2011

Social Disorganization and Sex Offenders in Minneapolis, MN: A Socio-Spatial Analysis

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A Thesis Submitted in Partial Fulfillment of the Requirements for
Master of Science
In
Geography

Minnesota State University, Mankato
Mankato, Minnesota
July 1st, 2011

Date: June 7, 2011

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This thesis has been examined and approved by the following members of the thesis committee.

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Abstract

Using a combination of techniques stemming from the spatial analysis approach of Geography, structural-functionalist theory in Sociology, and an ecological perspective of Criminology, this thesis addresses where sex offenders reside and why. Analyses were performed using the twin cities of Minneapolis and St. Paul, Minnesota as a typical urban setting. The study fuses multiple disciplines work on the complex social problem of released risk level III sex offender management in a spatially-conscious, micro-scale analysis attempting to understand the distribution of released offenders and the relevance of social disorganization theory in explaining their distribution. Socio-economic status and family disruption are tested and found to be important components of a generalized or fuzzy correlation between calculated social disorganization and offender settlement. In concert with other recent research in the U.S., residential stability is a variable of limited determinate capability. In an attempt to understand the fuzzy correlation, this fused analysis develops urban design considerations for mitigation of offender concentrations as well as other insights for policy and management. Inclusive in this analysis is the revelation that offenders often settle in physically and socially disrupted 'wedge,' or isolated neighborhoods. It suggests the merit of complimentary quantitative and qualitative analysis techniques in urban socio-spatial analysis.

Keywords

Socio-Spatial Analysis, Sex Offenders, Social Disorganization, Spatial Analysis, Geo-Spatial Analysis, Micro-Scale Analysis, Urban Geography, Geography of Crime, Criminology, Spatial Criminology, Qualitative Methods, Quantitative Methods, Wedge Neighborhoods

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Chapter 1: Introduction and Problem Statement

Structure and Organization of the Thesis

This thesis follows a non-standard format to more fully explain the phenomena studied from an evolutionary perspective, following the research method of socio-spatial analysis. It deviates from the expected layout in two ways. First, it presents significant portions of analysis and findings in captions of maps and other graphics. Second, the Research Methods and Results (Chapter 3) is divided into five phases that follow the socio-spatial research methodology in a linear form, rather than comprehensively. This should present stand-alone components of that are more easily understood and analyzed, as each successive phase builds on the results of the previous.

Problem

Released sex offenders, living in Hennepin County, exhibit spatial patterns that have been described as disturbing, and this has prompted inquiry from all levels of government. The highest risk offenders appear to be congregating in areas of the greatest disenfranchisement and social disorganization while at the same time being excluded from the communities with adequate levels of integrity for success in the avoidance of recidivism. There is debate on the factors that cause this; are sex offenders being pushed into the worst areas through

residency restrictions that offer them few housing choices or are they being pulled in by the attractive nature of anonymity and a familiar criminal process that occurs in socially disorganized places? This research aims to shed some light on the spatial nature of sex offenders living in the community and their reciprocal and interactional effects.

Importance

Sex crimes are feared and loathed more than any other non-lethal offense. Sex offender management has become a highly political issue and that focus is not serving the community or the offender well. Corrections practitioners struggle to get support from the public-at-large and decision makers for their best practices. Implementation of these practices isn't a trivial manner, as any increase in services reciprocates with their large funding requirements. As importantly, sex offender residential locations can be an important bellwether for understanding the community and dynamics of an urban place. The potential for GIS and spatial analysis to clearly communicate the situation and model policy outcomes can give the community and its representatives the knowledge that corrections professionals have had all along, yet have not been able to persuasively present to the public and their decision makers. Misperceptions about sex offenders and their management abound, and the most effective way to root out those ideas is through a spatial approach that can visually represent reality, from both the quantitative and qualitative sides. In essence, the geographic perspective can offer a factual base for policy development and analysis.

Methods

Two phases of research are proposed, with a final product that integrates both into a decision support system that can reach all audiences. The first phase is to map what exists in the present. The second, and more intensive phase, will analyze the offenders and the communities in which they reside. Together the results will feed into a decision support system will explain what causes the current, problematic situation, and suggest how policy alternatives might affect the overall well-being of all involved.

Mapping socio-economic data, residential restrictions and locations of known offenders can be completed with GIS software. Data on risk level three offenders is available but ambiguities and operational knowledge can be understood better through work with Hennepin County Community Corrections and the community.

The analysis phase starts with creating a multivariate analysis of social disorganization in Minneapolis, with an appropriate zone of measurement, taking into account connectivity, transportation, social networks and the Modifiable Areal Unit Problem. Analyzing the correlation between certain demographic attributes (modeled by an index of disorganization) and offender residences can, spatially and quantitatively demonstrate this hypothesis that has been suggested by experts. Not only can the idea that offenders are living in the places least able to assist their rehabilitation and reintegration, but it can also potentially shed light onto certain characteristics of place that offender residences share. A regional studies approach to the urban dynamics of the city can help to explain how

offenders settle. This can be applied to contrast and better understand the push and pull factors that have created the present disparate situation regarding the responsibility for these high-maintenance offenders. In short, this analysis will fuse methods that have been successful in other fields to the problem of sex offender community management in ways that have not been done before for this specific problem.

Expected Results

The present research, most of which is not openly cognizant of spatial dynamics, suggests that:

1. Sex offenders are forced into areas that are least desirable by residency restrictions.

2. Sex offenders revert to areas of disorganization to find anonymity and a community that more easily allows their pattern of criminal decision making to continue.

The proposed analysis will likely show that sex offenders live in areas that are the highest in social disorganization and the least conducive to successful avoidance of recidivism, with some local exceptions. Furthermore, such a spatial approach should show residency restrictions and policies that keep offenders out of areas with higher levels of community integrity (collective efficacy) are hindering the process of assimilating sex offenders into productive and crime-free lives. When looking at the distribution of offenders to the levels of social disorganization, it may not be a linear correlation (with the areas with low values

of organization having the highest concentrations of offenders), rather this may provide another instance of fuzzy correlation that provokes further research into understanding of place and spatial dependence.

Going Forward

Geographers are uniquely prepared to tackle the issue community sex offender management because of the inherent spatial domain and interaction issues between the built and human environment. A baseline statistical and descriptive decision support analysis can help decision makers and the public to understand the management of this population in their community. The technologies of GIS and spatial analysis have not been adequately applied to this problem and there has been an over-reliance on analysis that is not spatially sensitive and capable of correcting for local anomalies.

Chapter 2: Literature Review

Operational-Level Research with a Localized Focus

Sex crimes get attention. In a wired society, opinions and ideas travel fast. Less fortunately, so does reactionary legislation on some issues that play well across constituencies, such as laws that are seen as being tough on sex offenders. Over the past fifteen years (marked by the 1994 Jacob Wetterling outrage and subsequent national-level policy) state and local governments have produced multiple approaches to enhanced monitoring of sex offenders. Some of these ideas have worked and some are ready to be repealed because of their unintended or collateral consequences. This literature review aims to identify a general understanding of modern sex offender management at a micro and macro level, overview the multidisciplinary research on this topic, develop a framework for analysis of the residential patterns and community characteristics of sex offenders and show the lack of an appropriate response from geographers armed with the latest modeling technology, with an eye towards future research in Hennepin County and Minneapolis, MN.

Minnesota Statute (2004), §244.052, subdivision 4a states that corrections agencies, "to the greatest extent feasible, shall mitigate concentrations of level III offenders." This charge places the responsibility of community management of this population on the community corrections system, administered at the county level. That system in Minnesota is comprised of three separate management methods (State-administered Department of Corrections (DOC), County and

Community Corrections models). This operational group of agencies implements the policies and can benefit from some of the techniques that will be suggested for further research. Decision-makers will also be able to better analyze policy from the recommendations and the public can gain a better understanding of what their leaders are doing to keep their communities safe and where they could improve based on spatial analysis.

More importantly, this review will stand apart from many of the past analyses, especially those from the spatial perspective. The difference is not in motive but in method. The research identified will attack the issue from a more ecological or systematic perspective, in that crime or even the offender will not be the main point of analysis. Plenty is available to those seeking crime patterns analyses. Geographers have made important contributions to the understanding of crime. However, I propose that they can also work to enhance community management in this ecological manner, with regard to identified risk populations. With an eye towards developing best practices and influencing decision-makers of what corrections professionals hold as truth (but struggle to implement), this paper will have a proactive focus rather than the reactionary approach that is built into crime patterns analysis. In short, the spatial perspective being developed here will not focus on mapping crime but evaluating the community's role in why offenders settle where they do, and how this can lead to a better understanding of the urban social and built landscape.

Sex Offender Recidivism

Minnesota Department of Corrections research (2007c and 2007a) has shown the correlation between sex offenders, sex crime recidivism and non-sex crime recidivism is higher for those who are non-white, urban and have a prior felony conviction. Treatment completion, Intensive Supervised Release (ISR), Supervised Release Violations (SRV) and Supervised Release (SR), all reduced sex-offense recidivism in the population studied by the MN DOC. Importantly, these factors had no effect on non-sex crime recidivism. For all crimes, nearly half of the released sex offenders were rearrested in the 16-year study period and 23% of that total was re-incarcerated. However, sex-offense recidivism was much lower than other offense recidivism at about 12% in multiple research efforts (MN DOC 2007a, 2007b and United States General Accounting Office 1996).

Of those re-incarcerated, the number-one category of offenses (43%) was persons offenses, such as sex-crimes (28% of all re-incarcerated sex offenders, the highest single crime), assault and burglary. However, the second most significant category was failure to register (17%), a crime that can be used as a tool by corrections officials to deal with borderline offenders (a strategy based on the judgment and ability of a given organization). Taking the serious nature of persons offenses into perspective, especially since they comprise nearly half of recidivist's offenses, the realization that a criminal mentality may provokes cycles of repeated offending, even if it may be unrelated to the sex crime, is clear. The fact that recidivists were arrested for failing to register as the number-two overall

crime is also indicative of the effect of a mindset that ignores the authority complex that most citizens take for granted (MN DOC 2007a; Mustaine et al. 2006). Critically though, it may suggest structural problems with the manner in which sex offender management and registration is carried out.

The only significant exception the MN DOC (2007c) report identifies by victim class is for child molesters. Those who would prey on males under the age of 13 have a tendency to be criminals of specialty. They have a low level of non-sex crime recidivism suggesting they are different than the rest of sex offenders in their operation. Some argue they are more troubled by an anti-social personality disorder and a propensity to embrace secrecy rather than a criminal mentality as an operating system (MN DOC 2007a).

Community Corrections

The community corrections model has strong roots in Minnesota as many of the formative principles of this method were tested and developed here. Most importantly, this model has been shown to be successful for reducing recidivism and playing a part in keeping jails from overcrowding, while at the same time keeping the public safe. However, the community corrections field has been slow in reacting to the available technologies to assist in managing their populations and better tailoring their offender management practices to the available technology.

Russo (2006) describes the state of the technology in community corrections field with a pre-occupation on GPS technologies (with little mention of

what is or could be working behind those devices) reigning supreme as the newest and most promising tool. However, Russo's overview, like many others in the corrections field, is narrow and is seemingly focused only on what is seen at trade shows and is part of an overall lack of understanding of the spatial and ecological framework in which community corrections exists. The available and adaptable technology provided by geographic information systems as simple as Google Earth and can be used easily to assist in management of offenders from this perspective. A focus on the offender and their risk and accountability is important, but it cannot be the complete picture. That is, at least if overall public safety is the goal, an expanded view of offender management. This may be an area where the driving force in community corrections may not include an outright spatial trend, though there is no doubt it is an operational necessity for law enforcement and corrections students. The avoidance of a spatial focus in law-enforcement sociology, psychology and criminology may be in reaction to trepidations about furthering a stereotype of law enforcement officers as profilers of neighborhoods rather than invested community participants. As well, students of law enforcement, sociology or psychology (a solely human focused set of disciplines), may be disadvantaged by not recognizing the spatial and ecological issues in offender management. The spatially enhanced version of this version of criminology falls into the category of socio-spatial analysis in geography. The spatial perspective is the literal backbone of the research that is buttressed by a strong sub-trend of sociological research (forming the basis of this project) that identifies and appreciates the ecologic and spatial perspectives. Currently

though, the application of these approaches is far too limited and under-appreciated, possibly due to the political considerations outlined above.

However, the growing emphasis on community corrections is a definite positive outcome of overcrowded prisons and budget deficits (Terry 2005). It is shown in both local and national-level research that the more time an offender spends in the community, the less likely they will be to recidivate. Part of what this study aims to address is the characteristics of the community, and how they might affect the overall recidivism of the offenders. Therefore, at some level of construction, the community is inherently valuable and understanding that construction becomes the challenge (Gant 2003).

Table 1: This table provides a breakdown of Minnesota offenders by risk level and type of residence, June 2004. (MN DOC 2007)

June, 2004	**Registered Offenders**				
Residence Type	Level III	Level II	Level I	Unassigned	Total
Community residence	112	470	1321	5153	7056
Incarcerated	234	229	421	1057	1941
Total	346	699	1742	6210	8997

There are many misconceptions in the public, both current and historical, according to the Center for Sex Offender Management (CSOM) (2007). What needs to be communicated from a sex offender policy-maker standpoint to the general public is that sex offenders cannot be indeterminately locked up (United States General Accounting Office 1996). There will come a release day for nearly all but the most psychopathic offenders, and preparing them to reenter the

community and rebuild themselves into productive community members is essential.

Sex offenders released from correctional facilities face numerous challenges upon community reentry. Some of these challenges are similar or the same as those faced by non-sex offenders, yet there are a significant number of obstacles to reentry that are unique to sex offenders (MN DOC 2005). The stigma attached to sex offenses is a key issue that challenges offenders as they re-enter society. It is unlikely that this can be overcome, and as a matter of accountability, past transgressions probably should not be forgotten easily as a matter of deterrence. When looking at the challenges of reentry, it does appear that offenders have the deck stacked against them, and as mentioned above, this might not be something that can be dealt with easily. Minimizing the occurrence of a return to cycles of past behavior and actions is a poor strategy, though one of the only lines of effort by some in the mental health community. This is witnessed by the often singular focus on individual level determinates of behavior with little concern for the more complicated and harder to frame, community level variables.

Correctional programming is accepting the unique circumstance of sex offenders and leaders have developed specific therapy and courses for sex offenders re-entering the community. The majority of Minnesota's sex offenders who are to be released back to the community are processed through Minnesota Correctional Facility (MCF) Lino Lakes. Programming takes four phases, three of which focus on treatment and reducing recidivism. The fourth is tailored to

transitioning back into a society in which they were maladjusted to prior to their internment, and this process can range from a few years to decades. The programming covers all issues offenders may need to know from prices of commodities, how to get people involved as a support system, family issues that can arise, and the legal requirements of the sex offender registry and community notification. The inmates are instructed by a diverse array of people who have the information that they need to be successful, including a three person full-time staff, peers who have completed the requirements of the program and outside agents from the parole/ community corrections field and other community support agencies (Minnesota Dept. of Corrections 2005; Interview with Lisa Monaghan 2008; MCF-Lino Lakes Transitions 2008).

The process of sex offender management in Minnesota is decentralized and lacks an overall cohesive oversight body with any significant authority or power. The operational manifestation of this decentralization is a shotgun approach to management through a mix of state, federal and local laws and ordinances that can be detailed and somewhat confusing to offenders, practitioners and the public. This point is made to sex offenders going through the transitions programming. The inmates are suggested to work closely with their parole officers and those whom charge they have been put in post-release. From an outsider's perspective, the offenders have an uphill struggle to stay on top of the unique requirements that they are subject to, based on their status as sex offenders. This status cannot be removed, based on the Megan's Law legislation on a national level; in effect sex offenders are permanently branded

with their crime (Levenson 2005; Levenson 2007). Hennepin County has an above average density of registered sex offenders and in the city of Minneapolis the density is 2.3 per 1000 residents. Hennepin County is home to 48% of the states released level 3 offenders, highlighting the significance of the issue (Alter et al. 2005).

None of these management factors take into account the issue of criminal mentality that is so engrained in many populations, especially the repeat offenders and anyone who has served an extended period of time incarcerated. Developmental deficiencies in social adjustment and problem solving have a significant impact on the cognitive processes that govern the actions of sex offenders. These psychological issues are important barriers to understand when any sort of reentry or rehabilitation program is postulated, especially given the heterogeneous nature of sex offenders (English 1996; Kemshall 2004).

This concept of criminal mentality is based upon anti-social behavior and secrecy in actions. Sex offenders have been long shown to have a return to secrecy in actions as their first step in the slip to recidivism (MN DOC 2007a). The urban landscape of major metropolitan areas provides the veil of secrecy that the criminal mentality desires especially in areas where the case loads of community corrections officers are heavy; especially for low to moderate risk offenders whose crimes have been judged to be somewhat less heinous and whom receive much less specific and individual focus.

Residential Restrictions

Residential restrictions imposed on sex offenders do not curb recidivism in meaningful ways although they were a very appealing policy from a political standpoint in the recent past. Every case is certainly important, but no case analyzed by the MN DOC in the period 1990-2006 would have been affected by even a 2500 ft. restriction (MN DOC 2007b). There is no universal federal law regarding sex offender residential restriction and the matter is handled at the state and local levels. Taylors Falls, Minnesota is an example of a city that has outright prohibited risk level 3 sex offenders from residing in the city limits (MPR 2006). The cities of Wyoming and Albertville have used residential regulations to effectively rule out all of their area from sex offender occupancy. The state of Minnesota has considered a 1500 ft. residence restriction, though luckily, this seemingly reactionary policy was considered after quantitative analyses showing the poor performance of this measure created skepticism, which in turn led to non-adoption of this policy. The language and conceptual framework of the proposed rule would actually leave room for adjustment at the community corrections level, which would undermine any potential effectiveness of the measure. As is the case with current laws regarding concentration of offenders, it is unlikely that a piece of legislation would impact the on-the-ground challenges in Hennepin county and Minneapolis in specific.

Much concern has been made about the effectiveness of these restrictions in preventing sex crimes with children victims and yet there is very little evidence that these restrictions can provide any extra safety. Iowa is facing a severe

problem in sex offender management after instituting a 2000 ft. restriction from schools, parks, day cares, and child congregation areas. This has been upheld in district appeals court as constitutional yet there are still cases pending (Adkins 2000; Nieto 2006).

The problems that high levels of restriction create are two-fold. First, it is hard for an offender to find a housing location that complies with these restrictions. This not only makes it harder for the offender to find affordable housing, but also to live in more urban areas with access to services and treatment options that might decrease recidivism. Although the variance shown in Tewksbury's 2005 study of Kentucky's sex offenders was unexpected; it made the case that the non-metropolitan sex offenders actually had more trouble with entering back into society by a qualitative margin of five to ten percent.

Secondly, these restrictions can be constructed as barriers to sex offender reintegration by disenfranchising them as a group and forcing them into the least desirable locations that are the most socially disorganized (Andresen 2006). The second problem is certainly more serious and the necessity for a spatial approach becomes obvious in the application of location theory to this problem. Like people will often congregate due to the characteristics of a place and successful rehabilitation cannot exist in an environment of neglect. Knowing what is causing the congregation of people with a similar history (sex offenders) is key to improving the situation in already troubled communities.

What can be understood about the reality of the situation is simple. The vast majority of people do not want to live near sex offenders. However, if they do, they feel that it is their right to know about the person so that the transparency of the community will destroy the shroud of secrecy and manipulation that many sex offenders use to get at their victims (Meloy 2006).

Residential restrictions have been widely adopted in the aftermath of the kidnap, rape and murder of nine-year old Jessica Lunsford in Hermosa, Florida which gained a spike of media attention, driving restrictions against offenders, such as the Jessica Lunsford Act in Florida and similar legislation across the country. However, the excitement about the prospects for these restrictions has cooled significantly. These restrictions are shown to be ineffective in preventing recidivism except in the most isolated cases. As previously mentioned, the MN DOC researchers could not find a single case that would be prevented by even a 2500 ft. restriction, which is the most stringent level of restriction. Some in Iowa are even discussing repealing their 2000 ft. restriction, because it has made the management of sex offenders more challenging, made reintegration less likely and decreased public safety overall (MN DOC 2007b; MN DOC 2003; Mustaine et al. 2006; Nieto 2006).

A point that is clear from studies from areas with the most stringent residential restrictions is that sex offenders do face significant challenges in finding a place to live. This has led in multiple cases in Iowa and most notably in Miami-Dade County, Florida where sex offenders living under a bridge made headlines (Tewksbury 2007; Peirce 2008). In a qualitative survey of 135 sex

offenders in Florida, Levenson and Cotter (2005) found that 57% of those surveyed reported difficulty finding affordable housing and nearly half reported financial problems related to the 1000 ft. regulation imposed in their locality. They also reported that the offenders reported not seeing the restrictions as helpful or in any way reducing their risk of recidivism.

A survey of sex offender registries will show that significant percentages of the offenders are missing address information or are listed as homeless (Tewksbury 2005; Wernick 2006). Iowa has seen many sex offenders go missing due to their extensive restrictions and this has tied up law enforcement resources that could be deployed in better ways (MPR 2006). In hindsight, many in Iowa are seeing the residence restrictions that they instituted, before any other state, to be missing their intended goal of improving public safety. They now sit envious of states such as Minnesota and Colorado, which have chosen to investigate before implementing harsher residential guidelines (Levenson 2005). In all truth, repealing any law that creates restrictions on sex offenders is a tough sell to elected leaders, even if practitioners are behind it and certify it will enhance public safety. The nuance of that debate becomes counter-intuitive to many who risk losing their position or taking a stand on an issue that would seem to be soft on the offender (something quite contrary to popular sentiment) and the reality of such a legislative stance, as demonstrated by the evidence above.

This plays in to a factor that cannot be highlighted enough is the role of public opinion and the political process. No elected official wants to be seen as soft on crime and to the untrained observer, residential restrictions seem to make

sense on their surface, especially if one is influenced more by the nightly news than government publications and research, and who isn't at first? (Flint 2006)

Tewksbury and Levenson (2007), along with Merriam (2008) suggest that residential restrictions are politically and socially appealing but do little in practical matter to deter recidivism and actually work against the community reintegration processes. They state that there is an absolute role for technology in pushing the case for corrections agencies to analyze what is and what is not working for them, citing that a lack of study and empirical evidence missing. With that evidence, the public management officials may have the information they need to help drive change in the policies that are working against the communities they are intended to serve.

Community Notification and Risk

With regard to sex offender community notification, there is some debate however; most feel that it is in the community's best interest to know who lives there. It is seen as a community building and involvement oriented approach to have sex offender community notification meetings that build tighter knit communities that are aware of their new resident, and this openness generally discourages recidivism in the community. On the other side, one can argue that community notification hearings can foster feelings of neighborhood degeneration, fear, neglect and over time make residents feel like criminals are invading their neighborhood. It has been stated that this can be a push factor away from neighborhoods for certain residents; obviously, those with the means would leave this environment of perceived disrepair leaving only those without

the means to leave behind. In general terms, the more wealthy and stable residents leaving will loosen the informal social controls within the neighborhood that can bring about change in the wrong direction. This is a very real outcome of community notification. However, most research suggests a that any positive momentum for the community coming out of the meeting can be overcome by the inherent fear, stigmatism and anxiety that notification meetings strum up.

Significant steps have been made to better understand and more correctly assign risk levels to sex offenders. Getting this analysis done is an important step in determining how likely an offender is to recidivate. Assigning an appropriate risk level to released sex offenders is of paramount importance because it denotes the level of notification, supervision and monitoring that the offender may be subject to. The most current and accepted tools for screening offenders and assigning risk (such as the MnSOST-R) are able to differentiate even the pattern or victimization of the offender, such as interfamilial molesters vs. interfamilial rapists and those who engaged in sex crimes outside their families, or acquaintances (Epperson et al. 2003).

The American public takes sex offenses very seriously in a punitive manner. Rehabilitation is often seen as a waste of resources better spent on building confinement facilities. A 2005 Gallup Poll found that only 27% of those questioned believed that those who commit child molestation could be rehabilitated (Saad, 2005). Unfortunately, most correctional professionals disagree with the public in a very distinct manner. They feel that there is no possible way to warehouse offenders forever. Our justice system was not

designed to be a mechanism of revenge; its goal is to punish to the socially accepted (via codification in laws) level and then to offer the offender an opportunity to have another chance at life on the outside where they be more adjusted and live productive lives.

Social Disorganization

From a policy and political perspective, there is a tendency to view restrictive policies in a punitive nature towards the sex offender, who is acknowledged as the most socially disparaged of all criminals. Wide acceptance of "not in my neighborhood" attitudes of residents, decision makers and politicians to the possibilities of sex offenders residing in proximity, have had a negative overall effect on the possibilities for successful reintegration. In summary, sex offenders face the dual challenge of not being allowed to live in areas that may be conducive to their overall recovery and the reality that the most socially disorganized, unstructured neighborhoods will be calling them back to a familiar criminal mentality eased by the fact that finding an appropriate residence will be possible in these disadvantaged areas (Mustaine et al. 2006; Hennepin County Criminal Justice Coordinating Committee 2004).

Beauregard, Proulx and Rossmo (2005) explain that there are three major frameworks from which to view the spatial patterns of sex offender ecology. Those are the routine activities approach, the rational choice approach and crime pattern theory. Routine activity approach has been used successfully by others such as Andresen (2006) and has the distinct capability to be transferred from a crime mapping or prediction tool to a framework that will accommodate the

researcher looking to explain recidivism. At the center of this theoretical model is the idea that there exists a criminal population who will commit crime in the "absence of capable guardians" (Cohen and Felson 1979). This notion ties directly with the social disorganist principle that informal social controls can be determinates of neighborhood characteristics promoted by Mustaine and Tewksburry's studies. Tewksburry and Levenson have relentlessly argued individually and together for this framework in evaluated the spatial patterns of sex offenders, especially when evaluating neighborhood effects and proposed regulations. Kawachi, Kennedy and Wilkinson (1999) found this framework to be applicable to criminal activity and suggested the conflict idea that deprivation of resources and opportunities also are important determinates.

Social disorganization and routine activities theories are engaging and useful frameworks for analyzing the spatial definitions of communities with sex offenders. Rather than look at hot spots through the lens of crime pattern theory, this framework allows the focus to be put on the communities in which sex offenders are relegated to. This has been largely ignored by social scientists due to the relative shock factor of offenses rather than community profiles and a tendency to blame the offender without regard to conditions which may increase their likelihood of offending or re-offense.

GIS Applications in Sex Offender Policy and Management

Interestingly enough, the spatial and ecological approaches to crime that have just begun to return to academic importance were pioneered in the early nineteenth century and were refined up until World War II (Andresen 2006). The

modern resurgence of ecological crime theories is a logical progression of the Chicago School ideas emanating early in the century and essentially cornerstone in the works of Shaw and McKay (1942). Shaw and McKay found that higher levels of juvenile delinquency in Chicago were tied to lower levels of social organization.

What is concerning of the facts of sex offenders and their recidivism is the agglomeration of the issues and the few comprehensive interdisciplinary evaluations with a regional context. This is an issue that has spatial context, yet this level of evaluation is largely ignored except by those who are seeking help, such as Hennepin County, MN. Even in Hennepin County, there is an understanding of the problem based on spatial analysis, yet the power of Geographic Information Systems (GIS) and spatial analysis software has not been utilized to show this quantitatively. The problem needs better definition using the language of spatial analysis from a qualitative perspective as well.

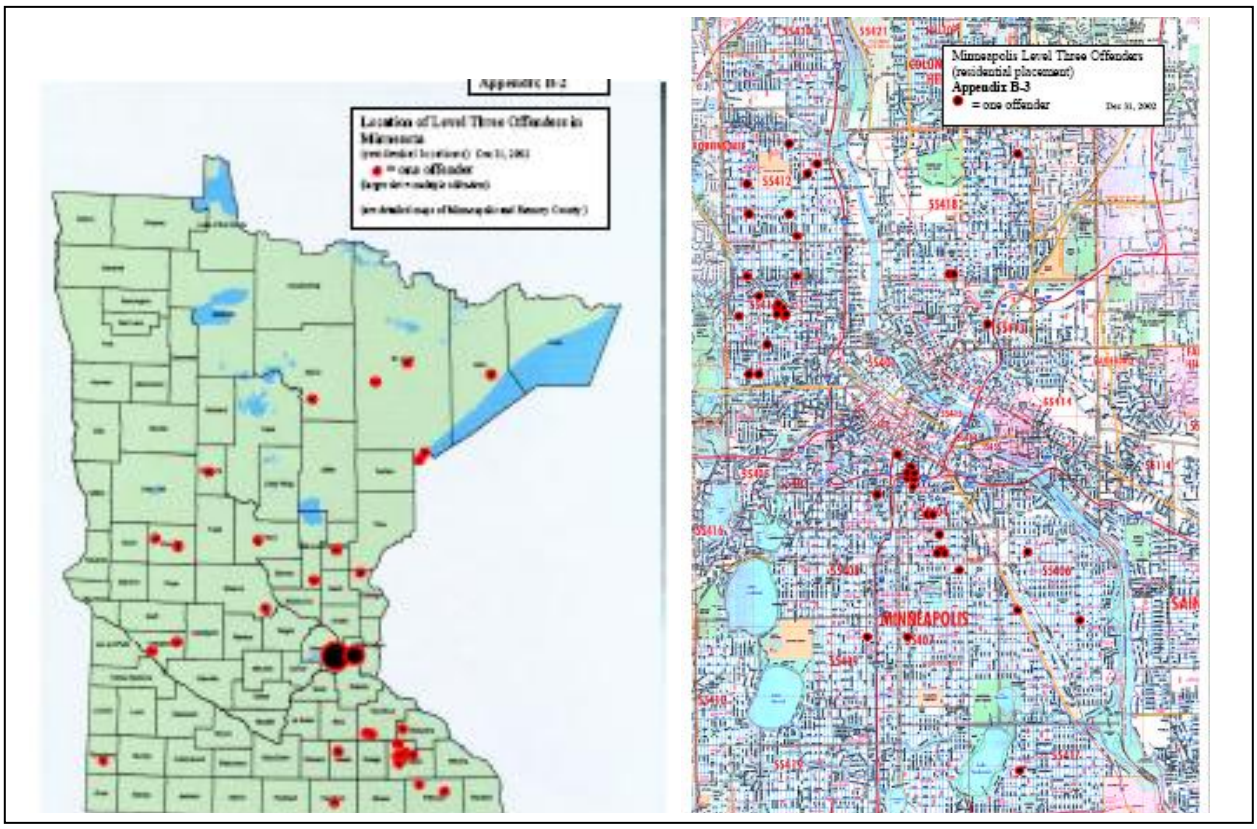


Figure 1: Cartography from the 2003 Report to the Minnesota Legislature on sex offenders in the community (MN DOC 2003). Even with poor visualization and cartographic methods, the clusters are evident. The very primitive mapping in a legislative product suggests limited coordination with GIS and spatial analysis experts.

Hennepin County is ideal for applying this framework of social disorganization analysis through GIS, as it is a dynamic environment that is the most demographically diverse in Minnesota. Hennepin County has recognized the value of dispersed sites for sex offender residency and half-way homes and the county also recognizes the community pressure against this policy (Hennepin County 2003). Hennepin County's bold stance to follow the recommendations of seasoned sex offender managers over the exclusionary goals of the larger population is to be commended, though not without debate from community members and analysts. However, public support can be gained through the use

of Decision Support Systems, a GIS approach that can dynamically simulate and visualize community composition variables and the results of management policies (Wang 2005 and Tomoki et al. 2007)

GIS technology can show the socio-economic variables at different levels of aggregation and its interoperability with statistical packages can evaluate the hypothesis of those such as Mustaine and Tewksbury (2006) about social disorganization in a quantitative fashion rather than a sole reliance on one's relative feeling about how the numbers line up without the necessary spatial coordinates. Grubesic (2007) looks more deeply into the statistical and spatial domain for sex offender residential patterns by building off the more substantial analysis of residential restrictions.

GIS resources are not allocated to this problem at the state and local levels. The important 2003 report the MN legislature on sex offenders in the community used a copy of regular street atlas to show where sex offenders lived and the 2007 Governor's Commission report used questionable cartographic methods from Google Earth as if was the appropriate tool for a seminal report on a committee that had been in session for years (MN DOC 2003; MN DOC 2007b, see Figure 1). What was more discouraging was that the 2007 reports did away with all cartographic elements. They chose to use only tables and words to describe issues, clearly sidelining the importance of graphic depiction of the spatial context. This is a totally inappropriate level of analysis and the importance of this issue dictates that the available technology be utilized to demonstrate the

underlying spatial factors in this issue that is so clearly an issue with a spatial context.

Mapping the locations of sex offender's reported residences and the socio-economic status indicators of the neighborhoods nearby can allow for a simple qualitative analysis above and beyond what has been done previously (Nieto 2006). A next step would be to aggregate the socio-economic variables into a statistical package and identify a more specific index of social disorganization. Building an index of disorganization would best display the problem faced by sex offender managers.

Another application of GIS technology for sex offender management is somewhat in use, in certain areas. Dealing with the implications of Jessica's law, on a state and local basis, presents GIS departments with a task that can help police, decision makers and the offenders themselves. Jessica's law puts residential restrictions on sex offenders. Some common restrictions include not allowing them to live within 1000 ft. of a school, church, daycare, park, etc. These types of restrictions can be mapped with precision with GIS technology creating a useful resource, but the results also pose questions on the viability of these restrictions as they can quickly show the questionability of the effectiveness or usability of these laws (see the patterns indicated on Figure 2).

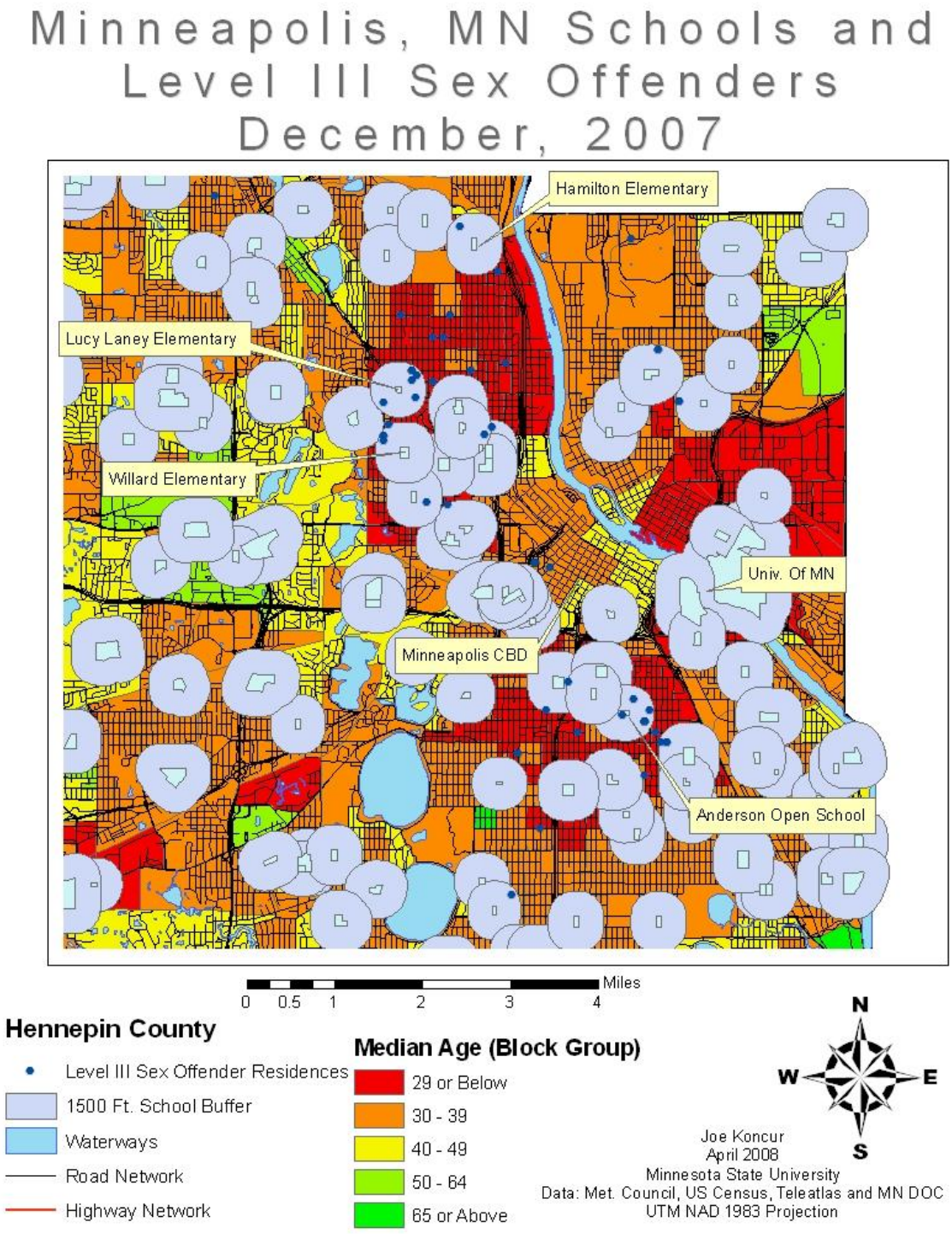


Figure 2: Potential 1500 ft. residential restriction in central Minneapolis proves arbitrary as high concentrations are currently found near schools in the Phillips and North clusters. Due to existing problems of residential placement, such a proposal is daunting at best and lacks empirical support

Sociological and Criminological Theoretical and Practical Perspectives

Introduction

Public outcry over cases of predatory sex offenders killing very sympathetic victims put sex offender policy on a fast-track update in the 1990's. More recently, research has caught up with many of the public opinion driven policies and often indicates that reactionary measures don't increase public safety, and are less effective than previously thought. However, the important dialogue on sex offender policy is now benefitting from the empirically based conclusions and suggestions of professional research. This research is quantifiably validating many of the suggestions that community corrections officials have advocated for, but have largely been ignored by politicians. Importantly, the present political-economic situation has forced government, at all levels, to fund programs that have proven results while backing away from those that are not evidence based practices.

The sex offender management debate brings up an opportunity to examine the underlying social theories that help to influence the programs and policies. Current applied research has often ignored the foundational social theory arguments. This research looks to include this perspective to further a more unified policy direction and, as should always be the aim, greater transparency in research.

What has been least studied in sex offender community management is its spatial domain. Kubrin and Stewart (2006) repeat the fact that individual level

causes of sex offender recidivism have been well documented while significantly ignoring the community level variables. This incomplete approach is bound for failure when not accepting that much of human action is based not only on individual choice and capacity, but also community influence and social processes. Burchfield and Mingus (2008) interviewed a number of offenders and community level variables, such as community mobilization and a lack of social capital were major issues brought up by the offenders. A spatial approach is necessary for a more complete understanding of this community sex offender management, something this research hopes to further.

McGrath et al. (2007) suggest that deinstitutionalization of sex offenders, especially those with mental disorders, is a growing issue that needs to be confronted in preparing community corrections officials to properly manage this difficult population. Serious offenders cannot be detained indefinitely (as the legal basis for civil commitment continues to be challenged) and community corrections organizations need to prepare to better manage greater numbers of problematic offenders. This research will focus on where offenders are living and how that might impact the results, measured by recidivism. This paper will first explain risk and present practices, then evaluate the literature on recidivism of sex offenders. Social disorganization theory will be explained along with the importance of a spatial perspective and some practitioners' views will be discussed, in the context of the findings.

Understanding Risk and its Adjudication

From a clinical perspective, Hanson (1998) explains that sex offender risk factors have been categorized as either static or dynamic. Static factors are those that cannot be changed and involve historical propensity to offend, such as a childhood sexual abuse and a prior offense history. However, dynamic risk factors can be changed. These factors are used to predict recidivism and their management will reduce recidivist behavior in the offender. Dynamic risk factors include both stable and acute factors; acute being those that rapidly change, (Hanson uses drunkenness and sexual arousal as examples) while stable factors are more long term (comparatively: alcoholism and deviant sexual preferences). Obviously, managers are focused on mitigation of the stable dynamic risk factors when considering lowering a risk level, or contemplating release of an offender. This risk factor understanding is considered evidence based practice and is widely accepted.

For more practical purposes, sex offender recidivism risk is categorized in three levels, as mandated by MN Statute 244.052, enacted in 1996. The levels correspond to risk of recidivism where three is the greatest and one is the least. Of the first 1310 Minnesota offenders evaluated, 14% were assessed a Risk Level III, 23% a Level II and 63% a Level I (MN DOC 2003). The Minnesota Department of Corrections (MN DOC) (2003) explains their risk assessment scale as:

Risk Level I: A sex offender whose score on the Minnesota Sex Offender Screening Tool-Revised (MnSOST-R) indicates a lower risk of re-offense and for whom there are no special concerns.

Risk Level II: A sex offender whose score on the MnSOST-R indicates a moderate risk of re-offense and for whom there are no special concerns OR (emphasis added) whose MnSOST-R score indicates lower risk, but for whom the End of Confinement Review Committee (ECRC) finds there to be special concerns

Risk Level III: A sex offender whose score on the MnSOST-R indicates a higher risk of re-offense or whose MnSOST-R score indicates moderate risk, but for whom the ECRC finds there to be special concerns. This category includes all offenders referred by the DOC for consideration of civil commitment.

As obvious by the definitions, these risk levels are based on the MnSOST-R and the offender's ECRC assessment. The MnSOST-R is a generally accepted, widely used and empirically validated tool that is similar to other offender risk assessments in concept (CSOM 2007). ECRC's are the most important institutions for the transition of responsibility from the Department of Corrections to the local community corrections and parole systems.

It is important to highlight that the ECRC has the power to make sweeping decisions that greatly affect the lives of offenders (who have served their sentences), their new communities and the mandated costs that the county of supervision accrues due to risk level definitions made by the ECRC. To counter

any suggestions that the ECRC might be an arbitrary assessor of the collateral consequences of conviction as a sex offender, the MN DOC has defined the potentially arbitrary “special concerns” with examples such as multiple treatment failures, patterns of re-offense after treatment, patterns of predatory behavior and prison behavioral record. Also, the MN DOC has an administrative review process for offenders who seek a reduction in their assigned risk level. However, in the first three years of risk level assignment, only about 2% of appeals were granted, suggesting that ECRC decisions are holding to a significant level of peer review and approval (MN DOC 2003).

Each risk level carries different levels of community notification and sanction. This study focuses on Level III offenders as, in Minnesota, the only data on released offenders considered public is that on Level III and non-compliant (non-registering) offenders. A spatial study of offenders who are not at their registered address, in addition to severe gaps in data reporting, make a concentration on non-compliant offenders outside the boundaries and resources of this study.

Level III offenders, besides being the topic of this study, are a unique group due to either a universally constructed psychological nature, far outside the scope of this research, or an ecological and structural process that is reinforced by the policies of sex offender management (Kubrin and Stewart 2006). Level III offenders are the most stigmatized of any offender group. Coppage (2006) states that there are four general types of sanctions placed on sex offenders who have completed their prison sentence: registration and supervision by public safety

officials, DNA filing, community notification along with public access database entry and involuntary civil commitment. No other type of criminal is subject to such restrictive measures after completing their punitive sentence. It would seem to logically follow that this pattern is in reaction to higher recidivism rates of sex criminals. This premise does not seem to be held up by current research which suggests that sex offender's crimes are deviant at a level somewhat higher than other criminal 'persons' offenders (MN DOC 2007a).

Registries and Community Notification

The ultimate goal of sex offender policy is to deter sexual recidivism. Everything else is complementary to that purpose. A fairly recent development is the sex offender registry, growing out of the Jacob Wetterling Crimes Against Children and Sexually Violent Offender Registration Act of 1994. This act mandated that states establish a public registry of sex offenders. The implementation has varied from state to state and Minnesota's registry is more on the side of offender privacy as opposed to states such as Florida where the registry covers all felony-level sex offenders. Although some suggest the underlying deterrence concept is antiquated and problematic (Prentky 1996; Zevitz and Farkas 2000; Tewksbury 2005; Burchfield and Mingus 2008), registries have become a useful and accepted tool for the public and law enforcement and cannot be conceivably undone. The idea of deterrence in this context is that registries and community notification will expose the offender to the public well enough that they will realize that re-offense is not in their best interests as they will be identified and apprehended immediately (Beccaria,

1764/1963). It is easy to be critical of this logical calculus as psychopathic criminals, such as some predatory sex offenders, might be unable to rationalize and act in accordance with deterrence theory's expectations. Along with that, the Center for Sex Offender Management (CSOM) notes that the registries are in place first as a deterrent to further offending but also to provide law enforcement and the public with a useful resource (CSOM 1999). It can be easily seen then that public outcry over deviant and inhumane sex crimes is a powerful legislative tool, but harnessing it to increase public safety, by making hard choices about community sex offender management, might prove to be an impossible challenge.

All sex offenders are required to register with authorities, but in Minnesota only Level III offenders require community notification meetings whenever they move. Broad public notification is required along with their profile being pasted on the MN DOC's website registry. Whereas Level I and II offenders' information is not publicly available, Level 3 offenders often receive broad media coverage (MN DOC 2005). Sex offenders are listed in the registry for at least ten years and "particularly serious" cases may warrant lifetime registration (Tewksbury 2005). In the best case, registration policies can be designed to reduce recidivism through diminishing levels of anonymity that allow offenders to revert to established criminal patterns (Mustaine et al. 2006). This best case scenario is dependent upon the communities' ability to organize within itself and with public safety institutions along the offenders' ability to feel "shamed" (Mustaine et al. 2006 and Tewksbury 2005).

However, not all agree that registries are a completely positive addition to sex offender management policy, and those who question their utility note the collateral consequences. Tewksbury and Lees (2005) found that offenders view the registries as having potential to be a tool to keep them from recidivating but felt that the current implementation was lacking severely. Tewksbury (2005) explains that collateral consequences are either socially or legally mandated. Legal consequences would include lost privacy rights, loss of certain rights and extra requirements in many routine activities. Social consequences for sex offenders can include family ostracism, disenfranchisement from the community, employment issues and financial issues. These issues are important because they likely may increase recidivism, based on an offender's conception that their stigmatized condition cannot be improved by following social norms (Tewksbury 2005; Goffman 1963). Yet, no significant challenge to sex offender registries has materialized at the policy level due to the self-perpetuating view the public holds of sex offenders as a highly recidivist and untreatable group (Quinn, Forsyth, and Mullen-Quinn 2004;Levenson and Cotter 2005). While this view has been challenged and, in many regards, disproved in empirical research, public perception of sex offenders is static.

The community notification strategies in place across the United States vary, much like the registries, due to the state-run nature of sex offender policy. In Minnesota, Level III offenders are subject to community notification meetings, flyer distribution and media release of information. The strategies used depend on the community, as do the outcomes. Finn (1997) found similar outcomes,

noting that community notification and registration are dependent upon the offender's history and the community's needs, leaving the implementation to corrections officials. Russ Stricker, director of the Intensive Supervised Release (ISR) program for Hennepin County, observes that in some high sex offender density neighborhoods, such as Jordan, there appears to be little interest in the issue and meetings. Often, his staff, along with those from other agencies, distributes flyers rather than hold meetings because of the cost and inter-agency coordination required. He suggests that, "When staff outnumbers residents, it's not cost-effective." Indeed, part of the issue of community notification is cost. CSOM (2001) demonstrates that media releases, registration lists, mailed flyers, door to door notification and internet registries are all more cost effective than community notification meetings. They also note that the meetings must be done in a manner that emphasizes education and is wary of creating a mob mentality.

Overall, sanctions and collateral consequences for sex crimes have greatly increased over the most recent decades. While the efficacy and recidivism reducing ability of these tools is debated, there is much room for further research. However, no matter the conclusions on the policies and tools, the public is demanding a role in community sex offender management. Society now has a "right to know" mentality toward sex offenders that shows little chance of giving this up. It seems much more plausible that offender registries in more private states such as Minnesota will increase their catchments to all levels of offenders in the future as other states have. In one way, this is can be interpreted as a growth of community guardianship and investment, yet that

would be a gross generalization that would not accurately reflect neighborhood attitudes and processes. People seem to get interested in knowing who lives in their neighborhood in organized areas; disorganized areas likely do not have this level of watchfulness.

Recidivism

Sex offender recidivism can be measured in three ways: general recidivism, sex offense recidivism and violent recidivism. General recidivism is when a sex offender is arrested for any crime, not just sexual offenses. Sex offense recidivism looks only at sex crimes and violent recidivism, while not universally accepted and used, looks at persons offenses. Hanson and Bussiere (1998) show that the sex offenders sexually recidivate based on indicators of sexually deviant victim choice, deviant sexual interests and prior offense history. Sex offender's general recidivism risk factors are similar to those of other offenders and include age, marital status, juvenile delinquency and anti-social personality disorder (Hanson 1998). Hanson (1998) also points out that often the statistical measures used to compare recidivists and non-recidivists show similarities, however, major qualitative differences exist in these populations as examined by clinicians. In that, those who participate fully in treatment programs have lower recidivism rates than those who routinely fail out or give superficial effort.

Recidivism rates vary among the heterogeneous sex offender population. Sex offenders are a diverse group that commits crimes that are similar only in their stigmatization and abhorrent nature. Sex offenders may be a diverse

group, yet can be grouped by their victimization patterns for better understanding. For example, the Minnesota Department of Corrections (MN DOC 2007a) found that offenders who victimized only male children under 13 had different general recidivism patterns than non-male-child molesters. This group of offenders is criminally specialized; they have very low general recidivism rates while maintaining similar sexual recidivism rates. In that, understanding the differences and similarities in sex offenders based on their patterns of victimization are inherently important. It is necessary to evaluate the offenders' victim choice, thereby asserting their heterogeneous nature, in research design.

General recidivism in the Minnesota Department of Corrections (2007a) (n = 3166) study of released offenders from 1990 to 2002 was 23% for re-incarceration but nearly half were re-arrested after release. The Bureau of Justice Statistics (1994) (n = 9691) found general recidivism to be nearly identical to the MN DOC study. Sex offense recidivism was lower than general recidivism; however, the survey differed more widely in their findings. The Minnesota Department of Corrections (2007a) found that 12% of offenders recidivated sexually within four years while the Bureau of Justice Statistics found that only 5.3% of offenders recidivated sexually within three years. The numbers would then seem to suggest that Minnesota has a higher than average sex-crime recidivism rate or that the 1994 study was too narrow in its temporal dimension. Importantly, the rate of sexual recidivism in the Minnesota study plateaued after the offenders first five years in the community. Generally, recidivism is highest in the first five years and drops thereafter (MN DOC 2007a; Hanson et al. 2002).

There are many correlations and trends that can be drawn between an offender's history and background compared with their recidivism rates. Offenders who are non-white, of urban communities and have a prior felony conviction have higher general recidivism and sex-crime recidivism (Minnesota Department of Corrections 2007; Bureau of Justice Statistics 1994). Following a logical pattern, offenders who completed treatment programs, completed Intensive Supervised Release (ISR) and supervised release (SR) had lower sex-crime recidivism rates. Interestingly, those with supervised release violations also had lower sex-crime recidivism. One could postulate that this is due to their inability to commit a sex crime after being convicted (and re-incarcerated) for a release violation. Stricker, ISR director for Hennepin County, finds this assessment to be accurate as his organization holds Level III sex offenders to many more regulations and gives less administrative leeway than any other class of offender (Koncur 2008).

Released offenders under some sort of supervision recidivate less, in line with the goal of the supervision, which is to hold the offender accountable in their new free-reign environment. Supervision also involves more lasting underpinning consequences. By keeping offenders accountable, they are less likely to have the opportunity to revert back to their criminal mindset, environment and then behavior. Controlling the patterns of social interaction in the offender is another consequence of supervision. Offenders can be ordered to avoid certain individuals as part of their supervision and house arrest and pass privileges are part of most programs that operate in phases. Breaking down the association

patterns of offenders and easing their transition back into society is the underlying success of supervision programs. In that, offender's association patterns are of pinnacle importance because they allow the offender to fall back into their criminal mind set through deviant norms being propagated when associating only with others who think criminally. The stated goal of supervision is to reduce recidivism yet, as has been explained, effective supervision also entails a re-socialization process that can allow the offender to acknowledge and therefore conform to the dominant societies norms. However, due to the arduous nature of this task (micro-managing an offender's life) it is very hard to generate the level of success that is, in theory, available from de-railing past criminal mindsets and associations.

By acknowledging that recidivism has an ecological perspective rather than a solely individualistic nature, the community characteristics are important to the outcome, recidivism levels (Kubrin and Stewart 2006). While previous research on recidivism has focused on an offenders individual characteristics, (such as age, criminal and family history, race etc.) more recent research has identified the need for community variables to be examined (MN DOC 2007a; Hennepin County 2004). Recidivism is shown to be higher in areas considered to be urban (MN DOC 2007a). Critically, the MN DOC study used the 10-county metro area as their definition of urban. They do not defend their choice, so it is hard to know why they chose this measure over the more common 7-county metro area. However, the term 'urban' creates much ambiguity and also does not qualify the value of lower, neighborhood level characteristics. The average

experience of an offender living in an more affluent urban environments such as Edina, MN or Elk River, MN would be quite distinct from the experience of an offender living in Minneapolis. But, even at that, a city level experience wouldn't do the study justice. All said, community level characteristics are a significant part of the recidivism equation. They cannot be analyzed by the ECRC nearly (if at all) effectively as the individual variables, yet they might have as much or more of a role in an offender's propensity to recidivate.

There are many constraints to recidivism research. Already discussed is the problem of the definition of recidivism, especially for sex offenders. To go further, one could argue for the different legal levels of recidivism (arrest, conviction, incarceration) as a definition, each would have a compelling argument. Also, recidivism research takes much time. A time frame of years might be useful, but decades are more appropriate. For anything but the most macro-scale policy research, recidivism is hard to measure.

However, analysis can be performed by generalizing about the sex offender population and looking at their residential locations across space. Offenders will behave in certain general manners, as individualistic research has shown. If individual offender characteristics are held constant to a model, the community analysis can be performed. The generalization, then, is that the offenders in the community today are going to recidivate similarly. In this way, community variables can be accounted for by generalizing individualistic variables into a limited number of classes (child molesters vs. known-victim rapists and unknown-victim rapists). This is a step further than the individualistic

research of past has done by assigning every community the same value. This research method would be able to account for some individual variables while focusing on the community level ones, rather than totally ignoring one or the other. While this will not produce a 100% solution, it has the opportunity to move our understanding of sex offender recidivism and community management much further than could possibly be done from a non-ecological perspective.

Sociological Perspectives and Social Disorganization Theory

Social disorganization is the lifeblood of modern structural-functionalist criminological research. Functionalism gets rough treatment in modern sociological textbooks. It is often portrayed as a well-meaning, but antiquated, theory that might have been relevant in the past but has outlived its use. It is pitted against the conflict perspective, which often is suggested to better model relations of disenfranchisment. Realistically, each approach has a relevant perspective on certain social problems. Functionalism shines in explaining the locations of stigmatized populations with a more realistic, and frankly more believable, explanation than conflict puts forth. Social disorganization is the modern functionalist explanation for social problems and it is flexible enough to apply across space and it is able to account for diverse communities.

Shaw and McKay (1942) are credited with bringing to life what has become social disorganization theory. They were part of the Chicago School of Sociology, credited with the development of symbolic interaction theory and while doing similarly focused research their findings pointed toward a macro-level conclusion explanation of juvenile delinquency in Chicago. They found that

certain individual variables, aggregated at neighborhood levels, correlated to delinquency rates quite seamlessly. This was a success for the micro-level interaction theory, but what would be more important was the idea that informal social control in neighborhoods could correlate with negative attributes. This fusion of social-interactionism and institutional understandings is fueling modern neighborhood effects research as Sampson et al. (2001) explain. The theoretical tradition of Shaw and McKay then, can be said to be quite alive. Martin (2002) defines the categories of the variables of social disorganization theory as, "concentrated disadvantage, residential stability and the level of formal control." Shaw and McKay (1942) are widely cited and their work is the underpinning of an increased focus on community social mechanisms in the recent past (Bursik 1988).

In essence, Shaw and McKay (1942) saved functionalism from its eventual fall from prominence as a social theory. As Kendall (2007) shows, functionalism is standing on a single theory (social disorganization) for its modern explanation of social problems. While conflict theory is rife with diverse dialogue (feminists vs. Marxists vs. anti-capitalists etc.), functionalism is often projected as more bland and less divisive. Conflict analysis often suggests that the social construction of laws and institutions is used to control the masses for the benefit of the owners of the means of production. While this perspective may offer insight into the broader challenges of the urban divide in America, it may be less capable of providing solutions for decision-makers operating in the current capitalist socio-economic paradigm. Functionalists base their view of society

largely on the ability of institutions to maintain order. A neighborhood can be said to be disorganized when it cannot realize the shared values of its residents while also being unable to informally control resident's behaviors (Sampson and Groves 1989). The word "traditional" is quite often used to explain the institutions that functionalists see as necessary to maintain social order. This includes religious, social and educational and governmental institutions. This framework generally puts forth the idea that these institutions have lost influence in modern society and their decline correlates with increased social problems. Martin (2002) suggests that there are currently three paths to explaining informal social control, a concept that by definition is hard to measure: the presence of social capital, community organization and collective efficacy. Sampson, Raudenbush and Earls (1997) made a convincing correlation between levels of efficacy and crime.

Sampson and Groves (1989) were able to corroborate the work of Shaw and McKay in a more methodical fashion. They were able to show that structural indicators of disorganization significantly correlated to levels of criminal offending and victimization. Lowenkamp et al. (1993) were able to replicate the findings of Sampson and Groves (1989) and therefore increase the stature of the theory which has become increasingly more researched and reviewed.

Routine activities theory presents another framework of understanding where offenders live. This idea suggests that the drive to crime is less important than other community factors. Most importantly, it suggests that a lack of capable guardianship will allow a community to fall prey to offenders. This

guardianship is apparent in organized neighborhoods that have functional institutions of family, education, community and other social institutions. A predatory offender does not have the anonymity they require for their crime in a neighborhood that is well organized and, by that, adequately guarded. Guardians can prevent crime, but also help to increase accountability for offender's behaviors. In that, neighborhoods that have high guardianship are best suited to reintegrate sex offenders. An important question is then, why are they not performing this function?

The reason for sex offenders ultimately clustering in disorganized neighborhoods with low guardianship is explained by different ideologies in different ways. Social disorganization theory suggests simply that the inverse of disorganization, social organization, allows organized areas to resist the settlement of offenders and find ways to keep them from their community, working through their social order. Disorganized neighborhoods do not have that type of informal and formal control over their environment. In that, there is a suggestion of a pull factor. Offenders are pulled to neighborhoods that have the anonymity and lack of guardianship that permits them to practice their criminal patterns of behavior and resist assimilation to non-deviant society. Disorganized neighborhoods pull because they are the path of least resistance to the offenders practicing of their deviant desires.

However, push explanations exist and, at some level, are in line with conflict ideology. Although, class-warfare explanations lack empirical evidence, Levenson and Cotter (2005) found that offenders are often pushed into the least

desirable residential locations by a variety of factors. Similarly, Mustaine et al. (2006) concluded that offenders are relegated (pushed) to disorganized places rather than being pulled their by an inviting environment. Push explanations have some grounding in conflict theory because they imply that an organized dominate group is able to overpower the will of a stigmatized population. However, it is a far step to suggest that a grand conspiracy of middle and upper class citizens are organizing to dump sex offenders into poor neighborhoods, which would be a true conflict argument. This matter seems entirely more plausible from a functionalist perspective.

Functionalists argue that the organization of the outlying communities and the specific broken institutions of the inner city neighborhoods, along with low levels of informal social control, funnel the policies toward a maintenance of the status quo. Repairing the broken social institutions of the inner city is more important, a structural issue, than eliminating sex offenders from those areas. Other social problems arise from these disorganized areas and therefore targeting effects of broken institutions is endless, whereas targeting the broken institutions will pay off exponentially and across the spectrum of social issues.

Community sex offender management is a social problem that is best explained by the functionalist social disorganization theory. Other theories and ideas can certainly contribute and are by no means inaccurate. However, as a micro-level operation, which this research is performing, social disorganization provides the necessary framework and ecological explanation.

Spatial Perspective

Data availability is always a consideration in micro-scale research. Sex offenders are an accessible population to study as a collateral consequence of their adjudication as offenders includes registry, providing a lucrative spatial domain. Generally, our society values privacy and denies that to only the most serious offenders (as can be seen from the inclusion of only Level III offenders in public databases). Data on crime events is plentiful through law enforcement reports as part of the public record. Yet, can crime rates fully tell the story of a place? Crime rates are indicators and to suggest that high crime occurs in areas increasing degradation is too simplistic to explain the varied patterns that can be observed across an areal unit. Just like the locations of released Level III sex offenders, a single data set is only a piece of the puzzle in explaining a spatial pattern.

However, planners, decision makers, community activists and researchers can compromise with our nurtured instinct to simplify things too far. Using multiple sets of data, across reporting and spatial domains; a better understanding of the specific variables that have the greatest impact in explaining the social disorganization of neighborhoods in Minneapolis, MN can be had. By performing a factor analysis on many layers of socio-economic data, with emphasis on units of least data aggregation, the spatial perspective can be brought into the micro-level social analysis. In this method, it is possible to satisfy the unrelenting demands of the quantitative community while trying to

understand urban processes that have largely been explained through qualitative measures or quantification at scales too granular for analytical context.

Summary

Clearly, sex offender management is a complicated web of interconnected social, political and technological issues. There is a desire, above that of any other segment of criminal, to prevent acts of sexual violence and deal with offenders before they can harm again. Embedded in this is a realization that for offenders, a cycle needs to be broken. Recidivism of sex crimes is lower than most other crimes yet the fear of these offenses is motivating attempts nationwide to develop best practices in dealing with this population.

Some of the initial attempts at management have failed and are working against societies best interests in the opinion of most corrections professionals. However, a spatial analysis using the full spectrum of GIS capabilities has not been done, leaving qualitative and quantitative questions in management best practices. With less certainty in the current methods of community protection, there will inevitably be more reliance on public opinions that have generally been emotional distortions of reality when applied to heinous sex offenders.

A wide field of possibility is open for further analysis of current and proposed management practices. In all these, the inevitable reality is that a spatial context must be developed and geographers are uniquely prepared to weigh in on this matter through a regional perspective using GIS and spatial statistics including a proposed, more detailed, evaluation of social

disorganization and simulation to build a decision support system for sex offender community management policy.

Neighborhood Effects, Definitions and Socio-Spatial Analysis

Introduction

Spatial analysis techniques used by geographers are becoming more powerful every day. In coincidence with this flexibility and precision, the applicability and use of spatial statistical analysis is rapidly growing across traditional discipline boundaries. Not only is the spatial perspective inviting new users of its tools, geographers are reaching out to topics across the academic spectrum to apply their spatial methodology. Importantly, neighborhood effects and social ecology have been areas where spatial analysis has bred a new socio-spatial analysis that fuses theory from sociology with methodology from spatial analysis.

This section focuses on understanding the importance and applicability of a spatial methodology when analyzing neighborhood effects in social analysis. It also critically reviews the importance of neighborhood definitions in this type of analysis, something that should be the logical precursor to any sort of neighborhood research. It goes on to discuss the current developments in socio-spatial analysis.

Neighborhood Definitions

While individual neighborhood characteristics can and should be analyzed in specific detail, one thing that cannot be ignored is the reality that neighborhoods are not "islands unto themselves." They are embedded within the structure of a city or urban area (Sampson, Morenoff and Earls 1999). Morenoff and Sampson (1997) have shown that residents leave neighborhoods en masse based not only on the perceived declining characteristics of their home neighborhood, but just as significantly based on the proximity of poverty and crime. This is the nature of spatial externalities and neighborhood effects; they ultimately allow the consequences of the mobility of social capital within an urban system to play out. This capital can spill over to neighbors creating positive and negative effects; therefore, understanding the interdependent role of neighborhoods in urban communities is necessary.

Clearly, understanding neighborhood effects is dependent upon understanding neighborhoods. Very few people know what census tract or block group they live in. However, they do often have a socially constructed (and sometimes politically endorsed) alternative to these somewhat arbitrary units. What neighborhood effects researchers should be most interested in is the definitions of neighborhoods used by the populous. Many larger cities have community areas and named official neighborhoods. Suburban end exurban dwellers often live in sub-divisions or named communities that are developed to increase a sense of community. This feeling of community is desirable and drives much of the new development for upper-middle class developments. That

said, neighborhoods are an important social instrument that appeal to the social and psychological needs of the humans that inhabit them. Some neighborhoods do this better than others, and those communities generally have larger positive outcomes for members. This structural idea is modeled by social disorganization theory, in the work of Shaw and McKay (1942). Not only are these characteristics always either positive or negative, they are seen as effecting housing prices in both positive and negative ways (Dietz 2002). A problem with this type of fine-tuned analysis of neighborhood effects is the reflection problem (Dietz 2002). This simply means that one cannot disassociate individuals in a group from the groups' effects. Are individuals in a group acting as individuals or as members of a group? This is largely an impossible problem to solve. In essence, it is hard to estimate the importance of individual agents and hence, the larger the scale of the group, the easier estimation becomes.

Neighborhood definition, being central to the outcome of any analysis, requires more attention than it has been given in many intra-urban analyses. Mustaine et al. (2006) present a short justification of their choice of census tracts in their analysis of released sex offender locations in two Florida and two Tennessee counties. Their data sets allowed greater numbers of offenders and tracts were appropriate based due to inclusion of all risk levels of sex offenders. This avoided the small population problem that is inherent in the Minneapolis data set, which includes only level III offenders. However, they even go so far as to admit that census tracts have been standard in this type of analysis. It has been clearly stated that any change of areal unit may result in occurrences of the

"modifiable areal unit problem" (MAUP) (Openshaw and Taylor 1979). This consideration shows that changing the inputs of spatial unit will often change the result and a correlation may be missed, misunderstood or artificially induced. Kubrin and Stewart (2006) argue that while individual level determinants of sex offender recidivism are well researched, less is known about the role of neighborhood effects on their recidivism. They state that emphasis on properly composed socio-spatial analysis is necessary and most overlooked in this research area.

Another significant problem in neighborhood ecological research is the reality that neighborhoods are "quasi-factual regions", existing at the intersection of the subjective and objective realms (Lee and Campbell 1997). Clearly, neighborhoods are multi-dimensional and have both statutory and social contexts. Lee and Campbell (1997) identify three dimensions of neighborhoods: demographic, symbolic and physical. Demographic characteristics deal with race and income level associations. The symbolic dimension includes names, history, agreement on the definition and awareness of the unit. Physical dimensions are easier to identify objects such as streets, landmarks, the official boundaries, the size, complexity and scope of neighborhood units. These equally important factors combine to build a sense of place that cannot be replicated by the arbitrary areal units commonly used in socio-spatial analyses. Within the constraints of the data available, the best possible fit should be striven for.

An Interdisciplinary Affair

Dietz (2002) explains that sociology, economics and geography have similar questions about neighborhood effects; although each use their own methods and have researchers who often avoid working interdisciplinary. Dietz points out, realistically, that “neighborhood definitions inmost social science research consists of census tracts or block groups. Such definitions have not been formed by thoughtful theoretical consideration. Rather, neighborhood delineation has been defined by the limitations of an available data set.” Dietz is absolutely correct as there is little to no discussion of neighborhood definitions in neighborhood effects literature. This should be a warning to those doing research in this field. This paper should give the reader the implied impression that a robust and task-specific definition of the neighborhood is best. What works in a certain survey may be wholly inappropriate in another. Reaching out to other disciplines and looking at their work on a similar topic cannot be removed from quality empirical work. Socio-spatial analysis has a large mix of contributors and owes its ability to explain reality only to the combination of ideas presented from a growing number of fields.

In the greater academic community, different specific standards exist within each discipline. For example, intra-urban analysis by criminologists and sociologists generally use census tracts as the dogmatic definition of a neighborhood. Important contribution has been made to neighborhood definitions by those who would try to alleviate small population problems by combining tracts into larger community units such as Morenoff and Sampson

(1997) (Wang 2006). However, geographers seem much more comfortable to explore areal unit effects at the neighborhood level. In part this is because the MAUP has developed as a pure GIS problem, but it should not be. Some analysis has shown that, in many cases, the important socio-economic data variation can only be found below the census tract level (Cohen 1980). With other disciplines reliant so much on a single unit and seemingly less interested in the change in outcome when different areal unit aggregations are used, room for theoretically sound spatial analysis in crime analysis and neighborhood effects is available. Spatial analysis can offer greater clarity and reasoning for one of the most important choices in neighborhood effects research, neighborhood definition.

Sociological Perspectives on Spatiality and Theory

Much of the theoretical base of neighborhood social analysis stems from sociology. Geographers can adapt the ideas presented by sociologists and refine them with a greater emphasis on the spatial domain. Social disorganization is a powerful theory for explaining certain social outcomes. Concepts such as social capital, rational-choice and routine activities are cornerstone in the sociological approach. Many other approaches exist and can be tuned to the realities that a data set presents. As with using multiple disciplines, analyzing social problems from a variety of perspectives increases the confidence in the conclusion.

Sastry et al. (2006) explain their findings in Los Angeles that neighborhood norms are related to levels of social disorganization.

Neighborhood norms can be seen as the informal social control that is necessary for a community to prosper. However, conversely, some disadvantaged neighborhoods have a "negative normative environment in which behavior seen by the middle class as negative is valued and reinforced." This fuels a cultural rift between these neighborhoods and the perceived norms of society. Collective socialization models (Wilson 1987 and 1996) would suggest that this change can be rapid and semi-permanent. Sastry et al. concluded that neighborhood level research is complicated by the amorphous nature of the neighborhood unit.

Elliot et al. (1996) puts forth important criteria for variable categorical consideration when analyzing the functions or neighborhood advantage: informal networks, informal control and social integration. These categories can be seen as an expansion or modernization of the three basic variables of social disorganization (Shaw and McKay 1942): concentrated disadvantage, residential stability and informal social control. Shaw and McKay put forth the idea of social disorganization to represent juvenile delinquency rates yet the theory has found application across the social sciences as an explanation for socio-spatial variation, specifically urban ills. The simple premise is that communities with the least amount of organization will have the least ability to maintain informal social control, work for shared positive community outcomes and keep potential negative influences (human, institutional and environmental) from degrading their neighborhood. Not only does social disorganization exist within neighborhoods but it generally reinforces negative social outcomes in neighboring areas. This is

known commonly in epidemic studies as a contagion effect (Crane 1991) or the concept of spatial dependence in Geography.

Social capital is an important concept in the realm of neighborhood effects and the ecological perspective. Bourdieu (1986) explains social capital as the, "actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." While Putnam (1993) is able to relate this concept closely to social disorganization theory by defining social capital as, "features of social organization, such as networks, norms and trust, that facilitate coordination and cooperation for mutual benefit." Sampson, Morenoff and Earls (1999) derive from Coleman (1990) that, "social capital is lodged not in individuals but in the structure of social organization." Clearly, the link between social capital and social organization is well defined. These concepts work together with increased levels of social capital leading to greater social organization, which suggests more informal control and more developed networks. Central to social capital is the idea of collective efficacy. Sampson, Morenoff and Earls (1999), define collective efficacy (in relation to children, their study group) as, "a task-specific construct that relates to the shared expectations and mutual engagement by adults in the active support and social control of children." Collective efficacy is a set of expectations that a community has about the exercise of informal social control, its realization is clear in organized communities. However, before embracing social capital as only a force for positive neighborhood effect,

Sampson, Morenoff and Earls (1999) remind analysts that social capital can, in some cases, be used for negative social ends.

Social capital must be seen as a flowing and dynamic process that has spatial and temporal flux. It is important to consider that, "economic resources and social-structural differentiation in the United States are very much a spatial affair" (Sampson, Morenoff and Earls 1999). As with any urban analysis, understanding neighborhood effects and definitions is based on a set temporal range and a necessarily important spatial domain. Neighborhoods are constantly in motion and have moved out of their place as primary social groups (Sampson, Morenoff and Earls 1999). Seeing a neighborhood as a secondary social group is more realistic due to the much more agile and footloose population that exists in the urban United States. Janowitz (1975) speaks of a "community of limited liability" in modern urban areas where neighborhood citizenship is not based on a utopian urban village ideal but rather on a social-economic choice model that residents make in neighborhood choice. While dense and overlapping community ties may exist in certain areas, they are the exception rather than the rule. The modern urban neighborhood is not stagnant enough to support such a situation; rather it is a dynamic and flowing region that is what its residents make of it.

Shaw and McKay's (1942) neighborhood ecological study, being the catalyst for subsequent social organization studies, is important to understand. They are products of Chicago School of sociology and embraced both quantitative and qualitative methods geared toward a full picture of urban

neighborhoods through the understanding of the neighborhood as having a particular ecology. Building on the ecological tradition, Anselin et al. (2000) state that, “place-based theories fall squarely within the theoretical tradition of social ecology, but are more specific about the mechanisms by which structural context is translated into individual action.” Two main ideas influencing place-based theories of crime are routine activities (Cohen and Felson 1979) and rational choice theory (Cornish and Clarke 1986). These seminal works offer perspective on how crime and neighborhoods inter-react. Both are important to include in any analysis of why offenders victimize certain geographical and social neighborhood areas more frequently than others. This is the type of spatial anomaly that drives the research of spatial analysts in neighborhood effects.

The Marxist view of neighborhoods, their effects and space in general can be summarized by the socio-spatial dialectic (Soja 1980). This concept explains the inherent relationships between production, “relations which are simultaneously social and spatial (Soja 1980).” Lefebvre (1976) states that, “space and the political organization of space express social relationships but also react back upon them.” Spatial relations are a demonstrably interdependent and inter-reactive social process. This view places neighborhoods at the mercy of the means of production and social processes along with spatial interaction. However, Marxists warn of a “fetishism of space” that ignores the social and economic processes underlying spatial variation (Soja 1980). Marxists see these processes driving the segregation and territorial fragmentation of the working class, which is readily apparent in the modern monopoly capitalist city (Soja

1980). The Marxist perspective reminds those interested in neighborhood effects that the interactions between social, economic and spatial relations are interwoven and interdependent.

Clearly, the issue of community management of sex offenders is an issue that can help to revive and reinvigorate the functionalist perspective in sociology. Social disorganization theory helps to analyze and explain the residential locations of sex offenders in large metropolitan areas. Martin (2002) explains the tenets of social disorganization theory:

> *"it seeks to explain variation in neighborhood crime rates using three contextual measures, concentrated disadvantage, residential stability and levels of informal social control."*

All of these characteristics can be seen in corresponding order to where sex offenders take residence, by choice or decree in Hennepin County and Minneapolis. Social disorganization is a powerful perspective for analyzing this issue; it is further affirmed as useful by the opinions of Stricker.

However, the line between a social disorganization and conflict approach becomes very blurry when looking at the way in which county probation systems interact and seem to dump problematic populations in areas that are least able to resist them. At this macro-level, conflict analysts would suggest that outlying counties are taking steps to proactively move this stigmatized population (sex offenders) into areas where the dominant culture does not live. They are able to do this through their political power. This analysis seems quite plausible. A

functionalist sees essentially the same problem but the process is different. Communities with low levels of organization (one of those variables being the percent of the dominant group in the areas population) as pull factors for sex offenders who prefer anonymity and broken social institutions of the city that allow them to take part in deviant and criminal acts. That is clearly a functionalist train of thought; yet, those doing social disorganization research also note that communities with less organization have less will to oppose the movement of the offenders into their communities. The distinction between that point and the conflict approach is very minute. Mustaine et al. (2006) note that these push and pull factors are both important, although the push factor seems to be most important in their study areas (two Florida and two Tennessee counties based on macro-level data).

Neighborhood Effects

Neighborhood effects research is in a state of growing interest, as the socio-ecological perspective is experiencing resurgence. A neighborhood effect is the result of a neighborhood's ability to influence a social outcome. There is some debate about the definition of a neighborhood effect but this has not limited the practice of neighborhood effects research (Manski 1995; Oakes 2004). Neighborhood effects research looks to explain the cumulative effect of a neighborhood's characteristics on the neighborhood and adjoining neighborhoods.

In the realm of neighborhood effects, Manski (1993, 2000) puts forth three types: endogenous, correlated and exogenous. Endogenous effects are those in

which influence emanates from an individual onto a community. This is often shown through studies of teenage behavior standards and shared parental standards across a community. Correlated effects are those that play off individual interaction through shared experiences and exposures. A correlated effect can be trend based population sorting that may occur through other socio-economic processes. In essence, this suggests that like-minded individuals often form communities through processes that they have little control over. Correlated effects can clearly be directly tied to informal social control as these effects often spill over and can spread lower community standards (and informal social control) rather more easily than raise them. Exogenous effects are those in which individual actions are based upon factors such as ethnic, religious and racial compositions along with specific place. This is important in understanding the influences of immigrant populations and ethnic centers. In all three effects, the importance of population sorting cannot be underestimated and Dietz (2002) concludes that, “neighborhood formation is not a random or pre-determined mechanism.”

Much attention is paid to residential stability in recent studies of neighborhood effects in general and social organization in specific. Recent surveys of neighborhood organization have found that residential stability is less important as a negative neighborhood attribute (Mustaine et al. 2006; Mu and Wang 2008). However, Sampson, Morenoff and Earls (1999) state, “A high rate of residential turnover, especially excessive population loss, fosters institutional disruption and weakens interpersonal ties.” They also show that homeowners

exert greater social control over their neighborhoods than renters, a somewhat common sense observation that certainly has effects for urban planners. While recent empirical work has suggested that residential stability is less important in neighborhood outcomes, the logical appeal of the importance of greater residential stability in increasing neighborhood organization is hard to ignore. Mustaine et al. (2006) argue that the current economic downturn, uncertainty and job market have created conditions in neighborhoods that do not favor residents moving as much as in past eras.

While this argument applies to the real estate side of the equation, is the effect as pronounced on renters? Being that tenants are a greater proportion of urban populations, especially regional centers, this might be a significant unknown variable. Popular belief would suggest that no shortage of rental housing units exist and that a substantial market of subsidized housing is fueling a growth of rental housing aimed at lower income urban populations. This can only mean greater competition for residents, increasing the likelihood of urban mobility. While homeowners are facing a rough bear market, the renters of today are offered a multitude of housing options allowing significant inter-neighborhood mobility. This trend would seem to emphasize the importance of neighborhoods. Developers might see corporate interest in revitalizing neighborhood image in certain areas that, then, has an equal or even opposite exogenous effect on neighbors. Gentrification of urban areas, such as the Phillips Neighborhood in Minneapolis, has had this effect. While increasing the appeal of a certain area of a previously undesirable neighborhood, other areas of the city that held at the

status quo become even further depleted of social capital as the gentrified areas draw residents interested in “better” neighborhoods and therefore more informal social control.

In the past, neighborhood dynamics can be seen through macro-economic processes such as Wilson’s (1987) conclusion that urban sprawl and a shift toward a post-industrialist economic model had concentrated the most disadvantaged urban populations of the time, African-Americans and female-headed households. While similar outcomes persist today, the causes are less clear and certainly more complicated. Sampson, Morenoff and Earls (1999) argue that, “economic stratification by race and residence thus fuels the neighborhood concentration of cumulative forms of disadvantage intensifying the social isolation of low-income, minority and single parent residents from resources that could support collective social control.” Another important factor is population density. While some suggest that population loss can negatively impact urban neighborhoods, others would see problems with increasing density. “High population density and its accompanying anonymity form a structural limit to what can be achieved through relational ties,” state Sampson, Morenoff and Earls (1999). The correlation between population density and crimes of violence (such as rape, murder and assault) is a historically demonstrated trend and one of the first forays geographers made into a spatial study of criminology. (Harries 1973) From a neighborhood effects approach, these types of changes are interesting, if not troubling, and valuable to analyze.

Summary

The ability to apply social theories in a way that can test their foundational principles serves public policy managers, as often research of theory-based underpinnings drive socio-spatial and urban planning mechanisms. The sex offender population is not ideal for a prefect test of a theory, as it has a high degree of autocorrelation and is driven to its current distribution by more than just neatly-calculable socio-economic factors. However, understanding the underpinnings of theories, and taking the fuzzy generalities and relationships between data's ability to predict these distributions can inherently identify what push and pull factors may be at play and what previously-held conceptions may require re-evaluation.

Methods of Socio-Spatial Analysis

Scale in Spatial Analysis

Scale is a necessary consideration of geographical analysis at every level but it is often overlooked at the intra-urban scale by two constraints: researcher familiarization with spatial analysis techniques and data limitations. At the neighborhood level, spatial analysis is often conducted by many disciplines, few of which spend significant time critically analyzing their choice of scale. While this does not preclude them from choosing a proper scale, it is an important deficiency in intra-urban analysis but also an area in which geographers and GIS (Geographic Information Systems) users can lend their expertise when approached by colleagues looking for critique and ideas about their research. Secondly, data sources are growing for local social analysis yet limitations based

on reporting areas, and current data are abundant. Using census data in areas with no other reporting tradition is nearly mandatory. Creative use of data sets can bring important and timely data to the researcher; however, the problem of data limitation is still quite an issue at levels below municipalities.

At the intra-urban scale, US census tracts have been the most popular choice based on their sample size and data availability. However, in some instances, they are too small with low-count events or they are not good proxies for real neighborhood connections. Mu and Wang (2008) deal closely with the first issue here, the small population problem. They suggest increasing the size of the population units to deal with homicide rates. This is duly applicable to a exploratory spatial data analysis of registered risk level III sex offenders in an urban area such as Minneapolis, MN. Secondly, census tracts may not be proxies for real neighborhoods as seen by their residents. Mu and Wang (2008) did research based off tract data in Chicago where tracts have not been good indicators of neighborhoods in past surveys. They find that their space-scale clustering of tracts results in more appropriate neighborhoods, not only for their study but in general. They were able to much less arduously replicate a socio-spatial neighborhood build by earlier experts using more variables, local knowledge and more in-depth analysis. Census tracts are used across the social sciences as the proxy neighborhood, however this is an area where researchers should be critiqued if they do not implicitly justify their spatial unit choice and thereby, their neighborhood definition, central to analysis of neighborhood effects.

Dungan et al. (2002) suggest the problem of sample size is not unique to socio-spatial analysis. In biological science they relate that, “In the majority of cases, however, a natural sampling unit does not exist and decisions must be made about the characteristics of the unit to be sampled. This decision is often mediated by the instrument used and by logistical constraints on making the measurement.” This level of ambiguity in a natural science is important for those pursing empirical work in social science. Scale is not a unique problem for social scientists, even less so geographers. All of science struggles with the proper scale of analysis; however, this is not necessarily negative, only a consideration of research design that has often gone ignored. Bringing the spatial domain to the analysis requires that both negative and positive spatial effects be understood. While positive spatial externalities do occur, the more important spatial relationship is that of the potential spatial pitfalls for already disadvantaged neighborhoods. While relative location (in the spatial or geographical sense) will dictate much of a neighborhoods prospects (still a dynamic process) disadvantaged neighborhoods face both spatial and internal vulnerability, increasing the chance that the status quo, or further decline is operationally realized. Also, it is important to notice how neighborhoods find ecological niches for a variety of agents in the urban fabric and causality for negative effects can be tenuous (Sampson, Morenoff and Earls 1999).

The Modifiable Areal Unit Problem (MAUP)

Wong (2003) explains that scale is significantly important in socio-spatial analysis and that the most serious problem with scale is the MAUP (Openshaw

1979). The MAUP is often ignored by those not from a GIS or geographical background as spatial analysis finds its way across the social sciences. The MAUP is significantly important at intra-urban scales due to the variety of units and data aggregations available. The opportunity to use multiple scales of analysis has had few successes according to Wong (2003). Most of the research in this area has required use of nested units such as census blocks nesting into block groups nesting into census tracts. This nesting has been the only way to take in variables at all scales; no disaggregation is possible. The MAUP states that variation can occur based on the scale of the unit used for analysis and its appearance has been well documented (Fotheringham and Wong 1991; Wong and Amrheim 1996; Sui 2000). For example, Koncur (2008) showed variation in k-means clustering using ethnicity z-scores between two common areal units (block groups and census tracts) in Minneapolis, MN using census 2000 data. This occurrence of the MAUP is in line with expectations and is similar to the substantiated claim by Fotheringham and Wong (1991) that less variation occurs at aggregated levels, producing weaker and more generalized results.

Spatial Effects

Two basic spatial effects are important for neighborhood researcher: spatial heterogeneity and spatial dependence. Spatial dependence, also referred to as Tobler's first law of geography, is the idea that similar things exist in proximity (Tobler 1979). Distance creates difference and close things are more alike than distant things (Anselin 2000). Spatial heterogeneity suggests a changing structure or association pattern across space. It is the idea that

complimentary neighborhoods may exist next to each other, suggesting a checkerboard pattern where zones of significantly deviating attribute scores may be near each other through socio-spatial processes such as stratification, relegation and sorting.

These spatial effects are causes behind the clusters of events and attributes that geographers are so interested in. Spatial dependence suggests true contagion, the result of a dynamic and interactive social process. This is the result of mixing and smoothing of the transitions between attribute scores. All attributes have a potential perfect state of spatial dependence where a central point is a local high or low and values move toward the other extreme at an even speed of regression. The perfect state of spatial heterogeneity is a checkerboard pattern. Again, this does not exist in the real world but often this pattern unearths what geographers see as anomalies; the understood expectation that phenomena follow a spatial dependence model rather than a heterogenic pattern. Spatial heterogeneity and its cluster model of apparent contagion present exceptions to the rule and suggest complexity (Anselin, 2001).

Problems of spatial dependence and spatial heterogeneity occur when classical regression analysis is used. These spatial effects can potentially bias analysis results and their spatial structure violates some of the basic assumptions of classic regression analysis. Because of this, spatial weights must be used in regression analysis to avoid any faulty inference which might be otherwise nominally be explained as nuisance variance from spatial dependence and spatial heterogeneity (Anselin et al. 2000). A spatial weights matrix

classifies regression effect by the distance of two points. Neighbor interaction can be modeled based on a number of situations, highlighting the flexibility of the more common regression analysis methods of ESDA.

Anselin et al. (2000) explain the importance of not inducing an ecological fallacy. Much spatial analysis is done with areal units and these units are often assigned attribute scores. However, these units are not individual agents in a model, they are merely aggregates for smaller and smaller nested units down to the individual level, the only true agent level. Using the units as agents approach, the analyst imposes extreme homogeneity on a often diverse and individually important population. If the analyst views neighborhood effects as a truly ecological research, they cannot allow this. Neighborhoods offer niches for a wide variety of agents and suggesting the mean average of these agents represents the totality of the circumstances within a neighborhood is the concept of ecological fallacy. Problems with simple mean data are easily understood and within any sort of socio-spatial analysis, the researcher should be careful to avoid the potential pitfall of ecological fallacy.

Another issue identified by Anselin et al. (2000) is the choice of global or local statistics. Global statistics involve a spatial relationship between all units based on distance. Local statistics use only a specified relationship of units to determine a certain unit's neighbors. Global statistics include the Spatial Autoregressive method (SAR) where every unit is correlated to every other but effects decay with distance. Local regression statistics include the Spatial Moving Average (SMA) where only the first and second order neighbors have

non-zero correlation. Therefore, at the local level, neighborhoods beyond second order do not have direct effects on the study unit. This method is considered a Local Indicator of Spatial Autocorrelation (LISA). Anselin's GeoDa (Anselin 2008) statistical program has the ability to perform spatial regressions called for in socio-spatial research.

Essentially, what a neighborhood effects research study should aim to do is distinguish between spatially lagged dependent variables (y), explanatory variables (x) and error terms (b), so as to clearly quantify neighborhood processes. By manipulating the explanatory variables based on their level of influence (m), in this case spatial, the general equation of $y = mx + b$ can be understood in its most basic spatial application. Different forms of this equation appear to the same effect, Anselin uses $y = X\beta + \varepsilon$ in his spatial econometric explanation of the equation (Anselin 2003 (b)).

Developments in Socio-Spatial Analysis

Spatial analysis is quickly finding its role in crime and socio-ecological studies. The realization that the spatial perspective is necessary and brings a large toolbox of important tools has created a need for accurate analysis through proficient spatial analysis techniques. While regional knowledge is important, one cannot reasonably expect every researcher to understand (and limit themselves) to knowledge of a specific area. Critics of modern geography have suggested that specialization is an inhibitor to greater knowledge transference. It also continues the pattern of weak-linkage within the discipline. Geographers want to be all things to everyone (a noble goal) but, in doing so they isolate

themselves from one another through specialization (Sheppard 2004). This drives at the point that methods requiring less regionally specific knowledge are valuable for greater mixing of researchers, their methods and their study areas. This is exemplified by the space-scale clustering method shown in Wang (2006). This method replaces arduous and subjective judgments about neighborhood definitions and replaces them with objective attribute scoring, to similar result in the case study (Wang 2006: 150).

Critically, spatial neighborhood effects research may look to do more than it is capable of. Analysts might fall victim to a bit of false hope of somehow social engineering a utopia. Neighborhood analyses can formulate quantitative equations for certain neighborhood outcomes from input attributes. It is easy, but misleading, to suggest that by merely increasing or decreasing certain attribute values that a neighborhood may end up with different outcomes. The thought of, "if only we could add more middle-income people to this neighborhood…" is this pitfall. Neighborhoods should be analyzed through an ecological context where different groups fit different niches they have developed into based on the opportunities available in their neighborhood and regional area.

Sampson and Groves (1989), more than any other study, brought the ideas of social disorganization in socio-spatial analysis to the attention of social scientists. They were able to first quantify the components of social organization based upon Shaw and McKay's proposal. They state accurately that no true test of Shaw and McKay had been undertaken before their important analysis. They scored ecological areas in the United Kingdom, functionally equivalent to census

tracts in the United States, based upon eight variables sets that were formulated from the British Crime Survey. The variable sets were:

Socio-Economic Status (SES): The sum of z-scores for college educated population, those employed in the professional/managerial fields and those with high-income.

Ethnic Heterogeneity: A measure of ethnic composition by reported race for each district was used to calculate heterogeneity.

Residential Stability: Residential stability was calculated using a census variable that asked if the respondent grew up within a 15 minute walk from their current address.

Family Disruption: The level of family disruption in a community was calculated by the sum of two z-scores. The first score represented the equation of divorced and separated divided by the population that was ever married. The second score was calculated based on the percentage of single parents residing with children in the community.

Urbanization: An area was designated either urban or non-urban based on land use. This was a 1 or 0 score.

Local Friendship Networks: The local friendship networks were analyzed based on available census data involving how many close friends lived within the 15-minute walk distance.

Unsupervised Youth Peer Groups: A grade was assed based on census

questioning about the presence of unsupervised peer groups.

Organizational Participation: The level of informal social control emphasized through social organizations was assessed through census questioning that asked how often respondents participated in social activities in their respective neighborhoods.

The overall result of the study was to verify the thesis proposed by Shaw and McKay, that crime rates are related to levels of social disorganization. This survey did not go to any bold-lengths past the statistical results shown, that the relationship was clear and demonstrated robustly. The standard presented in Sampson and Groves has been analyzed and reproduced by Lowenkamp, Cullen and Pratt (2003) based on the same British Crime Survey based on the 1994 survey. This verification shows the solvency of both social disorganization theory and the methodology used by Sampson and Groves.

The false perception of injecting affluent residents is quite dissimilar to the structural idea that adding more social capital (through program or institution) to a disenfranchised neighborhood will bring less of the undesirable outcomes (ex. crime or concentrations of sex offenders). Spatial analysis allows us to quantify important indicators of neighborhood characteristics; however, the attributes chosen for the analysis should in no way be seen as the only measures of a neighborhood. Neighborhoods are holistic and inter-related ecological communities that are not exempt from equal and opposite reactions (Newton's second law). Spatial externalities hinder the analysis of a neighborhood as an

independent unit. These externalities impact an urban area, along with a corresponding spatial domino effect.

Spatial analysis has found itself as a true trade tool of a movement toward a new socio-spatial neighborhood analysis sub-discipline. This realization has been in part by the demonstration of the ability and underlying perspective, a geographical one. Key to this is Exploratory Spatial Data Analysis (ESDA) (Anselin et al. 2000). Anselin et al. (2000) describe ESDA as "a collection of techniques to describe and visualize spatial distributions; identify atypical locations or spatial outliers; discover patterns of spatial association, clusters, hot spots and suggest spatial regimes or other forms of spatial heterogeneity." This type of analysis is concerned heavily with spatial autocorrelation, "the coincidence of similarity in value to similarity in location" (Anselin et al. 2000). Spatial autocorrelation is a condition that occurs often because of interrelated underlying spatial processes at work in urban communities.

Anselin (2003 (b)) cites Abbott (1997) and Sampson, Morenoff and Earls (1999) in stating that a, "renaissance of 'Chicago School' type analyses of neighborhood processes has led to the introduction of formal notions of spatial spillovers and dependence." This is the rebirth of socio-ecological neighborhood effects research within a new framework, applying past techniques with ever increasingly specialized and capable spatial statistics methods and software. The link between a place and its neighbors has been well understood by urban analysts, this is the fundamental principle of spatial dependence. Yet, over the past decades, the tools to apply this idea to intra-urban analysis have become

available and refined for this specific task. Anselin, the pioneer of spatial econometrics, explains that, “Conceptually, the principle underlying the resulting spatial dependence is fairly straightforward. However, the precise way in which this dependence should be included in a regression specification to mimic the salient features of the process under consideration is complex” (2003(b)).

Anselin (2003 (a)) brings important reminders to those undertaking a socio-spatial analysis by setting basic premises of how the spatial perspective fits into social science analysis. First, the interaction between many individual agents is what is most interesting to social scientists, not just their behavior by itself. Secondly, that social interaction will have a spatial imprint that can be modeled its self. In this modeling, concepts of social and economic distance are of pinnacle importance as they help to explain spatial dependence and/or spatial heterogeneity. Finally, when choosing spatial scale and distance metrics, distance and relational factors must be explicitly and reasonably defined to prevent false outcomes (Anselin 2003(a)).

Anselin (2003 (b)) warns that past studies have not fully considered the ramifications of misestimating the role of neighborhood effects and not giving them proper consideration, including spillover of effect or spatial externalities. He states, “In real estate economics, neighborhood effects are typically relegated to the error term on a priori grounds, inducing spatial error autocorrelation when such effects show a spatial structure.” In this case, true and important spatial interaction is seen as part of modeling error, not an intuitive process that could help to explain the researcher’s thesis. Anselin goes on to say, “Alternatively, in

neighborhood analysis in sociological studies, any externalities could be constrained to pertain to the neighborhood characteristics themselves, such as crime in one area being a function of poverty in another adjoining areas." The importance of being able to specify the nature of neighborhood interaction will be increasingly important, specifically in social program analysis, but also in all types of neighborhood demography and intra-urban analysis.

Summary

Spatial analysis is a process that can vastly increase the reliability and value of intra-urban analysis in what is now being called socio-spatial analysis. Neighborhood effects and social ecology have been areas where spatial analysis has brought up this new socio-spatial analysis, which combines theory from sociology with methodology from spatial analysis. This fusion is one that has been in the works for some time. Research starting with Shaw and McKay (1942) and being moved forward by Sampson and Groves (1989) has set the direction for socio-spatial analysis, specifically focused on social disorganization theory. Recently, the most important and compelling studies have been from those hailing from sociology. Spatial scientists should take charge of this brand of analysis as it is so critically invested in the methodology of spatial analysis.

Chapter 3: Research Methods and Results

Introduction to the Research Phases

Following this section are five research phases that will examine the data, each building upon the last, in a constant progression toward understanding the fuzzy correlations and baseline operation of sex offenders in the community context of Minneapolis. As each set of test or analysis produces new questions, the research methods for the next question are directly laid out so as to better portray the very linked and chain-deterministic approach used in this study. In essence, the conclusions of each test or analysis drove the next interrogations of the data, in an attempt to understand the distribution in reality and comprehensively evaluate all variables at work.

Phase 1: Neighborhood Effects and Definitions

Introduction

This initial phase of research looks to set the foundation for a larger thesis project that applies critical spatial analysis techniques to the problems of level III sex offenders in the Minneapolis, Minnesota community.

Importantly, this paper looks to show how to begin this type of research and what factors have been ignored in the past. By incorporating very current research and issues in Geographic Information Science (GISci), the study can be carried out in with a quantitative methodology, thereby more clearly attributing data to a conclusion, based not on perception but reality.

The GIS technology and data that are available are a double-edged sword. Perhaps, in a good sense, the easy access to data and visualization allow researchers to easily delve into topics and display data, but is the display accurate? And importantly, are the analysts taking into consideration all of the factors that should be basic tenants of socio-spatial research?

This phase will suggest that, while access to data and visualization tools has become easier and more time efficient, there needs to be greater cartographic, statistical and theoretical grounding in socio-spatial research. Technology has not made map makers and spatial analysts irrelevant the way elevator buttons made elevator attendants. Those who specialize in the

methodology of spatial analysis can ask questions and give insight to the issues of GIS techniques in a way that is often passed over by other social scientists. This research will show some of the questions that need to be addressed in the formative stages of socio-spatial analysis.

Community sex offender management is a topic that is has wide implications for all of a society. Policies that limit the rights of the offenders are designed to increase public safety and reduce recidivism. However, these policies are often tied to a public emotional reaction from such unfortunate cases as Jessica Lunsford, Megan Kanka, Dru Sjodin and other victims of predatory repeat sex offenders. But are the laws that currently govern sex offenders in the community effective at reintegrating them into society and thereby reducing recidivism? A critical spatial analysis of the factors affecting sex offenders and where they live is necessarily important in understanding this issue in a factual, reality-based way.

Hennepin County, whose largest city is Minneapolis, is responsible for the management of 52% of the level III sex offenders in the state of Minnesota while only comprising about 22% of the state's population. This disparity is even more exacerbated when looking at Minneapolis proper. The city houses 46% of the state's offenders with only 7% of the population. One neighborhood in Minneapolis houses more sex offenders than any other single county. These statistics were relayed in a 2004 report by the Hennepin County Criminal Justice Coordinating Committee as part of a cry for help. The problem they explain is that many of these dangerous offenders are living in some of the most

disenfranchised neighborhoods in the City of Minneapolis. The report notes that this often leads to relapse into the thinking errors and criminal mentality of past and therefore increases recidivism.

At that point, public safety is not well served by dangerous predatory offenders living in disenfranchised communities. Other studies in other urban areas have revealed similar findings (Mustaine et al. 2006; Levenson and Cotter 2005). Not only that, but the Minnesota Department of Corrections (2007b) found that of the 224 level III sex offenders that were released between 1990 and 2002, and who recommitted a sex-crime by 2006, none of the acts of recidivism would have been prevented by even the strictest residential restriction in the country. These residential restrictions are placed to keep offenders from living within a certain distance of schools, parks and other victim pools. In Minneapolis, the restriction is 1500 feet from schools, although the buffer can be encroached upon by approval of the Hennepin County Community Corrections Department. This is the type of policy that has been put in place recently to deal with sex offenders and as shown the MN DOC (2007b), it does not appear effective.

By using spatial analysis techniques that address some of the fundamental problems of GIS representation, quantitative analysis can be performed on this dataset which can show the results of current policy and implication. With accurate information, decision makers, community organizations and the public at large will be able to better understand the

consequences of certain policies and perhaps evaluate the issue on a less emotional and reactionary level.

Methods

This project uses data from three main public sources. Offender information can be obtained through the MN DOC's level III sex offender search engine. By searching Hennepin County, I was able to create a .DBF table of offender residences and id number's along with race data. Other biographical information, including offense history, was available but not pertinent to this study. By putting this information into a table that can be loaded into ArcMap, the data can then be geocoded and displayed. The limitations of this data set are that the last two digits of the street address are truncated for privacy issues, leading to some ambiguity when an offender's address is on the boundary of a block group or tract, etc. For example, an offender at 1821 Portland Ave S. would appear in the data as 1800 Portland Ave. S. For the scale of the study area of the thesis research, this is of insignificant value, half a block, or a shift of a zone, should not have a significant impact on the overall pattern of settlement. In addition, the use of muti-scaler units should maintain the importance of the lowest level units (Mu and Wang 2008).

Road network data was used from the Minnesota Tele-atlas data set which is more current and precise than the Tiger road files. This data matched the 66 offender's addresses to 100% confidence. Data for school polygons, waterways, airports and other land features came from this atlas as well. The Metropolitan Council GIS Café had the necessary files for determination of

municipal boundaries within Hennepin County. The ESRI Tiger 2000 download page provided the census unit Shape Files and the overall SF1 demographics table. The Crossroads Resource Center provided a Minneapolis Neighborhoods Shape File. All files that required were projected into Universal Transverse Mercator 1983 Datum (Zone 15 North) projection for interoperability.

The goals of this phase are:

1. Create and display the necessary layers for analysis of level III sex offenders, demographic characteristics and areal units in Hennepin County, MN.
2. Explore the issues of study area choice in relation to arbitrary units.

Goal 1:

Display and organization of the layer is a straightforward process that involved basic GIS techniques. The process of geocoding the sex offenders to their residence locations has been explained earlier. A layer was created by adding a 1500 foot buffer to the school polygons layer using Euclidean distance. Also, the SF1 files for tracts and block groups were joined so that certain demographic features could be explored.

Overall, this was a fairly straightforward and relatively simple goal to accomplish, however it took time and provides a helpful case for expanding a baseline understanding of the ArcMap environment, along with the logical reasoning for many of the functions and their order.

Goal 2:

The choice of a study area is important to any research and in the case of level III sex offender research the choice has often been at county levels. Little justification has ever been given for this choice however, it is logical for some areas. Counties, in most states including Minnesota, handle sex offender supervision and registry. Also, most cities lack the resources to do these duties and many counties are considered homogenous. Counties are also a long trusted and used unit of analysis by social scientists in the past. Today, this is very much changed. Serious analysis of local events or patterns requires a lower level of analysis and most recent research has reflected this. Counties are neater study areas because of their importance to the census and its many datasets. Using a municipality requires every layer to be tailored to that municipality and sometimes all units do not share the same boundaries. Other units that might be used could include zip codes, police precincts and neighborhoods. These units as a study area are small and not useful for a larger analysis. Therefore, in the past, similar analyses of sex offenders have chosen counties.

However, the original assumption of the underlying thesis research presented here was incorrect after basic analysis. Counties are not always the best study area for socio-spatial analysis, especially when the county is heterogeneous in many ways, as Hennepin County is. Hennepin County contains some of the highest density urban areas in the state along with suburban neighborhoods and row crop agriculture. The most exclusive neighborhoods of the Lake Minnetonka area contrast with the poorest crime-ridden areas of North Minneapolis. A map of the county shows the cluster of

level III sex offenders in Minneapolis, a few dispersed throughout the inner-ring suburbs and the lack of any of these offenders in the larger, more affluent expanse of the county.

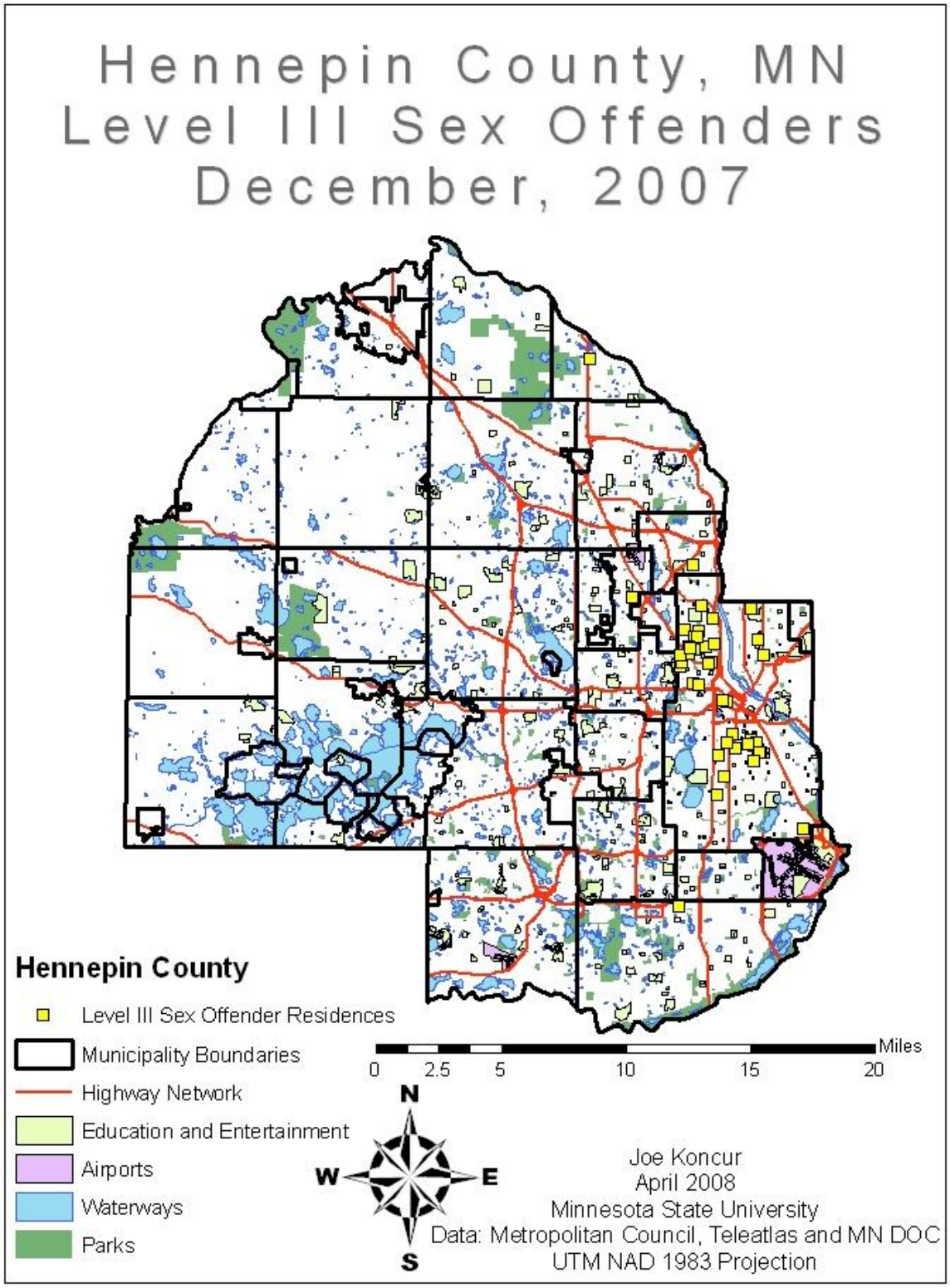


Figure 3: Sex offenders exhibit a clustered pattern in Minneapolis and the nearest inner-ring suburbs based upon visual inspection.

Results

Another significant factor that ultimately persuaded this researcher to focus on the City of Minneapolis rather than Hennepin County at large was the neighborhood organization of Minneapolis (see Figures 5 and 6). The city is divided into neighborhoods that have identity to their residents. Signage welcomes one to a neighborhood and people have a sort of neighborhood citizenship. Some of these neighborhoods are known for their many problems such as Jordan, Phillips and Willard-Hay. However, other neighborhoods have created enclaves to themselves such as many of the lake-adjacent southern neighborhoods. These reasons, organization and disparity, are convincing evidence that Minneapolis may be treated as its own study area. This conclusion is bolstered by the findings from the ethnic clustering to follow.

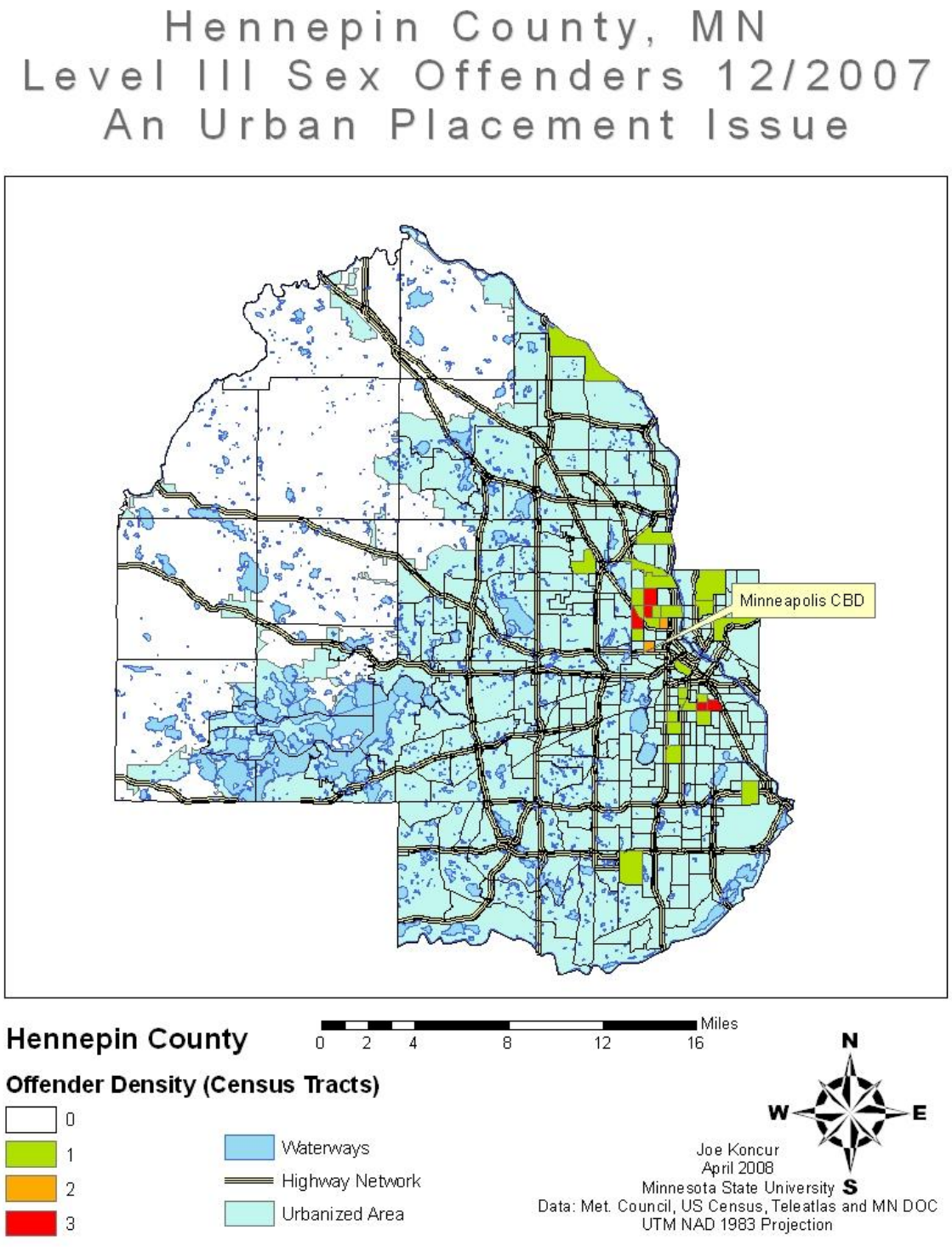


Figure 4: Hennepin County has a significant non-urban land use area. However, level III sex offenders in the county all reside in urban areas, casting further doubt that the county is a non-arbitrary areal unit.

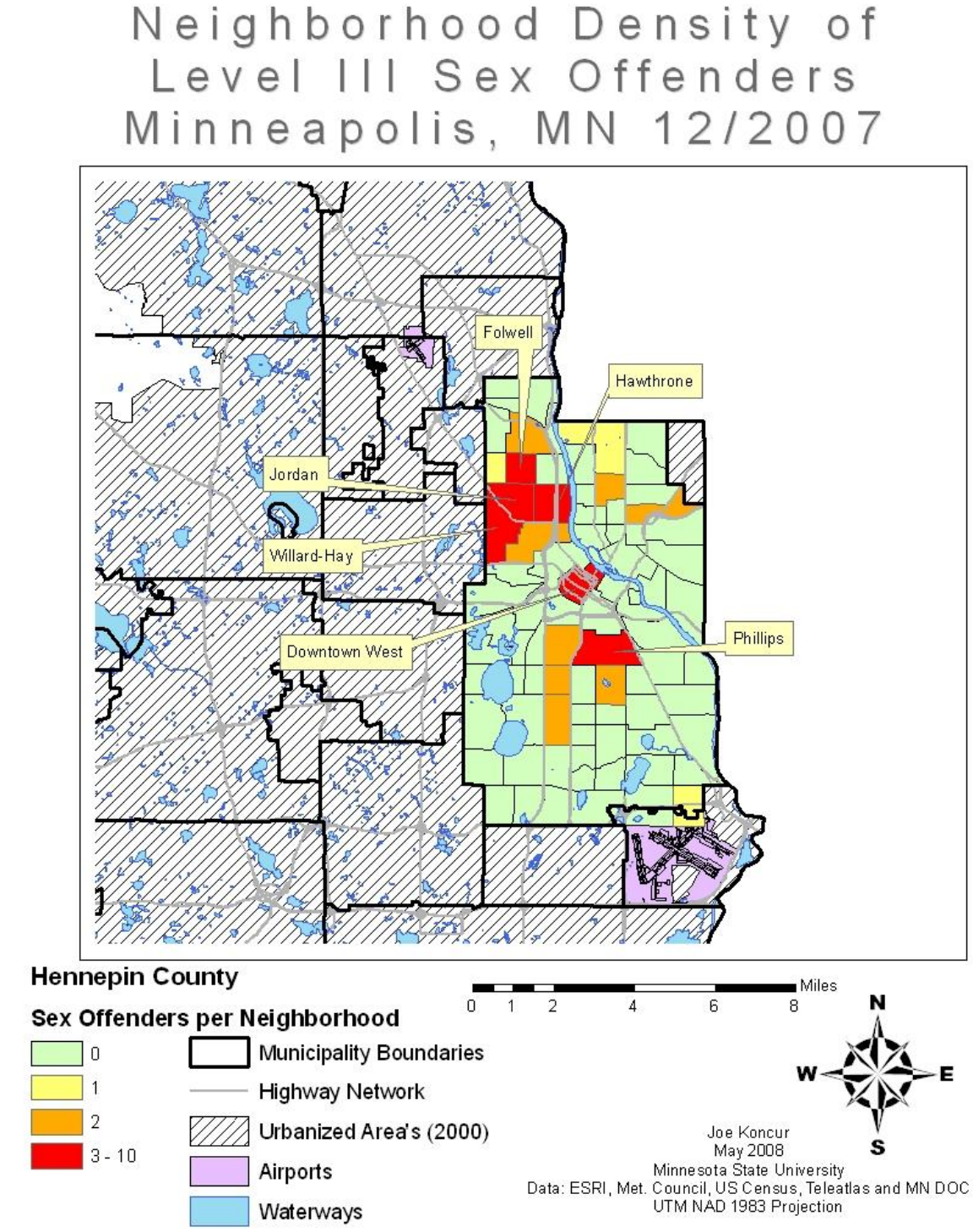
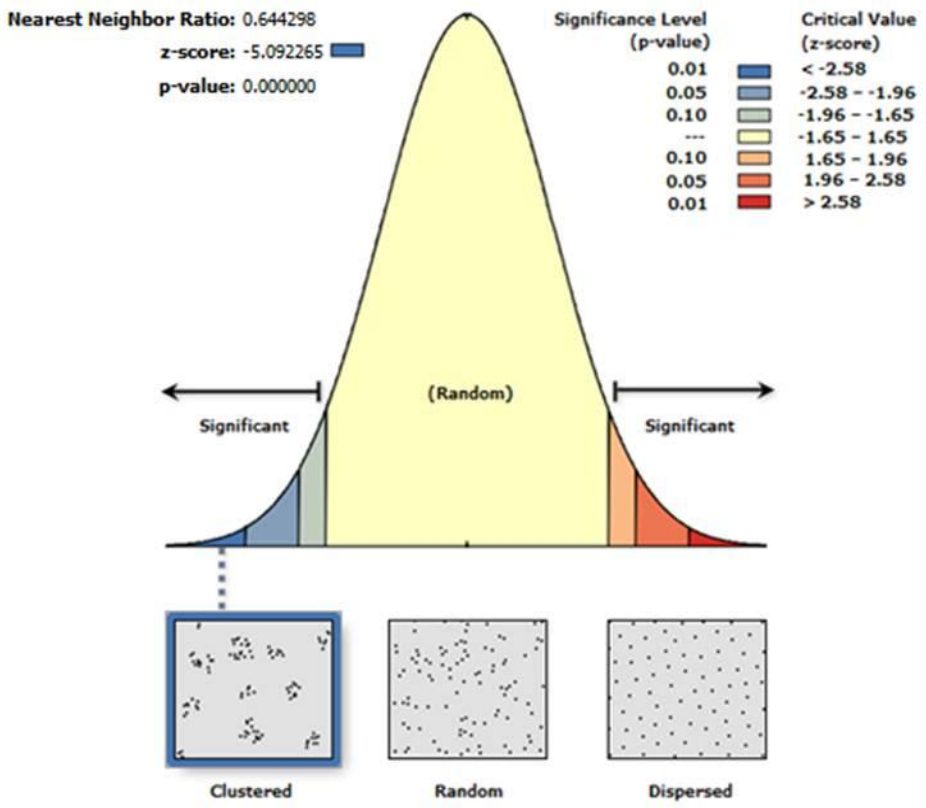


Figure 5: The concentration of offenders in Hennepin County residing within the city limits of Minneapolis allowed the study area to be redefined for meaningful analysis. In addition, the neighborhood structure of Minneapolis provides another structure for analysis.

Average Nearest Neighbor Summary



Given the z-score of -5.09, there is a less than 1% likelihood that this clustered pattern could be the result of random chance.

Average Nearest Neighbor Summary

Observed Mean Distance:	395.120029
Expected Mean Distance:	613.256472
Nearest Neighbor Ratio:	0.644298
z-score:	-5.092265
p-value:	0.000000

Figure 6: Results of a nearest-neighbor analysis for offenders in ERSI's ArcMap showing the pattern of offender residence settlement is non-random and clustered. The high low nearest neighbor difference shows that offenders are likely to live close together than a randomly sampled population at a significance level (p-value) of less than .01.

Summary

This phase has shown that the choice of study area for socio-spatial analysis does not necessarily need to follow the past choices. Certain local conditions can make study area choice important, keeping it relevant. Also, the MAUP problem exists even at changes between the block group and census tract level, and using the lower level data can make a more precise and accurate study. However, for comparison with other existing and pending research, the use of census tracts is more widely accepted and helpful in cross-regional understanding. What might be lost in the simplification and generalization that occurs in the use of census tracts over block groups can be interrogated using qualitative methods to understand outliers, incongruences and those tracts that beg questions. Importantly, this project has set the framework for a larger study and identified some of the issues and limitations of each method. Ethnicity appears to be a strong dependent variable of social disorganization theory and should be statistically evaluated as a determinate factor of such.

Making clear the choices that a researcher makes in setting the framework for any socio-spatial analysis is now shown to be extremely important. Issues of arbitrary boundary, whether they by study area or areal unit size, need to be considered and justified for intra-urban analysis. This exercise has prepared the framework for a more comprehensive study on the ability of social disorganization theory to explain the residential locations of level III sex offenders.

Phase 2: Exploratory Spatial Data Analysis of Social Disorganization in Minneapolis Neighborhoods

Introduction

Exploratory Spatial Data Analysis (ESDA) is a set of methods of that allows relationships to be understood inclusive of the spatial reality in which everything occurs. In the case of social interaction, nothing happens within a vacuum and therefore, every action can be seen to have an effect on the surrounding community. Different actions have different accompanying reactions and places too can play determinate roles in the social outcomes that are important to analysts and decision-makers.

No more important social outcome exists than public safety, especially from dangerous predatory individuals. Risk level III sex offenders are a group that is considered potentially dangerous to the community. Their rehabilitation requires not only their dedication but also the help of a community to help them find a reasonable standard of living and become invested into the community rather than to wallow in its shadows, walking perilously close to returning to a more comfortable and familiar life of seeking anonymity to allow their criminal actions.

In Minneapolis, MN, the state's largest concentration of these offenders is taking residence, following a clustered pattern, in neighborhoods that are commonly known to be dysfunctional, impoverished and disenfranchised. A single neighborhood in Minneapolis had more sex offenders than any other county in the state and the city often houses over half of the state's level III offenders (Hennepin County Criminal Justice Coordinating Committee 2004).

One excellent method of attempting to understand this problem is through the ecological lens of social disorganization theory (Shaw and McKay 1942). For one of two reasons, the pattern of sex offender settlement is non-random. Either, offenders are pushed from certain areas and thereby relegated into areas that are the least desirable, or they are choosing to live in these places, essentially a pull factor of anonymity (Mustaine et al. 2006). If offenders are choosing to live in socially disorganized communities then it would make policy-sense to work to improve these communities and mitigate the concentration of the offenders in these areas. However, if they are being relegated to these areas then the policy goal should revolve around better rehabilitation planning and working to address suburban laws that often prevent an offender from living anywhere inside of a city. Dispersal should be the goal from a management perspective, and is required from a legal standpoint in Minnesota.

In either case, or both, the decision maker needs strong evidence that there is a correlation between negative social attributes of a neighborhood and its propensity to be a settlement area for level III sex offenders. Then outliers, exceptions and a general rule can be constructed to better understand the role of

social disorganization in Minneapolis communities and its effect on successful offender reentry to society as a productive member.

This analysis will use some of the techniques available in ESDA to demonstrate many of the characteristics of Minneapolis at the census tract level. Sampson and Groves (1989) is widely cited as a classic methodology for determining social disorganization. Their method will be adapted and used as part of this analysis to suggest further research directions and to determine what level of accuracy social disorganization theory explains the distribution of level three sex offenders.

One of the best ways to interrogate a set of potentially correlated data is through Exploratory Spatial Data Analysis (ESDA). ESDA is defined by Anselin (1999(b)) as "a subset of exploratory data analysis (EDA) (Turkey 1977), but with an explicit focus on the distinguishing characteristics of geographical data. It is a collection of techniques to describe and visualize spatial distributions, identify atypical locations or spatial outliers, discover patterns of spatial association, clusters or hot spots and suggest spatial regimes or other forms of spatial heterogeneity." In essence, ESDA looks to add the spatial dimension to research that is focused on merely objects or actions individually. This individual approach often ignores the interaction between agents that defines spatial thinking (Anselin 1999(a)).

With that in mind, this analysis looks to better understand the relationships between community attributes and the presence of level III sex offenders. The

first primary goal of this analysis is to show the relationship between levels of social organization and offenders in the neighborhood. Veysey and Messner (1999) criticize social disorganization theory for not having a direct measure of social organization. This lack of a singular determinate creates many epistemological and definition problems for the theory that has been so far held together by loose threads of empirical work. However, the idea of social organization is very applicable to society and has maintained its popularity after its 1980's resurgence due to its relevance as an explanation for many social problems, especially crime.

This study moves down a relatively new path of research applicability of social disorganization. Mustaine et al. (2006) were the first to analyze the settlement of sex offenders in relation to levels of social disorganization in the neighborhood. Questions of neighborhood structure, effects, causality and differentiation are all waiting to be addressed. ESDA as a methodology allows the researcher to generate some fairly high-powered statistical relationships with basic data. This is the appropriate starting place for understanding the somewhat undefined social processes that are reflected in social disorganization theory (Veysey and Messner 1999).

Methods

The most integral part of a research project happens as the methodology is designed and most often revised as the study takes place and the knowledge and experience of the researcher increases, or to account for systematic issues that could not have been foreseen and increase the accuracy and reliability of the

result. What has been suggested as a problem in past surveys of neighborhood ecology is an issue of scale. This study has addressed areal unit choice in socio-spatial analysis often and comprehensively as it is a priority issue for geographers. Pleading ignorance to a choice of analysis unit is not acceptable and working within the confines of available data, this specific survey will use the census tract as the unit of analysis. The great inferential leap being made is that a census tract is somewhat representative of a neighborhood or social area. With that issue decided and accepted, the data preparation for this specific analysis can begin.

Sampson and Groves (1989) used eight sub-sets of variables to calculate a neighborhoods social disorganization. They used the British Crime Survey (BCS) and community areas as an areal unit. The community area was a unit of about 10,000 persons, which is 2-10 times larger than the census tracts to be used for this analysis (Minneapolis tract mean in 2000 was 2131 residents). The BCS data used for the first four sub-sets have relatively similar fields available in the US decennial census SF1 and SF3 files. The second four sub-sets are single questions that are not calculable using the US Census. They relate to organizational participation, unsupervised youth peer groups, local friendship networks and urbanization. Urbanization was omitted in this study because it was a 1 or 0 value and the present study area is completely urban. Later study will examine racial/ ethnic heterogeneity to understand if it does follow the expected pattern. On first analysis, increased levels of heterogeneity suggest greater numbers of sex offenders.

With that being specifically analyzed uniquely, this survey targets the three conglomerate factors of socio-economic status (SES), residential stability and negative family disruption.

Socio-Economic Status (SES): SES was calculated in the same manner that Sampson and Groves (1989) calculated their measure. Z-scores were calculated for three census variables: college degree holders, those employed in a professional or managerial position and family income.

Residential Stability: The original study was able to use a variable in the BCS that asked if a respondent had grown up within a 15-minute walk of their present address. However, such an option does not exist in the US Census. Therefore, the z-values for those who had owned their residence more than 5 years was combined with the z-score for renters in the tract. Mustaine et al. (2006) used renters as an approximation of residential stability and found that current trends (at the time of their study) made this a potentially unreliable variable for stability. However, current economic trends, including a less fluid housing market, may make this relevant in the near future.

Family Disruption: This variable was calculated in the same manner as the data from the BCS and US Census both provide information on divorced, separated and single parents. The amount of divorced and separated residents was divided by those whom had ever married. The results were standardized in z-

scores and added to the z-scores for single parents with children. Mustaine et al. (2006) used only head-of-the household females with children as an indicator for family disruption.

Following in the path of Sampson and Groves (1989) and Mustaine et al. (2006), this survey examines the three key variables of social disorganization and their relation to level III sex offender's residences. A variety of techniques are used. GeoDa, a program explicitly for ESDA, as well as the available tools for ESDA in ArcMap are utilized.

Results

These three scores were then analyzed for patterns in ArcGIS and Geoda. A Moran's I test on each of the three variables shows that there is little chance that the observed data could have been the result of a random process. Thus, the data is spatially dependent. The results of the analyses are represented in Table 1.

Table 2: Results of Moran's I analysis in ESRI's ArcMap for each tract's attribute value; a test for spatial autocorrelation with the preliminary data indicating very high levels of correlation.

Variable	Moran's I	Z-Score	Pattern	Significance Level
SES	0.14	13.57	Clustered	0.01
Residential Stability	0.03	3.91	Clustered	0.01
Family Disruption	0.12	11.84	Clustered	0.001

GeoDa (1998) is a tool specifically designed for ESDA. One inputs a shape file and is able to calculate and visualize many indicators of spatial autocorrelation and value. GeoDa also allows the user to specify a spatial weights matrix for use in local spatial analysis (those that differentiate by neighbors, rather than global which suggests all zones are linked at the same level of influence). For this ESDA, each single variable was analyzed with respect to its correlation with the number of level III sex offenders in the specified tract. The output, shown below, was in both map and Moran scatter plot format.

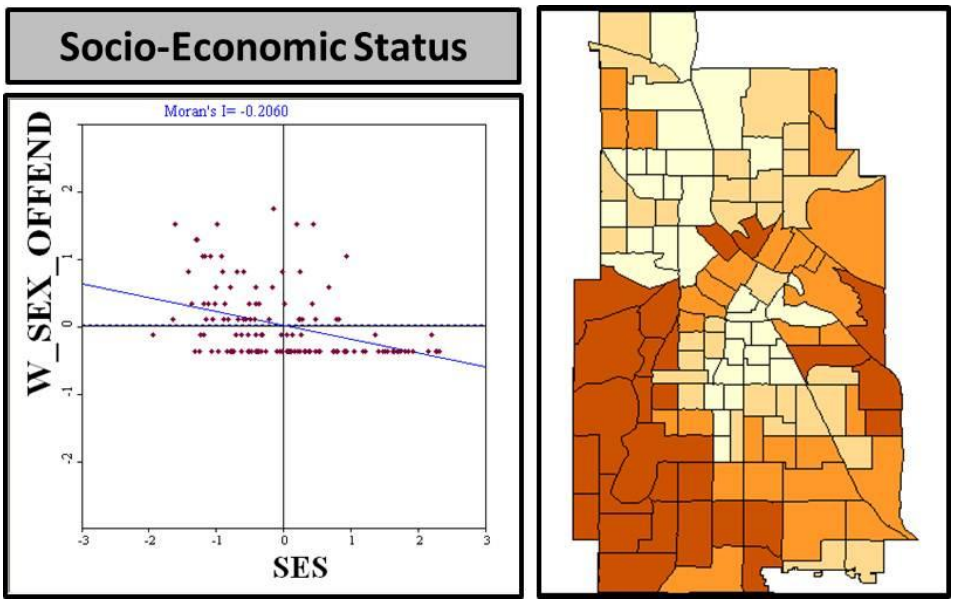


Figure 7: The relationship between SES and sex offenders. Moran's I= .2060. As SES decreases, offenders increase. On the map, dark colors indicate high SES, light showing lower values in expected regions. An important data point is the Folwell neighborhood of North Minneapolis which is a buttress of higher SES just north of the low-value homogeneity in the Jordan neighborhood.

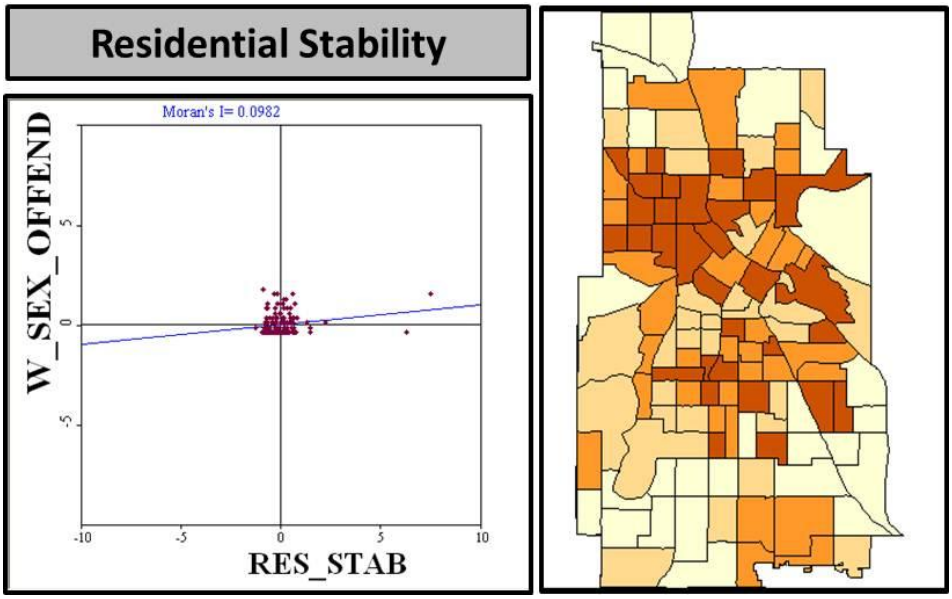


Figure 8: The relationship between residential stability and sex offenders. Moran's I= .0982, significantly less correlation than SES and family disruption. Dark color indicates high levels of instability, Light showing lower values in more stable regions and those with fewer renters. As this map shows, this factor of social disorganization continues to be controversial and the preliminary data suggests it may have the weakest correlation of the three components.

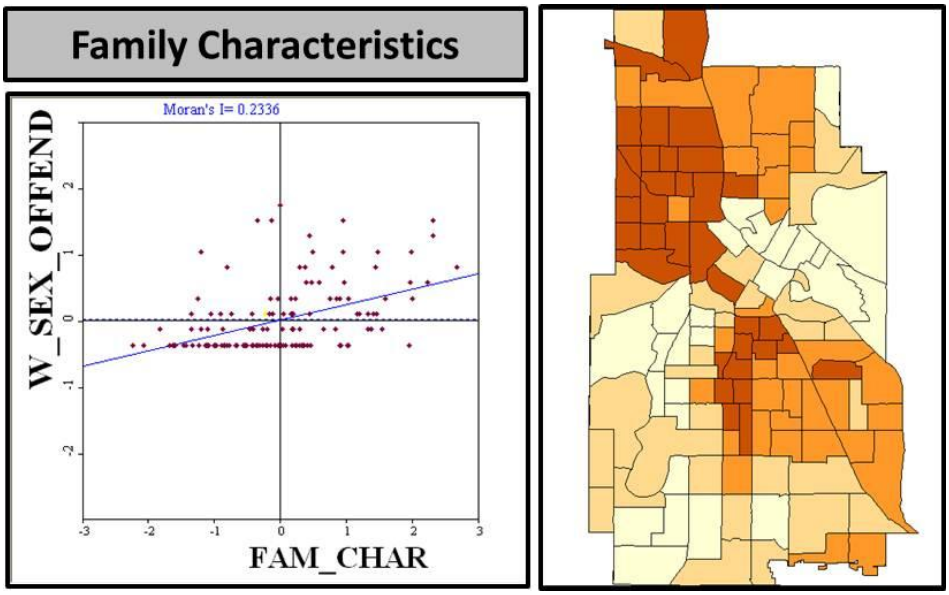


Figure 9: The relationship between family disruption and sex offenders. Moran's I= .2336, the strongest correlation of the three variables, as can be seen through visual inspection of the maps as well. Dark color indicates high levels of family disruption. The lighter tracts have fewer divorced, separated and single parents. This map clearly shows the two hearths of disorganization-influencing family characteristics, in the northwest and southeast. Also noted is a strong level of distance-decay in the southern part of the city.

The goal of this research is to better understand the process and the outliers of the data set. That which might be seen as an error term, in this analysis, is quite important. Neighborhoods with scores that suggest they are highly disorganized, yet with low populations of level III sex offenders beg many questions. This analysis is specifically looking for those neighborhoods that buck the expected trend of results. To organize the neighborhoods based on like value, K-means analysis is used. The user can use the K-means macros in ArcMap to categorized and cluster the census tracts based on both value and spatial location. The user interface allows the three variables of social disorganization to be input and the user selects how many cluster outputs are desired. Based on past work, three and four cluster outputs were selected with the three-cluster output most helpful (a fourth cluster does not help to explain the trend any better). Figure 10 shows the output of this clustering, interestingly showing that the census does pick up high values of disorganization in some of the CBD areas of Minneapolis which will be found to house large transient and homeless populations. The US census is often criticized for undercounting or missing homeless and minorities, but this seems to indicate that these populations were noticed as this is the location of the lowest disorganization scores, and a transient or homeless population would be indicative of those extremely low scores. The weakness of this method is that it is not clear about what variable has the most impact on each tracts value. For example, because this is a composite map, Figure 10 does not indicate if those areas labeled as 'High' are ranked in that manner due to an extreme value in one component, or if

they truly have high values across the board. This would require more research, and poses some valuable research questions

The Local Moran's I clustering function in ArcMap is useful for finding zones of correlation between two variables. In this case, the variables are offenders and level of social disorganization. High levels of offenders and high levels of disorganization do show up, center to the two hearths that will be analyzed in this research. Figure 13 shows these two areas as noted in their black coloration. Those labeled in black have high values for disorganization and level III sex offenders, a H-H relationship. Insignificant value relationships dominate the map, with the exception of one tract near the CBD, labeled as High-Low. After more detailed analysis, conducted later on in continuing depth, this tract has a high density of offenders, but a low value for social disorganization. This indicates something that is not covered in the theory acting on this tract, and it turns out to be a homeless shelter/halfway home, Catholic Charities, at 1000 Currie Ave.

Hot spot analysis is important in understanding where offenders are located, especially in regard to how that is impacted by social disorganization levels. The Getis-Ord Gi* tool in ArcMap is helpful in creating a visual representation of where high values for variables are located and what the extent or reach of clusters are. Figure 14 demonstrates this and shows the relative separation of the clusters from one another. Three distinct hot spots emerge (called clusters in the rest of this analysis). There is one that is centered on the Jordan neighborhood of North Minneapolis. There is a central cluster in the

CBD, which will be examined for its relevance as an outlier. The other main cluster is centered on the Phillips neighborhood of South Minneapolis.

Further work is necessary to understand the nature of these clusters, but in this phase the layout of the phenomena (offenders and social disorganization) has been accomplished in a way that shows the correlation between these two sets of data in a visual manner.

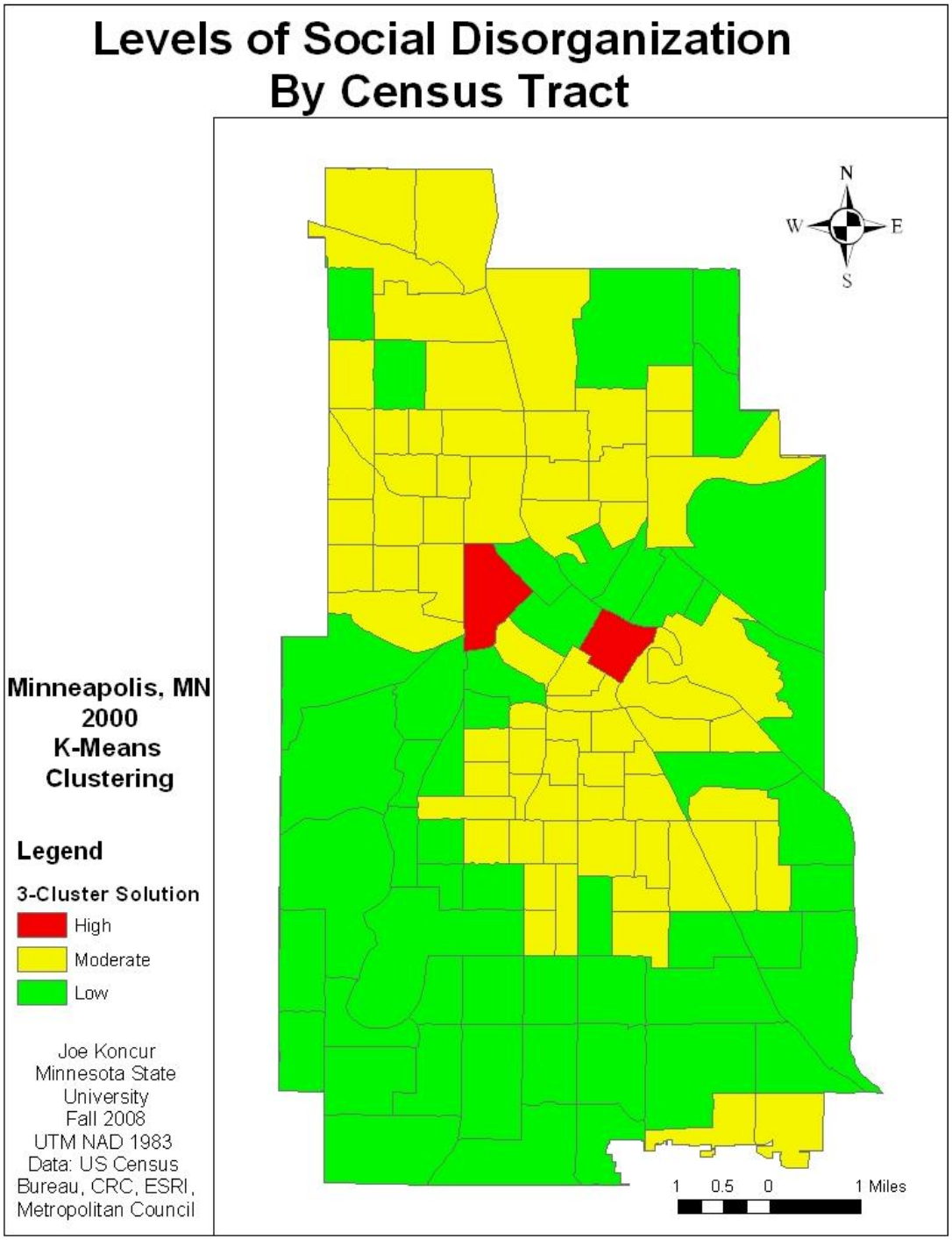


Figure 10: This map shows the preliminary level composite of social disorganization calculation for Minneapolis census tracts (2000 data) after undergoing a k-means hierarchal clustering analysis. This analysis supports the two-hearth model that is visually apparent with some neighborhoods in the central business district breaking connectivity between the two clusters.

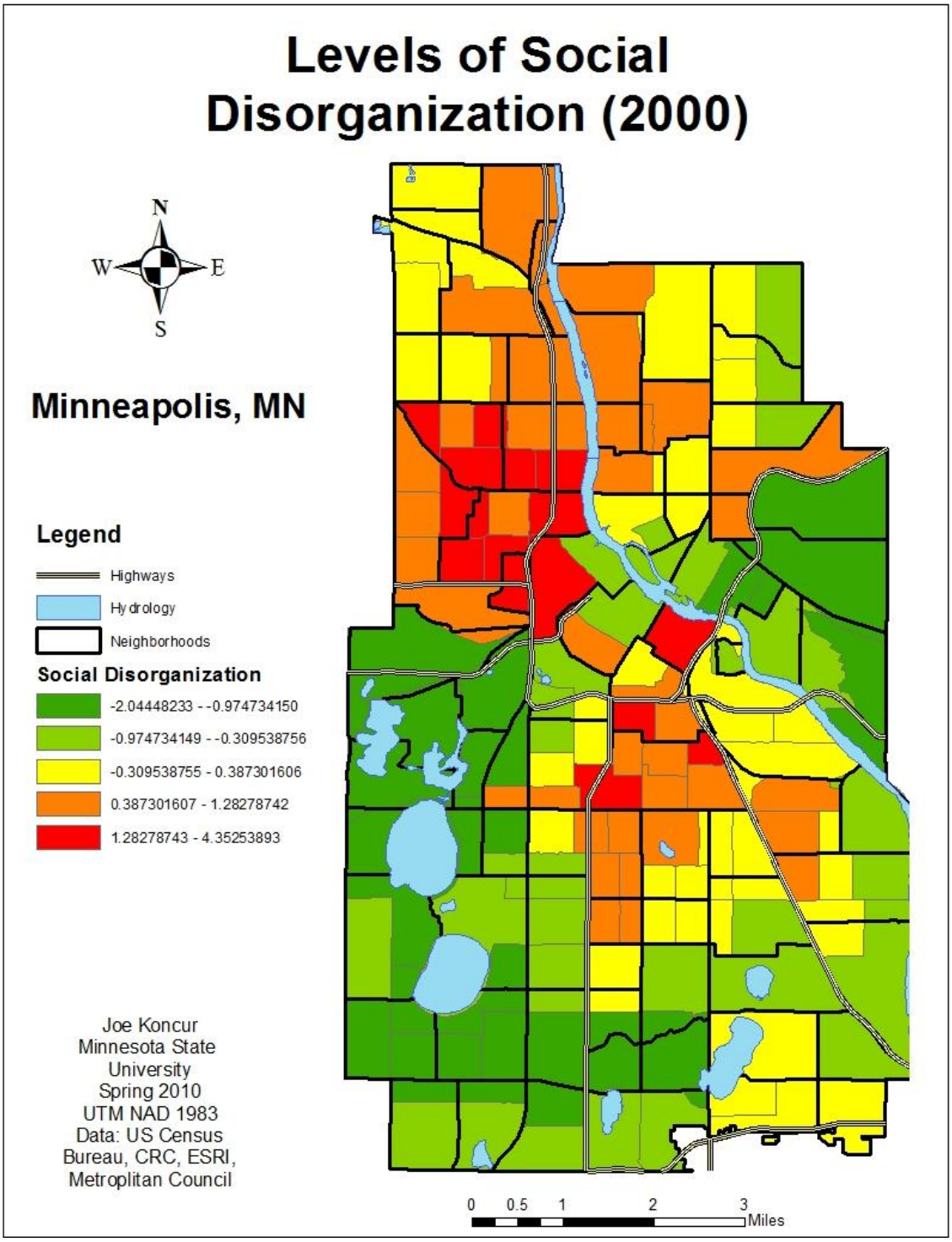


Figure 11: This map shows the final calculated composite levels of social disorganization for Minneapolis census tracts (2000 data). Comparison with the previous map demonstrates the important two-hearth concept in a more refined way. This map (and the previous) suggests that treating both hearths similarly would be incorrect as there is not the requisite connectivity to make the association.

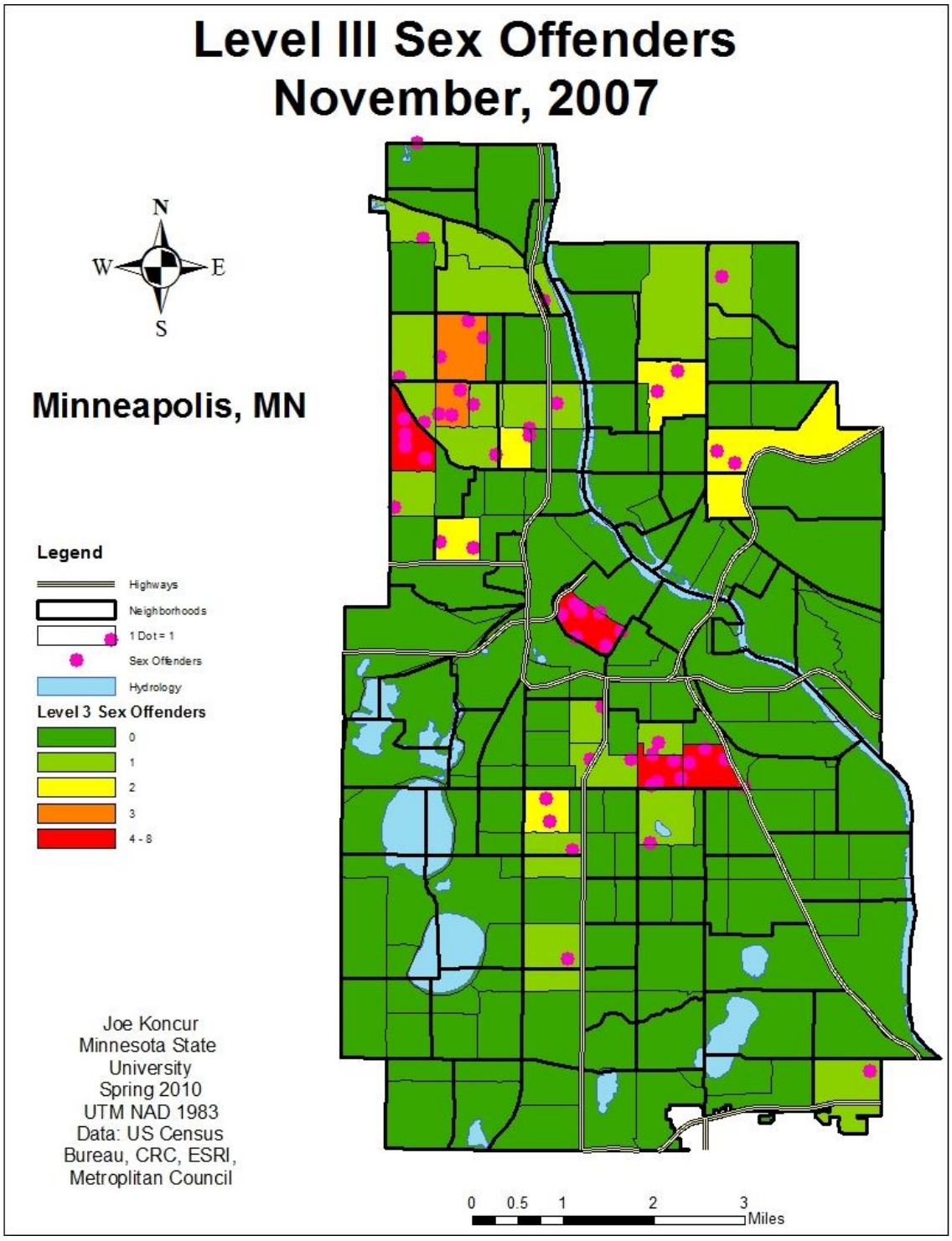


Figure 12: This map shows offender residential locations. The compact nature of the southern cluster is evident with much more dispersion visible in the northern portion of the city. The high level of offenders clustered in one central business tract is due to the availability of homeless shelters in this tract. Most prevalent was the 1000 Curie Ave. address, which corresponds to a Catholic Charities shelter.

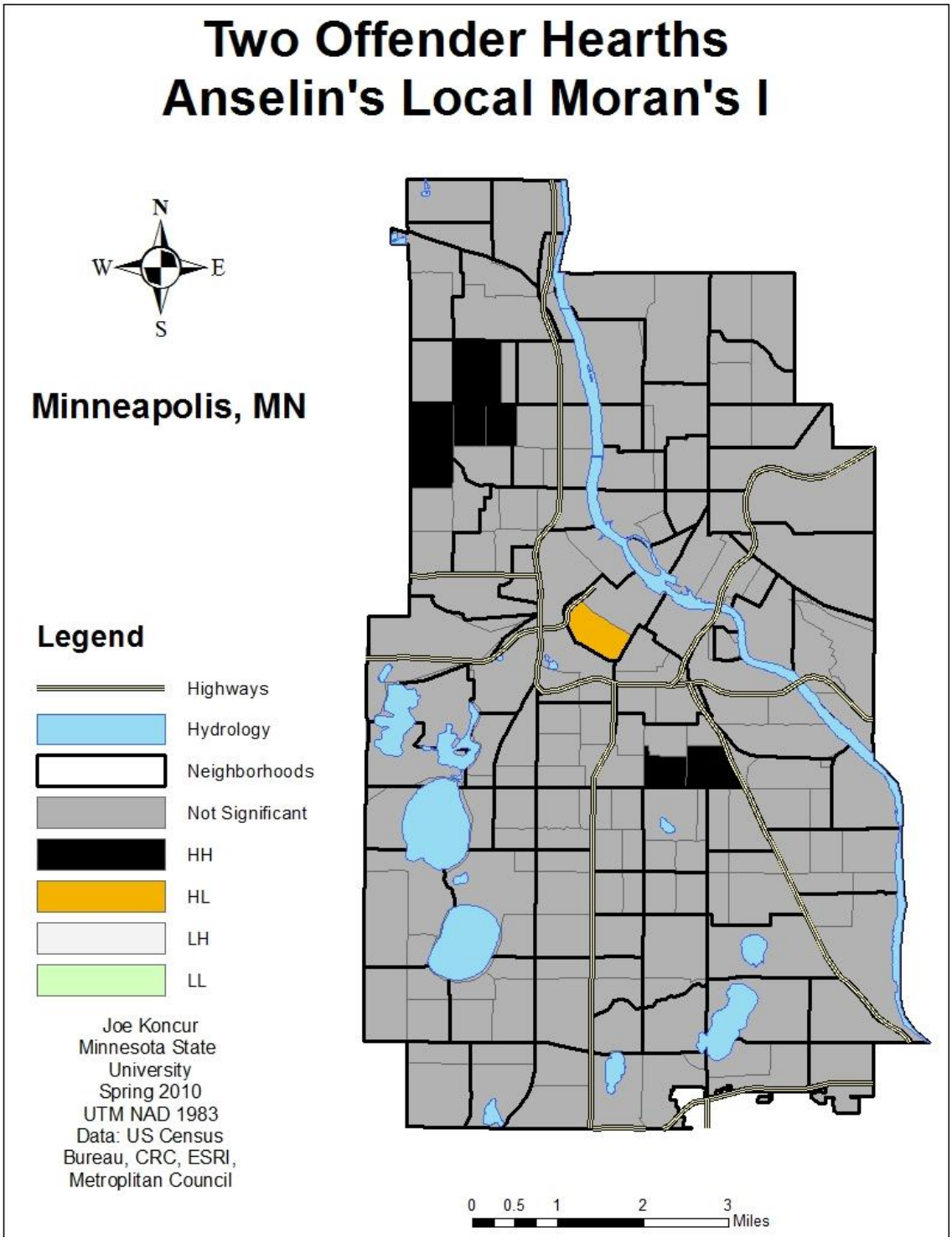


Figure 13: This map shows those tracts (in black) that have a significant high value of offenders with neighbors that have high values as well. This map clearly defines the two hearths of offender settlement. The North cluster includes portions of Jordan, Folwell and Willard-Hay neighborhoods. Phillips is the hearth in the south with the CBD tract as an outlier.

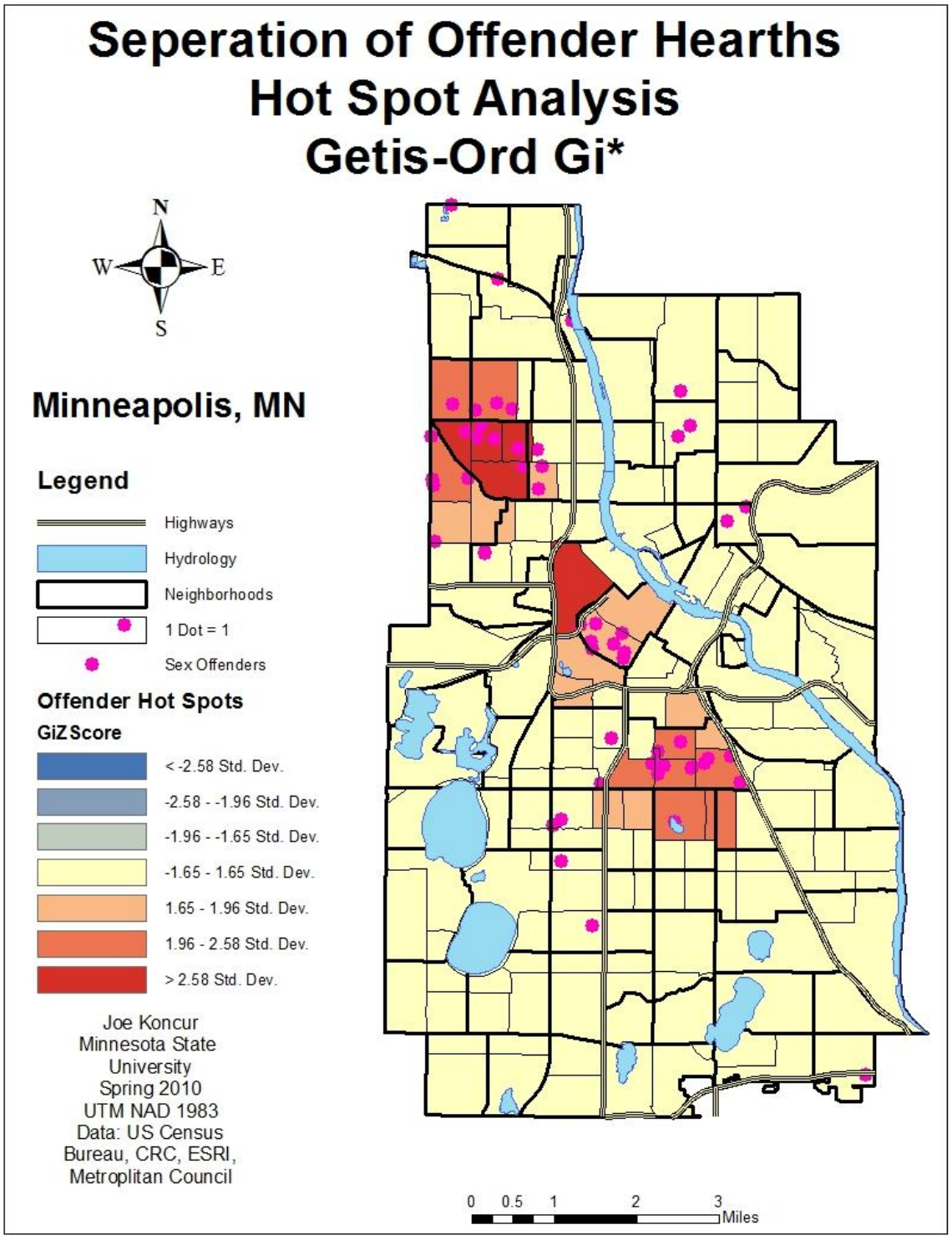


Figure 14: This map shows the result of hot spot analysis (Getis-Ord Gi*) applied to level three sex offender residential locations and social disorganization. It shows the two distinct hearths while also creating more ambiguity in the central business district, showing limitations of the models capability to explain the unique distribution along the boundary of a single tract.

Summary

ESDA is an important methodology for analyzing basic spatial distributions and correlations. Appropriate research can be formulated more precisely after ESDA techniques are applied. This study found that while there is a relatively small population (compared to the population as a whole) of level III sex offenders in Minneapolis, MN, their distribution asks many questions. Social disorganization theory may have answers to the problems faced by sex offender managers in Minneapolis, however; the theory is not without flaw. The relevance of residential stability, as presently calculated is suspect and requires further analysis.

Though the theory has shown problems with the concept of residential stability, the other two variables were fairly good predictors of where level III sex offenders might congregate. The outliers will receive more attention in a follow-up work to determine the nature of neighborhood spatial relations. Importantly, the relevance of Minneapolis's neighborhood system can be tested through evaluating whether tracts falling within a neighborhood are more alike or dissimilar. The similarity between the tracts within the statutory neighborhoods will be compared to that of those neighboring but in differently named communities. For example, the variation in the Phillips and Willard-Hay neighborhoods, as outlined in the map above beg questions about the structure of those neighborhoods where some tracts have alarming numbers of offenders where neighboring have none. An intra-neighborhood analysis is needed. This

analysis can further the understanding of the strength of community in Minneapolis as to shared values and collective efficacy.

Overall, social disorganization is an applicable theory to the problem of sex offender clusters. A better understanding of residential stability is needed along with an improved metric for its calculation. However, the locations of level three sex offenders is correlated to SES and family disruption, along with the important ethnic/racial divisions that were identified previously. Level III sex offenders have a low population and this analysis suggests that while outliers should be analyzed, the general characteristics of a neighborhood may well determine its accessibility and desirability as home to a newly released offender.

Phase 3: Ethnicity as a Variable of Social Disorganization Theory

Introduction

This project allowed for an important an interesting diversion into an analysis of the role that ethnicity may play in determining levels of social disorganization in Minneapolis. Up front, it should be made clear that ethnicity is the proper term for the phenomena being studied here. Yes, the US Census uses the term “race” and this is a common misnomer. Race is a concept without scientific status and undeserving of re-affirmation in this work. One clear local example of the invalidity of this concept is the African-American vs. more recent African immigrant communities in Minneapolis. Both have very unique social structures and have little more in common than pigmentation. In fact, the Somali-American community and African-American communities are relatively segregated from each other and have few shared experiences. As to combat the further use of incorrect term ‘race,’ this study will use the term ethnicity. Clearly, ethnic divisions are much more fractious and diverse than can be evaluated by the US census. There is not an easy solution to this problem for the US census, though there should be re-evaluation of the terminology as it is inaccurate. The failed and divisive concept of race will not be referenced in this study and the more accurate term ethnicity is used in its place.

Ethnic variation has been listed as a compounding factor to social disorganization for a number of reasons. However, local conditions will drive the impact of this factor and may actually show it to be moot point in some regions while a significant indicator in others. Oakes (2004) states that this is a serious problem in current neighborhood effects research because identifying the truly independent variables which can lead to an understanding of causation.

There is also a line of thinking in social disorganization research that asserts the use of ethnic or racial characteristics of a region is duplicative in nature because it is a result, in some areas, of the processes that create disorganization and therefore is not an independent variable, rather a dependent variable, just as social disorganization is of a larger community structure. In Minneapolis, a city that until 1980, had little non-white minority dominated neighborhoods to speak of, there is a clear correlation between where sex offender's live and where ethnic heterogeneity occurs. Even more so, there is a correlation between the locations of registered level III sex offenders and neighborhoods that are dominantly black. On the surface, ethnic heterogeneity may be a viable determinate of social disorganization, however further review is necessitated to ascertain if it is a true contributor.

This phase will use a hierarchal clustering macros template that can build clusters from zone and point data (Kim 2008). It will allow the use of multiple definitions of neighborhood to be tested to see if the MAUP is present, and to what degree. Does the choice of one areal unit (neighborhood definition) create significant issues that cannot be overcome?

The goals of this phase are:

1. Explore the issues of the Modifiable Areal Unit Problem (MAUP) as it applies to a comparative analysis of different scales of demographic analysis (Openshaw and Taylor 1979).
2. Analyze the effect of ethnicity as a variable of social disorganization theory and neighborhood construction.

Methods

To determine what level of dependence or independence the 'ethnicity or ethnic heterogeneity variables' may play in a cumulative social disorganization index, the first step is to display know data and create clusters of like domains. This will allow outliers to be seen and assessed later on, while the pattern of occurrences may lend some insight into the implications for use of these variables. This will also allow a test of the hypothesis that level III sex offenders are concentrating in the most disadvantaged communities. This can be seen if there is a large concentration of offenders residing in the regions that are of a dominant minority ethnic group. Just as important as where the offenders are, is where the offenders are not present at. This will also create a point to evaluate where offenders are expected to be, but are not. Such outliers or counter-evidence may need contextual research to understand why this occurs.

At the same time, this proved a good point to judge the effect of the MAUP on the study area. This was done using both block groups and census

tracts as units of agglomeration for a hierarchal clustering (k-means) process in both three and four cluster instances. The results would be compared to determine where the areas of difference occurred, likely along the borders, and if any significant information could be gleaned from this process of understanding the ethnic hearths of Minneapolis.

Goal 1:

This research goal should be necessary for any socio-spatial analysis because the MAUP cannot be eliminated, but its effects should be understood. It would seem in-line with best practices to propose to use census block group data as the basis for intra-urban analysis. Most socio-spatial analysts would not be surprised by this choice; many are even using block level data as lower aggregations continue to provide a clearer picture of reality. However, even the most recent studies of level III sex offenders and the explanation of their spatial distribution using social disorganization theory have used census tract level data. Using tract level data would make the research more compatible and comparable. It would open more data sources, and if it does not prove too problematic in its generalization, could be the best unit to use, even against the urge to use the lowest level of aggregation possible. To defend this choice, and as an opportunity to attempt to see the effects of MAUP, ethnicity clusters were computed using block groups and census tracts.

To create this analysis using hierarchal clustering, I used a template and macros provided, as credited above. After joining Hennepin County and

Minneapolis block groups and tracts to their ethnic data in the SF1 tables, I exported the joined attribute table in Microsoft Excel. The SF1 specifies a total population number and numbers for each ethnic group. Therefore, I needed to create a column for each race that showed their percentage in each areal unit. With the percent column in place I could calculate the average percentages. With the average percentages, I could build a deviation column for each unit and each ethnicity showing how much the record varied from the average. Then I could add another column where that number was squared. The square root of the average of those square's is the standard deviation. Then I could add a final column, the Z value. The value for this field was calculated by dividing the records deviation by the standard deviation. This Z value is a measure of variance that can be used in the Hierarchal Clustering macros in ArcMap. At this point I saved the excel table and loaded it into ArcMap. Then, I joined it to the spatial layer it corresponded to. Then the clustering program can be run. The variables of each ethnicity's Z value need to be used. This analysis was performed for Hennepin County and Minneapolis at the block group level and tract level for Minneapolis. The Hennepin County results were the final case for Minneapolis as a non-arbitrary study area. All three clusters were present in the city in appropriate areas, whereas two clusters barely appear outside Minneapolis.

These results signify the importance of local knowledge, without which it would be hard to suggest which level of aggregation better represents reality. However, in spatial analysis, the lower level is always better and therefore,

without the addition of local qualitative knowledge, it can be said that block groups are better units than tracts for this type of analysis to be accurate.

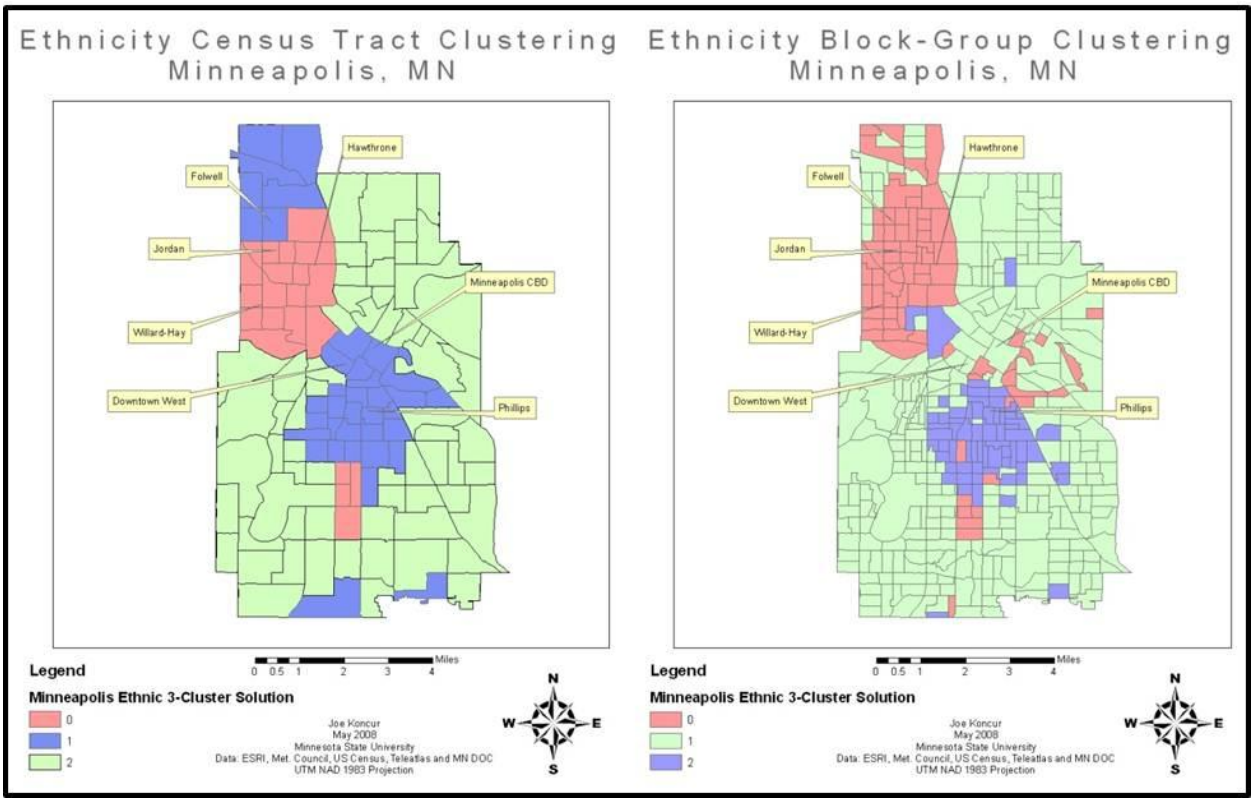


Figure 15: The noticeable difference in the Minneapolis clusters is the results of the MAUP. The green color represents areas of high z-values for Whites. The red areas are for high z values of Blacks and the blue areas are not dominated by, but have a determinate percentage of Hispanics.*

***Note: The values given are based on census data for race, a socially constructed concept. Current social disorganization modeling focuses on ethnicity, which is why that term is used in figures and analysis. Neither labeling census data on race as ethnicity or considering race as an appropriate variable (as there is no scientific basis for such a concept), is accurate, and therefore this work attempts to suggest that measure of ethnicity is needed, while following the trend in similar literature.**

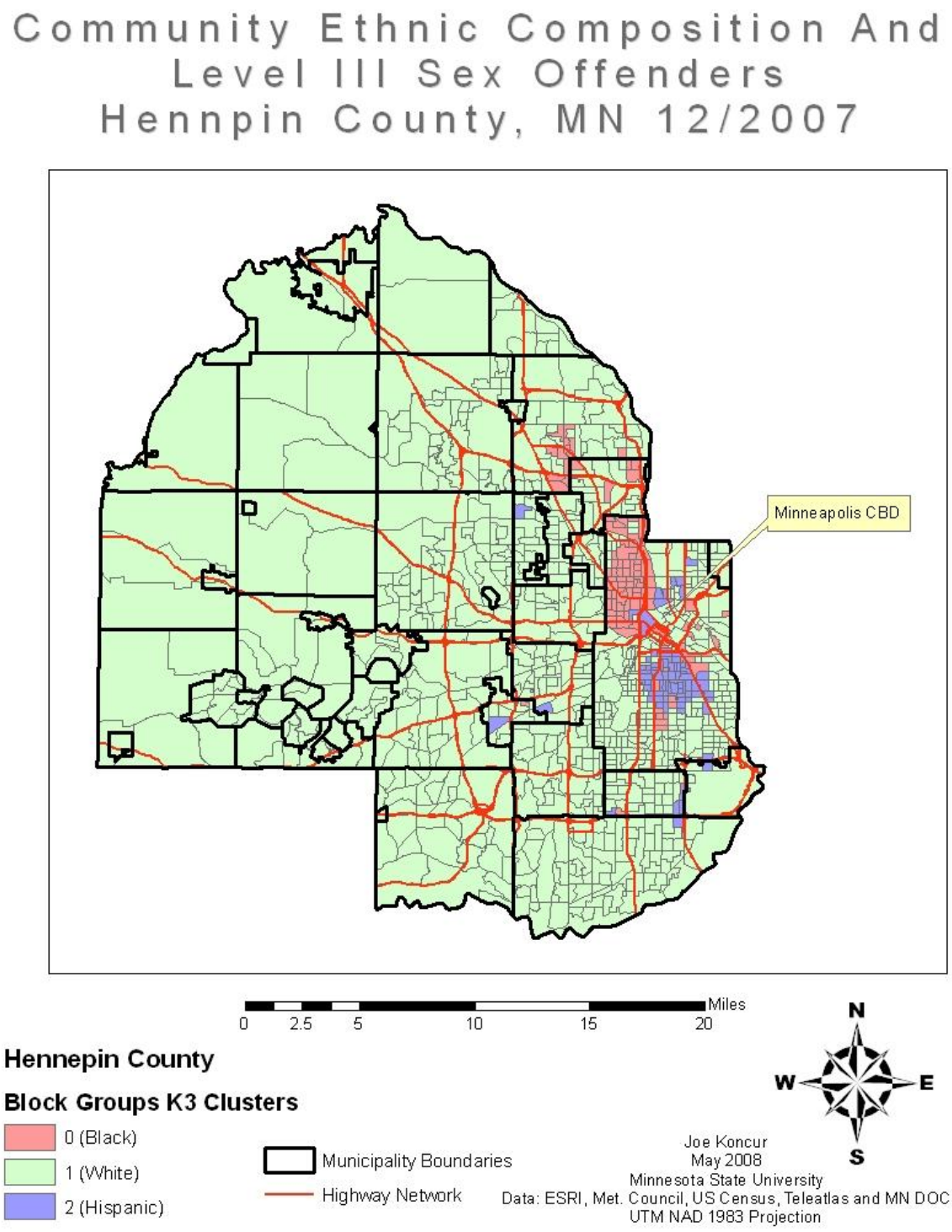


Figure 16: Much of Hennepin County is non-urban land use. The level III sex offenders in Hennepin County are all located in urban areas, casting doubt on the county as a non-arbitrary unit of areal analysis.

Goal 2:

The second goal of this research phase is to judge the significance of ethnicity as a variable of social disorganization theory. At this point, this can be distilled into a simple question: how well does a neighborhood's ethnic trait predict the amount of level III sex offenders in that neighborhood? Ethnicity as an element of social disorganization theory needs to show that the neighborhoods that are not dominated by the overall dominate ethnic group (Whites) are more likely to be places where sex offenders settle.

The neighborhoods identified as dominated by a larger than average population of Black or Hispanic citizens are clearly the same neighborhoods that are besieged by the largest number of sex offenders. Surprisingly, this cannot be easily explained by returning to dominate ethnic neighborhoods. 60% of the Minneapolis offenders were Black, 30% White and 8% Native American. These numbers do not seem to explain the Hispanic influenced neighborhoods. Therefore, it would seem that ethnic minority neighborhood clusters are a valid variable of social disorganization theory in Minneapolis.

Results

The results of examining the MAUP at different levels of agglomeration are clear, there is more specificity to be had at a lower level of analysis. This was expected and is demonstrated often for the most logical of reasons. It should serve to drive urban analyses into lower levels of examination; however with the trend of analyses being at the tract level, that unit of analysis cannot be

ignored. There is little harm shown in the larger portions of the city (especially those areas near the identified clusters of offenders that will be most closely analyzed. This approach would seem to indicate little danger of over-generalization by the use of tracts. With no good reason not to use tracts, other than possible slight improvements of data accuracy, census tracts seem appropriate to use. To be clear, the offender data is point data, and so the generalization of offenders does not occur, only the generalization of social disorganization characteristic values. This is a 'fuzzy' concept to start with and agglomeration from block-groups to tracts does not appear to have large negative effects.

The results of goal two were in-line with expectations that the vast majority of offenders lived in regions that were classified as minority-dominated or heterogeneous. In fact, only seven of 56 locatable offenders were listed as residing in white-dominated neighborhoods as defined by the census-tract level ethnicity clustering results.

Three areas of interest that deserve extra consideration were identified during the clustering process. The four-cluster solutions proved to be less intuitive and simply gave greater fuzziness to the overall picture of ethnic and racial hearths. When locations of level-three sex offenders were added to the cluster map, specific outlier regions became apparent. Further contextual information about the outlier regions is below.

The Cedar-Riverside neighborhood region is a mixed neighborhood that includes a region locally known as “Little Mogadishu,” for its enclave population of Somali and other East African immigrants. The lack of offenders in this region likely is an outcome of the dis-jointed ties the Somali immigrant community has with the rest of the city. Their late-emergence and potentially higher-levels of social organization within their enclave may make them both impenetrable and undesirable to offenders seeking anonymity.

The most northern reaches of the city of Minneapolis are also home to a checkerboard of racial and ethnic dominance. This region is abutted by industrial land-use and apartments in the neighboring suburb or Brooklyn Park. This region is at the junction of Interstate 94, 694 and Minnesota Highway 100. These major arteries bi-sect parts of the regions, and along with the industrial and commercial mixed-land uses, creates a patchwork of communities with various ethnic and racial ties, no-doubt with heterogeneous regions intermixed, local conditions determining.

The tracts surrounding the University of Minnesota in east-central Minneapolis indicate little, and beg questions about the true level of organization around the university and its relation to social organization. One would expect this to be an exception to the norm, with an ethnically heterogeneous population, lower overall incomes, while at the same time having a much higher level of organization. Though organization is not considered specifically in this specific analysis, a lack of offenders and near-ness to heterogeneity indicate these premises are accurate to some degree.

Summary

The overall trend in the results of this analysis indicates that ethnicity is not driving factors in the level of social disorganization. In many contexts, ethnicity seems to indicate baseline conditions, such as the existing segregation of the African-American community of North Minneapolis. Ethnic clustering appears more a result of other social processes than an indicator of disorganization. The specificity of the variables of race as used by the US Census bureau are just another factor that precludes the use of race or ethnicity in a calculation of social disorganization because they do not account for the very unique Somali-American community in any meaningful way. In a larger perspective, this could indicate the need for further expansion of the census racial variables in the way that 'White, of Hispanic descent' or 'White, non-Hispanic' are currently used in relation to the historical African-American population vs. the more recently arrived Black population. Ethnic specificity becomes a regional variable, and it is unlikely that this could happen on a national-scale encompassing all groups in a meaningful way for the decennial census. With questions about the independence of this variable noted in this survey and others, along with a problematic definition in the data source, use of race or ethnic background as an independent variable, contributing to an index of social disorganization would be flawed and would serve only to further an arguably racist assertion that social organization can be linked to race in any meaningful way. Certainly, some of the most organized communities and organization are minority-run. Effectiveness could be considered, but would be

beyond the ability of this study to quantify or accurately assess in more than broad generalities. The implications for his formula preclude incorporating this into the study in any way more than as a discussion point.

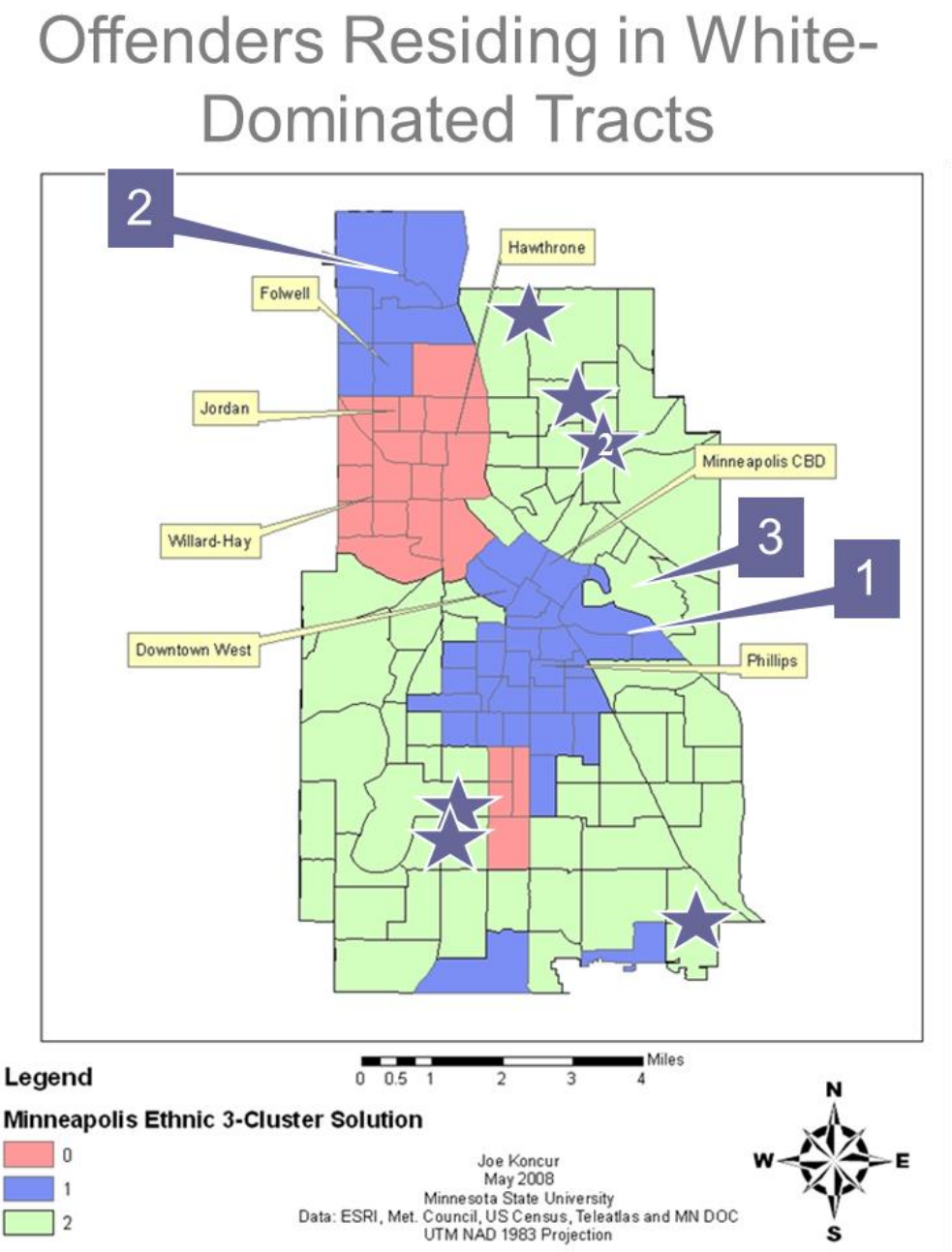


Figure 17: Only seven of the 56 offenders in Minneapolis live in White-dominated tracts. Offenders in White-dominated tracts are notated by the large purple stars.

Area of Interest 1: The Cedar-Riverside Neighborhood shows heterogeneity at a tract-level, but at block-group-level, a more cross-hatched pattern is evident.

Area of Interest 2: The extreme North of Minneapolis shows heterogeneity at the tract level, but a checkerboard pattern of White-Black neighborhoods at the block group level.

Area of Interest 3: Demographic values from the University of MN have little impact on the clustering showing the true heterogeneity of the associated tracts.

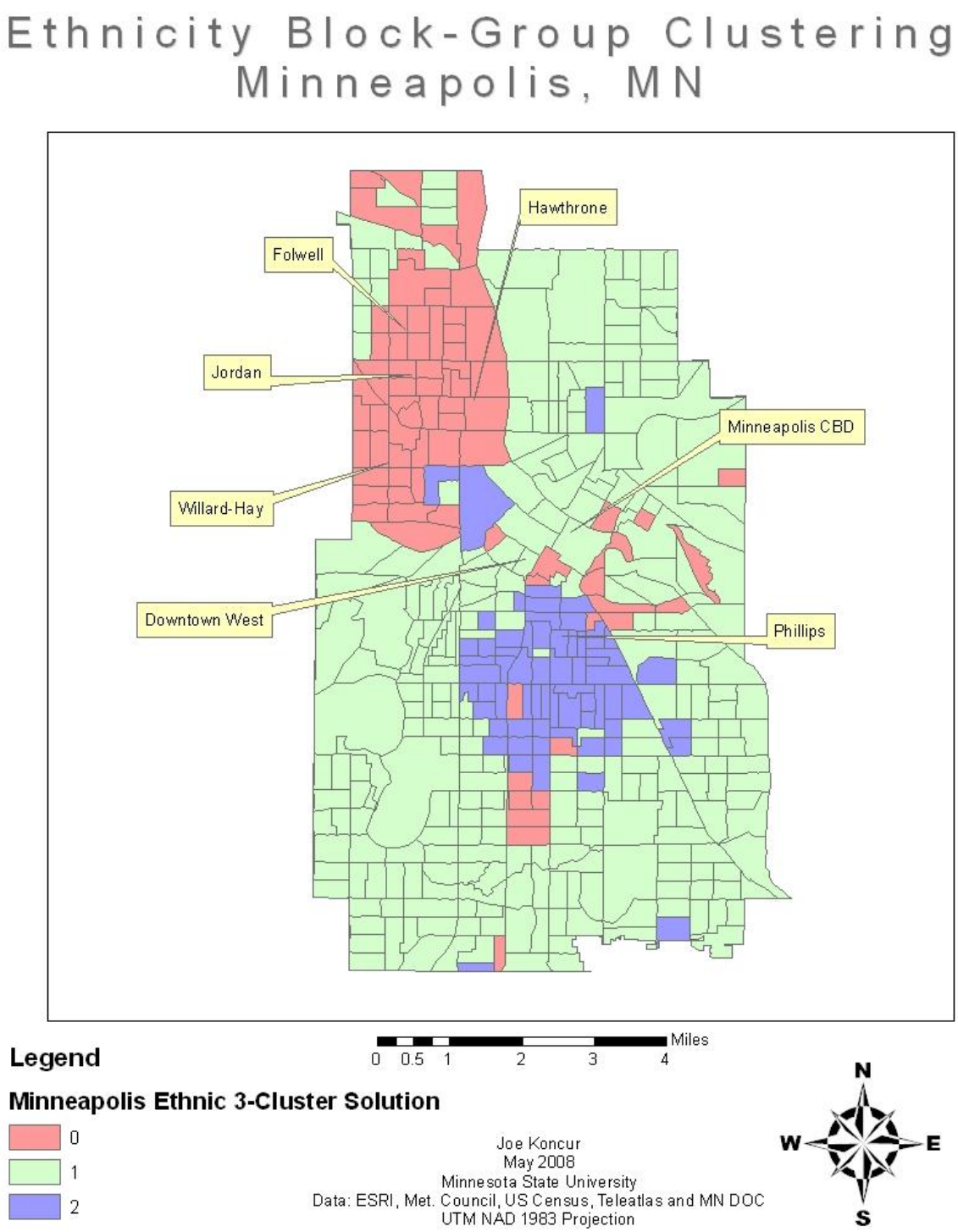


Figure 18: A three-group hierarchal clustering of racial characteristics shows a more granular and checkerboard-pattern than in the tract clustering. Cluster-value 0 represents Black dominated, 1 is White-dominated and 2 indicates heterogeneity including Hispanic and Native American populations.

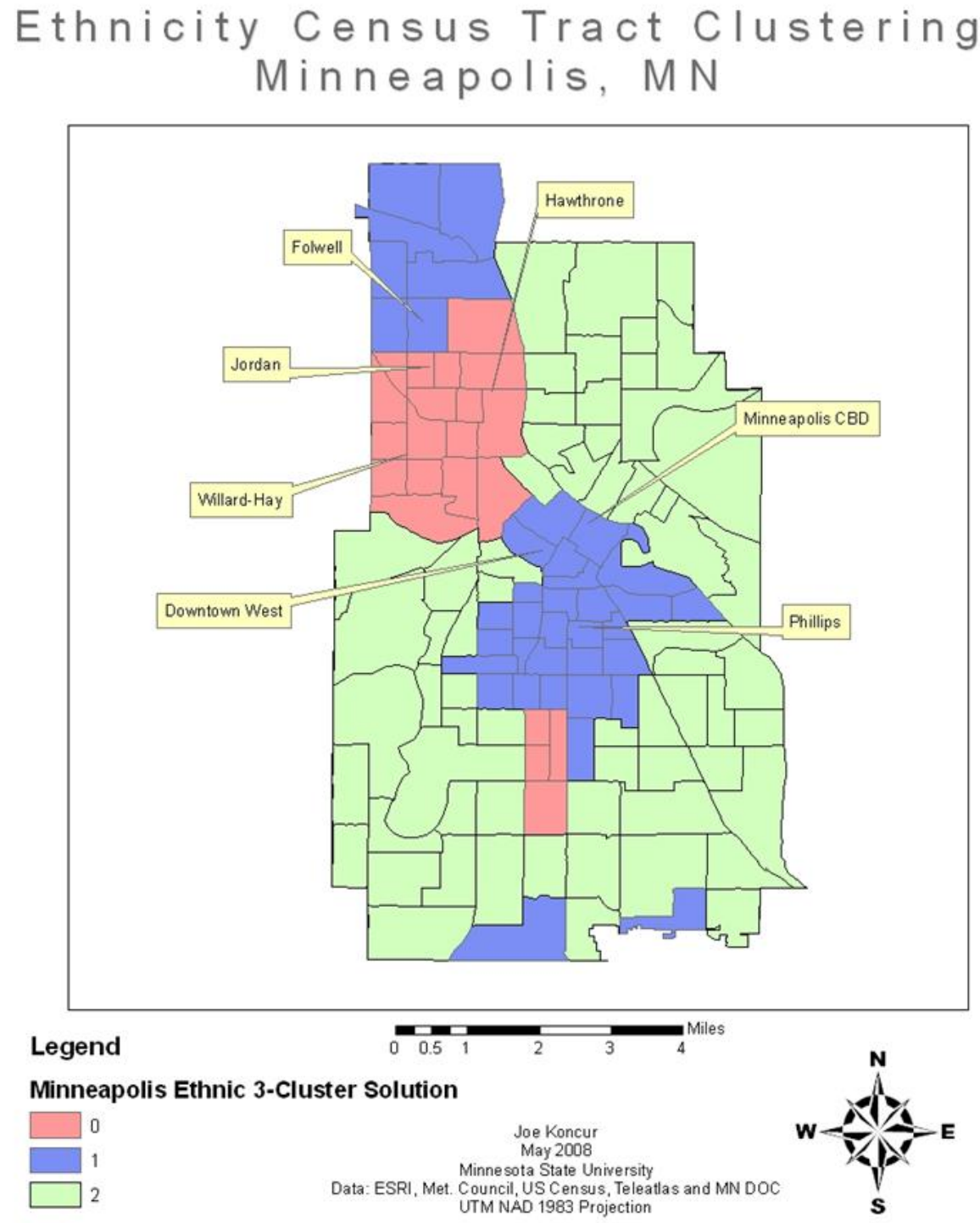


Figure 19: A three-group hierarchal clustering of racial characteristics shows a simpler hearth structure than in the block-group clustering. Cluster-value 0 represents Black dominated, 1 is White-dominated and 2 indicates heterogeneity including Hispanic and Native American populations.

Phase 4: Social Disorganization Modeling and Correlation

Introduction

This section aims to quantitatively demonstrate the correlation levels between components of social disorganization theory as defined by this socio-spatial analysis and the incidence of level three sex offender residential locations. As in the ESDA analysis, the underpinning statistical methods and analytical assumptions are based upon the work of Sampson and Groves (1989). That work has been replicated and established as the baseline work for the re-birth of social disorganization analyses that have been published. In addition, the article has been reviewed, re-tested and assessed with other data sets, all with a reasonable level of confidence in the model.

Taking that formulaic approach to social disorganization analysis, the next logical step for a socio-spatial analysis is to assess the levels of correlation and independence of the components of the social disorganization index. Also, it is important to critically analyze outliers and identify areas of interest for further study. These areas of interest can be identified by their inability to be statistically explained as outliers, and that require a more qualitative study to understand the spatial distribution of the phenomena in question.

Methods

Most important to this analysis is the quantitative analysis of correlation of the variables being studied and the analysis of their role in the social disorganization index. This study uses the residential locations of level three sex offenders as an indicator of social disorganization. This is not any leap of the imagination or weak assumption as it has been well-demonstrated in the literature review section of this paper that level three sex offenders are potentially the most detested and disparaged population in contemporary society. Nearly every case of offender settlement attempts result in some level of rebuttal or protest from the community, though it has also been shown with certainty that offenders are able to settle in disorganized communities much easier. Organized communities find ways to manipulate laws to prohibit offenders residence as well as create a hostile environment to offenders, both push and pull factors. Regardless of the will of the offender, whether their movement is forced or by choice, they undoubtedly are ending up in less-enfranchised communities with lower levels of overall social organization. This analysis will delve further into that question by looking below the municipality level and ask the same question applied within a single city. In other words, what this analysis will look to quantitatively do, is show the correlation (and to what level) of offenders and social disorganization.

A second important and ongoing step for social disorganization research (and any social theory research in general) is to continuously evaluate and provide feedback on the model. One of the most pressing issues in social

disorganization research is the question of residential stability as a component. Mustaine et al. (2006) found it to be a weak correlate to the incidence of sex offenders in two locations (Florida and Kentucky). To assess this properly, each of the three main components that can be quantified with the available data will be analyzed using the sex offender concentrations as the de-facto indicator of levels of social disorganization. At the census tract level, this will require the analyst to look past the tract-to-tract differences and look at neighborhood-level characteristics. One can expect deviation between census tracts within a neighborhood, but at that larger agglomeration unit, some mean should be visible, or there is likely to be an outlying condition in the formation of those neighborhoods.

To create a quantitative conclusion from the data, past what a preliminary analysis can suggest, regression analysis is necessary. Ordinary Least Squares (OLS) Analysis is a global regression model that will help to determine the contrast between predicted results and reality. OLS is useful as a quantitative tool but its a-spatial nature is its greatest limitations when dealing with data that is highly auto-correlated. This is often the case in spatial data, however, OLS does provide a very useful baseline, and can be a check against the autocorrelation when comparing and contrasting the results of Geographically Weighted Regression (GWR). GWR respects Tobler's First Law and from a spatial-statistical standpoint in Minneapolis, should produce values that respect the multiple hearths of the sex offender point data.

Results

Importantly, this OLS analysis shows a quantitative conclusion that is less obvious than is shown in thematic form. There were some indications from previous work and literature that the Residential Stability component would be the least related to the prediction of a negative social outcome; in this case residential locations of released level III sex offenders. This proved to be true in that the R^2 value or goodness of fit statistic, of that component was the lowest of the three at .003 (OLS) and .028 (GWR) , along with the Akaike Information Criterion (AIC) diagnostic statistic also showing the least fitment (by the highest score). Socio-Economic Status (SES) was expected to be the best correlate, however this proved to be untrue as the Family Disruption component was superior based upon both R^2 values and AIC. This seems to indicate that the same evolving social processes that marginalize the relevance of the Residential Stability component. Though the argument could be made that the relevance of the component is never in question from the standpoint of social organization, only its reliability as a relative indicator may make it a poor independent variable. Ascertaining whether this is a function of the data parameters and collection methods of the US Census or the larger social process would require further research. Just as movement increases in good economic times (based on other 2000-census based analyses), creating a temporally unpredictable and complicated process variable, the changing role of family composition was expected to muddle the effectiveness of this predictor. However, this proved false, as SES, thought to be the more stable and obviously correlated

component, was not the best predictor with an R^2 values of .058 (OLS) and .058 (GWR) compared to the R^2 values of the Family Disruption component of .096 (OLS) and .099 (GWR). None of the components were extremely well correlated in regard to typical correlation, thought this was expected due to unique problems with the data. It should be noted that the R^2 values observed indicate a better fit that a recent survey of Chicago sex offenders (Suresh et al. 2010) (all risk levels n=3021), where the most significant OLS R^2 was .04. Using all three components, the social disorganization index built in this research demonstrated a moderate level of prediction of the dependent variable (sex offender's residential locations) with an OLS R^2 value of .068.

The difference between the two surveys was significant, although Suresh et al. (2010) is exactly the type of work needed to better understand the phenomena of sex offender residential locations. Perhaps, reduction of the Chicago data set used to exclude Level I and Level II offenders could allow for a more accurate comparison. While at the same time, it would be important to note and explore the differences in distribution of offenders when classified by risk level. Unfortunately, as discussed previously, privacy laws prevent the distribution of even anonymously labeled data on non-level III offenders in Minnesota, preventing a true comparison.

The problems with creating a model of reasonable-fit are due to a few factors. One clearly visible and quantifiable is the large cluster of level-III sex offenders residing in the Catholic Charities shelter, at 1000 Currie Ave. in the Downtown West neighborhood, in the central business district. The eight

offenders (five at 1000 Currie) within this single census tract create a significant anomaly. Other outliers will be analyzed on a qualitative analysis in section five, as the result of this modeling shows a fuzzy correlation between the index, components, and factors. It would be important in a qualitative analysis to further investigate whether staffs at shelters in this neighborhood are prepared to handle the unique challenges of level III offenders and the potential vulnerability of other residents of the shelter.

After calculating the regression portion of the analysis, selected spatial analysis techniques can be applied to the data to understand and visualize relationships and spatial patterns. To get a baseline for further investigation, the first technique used is to display calculated sex offender density maps to understand their distribution. Multiple approaches can and have been used throughout this ongoing strain of research. Two new methods of approaching these issues were used in this analysis, Kriging and Inverse Distance Weighting (IDW), which are spatial interpolation operations that create a surface layer based on a set of point data (sample points, which create a raster layer). Each method has its strengths, weaknesses and applicability. In this analysis, ArcGIS 10 was used and both methods allow the user to specify an optimized model. After some modification of the optimized models, a close variant of the optimum specifications were chosen in all circumstances. The optimization feature appeared to work quite well, leaving minimal room for user adjustment, especially in the IDW models. IDW has fewer variables and methods to calibrate the model compared to Kriging, and in this survey, produced more detailed and intuitive

representations. Kriging models were optimized and allow flexibility for the more advanced user, but did not deliver the same level of utility in the output (ESRI 2010). Model parameters are listed prior to their output graphic. Another variable analyzed through both these spatial interpolation methods was the overall social disorganization score. Again, IDW proved to be most intuitive in its result, even as a more simplistic method. This could potentially be a function of the small population problem that limits some low-count surveys such as this one (ex. Homicides, rare events, etc.) Comparison of the two sets of maps can give the user a good understanding of the patterns of sex offenders as well as the patterns of social disorganization.

This analysis really highlights the existence of what this project terms a 'three hearth' city of Minneapolis, with regard to this issue. The Phillips hearth is the southerly that in both cases, envelopes that South Minneapolis neighborhood. The North-hearth encompasses the Jordan neighborhood, Willard-Hay and parts of other surrounding neighborhoods. The downtown hearth is actually an anomaly discovered through qualitative research and is more or less background noise. A large concentration of offenders (n=8) in one tract (ID# 10440) of the Downtown West neighborhood is the function of multiple homeless shelters along a single block. IDW does come up short in dealing with this outlier because it crates the tell-tale 'bullseye' effect around the outlier, indicating much uncertainty in the model. With respect to this specific tract on the sex offender density maps, the Kriging model does a better job of ignoring the outlier and only showing minor variation, actually making a two-hearth

situation more visible. In the social disorganization maps, many of the same results hold steady in this analysis. What is interesting to note is the Cedar-Riverside neighborhood is 'bullseye'd' in both IDW and Kriging analyses. This neighborhood was a major counter-example to some of the ill-conceived generalities as using race as a consideration in understanding social disorganization in Minneapolis, and actually one of the main reasons it was not adapted to this study, as other similar studies have used (such as Suresh et al. 2010). Cedar-Riverside is an east African immigrant enclave dominated by Somali immigrants, in great contrast to the North Minneapolis neighborhoods, which are dominated by African-Americans that are not part of a recent immigration movement. These populations are very different, and act in spatially unique ways, illustrating the underlying problems with a unified concept of race on the US Census. However, in the current analysis, Cedar-Riverside shows up as an outlier with the classic bull's eye, so most trained analysts will see this is to be ignored, or given less precedence than the map indicates. It certainly is open for debate, but one could argue that the level of social organization in the Cedar-Riverside neighborhood could be higher than other neighborhoods, and that the data is just unable by design to deal with these realities.

Using these methods of spatial interpolation compares favorably to the simple tract-level analysis because the trend information has just that resolution, a census tract. Interpolation methods give much higher resolution and are not bound by arbitrary geographic boundaries; hence they are able to be more accurate representations of the reach and intensity of a phenomenon.

A second line of inquiry goes past the mere visual analysis and creates comparison based upon Ordinary Least Squares regression analysis. With the statistics calculated for the three components (including each sub-component), and the overall social disorganization value complete, these indices can be compared to the incidence of level III sex offenders on a tract-level analysis. Using the OLS regression function of ArcGIS 10, the analysis was completed and diagnostic tables analyzed for goodness of fit. The table for the data output is included and shows better correlation (or model goodness of fit) between each component than the similar component from a recent study of all risk-level offenders in Chicago (Suresh et al. 2010). Suresh et al (2010) found R^2 values for their variables to range from .01 to .04, explaining one to four percent of the variation. They used the following variables: Total population, Housing Occupied, Housing Vacant, Median Household Income, Percent Poverty and Civilian Unemployment. While are much less structured than those provided by this analysis, they provide a good cross-check using similar census data. The model used in this analysis was pioneered by Sampson and Groves (1989), with their seminal modern social disorganization work; however, it is also of note that Elizabeth Mustaine and Richard Tewksbury are the best known experts on the issue of social disorganization and sex offenders. Adaptation of the models of Sampson and Groves (1989) requires more flexibility and was designed for the British Crime Survey, not the US Census. Mustaine et al. (2006) likely drives the development of the variables used by Suresh et al. (2010) as the earlier work, at least for this cohort of researchers, put to rest the idea of strictly Sampson and

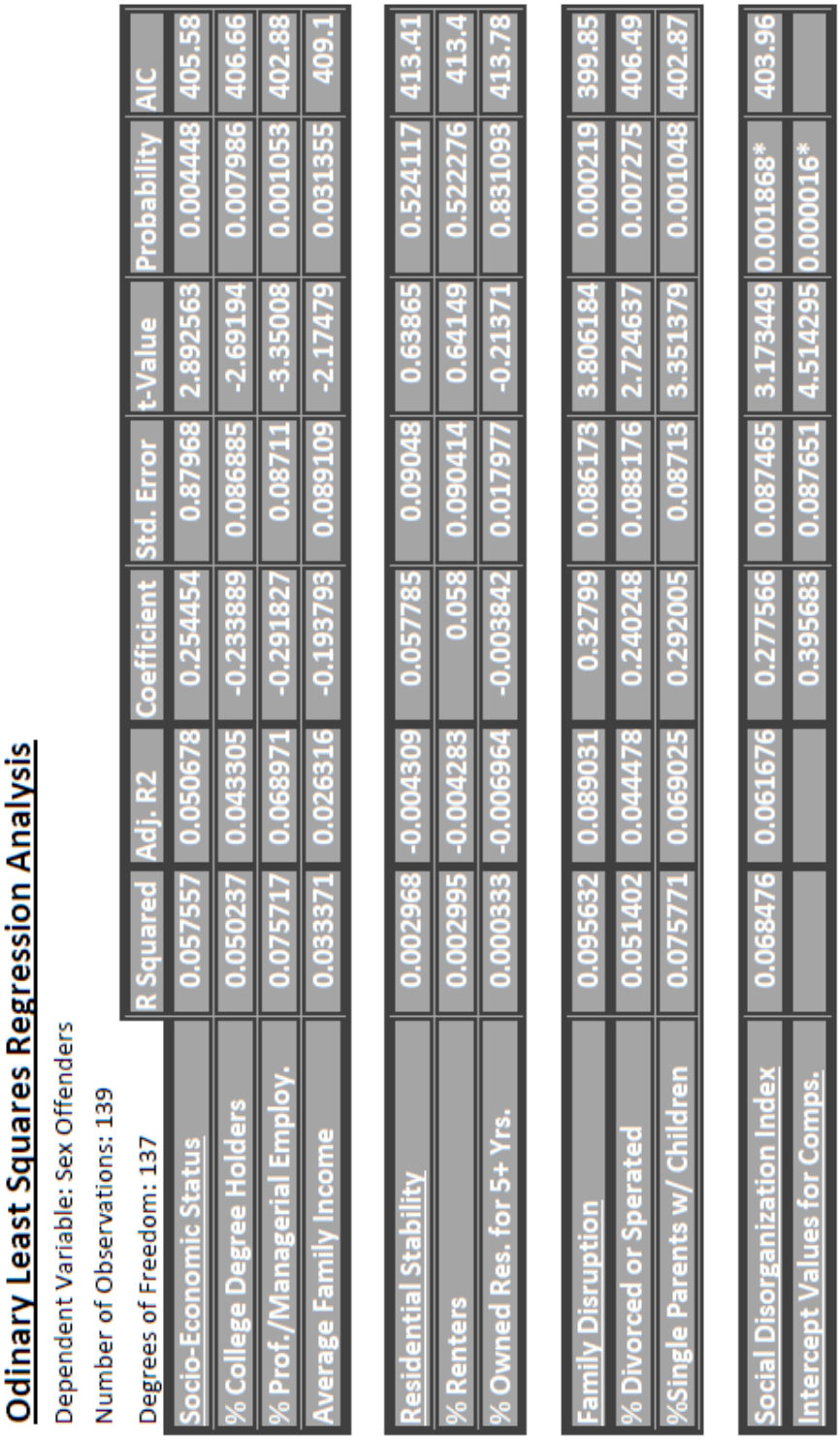
Groves-based research since they found to be one of the key tenants, residential stability, to be of minimal importance in understanding the overall correlation between disorganization and sex offenders. Though the low R^2 values initially caused some concern, the comparison with other peer-reviewed work indicates the overall poor performance of the social disorganization model. Social disorganization can provide a template for understanding general risk, but there is no substitute for local knowledge and understanding the process that drive offenders to their residences.

Previous investigation of these issues, including a discussion with Hennepin County Intensive Supervised Release head, Russ Stricker, suggests that housing availability is both the greatest challenge to offenders, as well as the greatest determinate of their locational choice. It is plain to see that their housing options are often limited to the most disorganized and disenfranchised places, however, the unique nature of this small population problem issue can throw off a city-wide understanding of where offenders live. Looking at the earlier interpolation maps, one would be reasonable to expect a higher level of offenders in neighborhoods such as the Near North, just north of the central business district and close-in industrial areas. However, there are very few offenders in those areas, because of many subsidized housing programs in the area that do not permit sex offenders to take residence. These structural issues with such a broad correlation drive the low goodness of fit statistics such as the R^2 and AIC.

Summary

The analysis provided in this section provides the quantitative case for a fairly fuzzy correlation between social disorganization and level III sex offender residential locations. Much of this can be attributed to the inherent nature of the offenders and some of the contextual outlier of this data set. To accurately understand the dispersion of offenders and the underlying processes behind this, one must look further than just a matrix of socio-economic data. Certainly, socio-economic status and family disruption proved to factor into the locations of offenders, but it is unlikely that these conditions drive the very specific pattern of distribution shown by offenders. The data analyzed inherently will produce gradient-based results that will help to understand where the highest concentrations of offenders will likely be found, however, they cannot (in any model) properly predict the dispersion of offenders due to interplay the small population problem and localized factors that most clearly can be investigated from a qualitative analysis. The statistical analysis can give a fuzzy picture, and create a preparation of the urban socioscape, but it is, again, only one of two necessary spatial considerations when attempting to understand the distribution of offenders. To answer the other half of this question, a qualitative analysis of the urban morphology, design considerations and other factors that are not well represented in the census data is needed.

Table 3: This table shows the results of the Ordinary Least Squares (OLS) analysis conducted for the social disorganization index as designed, the three major components or buckets, and the criterion values of those components. As expected, Residential Stability was the least capable predictor of sex offender residence, while the Family Disruption component outmatched SES.



Odinary Least Squares Regression Analysis

Dependent Variable: Sex Offenders

Number of Observations: 139

Degrees of Freedom: 137

	R Squared	Adj. R2	Coefficient	Std. Error	t-Value	Probability	AIC
Socio-Economic Status	0.057557	0.050678	0.254454	0.87968	2.892563	0.004448	405.58
% College Degree Holders	0.050237	0.043305	-0.233889	0.086885	-2.69194	0.007986	406.66
% Prof./Managerial Employ.	0.075717	0.068971	-0.291827	0.08711	-3.35008	0.001053	402.88
Average Family Income	0.033371	0.026316	-0.193793	0.089109	-2.17479	0.031355	409.1
Residential Stability	0.002968	-0.004309	0.057785	0.09048	0.63865	0.524117	413.41
% Renters	0.002995	-0.004283	0.058	0.090414	0.64149	0.522276	413.4
% Owned Res. for 5+ Yrs.	0.000333	-0.006964	-0.003842	0.017977	-0.21371	0.831093	413.78
Family Disruption	0.095632	0.089031	0.32799	0.086173	3.806184	0.000219	399.85
% Divorced or Sperated	0.051402	0.044478	0.240248	0.088176	2.724637	0.007275	406.49
%Single Parents w/ Children	0.075771	0.069025	0.292005	0.08713	3.351379	0.001048	402.87
Social Disorganization Index	0.068476	0.061676	0.277566	0.087465	3.173449	0.001868*	403.96
Intercept Values for Comps.			0.395683	0.087651	4.514295	0.000016*	

*Statistically Significant at the .05 level

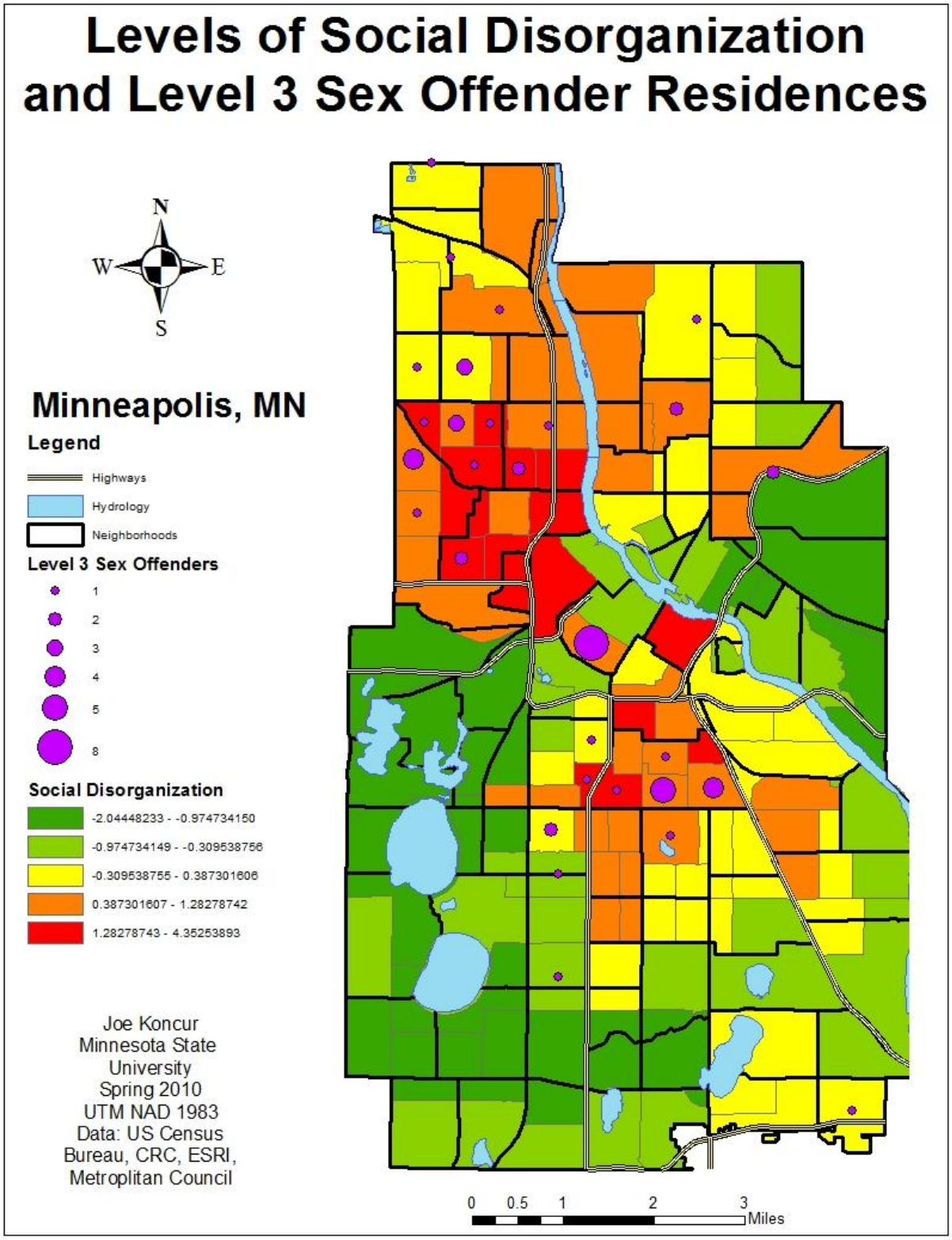


Figure 20: This map shows the level of social disorganization calculated for Minneapolis Census Tracts (2000 data) with level three sex offender density by census tract (2007 data). The correlation between high levels of disorganization is apparent.

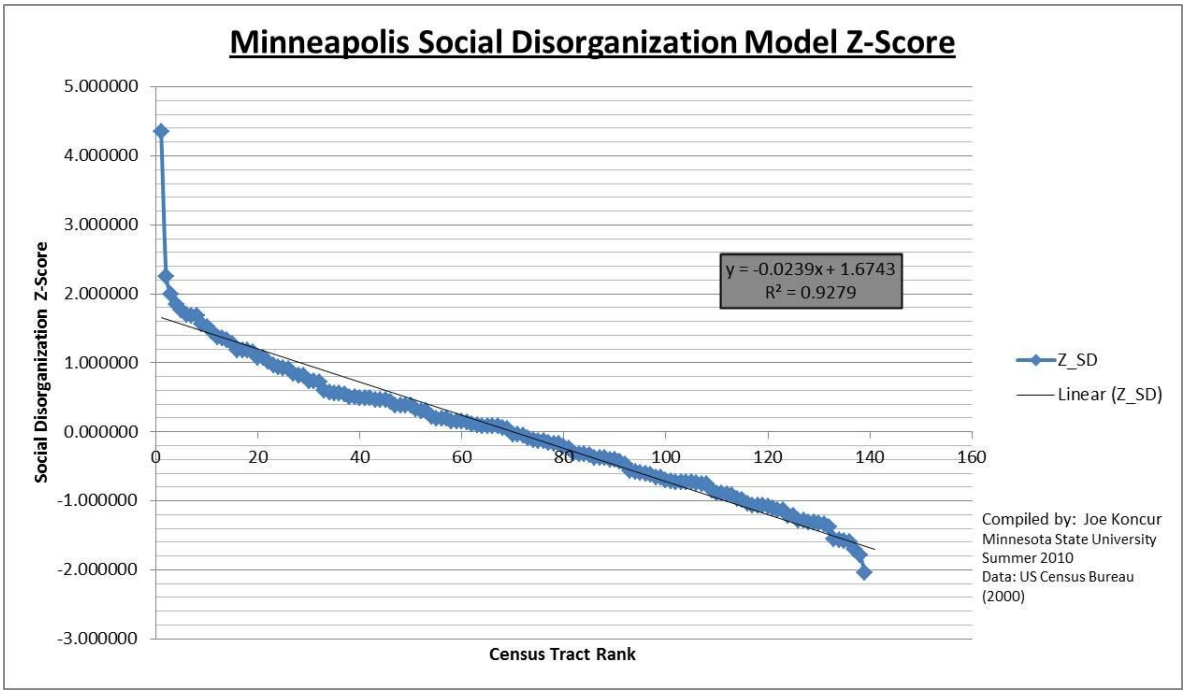


Figure 21: This graph shows the final statistical distribution of census tracts social disorganization index Z-scores. The distribution reasonably compares a linear model yet there are some extreme outliers, identified as most influenced by the residential stability component. Removing those outliers, this model is assessed to be a successful representation of intra-city variance.

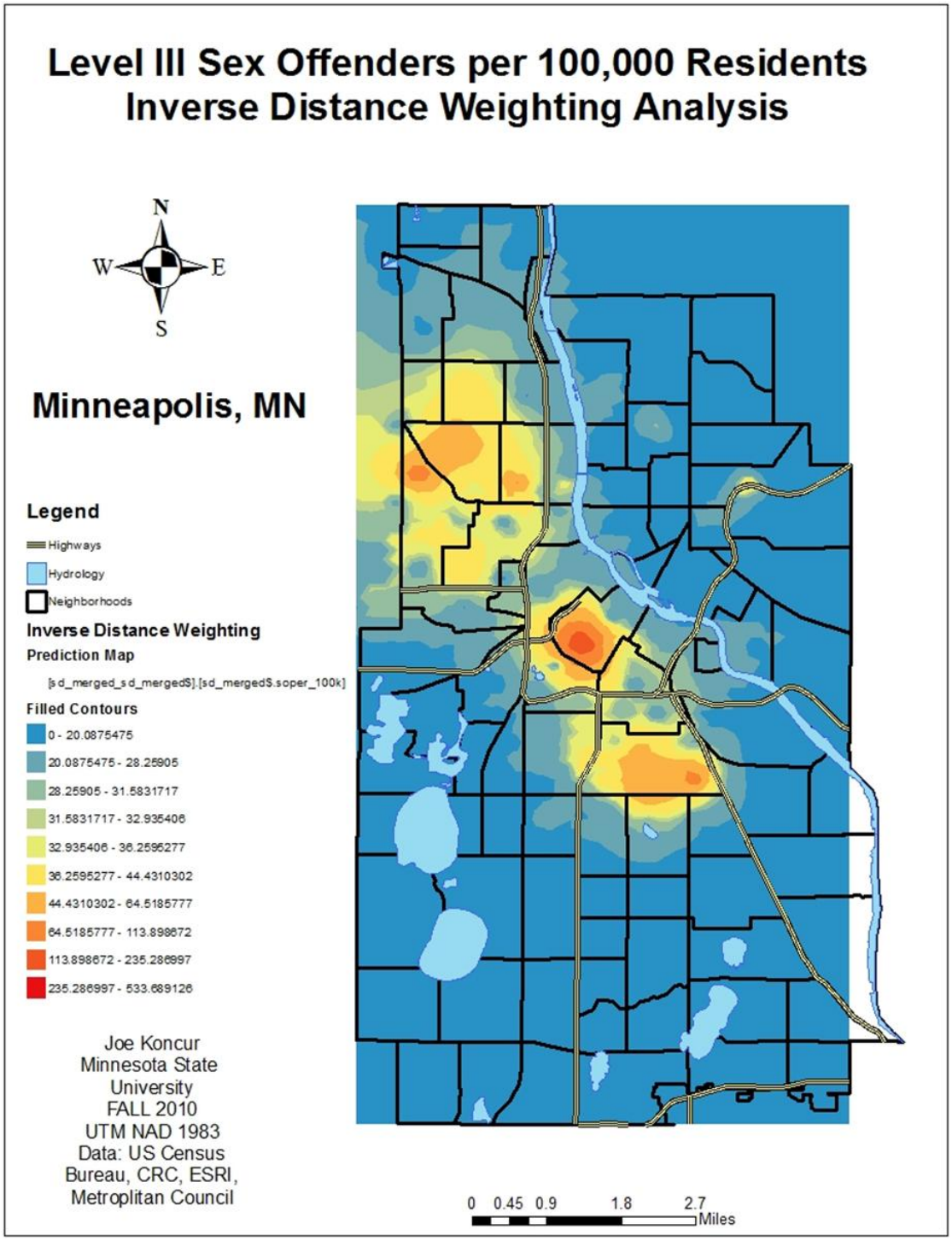


Figure 22: This map shows the output of the IDW analysis applied to the rate of offender residence by tract (per 100,000 residents). The bulls-eye effect in the central business district (Downtown West neighborhood, central hearth) is an anomaly that often occurs in IDW analysis due to outlier data. Interestingly enough, the Near North neighborhood, one of the most disorganized, serves as a buffer between the North hearth and the CBD hearth. As well, the Folwell neighborhood, just north of Jordan, has high rates of offenders and low rates of disorganization.

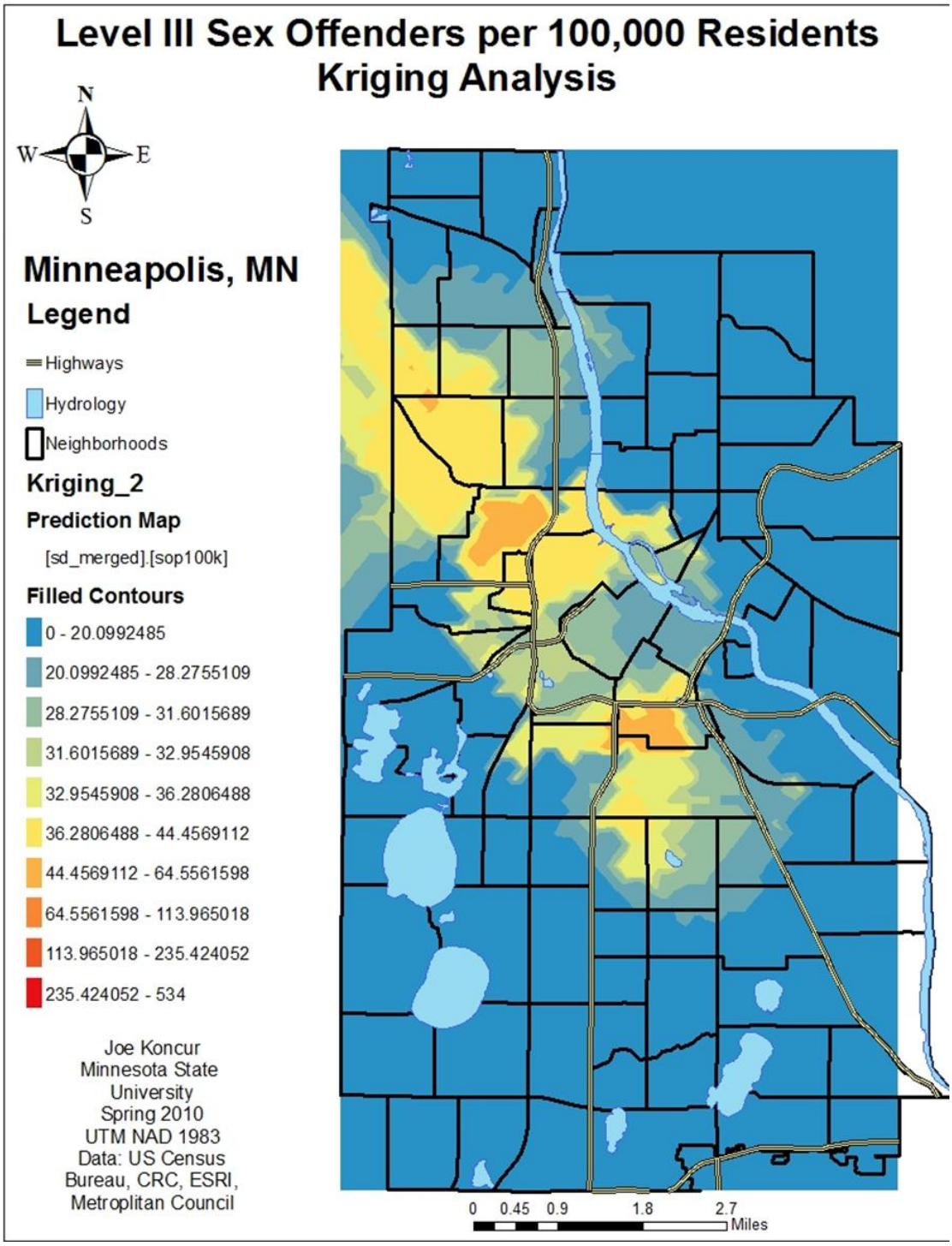


Figure 23: This map shows the Kriging analysis of the same sex offenders per 100,000 population rate. Because of the local focus of model (and the exactness of the model vs. the inexact models by other researchers such as Kernel Density Estimation), there is more local interpolation and much less outside the area effected by neighbor choices. Most interesting, and also most incorrect, is the interpolation of a hearth of offenders in the Near North neighborhood, which is actually a logical result, though false in reality due to outside variables and randomness of the process not modeled well by Kriging.

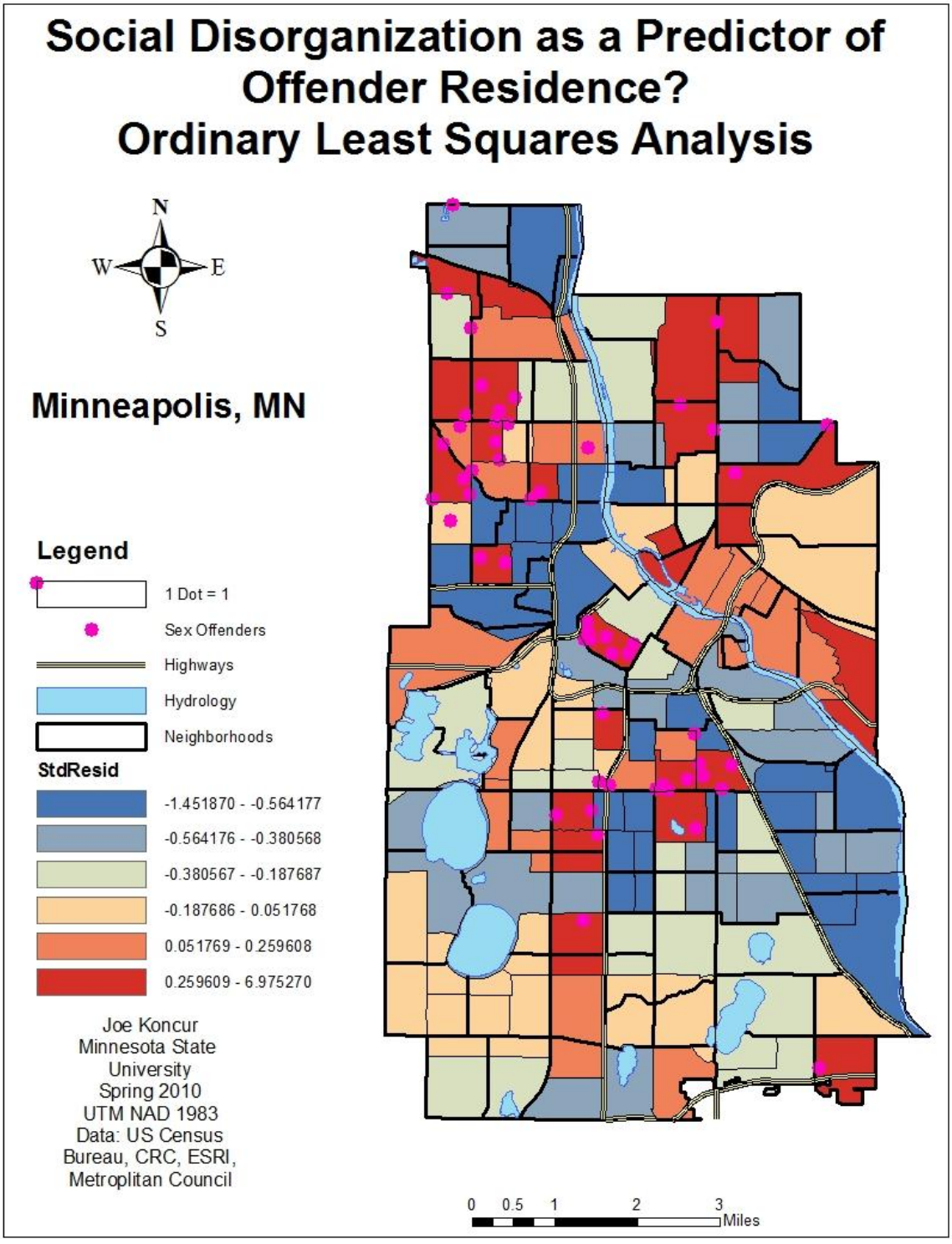


Figure 24: This map shows the results of the OLS analysis. What this demonstrates is where the social disorganization index is accurate as a predictor of offender residence (red), while it also shows where offenders are expected based on the index, but not found (blue/grey). Essentially, this is a test of the ability of social disorganization to predict offender density, which proves to be a fuzzy correlation.

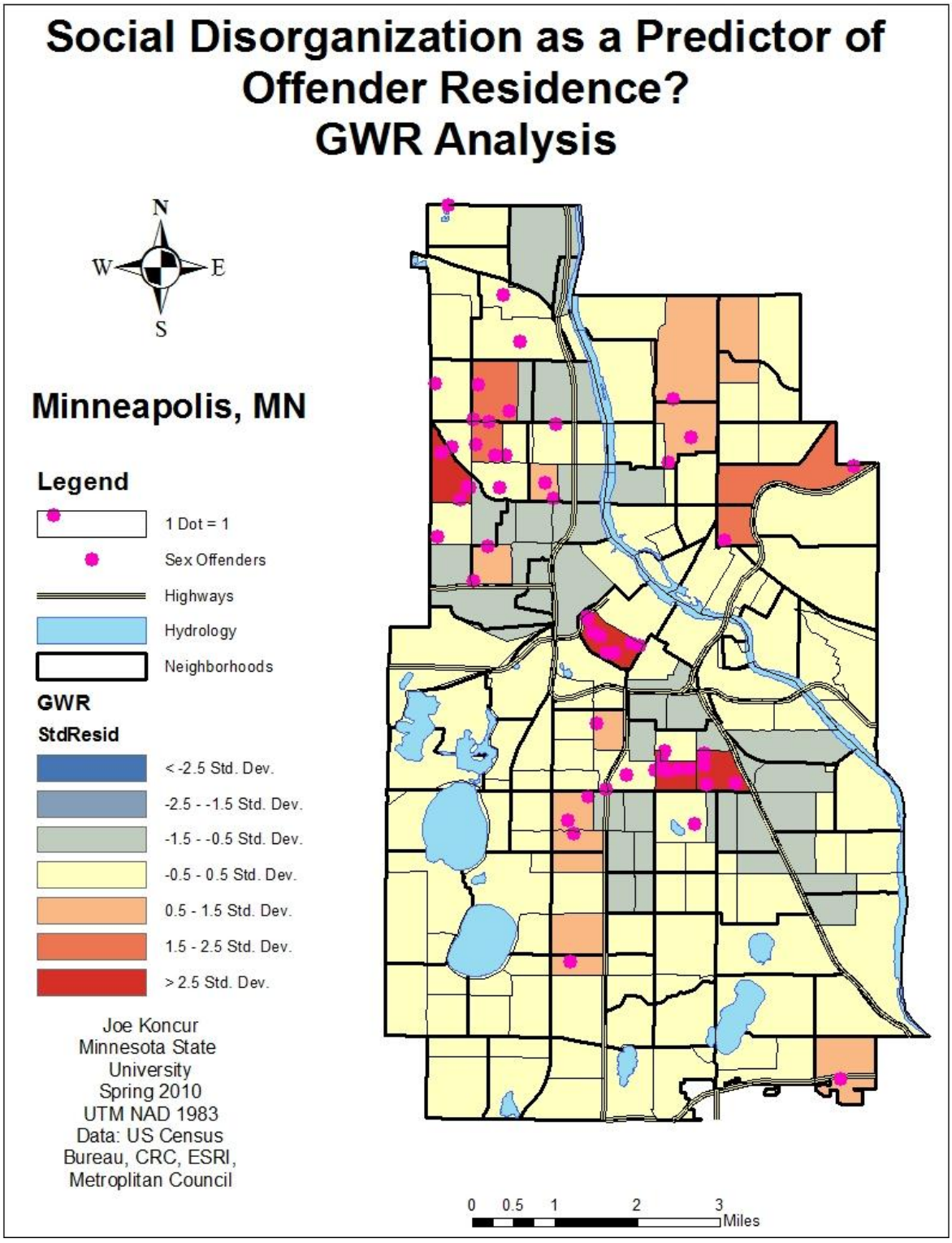


Figure 25: This map shows the results of the Geographically Weighted Regression (GWR) analysis. This proves a more localized and accurate model for understanding where, specifically offenders would be expected but are not. It also provides a better check, in that the parameters are more in concert with expectations.

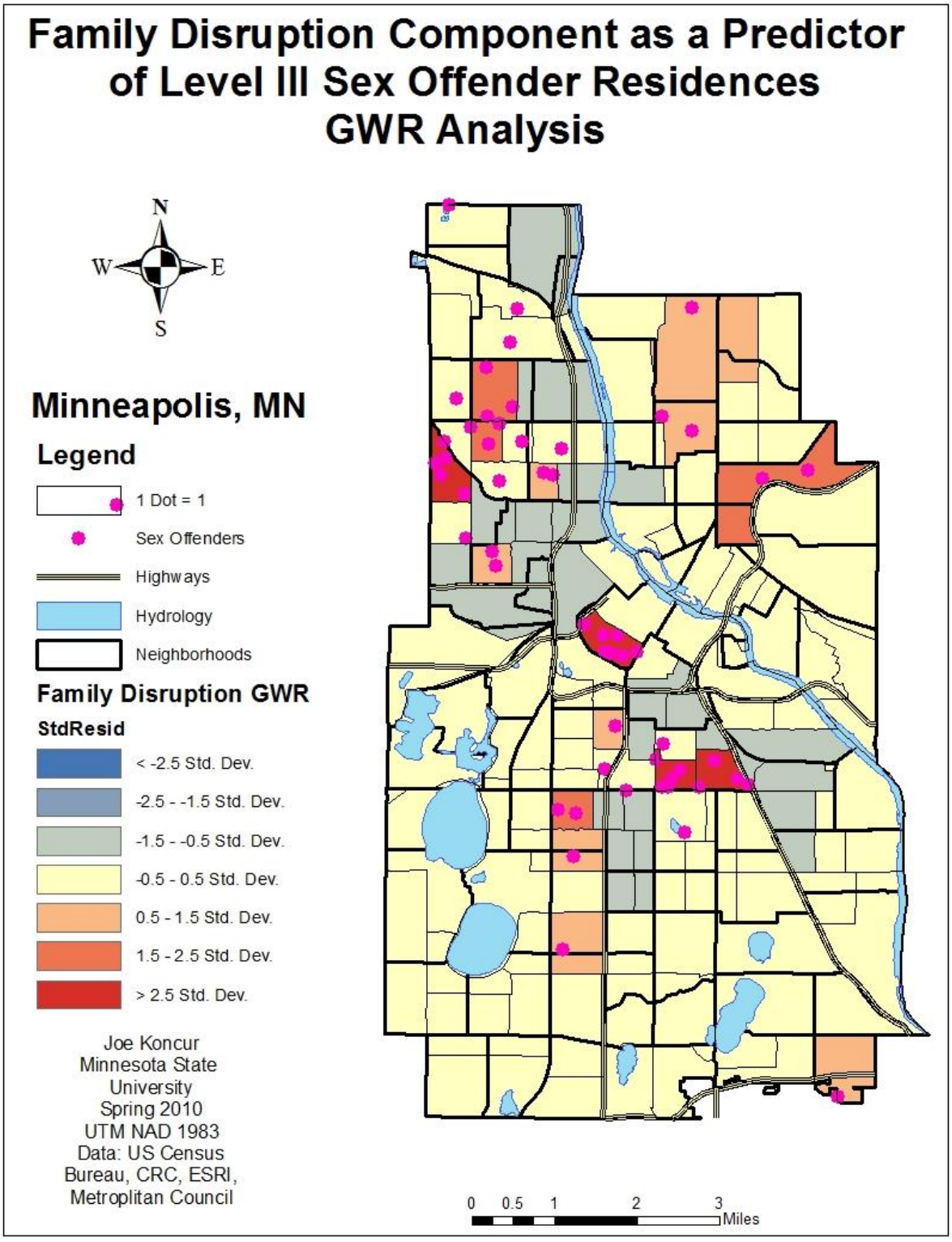


Figure 26: This map shows the results of the Geographically Weighted Regression (GWR) analysis when assessing only the social disorganization component of Family Disruption. The R^2 value is 0.09869. This indicates the highest level of correlation between the three components, as evidenced by the map.

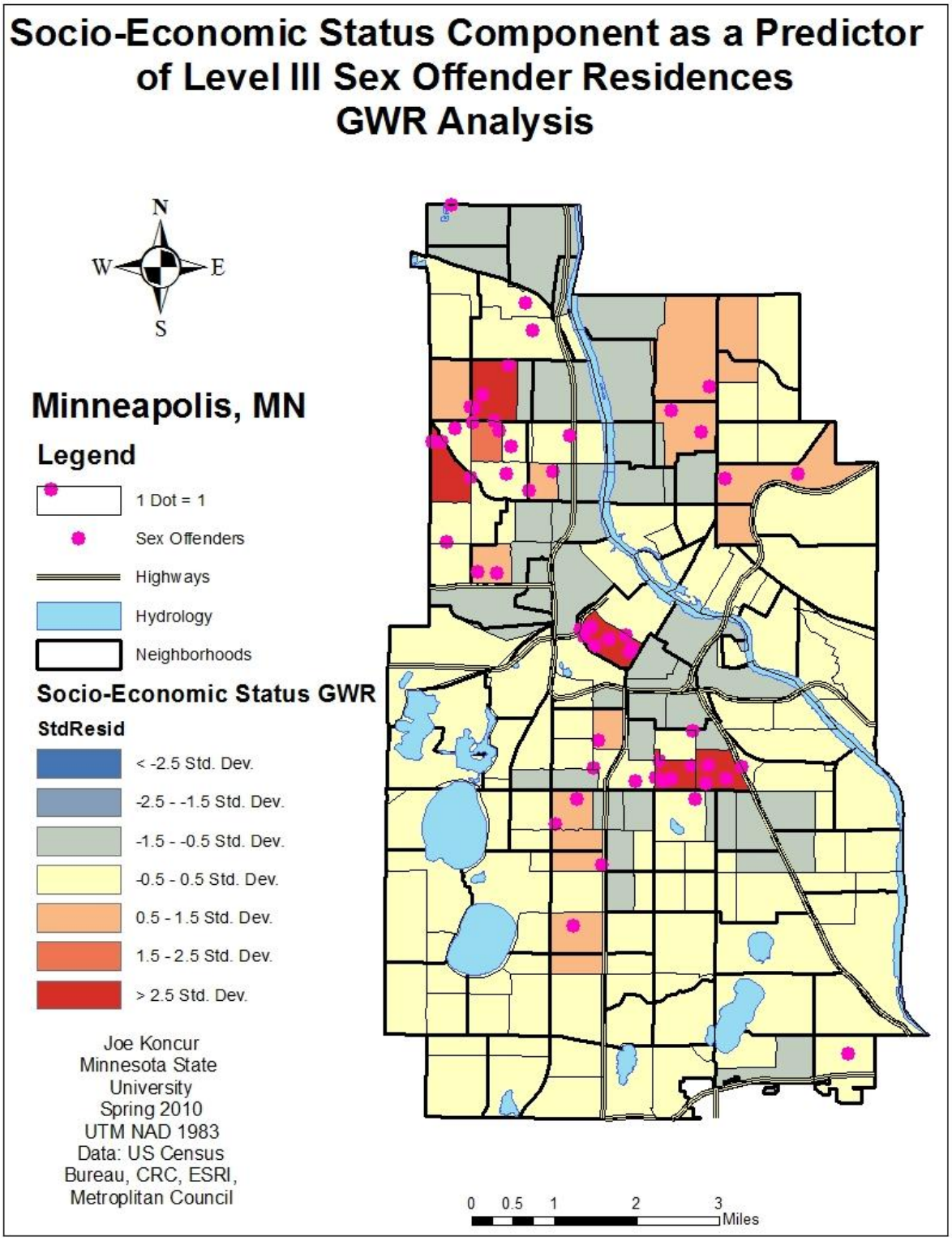


Figure 27: This map shows the results of the Geographically Weighted Regression (GWR) analysis when assessing only the social disorganization component of Socio-Economic Status. The R^2 value is 0.058268. This indicates moderate correlation between the components value and the incidence of sex offenders, as evidenced by the map.

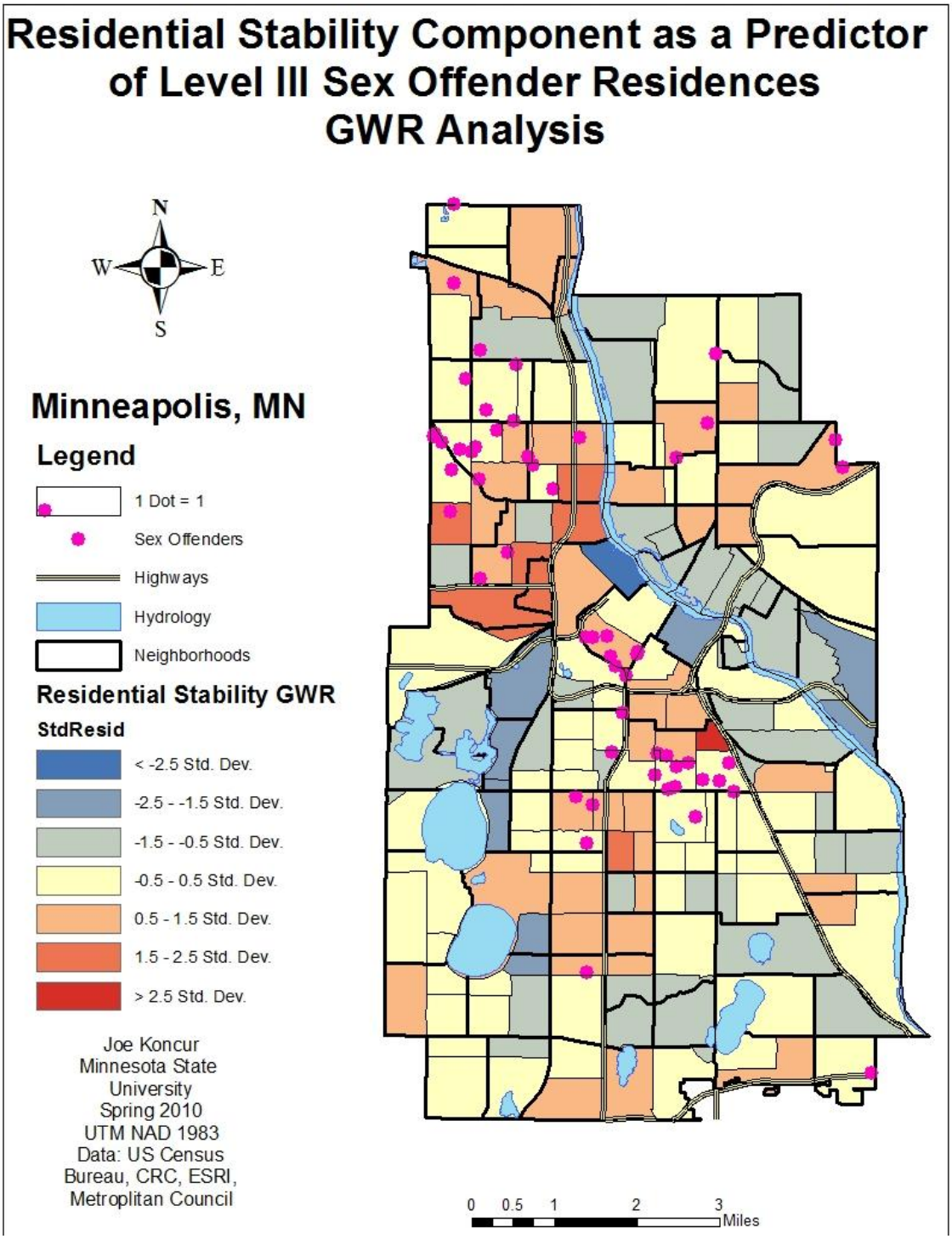


Figure 28: This map shows the results of the Geographically Weighted Regression (GWR) analysis when assessing only the social disorganization component of Residential Stability. The R^2 value is 0.028484. This indicates low correlation between the components value and the incidence of sex offenders, as evidenced by the map. The failure of this variable to perform at the same level as the other two calls into question its validity as a component, as discussed by Mustaine et al. (2006).

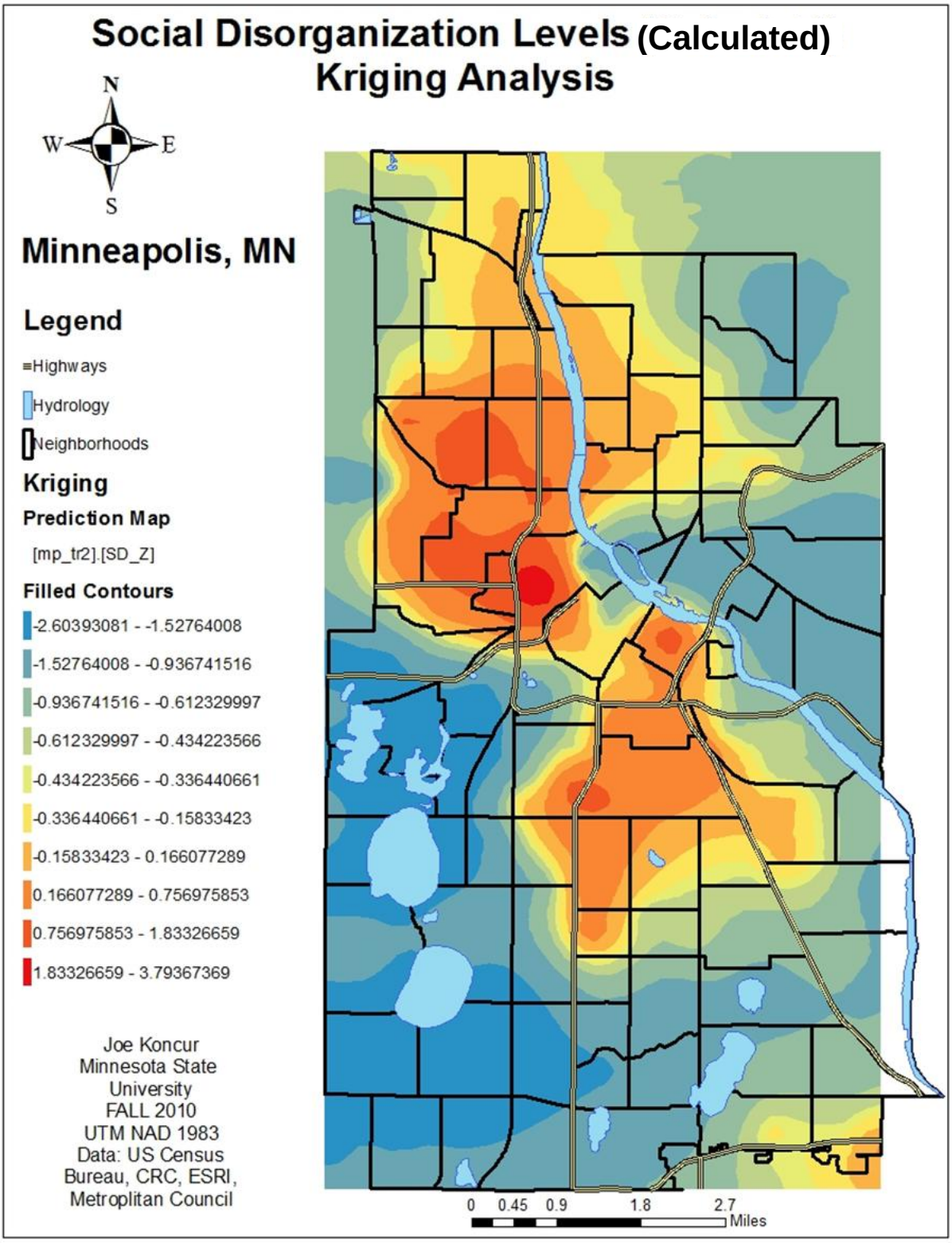


Figure 29: This map shows the Kriging analysis of the social disorganization rate. The results are particularly more centralized and less ambiguous (locally influenced) than in the IDW model. While this Kriging analysis is more intuitive than the last, it still is not as useful in understanding the patterns as the IDW map of social disorganization, because there is too much interpolation in areas of low values (southwest and northeast quadrants), while representing very sharp changes in value in areas of reported value.

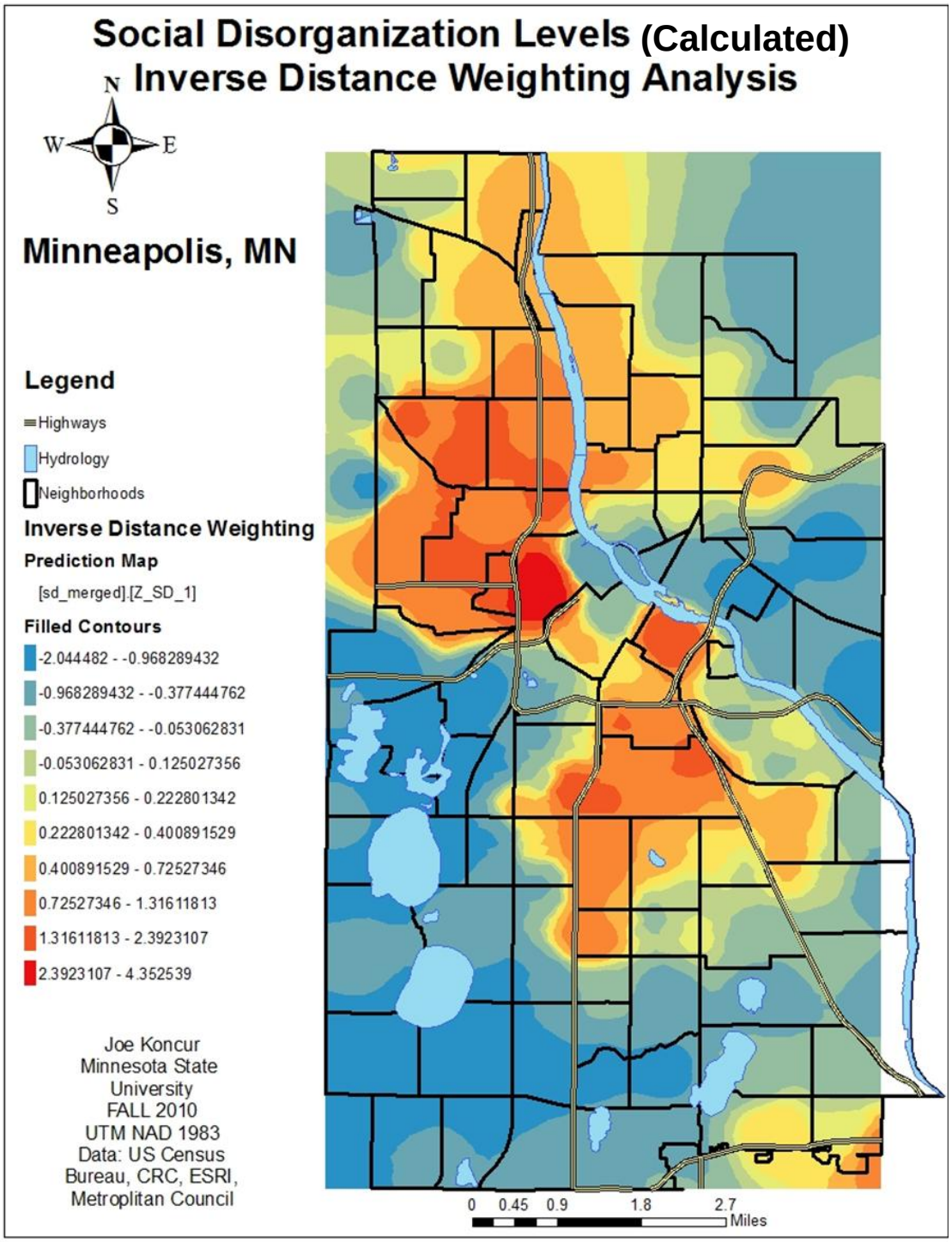


Figure 30: This map shows the IDW result for social disorganization. As discussed with the offender IDW map, the Folwell neighborhood is one of the most significant outliers for both maps, showing bent lines in both. The Near North shows up as highly disorganized, as expected, further reducing confidence in the global measure of social disorganization as a predictor or independent variable of sex offender residences. The corridor in South Minneapolis that follows closely to Interstate 35W, is of significant development, as the offenders cluster along this corridor as well.

Phase 5: Offender Residence Considerations Place-Study

Introduction

Why do released level-three sex offenders live where they do? This is probably the most important and seminal question this study examines, but at the same time, the follow up to this may drive at the real point: Can this be influenced? The weakness of the available statistical analysis tools and data-sets necessitate that all available contextual, qualitative and local-knowledge-based approaches be investigated to understand the reasons behind the spatial distribution of level-three sex offenders in Minneapolis. Using decennial census data that is dated in a society that changes rapidly at a local level creates only fuzzy reliability of data.

Socio-economic data at the micro-level is not intended to give more than generalities, creating yet another weakness for those looking for specificity. However, a full and open analysis of robust data sources and information systems can lead to a greater understanding of local conditions that may participate in the push or pull of released offenders to certain regions. During such a multi-source analysis, a better and more holistic picture of the communities can be built, rather than just one based on low Z-scores.

Tewksbury (2009) lays out a strong argument for the restoration of strong qualitative research in the social sciences in general, and in criminology more

specifically. He notes that qualitative analysis is often considered the weak stepchild of the scientific community, noted by only 11% of published articles in this field taking this approach. He states that qualitative research often helps to build theoretical constructs as an initial phase of research, allowing the variables to be described for later statistical evaluation. This paradigm is understandable in a highly quantitative society and research community, especially with social scientists constantly battling the misnomer of participating in a 'soft or lesser' form of science. In truth, qualitative analysis, regional interpretive knowledge and local ethnography can be just as powerful in relaying truth, the basis for scientific inquiry, as quantitative methods, with their many weaknesses and propped up conclusions. Statistical analyses suffer from data-centric issues that make it very complicated to evaluate a study without detailed analysis of methods and data strength, in all, the truth can be just as available from both research trends. In this analysis, statistical methods provide fuzzy insight into reality, and to further approach truth and understanding, a more qualitative or regional analysis is need, uniquely as the final phase vs. preliminary as is the paradigm.

Methods

The methods for this survey were inclusive of just about any data source or information system that could provide data on why offenders might behave in the spatial manner that they observably do. Internet searches for information from news organizations, community groups, and concerned citizens provided some spot knowledge, though this is generally a problem that persists in the

background due to the main underlying hypothesis of this project: that social disorganization allows offenders to obtain the anonymity to avoid any monitoring, mentoring or confrontations by neighborhood residents of disorganized regions. As a second front to the multi-source dragnet, Google Earth and associated Street View functionality will be used to survey blocks with offenders residing on them to determine if there are any shared characteristics among these regions that might help to explain the spatial distribution of offenders. Special attention will be paid to blocks with multiple offenders and those that are considered outliers by falling outside what the social disorganization model indicated would be most likely for offender residence.

Google Earth is a technology that continues to grow and expand its usefulness as a tool of geographical inquiry that had appeal to the masses. Google Earth puts ease of use and visualization ahead of complicate functionality. It is in most every way opposite to heavy GIS programs such as ArcGIS, except in functionality and potential capability. Yet, it holds more potential than any of the more complicated systems due to its user-friendly ability to be used easily and effectively (and often more intuitively) by the average user. On top of that, the open-source GIS community on the internet is vibrant, if not a few steps behind the computer science community in intensity. Open-source programs are available and their utility is growing. This is no truer than in the case of the utilization of these methods in this project. Viewing GIS Shape Files (.shp) in Google Earth is possible, though the most common (and GE/ESRI endorsed) method requires purchase of an extension for ArcGIS to convert the

Shape File into the Google Earth format, Keyhole Markup Language (.kml). On top of that, the output file will only run in the upgraded (non-freeware) version of Google Earth. This monopoly on this important technology did not last long and one workaround, used in this project, was completely free and worked flawlessly.

The workaround eluded to is done by downloading the freeware extension Shape2Earth for MapWindow GIS, an open-source and freeware product, available online (Shape2Earth, 2010). MapWindow is similar to many open source GIS programs in that it is extension run and only offers the most basic functionality pre-loaded (MapWindow, 2010). For simple operations or display of data, it is an excellent tool, though at the current time, no open-source program can compete with the overall power and ease of use (for experienced users) of ArcGIS. This is changing with more robust open source programs such as Quantum GIS, and the inevitable challenge this presents to expensive programs such as ArcGIS will have to be addressed in the coming decade. The Shape2Earth extension requires some simple input that defines what data to extract from the Shape File and its table. Once the .kml file is created, the user can simply drag or import it into the Google Earth window and change the properties, a simple and intuitive process similar to any other operations on Google Earth. In this project's instance, the imported .kml files consisted of a tract, block-group and city boundary files that included social disorganization calculations, along with a land use overlay and point file of sex offender residences.

The basic methodology for this investigation of the problem starts with statistical analysis of disorganization levels, based on already-adjudicated 'fuzzy' data. The areas of interest and clusters are identified in previous research phases and the data displayed in the GIS Shape Files. By transferring that GIS data onto Google Earth, it allows the user to literally explore the neighborhood from their desk in conjunction of the tried and true approach of field-work. Certainly, this is no substitute for field-work in all situations, but it can attempt to answer some of the urban design, and ecological questions that this project is asking in an immediate way. Viewing from Google Earth allows for the theme of movement to be added as place becomes more developed and the key lines of interaction between city regions become visible. At the same time, this visualization helps the user understand the city's regions better based on its urban-design. Once an offender-inhabited block is identified, the user can zoom into the Street View mode and literally walk down the block of an offender's residence, looking for clues as to why such a location was chosen or taken. Admittedly, the answer is not going to be visible in many of the circumstances because some economic, social and legal data or requirements cannot be seen physically on the cityscape. However, other characteristics, mostly those that assume the offender had some role in the residence decision (which they generally do), are visible and can be noted, highlighted and analyzed.

Results

What can be shown from this interpretive place-study analysis is that there are certain urban design features that have a correlation with the incidence of

offenders. In essence, certain abnormalities in urban cityscapes allow environments that offer traits that offenders appear to gravitate to. The reciprocal to this is not mutually exclusive. It is not incorrect to cite the push factors as influencing offender settlement in to regions or urban design abnormality; in effect these areas often have lower property values and rents due to their wedge community characteristics. In their essence these communities are designed to fill gaps between designed environments. They are the remainders to the planners and developers division of the city into land use categories. This is a basic design challenge to any developer and these regions have unique characteristics, and are also unique in their attractiveness to offenders.

Examples of this trend in wedge or abnormal community residence by offenders were shown by three clear examples in Minneapolis. Certainly, a larger concentration was found to likely reside in mid-size multi-family housing units, though the economic and legal constraints are likely what propel that type of residence into a noticeable pattern. The ecological factors though can be analyzed separately from the economic factors if neighborhoods are analyzed based on their socio-economic characteristics verses only rent costs and availability (availability in this analysis of Level III sex offenders is something more than an economic factor as discussed earlier, often landlords refuse to rent to this population for obvious reasons and most large rental companies do background checks to weed out and ex-felons from their prospective resident pools). When analyzing the characteristics and location of neighborhoods prone to offender settlement, it is important to note that these places are unique and

important because their site (physically, ecologically and socio-economically) allows them less capability to keep out problematic populations. This hypothesis appears with merit in three instances in the study area, during the temporal constraint: Lake Street development strip in the Phillips neighborhood, a wedge neighborhood along Tyler Street in Northeast Minneapolis and a strong example of the counter-effect of negative neighborhood effects (neighborhood organization and strength) demonstrated along the Minnesota Highway 55 corridor in southwest Minneapolis. This socio-spatial investigation is underpinned by many of the foundation concepts presented in ecological criminology. Essentially, this is the exact point of fusion for those theories of criminal behavior and the elements of urban design and distribution.

One of the best examples of urban re-design efforts in Minnesota is visible along the East Lake Street corridor. Shortly after this study sampling of offenders, construction neared its final stages along East Lake Street, at a time considered one of the more dangerous, disenfranchised and detached avenues through the city. However, since the time of study, this has changed for a number of reasons. Lake Street corridor development successfully re-imaged the corridor and promoted a less fragmented community with a fresh look from new sidewalks, community centers and businesses, including some national chains. Along with that the influence of gentrification is clear and present both in the presence of loft apartments and services tailored toward a more urban, trendy and less impoverished demographic. While this seems to indicate major changes in the region, there is still the impression both from residents and from

the built environment that the changes are only changes in the façade and don't penetrate far past the main redevelopment corridor of East Lake Street. The most stunning evidence for this claim is seen in photographic evidence presented in Google's Street View. One can readily observe the extent of new pavement, sidewalks and infrastructure improvements. As well, barriers to through traffic on some avenues, just south of their juncture with East Lake Street are likely not creating the potentially created defensible space (Newman 1996). They more likely appear to block any spillover or connectivity from the massive efforts on the corridor. This is an area of urban design that should be revisited by the city.

A second consideration for this area comes from the analysis of offender density by census tract map (see Figure 22). The three clusters observed all have different properties. The north cluster is relatively larger and less intense than the other clusters. The central cluster is very localized and exists almost entirely within a single tract. This is due to the presence of halfway house operations and the Catholic Charities homeless shelter where six offenders declared residence. For the purposes of understanding the impacts of social disorganization on the dispersion of offenders, this cluster can only add the importance of looking for certain magnet or network choke-point features which pre-determine outcomes. For instance, at a macro level, the only two sex-offender specific halfway homes are in Minneapolis, creating a systematic mechanism of constant offender residence at these locations. As offenders spend time at these facilities, they start to lay down roots in the community through social services and jobs. At that point, offenders are more likely to stay

in the community because of those ties. This creates a spatial outcome based on the process for offender re-entry that should be evidence enough for more spatially distributed facilities.

In looking at the Philips cluster however, it is fairly focused within the neighborhood and along East Lake Street. The study data found eight offenders along an 18 block (east-west) extent of East Lake Street (within a 3 block north-south buffer). Those eight offenders exhibited the pattern of living just in the shadows of the redeveloped corridor. As well, sporadic cases of gentrification as well as foreclosures create a patchwork environment for those looking to understand the social organization of the place. However, much of the gentrification has been through condominium conversion projects such as the Sears Building at 900 East Lake Street. That project, along with investments in the Abbott Northwestern Hospital Campus nearby anchor growing investment in the western Phillips neighborhood. The eastern extent of the neighborhood has always played host to a vibrant community and has done well historically. The central portion of this corridor is currently the least developed or detached from the greater city community. It also is home to the majority of offenders in this neighborhood, presenting a likely effect of the gentrification and investment pushes from the west.

The North cluster is more dispersed and is likely a better example of the issue for comparison to other major urban areas. North Minneapolis, as a residential region, is very congruent and homogenous in design. It is composed of a vast network grid of residential streets, uninhibited by anything but

institutional land use and the awkwardly diagonally-bisecting Broadway Avenue, the main thoroughfare in the North. Plans for redevelopment of the Broadway corridor in the Jordan neighborhood of North Minneapolis are underway, following the model of Lake Street. Corridor development can be a complete physical makeover of a key region, allowing for a socio-psychological change in belief about an area. For the sake of social disorganization analysis, this may allow informal social controls to blossom as the region is transformed physically and cognitively. Corridor development can be also be a factor in creating new areas of blight and there is no guarantee that a cognitive change will occur along with the physical changes to the neighborhood. Currently, the most troubled areas are on the main thoroughfare (Broadway), and this high intensity development shown in plans by the Jordan Area Community Council (2007) (within a block of Broadway) will result in the degradation of adjacent blocks status. In effect, it may serve to hide the blight- creating a one-block deep facade, rather than a functional community. The risk inherent is a failed redevelopment initiative is a deepened sense of internal helplessness and neglect while receiving disdain from the larger local and state community.

Importantly, the North has not seen the same density of offender settlement along the Broadway corridor. This presents some real issues in understanding the pattern of offender settlement in the North, and there are some key areas that require specific attention: the Near North, Folwell and Willard-Hay. If any generalization can be made about offender locations with regard to major transportation infrastructure, it can be said that they appear to

find the least connected places, in this least connected quadrant of the city. One very evident truth in the regression analysis was the lack of offenders in the Near North neighborhood which, in nearly every model showed to be low compared to expectations based on the social disorganization index and the components in specific.

The Near North neighborhood has low values for socio-economic status and family disruption in particular but maintains an unexpectedly low number of offenders. This can be explained however, through the contextual observation that there are many government subsidized housing projects that were placed in this previous industrial-residential transition zone, as industry receded. These public–private partnership housing cooperatives often have guidelines about prospective renters that prevent felons (and especially sex offenders) from occupying these domiciles. At the same time, these redevelopment efforts and proximity to the central business district put this neighborhood in a unique position to avoid the issues that other North Minneapolis neighborhoods are forced to confront, with regard to level III sex offenders.

The Folwell neighborhood is just north of Jordan and also serves as a transition neighborhood, but one that has a long tie to the large park that shares namesakes with it. This neighborhood has seen very positive outcomes throughout the decade, from gentrification, retirement and other factors. Its small size and large green space is attractive and gives it property value advantages, while its proximity to the Jordan neighborhood (easily the most perceived ‘troubled’ area in the Twin Cities metro area), keeps out those residents not

familiar or willing to deal with the dynamics of this place. It also is on the boundary of the perceptual region of African-American dominated North Minneapolis and the White dominated outlying regions, as evident in Figure 19. Folwell though, does have a large number of offenders based on its calculated statistical indicators (three). What can be taken from this contextual analysis is that neighborhoods such as this can provide room for White offenders to live without the scrutiny or out-of-placeless they would both endure and give off in an African American dominated tract.

Willard-Hay neighborhood is on the border of Minneapolis and Golden Valley, an inner-ring suburb that couldn't be more different in design and atmosphere. What is most important in this separation is the natural and built barriers of the Theodore Wirth Golf Course and other nearby nature areas, waterways and parks that effectively create a buffer some between North Minneapolis and inner-ring western suburbs. This is a unique challenge for the Willard-Hay neighborhood. However, it has actually become a launchpad for gentrification efforts, including those of blogger 'Johnny Northside.' He represents the gentrification influence and community organizational aspect of those participating in gentrification, rather than the purely economic motives of what are un-affectionately termed slumlords or absent landlords. One of his main goals as a community activist, providing a high level of community conscious and organization, is to identify and distribute the full and complete address of each level III sex offender in North Minneapolis. Those who follow and contribute to his efforts appear to share this goal and often report on

offenders with pictures of the domicile, exact addresses and information gleaned from police and community corrections personnel. This site presents ongoing stream of criticism of the management of offenders, and more specifically, the supervision given by Hennepin County Community Corrections and Intensive Supervised Release agents.

Willard-Hay is seen by those considering a move back to the city as a place to get a very low-priced home (it was hit hard by foreclosures, like most of North Minneapolis), many city incentives, and be very close to the central business district and commercial areas of the inner-ring suburbs that may be more comfortable and normative to this population. However, Willard-hay also offers anonymity because its residential gird plan is located about halfway between the main corridors of MN Highway 55 to the south and Broadway Avenue to the northeast. With the previously explained western physical and land use boundary, the similar residential expanse of the Near North to the west, and no major thoroughfares moving through this neighborhood, it is both more quiet and removed which likely makes it a place for those trying to avoid trouble or intensive monitoring. The offenders of Willard-Hay live central to the neighborhood, following the previously stated hypothesis of anonymity. A study of the built environment of this neighborhood revealed two important observations. First the neighborhood appeared quite clean and orderly thought Street View imagery as well as a physical tour. What stood out was actual investment in properties with home improvement and landscaping noted on a scale not seen in other parts of this region of Minneapolis. However, there were

also certain areas that seemed in disrepair. The second takeaway from this area was the prevalence of some small multi-story apartment buildings, consisting of 8-12 apartments and lining the main boundary roads. These apartments were observed in other areas as well and it is supposed that they present the most entry-level residence with lowest rents, often local ownership (vs. large corporations with restrictive leasing policies), and oldest buildings that were built with less desirable room sizes and amenities. These buildings were confirmed to house multiple offenders according to this survey and corroborated by JNS (2010). That could be seen as strong evidence for economic and regulatory push factors.

Other unique outliers were examined and there were multiple cases of offenders living in wedge communities, those that are non-congruent and built with remainder lands that fell between industrial land use and residential, ending up residential. All offenders in the Northeast Park neighborhood seemed to follow this pattern, and significantly, there were two offenders on the same wedge neighborhood dead-end street. There was also an example of an offender in a wedge of the Phillips neighborhood, in a residential strip that faced a truck and industrial park. Finally, going back to the blocked-off streets off East Lake Street, there were offender locations near these features as well. This provides some measure of certainty that these urban design flukes or derivations should be extremely well planned out. A good rule of thumb might be that, “when in doubt, park it out,” as from a holistic perspective, the wedge neighborhoods

produce lower quality communities in the measurable extent available, and seem to invite troubled populations.

Figure 31: This image from Google Earth's Street View shows a view of 18th Ave South from East Lake Street. The convergence of commercial and residential is obvious. Also to be noted are the fresh sidewalks ending near the red car, the extent of the commercially-based redevelopment efforts. The road barriers create a lack of continuity of the street and further limit any positive spillover effects from the redevelopment. As well, the barriers prevent easy inclusion of the road in police patrol routes and in the larger community. To further illustrate this point, there is an offender's residence on this very block.

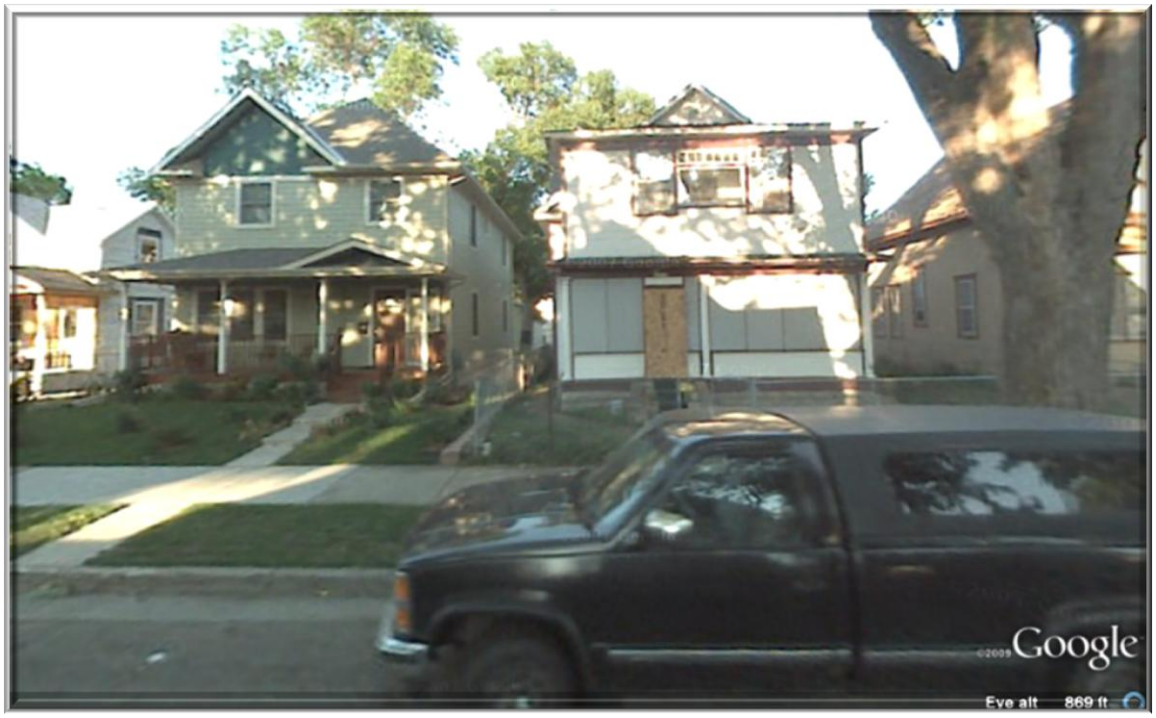


Figure 32: This image from Google Earth's Street View shows a view common of both Phillips and Willard-Hay. This exemplifies the reality of foreclosure and gentrification existing side by side.

Figure 33: This image from Google Earth shows an example of a wedge neighborhood. In this case, the Tyler Street Wedge in the Northeast Park neighborhood which dead ends into a warehouse, creating an area of neglect and lacking uniformity. Tyler Street includes two known offender residences.

Summary

Where the spatial analysis section of this study (phases 1-4) gave insight into a gradient or fuzzy distribution based on principles of contagious diffusion, this analysis gives consideration to the more hierarchal-linked concepts of offender behavior and push/pull factors. Since offenders did not only settle in locations in coincidence with levels of concentration, there clearly is a need to understand why certain neighborhoods endure an abnormally high concentration of offenders. Statistical analysis shows these neighborhoods of interest and outliers well, and the qualitative analysis of why offenders end up in these places can provide some key guidance in community design, as well as offender management. Specifically, it appears to highlight the importance of residence availability as dependent variable of level III sex offender residential locations.

What this analysis brings to light is that there is a significant correlation between urban design, offender housing opportunity and neighborhood integrity. Wedge neighborhoods are often places where offenders can find lower rents and accepting land-lords, further stratifying these neighborhoods as separate entities, unconnected to the larger and more cohesive urban structure. These neighborhoods can be areas of neglect and often form the boundaries between regions of investment and regions of dilapidation. Hence, one finds offenders in many cases, not in the calculated 'worst' neighborhoods, but those nearby, as both police and community development initiatives focus on those most disenfranchised tracts. This presents a clue that there is a degree of anonymity available in these 2nd-worst neighborhoods that outstrips any analysis solely

based on socio-economic gradient. One can then expect that if a proposed block-deep revitalization of Broadway Ave. in North Minneapolis occurs, it will have similar effect as the current revitalization of East Lake Street, creating a hearth for offenders in this newly created edge zones, just off the regions of re-development.

Chapter 4: Discussion

Practitioner Opinions

When conducting research on social problems, the ideas and opinions of practitioners, who are hands on with Level III sex offender's every day, must be reconciled with theory and empirical research. Social issues, by their naturally fuzzy and qualitative nature, cannot always be managed in a way that is consistent with a set dogma or based solely off quantified factors. Correspondingly, the knee-jerk emotional reactions that have driven public policy towards sex offenders are not evidence based practices and many have political payoffs that sex offender managers see right through. Those who deal with this problematic population on daily basis deserve to have their opinions heard alongside any research on the topic. To present merely statistics and maps would dehumanize this most human problem of dealing with dangerous populations. The views expressed by a practitioner will be problem-specific, more short-term and candid than those presented by an aloof researcher of social theory or politician playing on the emotional response of an ill-informed constituency. In many cases, the views of practitioners validate the conclusions that social disorganization research on this topic draws.

For a full spectrum of views across the sex offender management process, interviews with the ISR Supervisor for Hennepin County Community Corrections and the Transitions Facilitator at Minnesota Correctional Facility-

Lino Lakes were performed. Along with that, the authors experience as a Security Counselor with civilly committed sex offenders at the Minnesota Sex Offender Program has played a role in this research and will be fleshed out.

Russ Stricker, ISR Supervisor for Hennepin County Community Corrections, works with and coordinates the supervision of Hennepin County's Level III sex offenders, along with a full range of high-risk populations. Stricker plays up the success of the ISR program, with a recidivism rate of less than 1% for any offense. This is largely due to the agents routinely visiting, in person, with Level III offenders 6-7 times per week at random times. He states that the ISR program is not an easy to complete and many of the offenders are sent back to prison, not for recidivism but for violations of their release. Stricker cites many examples and figures of ISR's success. Undoubtedly, ISR is a program that requires the offender to follow strict regulations and earn back their privileges of free movement and association. ISR's success is well documented as an evidence based program.

However, not all is well in Hennepin County. Stricker cites Hennepin County only placing 50% of eligible releases on ISR, whereas the rest of the state's counties accept nearly 100% of offenders eligible. This is due to a lack of resources in Hennepin County Community Corrections. While no single explanation fully explains the dynamics of post-release supervising and how the money flows, significant issues exist in the states two most urban counties, Hennepin and Ramsey. Stricker cites that his offices caseload often contains 40% of offenders with counties other than Hennepin as their county of

commitment. This points out a structural problem with how sex offenders (especially) are being drawn to Hennepin County as it is least prepared to deal with them.

There is little concern that offenders will not be monitored as Stricker explains that the political situation makes sure that sex offenders eligible for ISR are placed on it. About 45-55% of his agent's caseloads are comprised of sex offenders of Level II and Level III. This is significantly down from highs around 60% only a few years ago. Stricker cites the exponential growth of civil commitment for Level III sex offenders as the main factor in this change. Problematically, offenders are leaving their county of commitment and moving to Hennepin County, placing a burden on this under-resourced area, however they don't get out of any supervision. Hennepin County takes a very serious line on sex offender supervision and puts them as first priority in many programs, especially supervision. One should be quick to point out that offenders shouldn't be allowed to move to a county that cannot adequately supervise them; can't Hennepin refuse incoming supervised offenders, as their movement requires approval of probation authorities? As Stricker explains, there's a catch. Hennepin County is home to the only two half-way homes (Damascus House and 180 Degrees) for Level III sex offenders in the state, both in Minneapolis. The bed capacity has been maxed out and no new facilities have been built statewide since the 1970's. Suburban counties are able to get their offenders court ordered into these half-way homes and if the offenders are successful in treatment, they will gain nearby employment (as a condition of release) and build social

networks. Then, another potentially dangerous offender is added to Hennepin County. While Sticker has worked out many arrangements for apartments for offenders on ISR, there is often a problem when the offender leaves supervision and looks to find housing. While not on supervision, offenders housing choices are limited and they seem to fall into areas of lowest rents and highest residential instability.

Regardless of ones views on social problems in urban environments, continuing to add more and more released offenders to an area that has issues already is, at a minimum, poor management policy. Stricker agrees and firmly believes that neighborhood characteristics are a significant determinate of an offenders ability to reintegrate back into society. ISR, in a sense, is adding the structure and institutional accountability to the offender's lives that some communities are unable to. Disorganized communities in neighborhoods such as Jordan and Phillips often show very little interest in community notification meetings as well. On a budget note, Stricker emphasizes that the ISR program, at $15 per offender/per day whereas much discussion has been made about the cost of civil commitment at nearly $350 per offender/per day. Stricker sees inevitable constitutional issues in the future for this method of sex offender management and feels that decision makers should, "admit it, and move on; it is going to be found unconstitutional."

Operational level issues are known well by practitioners such as Stricker, and yet they feel that strategic level planners at the state, county and municipal levels have slighted their opinions and empirical results. Stricker commends the

MN DOC's (2007a and 2007b) recent work that has brought more reality into the debate, with some empirical evidence contrary to what is often reported as public opinion. Stricker, like others in his field, hopes that many of the non-evidence based practices find their way out of policy soon. However, it is more likely that the model of residential restrictions will prevail. Residential restrictions were placed on sex offenders (can't live within x feet of a school, daycare, etc.) in some areas as a reaction to the wave of sympathetic cases referred to in the introduction. Iowa had one of the more stringent policies (2500 ft. from a large category of children's congregation places). Although, the state won out over constitutional challenges, the results as a management policy were clear, these restrictions were a failure a keeping anyone safer than without them (MN DOC 2007b). When asked about the issue of residential restrictions, discussed for his area of responsibility in Hennepin (2004), Stricker suggests that "politicians used it for what is was worth, and it died off." Public favored reactionary policies such as these often do not enhance public safety. This is a significant concern of practitioners and a reason that they should be included at the strategic level planning of sex offender management.

Lisa Monahan is the Transitions group facilitator at MCF-Lino Lakes. That prison is a level 3 (medium) security institution that deals with a large number of sex offenders before they are released to the community. Observing a course run at the facility brought a similar feeling to the personal experience the author has at the Minnesota Sex Offender Program (MSOP). The offenders who had completed their assigned treatment were leading the class for offenders who

were around 3 months from release. They talked a good game and would make the average person feel that these offenders were on the right track. However, in conversation after the course, Monahan confirmed a fear that these offenders were no different than those whom I had dealt with; displaying the manipulative and “only talk” behavior that institutional sex offender managers deal with on a daily basis. Many of the offenders were on their second and third offense, after having completed this same treatment program before. All were level I and II offenders who will not require community notification, public-access registry display and likely will avoid ISR. In that, it is clear that while we must focus on level III offenders most significantly, there is much more to the community management of sex offenders than just that population.

In my time as a Security Counselor for the MSOP, I have found that level III offenders do require significant supervision. The embattled MSOP was designed to treat the worst of the worst level III’s, diagnosed with a psychological disorder, who could not be released without significant danger to the public. However, the MSOP is growing rapidly and taking on a much more youthful population, some of whom have never been convicted as adults (Oakes 2008). The program has been pointed out as financially unsustainable and has become a de facto detention operation under the leadership of Dennis Benson, former Warden of MCF-Stillwater. Civil commitment of sex offenders in Minnesota appears to be a path of waning public support yet these offenders desperately need supervision at a level that does not exist, save ISR, in the community.

Adding the financial issues of the time and the extreme cost of civil commitment, community supervision and treatment will eventually gain more appeal to legislators. It is likely that the pattern of clustering in Minneapolis will be exaggerated more as offender releases ultimately increase to levels prior to MSOP's dragnet was fully deployed. Sex offenders have a host of specific treatment and supervision needs that clearly cannot be provided by an urban fabric that has a multitude of other social problems to deal with. However, all logic, and the views of practitioners suggest that overcoming a NIMBY (not in my backyard) mentality in the suburbs of the Twin Cities, and increasing the numbers of offenders treated in these areas (at least those committed by these counties) will have less an effect on these organized areas than the disorganized and disparaged neighborhoods of Minneapolis that are currently home to a majority of the state's Level III sex offenders.

Summary

Sex offender community management is a field plagued with poor and inefficient policy, resulting from reactionary, feel-good policies that do little to enhance safety and offender reintegration. Looking past individual level variables and analyzing community level characteristics can help to explain why sex offenders live in the communities that they do. At the least, this analysis provides for a more robust discussion of the potential management policies to be adopted, with a focus on the guidance of practitioners and evidence based practices.

Communities are important determinates of recidivism and reintegration. Unfortunately, the communities most able to provide guardianship and accountability to reintegrating offenders participate the least in this social necessity. This is an expected result of social disorganization theory. These communities are able to do this through the organization that their inner-city counterparts lack. Sex offenders thrive on anonymity and a return to familiar criminal patterns of behavior. Therefore, a combination of push and pull factors bring them to neighborhoods that have little power to stop them. Addressing the structural issues of these neighborhoods should be prioritized as sex offender clusters appear to be a true proxy for disenfranchised and needy communities.

Public safety is not served by congregating predatory offenders in proximity and state law charges supervision agencies with mitigating the clusters. However, they are prepared, funded and on shaky legal ground to take further steps than they currently have. Perhaps more open discussion, based on empirical evidence, the type this study will produce, can lead to greater public and decision maker understanding of the reality of Minneapolis's sex offender issues. Discussion of the society-wide approach and goals regarding management of dangerous populations, without market-based media bias, can increase the chances that effective policy is adopted. This can only be done through empirical research.

Chapter 5: Synthesis and Conclusion

The Social Problem

Predatory sex offenders eventually are released to the community after their prison terms. This population is potentially dangerous, prone to recidivism and is highly stigmatized. Stigmatization is a process that isolates a specific group and assigns socially constructed status to them that negatively affects their ability to interact in the dominant or mainstream culture. Stigmatization is dangerous when it is applied to groups who thrive on anonymity and need community-based accountability, such as sex offenders. Another effect of stigmatization is distance and isolation. This analysis and Mustaine et al. (2006) show that sex offenders occur in a spatially clustered pattern that centers on areas higher social disorganization. In that, the functionalist perspective can be used with the lens of social disorganization to understand the problems with current social management of released offenders.

Sex crimes are judged by our society to be only less horrendous than murder. The psychological damage that sex crimes do to a victim is seen as worse than the physical violence of other crimes. Logically then, our society sees sex offenders as a very dangerous population that it is not adequately protected from by formal legal means. Public opinion, driven by media hyper-coverage of offenders in suburban areas, has driven many of the present sex offender management policies. Tragedies of the most sympathetic victims (young, white and female), such as Dru Sjodin, Katie Poirier (both in Minnesota),

Jessica Lunsford and Megan Kanka have compelled the public to demand changes in sex offender management through legislative routes. Civil commitment statues have been enacted to keep “sexual psychopathic personalities” and “sexually dangerous persons” in secure treatment environments until they are judged to be rehabilitated. Oakes (2008) reports much of the controversy with the Minnesota Sex Offender Program (MSOP) as it has a ballooning budget and population, while no evidence of success.

This is the heart of this social problem, does society let a panel of psychologists arbitrate what appear to be life sentences, through civil commitment, for offenders who have completed their judicial sentence at incredible expense to the taxpayer, or would it be better served by community treatment and reintegration? Regardless of what happens legally with civil commitment, sex offender community management will continue to be an important social problem that needs to be part of the societal dialogue and debate.

Public safety is the primary concern of this issue; all solutions should be driven by this focus, before all others. Sex offender recidivism was found to have decreased but still run around 13% according to the Minnesota Department of Corrections (MN DOC) (2007a). The MN DOC (2003) explains that Minnesota Statute §244.052, subdivision 4a, charges:

"the agency responsible for the offender's supervision … shall mitigate the concentration of level three offenders and concentration of level three offenders near schools."

With this as a management backdrop, it is clear that clustering of offenders is not desirable. However, in many areas such as Minneapolis, MN, this is occurring. Not only are the (risk Level III) offenders living in close proximity to one another, they are living in neighborhoods that will not best be able to supervise and support their reintegration to society and move towards futures as productive citizens. Offenders are ostracized, moved and shuffled out of communities with sufficient organization to support rehabilitation and the Twin Cities Metro Area has thus used the city of Minneapolis as a dumping ground for the states most dangerous predatory sex offenders. This does not increase public safety, is an act of discrimination towards the predominantly minority neighborhoods that are receiving the majority of offenders and is bad public policy, yet it serves the NIMBY (not in my backyard) mentality of the more affluent and organized communities.

Community sex offender management is an important issue that is a political battle ground. Political power and the ability of communities to organize against the offenders entering them is substantially important in understanding where and why sex offenders live in the most socially disorganized neighborhoods. Probation officials agree that this is not the best practice for increasing public safety and helping this stigmatized population reintegrate and create a successful and productive future. Sex offender policy has been largely

driven by politics rather than experts, which has created a serious disconnect between different levels of government that would be better served as cooperating. As well, the focus has been placed on containment, surveillance and monitoring rather than successful reintegration and the communities' role. Accurate explanations, rather than sensationalized conceptions, of sex offenders and how they are presently managed, and how this can be improved, need to be disseminated to the population at large before any improvements in public safety can be realized.

Conclusion

This research has taken multiple disciplines work on a complex social problem, and fused them into a spatially-conscious analysis attempting to understand the distribution of level III sex offenders and the relevance of social disorganization theory. In that, this analysis succeeds in seeing the new broad inter-disciplinary research trends that focus on understanding social ills to produce insights for policy and management. This research demonstrates the importance of the ecological framework for understanding urban populations and managing dangerous offenders during community-based reintegration (supervised or otherwise).

What this research shows is an established fuzzy correlation of offender concentrations and higher levels of social disorganization; it does not attempt to say that ecological factors, such as those quantified in the social disorganization index are the only factors behind the pattern of offenders observed. In this case, the idea that a statistical analysis can accurately model a population and reveal

important truths is not left untested. The Phase 5 study in this research reached out to all available sources of data to better understand the reality of offender locations. The models miss important pieces of the urban morphology and cannot help to explain the actions of a population from an ecological perspective. Statistical analysis is powerful in its ability in telling the researcher where to look, but less powerful in establishing the reasoning for the values it presents in this work. In essence, one who proclaims the value of an ecological approach and uses only statistical modeling and analysis is ignoring what should be the key element of the approach, local knowledge and explanation.

Offender clusters occur in and around the most disorganized places within the urban landscape of Minneapolis, MN. Family disruption proved to be the most important factor in modeling this population, a conclusion that a structural-functionalist would be thrilled to see as it reaffirms the importance of social structure, most clearly the importance of the nuclear family as the base institution or social organization. Building off that, socio-economic status was also an important determinate in this study and showed how community prosperity and expectations can play a deterministic outcome on the social landscape. Those areas of low SES and high family disruption were most isolated from the rest of the city and maintained high levels of offenders, very possibly seeking the autonomy of the weaker social structure and lack of informal social control present in these areas.

While the statistical analysis showed important truths about the community characteristics, it might be a stretch to say offenders gravitate to these areas

based on wither push or pull factors. A full spectrum of research, including practitioners in the field, reviews the most complicated challenge to offender managers is community placement. While they may be trying hard to enforce the legal requirements for offender dispersion, they are failing due to a lack of infrastructure and a lack of political will to deal with this problem. Push and pull factors are identified, especially in regard to urban morphology concerns, but any specific binary conclusion of push vs. pull is not forthcoming. Further research to evaluate these factors would require interview and study of offender's thoughts and actions in regard to their residential choices.

This research is similar to studies on Chicago tracts in its approach, and this is different from most works on sex offenders which have attempted to look at larger units of agglomeration and ignore what could be termed qualitative knowledge and explanation (from the ecological and urban design perspectives). Geographers can add to this research area by a natural tendency to explore the urban morphology, using an approach that centers on the questions, "Why is ____ found there." That inclusion of the spatial domain and the familiarity with the tools of statistical and urban interrogation places this study tightly in the wheelhouse of geography.

This research presents a template that can be applied to other urban areas for comparison in a narrow sense, and a methodology that can be applied in many social science research projects. In specific, the pairing of statistical analysis and local all-source analysis can provide the best insight possible on urban issues. In this research, there were areas identified in the statistical

research as outliers which were analyzed further. That further analysis showed that there was a role for local analysis of offenders that doesn't readily make the news. Urban planners may have the tools to remedy some areas that are victims of heavy offender concentration. In other cases, simple economics prevailed for offenders, and it will take a level of political will, funding and probably (somehow) community acceptance of dangerous offenders outside the city of Minneapolis. The current spatial disposition of offenders is unjust and perpetuates the pattern of urban decline and segregation in sectors of Minneapolis. Certainly, more even distribution of offenders would not cure social ills, and it is clearly an effect of low levels of organization, but it may alleviate one more collateral consequence or barrier to improvement in the most disenfranchised communities of Minneapolis.

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Appendix A

Tract	Tract	SES Z Score	SES Rank	SES %	Res. Stab. Z	RS Rank	RS %	Fam. Dis. Z	FD Rank	FD %	Z Sums	Z_SD	SD Rank	SD %
10970	003501	1.604592	3	2.2	7.486	1	0.7	0.951	25	18.0	10.041307	4.352539	1	0.7
10080	104700	0.510967	50	36.0	6.279	2	1.4	-1.591	133	95.7	5.199518	2.253801	2	1.4
10570	007301	1.407199	4	2.9	0.510	21	15.1	2.677	1	0.7	4.594747	1.991654	3	2.2
10480	007801	0.830921	32	23.0	2.231	3	2.2	1.210	18	12.9	4.271995	1.851753	4	2.9
00010	003300	1.313394	6	4.3	0.792	8	5.8	1.961	8	5.8	4.066550	1.762700	5	3.6
10700	101300	0.978585	24	17.3	0.617	15	10.8	2.317	3	2.2	3.912413	1.695888	6	4.3
02490	101500	1.292756	7	5.0	0.287	33	23.7	2.319	2	1.4	3.898887	1.690025	7	5.0
10750	102100	1.163269	16	11.5	0.729	10	7.2	1.998	6	4.3	3.890672	1.686464	8	5.8
11040	102300	1.122931	18	12.9	0.477	22	15.8	2.003	5	3.6	3.602904	1.561727	9	6.5
00960	103400	1.646155	2	1.4	0.449	23	16.5	1.416	14	10.1	3.511111	1.521938	10	7.2
00060	007802	1.190589	13	9.4	1.504	4	2.9	0.660	34	24.5	3.353855	1.453773	11	7.9
00030	005902	1.237315	10	7.2	0.540	20	14.4	1.376	15	10.8	3.152639	1.366554	12	8.6
10620	002200	1.049772	21	15.1	0.617	16	11.5	1.465	12	8.6	3.131542	1.357409	13	9.4
01180	102800	0.405167	55	39.6	0.429	25	18.0	2.231	4	2.9	3.064899	1.328521	14	10.1
11090	002700	1.006533	23	16.5	-0.012	54	38.8	1.964	7	5.0	2.959391	1.282787	15	10.8
02140	101600	1.370321	5	3.6	-0.239	81	58.3	1.597	9	6.5	2.728888	1.182873	16	11.5
10460	110000	0.839168	31	22.3	1.467	5	3.6	0.418	41	29.5	2.724521	1.180980	17	12.2
11020	109400	1.188043	14	10.1	0.187	38	27.3	1.340	16	11.5	2.715089	1.176891	18	12.9
10760	101400	1.078552	19	13.7	0.114	45	32.4	1.471	11	7.9	2.663979	1.154737	19	13.7
10520	107200	0.897268	27	19.4	0.139	43	30.9	1.448	13	9.4	2.483889	1.076675	20	14.4
01199	104100	1.157624	17	12.2	-0.010	52	37.4	1.323	17	12.2	2.470255	1.070765	21	15.1
01200	008300	1.018968	22	15.8	0.595	18	12.9	0.750	33	23.7	2.364176	1.024784	22	15.8
02200	025000	1.937688	1	0.7	-1.251	139	100.0	1.547	10	7.2	2.233992	0.968354	23	16.5
10930	107100	1.181304	15	10.8	0.115	44	31.7	0.854	30	21.6	2.150144	0.932008	24	17.3
00680	008400	0.891659	28	20.1	0.079	48	34.5	1.171	19	13.7	2.141418	0.928226	25	18.0
11050	003200	0.401792	58	41.7	0.673	12	8.6	1.041	20	14.4	2.115773	0.917110	26	18.7
10990	106000	1.228008	11	7.9	-0.108	67	48.2	0.831	31	22.3	1.950880	0.845635	27	19.4
01100	007900	1.278274	8	5.8	0.151	42	30.2	0.451	39	28.1	1.880079	0.814945	28	20.1
02470	002400	0.730922	37	26.6	0.113	46	33.1	1.027	22	15.8	1.870323	0.810717	29	20.9
10490	100900	0.927510	26	18.7	-0.173	71	51.1	0.947	26	18.7	1.702127	0.737810	30	21.6
11110	102900	0.679390	42	30.2	0.558	19	13.7	0.445	40	28.8	1.681824	0.729009	31	22.3
10980	007302	1.195347	12	8.6	-0.012	55	39.6	0.496	36	25.9	1.679323	0.727925	32	23.0
02310	005901	1.247139	9	6.5	-0.193	75	54.0	0.338	46	33.1	1.392270	0.603498	33	23.7

Tract	SES Z Score	SES Rank	SES %	Res. Stab. Z	RS Rank	RS %	Fam. Dis. Z	FD Rank	FD %	Z Sums	Z_SD	SD Rank	SD %
020101	-0.128444	85	61.2	0.329	30	21.6	-1.822	137	98.6	-1.621251	-0.702753	100	71.9
011704	-0.897412	113	81.3	-0.103	62	44.6	-0.657	100	71.9	-1.657474	-0.718454	101	72.7
022802	-0.749748	108	77.7	-0.495	106	76.3	-0.429	93	66.9	-1.673784	-0.725524	102	73.4
109000	-0.939999	115	82.7	-0.782	126	90.6	0.045	63	45.3	-1.677246	-0.727025	103	74.1
000603	-0.259587	93	66.9	-0.224	80	57.6	-1.198	125	89.9	-1.681154	-0.728719	104	74.8
105600	-0.314790	95	68.3	-0.394	96	69.1	-0.972	115	82.7	-1.681407	-0.728829	105	75.5
101200	-0.279378	94	67.6	-0.708	121	87.1	-0.734	103	74.1	-1.721584	-0.746244	106	76.3
021200	-0.248723	92	66.2	-0.693	120	86.3	-0.808	105	75.5	-1.750121	-0.758613	107	77.0
103700	-0.375269	97	69.8	0.081	47	33.8	-1.463	132	95.0	-1.756667	-0.761451	108	77.7
003502	-1.703205	129	92.8	0.738	9	6.5	-1.002	117	84.2	-1.967296	-0.852751	109	78.4
012001	-0.747667	107	77.0	-0.456	103	74.1	-0.838	107	77.0	-2.041942	-0.885107	110	79.1
109200	-0.420167	99	71.2	-0.396	97	69.8	-1.247	127	91.4	-2.062675	-0.894094	111	79.9
111300	-1.924072	133	95.7	-0.832	134	96.4	-0.843	108	77.7	-3.599400	-1.560208	133	95.7
106600	-2.272632	136	97.8	-0.108	66	47.5	-1.234	126	90.6	-3.615160	-1.567039	134	96.4
106500	-2.319168	139	100.0	-0.357	94	67.6	-0.972	114	82.0	-3.647910	-1.581236	135	97.1
021800	-1.803095	131	94.2	-0.256	84	60.4	-1.633	135	97.1	-3.691966	-1.600332	136	97.8
111400	-2.153013	134	96.4	-0.789	127	91.4	-0.988	116	83.5	-3.930626	-1.703783	137	98.6
010700	-2.202401	135	97.1	-0.558	109	78.4	-1.348	130	93.5	-4.108141	-1.780729	138	99.3
023600	-2.273908	137	98.6	-0.831	133	95.7	-1.612	134	96.4	-4.716621	-2.044482	139	100.0
103900	-0.218021	88	63.3	-0.041	57	41.0	-2.229	139	100.0	-2.488277	-1.078577	120	86.3
003800	-0.332317	96	69.1	-0.141	68	48.9	-2.079	138	99.3	-2.552621	-1.106468	121	87.1
109100	-1.649064	127	91.4	-0.448	102	73.4	-0.511	95	68.3	-2.608277	-1.130593	122	87.8
111200	-1.218886	119	85.6	-0.852	135	97.1	-0.552	99	71.2	-2.622845	-1.136907	123	88.5
022901	-1.191038	118	84.9	-0.470	104	74.8	-1.131	123	88.5	-2.791437	-1.209986	124	89.2
021700	-0.941682	116	83.5	-0.676	118	84.9	-1.194	124	89.2	-2.811626	-1.218737	125	89.9
105500	-2.290061	138	99.3	0.159	41	29.5	-0.816	106	76.3	-2.947303	-1.277548	126	90.6
010600	-1.744904	130	93.5	-0.676	117	84.2	-0.547	98	70.5	-2.968013	-1.286525	127	91.4
111500	-1.364303	120	86.3	-0.799	129	92.8	-0.868	111	79.9	-3.031750	-1.314152	128	92.1
105000	-1.630502	126	90.6	-0.299	89	64.0	-1.105	120	86.3	-3.034357	-1.315282	129	92.8
108000	-1.860676	132	95.0	-0.072	60	43.2	-1.118	122	87.8	-3.050904	-1.322455	130	93.5
105100	-1.481233	122	87.8	-0.816	132	95.0	-0.778	104	74.8	-3.075818	-1.333254	131	94.2
022801	-1.701069	128	92.1	-0.055	58	41.7	-1.437	131	94.2	-3.192545	-1.383851	132	95.0