutions in society, and therefore compels individuals to prioritize economic success *by any means necessary* over other commitments to noneconomic institutions such as the family, community, polity, education system, religious organizations and the social welfare of others.

These conditions are present within an ideally meritocratic economic structure (instead of one based solely on ascribed status) with the valuing of material success as the fundamental and essential goal in life (Salvolainen 2000; Messner and Rosenfeld 2001; Maume and Lee 2003; Messner, Thome and Rosenfeld 2008). This recasting of Merton's strain and anomie theory did not simply implicate only strain resulting from maintaining aspirations to achieve material success without legitimate means to obtain this success (i.e., a "means-aspirations gap" leading to innovation). Instead, the *institutional anomie theory of crime* asserts that particular economic, social, political and ideological features of contemporary United States society directly and indirectly increase instrumental crime rates on the macro-level (Messner and Rosenfeld 2001).

Specifically, Messner and Rosenfeld (2001) argue that the overwhelming emphasis placed upon the economy (i.e., the dominance of the institution of the economy) over all other noneconomic institutions of the family, community, polity, religion, the education system and social welfare system causes an institutional imbalance. Most importantly, this pervasive condition in the social structure prioritizes the pursuit of wealth accumulation and monetary success goals over all other

noneconomic ends; each of these six noneconomic institutions can provide social support, social control, community wellbeing and family socialization. When disempowered in a society with an institutional imbalance prioritizing economic ends, these crime-mitigating functions are lessened in importance, relevance and strength (Cullen 1994; Messner and Rosenfeld 2001; Baumer and Gustafson 2007; Messner, Thome and Rosenfeld 2008). The persistent institutional imbalance of power tilted towards solely monetary success goals surpasses the necessity of employing legitimate means to achieve this success, and similar to Merton's (1938) theory of anomie, generates macro-level increases in the *instrumental crime rate*.

In a social structural context in which the economy is highly dominant when compared to other noneconomic institutions, three consequences result. These outcomes are devaluation, accommodation and penetration of institutions (Messner, Thome and Rosenfeld 2008: 168). First, devaluation is manifested when noneconomic roles such as mother or friend take on less prestige when compared to economic roles such as teacher, professor, banker or CEO. Second, accommodation refers to the process of foregoing other essential noneconomic components of society such as family social gatherings, community improvement assemblies or parent-teacher organization meetings in favor of work obligations. Third, penetration occurs when "the logic of the marketplace intrudes into other realms of social life," such as choosing one's educational or career path because it will be highly profitable or only befriending others who may benefit one's current or future professional career (Messner, Thome and Rosenfeld 2008: 168). These three implications of an institutional imbalance of power in which the economy dominates serve to indirectly cause crime within the institutional anomie theory.

Of greatest importance for this thesis, the dominance of the economy and the consequences of devaluation, accommodation and penetration increase crime rates in three primary ways. These are manifested in the decrease in the ability of noneconomic institutions to provide social support to individuals, the mitigation of the protective effect of informal social control on criminal involvement, and the reduction in the extent to which internalized moral controls can prevent criminal involvement (Messner and Rosenfeld 2001; Messner, Thome and Rosenfeld 2008). In regards to the first two mechanisms, when the economy dominates over all other noneconomic institutions, the attachments, morality, and alternative means of success afforded by enacting roles within the institutions of the family, community, polity, religious institutions and educational institutions are reduced or eliminated.

As such, conformity with institutionalized norms (i.e., laws) takes on less importance because the social support, social control and morality instilled by these noneconomic institutions is less salient and incentivized, compared with achieving economic success through criminal means. This theoretical linkage is similar to Hirschi's (1969) social bond theory and to the social control component of social disorganization theory. More explicitly, less attachment to conventional others, and reduced social support and social control from noneconomic institutions such as the family, friends and community—as a result of an overwhelming commitment to dominant economic institutions—is criminogenic (Cullen, Colvin and Vander Ven 2002; Sampson 2012). The concepts of reduced social support and lower informal social control resulting from weak noneconomic institutions are of particular importance for my anomic disorganization theory, and will be discussed in the following section.

Within a highly-dominant economy and anomic society, economic motivations and ends surpass all other institutional norms in importance. Individuals are "prone to use whatever means are technically expedient to realize their ends, regardless of the normative status of these means" (Messner, Thome and Rosenfeld 2008: 169). As instrumental crime is often the most efficient means to obtain immediate economic gains, it is pursued when the economy is most dominant and internalized moral controls are neutralized.

Internalized moral controls, which are instilled by noneconomic institutions such as the family, community or religious organizations and guide conformist action are reduced or negated in importance when the economy is the paramount institution in society. When reduced in value and importance, internalized moral controls cannot serve their function of instilling self-control, restraint, and conformity to laws and norms. Thus, the main consequence is the deregulation of internalized norms which guide behavior, in turn increasing crime on the micro-level and, consequently, on the macro-level within social systems (Messner and Rosenfeld 2001; Messner, Thome and Rosenfeld 2008).

Based on these theoretical antecedents and three outcomes of a criminogenic institutional imbalance, I argue, consistent with Chamlin and Cochran (1995) and Maume and Lee (2003) that the focus on crimes which are committed to fulfill an economic or financial motive are best explained by institutional anomie theory. I reason that the more severe (and felonious) instrumental crimes of robbery, burglary, motor vehicle theft and larceny are particularly relevant, as Messner and Rosenfeld (2001: 42) limit their scope of their theory to "serious" crimes which either cause significant monetary or bodily harm to

the victim. Therefore, I extend Baumer and Gustafson's (2007) definition of instrumental crime to encompass these four serious crimes which are committed with the ultimate end of obtaining money or objects convertible to cash.

The institutional anomie theory of crime also posits that the strength of noneconomic institutions can modify the institutional balance of power. When a nation or other ecological aggregate like a state, city or neighborhood has strong noneconomic institutions, this can decrease the supremacy of the economy, and thus its crime-generating effects on instrumental crime is reduced (Savolainen 2000; Messner and Rosenfeld 2001; Messner, Thome and Rosenfeld 2008). This means that the strength of noneconomic institutions *mediates* the relationship between the dominance of the economy and instrumental crime rates. In this context and for all tests of institutional anomie theory, *mediation* is tested such that as the strength of commitment to noneconomic institutions increases, the positive, direct effect of the dominance of the economy on crime rates becomes *attenuated* in magnitude and/or is rendered no longer statistically significant (Baron and Kenny 1986).

The central arguments for theoretical integration hinge on mediating effects of the strength of commitment to noneconomic institutions on measures of the dominance of the economy. When the strength of these institutions surpasses the dominance of the economy (i.e., the institutional structure is more balanced), then they can provide social support, informal social control and instill internalized normative moral controls, all three of which are protective against crime. Increased social support, external social controls and internal moral controls therefore compel residents of social aggregates to behave more lawfully and to conform to institutionalized norms instead of committing crime to

achieve economic ends, thereby lowering instrumental crime rates (Messner and Rosenfeld 2001; Baumer and Gustafson 2007). In the course of the current thesis and in the development of an integrated anomic disorganization theory, social support, social control and internalized moral control produced by strong noneconomic institutions guide my analyses and serve to inform hypothesis testing, model specification and discussion of important findings and conclusions.

2. *Recent Extant Literature on Instrumental Crime*

Relatively little attention has been paid to instrumental crime in the scholarly literature (Messner and Rosenfeld 2001). This is so despite the facts that the majority of crimes that are committed in the United States are categorized as instrumental, the economic losses that are inflicted are several billion dollars per year and the deaths that result from instrumental homicides (e.g., botched robberies, car thefts or profit-driven murders) number several thousand per year nationwide (FBI 2012). As the central argument of Messner and Rosenfeld's (2001) *Crime and the American Dream* is that inherent features of American society foster a far higher crime rate than other industrialized nations, the studies that have investigated instrumental crime exclusively in recent years have used institutional anomie theory as the explanatory theoretical model. In the next section, I provide in-depth summaries and critiques of the four most important articles published in the last two decades with a focus on instrumental crime, after which I synthesize these studies and comment on their limitations and their theoretical and methodological importance for this thesis.

a. *Chamlin and Cochran (1995)*

Chamlin and Cochran (1995) conducted the first partial test of Messner and

Rosenfeld's (2001) institutional anomie theory. Using a sample of 50 U.S. states the

authors explored the relationship between economic deprivation, measured as percentage

of families below the poverty line and the strength of noneconomic institutions (measured

as family structure (ratio of divorces to marriages per 1,000 people), participation in

religious institutions (rate of church membership per 1,000 people), and involvement in

political institutions (percentage of eligible voters who voted in 1980 congressional

elections), as predictors of the property crime rate in 1980. They found that each of the

three measures of the strength of noneconomic institutions successfully moderated the

relationship between the percentage of families in poverty and state-level property crime

rate, net of percent black and the percentage of population between the ages of 18 and 24

(Chamlin and Cochran 1995). Therefore, a lower divorce rate and higher participation in

religious and political institutions attenuated the criminogenic effects of poverty at the

state level.

Although their approach and findings supported the main theoretical propositions

of the institutional anomie theory, their measures were relatively underdeveloped and do

not fully capture all of the five dimensions[6] of the strength of commitment to

noneconomic institutions. Their study also failed to control for other important covariates

of instrumental crime, utilized a small sample size and employed weighted least squares

regression instead of more accurate and efficient negative binomial and overdispersed

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[6] In *Crime and the American Dream,* Messner and Rosenfeld (2001) discuss five types of noneconomic institutions, while I include five types in this thesis. These are the family, the polity, the religious institutions, the education system and the community. In this study, Chamlin and Cochran (1997) only include the dimensions of noneconomic institutions of the family, religious organizations and the polity.

multilevel Poisson regression methods (Long 1997; Raudenbush and Bryk 2002; Rabe-Hesketh and Skrondal 2012). These methods were the best available statistical tools at the time and this study should not be discounted on these grounds alone. In fact, this landmark study represents the first partial test of the abstract concepts of institutional anomie theory applied to instrumental crime, and it has served as the theoretical and methodological foundation for subsequent empirical analyses. Its concluding remarks still ring true today in the development and testing of macro-level strain and anomie theories of crime, in the recommendation "to make use of available data to evaluate empirical propositions that reflect on the core assumptions of institutional anomie theory [and] more specifically, it may prove useful to use alternative research designs (e.g., longitudinal data, city-level data) and reexamine the conditional effects of economic deprivation on instrumental crime" (Chamlin and Cochran 1995: 426).

b. *Piquero and Piquero (1998)*

Piquero and Piquero (1998) utilized cross-sectional data from 1990 for U.S. states to test institutional anomie theory as applied to both property *and* violent crime separately. These authors sought to build on and improve upon previous studies by conducting sensitivity testing with different operationalizations of the strength of commitment to three types of noneconomic institutions. The dominance of the economy was again operationalized as the poverty rate, while the strength of the noneconomic institutions of the family was measured as the percentage of single-parent families. Diverging from previous work, they measured the strength of the polity as both the percentage of the population who voted in the 1988 presidential election and the percentage of state residents receiving any kind of government assistance or welfare

benefits. The strength of the institution of education was measured (uniquely) as the ratio of teacher annual salaries to those of other citizens, the percentage of individuals who did not complete high school and the proportion currently enrolled in post-secondary education (Piquero and Piquero 1998).

Similar to previous research by Chamlin and Cochran (1995), the authors used ordinary least squares regression models with cross-product interaction terms between the poverty rate and the strength of noneconomic institutions. They found that college enrollment moderates the positive relationship between the poverty rate and property crime. In contrast, for violent crime, the strength of the education system and polity significantly attenuated the relationship between the poverty rate and crime. Sensitivity testing revealed that alternative operationalizations of the strength of the polity and education were not statistically significant, leading to a conclusion for future inquiries to develop more precise measures of the key concepts of institutional anomie theory. Overall, this study's most important contributions were expanding of the scope conditions of the theory to include violent and property crime, emphasizing the importance of testing the theory across diverse social aggregates and using different indicators to measure the dominance of the economy and especially the strength of commitment to noneconomic institutions (Piquero and Piquero 1998).

c. *Maume and Lee (2003)*

Maume and Lee's (2003) study significantly expanded upon Chamlin and Cochran's (1995) paper both theoretically and methodologically. Maume and Lee (2003) narrowed the theory's focus to the county level, they utilized a more accurate and

efficient estimator of regression coefficients with a negative binomial analysis method for an overdispersed count variable outcome (Long 1997) and they also tested both mediating and moderating effects with more developed operationalizations of the strength of noneconomic institutions (Maume and Lee 2003). In addition, instead of analyzing only property crime as the dependent variable, Maume and Lee (2003) shifted their focus to the homicide rate, and they employed data from the FBI's Supplementary Homicide Reports to disaggregate total homicides in 454 urban counties into expressive and instrumental types, allowing for crime-specific analyses applying the institutional anomie theory. Maume and Lee (2003: 1152) assert that their use of counties as the unit of analysis is justified because the "relationship between economic and noneconomic institutions specified by institutional anomie theory should hold across communities." Similarly, I argue that neighborhoods are suitable units of analysis to determine the effects of social disorganization, the dominance of the economy and the strength of noneconomic institutions.

Much like Chamlin and Cochran (1995), Maume and Lee (2003) also operationalized the strength of commitment to the polity as the average voting percentage in the 1988 and 1992 elections, and the strength of commitment to the family as the divorce rate in 1990. They go beyond previous studies predicting instrumental crime by including a measure of commitment to civically-engaged religious groups, the average educational expenditures per pupil, and the monthly welfare payments per person below the poverty line. Furthermore, the authors diverge from previous studies by operationalizing the dominance of the economy as the Gini coefficient of economic inequality, which has been found to be positively associated with total, violent and

property crime in several notable studies (e.g., Blau and Blau 1982; Messner and Tardiff 1986; Blau 1994). Using negative binomial regression and cross-product interaction terms between the Gini coefficient and the five measures of the strength of noneconomic institutions to test the moderation hypotheses, Maume and Lee (2003) produced findings that partially support the institutional anomie theory. Maume and Lee (2003) conclude that the Gini coefficient and divorce rate have significant positive direct effects on all three types of homicide. The percentage of civically-engaged religious adherents and voting members of the population, and the welfare expenditures per person, had significant negative direct effects on homicide.

Only welfare expenditures per person—a measure of commitment to institutions of social welfare—were found to moderate the relationship between the Gini coefficient and all three types of homicide. In other words, as the strength of commitment to social welfare increases within a county (i.e., the moderator), the magnitude of the positive effect of the dominance of the economy (i.e., the Gini coefficient; the direct effect) on the rate of total, expressive and instrumental homicide decreases. This study is one of the few besides Baumer and Gustafson (2007) to apply institutional anomie theory at smaller levels of aggregation to instrumental crime. Its methodological approach also lends additional credence to my central arguments in this thesis and will help guide the development of the novel anomie disorganization theory.

d. Baumer and Gustafson (2007)

Baumer and Gustafson (2007) offer the most recent and comprehensive test of institutional anomie theory for instrumental crime rates. They assert that their study

intends to fill a substantial gap in the literature by exploring "the extent to which members of different populations are strongly committed to monetary success goals and weakly committed to legitimate means," in addition to testing the positive effects of the dominance of economy and the conditioning (i.e., moderating) effects of the strength of noneconomic institutions on instrumental crime rates (Baumer and Gustafson 2007: 620). In effect, this particular study integrates a Mertonian view of the micro-level model of strain which focuses on the individual-level gap between aspirations to achieve monetary success without the legitimate means, an anomic condition that Messner and Rosenfeld (2001) assume is already pervasive within the macro-level context of the contemporary United States (Merton 1938). Using a unique methodology, this study aggregates individual-level data from the General Social Survey (which contains coded Primary Sampling Units which can be matched to metropolitan areas) with Census data and data from the FBI's Uniform Crime Reports in 77 metropolitan areas in the United States.

Overall, the authors test the fundamental component of anomie theories of a gap between aspirations to achieve monetary success and the availability of actual legitimate means to achieve this end. This Mertonian conceptualization of strain was examined in conjunction with the dominance of the economy (measured as limited job availability, educational and economic attainment, and Gini coefficient of income inequality), and the moderating effects of the commitment to noneconomic institutions of the family, education, polity, religion and community, on the outcome of instrumental crime rates. This concept was defined as "the number of robberies, burglaries, larcenies, and auto thefts per 100,000 residents in [the] sample units for 1977" (Baumer and Gustafson 2007: 633). The authors found that instrumental crime rates are higher in ecological areas with

a larger disparity between aspirations to achieve monetary success and the availability of actual legitimate means to achieve this end, and that this positive relationship was moderated by the amount of welfare assistance and quantity of socializing with family, and amplified for areas with high levels of inequality and low attainment in economic and educational domains (Baumer and Gustafson 2007).

Stated differently, when commitment to social welfare and the family is stronger in a geographical area, the positive effect of a larger aspirations-legitimate means gap on instrumental crime is reduced. In contrast, when a geographic area has high economic inequality, low educational attainment and a poor labor market, the positive effect of a larger aspirations-legitimate means gap on institutional crime is increased. As a guide to future research in the substantive area, the scholars emphasize the need to "reconsider linkages examined in our study with alternative measures, data sources and samples," (Baumer and Gustafson 2007: 655) which I strive to achieve in this current thesis.

This innovative paper by Baumer and Gustafson (2007) suffers from two potential methodological problems that I seek to address and remedy in the present study. First of all, contrary to recommendations from Osgood (2000) and Wooldridge (2008), among others, this investigation employed instrumental crime *rates* as the dependent variable instead of taking the natural log of this value, and then analyzed and tested the direct and conditioning effects with Ordinary Least Squares regression analysis. Although the authors comment that "visual inspection of the model residuals showed no indications of significant non-normality," (Baumer and Gustafson 2007: 641), this conclusion is potentially problematic. Crime data at the macro-level are usually (although not always)

positively skewed and overdispersed[7], leading to biased regression coefficients, inefficient standard errors, and most importantly, incorrect conclusions about the statistical significance of direct and interaction effects between explanatory variables and outcomes of study (Long 1997; Osgood 2000). Indeed, Osgood (2000: 22) notes that "crime rates based on small counts of crime present two serious problems for least squares analysis," specifically with the violations of the assumption of a constant error variance and non-normal error distributions, which introduce significant bias and lead to misleading significance testing.

Secondly, the small sample size of 77 may have caused problems with adequate statistical power to determine statistically significant effects (Cohen 1992; Wooldridge 2008). These issues are important to take into account in future tests of institutional anomie theory and in empirical studies on instrumental crime. In this thesis, I seek to overcome these limitations by using negative binomial and multilevel regression models with a total sample of 9,593 Census-tracts.

e. Synthesis of Extant Literature

The state of the literature on instrumental crime has several important features that inform the current analyses and theoretical integration in this thesis. First, the extant literature in this area is successful in actually operationalizing some of the more amorphous and abstract theoretical constructs such as the dominance of the economy from Messner and Rosenfeld's (2001) original articulation of the theory. This has been a

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[7] Though most macro-level crime data is positively skewed and overdispersed, violent crime tends to suffer from these two statistical conditions more so than property crime. Therefore, statistical tests are always necessary and warranted in all cases to determine if the variance actually exceeds the conditional mean, resulting in the condition of overdispersion.

perennial and particularly difficult problem, and only Baumer and Gustafson (2007) have gone beyond the use of U.S. Census and other additional existing datasets by aggregating individual-level General Social Survey data to the metropolitan statistical area level (Messner, Thome and Rosenfeld 2008). While my approach is similar in that I employ secondary data merged with existing crime data, I also introduce unique data sources such as measures of social capital from Putnam (2000) and percentage of religious adherents from the Association of Religious Data Archives (ARDA 2000).

I also use more recent data from 1999-2001, instead of older data from 1977 and 1990, another potential limitation of current published research findings. The use of historical data is not necessarily a negative aspect of these studies, however, as Lawrence (2012) suggests that historical data can actually serve to improve the robustness of tests of theories of crime across time and with different study populations. Even so, in light of the steady decline in crime rates over the last two decades and the possibility that shifts in economic conditions have changed patterns of crime, I argue that my use of more recent data is a substantial contribution to the literature (Rosenfeld and Fornango 2007). Second, the more recent studies in this field have refocused on smaller aggregate ecological units over time. While countries were analyzed in studies by Messner and Rosenfeld (1997) and Savolainen (2000), and states were the unit of analysis in the paper by Chamlin and Cochran (1995), the more recent studies by Baumer and Gustafson (2007) (metropolitan statistical areas) and Maume and Lee (2003) (counties) use smaller aggregates. I continue this trend in the present investigation by refocusing the theoretical and analytical lens to Census-tracts, which I employ as a proxy for neighborhoods (Sampson, Morenoff and Gannon-Rowley 2002; Hipp 2007; Peterson and Krivo 2010).

A third characteristic of the extant literature on instrumental crime is the use of Ordinary Least Squares and negative binomial regression analysis methods. These are applicable and fully acceptable for research on macro-level crime, but they do not take stock of the methodological advances that have occurred in the last two decades since the advent of multilevel and hierarchical linear modeling (Sampson, Raudenbush and Earls 1997; Raudenbush and Bryk 2001; Luke 2004; Rabe-Hesketh and Skrondal 2012). I forward a modified anomic disorganization theory which incorporates elements of both social disorganization theory and institutional anomie theory, and applies conventional negative binomial regression analytic techniques employed in previous studies on the Census-tract level and state level. In preliminary analyses, I also aim to surpass previous work in the substantive area of instrumental crime by employing an overdispersed Poisson multilevel model, with both Census-tract *and* state level predictors of neighborhood-level instrumental crime.

The fourth element of the present state of the existing literature described in this section is its limited geographic range and lack of representativeness of regions in the United States. Only Baumer and Gustafson (2007) used a nationally-representative dataset with the General Social Survey, yet they selected a small proportion of the sample non-randomly, and they excluded the majority of cases. To remedy this shortcoming, my analyses are based upon the recently-released (publicly in 2010) National Neighborhood Crime Study (which has yet to be analyzed for these purposes) which is a "set of tracts in a sample of United States cities that are representative of large places in terms of the relevant dimensions [of]…regional [locations], population size, racial/ethnic

composition, and poverty status of urban "neighborhoods" in the United States in 2000"
(Peterson and Krivo 2000: 1).

The fifth and final characteristic of contemporary research on instrumental crime
is the singular focus on institutional anomie theory as the central and sole theoretical
framework. This work only includes additional explanatory variables such as males ages
15 to 34, southern region, and population size and density as control variables in the
primary analyses. I seek to go beyond the current literature on instrumental crime by
incorporating salient variables from social disorganization theory. These variables have
not been exclusively applied to empirical models with my specific operationalization of
instrumental crime, yet the successful replication of significant findings supporting social
disorganization theory across populations and contexts to both violent and property crime
makes is particularly relevant for explaining macro-level instrumental crime rates
(Kubrin and Weitzer 2003; Pratt and Cullen 2005).

Undoubtedly, the studies summarized above are substantial and important
contributions to the canon of scientific knowledge due to the scant body of existing tests
of institutional anomie theory applied to instrumental crime. Nevertheless, the
approaches in these studies neglect to integrate and test other competing macro-level
theories of crime such as social disorganization theory, which have been shown to
explain a moderate amount of variation in crime rates and which have been applied at
smaller levels of analysis such as the city, county, and (most often) the neighborhood-
level (Sampson and Groves 1989; Pratt and Cullen 2005; Hipp 2007; Sampson 2012). In
sum, the present thesis seeks to progress beyond the current state of empirical research on
institutional anomie theory as an explanatory framework for instrumental crime. This

aim will be achieved by following a persistent and increasing trend of integration in criminology to enhance scientific knowledge about the etiology, persistence, spatial distribution, correlates and nature of crime and deviance by both proposing a new anomic disorganization theory and providing the first empirical test of this theory.

3. *A Novel "Anomic Disorganization" Integrated Theory*

A recent trend in criminology is the integration of existing theories aimed at explaining crime and deviance (Colvin, Cullen and Vander Ven 2002; Tittle 2004; Antonaccio et al. forthcoming). This research agenda seeks to provide more comprehensive and robust theoretical models that explain a greater amount of variation in crime rates. Important components of theoretical integration include the potential for empirical testing, elaboration of conceptual models, replication over repeated trials and across different populations (i.e., high reliability and external validity), construct and content validity of concepts and operationalized variables, and parsimony (Messner, Krohn and Liska 1989; Tittle 1995). Drawing from the body of literature reviewed above on social disorganization theory, institutional anomie theory and instrumental crime, and the characteristics of a successful integrated theory in Criminology, I provide a description of the hypothesized causal relationships and the first empirical test of an anomic disorganization theory of crime.

4. *Theoretical and Conceptual Model*

To illustrate the proposed theoretical model of macro-level predictors of instrumental crime, a conceptual path diagram was created (See Figure 1). This conceptual model is designed to visually represent the social predictors of instrumental crime, while also showing the direct, mediation and moderation effects in the relationships between the main concepts with one another[8]. Each component of the model is a latent construct that will be operationalized with variables from the six datasets and key concepts from the criminological theories of social disorganization and institutional anomie. The procedure of making unobservable concepts measurable and quantifiable is described at length in the following chapter.

Figure 1: Theoretical and Conceptual Model of Structural Predictors of Instrumental Crime from Social Disorganization Theory and Institutional Anomie Theory

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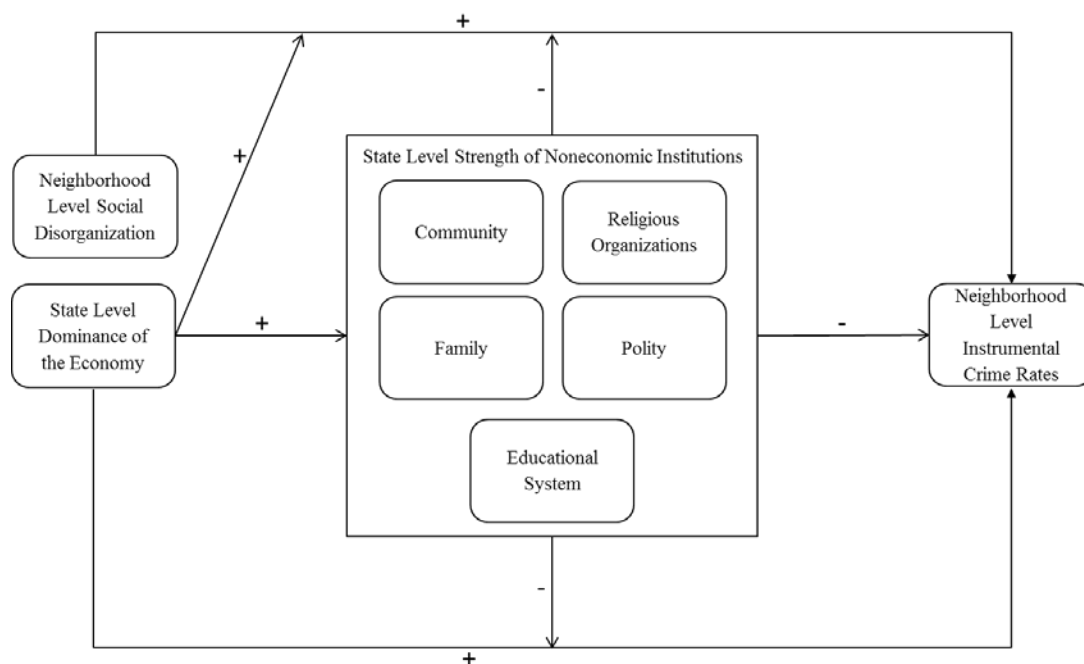
[8] In the path model, the arrows represent direct effects, the + and – signs indicate the directionality of effects, the arrows to path intersections represent moderation effects, and the intervening concept of strength of noneconomic institutions represents mediation effects.

The model visually illustrates the theoretical propositions, and shows that measures of social disorganization at the neighborhood-level and the dominance of the economy at the state-level are hypothesized to be positively associated with higher rates of neighborhood instrumental crime. Conversely, measures of the strength of commitment to noneconomic institutions of the family, community, polity, religious organizations, and education system at the state-level are all hypothesized to be negatively associated with higher rates of neighborhood instrumental crime. The strength of commitment to noneconomic institutions of the family, community, polity, religious organizations and education system at the state-level mediate the positive relationship between the dominance of the economy and instrumental crime rates such that as the strength of noneconomic institutions is greater, the positive effect of the dominance of the economy on neighborhood instrumental crime rates will be *attenuated.*

In regards to moderation effects, measures of the strength of commitment to noneconomic institutions of the family, community, polity, religious organizations and education system at the state-level will moderate the positive relationship between social disorganization and instrumental crime rates such that as the strength of commitment to noneconomic institutions in high, the positive effect of social disorganization on neighborhood instrumental crime rates will be *less pronounced*[9]. Lastly, the dominance of the economy at the state-level will moderate the positive relationship between social

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[9] This terminology when referring to moderation pertains to the steepness of the graph of the simple slopes of the relationship between the predictor variable (e.g., social disorganization measures) and the outcome variable of instrumental crime. When indicators for noneconomic institutions are +1 Standard Deviations above their mean, the simple slope between social disorganization predictors and instrumental crime will be less steep, and when indicators for noneconomic institutions are -1 Standard Deviations below their mean, the simple slope between social disorganization predictors and instrumental crime will be more steep (Preacher, Curran and Bauer 2003; Bauer and Curran 2005)

disorganization and instrumental crime such that when the dominance of the economy is high, the positive relationship between social disorganization and neighborhood instrumental crime will be *more pronounced[10]*. This theoretical model will serve as the primary articulation of the proposed anomic disorganization theory in this analysis and will be subjected to empirical testing.

5. *Noneconomic Institutions, Social Support and Social Control*

The purpose and logic of this theoretical integration is supported by four main arguments. First and foremost, two central concepts in criminology will serve as intervening mechanisms in the theoretical model of the anomic disorganization theory (See Figure 2). These two concepts are social support and social control, and both have been found to be inversely related to crime at the macro-level in numerous studies (e.g., Chamlin and Cochran 1997; Chamlin, Cochran and Lowenkamp 2002; Sampson, Raudenbush and Earls 1997; Sampson 2012). Social support is defined as "the perceived or actual and/or instrumental expressive provisions supplied by the community, social networks, and confiding partners" (Lin 1986: 18). According to Chamlin et al. (1999: 440), higher levels of social support increase the extent to which "communities can enmesh their citizens in mutual ties of trust, empathy and obligation through the performance of behaviors that promote the welfare of others…which generate and nurture altruistic values" and in turn reduce community property and violent crime rates. In effect, with more social support within a community or social aggregate, the greater

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[10] This same logic can be extended to this relationship, in that when the dominance of the economy is +1 Standard Deviations above its mean, the simple slope between social disorganization predictors and instrumental crime will be more steep, and when the dominance of the economy is -1 Standard Deviations below its mean, the simple slope between social disorganization predictors and instrumental crime will be more steep.

extent to which members of a community trust each other and feel obligated to assist their fellow citizens, making people less likely to victimize other residents.

Social control is a similar, but distinct concept, and in this context is defined as "those acts, relationships, processes, and structures that maintain social conformity" (Liska 1992: 2). This fundamental concept in social disorganization theory is found to reduce crime rates because (among other reasons) it prevents individuals from engaging in crime for concern of condemnation from friends and family, and because it generates social networks which informally monitor the behavior of neighborhood residents, reduces neighborhood disorder and increases trust among residents (Hirschi 1969; Kornhauser 1978; Sampson and Groves 1989; Bursik and Grasmick 1993; Sampson 2012). Based on these two concepts, I contend that the strength of noneconomic institutions can act as structural factors which can increase the intervening mechanisms of social support and social control within an ecological unit such as a community, city or state. As social support and social control are increased within a social system, the effect should be a decrease in the prevalence and influence of both micro-level and macro-level criminogenic factors in these geographic units, and a reduction in crime rates (See Figure 2; Pratt and Godsey 2003; Cullen, Colvin and Vander Ven 2002; Worrall 2009; Sampson 2012).

Figure 2: Theoretical and Conceptual Model of Structural Predictors of Instrumental Crime from Social Disorganization Theory and Institutional Anomie Theory with Intervening Variables of Social Support and Social Control
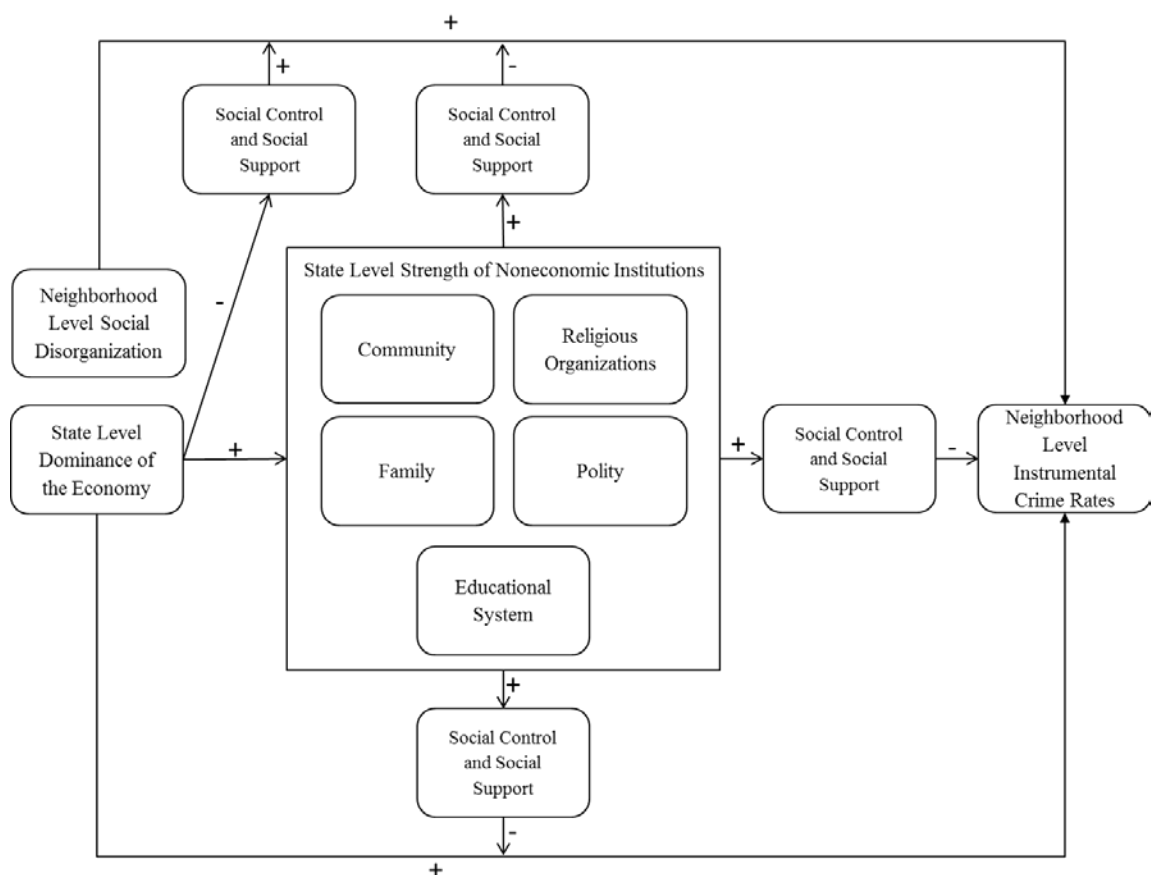
The manner in which I hypothesize that this process occurs is as follows. As the strength of (and commitment to) noneconomic institutions such as the family, polity, community, religious organizations and the education system increases in a social collective, residents are more likely to build more dense social networks, exercise informal social control on behalf of their neighbors, engage in more effective parenting during childhood, develop social bonds with others and to better cope with general strain (Gottfredson and Hirschi 1990; Cullen 1994; Agnew 1999; Messner and Rosenfeld 2001; Cullen, Colvin and Vander Ven 2002; Pratt and Godsey 2003; Sampson 2012). For instance, when the institution of the family is strong and not suffering from disruption

within a macrosocial unit, parents are better able to supervise youths and therefore lessen criminal opportunity and criminal involvement (Sampson 1985). Accordingly, a strong commitment to community within areas with high levels of social capital can reduce criminal involvement by increasing social trust, attachment and involvement among residents, providing reciprocal friendship networks to mitigate strain, and shifting emphasis from solely pursuing economic ends to enacting community and social roles (Rose and Clear 1998; Rosenfeld, Messner and Baumer 2001; Messner, Baumer and Rosenfeld 2004; Portes 2010; Gachter, Savage and Torgler 2011).

High quality public schools and commitment of the community to education can help to increase the social support and solidarity among residents which in turn mitigates crime (Wilson 1987; Hagedorn 1991). Hagedorn's (1991: 538) research on gangs in Milwaukee supports this notion, concluding that "without community controlled institutions, conventional values will have diminished appeal, neighborhoods will segment [and] solidarity will weaken…which is consistent with the basic tenant of social disorganization theory, that the lack of effective institutions is related to crime and delinquency." Finally, a functioning and engaged polity within counties and states can serve to increase social conformity and social control among residents and in turn, decrease violent and property crime (Coleman 2002).

Kim and Pridemore (2005: 92) reached similar findings in a study in the context of post-Soviet Russia, concluding that stronger commitment to the noneconomic institution of the polity was inversely related to robbery, and that "regions with higher voter turnout may possess stronger solidarity and thus greater cohesion and control." These findings and arguments are derived from leading criminological theories such as

social support/social altruism, systemic social disorganization, self-control, social bond, and general strain theories, and cannot be tested exclusively with the available data in the present study. However, I argue that the strength of noneconomic institutions in providing social support and social control within an aggregate area can mitigate increased criminal propensity and actual criminal involvement among individuals, and therefore among aggregated groups of individuals in social collectivities (i.e., neighborhood and state-level crime rates).

6. *Noneconomic Institutions and Social Disorganization*

Second, extending the argument further, I reason that if stronger noneconomic institutions can increase social support and social control, then in turn they can also serve to reduce the criminogenic effects of social disorganization measured as residential instability, racial/ethnic heterogeneity and concentrated disadvantage. Messner and Rosenfeld (2001) hint at this possibility in their book, and expand on the idea further in a more recent article, in which they describe how the dominance of economic institutions and weak noneconomic institutions are "conducive to criminal behavior by virtue of the operation of internalized moral controls and external social controls" (Messner, Thome and Rosenfeld 2008: 169). In essence, these arguments mean that an institutional balance of power in which noneconomic institutions are weak reduces social support and social control, thereby preventing these two social mechanisms from protecting against the criminogenic effects of social disorganization.

Several recent empirical studies also support this theoretical logic. Hawdon and Ryan's (2009) findings on social capital uphold this argument, as they found that high

social capital (a measure which I use to assess strength of and commitment to community), is associated with higher levels of informal social control that in turn reduces rates of violent victimization in economically disadvantaged neighborhoods. A thriving social welfare system can also reduce the criminogenic effects of relative deprivation and economic disadvantage within a community, thereby decreasing the criminal involvement among its members (Chamlin, Cochran and Lowenkamp 2002). Hannon and DeFronzo (1998) reached similar conclusions, finding that high levels of welfare assistance moderates the positive relationship between economic disadvantage and crime rates, likely due to a decrease in anomie and an increase in social control.

Sampson, Raudenbush and Earls (1997) comment on this causal linkage in their seminal multilevel study, emphasizing that social ties, organizational involvement (i.e., commitment to community) and local services (i.e., strong noneconomic institutions such as education and social welfare systems) can have protective effects against the criminogenic effects of economic deprivation. Of course, they find that collective efficacy, a "combined measure of informal social control and cohesion and trust remained a robust predictor of lower rates of violence" (Sampson, Raudenbush and Earls 1997: 923). Yet this concept still subsumes social control, which I argue will also increase in a strong noneconomic institutional context. Although social control, social network ties and social cohesion have almost exclusively been viewed as *mediators* in the relationship between social disorganization and crime (e.g., Sampson, Raudenbush and Earls 1997; Warner and Wilcox 1997; Steenbeek and Hipp 2012), for my integrated theoretical model, I hypothesize that social control and social support can also *moderate* the relationship between social disorganization and crime rates (See Figure 2). As such,

when noneconomic institutions are stronger within a spatially defined area, the social

support and social control in that area is also hypothesized to increase, and consequently,

the positive, direct relationship between social disorganization (i.e., residential instability,

racial/ethnic heterogeneity and collective disadvantage) and crime is expected to become

less pronounced.

7.   *The Dominance of the Economy, Social Support and Social Control*

A third important justification for theoretical integration is consistent with the

logic described in my second point regarding noneconomic institutions, but instead

focuses on the dominance of the economy, social support and social control.

Specifically, this pertains more generally to the potential for the dominance of economic

institutions to condition the relationship between residential instability, collective

disadvantage and racial/ethnic heterogeneity, and crime rates (See Figure 2). Messner

and Rosenfeld (1997: 1396-1397) summarize the process by which economic dominance

facilitates low social support and social control as follows:

> Economic dominance leads, in turn, to high rates of crime via two complementary
> processes. First, this type of institutional imbalance provides fertile soil for the
> growth of the anomic cultural pressures associated with market arrangements.
> This is because the noneconomic institutions that bear primary responsibility for
> cultivating respect for social norms, such as families and schools, are less capable
> of fulfilling their distinctive socialization functions. Second, economic dominance
> weakens the external social controls associated with institutional attachments.
> When the economy dominates the institutional balance of power, noneconomic
> roles become relatively unattractive. The result is relatively tenuous institutional
> engagement, weak social control, and high rates of crime.

Thus, the first process indicates that when economic dominance is most prevalent,

socialization and social support provided by noneconomic institutions is reduced. The

second process means that with economic dominance, the reduction in attachments to noneconomic social institutions diminishes the social control exercised by these institutions. Messner, Thome and Rosenfeld (2008: 172) rephrase this same argument more recently, asserting that "economic dominance in the institutional balance of power implies that these sources of effective social control and moral guidance (i.e., 'the family, the schools and the democratic state') are rendered impotent." They reason that this also occurs because a highly dominant economy in an anomic society with a large gap between legitimate means to achieve institutional goals maximizes devaluation, accommodation and penetration which can have criminogenic effects (Messner and Rosenfeld 2001; Messner, Thome and Rosenfeld 2008).

In this social context, individuals prioritize economic achievement and financial success over commitments to all other institutions in society, which prevents conventional sources of social support and informal social control such as the family and community from being influential. When the economy is the dominant social institution in a particular neighborhood, city, state, region, or nation, the extent to which social support and social control are present and can be exercised is reduced. With reduced social support and social control, the extent to which these two factors can protect against the criminogenic effects of social disorganization is mitigated (Hannon and DeFronzo 1998; Sampson 2012). Therefore, low levels of social support and social control resulting from an institutional imbalance in which the economy is dominant is also hypothesized to *amplify* the positive, direct effects of measures of social disorganization on crime rates. The fully-specified model in Figure 2 shows the mediating and moderating effects of social control and social support with concepts from social

disorganization theory, and the dominance of the economy and strength of noneconomic institutions from institutional anomie theory.

8. *A Multilevel Model of Anomic Disorganization*

A fourth and equally pertinent rationale for my proposed anomic disorganization theory is the application of a multilevel framework to explain and better understand differences in crime rates across ecological units. Even as early as Kornhauser (1978), the importance of assessing both individual *and* contextual effects (i.e., at multiple levels) on criminal propensity and involvement at different levels of analysis was emphasized. Some of the current models of both social disorganization and institutional anomie solely rely on measures of structural factors at the neighborhood-level, county-level or state-level. This approach does not address or statistically model the complex and holistic nature of sociological phenomena, such as in this case with crime and deviance.

Indeed, such studies as Sampson, Raudenbush and Earls (1997), Agnew (1999) and Wikström (2010) each take on this multilevel approach, testing social disorganization, a macro-level general strain theory, and situational action theory, respectively, with individuals nested within neighborhoods. Extant research on each theory suggests that institutional anomie theory is most applicable to larger social systems such as states and countries, while social disorganization theory is most applicable to communities and neighborhoods (Messner and Rosenfeld 1997; Savolainen 2000; Messner and Rosenfeld 2001; Sampson and Groves 1989; Sampson 2012). For these reasons, I propose a unique approach in my anomic disorganization theory, in that neighborhoods (to test the social disorganization component) are nested within states (to

test the institutional anomie component), a framework that to date has never been proposed or formally tested.

a. *Social Change and Theoretical Robustness*

The current state of the United States' economy and social transitions that have occurred over the last two decades dictate the need for criminological theory that addresses these social changes and unprecedented levels of social inequality. The economic and social changes in recent years are characterized by increasing wealth disparities and social class inequality, coupled with declining political involvement and mobilization, decreasing political and popular support for social welfare programs, diminishing emphasis placed upon the institution of the family, and, lastly, weakening support for the public education system (Putnam 2000; Maume and Lee 2003; Desilver 2013; Roper Center Public Opinion Archives 2014). Overall, the economy has become the most dominant institution in society (Messner and Rosenfeld 2001). By applying concepts from two prominent macro-level theories, the empirical test in this thesis can determine if findings on each theory still hold in contemporary society. This approach serves to strengthen the current findings on both theories and, if the hypotheses are supported, will increase the robustness of social disorganization theory and institutional anomie theory with a large, representative sample of United States Census-tracts and states.

b. *Greater Explained Variation in Crime Rates*

A central goal of the discipline of Criminology is to investigate "knowledge concerning the measurement, etiology, consequences, prevention, control, and treatment of crime and delinquency" (ASC Website 2014: 1). However, the amount of explained variation in total crime rates in current models of social disorganization or institutional anomie ranges from about 20 percent to 40 percent (or less) of the variation in crime rates across ecological units (Maume and Lee 2003; Pratt and Cullen 2005; Cullen and Agnew 2011). Of course, this means that approximately 60 to 80 percent of the variation in crime is unexplained, a theoretical and policy relevant problem which may be addressed in my proposed theory. My theory strives to explain a greater amount of the variation in crime. The findings and policy implications may thus serve as a better source of information to guide policymakers and academic researchers by illuminating a greater number of structural factors which contribute to the persistent and damaging problem of instrumental crime and delinquency in society.

9. *Research Questions and Hypotheses*

Drawing from the theoretical model illustrated and explained above, the central research questions that will guide the subsequent analyses are described below. These broader research questions incorporate the two criminological theories of social disorganization and institutional anomie, and they inform the development of six specific hypotheses that will be tested. Three research questions will inform the development of the six hypotheses. First, how do concepts from social disorganization theory and institutional anomie independently explain instrumental crime rates across neighborhoods

and states in the United States? (Hypotheses 1-3). Second, does the strength of

commitment to noneconomic institutions mediate (Hypothesis 4) and moderate

(Hypotheses 5, 5a and 5b) the effects of the dominance of the economy on instrumental

crime rates? Third, how does the dominance of the economy and the strength of

noneconomic institutions at the state level moderate the effects of social disorganization

on the neighborhood level? (Hypotheses 6, 6a and 6b). This approach first tests social

disorganization theory alone at the neighborhood level as a framework for explaining

variation in instrumental crime rates, and then tests institutional anomie theory alone at

the state level as a framework for explaining variation in instrumental crime rates.

Lastly, the moderation hypotheses 6, 6a and 6b facilitate an initial empirical test of the

integrated anomic disorganization theory.

Hypotheses:

Hypothesis 1: Neighborhoods with greater social disorganization will have higher

instrumental crime rates (See Figure 3).

Figure 3: Path Model of Neighborhood Level Social Disorganization and Instrumental
Crime Rates
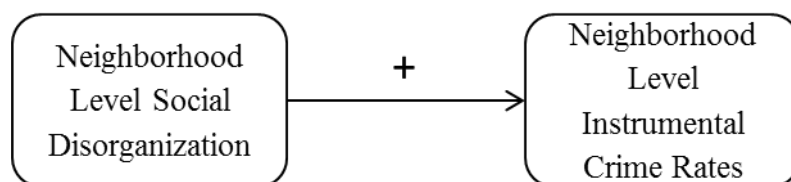
Hypothesis 2: States in which the economy is more dominant will have higher

instrumental crime rates (See Figure 4).

Hypothesis 3: States with a weaker commitment to noneconomic institutions will have higher instrumental crime rates (See Figure 4).

Figure 4: Path Model of State Level Dominance of the Economy, Strength of Noneconomic Institutions and Instrumental Crime Rates with Mediation Effects
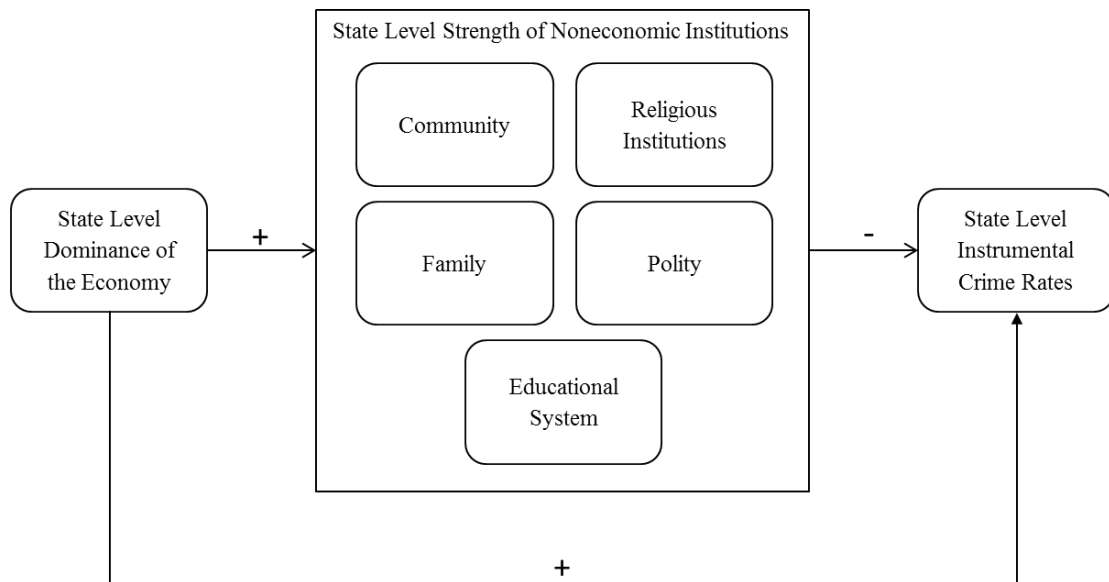
Hypothesis 4: The strength of noneconomic institutions will mediate the relationship between the dominance of the economy and state-level instrumental crime, such that when controlling for the strength of noneconomic institutions, the positive effect of the dominance of the economy will be reduced or rendered not statistically significant (See Figure 4).

Hypothesis 5: The strength of and commitment to the family, polity, community, religious organizations and education system will moderate the positive relationship between the strength and dominance of the economy and instrumental crime rates (See Figure 1).

Hypothesis 5a: When the strength of and commitment to the family, polity, community, religious organizations and education system is low, the positive relationship between the strength and dominance of the economy and instrumental crime rates will be amplified.

Hypothesis 5b: When the strength of and commitment to the family, polity, community, and education system is high, the positive relationship between the strength and dominance of the economy and instrumental crime rates will be less pronounced.

Hypothesis 6: The dominance of the economy and the strength of and commitment to the family, polity, community, religious organizations and education system will moderate the positive relationship between social disorganization and instrumental crime rates (See Figure 1).

Hypothesis 6a: When the dominance of the economy is low, and the strength of and commitment to the family, polity, community, religious organizations and education system is high, the positive relationship between measures of social disorganization and instrumental crime rates will be less pronounced.

Hypothesis 6b: When the dominance of the economy is high, and the strength of and commitment to the family, polity, community, religious organizations and education system is low, the positive relationship between measures of social disorganization and instrumental crime rates will be amplified.

Chapter 2 has consisted of five sections, which provide a background of the two theories of social disorganization and institutional anomie, the extant literature on instrumental crime and the reasoning for theoretical integration. I first discussed the main concepts, advanced a brief historical outline and reviewed some of the more recent findings on both social disorganization theory and institutional anomie theory. Next, I provided a more thorough review of the recent extant literature focusing on the study of macro-level instrumental crime through the lens of institutional anomie theory, and forwarded a synthesis of the existing body of work on the topic. Subsequently, I described in detail the integrated anomic disorganization theory, focusing particularly on the intervening concepts of social control and social support, the theoretical linkages among all salient concepts, and the relevance to policy and the state of empirical research in the discipline of criminology more broadly. Finally, I concluded the second chapter with a discussion of the theoretical and conceptual model of anomic disorganization theory, the three research questions of study and six empirically testable hypotheses.

The following chapter provides a detailed description of the data, measurement and operationalization of the abstract concepts from social disorganization theory and institutional anomie theory. I explain in detail the independent, dependent and control variables which will be incorporated into the models for testing. Finally, I elucidate the analytic strategies which are used to test the six hypotheses described above, including both geospatial analyses and conventional statistical analyses.

Chapter 3: Research Methods

In this chapter, I first describe in detail the six data sources which will be used to test the hypothesized relationships among the concepts in the integrated anomic disorganization theory. Next, I explain the measurement and operationalization of the dependent and independent variables from social disorganization theory and institutional anomie theory. I expound on the analytic strategies that I employ to test the hypotheses of study, proceeding from basic descriptive statistics to the geospatial distribution of each of the variables, and then to separate multivariate regression models for social disorganization theory at the neighborhood level and institutional anomie theory at the state level. Lastly, I conclude with the discussion of a preliminary multilevel model and an analysis of the geographical patterning of instrumental crime using a major metropolitan area as a case study.

1.   *Data Sources*

a.   *US Census Socio-Demographic and Economic Data*

In order to assess the relationships between macro-level variables at different levels of analysis and instrumental crime rates based on the research hypotheses described in the previous chapter, six secondary data sources are utilized. The data source that will be used to develop measures of the dominance of the economy and the strength of the noneconomic institutions of the family and polity is the United States Census. In addition to the Decennial Census, the U.S. Census Bureau also publishes hundreds of reports yearly or every two years containing a wide variety of data on national, state, city, county and census tract-level socio-demographic characteristics (U.S. Census 2014). These measures include variables such as annual household income,

racial/ethnic composition, average age, political ideology, region, divorce rates, welfare

spending and total number of welfare recipients. These data are available in publications

such as the American Community Survey, the American Housing Survey, American

Economic Survey, Annual Surveys of Governments, Census of Governments, and the

Economic Census, which is conducted every 5 years (U.S. Census 2014). The measures

in this thesis are drawn from the 2000 Census of Population and the 2012 Statistical

Abstract of the United States, which were accessed through the U.S. Census online

resources (U.S. Census 2000; U.S. Census 2012).

Data from the U.S. Census have been used in numerous macro-level studies of

crime, and they have been the primary means of operationalizing concepts from

institutional anomie theory (Piquero and Piquero 1998; Maume and Lee 2003; Baumer

and Gustafson 2007). In order to develop measures of key explanatory variables from

institutional anomie theory, publicly-available Census data from the study period of 1999

to 2001 were merged with National Neighborhood Crime Study and Uniform Crime

Reports data described in the following section (US Census 2000). This methodological

approach is similar to studies by Maume and Lee (2003) and Baumer and Gustafson

(2007), as well as recently published criminological findings that empirically test the

relationship between structural correlates of violent and property crime at multiple levels.

b.   *National Neighborhood Crime Study Data*

The data source that is used to operationalize measures of social disorganization

and instrumental crime is the National Neighborhood Crime Study (NNCS). This

publicly-available data set contains socio-demographic and Census-tract level data on

crime from 91 cities and 64 metropolitan areas, with 9,593 census tracts in a representative sample of neighborhoods in large U.S. cities from the years 1999, 2000 and 2001 (Peterson and Krivo 2000). This unique dataset was released in 2010 and is the first available collection of data on instrumental crime that is nationally-representative of the urban United States. This source of crime data contains information on crime counts, rates and key structural predictors from social disorganization theory and institutional anomie theory at three distinct aggregate units of analysis: the Census-tract, the city and the greater metropolitan area (Metropolitan Statistical Area; M.S.A.) (Peterson and Krivo 2000).

These data were collected based on a stratified random sample methodology within each geographic region of the United States which had at least 100,000 in population in 1999. Crime data were aggregated from police department reports of either Census-tract level crime counts or location-based crime reports of the seven FBI Part I crimes of robbery, burglary, larceny theft, motor vehicle theft, assault, homicide and rape (FBI 2012). In the event that data were not released by the police department in a particular city or were not otherwise available, the "city was replaced with an alternative place of similar size, racial/ethnic composition, and level of poverty" (Peterson and Krivo 2010:1). Data were excluded for Census tracts with very small numbers of inhabitants (less than 300 residents), large institutionalized populations (more than 50%), if the laws prohibited the release of address data on violent crimes of rape and homicide, and if the validity of the police department data could not be verified against the Uniform Crime Reports for 1999-2001 (Peterson and Krivo 2000).

In the cities of Detroit, Houston, Milwaukee, Pittsburg and Seattle, offense counts were drawn from Census tract boundaries from 1980 or 1990. In very few instances, police departments did not have access to data for 1999, 2000 and 2001, and crime data from 2002 was used instead. Significant missing data are present for the rape rate and homicide rate (i.e., between 10% and 27.7%) for 2000 and the three years aggregated. However, as I am only examining instrumental crime (i.e., robbery, burglary, larceny theft and motor vehicle theft), this is not a limitation of these data. Beyond the crime data, the NNCS includes measures of key variables including socioeconomic indicators, labor market conditions, social disorganization, structural disadvantage, mortgage lending and population characteristics extracted from eight additional publicly-available data sources, including the U.S. Census[11] at the Census-tract, city and MSA level. Most pertinent to my analyses is that each of the Census-tract measures can be linked to a specific U.S. state. This characteristic of the NNCS allows for the aggregation of state-level measures of the dominance of the economy and strength of commitment to noneconomic institutions.

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[11] The additional publicly available data sources include:
1. 1990 and 2000 County Business Patterns Data from the US Census.
2. Census of Population and Housing, 2000 [United States]: Summary File 3 (SF3), States, from the specified Table # in parentheses (census tract data from summary level 158, city/place data from summary level 160, MSA data from summary level 380, PMSA data from summary level 385).
3. 1990 Census of Population and Housing, Summary Tape File 3A, from the specified Table # in parentheses (census tract data from summary level 080, city/place data from summary level 160, MSA data from summary level 319, PMSA data from summary level 321).
4. County and City Databooks: 1967 and 1977 editions.
5. Census of Population and Housing, 2000 [United States]: Summary File 3 (SF3): States: Geographic Header Record (see SF3 Technical Documentation, Chapter 7).
6. Home Mortgage Disclosure Act (HMDA) 2000 Loan Application Register (LAR) & Transmittal Sheet (TS) Raw Data.
7. Law Enforcement Management and Administrative Statistics: 2000 Sample Survey of Law Enforcement Agencies.
8. Lewis Mumford Center for Comparative Urban and Regional Research at the University of Albany

The NNCS has been used to investigate diverse research topics; however, no previous studies have used instrumental crime as an outcome. To date, the NNCS data have been utilized to evaluate the relationship between neighborhood racial composition and city segregation as correlates of crime rates (Krivo, Peterson and Kuhl 2009; Peterson and Krivo 2009; Peterson and Krivo 2010), immigrant concentration and crime in large metropolitan areas of the United States (Kubrin and Ishizawa 2012; Ramey 2013; Lyons, Velez and Santoro 2013) and the degree and amount of community financial investment and crime (Saporu et al. 2011). Most of the existing studies have exclusively used measures of social disorganization as predictors of violence. Other researchers have analyzed these data to explore topics such as the relationship between fringe banking (e.g., payday lending) and crime (Kubrin et al. 2011), and land use patterns and neighborhood violent crime using geospatial analyses (Browning et al. 2010). Although social disorganization, racial segregation and other topics have been investigated with these data in a multilevel framework, no study to date has incorporated measures from several secondary data sources to test relationships among concepts from both social disorganization theory and institutional anomie theory together. As such, the analyses and theory testing employed in this thesis seek to go beyond extant research using this data source by asking different research questions and moving towards the integration of existing theories of crime applied specifically to instrumental crime outcomes.

c. *FBI's Uniform Crime Report Data*

The data source that is used to operationalize the dependent variable of instrumental crime at the state level is the Federal Bureau of Investigation's (FBI) Uniform Crime Reports from the years 1999, 2000 and 2001. Started in 1929 by the

International Association of Chiefs of Police and federal law enforcement agencies, the FBI's Uniform Crime Reporting Program relies on voluntary reports of serious violent, property and hate crimes from over 18,000 law enforcement, private and public agencies (FBI 2014). Each year, the program issues four main reports on serious crime, criminal victimization, assaults and deaths of law enforcement officers, and hate crimes. Of central interest for this thesis is the publication entitled *Crime in the United States*, which contains publicly-available data on the eight Part I offenses of homicide, rape, robbery, aggravated assault, burglary, larceny, motor vehicle theft and arson (FBI 2012). The primary purpose of these data is to facilitate the testing of the effects of state level variables from institutional anomie theory on an index of instrumental crime consisting of burglaries, robberies, larcenies and motor vehicle thefts.

Uniform Crime Report data have been used extensively in myriad criminological studies to examine state-level crime rates and to test theories at the macro-level (e.g., Grove, Hughes and Geerken 1985; Chamlin and Cochran 1995; Nolan, Haas and Napier 2011). Although some data are missing from police departments and local government entities when reported to the FBI, complex multiple imputation procedures are employed to reduce bias and yield more accurate approximations of property and violent crime rates at the state level (Nolan, Haas and Napier 2011). As such, no missing data were present in the FBI's Uniform Crime Reports for 1999, 2000 or 2001, and therefore data were available for each of the four types of instrumental crime for all 50 states and the District of Columbia for the years 1999, 2000 and 2001.

d. National Center for Education Statistics Data

The data source that is used to measure the strength of the noneconomic institution of education is from the National Center for Education Statistics (NCES). The NCES is a government agency subsumed under the Institute of Education Sciences and the United States Department of Education. Through a vast network of survey administrators, this organization gathers and aggregates specific data monthly and annually on measures of private, public and parochial primary and secondary school achievement and characteristics in the United States. The center assists academic researchers, policy evaluators and public and private agencies by releasing publicly-available reports on issues such as high school dropout rates, educational spending per capita, pupil to teacher ratios, total enrollment in public and private schools nationwide, and five primary annual reports entitled Condition of Education, Digest of Education Statistics, High School Dropout and Completion Rates, Indicators of School Crime and Safety, and Projections of Education Statistics (NCES 2014).

This national organization coordinates its efforts in a hierarchical structure with state and local agencies to conduct surveys of random and non-random samples of school administrators, teachers and students which are then aggregated up to the local, state, regional and national levels (NCES 2014). Their goal is to assess longitudinal trends and markers of success in educational institutions. This dataset is unique in that it allows for the construction of measures of the strength of commitment to the noneconomic institution of education at the state level, and it contains publicly-available data on time periods for previous years. The publicly-available data I will use to measure the strength of commitment to education is from the 1999 to 2001 period, which is temporally

consistent with the crime data from the NNCS. Thus, this dataset allows for the introduction of a theoretically relevant measure of the strength of commitment to education concept from institutional anomie theory (NCES 2001).

e. Association for Religious Data Archives Data

The data source that is utilized to measure the strength of commitment to the noneconomic institution of religion is extracted from the Association of Religious Data Archives (ARDA 2014). The ARDA is an organization founded in 1997 within the Department of Sociology at Pennsylvania State University that conducts primary surveys of minor and major religious denominations. It also aggregates extensive local, national and international data on important topics related to religion from other publicly-available sources. These data focus on subjects such as religious participation, religiosity, opinions on political issues such as abortion and the death penalty among different religions, and religious service attendance (ARDA 2014). This publicly-available source of data makes yearly reports available online in an effort to democratize data access (ARDA 2014). The report for the year 2000 is particularly comprehensive in its coverage of the topic of religious adherence, which is particularly applicable to this thesis because it allows for the operationalization of the concept of strength of commitment to religious organizations. Specifically, I utilize the data from 2000 on the percentage of religious adherents for each of the 50 U.S. states and Washington DC.

f. Putnam (2000) State-level Social Capital Data

The final data source that is used to measure the strength of noneconomic institutions is publicly-available data from Putnam's (2000) publications on the

operationalization and evaluation of declining levels of social capital in the United States since the 1960s[12] (Bowling Alone 2014). In this context, social capital is defined as "features of social organizations, such as networks, norms, and trust, which facilitate action and cooperation for mutual benefit" (Putnam 1995: 35). Consistent with the methodology of Baumer and Gustafson (2007), this measure is used to measure the strength of commitment to the noneconomic institution of community. Putnam (2000) published a seminal work on this pertinent issue in sociology in a highly acclaimed book entitled *Bowling Alone*, as well as in several journal articles (e.g., Putnam 1995). Consistent with institutional anomie theory and empirical research on social capital and crime by Baumer and Gustafson (2007), and other recent research which has found a negative association between social capital and crime (e.g., Messner, Baumer and Rosenfeld 2004; Buonanno, Montolio and Vanin 2009; Hawdon and Ryan 2009), this state-level measure is employed as an indicator for the strength of commitment to the noneconomic institution of community. The reasoning for this empirical indicator is explained in more detail in the following section on measurement and operationalization.

g. *Existing State-level Maps of the United States*

Recent criminological research has highlighted the importance of geospatial analyses of crime data patterns at the macro-level and the assessment of the geographic distribution of crime and its predictors into graphical models (Morenoff, Sampson and

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[12] These data were accessed on the public online archives of the book *Bowling Alone: The Collapse and Revival of the American Community* (Bowling Alone 2014). On page 435 in the book, Putnam (2000) displays the sources used to construct the 14 item social capital index, which consists of data from the Roper Social and Political Trends archive, 1974-1994; the General Social Survey, 1974-1996; the DBB Needham Life Style archive, 1975-1998; the U.S. Census Bureau, 1998 and 1992; the *Non-profit Almanac, 1989;* and County Business Patterns, Dept. of Commerce, 1977-1992. The specific items that make up the social capital index are described in the next section on "Measurement and Operationalization."

Raudenbush 2001; Nielsen, Lee and Martinez 2005; Light and Harris 2012). This trend will likely increase in the future, as findings consistently demonstrate that crime is not randomly distributed and that *place matters* in the etiology of crime (Light and Harris 2012). A geospatial analysis is thus warranted in the preliminary testing of the anomic disorganization theory.

While a full scale geospatial analysis of instrumental crime patterns across the entire United States is well beyond the scope of this thesis, I find it important to demonstrate the spatial distribution and potential clustering of the independent variables and dependent variable of instrumental crime across the United States and within a case study city. By plotting the measures of the dominance of economy and the strength of noneconomic institutions on existing maps of the United States, I am able to conduct a preliminary analysis of the spatial distribution and clustering of these variables. Drawing from the U.S. Census Bureau data, the NCES data, the NNCS, the UCR and the Putnam (2000) social capital data, as well as from the ESRI geographical database, maps will be created in Arc Map 10.1. These maps will serve as a template for plotting the values of independent variables and the dependent variable of instrumental crime at the state level across the U.S. and within a case study city.

2. *Measurement and Operationalization*

In this study, the two units of analysis are Census-tracts and U.S. states. The explanatory variables from social disorganization theory are measured at the Census-tract level and the explanatory variables from institutional anomie theory will be measured at

the state level. The dependent variable of instrumental crime is measured at both the Census-tract level and at the state level.

a. *Dependent Variables: Census-tract Level Instrumental Crime from NNCS and State-level Instrumental Crime from UCR*

The NNCS provides the data on neighborhood level instrumental crime. I draw from the methodology of the most recent test of institutional anomie theory by Baumer and Gustafson (2007), and I specifically operationalize neighborhood level instrumental crime as three-year average counts (1999-2001) of Census-tract level robberies, burglaries, larcenies and motor vehicle thefts that were reported to police. This average measure is recommended over single year counts because it "minimizes the impact of annual fluctuations for small units" (Krivo, Peterson and Kuhl 2009: 1777). These average counts were then summed to yield a summed count of the three year average of the four instrumental crime measures. Higher values on the instrumental crime variable represent higher neighborhood-level instrumental crime counts.

Second, the UCR provides data on state level instrumental crime. I operationalize state level instrumental crime as three-year average counts (1999-2001) of state level robberies, burglaries, larcenies and motor vehicle thefts that were reported to police. These average counts were then summed to yield a summed count of the three year average of the four instrumental crime measures. Higher values on the instrumental crime variable represent a higher state level instrumental crime counts. The logical and empirical rationale for using the summed measure and three year averages is the same for state-level instrumental crime as neighborhood-level instrumental crime.

b. *Independent Variables: Macro-Level Predictors from Institutional Anomie Theory*

Drawing from previous findings from Messner and Rosenfeld (1997; 2001), Piquero and Piquero (1998), Maume and Lee (2003) and Baumer and Gustafson (2007), specific economic and noneconomic variables that have been utilized to test institutional anomie are employed. To measure the central concept of institutional anomie theory, the *dominance of the economy*, a commonly-used measure of economic inequality at the state level is utilized from the U.S. Census. The measure is known as the Gini coefficient of income inequality, which measures the level of economic inequality, or the degree of social stratification, among households in the area of study. The Gini coefficient of household income inequality is calculated by the United States Census Bureau with the following formula:

Equation 1: The Gini Coefficient of Economic Inequality of Households (From Bass 2013)

$$G = 2/\upsilon n^2 \sum_{i=1}^{n} iX_i \frac{n+1}{n}$$

Where G is equal to the Gini coefficient of economic inequality, X_i is equal to the weighted (by its rank in the income distribution) income of household i, n is equal to the weighted number of observations and υ is the weighted population mean.

Specifically, I use the 2000 state level Gini coefficient of household income inequality from the United States Census Table S4 of the 2000 Census of Population (U.S. Census 2000). The overall possible range of this variable is 0 to 1, with 0 representing perfect equality in which all households have the exact same income, and 1

representing perfect inequality in which a single household obtains all of the income and other households receive none. Thus, higher values represent greater dominance of the economy over other noneconomic institutions. Although there are some conflicting conceptualizations and applications of the Gini coefficient in the field of criminology, several existing studies such as Maume and Lee (2003) and Baumer and Gustafson (2007) have effectively used this calculated value as a measure of the dominance of economic institutions in society. The Gini coefficient of economic inequality is a valid measure that has been previously found to be positively associated with violent and property crime rates (Blau and Blau 1982; Maume and Lee 2003).

To measure the *strength of and commitment to noneconomic institutions* at the state-level, five indicators were derived from the four additional publicly-available secondary data sources (Messner and Rosenfeld 2001). Again drawing from Messner and Rosenfeld (2001) and Maume and Lee (2003), indicators were selected to measure the strength of five noneconomic institutions in the social structure of the polity, family, religious organizations, educational system and the community. The first measure of the strength of noneconomic institutions, the *polity*, was operationalized as the percentage of potential voters registered to vote in the 2000 November elections by U.S. state. This measure was extracted from "Table 4b: Reported Voting and Registration of the Total Voting-Age Population, by Age, for States: November 2000 (In thousands)" from the 2000 U.S. Census on the Factfinder database (U.S. Census 2000).

The second measure of the strength of noneconomic institutions, the *family*, was operationalized as the divorce rate per 1,000 people among residents 15 years of age or

older in 2000[13]. In this case, higher rates of divorce are predictors of higher levels of social disintegration in the family. This measure was extracted from "Table 133: Marriages and Divorces—Number and Rate by State" from the Statistical Abstract of the United States for 2012 (U.S. Census 2012).

The third measure of the strength of noneconomic institutions, *religious organizations,* was operationalized as the total percentage of religious adherents in each U.S. state in the year 2000. For this variable, "religious adherents" includes "all full members, their children and others who regularly attend services" (ARDA 2000: 1). These data were originally collected by the Association of Statisticians of American Religious Bodies in 2000 on 149 religious groups' congregational adherence, and they were initially published a report from the Glenmary Research Center entitled "Religious Congregations & Membership in the United States, 2000" (ARDA 2000).

The fourth measure of the strength of noneconomic institutions, the *education system*, was operationalized as the student to teacher ratio in 2000. In this case, a higher student to teacher ratio should reflect a lower strength of commitment to the noneconoinc institution of education. This measure was extracted from the "State Nonfiscal Public Elementary/Secondary Education Survey" for 2000 in the National Center for Education Statistics online database (N.C.E.S. 2001).

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[13] Due to four states not officially reporting the divorce rate during the 1999-2001 period, several proxy measures were used from years nearest to the 1999-2001 period in which divorce rates were officially reported. Specifically, the divorce rate for California was from 1990, the divorce rate for Louisiana was from 2002, the divorce rate for Oklahoma was from 1995 and the divorce rate from Indiana was from 1987. As rates remain relatively constant from year to year, these proxy measures should not introduce bias into the subsequent models.

The fifth and final measure of the strength of noneconomic institutions, the *community*, was operationalized by an index of social capital at the state level from the publicly-available data archives of Putnam's (2000) study. The social capital index[14] was constructed by incorporating 14 indicators[15] tapping the five elements of social capital including social trust, community organizational life, community volunteerism, engagement in public affairs and informal sociability[16] (Putnam 1995; Putnam 2000; Bowling Alone 2014). The scale was standardized, and it ranged from -1.43 to 1.71 with higher values reflecting greater social capital.

c. Independent Variables: Macro-Level Predictors from Social Disorganization Theory

Consistent with previous criminological research (e.g., Sampson, Raudenbush and Earls (1997), Nielsen, Lee and Martinez (2005), Krivo, Peterson and Kuhl (2009) and Ramey (2013)), social disorganization at the neighborhood level was measured based upon three indexes: A residential instability index, a racial heterogeneity index, and a concentrated disadvantage index. Each of the three measures of social disorganization

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[14] See Pages 290-291 and Endnotes in Putnam (2000) for specific procedures on coding and construction of state-level Social Capital Index.

[15] The 14 items incorporated in the scale were drawn from a variety of data sources from 1975 to 1998 on the following 14 specific questions and statements: 1. Agree that "I spend a lot of time visiting friends," 2. Agree that "Most people can be trusted," 3. Agree that "Most people are honest," 4. Attendance at any public meeting on town or school affairs in last year (percent), 5. Number of civic and social organizations per 1000 population, 6. Average number of club meetings attended in last year, 7. Average number of group memberships, 8. Average number of times volunteered in last year, 9. Average number of times entertained at home in last year, 10. Average number of times worked on community project in last year, 11. Number of non-profit (501[c] 3) organizations per 1000 population, 12. Served as officer of some club or organization in last year (percent), 13. Served on committee of some local organization in last year (percent) and 14. Turnout in presidential elections, 1988 and 1992.

[16] As Putnam (2000) does not calculate values for the social capital index for Alaska and Hawaii, data on a comparable standardized social trust index in 2000 from Fairbrother and Martin (2013) were used for these two states.

were extracted from the National Neighborhood Crime Study data and were already constructed prior to my analyses[17] (Peterson and Krivo 2000). I will describe each in order, based on the information on scale construction found in the supplementary documentation and codebook. First, a *residential instability index* for the year 2000 was constructed by summing the z-scores of the percentage of individuals five years or older who lived in a different home in 1995 and the z-scores for the percentage of occupied housing units that are renter occupied in each Census-tract. This measure was then divided by two to yield the average. Larger values indicate greater neighborhood-level residential instability. The Cronbach's alpha value for this index was α=0.69.

Second, an *racial/ethnic heterogeneity index* for the year 2000 was constructed by subtracting the summed squared values of the percentage of the population within each racial and ethnic group, and then subtracting this value from 1. The seven ethnic/racial groups included are "non-Hispanic Whites, non-Hispanic Blacks or African Americans, non-Hispanic American Indians and Alaska natives, non-Hispanic Asians, Native Hawaiians, or other Pacific Islanders, non-Hispanics of some Other Race or two or more races, and Hispanics or Latinos" (Peterson and Krivo 2000: 13). Larger values indicate greater racial and ethnic heterogeneity.

Third, a *concentrated disadvantage index* for the year 2000 was created by summing the z-scores of the percentage of the secondary labor market sector in low-wage jobs, the percentage of the population between the ages of 16 and 64 who are not in the labor force or are unemployed, the percentage of female headed households and the

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[17] For more specific details about the procedures utilized to construct the three indexes described here than is included in this section, see page 13 for the residential instability index and ethnic/racial heterogeneity index, and page 12 for the economic disadvantage index in the NNCS Codebook available at http://www.icpsr.umich.edu/icpsrweb/RCMD/studies/27501.

percentage of residents whose income in 1999 was below the Federal poverty line. The measure was then divided by 4 to yield an average. Higher values indicate greater economic disadvantage. The Cronbach's alpha value of the index was $\alpha=0.91$. Each of the measures of internal consistency (i.e., the alpha values) of the three indexes were calculated in the NNCS dataset (Peterson and Krivo 2000).

d. Control Variables: Covariates of Instrumental Crime Rates

Traditional covariates of instrumental crime rates which have been found to be associated with higher rates of instrumental crime are used as control variables for the present thesis. These variables are introduced into the theoretical model to prevent a biasing of the regression coefficients (i.e., omitted variable bias) predicting instrumental crime rates in the subsequent statistical analyses (Wooldridge 2008). The control variables for both the neighborhood level and state level include a dummy variable for *southern location* (coded as 1 for Southern locations and 0 otherwise), a measure of the *logged Census-tract (or state) population* (which acts as an offset variable in the subsequent negative binomial and overdispersed Poisson multilevel regression equations), the *percentage of new immigrants*[18] at the Census-tract level and *percentage of foreign born* at the state level, and finally, the *proportion of males ages 15 to 34* in each Census-tract (or state) (i.e., the age group with the highest level of criminal propensity) (Osgood 2000; Maume and Lee 2003; Kubrin and Ishizawa 2012). The Census-tract level measures were extracted from the NNCS, and the state level measures were extracted from U.S. Census data from the year 2000. In particular, the measures

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[18] Consistent with studies testing the immigrant revitalization paradigm such as Ramey (2013), the percentage of new immigrants was operationalized as the "Percent of the total population in each Census tract that is foreign-born and entered the United States in 1990 or later" See page 14 of the NNCS codebook for more information.

were extracted from "Summary File 3" from the Census of Population and Housing from the 2000 Census (U.S. Census 2000).

Consistent with previous literature, Census-tracts (or states) located in the southern United States, with larger populations and a greater percentage of males 15 to 34 (who have a higher criminal propensity) would be expected to have higher instrumental crime rates (Gastil 1971; Hackney 1969; Huff-Corzine, Corzine and Moore 1986; Sampson and Laub 2005). Conversely, Census tracts (or states) with a larger percentage of new immigrants would be expected to have lower rates of instrumental crime due to the immigrant revitalization hypothesis (Ramey 2013). In short, this theoretical position argues that a higher concentration of recent immigrants actually has a protective effect on crime because of the presence of strong social network ties, a higher amount of collective efficacy, and more informal social control at the neighborhood-level (Lee and Martinez 2002; Sampson 2012; Ramey 2013). This measure is conceptually distinct from the ethnic/racial heterogeneity measure as it measures *recent immigration* and does not display enough correlation with the ethnic/racial heterogeneity measure to introduce a problematic amount of multicollinearity into the model (Wooldridge 2008).

e. *Geographic and Location-Specific Variables*

In recent years, a trend in the social sciences has been to incorporate geospatial analyses of crime data, socioeconomic data, and demographic data to examine a diverse body of research questions (e.g., Baller et al. 2001; Nielsen, Lee and Martinez 2005; Stucky and Ottensmann 2009). In order to provide a more thorough and comprehensive assessment of the spatial distribution of the dominance of the economy and the strength

of noneconomic institutions, descriptive statistics for the six explanatory variables and the dependent variable measured at the state-level will be displayed on maps of the United States. In addition, the instrumental crime at the neighborhood level will also be investigated spatially within the case study city of Chicago, Illinois. In both the state level and neighborhood level geographic analyses only, three year average *instrumental crime rates* from the NNCS and UCR are used *instead of counts* because they take into account population and account for population when conducting spatial analyses. Geographical analyses will be conducted and these variables will be compared across U.S. states and within the case study city of Chicago, Illinois to explore possible clustering and spatial trends. The specific geospatial analysis methods are described in more detail in the next section.

3. *Analytic Strategy*

This section discusses the analytic approaches that I utilize to assess the spatial distribution of the variables at the state and neighborhood level, and the conventional statistical analyses used to test the hypotheses expounded in the previous chapter. Next, I discuss the statistical rationale for the use of particular descriptive and inferential statistical tests. The data analyses progress logically from basic statistical analyses to more complex methods.

The statistical package SPSS 21 is used for descriptive statistics and negative binomial regression analyses of Census tract level variables from social disorganization and state-level variables from institutional anomie theory. HLM7 with multilevel modeling (i.e., overdispersed Poisson regression models) was used to formally test the

moderation hypotheses forming a preliminary test of anomic disorganization theory (Raudenbush and Bryk 2002; Rabe-Hesketh and Skrondal 2012). The statistical analyses proceed in five distinct stages.

a. Testing of Spatial Autocorrelation with Moran's I

First, to better understand the spatial distribution of variation in the dominance of the economy and strength of noneconomic institutions across the United States, several variable values were plotted on maps of the U.S. These include the Gini coefficient in 2000, the divorce rate in the year 2000, the percentage of registered voters for the November 2000 election, the social capital index, the percentage of religious adherents in 2000 and the student to teacher ratio in 2000. Second, instrumental crime rates were plotted on the same maps of the United States to investigate the spatial distribution of the dependent variable (See Figures 5-11). This approach allows for a more comprehensive and intuitive display of spatial variation in the relative strength of economic and noneconomic institutions as well as instrumental crime, than simply displaying the means, standard deviations and ranges of each variable. Next, testing of clustering of instrumental crime was conducted by calculating a Global Moran's I statistic, which shows the spatial autocorrelation by state across the map of the U.S. (Lee 2001).

Global Moran's I is similar to a Pearson correlation coefficient, in which values closer to positive 1 indicate positive spatial autocorrelation and values closer to negative 1 indicate negative spatial autocorrelation. A value of 1 indicates that the values of the variable of interest are perfectly clustered/correlated with each other in space, a value of 0 indicates that the variable is randomly distributed, and a value of -1 indicates that the

variable is perfectly dispersed (Lee 2001). Drawing from the criminological literature,

Andresen (2011: 395) explains that "it is common to use Moran's I in crime analysis,

finding positive spatial autocorrelation among spatial units: high crime areas are close to

other crime areas and low crime areas are close to other low crime areas…Moran's I is a

"global" statistic in the sense that it provides an average representation of the study area."

In this thesis, this spatial statistic indicates whether instrumental crime rates at the state

level display statistically significant clustering across space. For example, if the

instrumental crime rate is far higher in the Southwestern part of the United States when

compared to the rest of the country, the value for the Global Moran's I would be closer to

1, indicating positive spatial autocorrelation.

The formula to calculate Moran's I is as follows (Lee 2001):

Equation 2: Global Moran's I of Spatial Autocorrelation

$$I = \frac{n}{S_0} \frac{\sum_i \sum_j w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{\sum_i (x_i - \bar{x})^2},$$

where $\bar{x}$ is the mean of the x variable, w_{ij} are the elements of the weight matrix, and S_0 is the sum of the elements of the weight matrix: $S_0 = \sum_i \sum_j w_{ij}$.

In addition to a Global Moran's I of spatial autocorrelation, another geospatial

analysis technique entitled the Local Moran's I will be employed (Anselin 1995; Anselin,

Syabri and Kho 2006; Andresen 2011). This statistic also measures the clustering of a

variable across space and is a local indicator of spatial association (LISA) (Anselin

1995). Anselin[19] (1995: 95) explains geographic units with a statistically significant

Local Moran's I as "local spatial clusters, sometimes referred to as *hot spots…*identified

as those locations or sets of contiguous locations for which LISA is significant." In other

words, the Local Moran's I shows *which spatial units (i.e., states or Census-tracts)*

within an area actually show statistically significant positive clustering among groups of

spatial units after finding a statistically significant clustering present *within a larger area*

(i.e., the whole United States or all Census-tracts within a city) as a whole with a

statistically significant Global Moran's I[20] (Anselin 1995; See Equation 3).

Equation 3: Local Moran's I Calculation (Anselin 1995)

The local Moran's I statistic for spatial unit *i* is:

$$I_i = z_i \sum_j w_{ij} z_j$$

where z_i is the original variable x_i in standardized form, z_i is the original variable y_i in

standardized form, w_{ij} is the spatial weight and each <u>row</u> *i* of the spatial weights matrix

is included in the summation operator.

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[19] Although many other local indicators of spatial autocorrelation exist such as Geary's C, the Local Moran's I is the most applied in criminology and the social sciences when assessing the local clustering of a macro-level variable, and was first described and proven in the paper referenced here by Anselin (1995).

[20] Andresen (2011) provides a more detailed interpretation of the Local Moran's I for each spatial unit when applied specifically to crime data. He explains that "values for local Moran's I that range from − 1 (perfect negative spatial autocorrelation) to + 1 (perfect positive spatial autocorrelation). Using these values, local clusters of four different forms may be identified: High – High, Low – Low, Low – High, and High – Low; High – High are areas with high crime rates that are surrounded by areas with high crime rates, Low – Low are areas with low crime rates that are surrounded by areas with low crime rates, High – Low are areas with high crime rates surrounded by areas with low crime rates, and Low – High are areas with low crime rates surrounded by areas with high crime rates (Anselin, Syabri and Kho 2006). Lastly, there are areas classified as not having any significant clustering of crime."

b. *Localized Patterning of Instrumental Crime in Case Study City of Chicago, Illinois*

Geospatial analyses are also employed to investigate more localized patterns of instrumental crime across neighborhoods within a major metropolitan area of the United States. Specifically, Chicago, Illinois is used as a case study that is analyzed by plotting Census-tract level data on instrumental crime on maps of the 2000 Census-tract boundaries within Cook County, Chicago, Illinois. The data on neighborhood level instrumental crime rates was extracted from the NNCS, and each place code was joined with the corresponding place code in the shape files from the U.S. Census.

Chicago, Illinois is particularly suited as a case study city for investigating the spatial patterning of instrumental crime for two reasons based on the scholarly literature. First, drawing from the seminal work of Sampson (2012: 76) and the rich history of sociological and criminological inquiry in the Chicago School tradition dating back to Shaw and McKay (1942), this particular city was selected because it contains "sufficient representation of the three largest race/ethnic groups in American society—blacks, Latinos and whites—combined with variation in socioeconomic status (SES)." In fact, Cook County—which contains the greater Chicago metropolitan area—was found to have the second highest level of income inequality measures as the Gini coefficient among the five most populous counties in the United States between 2006 and 2010[21] (Bee 2012). As the main argument of the institutional anomie theory is that a more dominant economy (measured as the Gini coefficient) creates increases in the

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[21] The most populous county with the highest level of economic inequality measured as the Gini coefficient is Los Angeles county, California; however, due to the sampling methodology of the National Neighborhood Crime Study, data on instrumental crime rates are only available for 827 of the total 2054 (40.26%) Census-tracts in Los Angeles County, California.

instrumental crime rate at the macro-level, Chicago is particularly suited as a case study city due to its very high levels of social inequality (Messner and Rosenfeld 2001).

Second, Chicago has seen unprecedented levels of crime, violence and homicide in recent years within areas of high economic disadvantage, residential instability and ethnic/racial heterogeneity (Sampson 2012; FBI 2012). In fact, in 2012 Chicago led the nation in homicides with 500 incidents, many of which can be classified as instrumental homicides committed to obtain economic ends such as cash or items that can be readily converted to cash (FBI 2012). As these high levels of homicide and violence are due in part to both social disorganization and an anomic social context within certain geographic areas, the study of Chicago is important because it can lead to findings on the nature of crime patterns in these locations. These results can potentially show how and why these very high levels of crime are present, and could be used to guide policy to reduce these high levels of crime and instrumental violence.

Similar to the analytic strategy described for the state-level data, a Global Moran's I and a Local Moran's I are calculated for Chicago. These spatial statistics demonstrate two key features of the localized patterning of instrumental crime. First, the Global Moran's I shows whether Chicago has positive, negative or non-significant clustering of instrumental crime across neighborhoods within the city as a whole. Second, the Local Moran's I shows which combinations of neighboring Census-tracts (i.e., neighborhood clusters) collectively have either statistically significant high or low levels of instrumental crime. In effect, this second analysis of the local spatial autocorrelation demonstrates which "hot spots" within the city collectively have high or low levels of instrumental crime, which will allow for an explanation to be provided

about this localized clustering based on the proposed anomic disorganization theory (Anselin 1995: 97).

c. Census-tract Level Model of Social Disorganization

I employ negative binomial regression models to assess the extent to which the social disorganization measures of residential instability, ethnic/racial heterogeneity and economic disadvantage are statistically significant predictors of instrumental crime at the neighborhood level. Negative binomial regression is the preferred statistical estimation technique for count data with non-normal, highly skewed distributions, as is often characteristic of macro-level crime data (Long 1997; Osgood 2000; Wooldridge 2008). The negative binomial model is also preferred when some units of analysis have zero counts, and when the outcome variable is a rare event (Wooldridge 2008).

Although a regular Poisson regression for limited dependent count data could be estimated, the Poisson distribution relies on the assumption that the conditional mean is equal to the variance (i.e., no underdispersion or overdispersion) (Osgood 2000). In this case, a negative binomial regression estimation technique is preferred because the three year average Census-tract instrumental crime count and three year average state-level instrumental crime count is highly overdispersed. Overdispersion is present because the variances far exceed the means for each of the four crime types (i.e., robbery, burglary, larceny and motor vehicle theft), as well as for the three year average count of instrumental crime variable (Long 1997; Osgood 2000). This condition of overdispersion was identified by calculating descriptive statistics for these variables, and comparing the mean and variance.

Much like the typical ordinary least squares regression model, the negative binomial regression model also relies on specific assumptions about the statistical form of the data (Long 1997). The most important underlying assumptions for the negative binomial regression model for the present analysis are the independence of observations, linearity in parameters and the absence of perfect collinearity (Long 1997). However, unlike OLS regression analysis, the absence of heteroskedasticity (i.e., a non-constant variance in the error term) is not a requirement (Long 1997). Each of these assumptions of negative binomial regression will be tested and, if necessary, corrected for prior to conducting the main analyses.

Additionally, although negative binomial has been applied primarily to data for event counts or counts of different types of disaggregated crime, recent studies have employed a negative binomial regression estimation technique to evaluate the relationship between structural predictors and *crime counts*. As is described in Osgood (2000) and Maume and Lee (2003), negative binomial regression may be applied to crime counts as the dependent variable when the natural log of the population of the unit of analysis is included in the regression equation as an offset variable. In this case, I employ the natural log of the Census-tract population as the offset variable and fix the value of its parameter at 1 (Osgood 2000; Osgood and Chambers 2000). Even so, the resulting regression coefficients must be interpreted carefully based upon the unit and substantive meaning of the independent variables, and in this analysis, will be converted to incident rate ratios[22].

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[22] The incident rate ratio is calculated as the exp(unstandardized Beta Coefficient). The percentage change interpretation in the dependent variable is then calculated by taking the difference between the incident rate ratio and 1, and then multiplying this resulting value by 100.

When analyzing incident rate ratios, the regression coefficient takes on a percentage change interpretation, in which a one unit change in the explanatory variable corresponds to an exact predicted percentage change in the dependent variable (i.e., instrumental crime rates), when the proportion in the incident rate ratio is converted to a percentage (Long 1997). Equation 4 below shows the general form of the negative binomial distribution and Equation 5 shows the single level negative binomial regression model for social disorganization and control variables as predictors of three year average Census-tract level instrumental crime counts.

Equation 4: Negative Binomial Distribution (From Osgood 2000: 29):

$$P(Y_i = y_i) = \frac{\Gamma(y_i + \phi)}{y_i!\,\Gamma(\phi)} \frac{\phi\lambda}{(\phi + \lambda)^{\phi - y_i}}$$

Where ϕ(phi) is equal to the reciprocal of the residual variance of the mean counts which underlie the distribution and Γ(capital gamma) is a continuous version of the factorial function.

Equation 5: Level-1 Negative Binomial Regression Equation for Social Disorganization Variables on Census-tract Three Year Average Instrumental Crime Counts

$$NBREG(Y_i) = \beta_{0j} + \beta_1 X_{1j} + \beta_{2j} X_{2j} + \beta_{3j} X_{3j} + \beta_{4j} X_{4j} + \beta_{5j} X_{5j} + \beta_{6j} X_{6j} + \beta_{7j}$$

Where Y_i=3 year average instrumental crime counts at Census tract i (assumed to follow a negative binomial distribution), β_0=intercept term, $\beta_1,\ldots,\beta_6$=unstandardized regression coefficients, β_7=parameter fixed at 1 (offset variable; natural log of the Census-tract population), X_{1j}=residential instability index, X_{2j}= ethnic/racial heterogeneity index,

X_{3j}= concentrated disadvantage index, X_{4j}=percentage of new immigrants,

X_{5j}=proportion of males aged 15-34 and X_{6j}=dummy variable for southern location.

d. State Level Model of Institutional Anomie Theory

Fourth, the same statistical technique of negative binomial regression for testing the effects of variables from social disorganization theory at the neighborhood level is used to test institutional anomie theory on the state level. This is the preferred model because like Census-tract level instrumental crime counts, state level instrumental crime is also overdispersed, although less so. Much like with the previous model, I employ the natural log of the state population as the offset variable and fix the value of its parameter at 1 (Osgood 2000; Osgood and Chambers 2000). Of course, the number of variables and the sample size differ in this model. However, while these differences will not affect the magnitude of the unstandardized coefficient estimates or the corresponding incident rate ratios, the statistical power of tests of statistical significant will be lower as the total sample size is equal to only 51 (Cohen 1992; Wooldridge 2008). This potential issue will be addressed in more detail in the results and discussion sections. Equation 6 shows the single level negative binomial regression model for institutional anomie and control variables as predictors of three year average state level instrumental crime counts.

Equation 6: Level-1 Negative Binomial Regression Equation for Institutional Anomie Variables on State-level Three Year Average Instrumental Crime Counts

$$NBREG(Y_i) = \beta_{0j} + \beta_1 X_{1j} + \beta_{2j} X_{2j} + \beta_{3j} X_{3j} + \beta_{4j} X_{4j} + \beta_{5j} X_{5j} + \beta_{6j} X_{6j} + \beta_{7j} X_{7j}$$

$$+ \beta_{8j} X_{8j} + \beta_{9j} X_{9j} + \beta_{10j}$$

Where Y_i=3 year average instrumental crime counts in state i (assumed to follow a negative binomial distribution), β_0=intercept term, $\beta_1,\ldots,\beta_{10}$=unstandardized regression coefficients, β_{10}=parameter fixed at 1 (offset variable; natural log of the state population in 2000), X_{1j}=Gini coefficient, X_{2j}= social capital index, X_{3j}= percentage of religious adherents in 2000, X_{4j}=divorce rate in 2000, X_{5j}= registered voters in 2000 elections, X_{6j}= student to teacher ratio in 2000, X_{7j}=percentage foreign born, X_{8j}=proportion of males aged 15-34, and X_{9j}=dummy variable for southern location.

The one level negative binomial model for social disorganization and the one level negative binomial model for institutional anomie are systematically compared based on the statistical significance of the whole model, the statistical significance of each variable and the magnitude of the incident rate ratios. This approach facilitates the testing of the degree and extent to which each theory independently explains instrumental crime, and which theory could tentatively be a better theoretical model for explaining differences in instrumental crime across ecological units.

e. *Multilevel Overdispersed Poisson Model of Anomic Disorganization*

Fifth, in order to test the primary hypotheses of the integrated theory of anomic disorganization, a two-level nonlinear overdispersed Poisson regression model is constructed. When used in a multilevel framework, the overdispersed Poisson regression

model is comparable to the negative binomial regression technique in that it includes an addition parameter to adjust for overdispersion in the outcome variable (Raudenbush and Bryk 2002; Rabe-Hesketh and Skrondal 2012). The models will be estimated in the HLM7 program with the limited dependent variable models features, and the equations used to construct the fully specified multilevel models are displayed below (Equations 7-12). This approach is very similar to that of Peterson, Krivo and Kuhl (2009) and Ramey (2013), who both employed overdispersed Poisson multilevel models to investigate the effects of socio-demographic characteristics on the city level (level-2) on crime rates on the neighborhood level (i.e., Census-tract; level-1). Thus, in their analyses, Census tracts were nested within U.S. cities. In my case, I extend this logic further to test the anomic disorganization theory by testing the effects of state level characteristics (Level-2) *and* neighborhood-level (i.e., Census-tract; Level-1) characteristics on neighborhood-level instrumental crime counts. Thus, Census-tracts are nested within U.S. states. This model relies on the Poisson distribution (See Equation 7).

Equation 7: Overdispersed Poisson Probability Mass Function (From Joe and Zhu 2005: 220)

$$f(x; \theta, \eta) = \theta(\theta + \eta x)^{x-1} e^{-\theta - nx} / x!,$$

Where $x = 0, 1, 2 \ldots$, $\theta > 0$, $0 \leq \eta < 1$, and ! is a factorial sign.

The outcome variable utilized in all models is three year average Census-tract instrumental crime counts. Consistent with the recommendations of Osgood (2000), Osgood and Chambers (2000) and the study by Krivo, Peterson and Kuhl (2009), instrumental crime counts are transformed into rates by introducing an offset variable of the logged Census-tract population. This assures that the coefficient estimates are

calculated more accurately and that standard errors are estimated with greater efficiency (Rabe-Hesketh and Skrondal 2012). Much like the case of the application of negative binomial regression in non-nested data to account for overdispersion in the dependent variable—which occurs frequently with highly positively skewed count data—I formally tested for overdispersion by computing descriptive statistics for the three year average instrumental crime count and found considerable overdispersion (Wooldridge 2008).

Therefore, the level-1 model for the variance of instrumental crime rates in Census-tracts was modeled for overdispersion (Raudenbush and Bryk 2002; Rabe-Hesketh and Skrondal 2012). Consistent with Krivo, Peterson and Kuhl (2009: 1781), I grand-mean centered all six explanatory variables so that the level-2 variables can be "meaningfully interpreted as effects on the average" tract level instrumental crime rate when controlling for neighborhood-level factors. Grand mean centering is simply subtracting the overall mean of all level-1 explanatory variables from their actual observed values (Raudenbush and Bryk 2002). In all analyses, regular and robust standard errors are calculated to yield efficient standard errors and ensure that the variance components of the level-1 and level-2 models are properly specified (Raudenbush and Bryk 2002; Rabe-Hesketh and Skrondal 2012).

Finally, all models described below include the control variables of percentage of new immigrants, proportion of males aged 16-34, a dummy variable for southern location, and an offset parameter fixed at 1 with the natural log of the Census-tract population (Osgood 2000; Osgood and Chambers 2000). My analysis proceeds in three steps. First, I estimate the empty Census-tract level model with Equations 8-10 to

determine whether variation in three year average instrumental crime rates at the Census-

tract (level-1) are a function of both Census-tract and state-level predictors.

Equation 8: Empty Census-tract Level Model Predicting Three Year Average Census-
tract Level Instrumental Crime Counts

$$Y_{ij} = \beta_{0j} + r_{ij}$$

Where the dependent variable (three year average instrumental crime count) Y for Census

tract i nested within state j equals the average outcome in state j summed with the error

term for each Census tract denoted as r_{ij}.

Equation 9: Intercept Equation to Account for State-level Error

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

Where the intercept β_{0j} in Equation 9 is equal to the average outcome for all Census

tracts denoted as γ_{00} and the State-level specific effect denoted as u_{0j}.

Equation 10: Full Equation Including Empty Census-tract Level Model and State-level
Error Equation (Empty Model from Equation 8 with Intercept from Equation 9).

$$Y_{ij} = \gamma_{00} + u_{0j} + r_{ij}$$

Where Y again equals the three year average instrumental crime count for Census tract i

nested within state j.

Second, I calculate the *intraclass correlation coefficient* and its statistical

significance with Equation 11. HLM7 computes bootstrapped standard errors for the

value of ρ which can be used to calculate a p-value indicating the statistical significance

of ρ. This equation yields ρ which is equal to the percentage of variance in the outcome attributable to State-level characteristics and 1- ρ which is equal to the percentage of the variance in the outcome attributed to Census-tract level characteristics.

Equation 11: Percentage of Observed Variation in Three Year Average Instrumental Crime Counts From Census-tract Level Characteristics

$$\rho = \frac{\tau_{00}}{\tau_{00} + \sigma^2}$$

Where τ_{00} is equal to the variance of u_{0j} (the State-level specific effect), σ^2 is equal to the variance of r_{ij} (the Census-tract level specific effect), and ρ is the *intraclass correlation coefficient*.

Third, finding statistically significant variance components attributed to both level-l and level-2 predictors, I introduce the residential instability, racial/ethnic heterogeneity and concentrated disadvantage indexes at the Census-tract level as level-1 predictors and the Gini coefficient in 2000, the divorce rate in the year 2000, the percentage of registered voters for the November 2000 election, the social capital index, the percentage of religious adherents in 2000 and the student to teacher ratio in 2000 as level-2 predictors (Equation 12). Next, I add the control variables of southern location, percentage of recent immigrants and proportion of males ages 15-34 to determine whether the effects of the explanatory variables at level-1 and level-2 hold net of the control variables (Equation 13).

Equation 12: Multilevel Model Testing Direct Effects of Social Disorganization Predictors and Institutional Anomie Predictors on Three Year Average Census-tract Level Instrumental Crime Counts

$$ODPOISSON(Y_{ij}) = \gamma_{00} + \gamma_{10}(ResIntab_{ij}) + \gamma_{20}(RacHet_{ij}) + \gamma_{30}(ConcDisad_{ij}) +$$

$$\gamma_{01}(Gini_j) + \gamma_{02}(DivRate_j) + \gamma_{03}(RegVote_j) + \gamma_{04}(SocCap_j) + \gamma_{05}(Relig_j) +$$

$$\gamma_{06}(StoTRatio_j) + u_{0j} + r_{ij}$$

Where Y_{ij} is the three year average Census-tract level instrumental crime count (assumed to follow an overdispersed Poisson distribution), γ_{00} is equal to the average outcome for all Census-tracts, γ_{i0} are Census-tract level regression coefficients, γ_{0j} are state level regression coefficients, $ResIntab_{ij}$ is the Census-tract level residential instability index, $RacHet_{ij}$ is the Census-tract level ethnic/racial heterogeneity index, $ConcDisad_{ij}$ is the Census-tract level concentrated disadvantage index, $Gini_j$ is the state level household Gini coefficient of economic inequality, $DivRate_j$ is the state level divorce rate in 2000, $RegVote_j$ is the state level percentage of registered voters for the November 2000 election, $SocCap_j$ is the state level social capital index, $Relig_j$ is the state level percentage of religious adherents in 2000, $StoTRatio_j$ is the state level percentage of religious adherents in 2000, u_{0j} is the state specific effect, and r_{ij} is the error term for each Census tract.

Equation 13: Multilevel Model Testing Direct Effects of Social Disorganization Predictors and Institutional Anomie Predictors on Three Year Average Census-tract Level Instrumental Crime Counts with Census-tract Level Control Variables

$$ODPOISSON(Y_{ij}) = \gamma_{00} + \gamma_{10}(ResIntab_{ij}) + \gamma_{20}(RacHet_{ij}) + \gamma_{30}(ConcDisad_{ij}) +$$

$$+\gamma_{40}(South_{ij}) + \gamma_{50}(RecImm_{ij}) + \gamma_{60}(PropMales_{ij}) + \gamma_{01}(Gini_j) +$$

$$\gamma_{02}(DivRate_j) + \gamma_{03}(RegVote_j) + \gamma_{04}(SocCap_j) + \gamma_{05}(Relig_j) +$$

$$\gamma_{06}(StoTRatio_j) + u_{0j} + r_{ij}$$

Where Y_{ij} is the three year average Census-tract level instrumental crime count (assumed to follow an overdispersed Poisson distribution), γ_{00} is equal to the average outcome for all Census-tracts, γ_{i0} are Census-tract level regression coefficients, γ_{0j} are state level regression coefficients, $ResIntab_{ij}$ is the Census-tract level residential instability index, $RacHet_{ij}$ is the Census-tract level ethnic/racial heterogeneity index, $ConcDisad_{ij}$ is the Census-tract level concentrated disadvantage index, $South_{ij}$ is a dummy variable coded as 1 is the Census-tract is southern and 0 otherwise, $RecImm_{ij}$ is the Census-tract level Percent of the total population in each Census tract that is foreign-born and entered the United States in 1990 or later, $PropMales_{ij}$ is the Census-tract level proportion of males ages 15 to 34, $Gini_j$ is the state level household Gini coefficient of economic inequality, $DivRate_j$ is the state level divorce rate in 2000, $RegVote_j$ is the state level percentage of registered voters for the November 2000 election, $SocCap_j$ is the state level social capital index, $Relig_j$ is the state level percentage of religious adherents in 2000, $StoTRatio_j$ is the state level percentage of religious adherents in 2000, u_{0j} is the state specific effect, and r_{ij} is the error term for each Census tract.

Fourth, if I were to find significance at level-1 and level-2, I add cross-level interactions into the overdispersed Poisson multilevel model to test hypotheses 6, 6a and 6b. Recall that these hypotheses predict that adding an interaction term between Census-tract level predictors of social disorganization and the state level of the dominance of the economy will *increase* the criminogenic effect of social disorganization on instrumental crime. Accordingly, adding an interaction term between Census-tract level predictors of social disorganization and the state level of the strength of commitment to noneconomic institutions will *decrease* the criminogenic effect of social disorganization on instrumental crime. The introduction of cross-level interaction terms allows for the testing of the moderation hypotheses among measures of social disorganization, the dominance of the economy and the strength of noneconomic institutions.

Equation 14 shows the testing of the moderating effect of the state level divorce rate in 2000 ($DivRate_j$) on the positive relationship between residential instability and three year average Census-tract level instrumental crime rates. Although not shown here, each of the multilevel regression equations is similar in format to test each cross-level interaction. For example, to test the moderating effects of the strength of the polity on residential instability, the percentage of registered voters in 2000 was substituted for the in the cross-level interaction term (i.e., $\gamma_{13}(RegVoters * ResIntab_{ij})$) instead of $\gamma_{13}(DivRate * ResIntab_{ij})$). Similarly, to test the moderating effects of the Gini coefficient on residential instability, the Gini coefficient was substituted in the cross-level interaction term (i.e., $\gamma_{11}(GiniCoef * ResIntab_{ij})$ instead of $\gamma_{11}(RegVoters * ResIntab_{ij})$). This procedure was replicated for each of the possible moderation models

in hypotheses 6, 6a and 6b yielding a total of 18 different interaction terms, and

consequently, 18 different models[23] (Rabe-Hesketh and Skrondal 2012).

Equation 14: Fully Specified Multilevel Model Example to Test for Cross-level
Interactions Predicting Three Year Average Census-tract Level Instrumental Crime
Counts (Hypotheses 6, 6a and 6b)

$$ODPOISSON(Y_{ij}) = \gamma_{00} + \gamma_{10}(ResIntab_{ij}) + \gamma_{20}(RacHet_{ij}) + \gamma_{30}(ConcDisad_{ij}) +$$

$$+\gamma_{40}(South_{ij}) + \gamma_{50}(RecImm_{ij}) + \gamma_{60}(PropMales_{ij}) + \gamma_{01}(Gini_j) +$$

$$\gamma_{02}(DivRate_j) + \gamma_{03}(RegVote_j) + \gamma_{04}(SocCap_j) + \gamma_{05}(Relig_j) +$$

$$\gamma_{06}(StoTRatio_j) + \gamma_{12}(DivRate_j * ResIntab_{ij}) + u_{0j} + r_{ij}$$

Where Y_{ij} is the three year average Census-tract level instrumental crime count (assumed

to follow an overdispersed Poisson distribution), γ_{00} is equal to the average outcome for

all Census-tracts, γ_{i0} are Census-tract level regression coefficients, γ_{0j} are state level

regression coefficients, $ResIntab_{ij}$ is the Census-tract level residential instability index,

$RacHet_{ij}$ is the Census-tract level ethnic/racial heterogeneity index, $ConcDisad_{ij}$ is the

Census-tract level concentrated disadvantage index, $South_{ij}$ is a dummy variable coded

as 1 is the Census-tract is southern and 0 otherwise, $RecImm_{ij}$ is the Census-tract level

Percent of the total population in each Census tract that is foreign-born and entered the

United States in 1990 or later, $PropMales_{ij}$ is the Census-tract level proportion of males

ages 15 to 34, $Gini_j$ is the state level household Gini coefficient of economic inequality,

$DivRate_j$ is the state level divorce rate in 2000, $RegVote_j$ is the state level percentage of

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[23] I calculate this total number of models in the following way. There are three models testing the cross-level interactions of the Gini-coefficient with residential instability, ethnic/racial heterogeneity, and economic disadvantage. Next, there are 15 models testing the interactions of the five measures of the strength of noneconomic institutions with residential instability, ethnic/racial heterogeneity, and economic disadvantage.

registered voters for the November 2000 election, $SocCap_j$ is the state level social capital

index, $Relig_j$ is the state level percentage of religious adherents in 2000, $StoTRatio_j$ is

the state level percentage of religious adherents in 2000, $\left(DivRate_j * ResIntab_{ij}\right)$ is the

cross-level interaction term of state-level divorce rates and Census-tract level residential

instability index, u_{0j} is the state specific effect, and r_{ij} is the error term for each Census

tract.

In summary, in this chapter, I first explained the six secondary data sources used

in this study. I then described the specific operationalization and measurement of each of

the abstract constructs from social disorganization theory and institutional anomie theory

integrated in the anomic disorganization theory. Next, I discussed of the analytic

strategies that I employed to test the hypotheses, beginning with the clustering of the

explanatory variables and dependent variable across maps of the United States and within

the case study city of Chicago. The analytic procedures were described, consisting of a

negative binomial regression model for social disorganization theory at the neighborhood

level and institutional anomie theory at the state level. Finally, the chapter concluded by

describing the two-level overdispersed Poisson regression model that facilitates the

preliminary test of the anomic disorganization theory. The next chapter contains the

results of these analyses and the final chapter will discusses and interprets the findings in

the broader framework of the integrated anomic disorganization theory and on

substantive, theoretical and methodological grounds.

Chapter 4: Findings

In this chapter, I apply the analytic strategies described in the previous chapter to test both social disorganization and institutional anomie theory independently and in a multilevel model. First, I discuss the descriptive statistics and model specification issues, and then I describe the spatial distribution of each variable on maps of the United States. Second, I highlight the important findings from the geospatial analyses of instrumental crime across the U.S. and in the case study city of Chicago. Third, I explicate the results from the models for neighborhood level social disorganization and state level institutional anomie. Fourth, I explain the results of the multilevel model of anomic disorganization.

1. Exploratory Analyses

a. Descriptive Statistics

Table 1 shows the descriptive statistics for the dependent variables and independent variables at the Census-tract and state level. At the Census-tract level, several features of the descriptive statistics are important to discuss. For the dependent variable of the three-year average instrumental crime count, the range is from 0 to 3440 incidents of instrumental crime, with a mean of 233.01 and a standard deviation of 197.50. Seven Census-tracts actually had zero instrumental crimes occur during this period, while a tract in Los Angeles was characterized by an extremely high amount of 3443 instrumental crimes during this period. In addition, this dependent variable is a count variable with a small amount of zero values, and overdispersion is present because the variance of 390006.25 (i.e., 197.5^2) far exceeds the mean of 233.01. Thus, negative binomial regression is the preferred statistical technique for analyzing these data (Long

1997). Each of three-year average counts of the four types of instrumental crime of robbery, burglary, larceny and motor vehicle theft are displayed to demonstrate the four items constituting the additive index. Finally, instrumental crime rates each of the four crime types are also included for the neighborhood level because they are used in the spatial analyses of neighborhood level instrumental crime.

For the independent variables at the Census-tract level, three points are important to note. First, the dummy variable for southern location has a mean of .32, which shows that the majority of tracts in the sample are from northern, Midwest or western regions of the United States. Second, the percentage of recent immigrants and males between the ages of 15 and 34 varies greatly, from zero percent to more than half of the population in some tracts. The high degree of variability and large ranges for variables is likely due to the large size and representativeness of the dataset, making it particularly suitable for testing the hypotheses espoused in this thesis. Third, the residential instability and economic disadvantage indexes are based on standardized variables, and therefore have a mean of zero. The racial/ethnic heterogeneity index ranges from 0 to .81, showing that neighborhood composition ranges dramatically from having an entirely racially and ethnically homogeneous population (i.e., with a value of 0) to a highly diverse racially and ethnically heterogeneous population (i.e., with a value of .81). The mean value is .38, indicating that the neighborhoods in this sample tend to be more racially and ethnically homogeneous than heterogeneous, which is consistent with sociological literature on residential segregation based on race and ethnicity (Massey and Denton 1993).

Table 1 also shows the descriptive statistics for the dependent and independent variables at the state level. For the dependent variable, the range is from 14,642 to 1,142,853 incidents of instrumental crime, with a mean of 209,601.65 and a standard deviation of 234,136.19. As expected, instrumental crime counts are larger in states with larger populations. Much like the Census-tract level outcome variable, the three-year average instrumental crime count at the state level is also overdispersed with a variance that far exceeds the mean, making negative binomial regression the most suitable technique. Each of three-year average counts of the four types of instrumental crime is also included to demonstrate the four items constituting the additive index. Lastly, instrumental crime rates each of the four crime types are also included for the state level because they are used in the spatial analyses of state level instrumental crime.

For the independent variables at the state level, the variables exhibit a large degree of variability despite the small sample size of 51 US states. For example, the percentage of registered votes 18 or older in 2000 ranges from only 47 percent of the population in Hawaii to 91.1 percent of the population in North Dakota. The divorce rate and percentage of religious adherents also varies widely. For Massachusetts, the divorce rate is only 2.5, while the divorce rate in Nevada is 9.9. The percentage of religious adherents is largely regional with southern states reporting a higher percentage of residents as adherents to religion. As such, in Oregon only 31.1 percent of residents report adhering to any religion, while in Utah 74.7 percent of residents report being religious adherents. The range of the social capital index is also interesting, as states range from a low of -1.43 in Nevada to a high of 1.71 in North Dakota. Lastly, the household Gini coefficient of economic inequality varies the least out of all of the

independent variables, from a minimum of .402 in Alaska to maximum values of .499 in New York and .549 in Washington DC. The mean of the Gini coefficient was .45, which represents the Gini coefficient economic inequality of the U.S. as a whole in 2000. This value is near that of .42, which was found to be the highest among all industrialized nations in a recent study from 2013 (Cassidy 2013). Overall, each of these independent variables exhibits considerable variability even with such as small sample size, which facilitates the application of statistical techniques.

To test for potential problems with multicollinearity, or a high degree of correlation among the explanatory variables that may influence the efficiency of the standard errors and bias subsequent hypothesis testing, variance inflation factors were computed (Wooldridge 2008). For all of the explanatory variables at the Census-tract level, the highest variance inflation factor was 2.05. For all of the explanatory variables at the state level, the highest variance inflation factor was 3.413. These values are well below the conservative recommendation of a maximum variance inflation factor of 4, indicating that multicollinearity is not a diagnostic problem with these variables or regression model specifications (Wooldridge 2008).

b. *Geographic Display of Variables on Maps of United States*

To further illustrate the spatial distribution of the each of the independent variables and the dependent variable of instrumental crime across the United States, seven maps were constructed (See Figures 5-11). These graphic representations of the variables at the state level have three important features.

First, the spatial distribution of each of the independent and dependent variables demonstrates significant clustering in certain regions of the United States, indicating that variables are not randomly dispersed across space. These maps explicitly illustrate this fact, and show that only reporting conventional descriptive statistics does not provide a comprehensive assessment of the actual distribution of variables geographically. While conventional statistics could also demonstrate this fact, these maps provide a more intuitive, clear and understandable method of presenting empirical data that explicitly shows the variation in variables at the macro level.

Second, these maps intuitively exemplify how instrumental crime follows a similar pattern of geographic distribution as violent and overall crime, with a higher rate of instrumental crime in the southern United States (Hackney 1969; Lin and Moore 1986). These findings are consistent with Nisbett (1993), who finds that a culture of honor that persists in the south increases violence rates because individuals are more likely to use violence for protection and as solutions for personally insulting circumstances. It is likely that this culture of violence, coupled with largely higher levels of economic inequality in the south (e.g., in Texas and Florida), is a contributing factor to the high levels of instrumental crime and could contribute to a higher rate of instrumental homicide, or murder committed to attain economic ends such as botched robberies or premeditated murder of a significant other to obtain life insurance money.

Third, these maps also show that social capital tends to be highest in more rural states with smaller, more racially/ethnically homogenous populations such as Vermont, North Dakota, and Minnesota, while the strength of commitment to education tends to be higher in the northeast and lower in the west. These results are consistent with Putnam's

(2000) wide-ranging book on social capital, in that social aggregates such as neighborhoods, cities and states with more homogenous populations tend to develop greater solidarity, organizational and institutional commitment and less social, political and economic conflict. These three social determinants all comprise high levels of social capital at the macro level, and with greater solidarity and organizational commitment, a logical consequence is a greater emphasis placed on the education system by minimizing student to teacher ratios to increase student learning processes and outcomes.

In addition, the dominance of the economy is higher in coastal states such as New York, California and Florida, while the commitment to religion is higher in the south and Midwest. These findings are similar to those of Lochner et al. (2001), who found in a multilevel study that coastal cities of New York and California had very high levels of inequality, which led to individuals within these states to be at a greater risk for mortality. In addition, these findings on the geographic distribution of commitment to religion generally agree with findings from the sociology of religion, which assert that the United States follows a pattern "generally described as a more 'devoted' South and a relatively irreligious West" (Sherkat and Ellison 1999: 369).

This pattern is explained as both a greater devotion to religion as a central feature of social and political life in rural and suburban Southern and Midwest areas, and also a consequence of greater populations of African American Baptists within these regions (Sherkat and Ellison 1999). Lastly, the commitment to the polity is higher in the Midwest and northeast, and the divorce rate does not follow a distinctive spatial pattern, except that Nevada is a significant outlier with a divorce rate of 9.9. These findings can be explained by two potential mechanisms. First, as northeastern states tend to have

higher levels of social capital, they also contain more organizationally and civically

engaged residents, which may lead these individuals to feel as though they have more

power to determine political elections and also to collectively mobilize to increase the

activism and involvement in the polity among residents (Putnam 2000). In regards to the

Midwest, research has demonstrated that the evangelical Christian population or

'Christian Right' of conservative voters in this area actively and aggressively focuses on

influencing the polity with political mobilization techniques such as "mass distribution of

voter guides, magazines radio advertisement and political talk show appearances"

(Regnerus, Sikkink and Smith 1999: 1375).

Thus, the spatial analyses demonstrate two important characteristics. First, states

with high levels of instrumental crime also have historically high levels of overall and

violent crime and are consistent with the southern culture of violence and honor

literature. Second, the geographic distribution of economic inequality and the five

measures of the strength of noneconomic institutions is also generally consistent with

previous scholarly work based on the reasoning described above. Overall, the application

of spatial analyses provides a more complete and comprehensive presentation of these

data, increasing their explanatory power and utility.

2. Central Analyses

a. Testing of State Level Spatial Autocorrelation with Moran's I

In order to investigate the spatial distribution of instrumental crime across U.S.

states, a Global Moran's I of spatial autocorrelation was calculated based on three year

average instrumental crime rate displayed in Figure 5. This measure is an indicator of the

extent to which instrumental crime clusters across geographic units, in this case US states (Murray et al. 2001). The Global Moran's I of spatial autocorrelation was .9228 with a z-score of 2.4175 (p < .05). These results show that instrumental crime has statistically significant positive spatial autocorrelation, indicating that instrumental crime is highly clustered at the state level (i.e., high instrumental crime states border other high instrumental crime states). To determine the localized patterning of instrumental crime across the United States, a Local Moran's I of spatial autocorrelation was calculated (See Figure 12). The results show which states cluster locally with other states with either low or high instrumental crime rates.

Due to the statistically significant Global Moran's I, a Local Moran's I was calculated to determine which states or clusters of states have similarly high or low instrumental crime rates. The results of the Local Moran's I indicate that statistically significant (p < .05) low-low clustering of instrumental crime rates is present in North Dakota, South Dakota, Maine, New Hampshire and New York, and that statistically significant high-high clustering of instrumental crime rates is present in Florida, Arizona and New Mexico. In other words, each of these states is surrounded by states with similarly low or high instrumental crime rates, respectively, within neighboring states. These results are generally consistent with the hypothesized relationships at the state level, as four states with low-low clustering tend to have lower (i.e., below the median) Gini coefficients (with the exception of New York), a higher percentage of religious adherents and registered voters, lower student to teacher ratios and higher levels of social

capital[24]. Conversely, the three states with high-high clustering of tend to have higher Gini coefficients (except Arizona), lower percentages of religious adherents (except New Mexico) and registered voters, higher student to teacher ratios (except New Mexico) and lower levels of social capital (except Arizona)[25]. These results will be interpreted in greater detail in the next chapter.

b. Localized Patterning of Instrumental Crime in Chicago, Illinois

To complement the conventional statistical analyses and to build on the previous large-scale geospatial analysis of the entire United States, the city of Chicago was selected to serve as a case study city of the distribution of instrumental crime across Census-tracts on a smaller geographic scale. Chicago, Illinois was selected from the 93 total cities included in the National Neighborhood Crime Study dataset. Figure 13 shows the distribution of instrumental crime rates in Chicago.

The Global Moran's I of spatial autocorrelation for Chicago is .2779 with a z-score of 25.6721 (p < .01). These results show that instrumental crime has statistically significant positive spatial autocorrelation and that instrumental crime is therefore moderately clustered at the neighborhood-level. In addition to the Global Moran's I of spatial autocorrelation, a Local Moran's I was also calculated for Census-tracts in Chicago (See Figure 14). Like the state level Local Moran's I, the Local Moran's I for

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[24] North Dakota and South Dakota have the third and fourth highest percentage of religious adherents respectively, while North Dakota and Maine have the first and second highest percentage of registered voters respectively. Moreover, Vermont and Maine have the first and second lowest student to teacher ratios respectively, while North Dakota, South Dakota and Vermont have the first, second and third highest social capital indexes respectively.

[25] Arizona, New Mexico and Florida have the fourth, seventh and eighth lowest percentages of registered voters respectively, while Arizona and Florida have the third and seventh highest student to teacher ratios respectively. Finally, Florida and New Mexico have the thirteenth and sixteenth lowest social capital index respectively.

Chicago shows which neighboring Census-tracts have low or high levels of instrumental crime when compared to neighboring Census tracts. The Local Moran's I measure shows that statistically significant ($p < .05$) high-high clustering of instrumental crime is present within two distinctive areas of the city, the downtown near north side area near the lake, and the near south and south side areas.

These results are relevant to the testing of anomic disorganization theory for two reasons. First, the high-high clustering of instrumental crime in the near north side is interesting because this area is also on of increasing gentrification in the previous three decades, which has yielded very high levels of income inequality within these neighborhoods (Sampson and Morenoff 2006; Sampson 2012). Neighborhoods within this area such as Lincoln Park, the Near North Side, the Loop and West Town were previously socially disorganized areas, but have recently undergone demographic and social changes that have resulted in both very wealthy and very poor residents living side by side (Sampson 2012). Consistent with the anomic disorganization theory, this condition has likely resulted in anomie and strain among residents which in turn has led to high levels of instrumental crime and a clustering of Census tracts with high levels of instrumental crime.

A second way in which these results are relevant to the anomic disorganization theory is that the second region of high-high clustering of instrumental crime in the near south and south side of Chicago is present in neighborhoods such as Oakland, Englewood, Washington Park and Grand Boulevard. These areas tend to have high levels of social disorganization (i.e., residential instability, racial/ethnic heterogeneity and economic disadvantage) with low commitment to the noneconomic institutions of the

family, religion, education system, community and polity (Sampson and Morenoff 2006; Sampson 2012). In addition, a single Census-tract within the Midway neighborhood demonstrated statistically significant high-low clustering, which means that it is a low crime area bordering on a high crime area. The Midway neighborhood borders more affluent suburbs such as Garfield Ridge, Clearing and West Lawn to the west, and more socially disorganized areas such as West Englewood and Englewood to the east, making it a zone of transition between these two socio-demographically different neighborhood clusters (Shaw and McKay 1942). As such, high levels of instrumental crime in this neighborhood are consistent with the anomic disorganization theory because residents nearby this neighborhood are likely exposed to conspicuous displays of wealth and economic dominance, yet live in socially disorganized neighborhoods with weak noneconomic institutions to mitigate criminogenic anomie and strain. Thus, the localized clustering of instrumental crime within these neighborhoods is consistent with both parts of the anomic disorganization theory.

c. *Census-tract Level Model of Social Disorganization*

Table 2 shows the negative binomial regression model estimates testing social disorganization theory predictors with the outcome of instrumental crime at the Census-tract level. In the two models in the table, model 1 includes only the three social disorganization measures, while model 2 includes the three social disorganization measures with control variables to see if the effects hold net of the control variables. The results in model 2 show that the three predictors of residential instability, ethnic/racial heterogeneity and concentrated disadvantage have statistically significant positive effects on the outcome of instrumental crime at the Census-tract level. These effects are

statistically significant ($p < .01$) when controlling for southern location, the percentage of

new immigrants and the percentage of males ages 15-34[26]. *Hypotheses 1 is supported.*

For model 1, the value of R^2 is .082 and for model 2 the value of R^2 is .103.

R^2 represents the proportion of the total variance in the dependent variable of

instrumental crime that is explained collectively by the explanatory variables[27]

(Wooldridge 2008). Thus, the three social disorganization predictors collectively explain

8.2 percent of the variance in instrumental crime and adding control variables to the

model increases the percent of explained variation in instrumental crime to 10.3 percent.

Although all three social disorganization predictors were statistically significant when

controlling these three variables, their relative importance differs. The incident rate ratios

demonstrate this finding, as they show the estimated percentage change in the dependent

variable corresponding to a one unit change in the independent variable[28]. In comparing

the value of the incident rate ratio for these three variables, residential instability has the

strongest effect, followed by ethnic/racial heterogeneity, and then concentrated

disadvantage. First, a one unit increase in the residential stability index is associated with

a 33.4 percent increase in the instrumental crime rate. Second, a one unit increase in the

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[26] Racial/Ethnic Heterogeneity was not statistically significant in model 1 with only residential instability and economic disadvantage. This was likely due to omitted variable bias present prior to adding the control variables, and the addition of these variables caused a suppression effect which reduced the bias in the coefficient for Racial/Ethnic Heterogeneity, rendering it statistically significant (Long 1997; Friedman and Wall 2005; Wooldridge 2008).

[27] Although the direct effects and statistical significance were calculated with negative binomial models, these models do not have easily interpretable and informative measures of the total proportion of variance explained in the dependent variable that are comparable to a standard R^2 coefficient of determination (Long 1997). Therefore, each model was estimated with OLS regression and the R^2 values reported from these analyses are reported for the neighborhood level and state level models.

[28] The formula $(e^b - 1) * 100$ is utilized to calculate the percentage change in the dependent variable based upon a one unit change in the independent variable, where e^b is equal to the incident rate ratio and b is equal to the unstandardized regression coefficient.

ethnic/racial heterogeneity index is associated with a 26.7 percent increase in the

instrumental crime rate[29]. Third, a one unit increase in the concentrated disadvantage

index is associated with a 23.5 percent increase in the instrumental crime rate. In

addition, the effects of the control variables on instrumental crime are also statistically

significant (p < .01) and in the expected direction based on previous literature. Census-

tracts located in the southern United States and with a higher percentage of males aged

15-34 have higher levels instrumental crime, while tracts with a greater percentage of

new immigrants have lower levels of instrumental crime. These findings will be

discussed in greater detail in the discussion chapter.

d. State Level Model of Institutional Anomie

Table 3 shows the negative binomial regression model estimates testing

institutional anomie theory predictors with the outcome of instrumental crime at the state

level. In the four models in the table, model 1 includes only the Gini coefficient to test

whether the dominance of the economy has a direct and positive effect on instrumental

crime (Hypothesis 2). Model 2 includes the Gini coefficient, and the five measures of

noneconomic institutions to test whether the positive effect of the Gini coefficient on

instrumental crime is mediated when controlling for the strength of commitment to

noneconomic institutions (Hypothesis 3 and Hypothesis 4). Model 3 includes all of the

variables in model 2 and adds the control variables to see if the effects hold net of the

control variables. Finally, model 4 tests the moderation of the effect of the Gini

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[29] The predicted percentage change in instrumental crime is calculated as ((1-1.334)*100)=33.4 for residential stability, as ((1-1.267)*100)=26.7 for ethnic/racial heterogeneity and as ((1-1.235)*100)=23.5 for concentrated disadvantage.

coefficient on instrumental crime by introducing a multiplicative interaction term (Hypothesis 5, 5a and 5b).

The results in model 1 show that the household Gini coefficient of economic inequality has statistically significant (p < .05) positive effects on the outcome of instrumental crime at the state level, when measures of the strength of noneconomic institutions and control variables are not included. *Thus, hypothesis 2 is supported.* In regards to hypothesis 3 and hypothesis 4, the results in model 2 and model 3 in Table 3 yield mixed results. Turning to hypothesis 3, in models 3 and 4, of the five theoretical covariates, only the measure of the strength of commitment to the noneconomic institution of education (p < .01) is statistically significant and in the expected direction. Thus, the student to teacher ratio is positively associated with instrumental crime at the state level. This effect remains statistically significant when controlling for southern location, percent foreign born and the proportion of males ages 15-34 in model 3. Based on the incident rate ratio in model 3, a one unit increase in the student to teacher ratio is associated with a 3.9 percent increase in the instrumental crime rate[30]. Also consistent with previous findings, the direct effect of the proportion of males ages 15 to 34 on instrumental crime is also statistically significant in model 3.

Models 2 and 3 in Table 3 also show that the positive effect of the Gini coefficient on instrumental crime is rendered not statistically significant when controlling for the five measures of the strength of noneconomic institutions. This effect is consistent and robust in model 3 in which the control variables of southern location, percent foreign born and proportion of males are introduced into the model. Thus, the effect of the Gini

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[30] The predicted percentage change in instrumental crime is calculated as ((1-1.039)*100)=3.9.

coefficient on instrumental crime is mediated when controlling for the strength of commitment to noneconomic institutions. *Hypothesis 4 is supported*.

For model 1, the value of R^2 is .112, for model 2 the value of R^2 is .326 and for model 3 the value of R^2 is .495. Thus, the Gini coefficient alone explains 11.2 percent of the variance in instrumental crime, adding five measures of the strength of noneconomic institutions to the model increases the percent of explained variation in instrumental crime to 32.6 percent, and adding control variables increases the explained variance further to 49.5 percent. Even though four of the five measures of the strength of commitment to noneconomic institutions are not statistically significant, the direction of their effects is important to discuss. As these data on all 50 states and Washington D.C. represent a full, enumerated and representative population of observations (i.e., all states) instead of a sample of observations, then hypothesis testing is not always required (Desbiens 2007). According to Desbiens (2007: 37), "when studying an entire population (e.g., all program directors, all deans, and all medical schools) for factual information, do not perform statistical tests." Using this approach, model 3 shows some important characteristics relevant to hypothesis 3. In this case, all of the effects except that of the divorce rate are in the expected direction. Specifically, the percentage of registered voters, social capital index and percentage of religious adherents is negatively associated with instrumental crime. Taking these findings together, *hypothesis 3 is partially and tentatively supported*. A small sample size of 51 is likely also a factor influencing the statistical power and lack of statistical significance, an issue that will be discussed further in the next chapter.

Table 3 also shows the testing of moderation effects of the Gini coefficient and student teacher ratio. Although hypothesis 5, 5a and 5b proscribe the testing of interactions between the Gini coefficient and each measure of the strength of noneconomic institutions, this interaction is possible to test because only the student to teacher ratio had statistically significant direct effects. Moderation effects can only be tested after finding a statistically significant direct effect (Baron and Kenny 1986). Model 4 shows the introduction of a multiplicative interaction term between the Gini coefficient and the student to teacher ratio. The moderation effects of the student teacher ratio on the relationship between the Gini coefficient and instrumental crime is not statistically significant. As such, *hypotheses 5,5a and 5a are not supported.*

e. *Multilevel Model of Anomic Disorganization Theory*

Table 4 shows overdispersed Poisson multilevel model used for the testing of social disorganization theory predictors at the Census-tract level and institutional anomie theory predictors at the state level with the outcome of instrumental crime at the Census-tract level. Model 1 shows the neighborhood level measures of social disorganization and the state level measures of Gini coefficient and strength of noneconomic institutions, with the outcome of instrumental crime at the neighborhood level. Model 2 shows the same variables with the control variables added at the neighborhood level. Both models control for the clustering of neighborhoods within states within the nested structure of level-1 units within level-2 units, eliminating potential bias that may be present due to a lack of statistical independence among neighborhoods within the same state.

The results in model 2 show that when accounting for clustering of observations and controlling for southern location, percentage of new immigrants and percentage of male ages 15-34, each of the social disorganization predictors has statistically significant effects on the outcome of instrumental crime at the Census-tract level[31]. Model 2 shows that a one unit increase in the residential stability index is associated with a 19.2 ((1-1.192)*100) percent increase in instrumental crime. Second, a one unit increase in the ethnic/racial heterogeneity index is associated with an 86 ((1-1.860)*100) percent increase in instrumental crime. Third, a one unit increase in the concentrated disadvantage index is associated with a 14 ((1-1.140)*100) percent increase in instrumental crime.

In regards to the state level predictors from institutional anomie theory, none of the variables have statistically significant effects on instrumental crime at the Census-tract level in model 1 or model 2. *Hypotheses 6, 6a and 6b are not supported*. This lack of statistical significance among the level-2 predictors is likely a function of the small sample size among states in which the neighborhoods in the NNCS data are nested within (i.e., 28 states), an issue that will be discussed in greater detail in the discussion. Even so, because of the lack of statistically significant effects at level-2, the construction and testing of cross-level interaction terms is not possible with these data. Therefore, it is not possible to formally and systematically test for the moderation effects predicted in hypotheses 6, 6a and 6b.

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[31] Much like the incident rate ratio in a negative binomial regression model, a multilevel overdispersed Poisson model yields a similar value known as the event rate ratio, with a similar interpretation (Raudenbush and Bryk 2002; Rabe-Hesketh and Skrondal 2012).

In this chapter, I first explained the key features of the descriptive statistics and geographic distribution of the variables. Next, I discussed the results of the spatial analyses for instrumental crime in the U.S. and in the case study city of Chicago, lending some support for the clustering of instrumental crime and key elements of the anomie disorganization theory. I examined the results from the models of neighborhood level social disorganization and state level institutional anomie, finding strong support for the former and moderate support for the latter. Lastly, I described the results of the multilevel model of anomic disorganization, finding strong evidence for the social disorganization component of the theory.

Chapter 5: Discussion and Conclusion

In this concluding chapter, I discuss the results and findings described in the previous chapter. First, I discuss the central findings in detail, interpreting the results from the two independent models and the multilevel model of anomic disorganization based on the theoretical frameworks and study hypotheses. Second, I forward the specific substantive, theoretical and methodological contributions of this thesis to the body of scholarly literature, prior to identifying limitations that are present. Lastly, I describe some directions for future research and potential policy implications based on the theoretical model and preliminary empirical test of anomic disorganization theory in this thesis.

1. Discussion of Central Findings

This thesis applies the two macro-level criminological theories of social disorganization and institutional anomie within an integrated and multilevel framework to better explain the understudied concept of instrumental crime across neighborhoods and states in the United States. This approach is presented within a new anomic disorganization theory, in which the increased social control and social support provided by strong noneconomic institutions is posited to reduce the criminogenic effects of neighborhood social disorganization and state level dominance of the economy. Previous literature has not investigated the application of each of these theories independently and jointly to explain instrumental crime, which is made possible with the unique nationally-representative NNCS data and testing of moderation effects with cross-level interactions.

The results of this thesis fill some of the gaps in the literature on both theoretical integration and instrumental crime. First and foremost, this thesis shows that social disorganization theory is a robust, valid and reliable theory across different geographic areas and crime outcomes. This is shown by the replication of previous findings that even when controlling for covariates of instrumental crime, residential instability, racial/ethnic heterogeneity and economic disadvantage are associated with higher levels of instrumental crime. These findings are replicated with a large, nationally-representative sample of neighborhoods in the United States and a heretofore neglected outcome variable, increasing the empirical evidence for social disorganization theory as applied to a new dependent variable. Moreover, the fully specified model of social disorganization explains over 10 percent of the variance in instrumental crime, which is slightly less than the 12.3 percent found in previous research on social disorganization theory applied to violent crime outcomes (Sampson, Raudenbush and Earls 1997).

Second, the bivariate findings on institutional anomie theory at the state level show that when the economy is more dominant, instrumental crime within a state is also higher. Consistent with previous findings, this shows that as people feel a greater need to pursue economic ends, their internalized control and the social support provided by noneconomic institutions is lessened which can lead to criminal means to obtain economic ends across macro-level units (Messner and Rosenfeld 2001). Furthermore, the results also show that the total variance explained in instrumental crime is 49.5 percent in the fully specified models of institutional anomie, which is a very high amount of explained variance for social science research (Wooldridge 2008). As such, institutional anomie theory seems to be particularly suited to be applied specifically to instrumental

crime as an outcome. Based on the extant literature, the results in this study demonstrate

more explained variation that previous tests of the theory applied to violence (i.e.,

homicide) outcomes in which 40.2 percent of the variance was explained in a cross-

national study (Messner and Rosenfeld 1997) and 9 percent of the variance was explained

in a study of urban U.S. counties (Maume and Lee 2003).

Although it should be interpreted carefully due to the small sample size, the

mediation of the positive effects of the dominance of the economy on instrumental crime

by the five variables measuring the strength of noneconomic institutions is another

critical finding. These results suggest that the criminogenic strain and anomie generated

by a highly dominant economy can by mitigated when noneconomic institutions are

strong and have high levels of commitment among the population. Therefore, the social

control and social support provided by strong noneconomic institutions potentially

lessens the internalized desire to pursue economic success through criminal means (i.e.,

innovation) by committing instrumental crime.

Third, the geospatial analyses provide some evidence for the anomic

disorganization theory at both the state level and neighborhood level in the case study

city of Chicago. Within the state level model, states with high levels of economic

inequality, and a weak commitment to noneconomic institutions tend to have higher rates

of instrumental crime based both on the geographic display of the variables and the

analysis of clustering of each variable. These findings are consistent with statistics on

violent and overall crime, and interestingly, two of the three states (Arizona and New

Mexico) are located on the border of the United States and Mexico (FBI 2012). As such,

the clustering of instrumental crime in these areas could be related to the operations of

organized drug cartels in the last two decades, who commit property and violent crime to obtain money to fund illegal activity and for self-enrichment (O'Neil 2009). However, this is not consistent across the entire border as Lee, Martinez and Rosenfeld (2001) find that homicide rates remain very low in El Paso, Texas despite its location bordering Mexico. They reason that due to the immigrant revitalization hypothesis, recent immigrants actually enhance community social capital and renew the labor market in neighborhoods, which prevents increases in crime. These findings are consistent with the negative association found between the percentage of recent immigrants and instrumental crime in both the neighborhood and state level models in this study.

Drawing from this contemporary example, these criminal individuals and groups pursue innovation by maintaining the goals of monetary success yet pursue this success through illegitimate means, and do so within Mexico, which is a country with high economic inequality, a weak commitment to noneconomic institutions and high levels of social disorganization within some urban areas (Merton 1938; Messner and Rosenfeld 2001; Esquivel and Cruces 2011; Eckstein 2014). As such, showing that instrumental crime tends to cluster in these two border states shows the effects of the 'spill over' of drug cartel crime and violence into the United States, and could potentially strengthen the anomic disorganization theory as applied to the case of Mexico and U.S. border states.

Within the case study of Chicago neighborhoods, instrumental crime tends to cluster spatially in areas with high levels of social disorganization, elevated economic inequality and a weak commitment to noneconomic institutions, which is consistent with the findings from Sampson, Raudenbush and Earls' (1997) seminal study on social disorganization and more so with Sampson's (2012) comprehensive longitudinal study of

Chicago neighborhoods. The neighborhoods identified as high in social disorganization were also similar to those identified in a historical spatial analysis of the persistence of poverty over time by Sampson and Morenoff (2006), further strengthening these findings. In addition, more affluent areas with less social disorganization do not have a clustering of high levels of instrumental crime, except for in the most urbanized areas with very high levels of economic inequality.

These results show that constant exposure to economic and material success manifested as luxurious apartments, expensive high-end businesses and individuals in public with lavish designer clothing may instill a stronger emphasis on the attainment of material success goals, yet the majority of low and middle class residents in Chicago likely cannot achieve this success through legitimate means. Therefore, a turn to instrumental crime for some people is a valid and logical consequence of this social arrangement, as frustration, relative deprivation and economic disadvantage render committing theft or robbery a better decision than remaining in abject poverty while being exposed to opulence and wealth on a day to day basis. Indeed, these results are highly relevant to today's society in which the economic inequality is at its highest of all time in the modern United States, and "the richest 1 percent are likely to control more than half of the globe's total wealth by next year [2016]" (Cohen 2015: 1).

Another tentative explanation of this localized clustering within Chicago neighborhoods drawing from a routine activity approach; areas with the highest levels of economic inequality also contain the greatest quantity of suitable targets for crime and (because they are public areas such as streets, parks and sidewalks) may entice motivated offenders to go to these areas to seek potential targets to victimize (Cohen and Felson

1979). Future research should explore the possibility of actual personal exposure to wealth among disadvantaged residents to determine if this does enhance relative deprivation and frustration over not possessing legitimate means to achieve this material success. In addition, future work could incorporate variables on motivated offenders, suitable targets, and capable guardians at the neighborhood level with instrumental crime outcomes to determine how the contextual factor of economic inequality influences offending and victimization within a routine activities framework. These results provide support for the key tenants of both theories at multiple levels of analysis, and strengthen the robustness of the findings from the conventional statistical analyses with geographical data and spatial statistical analysis methods.

2. Testing of Anomic Disorganization Theory

The proposed anomic disorganization theory was tested empirically within a multilevel framework, and the results demonstrate four important characteristics. This is even though the level-2 (i.e., state level) component of the model was not statistically significant. First, taking the separate tests of social disorganization at the neighborhood level and institutional anomie at the state level with the outcome of instrumental together, the total explained variance in was collectively over 50% (10.3% for S.D. and 49.5% for I.A.T.). This finding is important because it supports on of the main arguments for an integrated theory, namely that integrating the theories together in anomic disorganization theory successfully explains a greater percentage of the variance in instrumental crime.

Second, this study uses a novel approach by applying a multilevel model (which accounts for clustering of neighborhoods within states) to integrate both social

disorganization theory and institutional anomie theory. As the results showed, only the predictors from social disorganization theory were statistically significant, while variables from institutional anomie theory were not significant. This result is likely methodologically and data-related, in that only the social disorganization component, which relied on over 9,000 observations, was found to be statistically significant, while the institutional anomie component relied on only 28 observations in the multilevel model. Even so, the model shows that when accounting for the clustering of observations and the lack of statistical independence, social disorganization theory remains as a robust framework for explaining instrumental crime (Raudenbush and Bryk 2001).

Third, this thesis lays the theoretical and empirical foundation for future tests of the anomic disorganization theory. By providing a theoretical and conceptual model, as well as a preliminary test of this model with single item indicators for each concept, researchers can further refine, elaborate and reformulate the model with diverse data sources. The anomic disorganization theory can be tested with multi-item indicators for the dominance of the economy and the strength of noneconomic institutions, which may yield different findings. For example, instead of using social capital as a measure of the strength of community, one could construct a multi-item measure from secondary data on public opinion on neighborhood solidarity and engagement in community activities. Furthermore, the strength of commitment to the institution of the family could be tested with aggregated responses to a survey with a representative sample of adults with a composite measure incorporating time spent with family, emphasis placed on socialization of children, hours worked vs. hours spent at home and the amount of positive daily interactions with family members. The use of the theoretical and

conceptual model described in this thesis is versatile and foundational, and these multi-item indicators can be drawn from diverse data sources in subsequent tests of the theory.

Fourth, the null findings on the effects of institutional anomie variables at the state level may also be related to the unit of analysis of states, instead of a smaller aggregate such as cities or metropolitan statistical areas (Maume and Lee 2003). In the theoretical model, it is argued that structural characteristics of states have direct effects on the neighborhoods within each state. However, it is possible that the strength of these effects increases as units of analysis are aggregated at smaller levels. In other words, while state level variables may not affect the neighborhoods within them (as was shown in this preliminary test), perhaps structural characteristics of cities influence the ways in which social structural processes in neighborhoods or communities within a city operate. This precise argument is made in Krivo, Petersen and Kuhl (2009), who found that differential levels of segregation in cities affects the relationship between structural neighborhood-level predictors of crime and the outcome of violent crime. Therefore, states may represent too large a level of aggregation with too much population heterogeneity, and future tests could instead incorporate cities, counties or metropolitan areas at a higher level, with smaller geographic units subsumed within these social aggregates.

3. *Substantive, Theoretical and Methodological Contributions*

This thesis represents a significant contribution to the extant literature in criminology and sociology on substantive, theoretical and methodological grounds. Substantively, this thesis shows that the concept of instrumental crime can be explained

with existing theories of social disorganization theory and institutional anomie theory. As instrumental crime has received little scholarly attention despite its enormous economic and social impact, this thesis highlights the importance of applying theories to diverse types of crime with rigorous methods and nationally-representative empirical data. Consistent with the large body of previous research, the key variables from social disorganization theory significantly predict variations in instrumental crime, illustrating the robustness of this theory across a large, representative sample of urban neighborhoods in the United States.

Theoretically, this thesis moves beyond the testing of individual theories independently by applying a multilevel framework and integrating current theoretical approaches to explain a unique crime outcome. Instead of taking on the vertical integration approach drawing from one micro and one macro level theory as most integration efforts do (e.g., situational action theory or coercion-social support theory), this thesis attempts to integrate two theories horizontally at the macro level with an original conceptual model (Tittle 1995; Colvin, Cullen and Vander Ven 2002; Wikström 2004). Although each of the cross-level interactions were not possible to construct and test, the fully specified model with direct, mediating and moderating effects is articulated among concepts in both theories in the anomic disorganization theory to guide future theory development and empirical research.

Methodologically, the multilevel modeling approach of neighborhoods nested within larger social units has only appeared in very few previous studies (e.g., Krivo, Petersen and Kuhl 2009), as almost all applications of multilevel modeling focus on individual participants nested within social aggregates (e.g., Sampson, Raudenbush and

Earls 1997). By obtaining data in a nested structure, the methodological approach allows

for jointly testing smaller-scale macro level theories such as social disorganization (i.e.,

operates at neighborhood level) and larger-scale macro level theories such as institutional

anomie (i.e., operates at city, state or national level). Furthermore, researchers can apply

the broader framework of smaller aggregate units nested within larger aggregate units to

test other macro-level theories at different units of analysis, not necessarily limited to the

discipline of criminology.

Within criminology, one could test other theories such as routine activities theory

(Cohen and Felson 1979; Felson 1998) at a smaller level of aggregation such as the

neighborhood, while simultaneously testing social support theory (Cullen 1994) or

deterrence theory (Bentham 1998 [1780]; Nagin 1998) at the county or city level. Within

sociology, one could test Durkheimian theories of social integration (i.e., anomie) at the

community or neighborhood level with elements of Marxist conflict theory (e.g., degree

of alienation or capitalist exploitation) at larger levels of aggregation such as the city,

state or nation (Durkheim 1897 [1951]; Marx 1976 [1867]). While data constraints due

to availability are always a practical issue in the social sciences, the methodological

approach in this thesis can be an impetus for researchers and institutions to collect more

macro-level data in a nested structure at multiple levels of analysis. By moving beyond

the prevailing paradigm of multilevel modeling which focuses solely on nesting

individuals within larger social aggregates, this thesis shows how this model is versatile

for both theory testing and theoretical integration.

4. *Study Limitations*

Although this thesis contributes substantively, theoretically and methodologically to the current body of scholarly literature, four key limitations are present. First, the indicators for each of the key concepts of the dominance of the economy and the strength of noneconomic institutions are based on secondary data, and can be further developed in future tests of the theory. In particular, the Gini coefficient of household income inequality is not an ideal operationalization of the dominance of the economy, and future studies could use other valid and reliable multi-dimensional economic measures. While these empirical indicators are based on previous measures used in tests of the theory, they are single indicators and serve as the best possible operationalization of each concept given the data available. These indicators can be further refined through primary data collection or the aggregation of individual-level data, two issues which will be discussed in more detail in the next section.

Second, the application of cross-level interactions in the multilevel models were not possible to test due to the small number of cases with the level-2 data on 28 states likely due to inadequate statistical power (Cohen 1992). Although the 28 is higher than the 25 case requirement at level-2 recommended by Raudenbush and Bryk (2001), this limitation is important to take into account because it prevented the testing of hypotheses 6, 6a and 6b. Even so, this null finding emphasizes the need for additional research using a nested data structure on anomic disorganization theory with a larger sample of larger social aggregates, an area of future inquiry that will be discussed further in the next section.

Third, two issues related to the data used for the dependent variables are limitations of this study. A very small percentage of data on the motor vehicle theft count and rate for 1999-2001 were missing for 81 Census-tracts from the National Neighborhood Crime Study dataset. This reduced the sample from the original 9,593 to 9,512 neighborhoods. This condition of missing data was corrected with listwise deletion, which according to Allison (2002) results in unbiased regression estimates for limited dependent variables when the percentage of missing cases is small and data is only missing on the dependent variable. In the analyses conducted in this thesis, this condition is present, and a listwise deletion procedure is comparable to maximum likelihood approaches to remedy missing data and potentially superior to multiple imputation procedures (Allison 2002). In addition, previous research has found that property crime tends to be underreported when compared with violent crime based on data from criminal justice agencies and victimization surveys (MacDonald 2001). As the instrumental crime outcomes in this study rely on official data from police departments and the FBI, and are dominated by the larceny and theft measures, the estimates for the dependent variables are likely lower than the actual number of neighborhood and state level instrumental crimes that occurred between 1999 and 2001.

Fourth—again due to data constraints at the individual-level—fundamental concepts from social disorganization theory and in the institutional anomie theory are not empirically measured. Specifically, collective efficacy is not measured in the social disorganization models, and the disjuncture between goals for material success and legitimate means to achieve this success (i.e., goals-means gap) is not measured in the institutional anomie models (Merton 1938; Sampson, Raudenbush and Earls 1997;

Sampson 2012). Even so, this is not necessarily a limitation as the majority of previous studies on social disorganization theory and institutional anomie theory did not incorporate these variables, and the institutional anomie theory actually assumes that this anomic condition is already present in American society (Messner and Rosenfeld 2001; Messner, Thome and Rosenfeld 2008). In addition, as the role of collective efficacy is an intervening variable, models of social disorganization can still measure direct effects on crime outcomes without including this variable. Therefore, because the three primary measures of social disorganization are present and the condition of anomie is already assumed to be present in American society, these variables do not necessarily need to be introduced into empirical models of the two theories.

5. *Directions for Future Research on Anomic Disorganization Theory*

Based on the key findings and contributions of this thesis and the study limitations described in the previous section, future research on anomic disorganization theory should focus on four areas of enquiry. First, the conceptual model and the indicators utilized to operationalize key concepts from institutional anomie theory can be further refined, developed and tested. This goal can be accomplished by constructing more complex multidimensional measures of each concept, and then obtaining data on these indicators either from existing secondary datasets or primary data collection. For example, the dominance of the economy could by operationalized with multi-item composite measures aggregating individual-level survey data on prioritization of economic goals over noneconomic ends with multiple macro-level indicators of economic inequality. Furthermore, the concept of family can be operationalized differently than the divorce rate, with measures such as the percentage of single headed

households, the percentage of female headed households, the ratio of marriages to divorces or even the aggregation of individual-level survey data on quality of family life up to the neighborhood, city or state level.

The second area for future research draws on this last approach of aggregating individual-level data up to the macro-level, what Sampson (2012) identifies as an ecometric methodology, to obtain measures of macro-level phenomena. In this case, a primary data collection effort with a nationally-representative sample with specific multi-item indicators for each concept, including collective efficacy and the goals-means gap, should be conducted. By developing and refining empirical indicators of concepts from institutional anomie theory with greater validity and reliability, a more comprehensive test of the anomic disorganization theory can be conducted. In this same vein, future studies on anomic disorganization theory should include measures of the intervening concepts of social control, social support and collective efficacy (which are unobserved in this thesis) to test their mediating effects. This approach will facilitate the testing of direct and indirect effects of key variables from social disorganization and institutional anomie theory on instrumental and other types of crime. Thus, a more complete assessment of the magnitude and significance of effects can be conducted and can be used to inform future theoretical integration, empirical research and policy interventions.

Third, subsequent studies should consider the possibility of different types of social disorganization within a descriptive and explanatory typology. While social disorganization that operates within neighborhoods within an anomic context may be one type of social disorganization, two other typologies are also present. Drawing from Durkheim's (1951) seminal book on the tripartite typology of anomic, egoistic and

altruistic suicide, social disorganization can be produced by several causes and can operate differently in different social contexts. For example, Ramey (2013) finds that differential effects of social disorganization and immigrant concentration on violence in new and old immigrant destination cities.

A typology of qualitatively different kinds of social disorganization can assess how the theory operates differently based on the characteristics of the larger scale social context (i.e., city or state). In effect, comparing neighborhoods located in different larger social contexts can allow for empirical comparisons of how racial/ethnic heterogeneity, residential instability, economic disadvantage, collective efficacy, and informal social control (i.e., private, public and parochial) processes operate differently in different structural contexts. As such, beyond the social disorganization that operates within a larger anomic social structure within a city or a state, social disorganization may also be caused by and operate differently due to globalization, deindustrialization, political unrest, social movements or natural disasters within a city or a state. Thus, future research should seek to identify the diverse causes of social disorganization, and most importantly, construct a typology of the ways in which social disorganization operates differently in neighborhoods located within cities and/or states with varying levels of not only anomie, but also other macro-level structural variables.

Fourth, future work should apply geospatial analysis methods to a larger sample of neighborhoods in more than one major metropolitan area in the United States. While the use of Chicago as a case study was effective in this thesis to show how instrumental crime follows spatial clustering patterns based on differential levels institutional anomie and social disorganization within neighborhood clusters within this city, more rigorous

analyses should be performed in future studies. Specifically, geographically weighted regression analysis could be applied with data on other cities to explore how neighborhood level measures of social disorganization, the dominance of the economy and the strength of noneconomic institutions affects instrumental crime patterns differently in different broader social contexts. This approach could further enhance the support for anomic disorganization theory and complement more comprehensive conventional statistical analyses.

6. Policy Implications

In order to ground the findings of this empirical research in the broader society, the criminal justice system and public policy, three primary implications stem from the key findings of this thesis. First, policymakers must take on a holistic approach to crime control and prevention in neighborhoods, cities and states, as the results have shown that variables from both theories at different levels of analysis are important in predicting crime. For example, instead of focusing the majority of criminal justice spending towards increasing the size of law enforcement agencies and the correctional system in neighborhoods and cities, policy makers would more successful in developing city and state programs to improve commitment to the family, community and education. In addition, programs can also be instituted on the neighborhood level to increase community investment, affordable homeownership, community-based policing and employment opportunities. Each of these interventions could potentially result in the strengthening of noneconomic institutions and a reduction in social disorganization within neighborhoods. Overall, taking a more holistic approach that focuses on the more

distal causes of crime instead of proximate causes will likely have more widespread and lasting benefits than merely "treating" crime with more arrests and incarcerations.

A second policy implication pertains to the current arrangement of the economic system in the United States which prioritizes financial and material success over all other ends in life. This condition inevitably causes strain and anomie among those who cannot achieve this success, and who are not able to pursue other noneconomic ends as an alternative to the dominant economy (Messner and Rosenfeld 2001). Government policy at the state and national level should be instituted to mitigate this strain and anomie by taking specific actions to reduce the dominance of the economy and to improve the strength of and commitment to noneconomic institutions. These policies could take many forms, such as increasing the minimum wage, mandating family leave policies for all businesses, easing the process of home ownership, forming community improvement organizations and increasing federal funding of schools in areas with high levels of social disorganization. Policy interventions could also focus on instilling in children (e.g., in public schools) and adults (e.g., with public service announcements) that noneconomic institutions are as important, if not more important, that solely pursuing economic success.

Third, drawing from the anomic disorganization theory and the findings supporting the effects of the institutional anomie at the state level, state policy makers should take into account all neighborhoods with a state instead of only economically advantaged communities in the state. Often legislative policies on criminal justice and neighborhood investment are made at the state level with a preference towards higher socioeconomic status communities, while neglecting more disadvantaged neighborhoods.
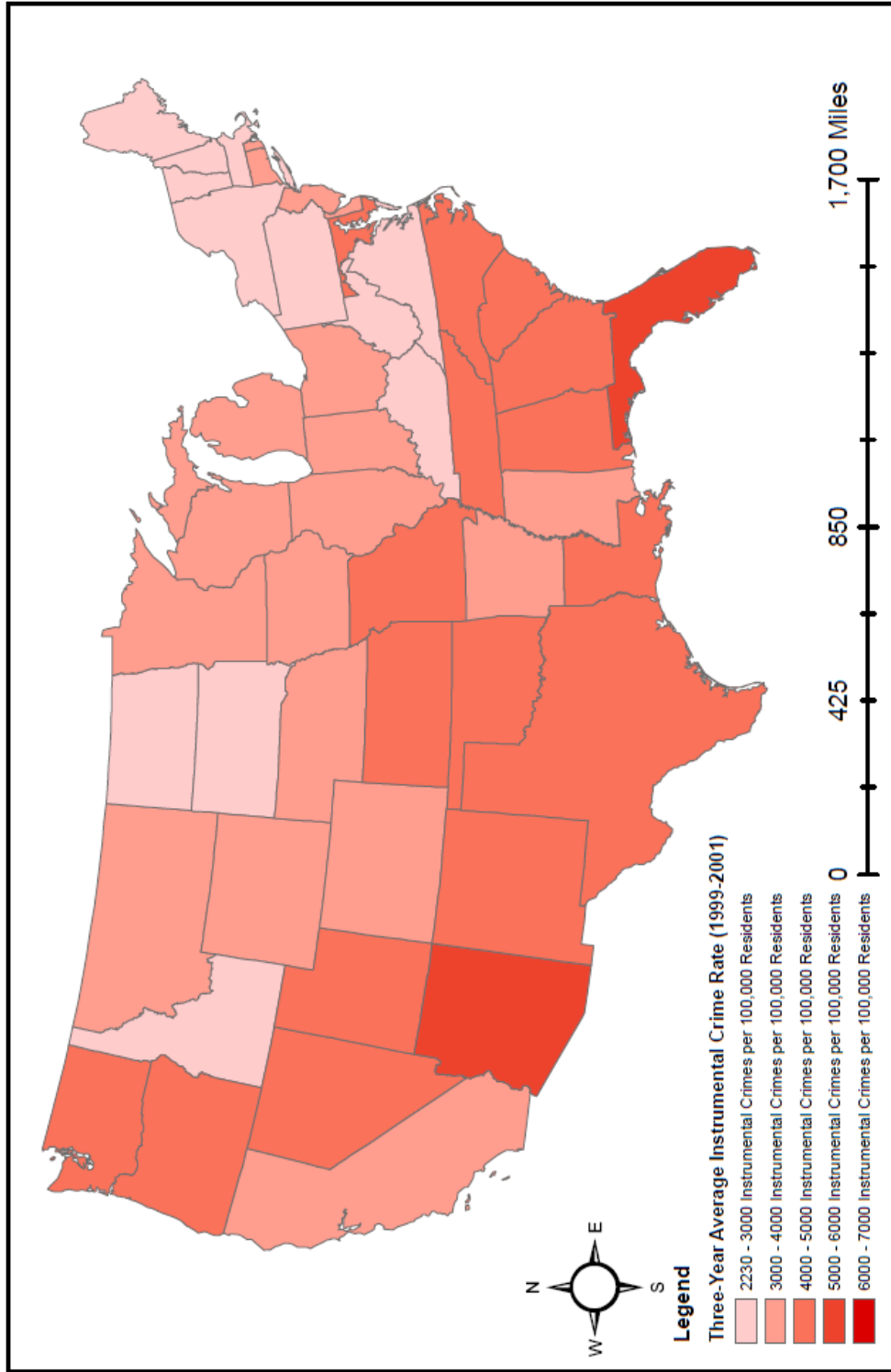
This approach does not take into account the regions within states that often could benefit most from targeted criminal justice policy interventions and increased investment in infrastructure. By focusing on the more distal causes of crime such as social disorganization and poor quality noneconomic institutions such as public schools and organizations aimed at fostering community wellbeing, criminal involvement can be reduced at the individual level and macro-level in these disadvantaged communities.

7. Conclusion

To sum up, this thesis found that social disorganization is strongly supported as a theoretical explanation of instrumental crime at the neighborhood level. The core arguments of institutional anomie theory of the criminogenic effects of the dominance of the economy and protective effects of strong noneconomic institutions are partially supported as a theoretical explanation for instrumental crime at the state level. Geospatial analyses across U.S. states and within the case study city of Chicago strengthen the empirical findings by demonstrating that instrumental crime tends to cluster within areas with economic dominance, social disorganization and a lack of commitment to noneconomic institutions. Most importantly, this thesis also forwarded and developed an anomic disorganization theory, which received mixed support in a preliminary empirical test. These findings provide the groundwork for future empirical studies and theoretical development of anomic disorganization theory, which are fruitful areas of research for additional scholarly work in the social sciences.

APPENDIX A: Geographic Representations of Descriptive Statistics

Figure 5: Geographical Representation of the Three-year Average Instrumental Crime Rate in the United States

Three-Year Average Instrumental Crime Rate (1999-2001)

Legend

- 2230 - 3000 Instrumental Crimes per 100,000 Residents
- 3000 - 4000 Instrumental Crimes per 100,000 Residents
- 4000 - 5000 Instrumental Crimes per 100,000 Residents
- 5000 - 6000 Instrumental Crimes per 100,000 Residents
- 6000 - 7000 Instrumental Crimes per 100,000 Residents

0   425   850   1,700 Miles

Source: FBI's Uniform Crime Reports (1999-2001)

Figure 6: Geographical Representation of the State-level Gini Coefficient of Economic Inequality in the United States

Legend

Household Gini Coefficient (2000)

- 0.402 - 0.418
- 0.418 - 0.429
- 0.429 - 0.441
- 0.441 - 0.465
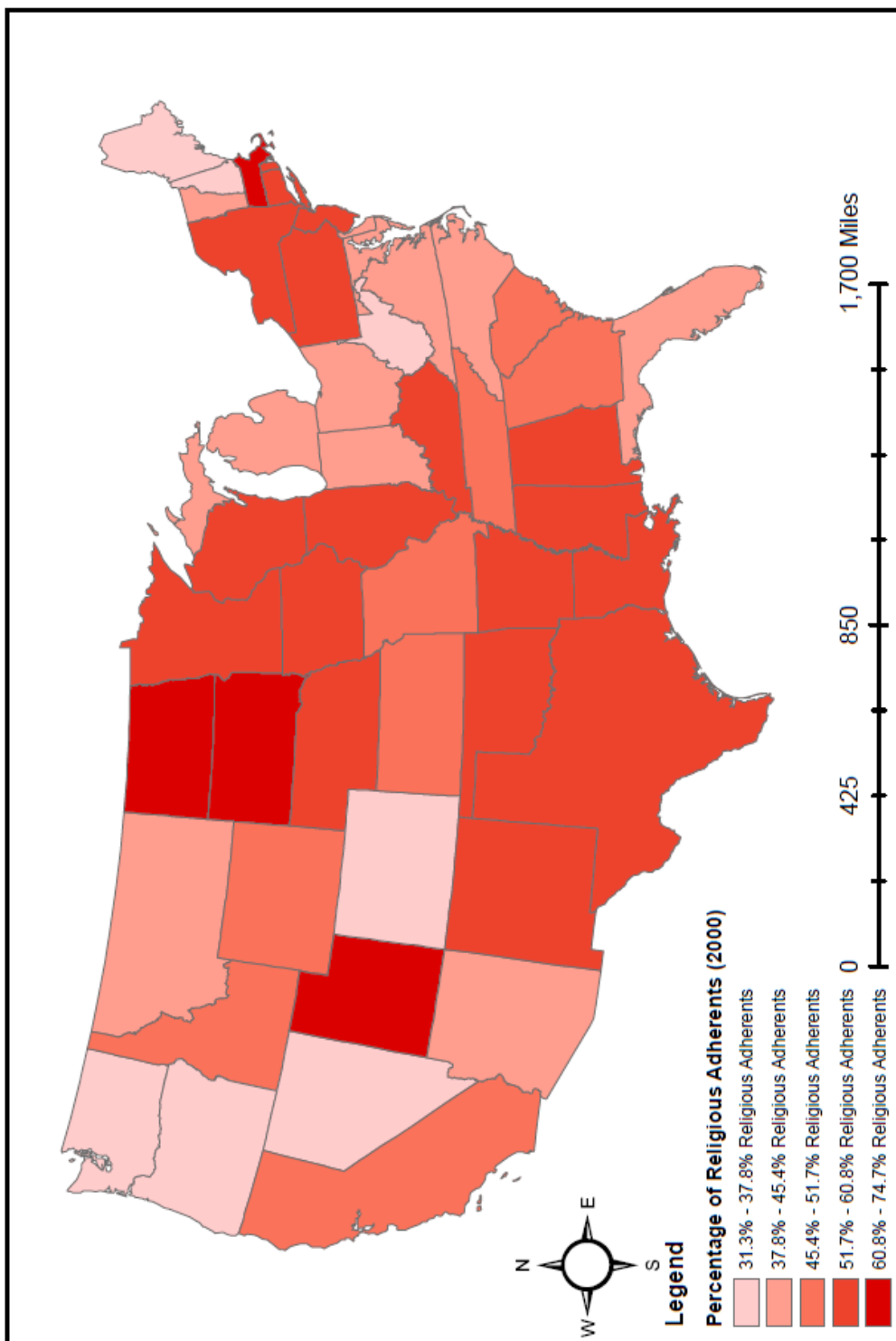- 0.465 - 0.499
- 0.499 - 0.549

0   425   850   1,700 Miles
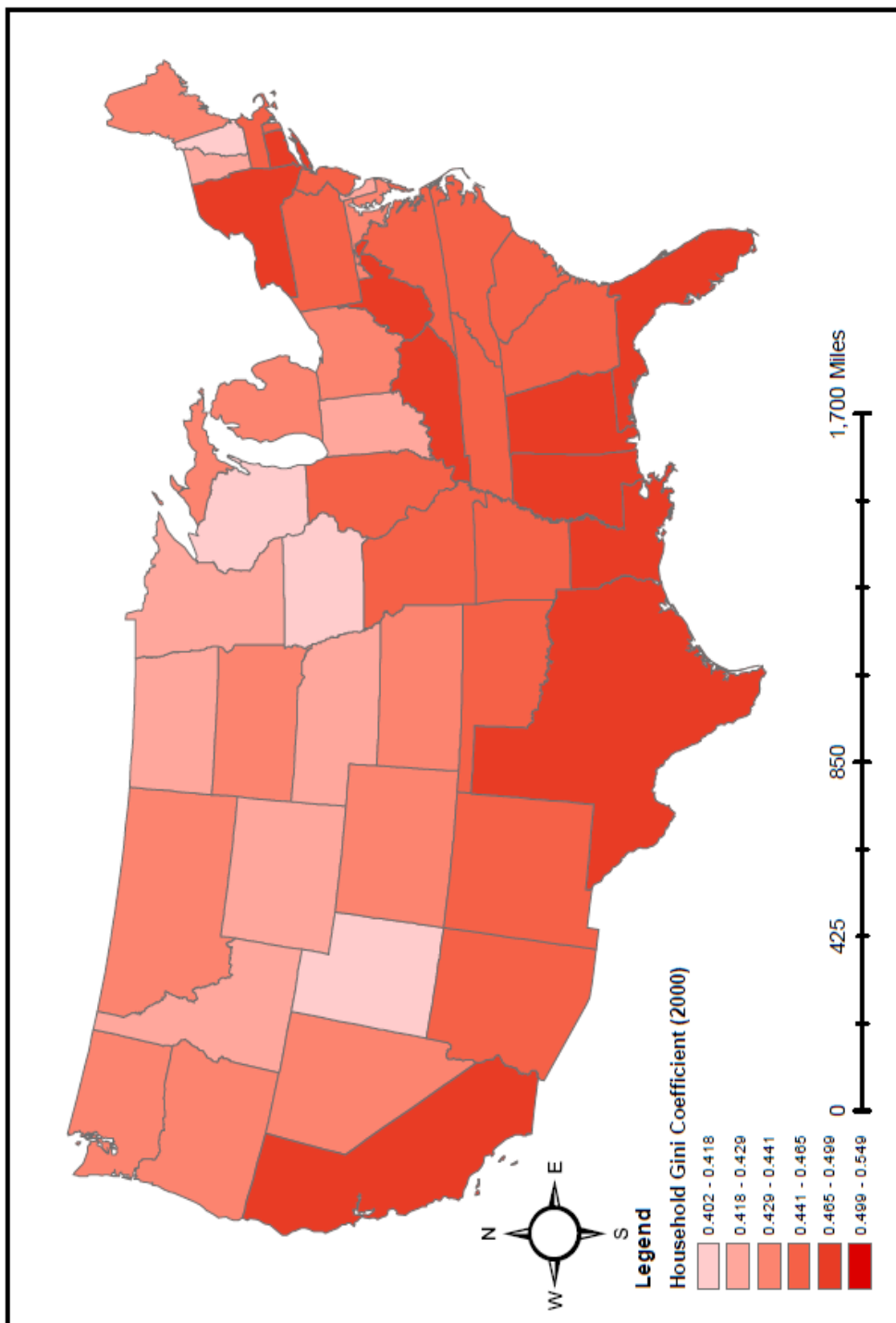
Source: US Census of Population and Housing (2000

Figure 7: Geographical Representation of Percentage of Religious Adherents in the United States (2000)

Legend

Percentage of Religious Adherents (2000)

31.3% - 37.8% Religious Adherents
37.8% - 45.4% Religious Adherents
45.4% - 51.7% Religious Adherents
51.7% - 60.8% Religious Adherents
60.8% - 74.7% Religious Adherents

0   425   850   1,700 Miles

Source: Association of Religious Data Archives (2000)

Figure 8: Geographical Representation of Student to Teacher Ratio in the United States (2000)

Legend

Student to Teacher Ratio (2000)

12.1 - 13.9 Pupils per Teacher

13.9 - 15.1 Pupils per Teacher

15.1 - 16.3 Pupils per Teacher

16.3 - 18.6 Pupils per Teacher

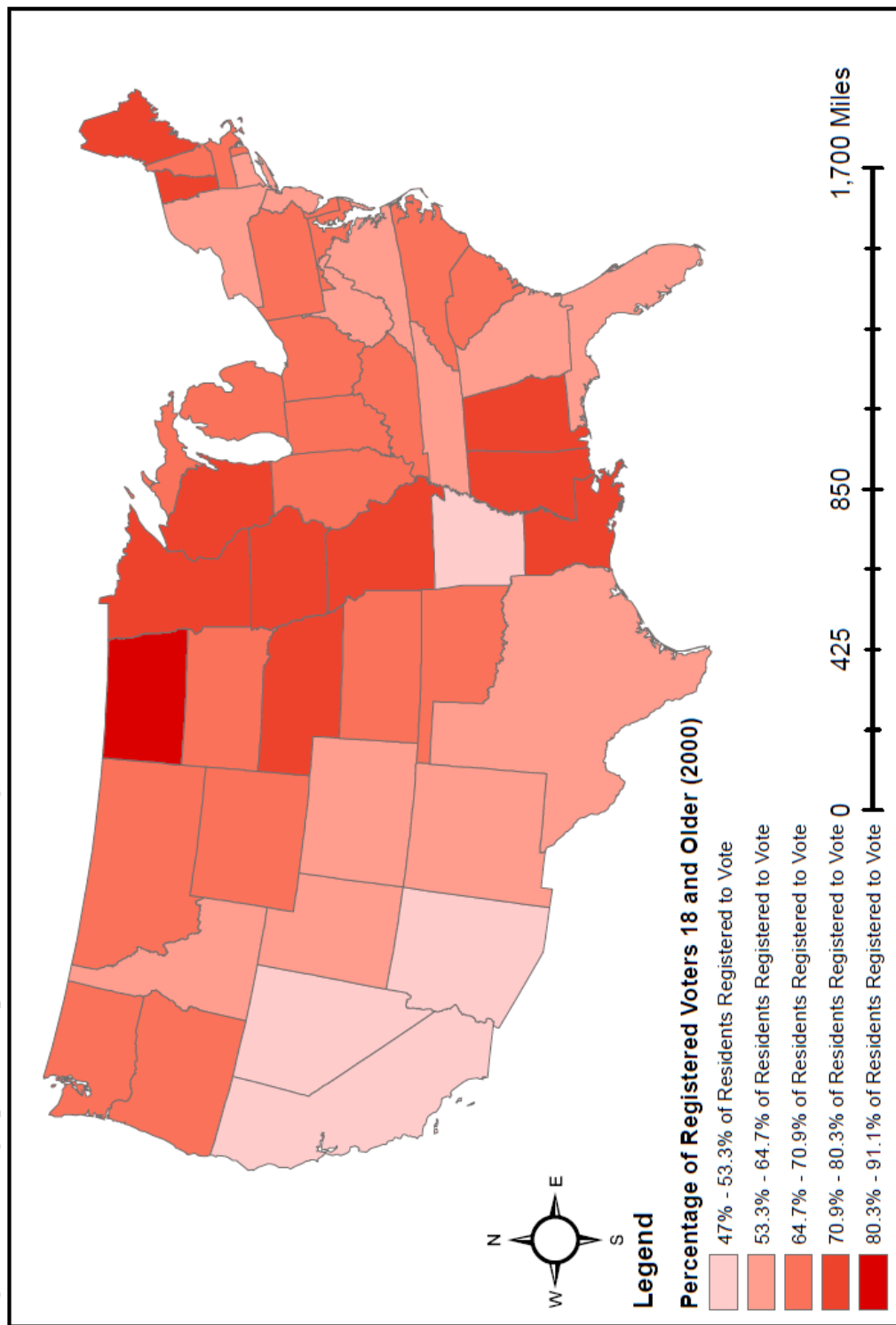18.6 - 21.9 Pupils per Teacher

0   425   850   1,700 Miles
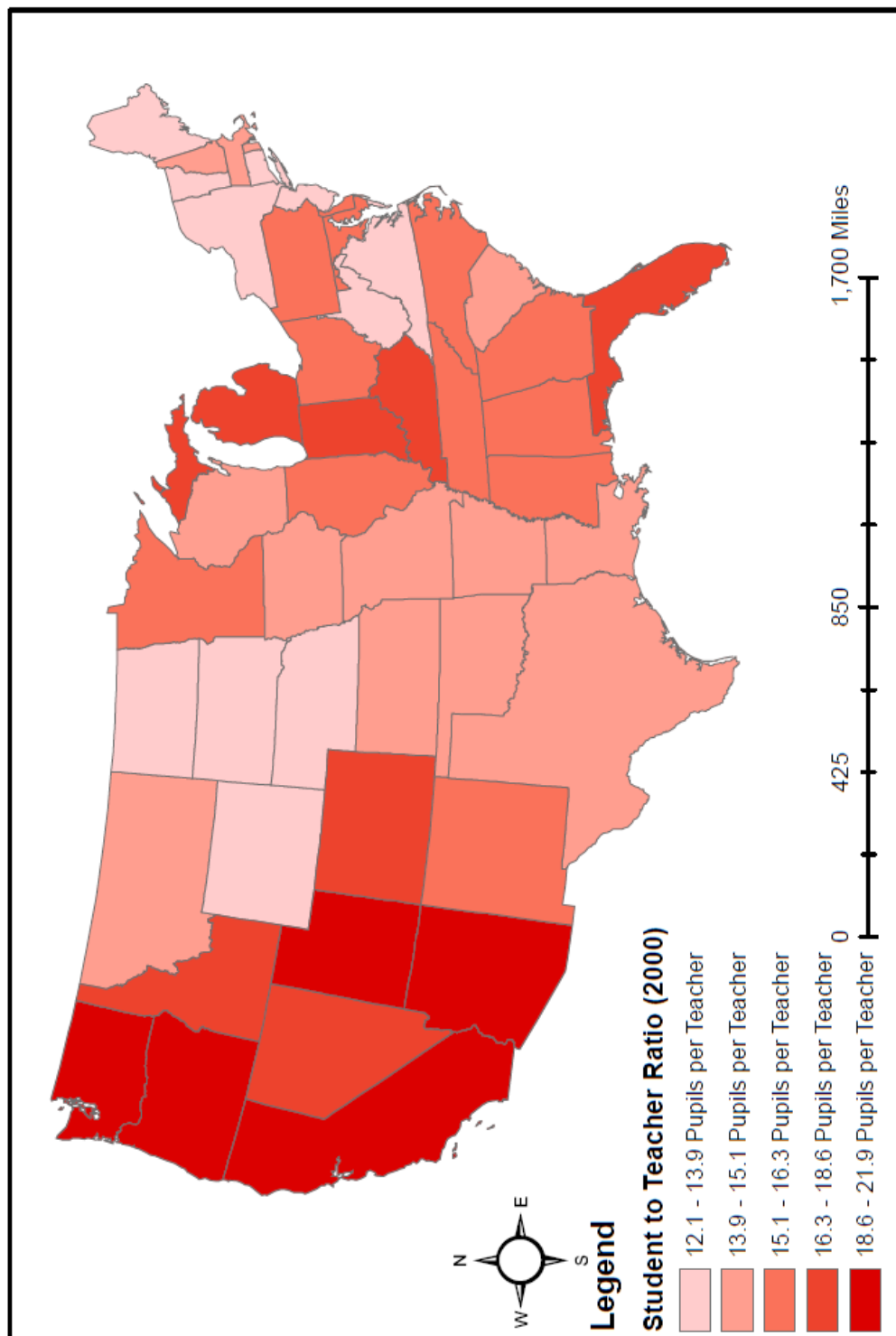
Source: National Center for Education Statistics (2001)

Figure 9: Geographical Representation of Divorce Rates in the United States (2000)

Legend

Divorce Rate per 1000 Population (2000)

- 2.5 - 3.5 Divorces per 1000 Residents
- 3.5 - 4.3 Divorces per 1000 Residents
- 4.3 - 5.1 Divorces per 1000 Residents
- 5.1 - 6.6 Divorces per 1000 Residents
- 6.6 - 9.9 Divorces per 1000 Residents

0   425   850   1,700 Miles
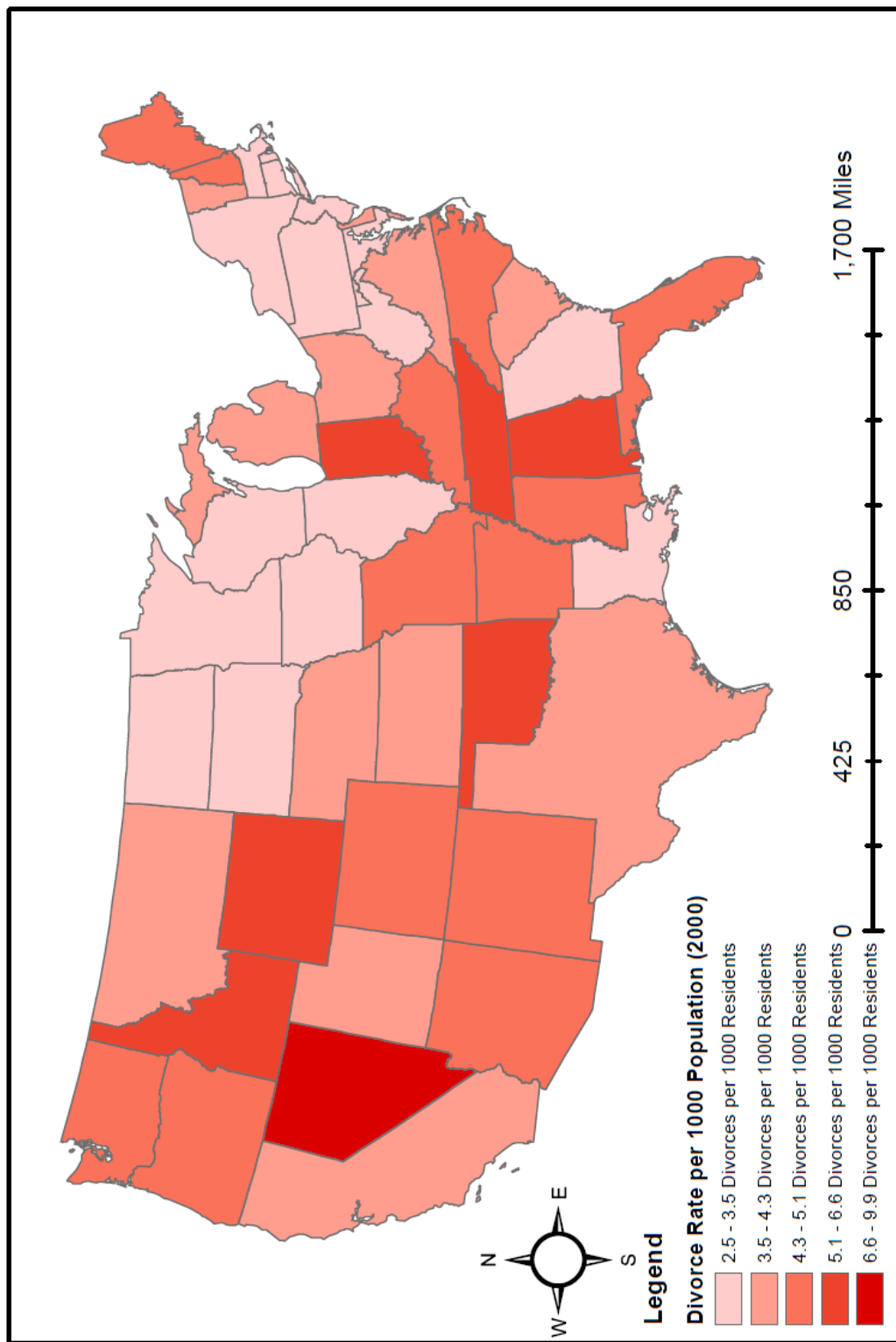
*Source: United States Census (2012)*

Figure 10: Geographical Representation of Registered Voters 18 or Older in the United States (2000)

Legend

Percentage of Registered Voters 18 and Older (2000)

47% - 53.3% of Residents Registered to Vote

53.3% - 64.7% of Residents Registered to Vote

64.7% - 70.9% of Residents Registered to Vote

70.9% - 80.3% of Residents Registered to Vote

80.3% - 91.1% of Residents Registered to Vote

0   425   850   1,700 Miles

Source: US Census Bureau (2001)

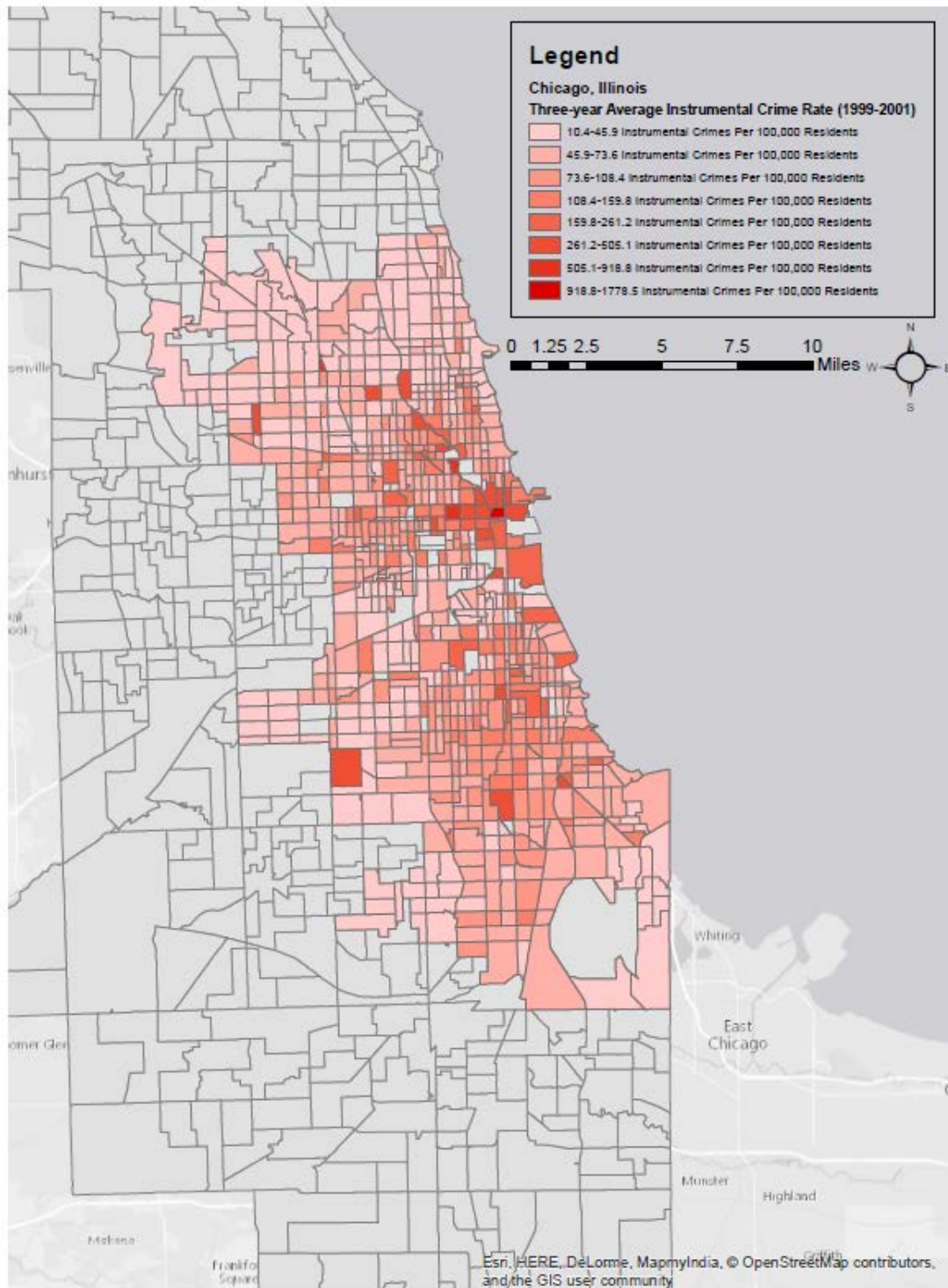Figure 11: Geographical Representation of Social Capital Index in the United States (2000)

Source: Putnam (2000)

Figure 12: Local Moran's I of Three-Year Average State Level Instrumental Crime Rate (1999-2001)
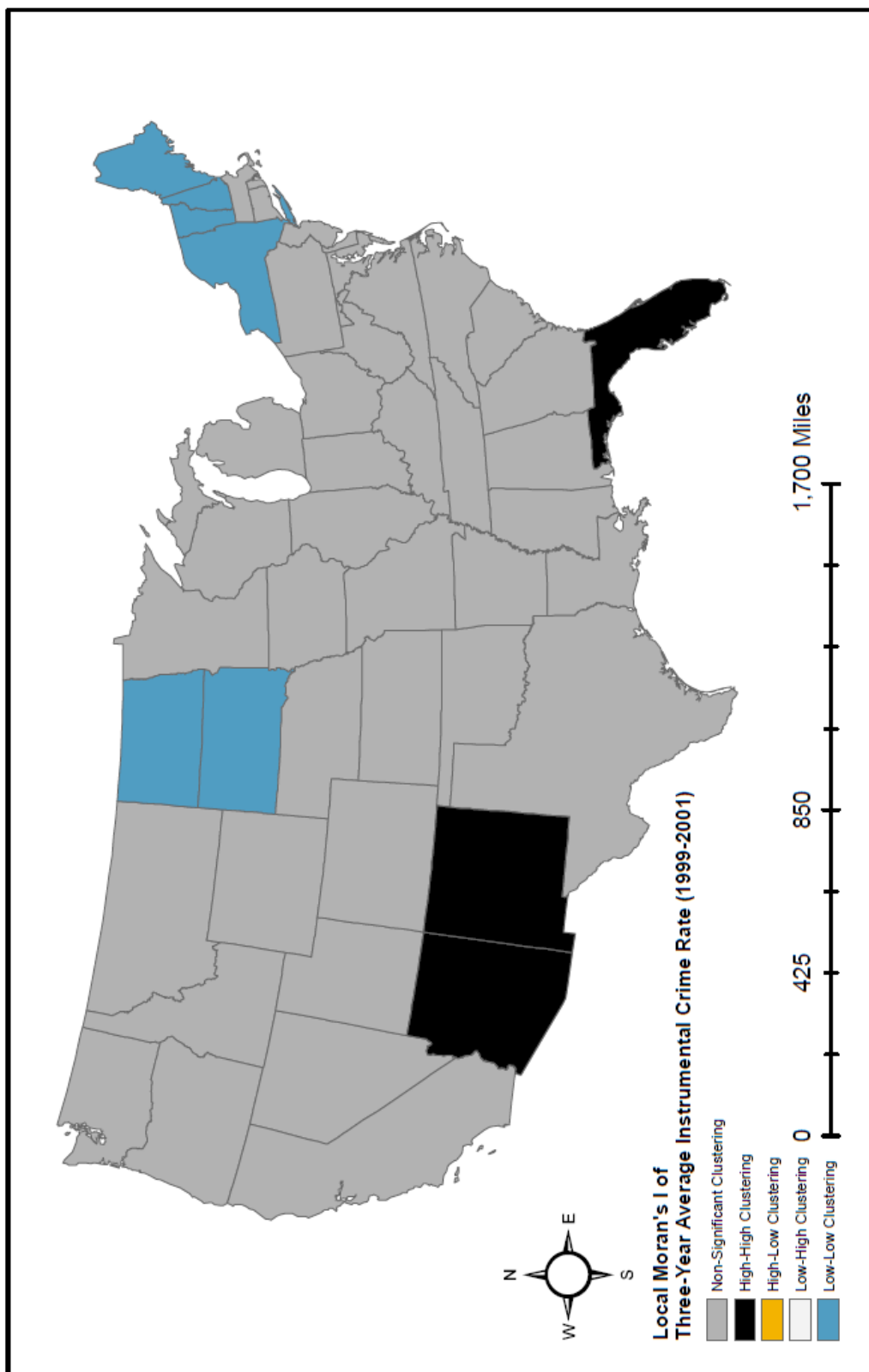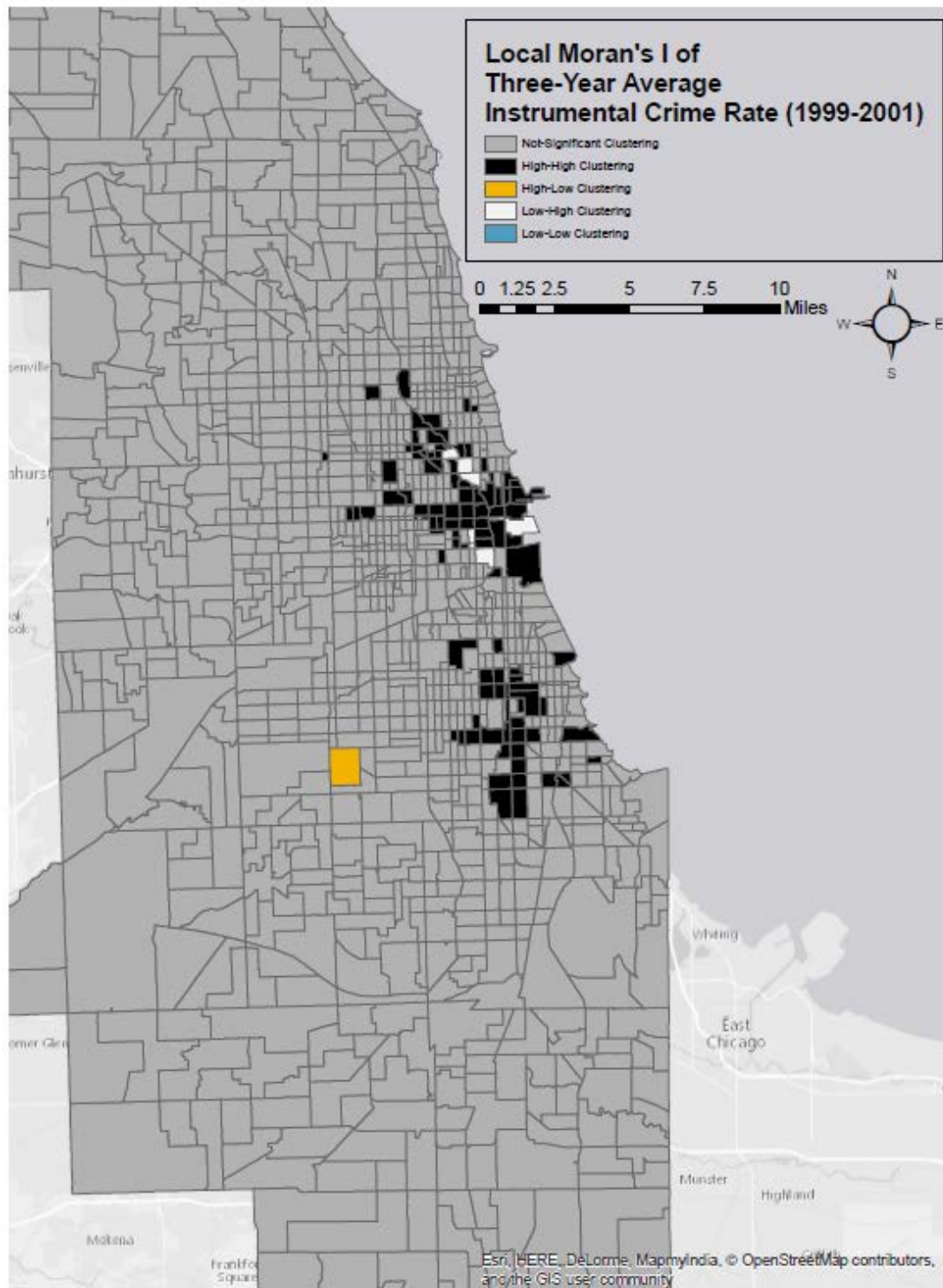
Source: FBI's Uniform Crime Reports (1999-2001)

Figure 13: Localized Patterning of Instrumental Crime in Chicago, Illinois (1999-2001)

Source: National Neighborhood Crime Study (1999-2001)

Figure 14: Local Moran's I of Instrumental Crime in Chicago, Illinois (1999-2001)

Source: National Neighborhood Crime Study (1999-2001)

APPENDIX B: Descriptive and Inferential Statistics Tables

Table 1: Descriptive Statistics and Operationalization of Key Predictors and Control Variables at Census-tract Level and State Level

	Mean	SD	Minimum	Maximum
Census-tract Level (n=9,512)				
Dependent Variables				
Three-year Average Instrumental Crime Count	233.01	197.50	0	3440
Three-year Average Robbery Count	45.09	49.69	0.00	997.00
Three-year Average Burglary Count	128.41	101.19	0.00	1222.50
Three-year Average Larceny Count	412.20	423.41	0.00	7992.00
Three-year Average Motor Vehicle Theft Count	112.5325	104.0856	0	1545
Three-year Average Robbery Rate	4.6744	6.39	0	124.88
Three-year Average Burglary Rate	12.3696	10.9684	0	247.89
Three-year Average Larceny Rate	42.0943	65.6371	0	1609.38
Three-year Average Motor Vehicle Theft Rate	11.0342	12.9482	0	380.07
Independent Variables				
Social Disorganization Measures				
Residential Instability Index	0.00	0.87	-2.21	2.74
Ethnic/Racial Heterogeneity Index	0.38	0.20	0.00	0.81
Concentrated Disadvantage Index	0.00	0.88	-1.61	4.36
Control Variables				
Southern Location	0.32	0.47	0.00	1.00
% of Recent Immigrants	7.29	8.31	0.00	61.68
% of Males 15-34	15.77	5.70	0.00	55.92
Tract Population (ln)	8.13	0.61	5.71	10.08
State Level (N=51)				
Dependent Variables				
Three-year Average Instrumental Crime Count	209601.65	234136.19	14642	1142853
Three-year Average Robbery Count	8110.75	11744.51	57.00	61634.00

Three-year Average Burglary Count	40968.98	47441.58	2198.00	226127.00
Three-year Average Larceny Count	137381.57	146346.37	11350.00	670195.00
Three-year Average Motor Vehicle Theft Count	23140.33	31355.05	622.00	184897.00
Three-year Average Robbery Rate	119.80	96.99	9.00	641.00
Three-year Average Burglary Rate	718.63	223.54	345.00	1248.00
Three-year Average Larceny Rate	2558.65	578.68	1572.00	3952.00
Three-year Average Motor Vehicle Theft Rate	380.02	201.37	110.00	1275.00
Independent Variables				
Dominance of the Economy				
Gini Coefficient of Household Income Inequality	0.45	0.03	0.40	0.55
Strength of Commitment to Noneconomic Institutions				
Polity				
% of Registered Voters 18 Years or Older	66.85	7.62	47.00	91.10
Family				
Divorce Rate per 1,000 Residents	4.28	1.24	2.5	9.9
Education System				
Student to Teacher Ratio	15.64	2.14	12.1	21.9
Community				
Social Capital Index	.03	.76	-1.43	1.71
Religious Organizations				
% of Adherents to Religious Organizations	50.05	10.77	31.30	74.70
Control Variables				
Southern Location	.29	.46	0	1
% Foreign Born	7.26	5.68	1.10	26.20
Proportion of Males 15-34	.14	.01	.1240	.1746
State Population (ln)	15.03	1.04	13.11	17.34

Table 2: One level Negative Binomial Models of Census-tract Social Disorganization and Three-year Average Instrumental Crime Count

Variables	Model 1: SD Predictors Only	Model 2: Full Model
Census-tract Level (n=9,512)	b/se/irr	b/se/irr
Social Disorganization Measures		
Residential Instability Index	.299** (.016) 1.348	.288** (.021) 1.334
Ethnic/Racial Heterogeneity Index	.013 (.056) 1.013	.236** (.061) 1.267
Concentrated Disadvantage Index	.172** (.013) 1.187	.211** (.015) 1.235
Control Variables		
Southern Location		.132** (.024) 1.141
Percentage of New Immigrants		-.022** (.002) .978
Percentage of Males 15-34		.015** (.004) 1.015
Intercept	-2.715**	-2.936**
Likelihood ratio (χ^2)	1840.743**	2448.035
N	9,512	9,512
df	3	6
R^2 (Proportion of Explained Variance)	.082	.103

Note: ** Statistically significant effects, p-value < 0.01, two-tailed test * Statistically significant effects, p-value < 0.05, two-tailed test. The results in this model are unstandardized regression coefficients, robust standard errors (in parenthesis) and incident rate ratios. All models account for the Census-tract population by including an offset variable of the natural log of the Census-tract population. R^2 is from OLS estimates.

Table 3: One level Negative Binomial Models of State-level Institutional Anomie and Three-year Average Instrumental Crime Count

Variables	Model 1: Dominance of Economy Only	Model 2: Dominance of Economy with Strength of NE Institutions	Model 3: Dominance of Economy with Strength of NE Institutions and Controls	Model 4: Dominance of Economy with Strength of NE Institutions, Controls and Interaction
State Level (n=51)	b/se/irr	b/se/irr	b/se/irr	b/se/irr
Dominance of the Economy				
Household Gini Coefficient	3.063* (1.327) 21.398	3.390 (1.930) 29.679	3.639 (1.854) 38.049	10.365 (12.95) 31733.147
Strength of Commitment to Noneconomic Institutions				
Polity				
% of Registered Voters 18 or Older		.000 (.005) 1.000	-.003 (.005) .997	-.002 (.005) .998
Family				
Divorce Rate per 1,000 Residents		.001 (.022) 1.001	-.007 (.023) .993	-.005 (.023) .995
Education System				
Student to Teacher Ratio		.051** (.014) 1.053	.038* (.016) 1.039	.241 (.376) 1.273
Community				
Social Capital Index		-.040 (.053) .960	-.009 (.048) .991	-.004 (.046) .996
Religious Organizations				
% of Adherents to Religious Organizations		-.001 (.003) .999	-.005 (.003) .995	-.005 (.004) .995
Gini Coefficient X Student to Teacher Ratio Interaction				-.459 (.862) .632
Control Variables				
Southern Location			.049 (.098) 1.050	.072 (.109) 1.075
% Foreign Born			-.004	-.003

			(.009) .996	(.009) .997
Proportion of Males 15-34			7.539* (3.512) 1880.557	6.181 (4.123) 483.27
Intercept	-4.660**	-5.525**	-6.129**	-8.950
Likelihood ratio χ^2	5.893*	22.546**	27.957**	28.471**
N	51	51	51	51
df	1	6	9	10
R^2 (Proportion of Explained Variance)	.112	.326	.495	.632

Note: ** Statistically significant effects, p-value < 0.01, two-tailed test; * Statistically significant effects, p-value < 0.05, two-tailed test. The results in this model are unstandardized regression coefficients, robust standard errors (in parenthesis) and incident rate ratios. All models account for the state population by including an offset variable of the natural log of the state population. R^2 is from OLS estimates.

Table 4: Multilevel Overdispersed Poisson Models (with Variable Exposure) of Census-tract Level Social Disorganization and State-level Institutional Anomie on Census-tract Three-year Average Instrumental Crime Count

Variables	Model 1: Key Predictors from SD and IAT Only	Model 2: Key Predictors from SD and IAT with Controls
	b/se/err	b/se/err
Census-tract Level (n=9,512)		
Social Disorganization Measures		
Residential Instability Index	.208** (.001) 1.231	.176** (.001) 1.192
Ethnic/Racial Heterogeneity Index	.608** (.004) 1.836	.620** (.004) 1.860
Concentrated Disadvantage Index	.116** (.001) 1.122	.131** (.001) 1.140
Control Variables		
Southern Location		.005 (.151) 1.005
% of Recent Immigrants		-.003** (.000) .997
Proportion of Males 15-34		.009** (.000) 1.001
State Level (n=28)		
Dominance of the Economy		
Household Gini Coefficient	-1.146 (2.313) .318	-.972 (2.478) .378
Strength of Commitment to Noneconomic Institutions		
Polity		
% of Registered Voters 18 or Older	-.001 (.009) .999	-.002 (.010) .998
Family		
Divorce Rate per 1,000 Residents	.106 (.063) 1.112	.105 (.074) 1.111
Education System		
Student to Teacher Ratio	-.028 (.032)	-.027 (.033)

	.972	.973
Community		
Social Capital Index	.019 (.110) 1.020	.028 (.121) 1.028
Religious Organizations		
% of Adherents to Religious Organizations	-.007 (.008) .993	-.007 (.008) .993
Intercept	4.050**	3.891*

Note: ** Statistically significant effects, p-value < 0.01, two-tailed test; * Statistically significant effects, p-value < 0.05, two-tailed test. The results in this model are unstandardized regression coefficients, standard errors (in parenthesis) and event rate ratios. All models account for the Census-tract population by including an offset variable of the natural log of the Census-tract population

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