ABSTRACT

Title of Document:	THE UNDISCOVERED COUNTRY: HOMICIDE, DYNAMIC CHANGE, AND DETERRENCE IN WASHINGTON, D.C. NEIGHBORHOODS, 1998-2006.
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Studies examining homicide rates often have two limitations. First, there is a lack of rich, dynamic data to account for change, and second, no consideration of formal social controls at the neighborhood-level. To address these limitations, longitudinal data from Washington, D.C. was collected at the neighborhood level. This homicide incident and neighborhood demographic data, which spans from 1998-2006, allow for a test of two theoretical perspectives within a classical/social control sphere, namely social disorganization and deterrence. This work poses two main questions: Do dynamic structural factors influence homicide rates across neighborhoods? Does aggregate deterrence influence homicide rates across neighborhoods? Results suggest that dynamic structural factors predict homicide rates better than static factors, though deterrence results are insignificant. Implications and avenues for future research are also discussed.

THE UNDISCOVERED COUNTRY: HOMICIDE, DYNAMIC CHANGE, AND

DETERRENCE IN WASHINGTON, D.C. NEIGHBORHOODS, 1998-2006

By

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2014

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Dedication

To Angel. I did it, sweet pea.

Acknowledgements

"You should never be in the company of anyone with whom you would not want to die."

This would not have been possible without a legion of contributions from others throughout my life and career. Foremost, I thank my parents for their unwavering love and support that has made any success of mine possible. I have been fortunate to encounter numerous helpful individuals throughout my scholastic career, such that a comprehensive list and description would rival the length of this dissertation. Still, I need to acknowledge the immeasurable guidance provided by some specific individuals through my academic life – Alana Caraccio, Robert Combs, Seyyid Hossien Nasr, Peter Rollberg, Charis Kubrin, John Laub, and Charles Wellford. Of course, I want to thank my dissertation chair, Raymond Paternoster, for his insightful commentary, humor, and patience dealing with me. Additionally, I greatly appreciate the time and feedback given by my committee that has meaningfully improved this dissertation. This work would not have been possible without the partnership with and assistance of the Washington, D.C. Metropolitan Police Department. Specifically, I thank James Trainum, who taught me how to read cases, answered my questions, and graciously provided space for me to spend countless hours doing case review. Lastly, I wish to thank my enemies, both personal and conceptual. Part of my strength in this quest has come from anticipating, reacting to, and responding in various modes of battle. The rumors of my demise are exaggerated.

Any blame or fault attached to this work is mine alone.

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Chapter 1: Introduction

> "…The undiscovered country… puzzles the will,
> And makes us rather bear those ills we have
> Than fly to others that we know not of…"
> *-Hamlet, Act III, Scene I*

Explanations for differences in homicide rates often have two pitfalls: first, a lack of rich, dynamic data to explore theoretical predictions; and second, a failure to account for formal social controls at the neighborhood-level. With these in mind, detailed, longitudinal data from Washington, D.C. were collected for the time period 1998-2006. Drawing on two theoretical perspectives within a classical/social control sphere, namely social disorganization and deterrence, the collection of new data and conceptualization of social control variables allow this work to address two main questions: Do dynamic structural factors influence homicide rates across neighborhoods? Does aggregate deterrence, as captured by homicide clearance, influence homicide rates across neighborhoods?

This introductory section covers the context, purpose, and justification for the study. To start, a brief discussion of Washington D.C.'s demographic shifts, homicide rates, and public focus helps establish context for this current work. Next, the potential utility of exploring dynamic structural factors and formal legal factors is reviewed. Missing from many neighborhood-level studies is a measure of formal control, and this work will discuss how deterrence theory can contribute such a conceptualization; some researchers have buried deterrence theory without praise, though this may be premature given the lack of celerity testing and successes in deterrence-based policing. Finally, there are numerous gaps in the homicide

literature, which allows for the approaches proposed by the current study. This study's purpose is to confront an "undiscovered country" of unanswered questions, and this introduction will provide an overview of what is known and what remains undiscovered.

Washington, D.C.

> "Washington, D.C. is a city of Southern efficiency and Northern charm."
> -*John F. Kennedy*
> "Outside of the killings, D.C. has one of the lowest crime rates in the country."
> -*Marion Barry*

Washington, D.C. is the only city created by a direct mandate within the U.S. Constitution and has continued to develop a unique history and context since 1790. While Article I called for a federal district, the actual location was determined through a compromise between the northern and southern interests after ratification. The land was surveyed and city designed for nearly a decade before it became the official seat of government in 1800. Per the District of Columbia Organic Act of 1801, the federal district was composed of three regions – the area to be used expressly by the federal government was known as the City of Washington, with the surrounding region on the east of the Potomac River named Washington County and the region to the west of the Potomac named Alexandria County. Interestingly, two cities remained autonomous – both Georgetown and Alexandria had been founded in the colonial period and placed inside the boundaries of the new federal district, though neither city was incorporated into the District of Columbia. Both Maryland and Virginia ceded territory for the federal district, but the aforementioned act of 1801 required that the laws of those states remain in force within the respective

yielded counties; in other words, Maryland laws were enforced in Washington County and Virginia laws in Alexandria County. Virginia was granted the power to incorporate Alexandria County and the City of Alexandria into their state from the federal district in 1846, and in 1871 Congress passed a law incorporating the cities of Washington, Georgetown, and Washington County into the current geography known as "Washington, D.C."[1] During this period, the District was allowed its own government and laws for the first time; additionally, a governor was established as the head of government and was to be appointed directly by the U.S. President. However, all laws were still reversible by the Congress, and after corruption scandals arose regarding the first D.C. governor, Congress re-established direct rule over the region. This lasted until 1973, when Congress passed legislation reverting to the 1871 law in many ways, though a notable difference is that in the 1973 version, the head of government for D.C. was a democratically-elected mayor.

Demographically, the District has seen numerous shifts which have contributed to its unique context, both in overall population and among the black population specifically. The District of Columbia grew nine-fold from its founding through 1860, with an original population of over 8,000 to over 75,000 in 1860. The percentage of black residents was never lower than 19% according to census records during that period. While slavery was recognized within the District until 1862, the

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[1] According to the District of Columbia Organic Act of 1871, the three incorporated regions would have their charters revoked and be re-chartered as a single District of Columbia; however, the law expressly states that the region known as the city of Washington would continue "to be known as the city of Washington" – this is the root of the moniker Washington, D.C., though notably, the law also dictates the city of Georgetown to be known as the city of Georgetown in the same fashion. So to accurately follow the law, any area within Georgetown should technically be addressed as "Georgetown, D.C."

black populations from 1830-1860 were majority free people – according to the 1850 and 1860 censuses, well over 70% of the District's black population were free.

Over the next century, the District experienced more changes in population. The overall population continued to grow until reaching its peak in 1950 with over 800,000 residents – the most dramatic growth in population corresponded with a 36% increase in total residents between 1930 and 1940 linked to New Deal government-growth, though large increases are also seen corresponding to the two World Wars. The black population rose after the Civil War to about one-third of the total District population, but then dropped to near one-quarter by the 1920 census. After migrations of black populations seen throughout the country following the two World Wars, Washington, D.C. became one the first major cities with a black population majority; in 1960, nearly 54% of the population in Washington were black, which itself was a dramatic increase from the 1950 level of 35%.

As the overall population of Washington, D.C. decreased from 1960-1980, the black population remained greater than 70%. D.C. continued to lose population in the 1990 and 2000 censuses, though the percentage of blacks also declined into the 60s and then 50s. While the District has gained population since 2000, the black population continues to drop as a percentage. As of the 2010 Census, the black population is down to 50.7%. Some of this change has been due to increases in the white population – in 1950, whites made up nearly 65% of D.C. residents, but this figure dropped to a low of about 27% in 1980; since then, the white population has increased and is reported in the 2010 Census as 38.5% of the District's population.

When the District of Columbia is included in aggregate crime studies, it is often an outlier in the data (Ousey & Augustine, 2001; Velez, Krivo, & Peterson, 2003). Examinations of aggregate homicide trends found Washington, D.C. often considerably higher than other jurisdictions, though few explanations are given beyond alluding to the city's reputation as being a very violent place, thus providing at best a tautological reasoning for homicide in the District.[2] Crime, and particularly homicide, in Washington, D.C. has garnered national media interest throughout the years. While there is always an inherent interest in the social condition of a nation's capital city, the crime spikes of the mid-1980s brought an intense focus onto the District. With a drug market so extensive that it prompted a drug-buy for a 1989 Oval Office speech highlighting the crack epidemic, and with the substantial violence associated with crack during this period, Washington, D.C. became known for a time as both the political and murder capital of the United States.

While many of these factors have clearly changed for the better (see footnote 2), the state of crime and homicide in D.C. has been a recurring focus during discussions and recent challenges to the District's gun control law. Originally enacted in 1975, the law essentially prohibited handgun licensing until the legislation was declared unconstitutional in 2008. Given the high percentage of handgun crimes and homicides within Washington, both sides used general trends and research from

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[2] While such an explanation is very easy when Washington, D.C. had homicide rates upwards of 70 per 100,000 residents during the 1990s, an appeal to stereotypes is more difficult now. The 2011 homicide rate in D.C. was 17 per 100,000, which puts the District in the company of Buffalo, NY and Richmond, VA rather than Baltimore, Detroit, or New Orleans. This rate has dropped further in 2012, as Washington, D.C. has less than 100 total homicides in a year for the first time since 1963. While still producing a homicide rate about three times the national average, it is interesting to see greater change in Washington than in other cities that were once the closest competition below the District's rate; it suggests an interesting puzzle may be afoot for those seeking explanations, both within D.C. itself but also for unconsidered mechanisms in other areas.

other jurisdictions to support their respective positions – proponents of the law noted it would be irresponsible to loosen gun markets in an area prone to gun violence, whereas opponents cited studies linking relaxed gun laws to lower crime and noted that the D.C. ban did not appear to have significant impact on crime given the high gun usage among criminals.[3]

The impact of D.C.'s handgun ban was often argued through data from other regions or older D.C.-based studies – the common problem for both sides was limited data availability. While Washington, D.C. has consistently reported aggregate data to the *Uniform Crime Reports* (UCR), the data is of limited use when trying to explain factors contributing to trends or differences within geography. In contrast, data in the *Supplemental Homicide Reports* (SHR) is of greater use for trend analysis considering the detail given for homicide incidents – however, the District had not reported to the F.B.I. between 1997 and 2010. The results reported later in this work represent the first time such data have been examined, due to a collection process recounted in Chapter 3.

Neighborhood Studies

Exploration of differential crime and homicide trends across geography can be traced to A. Quetelet's work in France during the 1830s and 1840s. A century later,

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[3] While specific arguments for both sides often appealed to hyperbole and ideology lightly-masked in facts, it is worthy to note that the predicted/alluded to increase in gun crime due to removing the ban has not taken place, at least in the short term. In 2009, the first year without the 1975 handgun ban in effect, homicides dropped 23%, assaults with a firearm dropped 9%, and total violent crime fell 4% citywide. These drops have generally continued or been maintained through 2012. While far from proof that relaxing gun laws causes a crime drop, these short-term crime declines on their face may raise some doubts in the "Proven Correlation between the Availability of Handguns and Incidents of Violence" (see *amici curiae* of Professors of Criminal Justice In Support of the Petitioners, in *District of Columbia v. Heller*, 2008). Of course, much of this issue touches on the nature of the gun markets in D.C., especially the potential strength and robustness of the secondary illegal market. Certainly, this issue begs for more research.

C. Shaw and H. McKay conceptualized "social disorganization," rooted in prior positivist work of the Chicago School. Their work later fell out of favor, only to be revitalized through a theoretical re-conceptualization by R. Kornhauser (1978) as a social control theory; additionally, growing interest in communities and crime was marked by a 1986 *Crime & Justice* dedicated to the topic. Studies examining differences in homicide trends between neighborhoods have generally remained within the social disorganization framework, providing ample predictions but also recurring limitations. Discussing these gaps, often a result of limited data at the neighborhood-level, will yield some insight as to the direction of the current study.

Neighborhood-level research provides a rich ground to both test theory and improve upon prior research, yet there remain two important limitations which this current work seeks to address. One limitation was highlighted by C. Kubrin and R. Weitzer (2003) – most important from a data perspective[4] are the lack of longitudinal data, use of non-dynamic predictors, and limited measures of formal social controls. Given that a great deal of neighborhood-level study uses U.S. Census data to research social disorganization-based theories, these limitations should not be surprising. Census periods are cross-sectional at ten-year increments, and researchers often carry the same value for variables over multiple years. Additionally, Census data provides sufficient variables to examine tenants related to informal social control (poverty, residential mobility, disadvantage), but lacks formal control measures. The current study will examine consecutive years of data (1998-2006) with local dynamic

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[4] This is in contrast to a methodological perspective, for example the recommendation to use techniques addressing spatial autocorrelation and interdependence. While certainly important and incorporated within this study later, such limitations in previous work are less a function of the current topic, data availability.

predictors of informal control and measures formal social control drawing from police research and deterrence theory.

Dynamic Factors

Neighborhood studies often take demographic data from the U.S. Census. The Census provides a wide array of variables that serve as reliable measures given the sampling frame. This data are widely available for any region of the U.S. that one wishes to study. Of course, the drawback is that the benefits of range and stability stem in part from the lack of frequency in collecting them. When data are collected every ten years, one can allocate sufficient resources for a large undertaking. If these Census variables were collected in all regions on a yearly basis, the costs would rise and potentially the measures themselves would suffer due to respondent fatigue. Yet, one of the limitations to neighborhood-level studies is the lack of dynamic factors, and a measure captured once a decade is emblematic of this limitation.

This dilemma suggests that it is worthwhile to explore other options, even if they are less ideal or more difficult to obtain. A tacit assumption of using Census data, especially in studies that span across more than a decade, is that a federal government apparatus will yield the best measure of any locality and the non-dynamic variables are worth the drawbacks because nothing else could be as reliable. However, local jurisdictions and major cities do collect their own data for planning purposes in-between decennial population counts. This is done not through surveys, but rather through rates of use for local government resources. Such resources can vary, from federally-funded but locally administered programs (e.g. Temporary Assistance for Needy Families, or TANF), sales within a local real estate market, or

use of birth facilities at local hospitals by specific groups (such as teen mothers or low birth-weight infants). These types of data are important to local jurisdictions, as planning and resource allocation is often done on a yearly basis corresponding with budget resolutions. As such, these local variables can possibly prove useful in longitudinal testing of neighborhood-level theories. For this study, local data have been obtained through various government offices within Washington, D.C. in order to test a reliable and dynamic set of neighborhood-level variables.

Formal Social Control and Deterrence

Another limitation in neighborhood-level studies is a lack of formal social control measures. While resource deprivation and population factors are theorized to work informally where poverty and residential turnover reduce control among residents and families, the role of formal controls has been less explored. Certainly, researchers have considered the impact of formal controls within communities, from a theoretical social disorganization perspective (see Bursik & Grasmick, 1993) to considerations of factors ignored in previous theory (see Rose & Clear, 1998). However, many gaps remain as formal control is not often considered at the neighborhood-level. While acknowledged that formal controls play a role, it is unclear *what* formal controls influence crime and *how much* these controls impact criminal activity.

In light of this, deterrence theory provides formal control variables with testable predictions at the neighborhood-level of analysis. Deterrence at the aggregate-level is likely to foster theoretical doubts among many researchers based on the established view of the deterrence literature. However, such doubts ignore two

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inter-related issues which suggest deterrence could play a role in formal social control at an aggregate unit of analysis – first, positive results within the policing literature based on deterrence principals and second, the lack of celerity testing.

The evaluation of police tactics in recent years has demonstrated ample evidence for the impact of deterrence-based law enforcement action. Through experimental designs, researchers have found significant reductions of crime due to techniques like hot-spots policing and pulling-levers. Such tactics represent A. Vollmer's perspective of police action to prevent crime through deterrence – hot spots and pulling-levers are simply methods for police to deter crime through highly-targeted and precise action; it is the targeting and identification of geography which make these tactics different than generic and inefficient "flood the zone" techniques seen previously in policing. It is difficult to theorize that such interventions work in reducing crime through decreasing poverty or altering cultures. The possibility that the tactics work because crime is deterred within very specific geographies which have specific crime problems at an aggregate-level cannot be rejected out of hand. In fact, one can argue this may be the most probable causal mechanism, based on the research to date. The results are demonstrative that aggregate police action can impact crime at the aggregate/neighborhood-level without working towards the underlying "causes of crime," which is consistent with the "prevention through deterrence" model.

While deterrence theory is comprised of three main factors, only two have been examined in the literature. Severity and certainty have yielded mixed results whether used in aggregate or individual-level studies. Yet, only a handful of studies

have attempted to measure swiftness. Testing of celerity has two main problems: first is definitional, and the second is operational. What period of time should be measured in determining swiftness? Is it the time until adjudication of a crime, as seen in most of the limited attempts to gauge celerity? This definition issue ties into an operational problem, in that data are hard to come by for any other potential measure of swiftness. The speed at which courts proceed is an easier variable to obtain than other potential formulations, particularly variables at which police solve crimes. Additionally, examining criminal homicide has an advantage in this case. From a theoretical perspective, one can argue that police closure speed is likely as good, if not better, determinate of "swift punishment" than court speed, as those arrested for murder generally lose their freedom in a noticeable way within a community when police catch the suspect. If deterrence is predicted to work, one has to imagine that the knowledge of swift arrests of offenders within a neighborhood would deter similar crimes in the same area in the future.

To address these deterrence-based issues just described, this study will test deterrence through aggregate measures of clearance (certainty) and time to closure (celerity) for homicides within neighborhoods.[5] The assumption is that police work can impact crime, not by changing root causes but through deterrence. An added

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[5] Severity is not examined directly in this study. Following my measures of celerity and certainty, the most thematically consistent measure of severity would be either conviction rate or sentence length. Given that the crime being studied is criminal homicide, there is limited variability in potential sentences under Washington, D.C.'s sentencing guidelines (enacted by the Sentencing Reform Act of 2000). No codified source of data currently exists for either the adjudication of the specific homicides studied here or for average sentence lengths for homicide across the time period in Washington, D.C. The District produces annual sentencing reports, in which the average sentence length is given for violent crimes in the aggregate – homicide had the highest averages and was quite constant over time. As such, any general measures of severity which could be gleaned would be imprecise to homicide specifically but also essentially constant at the "maximum" sentence length, and are therefore omitted in this analysis.

benefit of using homicide data for this purpose is that homicide incidents and

subsequent closures can be assumed to be better known throughout a neighborhood

(in contrast to hearing about a single theft or an arrest for simple assault). Towards

that point, it is useful to now discuss how other factors, more specific to the study of

homicide, provide additional ground to explore in this work.

Homicide Studies

Examining homicide trends as an outcome is not a new phenomenon in

criminology, yet there remain a number of data issues and answered questions which

leave gaps in the body of knowledge. Numerous studies have looked at national,

regional, and city-specific trends in homicides using official data. Overall since

1960, homicide trends have seen a number of peaks and valleys. Using national UCR

data, the general trend peaked in 1974, then dropped, spiked in 1980 followed by a

rapid drop until 1985, then a rapid increase until 1991, followed by a decrease that

now finds homicide at near record lows (within the time period covered in the

available data).[6]

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[6] In both the popular imagination and within criminology, there seems to be a tendency to describe crime trends, and especially those for homicide, in absolute terms. The starting period for accurate national trend data in the U.S. is roughly 1960 (see O'Brien, 2003), so to say that crime is comparatively high or low only uses about 50 years of data. For all we know, the crime/homicide epidemic in the late 1980s may be seen as more "normal" if we had better measures going back over centuries, or our current lows may actually be higher than even the highs of past eras. Using limited data on deaths and court cases, selected periods of time going back to the Middle Ages may have seen far greater crime rates then we have experienced in our lives (see Brown, Esbensen, & Geis, 2009). While all our data is compared to the lows of the 1960s (which thus leads to the conclusion that crime has spiked during our generations albeit to fall again), it could be possible that the 1960 levels of crime were a low ebb and that rising crime was somewhat inevitable and a revision towards the true mean. The "Hurricane Neddy" episode of *The Simpsons* provides a useful insight when Homer does not believe a hurricane is hitting Springfield, as there is no record of such an event happening; at this time, his daughter notes that weather records only go back to 1978 when "the Hall of Records was mysteriously blown away" during a massive wind and rain storm.

Yet, such general patterns are common for many other crimes during this period. What makes homicide specifically worthy of study? There are practical and policy reasons for examining homicide. Practically, homicide has a high reporting rate in official data and limited dark figure of crime, in contrast to even other serious violence (Brown et al., 2009). This means conclusions can be reasonably generalized to all homicides within the scope of the data, as there is unlikely to be a large missing component. In contrast, with other crimes as a dependent variable, there may be reasonable doubt that independent variables only impact the incidents within the data rather than all such incidents. Also in contrast with other crimes, homicide has strong reliability in definitions across jurisdictions and strong validity in crime classification, making it a robust benchmark for measuring neighborhood effects. This likely explains the heavy use of homicide rates as outcomes across studies of neighborhoods, particularly in research from the Project on Human Development in Chicago Neighborhoods (see Browning, 2009; Morenoff, Sampson, & Raudenbush, 2001; Sampson, Raudenbush, & Earls, 1997).[7]

From a policy standpoint, homicide is unique in terms of severity, perceptions, and (potentially) police effort. While homicide is a rare outcome across potentially lethal encounters (Block & Block, 1993) and in some ways can be argued to be simply an outcome of any other crime type (see Flewelling & Williams, 1999) or as a special circumstance of aggravated assault (see Pillman & Handy, 1964), the difference in degree to other classifications provided by a corpse is considerable, independent of whether the difference in kind exists. Any factors determined to

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[7] It should be noted that often, homicide is used as a proxy for "violent crime" generally (see Morenoff et al., 2001 as a example). For purposes of this research, however, this generalization is not made because of the unique policy implications noted subsequently.

decrease homicides specifically, and subsequently seized on, could go a long way in improving perceptions of crime among the public. For this reason, police effort in homicide investigations tends to be greater than in other crime investigations (see Greenwood, Chaiken, & Petersillia, 1975). In fact, much of the research into best practices for crime clearance have focused on homicide, in part due to the relative wealth of potential data about investigations (see Alexander, 2012). Given that this study is particularly interested in the impact of police action through deterrence, homicide is likely the best crime type to examine since maximum police effort will apply in such cases.

Data Issues

Both the UCR and SHR provide data to study large-scale trends, in that the UCR data provide basic counts and rates at various levels of analysis, while the SHR provide more detail about individual homicide incidents within reporting jurisdictions. Additional studies have been able to obtain city-specific data (or in some cases county-specific when homicide counts are low within a city), as seen in research using collections from major cities like Chicago, New York, and St. Louis.

Yet, these data sources often lack various measures that prevent a fuller understanding of the "nuts and bolts" behind homicide. Discussing the national/regional data first, UCR data are limited to counts and SHR lacks clear motive measures, has reporting problems, and is missing important factors at the incident-level. While the National Incident Based Reporting System (NIBRS) was

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designed in part to address some of the weaknesses in the UCR and SHR's data, this system is not widely used among large urban areas.[8]

The SHR has a limited "circumstances" measure which attempts to glean both a context and motive in one variable. All circumstances are grouped as either being "felony-type," "suspected felony type," "other than felony type," or "unknown." While possibly useful in principle, the coding yields "unknown" as the modal category, with individual circumstances such as "other arguments," "other-not specified," and self-evident felonies like "robbery" making up the bulk of remaining cases. While there are circumstances covering gang and drug-related homicides, there are no measures for theoretically important motives such as domestic or retaliatory killings. Considering the importance of disaggregation within the homicide literature, such a weakness in the SHR may be particularly counter-productive to studying trends.

SHR data also suffers from a lack of reporting. Jurisdictions in Florida have failed to report SHR data over large periods, along with other major areas and cities. Washington, D.C. did not reported SHR data to the F.B.I for over a decade, resulting in any SHR analysis involving the past twelve years as missing data from a high-rate jurisdiction. As noted, the desire to transition to NIBRS and greater number of variables has been plagued with further non-participation from the largest urban areas, though the NIBRS system has been approved for use since the late 1980s.

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[8] To be fair, NIBRS is not widely used among suburban or rural areas either. The lengthy reporting processes result in a considerable increase in workload for agencies, and as a result NIBRS has limited compliance. The agencies who participate in NIBRS only cover about 20-30% of the U.S. population. In contrast, agencies reporting to the UCR cover approximately 95% of the U.S. population.

While the SHR collects more incident-level details than the UCR does for homicide, there is still a lack of location/geography and closure variables. Geography of incidents is limited to the jurisdiction reporting, so one has no indication of the specific location within the reporting area. Given homicide and other crimes are not generally randomly distributed within a geographic space, such a limitation in the data precludes any significant analysis of neighborhood characteristics, either within or between jurisdictions. Variables related to case closure/clearance are also missing at the incident-level – while aggregate percentages for clearance rate are reported to the UCR by each jurisdiction,[9] the outcome of individual cases is unknown. Other than a case being closed, there are other related factors of theoretical and practical interest, such as time to closure and type of clearance (i.e. whether by arrest or other administrative means). NIBRS has incorporated some of these closure variables; however, as I noted, regions with the most homicides generally do not report to NIBRS at all.

Studies of specific areas, in contrast to national/regional measures, often have many of the same problems regarding data. Motives and closure information may be limited, though these often city-specific datasets have far better geographic data for

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[9] Even this figure is somewhat suspect. Rules dictating how a clearance rate is computed and reported to the F.B.I. have been interpreted as taking the total number of cleared homicides in the current year (including homicides from previous years which were solved in the current year) and dividing by the total current year homicides. While producing a stable rate that takes into account continuous work on older cases and which does not require revision year-to-year since both numerator and denominator reflect snapshots from the current year, mathematically it seems quite ridiculous. The numerator and denominator reflect different pools of cases, where the numerator pool includes all current year cases in addition to all non-closed cases in the jurisdiction's history while the denominator is limited to current year cases. Based on this formulation, it is theoretically possible to have a clearance rate over 100%, which should be a serious indication that the calculation is faulty and, more importantly, biased towards having a higher clearance rate. Given that the clearance "rate" is not expressed as a traditional rate (x number of unit 1 per unit 2) but rather as a dimensionless percentage, an argument could be made that it is especially important to assure the units/populations are the same throughout this calculation in contrast to the current interpretation.

the incident location. Obviously, the counts for these limited-jurisdiction data are far lower than the number of cases when comparing national or regional trends. While the SHR and more specific datasets cover basic demographic information, there is often a lack of data regarding the exact incident location within the given geographic unit.

Unanswered Questions

Coupled with these data issues, there are also unanswered questions regarding homicide trends. Blumstein and Rosenfeld (1998) described homicide trend forecasting is an "academic pastime," with wild predictions over the past twenty-five years about the role of juveniles, shifting population demographics, concentrated poverty, incarceration effects, drug markets, abortion, and the inevitable rise of super-predators which failed to materialize, just to name a few. More specific questions are directly linked to the previous discussion of gaps in the social disorganization literature, as many explanations of homicide trends have drawn from neighborhood research; as such, questions of dynamic predictors, formal control variables, and a lack of diverse longitudinal data sources for testing theory are issues at the neighborhood-level for any type of crime. The lack of dynamic structural predictors has been an issue for neighborhood-level homicide research. Questions as to operationalizing structural covariates when studying homicide rates have been acknowledged, with methods using factor scores or indices showing a greater link between neighborhood traits and homicide than other measures (Land et al., 1990). Still, these factors have been comprised of static variables, often Census measures. While these may prove sufficient for cross-sectional studies, static factors are less

applicable to studies of growth and change. Kubrin and Herting (2005) attempted to address a dynamic prediction model for homicide trends but were limited to using static structural predictors. Their study was not alone, but rather was among the most sophisticated treatments of the issue. That fact is telling as to the necessity to address truly dynamic predictors of homicide trends in order to further advance research.

More so than other neighborhood-level research, homicide studies have found some ways to incorporate a limited measure of formal control. Such studies often examine the drop in crime/homicide in New York City since the early 1990s, and formal control is captured by a measure of police activity such as arrests. The purpose of these formal control variables is generally to create a proxy for "broken windows policing" (a concept in which the definition itself can vary from study to study). The assumption is that some degree of formal social control can impact homicide, and help explain the significant decreases in homicides over the past twenty years. As previously discussed, the idea that police can impact crime through their activity has been supported in the experimental design literature with hot-spots and pulling-levers. However, broken windows proxies are often crude measures of police action (or related, measures of crude police actions such as unstructured flooding of areas or limited discretion) and experimental interventions conceptualize formal controls as a targeted specific policy change. In both, measures of formal control have not been conceptualized using normal police action within investigation of crime. The proxies and experiments may address whether police interventions work in altering trends, while the later may focus on the less studied question of

whether routine action (such as solving homicide cases within a prompt timeframe) impacts homicide trends.

Additional questions explore how and why disaggregated homicide trends differ from both overall trends and from other disaggregated typologies. Recent literature has noted the importance of disaggregating by circumstances or motive as homicide trends are not uniform across categories. Findings across studies of the homicide drop in New York City, juvenile trends, and links between cultural explanations and disaggregated motive all point significant differences between various types of homicide. As noted, SHR data are only marginally helpful in establishing the circumstances of a homicide once a distribution of the "circumstances" variable is examined. While some researchers feel that homicide motive is not useful or even misleading in certain contexts (see Puckett & Lundman, 2003), disaggregating homicide has rapidly caught on during the past decade and generated new puzzles regarding why differences exist between motives and how predictors may impact types of homicide differently.

This study will incorporate new sources of data and new predictors to help explain differences in homicide rates as well as address prior limitations within homicide research. Homicide data from Washington, D.C. have not compiled previously either for SHR/NIBRS or for a stand-alone city-based dataset. The only previous report of this data had been as a raw count to the UCR. Most importantly, the data for this study have variables for motive, geography, and closure in addition to standard homicide measures.

The purpose of this study is to explain differences in homicide rates using data from 1998-2006 in a major U.S. city, Washington, D.C., at the neighborhood-level. Using the neighborhood-level of analysis is important given that homicide rates are not evenly distributed across a geographic area. Research into neighborhoods has been rooted in the social disorganization framework first made famous by Shaw and McKay. Over time, a significant body of research has developed but not without limitations, particularly in regards to data availability. Central among these limitations are the lack of dynamic factors, lack of formal controls, and lack of data sources. Given that research into homicide trends across neighborhoods have relied on this theoretical perspective, it is not surprising to note similar limitations in homicide research.

With the goal to explain homicide trends and these limitations in mind, the major questions of this study focus on two aggregate considerations – one is a social disorganization perspective concerning structural/informal social control within neighborhoods; a second is a deterrence perspective concerning formal social control within neighborhoods. Structural factors will be measured by dynamic population and resource deprivation variables, while formal control factors will be measured by closure rates and time to closure in homicide cases. By including dynamic predictors for my time period and using previously unstudied homicide data for address these aggregate considerations, a two fundamental research questions can be asked:

- Do dynamic structural factors influence homicide rates across
  neighborhoods?

- Does aggregate deterrence influence homicide rates across neighborhoods?

This work will confront an "undiscovered country" of unanswered questions within an under-studied region. Other explanations of homicide trends have focused on the same sets of ills that plague neighborhoods, rarely daring to incorporate other factors that remain yet uncovered. The excitement of the undiscovered country is that one cannot know what to expect – while one may plan and hypothesize, the truth is unknowable until a light shines in the surrounding dark. It is my hope that this work can serve as a small beam of light illuminating what was previously undiscovered.

Chapter 2: Literature Review

Before embarking into the "undiscovered country," one must examine and understand what has been previously discovered. The goals of this chapter are to establish a foundation for the current research and to clarify how this current work builds on the body of knowledge in the literature. Two theoretical frameworks, namely communities and crime and deterrence, are each broken into two components – first, a theoretical discussion following the course of thought in the topic, then a summary of the empirical findings. Following this review, it will be clear how this work expands the literature, particularly in the areas of dynamic conceptions of neighborhoods and the impact of formal social controls.

Communities and Crime

"Behold with what companions I walked the streets of Babylon! …And, drawing me more closely to the very center of that city, my invisible enemy trod me down and seduced me, for I was easy to seduce. My [morally reformed] mother had already fled out of the midst of Babylon and was progressing, albeit slowly, toward its outskirts."
- Augustine, <u>The Confessions</u> Book II

At the heart of any discussion regarding communities and crime is the belief that social facts have regularity and contain an objective aspect which impacts human behavior independent of individual motivation (Morris, 1958). This connection between crime and place can be found throughout the Western intellectual tradition wherever the nature of society is considered, such as the discussion of Sodom and Gomorrah in Genesis 18-19, works of the early Greek philosophers, or later European moralists. One specific example is in Plato's *Republic* when the dialogue focuses on

the nature of the tyrant/criminal in Book IX. The characters acknowledge "the whole city gives assistance to each individual," and then reason that a criminal's behavior would change if the gods "were to lift him and his wife and children out of the city and put him down" in other locations that would not tolerate his actions (pgs. 264-5). However, many of these discussions of crime and place focused on the individual foremost, so it would not be until the dawn of modern sociology when the geographic element of crime would be explored in depth.

Due to both the Scientific Revolution and the Enlightenment in Europe, new tools and motivations were seized upon in an attempt to measure and change elements of society. The early 19th century saw the development of sociological positivism among a cohort of researchers. At first, the concept of "sociological positivism" may seem like a contradiction, as positivism is generally associated with an individual unit of analysis due in part to the influence of biological positivism (associated with names like C. Lombroso, E. Hooton, and W. Sheldon). However, the sociological manifestation came first in history and applied known positivist suppositions at a macro-level. The causal mechanism of crime[10] was the inherent differences between criminal and non-criminal regions/populations, and there was assumed to be an element of determinism through outside factors (poverty, education, and population density[11]) working beyond individual choice in creating criminal places.

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[10] For positivists, the definition of crime is generally a legal distinction and is reflective of deviance outside of society's norms.

[11] It should be noted that these factors were seen to not always work in the predicted ways. In fact, A.-M. Guerry tested these factors directly with mixed results. Though the methods and techniques lack sophistication from our modern statistical perspective, his results made him and later researchers of this period keenly aware of opportunity – when finding that a very rich area had high property crime while a very poor had low property crime, he concluded that the availability of items to steal can impact the poverty-crime relationship (Guerrey, 2012[1833]; see also Morris, 1958).

The work of three individuals serves to highlight the initial advances of sociological positivism in Europe. A. Guerry produced a work in 1829 mapping education and crime statistics within France. He built on this with an 1833 publication featuring a larger variety and detail in the maps (see Gurrey, 2012 [1833]). Data were included for crime counts, demographics (gender and age), variations in crime rates, and various other social ills such as lack of education, illegitimate births, and suicide counts. This work was unique in the usage of density maps for comparison, but also in the fact that previous governmental data collections had not been compiled or analyzed. Guerry found that crime was not distributed equally across places and that there was regularity to the uneven distribution – in other words, certain areas would routinely have more crime than other places across multiple years.

Closely following Guerry, the Belgian mathematician A. Quetelet introduced more rigorous statistics to the problem of crime. While Guerry relied on numerous cross-tabulations to compare the extensive trove of data, Quetelet sought to incorporate more formal statistics from the physical sciences into social research. His work through the 1830s and 1840s served to lay the early foundation of statistical examination for sociological problems; this effort was not fully appreciated by some sociologists, notably A. Comte (see Morris, 1958). However, Quetelet continued with Guerry's cartographic techniques to display crime data and differences across space. Combining these methods, Quetelet confirmed many of Guerry's general findings about the distribution of crime and the impact of macro-level factors.

In England, H. Mayhew continued the crime mapping comparisons seen in the works of Guerry and Quetelet. While Mayhew did not advance understanding through statistics or any formal hypothesis testing (Morris, 1958), he did add a unique qualitative component to his examinations of crime and place. Much of his data were generated from interviews and walking the streets of London, though he did use official police data to examine the distribution of arrests for various crimes. Like other sociological positivists, he concluded that crime was social in nature and directly impacted by social milieus found concentrated in certain geographic areas, such as poverty, illness, and dilapidated housing. His use of narrative work is a technique seen in later work by the Chicago School, particularly C. Shaw's life histories.

These three figures added unique elements to sociological positivism while still maintaining a common ground regarding the study of crime and place. Place matters in crime, and Guerry's mapping, Quetelet's statistics, and Mayhew's ethnographies supported that idea. While their work was briefly eclipsed by the biological positivists and the advent of the medical model for treating individual criminals, the foundation built by these sociological researchers was seized upon to develop the modern conceptualizations of communities in crime during the early 20th century.

The First Revival: The Chicago School and Social Disorganization

Multiple factors led to the revival of sociological positivism following a half-century infatuation with Lobrosian ideas of crime. First, biological positivists had limited empirical success, and associated theories were developing as loosely-

disguised racial treatises which would later advocate eugenic solutions to crime and other social ills.[12] City pathologists had suggested that the urban environment itself generates social dysfunction uniformly, which was poorly received by social scientists who generally worked, lived, and studied in these urban areas. Social researchers had developed more cognizant causal theories than seen in the classification-focused early sociological positivists, and coupled with new sources of data, such studies promised to determine the causes of social unrest and ills. Finally, immigration to the United States had produced a unique opportunity to study the impact of place on crime – there was an inherent public interest and believe in the criminality of immigrants, often immigrants lived in highly concentrated places, and these immigrants would often change places over time as they and future generations assimilated into American society. This last factor produced a shift in theory development from Europe to the United States, as American urban researchers had the desire and opportunity to move the study of place and crime forward.[13]

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[12] The eugenics element, clearly seen in the biological positivism by the 1930s (see Hooton, 1939), would become a larger stigma as World War II concluded, given the Nazi philosophy and atrocities.

[13] The passing of the torch from European to American social scientists during the early 20th century is emblematic of the state of much criminological and social research today. As J.Q. Wilson (2009) noted, the United States has studied itself more than any other country, which is not surprising given that few else have the data, freedom, and variability to study social problems (Wilson mentions race and class as specific examples of "problems"). There are at least two potential consequences to this phenomenon. First, researchers may assume other nations are more tolerant and less punitive/violent, since many other nations are not willing or able to accurately examine themselves in such a way as found in America. The example of Andrei Chikatilo, a Russian serial killer during the 1970s and 80s comes to mind. Though it was clear a serial killer was at work given the proclivity, similarity of crime characteristics, and very close geographic proximity of discovered victims, Soviet officials refused to acknowledge that such a murderer could exist in the U.S.S.R. since serial killings were considered a feature of the West, which itself was due to Western governments willing to recognize such criminals as existing. It took five years for the Soviet government to publically link the murders to a single offender, and another three years to consult a forensic psychologist. During this time, the government used the murders as an excuse to round up "undesirables," such as homosexuals and the mentally ill, regardless of whether they could be linked to one or multiple victims. Chikatilo was arrested for murder in late 1990 and eventually tried publically following the fall of the Soviet Union. After being convicted of over 50 murders, he was executed by a single gunshot to the head. The second potential consequence of being limited to American research is that the United States may not be wholly

At the fore of this revival was the Chicago school of sociology. The Second

City provided ample opportunities to study the natural development of areas due to

waves of immigration and extensive public records. The core of the Chicago

perspective was human ecology – taken from concepts found in plant research, these

sociologists theorized that locations develop based on waves of invasion and

succession (Park, 1936). During the 1910s and 20s, the primary method of

succession was immigration. Numerous researchers pursued different theoretical

avenues to explain crime in communities. W.I. Thomas and F. Znaniecki (1918-20)

studied Polish immigrants as they developed communities in Chicago. Thomas and

Znaniecki noted that most immigrants came from areas in Poland that were rural but

also had high social organization. Upon coming to America, much of this

organizational ability was lost, as many immigrants left Poland due to being outcasts

already (hence, not inherently part of the high social organization), often forgot how

they were organized in their homeland, or found that rural mechanisms for

organization were not applicable in urban environments. However, Thomas and

Znaniecki found that perpetual disorganization was not the destiny for all such

immigrants, as many would reorganize and develop informal community controls

over time.

R.E. Park and E.W. Burgess, two key figures in the initial development of the

Chicago school, produced a central work for human ecology and crime in 1925 called

The City. Many of the classical features of the Chicago school, such as concentric

zoning, the central business district (CBD), and zones of transition, were described in

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generalizable, much in the same way it is possible Chicago-based theories of communities and crime
may not apply to other cities.

great detail. They theorized, based on available data, that cities were structured such that high crime would be in the CBD and crime would decline as one progresses out of the center. Zones of transition were critical to understanding immigration and the importance of place in crime. These regions would be populated by poor new immigrants, but there would also be high turnover as more established immigrants would leave for better zones. Park and Burgess noticed that crime did not follow the immigrants out of the zone, suggesting that it was the place that led to crime rather than the individuals.

F.M. Thrasher (1963 [1927]) focused on the causes and development of delinquent gangs in Chicago. Like other Chicago school theorists, Thrasher proposed a social explanation for crime. Through interviews with youth, he suggested that gangs formed due to a failure of controlling institutions and a common source of conflict. Youth did not obtain the necessary relationships and nurturing through family and schools, and yet a degree of social solidarity was needed for protection as there is greater strength in numbers. In essence, gangs and the related delinquency were often protection mechanisms in areas where social expectations were unclear and potential threats existed. Like the disorganization of Polish immigrants and the zones of transition, gangs were seen as non-permanent social features that most would grow or develop away from, though Thrasher noted the existence of highly distinct social groups which had participation among the non-immigrant, non-poor and non-youth populations.

While important and insightful, the previous Chicago school works do not retain the modern clout and research interest as *Delinquent Areas*, the seminal work

of C. Shaw and H. McKay (1942). This work could be considered a book that launched a thousand studies, to paraphrase Homer's description of Helen of Troy. It was the logical product of earlier efforts to use cartography combined with more extensive data and sophisticated research methods, infused with the findings of the Chicago school and the passion of Mayhew's examination of deviance. An earlier work by Shaw, *The Jack-Roller* (1974 [1930]), is itself a qualitative masterpiece written with the hope of spurring social reform. These factors combined to produce Shaw and McKay's theoretical capstone, social disorganization.

For Shaw and McKay, social disorganization explains how differences between neighborhoods impact their character, despite ethnic changes,. Specifically, the theory suggests that the four factors of urbanization/industrialization, poverty, residential mobility, and ethnic heterogeneity cause social disorganization. This social disorganization erodes informal/formal social control and causes crime and other social ills.[14] Their theory can be read as having both a macro- and micro-level of causation. At the macro-level, crime is caused due to a lack of control in the zones of transition. The four structural factors prevent solidification and agreement on norms in the neighborhood. They suggest that as re-organization progresses, it is possible to establish organization and thus have an area change. However, the four structural factors work against re-organization – industrialization and poverty undermine the informal controls of the family, while mobility and heterogeneity undermine the informal controls of the community. Additionally, the micro-level

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[14] Like Guerry and others, Shaw and McKay noticed that crime often does not stand alone, but rather comes as a package with other social problems. D.P. Moynihan (1965) famously referred to this general phenomenon as a "tangle of pathology." This reality suggests that preventing crime may also have positive effects in other social areas, but also suggests that techniques to combat crime may not be as simple as focusing on criminal activity itself given the intertwined nature of these "social ills."

component of the theory works against re-organization. At this level, crime and social ills are perpetuated as a result of cultural and learning processes. Even if immigration stops, Shaw and McKay theorized that the stability of the delinquent tradition and strong peer influences could keep disorganization in place.[15]

Social disorganization theory sought to show how place, rather than specific classes of people, causes crime. The influence of Shaw's earlier work can be seen as this theory holds a positive view of human nature in the assumption that delinquents would find satisfaction in other activities if the setting/place where better. Shaw and McKay suggest that slum boys (female delinquency was not a central topic because there was little official female delinquency) become delinquent not due to inherent evils or illness, but rather though a lack of conventional controls/values (structure) and exposure to delinquent subcultures (culture); both of these causes are inherent to neighborhoods, not individuals.

Numerous problematic issues arose which led to a marginalization of Shaw and McKay's grand theory of communities and crime. Their theory largely assumed that neighborhoods had stable natural development, as did most all ecological theories. There was difficulty in defining social disorganization apart from the consequences of crime and social ills – there was no independent measure of "organization," only the reasoning that if there is crime, then there must be

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[15] It can be argued that the micro-level theory is unnecessary or even tautological when linked to the macro-level formulation (see Kornhauser, 1978). In forming this portion of their theory, there was likely some influence from another Chicago school sociologist, namely E.H. Sutherland. Modern social disorganization essentially remains cleaved along the lines of a macro control theory and a micro cultural theory (this point is discussed and supported in greater detail later in this chapter). The inclusion of the micro-level component was not necessary to the functioning of the theory (Kornhauser, 1978) but could explain the high levels of crime within areas with large black populations. Shaw and McKay noted such areas were difficult to explain through their four macro-level structural factors (pg. 389), and this difficulty would lead to later empirical challenges in testing Shaw and McKay's direct theory (see Bursik, 1982).

disorganization. While Shaw and McKay had access to more data than previous

researchers, much of it was official police and juvenile court data and further

developments in obtaining self-report data suggested that delinquency was not

isolated in "disorganized" neighborhoods.[16] This survey finding would later help

spur a resurgence of individual-level theories. Another feature of sociological

positivism, namely determinism, worked against Shaw and McKay as they could not

provide a solid explanation for why most youth are not delinquent even in the most

disorganized areas; in other words, if the structural/cultural factors in a neighborhood

impact all residents, why do most desist from crime? Finally, the theory was

undercut by the failure of the Chicago Area Project (founded by Shaw) to reduce

delinquency. It would take decades until interest in communities and crime would

return to the front burner of criminology.

The Second Revival: Kornhauser and the Informal Social Control of Communities

As the macro-level explanation of deviance seen in social

disorganization waned, other micro-level theories rose to the top of criminology by

the 1950s. In particular, two perspectives saw their heyday – differential association

theory and strain theory. Neither theory was new to criminology, as their concepts

and structure stretched back into prior decades, with E.H. Sutherland and R.L. Merton

working on their respective theories during the 1930s. The time was right for micro-

level cultural explanations of deviance, so these two theories gathered interest and

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[16] As previously noted, Thrasher found evidence of "gangs" among higher-class youths. Often the
delinquency would focus around sexual promiscuity rather than more typical criminal behavior.

advancement in the literature (see Brown et al., 2009).[17] These theories would be

refined, retooled, and in one case renamed through the 1960s. This era of research

contained a number of important developments, such as the acknowledged influence

of R. Cloward and L. Ohlin's on presidential social initiatives and the rehabilitation

of psychological perspectives in part through R. Akers's linking learning concepts to

differential association.[18] Interest in these micro-level perspectives continued to

grow.

Yet, a funny thing happened on the way to micro-level dominance. Though

the theories were popular, influential, and applied in public policy, crime began to

rise. Public disorder, often concentrated in specific neighborhoods, also increased.

Initiatives such as the War of Poverty seemed to at best do nothing for crime, and at

worst were correlated with spikes of all types of criminal activity. Looking at trends

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[17] If micro-level cultural explanations were the *zeitgeist*, then why did researchers not advance Shaw and McKay's cultural component?   While an open question, one can speculate as to reason why history unfolded as it did here. First, the cultural argument was not as well-defined as the macro-level disorganization argument (Kornhauser, 1978), and thus would make testing difficult on its face; this point is highlighted by the fact that the macro-level component was also difficult to test even with greater detail (Bursik, 1982). Second, if one sought to fill in the gaps of their theory which predicts continued delinquency among individuals who differentially associate with delinquent peers, then one would already have a different Chicago school theory to use courtesy of Sutherland.

[18] The irony that Sutherland's differential association required a heavy psychological component for operationalization seems lost on some. In his 1934 text, Sutherland rejected multi-factor groups (a popular psychological construct once embraced by Sutherland) as leading to bad science. This rethinking was likely in part a reaction of the Michael-Adler report that poorly evaluated the science in criminology at the time (see Laub, 2006). Rather than multi-factors, Sutherland strongly argued for a sociology basis, rejecting both biological and psychological elements. His macro-level theory has cultural conflict as the root of crime, and notes that regions have "differential social organization." The crux of his micro-level differential association is that differential cultural groups provide norms/definitions favorable or unfavorable to crime. Of course, that begs the question of how do individuals learn these norms/definitions, which would be a prime psychological issue, especially as learning theories developed in the late 1950s and 1960s. D. Cressey (1960) acknowledges Sutherland's oversight of defining mechanics for the learning process, though he brought it up after Sutherland had already passed away. While some see social learning as the logical successor to Sutherland and possibly even believe Sutherland would have supporting this (Akers, 1996), history suggests that Sutherland may have been pushed to a full-throated defense of his sociological-based theory and may have developed an ingenious way to measure definitional balance and variation of association. But that is simply speculation given that Sutherland died over a decade before any such debate would have raged.

in UCR homicide data, there was a national increase in homicide rates from 1960 through 1974. Couple this crime wave with decreasing trust in government, which was likely both a cause and reciprocal effect of the disorder/incivility, and there will eventually be people who question the conventional wisdom.[19]

By the late 1970s, coherent responses and alternatives to micro-level cultural theories could be found scattered in the literature among a sea of critical criminology pieces. However, the focus remained primarily on the individual, such as Hirschi's control theory, the comparisons self-reported delinquency/victimization to official records, rational choice theories, and even deterrence research. That focus shifted with R. Kornhauser's *Social Sources of Delinquency* (1978). While some researchers note that the "resurgence of interest in ecological change and the ramifications for crime" was embodied by later work during the 1980s (Kirk & Laub, 2010), the fact remains that such work may have been mostly unread if not for Kornhauser. Therefore, one must understand how her work set the stage and truly marks the revival point of community and crime research.

In short, Kornhauser made it theoretically acceptable and justifiable to study communities as a unit of analysis within criminology once again. This was done in two steps – first, Shaw and McKay's problematic issues in social disorganization were re-conceptualized in light of recent control theory, and second, the cultural/strain theories were laid bare as unacceptable alternatives. Kornhauser

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[19] This period is also very important for the revival of deterrence research, which had been mothballed since the rise of positivism in the early 1800s. The link between the social disorganization and deterrence concurrent revivals may be in the rise of control perspectives, given the theories similar assumptions towards human nature. Obviously, T. Hirschi's seminal work (1969) and its subsequent influence speak to this point, but it is worth noting that control theories were not wholly new in 1969 and could easily be traced (even by Hirschi himself) to E. Durkheim. Rather, this seems to be another example of theories being evaluated not just on merits, but on the historical mood at the time.

recognized the need to explore the intervening variables/mechanisms between

neighborhood conditions and delinquency, a critical problem for Shaw and McKay as

"social disorganization" was never defined beyond the outcomes. The division

between a structural model and a cultural transmission model were problematic

towards that goal, given the logical inconsistency and redundancy of such a mixed

model; she focused on how the two theories could stand alone. The structural model

was conceptualized as a pure control model, enhanced by recent research into control

theories and bonding. Social disorganization was envisioned as a social control

process and thus measurable independent from the outcomes of crime. This idea

would form the backbone of the dominant communities and crime theories through

the present day.[20]

This rehabilitation of Shaw and McKay, which allowed for theoretical

predictions and provided a framework for testability, was not enough to alone bring

macro-level perspectives as serious avenues of interest. Both differential association

(by this time, social learning) and strain theories had usurped macro-level

explanations previously. While history had turned on these cultural perspectives by

the late 1970s, these were still potent theoretical forces which had risen in response to

weaknesses in macro-level explanations. The fact that Kornhauser did not fully reject

Shaw and McKay's cultural theory suggests that even a harsh critic can see the value

and appeal of cultural perspectives. Making the structural model more sound made

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[20] As for the cultural model, Kornhauser suggests that most problems could be remedied by looking at culture as attenuation, where values are not rejected but not disused. Similar ideas had been found previously in D. Matza's *Delinquency and Drift* (1964). To date, some cultural researchers may give the idea lip service but then often address cultural explanations with the same problems of determinism that Kornhauser and Matza decried (see Kubrin, 2003); others simply resort to tautology to explain both the pervasiveness of culture while acknowledging many do not appear to succumb (see Anderson, 1999).

Shaw and McKay's work relevant and theoretically competitive once again, but what made the new perspective even more appealing was cutting the knees out from under the main competition. Thus, the second half of Kornhauser's work was dedicated to the theoretical annihilation of the two cultural explanations which bested social disorganization decades prior.

The assault on learning and strain theories was focused on their perceived lack of logical soundness and testability, which was likely designed to contrast with control theory's argued strengths on those criteria. Kornhauser did not pull any punches - differential association and social learning were hammered on their inherent assumptions for perfect socialization, the problems in defining a subculture given that assumption, and the "embarrassment of riches" that would exist if the theories were true; strain theories were dissected on the inherent economic and universal cultural goal assumptions, the deviation from Durkheim (a powerful criticism given that strain theories saw themselves directly descendent from Durkheimian anomie), and were eventually labeled the product of "deadpan sociology" in that strain researchers themselves did not have faith in cultural strain and thus added numerous contradictory components.

The true power of Kornhauser's critique is seen in the results. Strain theory, as it had been known at the time, was effectively wiped off the map and would only regain relevance in a wholly re-conceptualized manifestation by R. Agnew (1992). Of course, there is irony in that Agnew's General Strain Theory was made possible by Kornhauser's observations eliminating "old strain" from the research agenda, only to have GST eventually become the embodiment of Kornhauser's "old strain"

criticism, particularly regarding the weakness of strain to stand alone in explaining criminal action (see the notable inclusion of control-based variables in Agnew, 2008).

Social learning theory survived, though it is telling that debate raged on regarding Kornhauser's observations for decades (see Akers, 1996; Hirschi, 1996; Matsueda, 1988 as examples), and that Akers (1998) partially reinvented social learning in an attempt to reduce its apparent determinism and create a life course and macro-level component. Like Agnew's GST, Akers has added considerable elements of social control to his theoretical formulation. While Akers claims that "all theories are social learning theories" (pg. 37, 1998), it is unclear how adding control elements makes a theory *more* social learning based, given the different assumptions regarding human nature that control and learning theories are each rooted in. It is also unclear whether the incorporation of control elements is a permanent feature for criminological theories, or simply reflective of the continuing pro-control *zeitgeist* seen currently.

Most importantly for this study, communities and crime was reignited as a valid and theoretically sound topic up through the present day over three decades later. As noted by Kirk and Laub (2010), the true coming out of community perspectives was a 1986 *Crime and Justice* volume (Reiss & Tonry, 1986). Numerous authors discussed a wide array of still-relevant ecological topics, such as the assumption of stable neighborhood development (Bursik, 1986) and the impact of gentrification (McDonald, 1986). The tone was set in the volume's introduction by A. Reiss (1986), who stressed the importance of studying neighborhoods in understanding crime, social changes, and the impact of government (e.g. police) on society.

Subsequent research would cover new theoretical ground, proposing mechanisms not previously considered in criminology. Yet, the most influential developments would continue in part down the path suggested by Kornhauser – models in which the informal social controls of neighborhoods mediate the impact of structure on crime. Three particular formations warrant a brief theoretical discussion in this work: the systemic model, the disorder model, and the collective efficacy model.

Systemic Model

The systemic model conceptualized social disorganization as a lack or weakness in social ties/networks (Bursik & Grasmick, 1993; Warner & Roundtree, 1997). A neighborhood is seen as a "complex system of friendship and kinship networks" in which ties are "rooted in family life and [an] ongoing socialization process" (Kasarda & Janowitz, 1974). The classic structural factors, such as heterogeneity and mobility in neighborhoods, influence social ties/networks. Problematic ecological factors are positively associated with crime because such factors will impede network development and socialization.

Bursik and Grasmick (1993) developed one of the most prominent specifications of the systemic model which emphasized the role of networks and social capital. Social disorganization was defined as weak, non-dense networks; networks were built through ties, which themselves were considered as interaction opportunities within the neighborhood. These ties/networks would yield social capital, or an ability to affect change/stability in a community. Social capital impacts the degree of social control, as capital (in part a mix of influence and power) is

needed to generate control.[21] In this system, there are three kinds of control – private

(family), parochial (neighborhood institutions, such as schools or churches), and

public (outside agencies, such as government and police). The public controls were a

new addition to social disorganization, and could be considered a fresh consideration

of formal social control, which to date has not been fully explored.

     Disorder Model

        The disorder model took a different approach to the mediating factors

by defining social disorganization as ugliness and crime (representative of physical

and social disorder). As such, it is similar to Shaw and McKay's assessment of

disorganization through the outcomes, namely crime and social ills. Disorder is both

a cause and symptom of reduced controls and increased fear within communities

(Skogan, 1990). In contrast to the systemic model, there is no need for specific social

ties or networks within a disorder model – the mere presence of visible "disorder" in

a neighborhood is sufficient to break down community controls, independent of any

bonds or networks in place.

Two major theoretical works highlight the disorder perspective. First, J.Q.

Wilson and G. Kelling (1982) advanced the broken windows hypothesis, in which the

combating of physical disorder can lead to a reduction of crime and fear within a

community. This idea is significant since it suggests crime can be impacted

independent of addressing "root causes," such as poverty; this would be especially

good news to police departments, who have little control over socio-demographic

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[21] It should be noted that "control" in the neighborhood context means the capacity of the community
to regulate itself towards collective (not forced) goals, and the underlying assumption is that a
collective neighborhood goal is to live free of crime (Sampson & Raudenbush, 1999).

factors but can help regulate disorderly violations of law. For Wilson and Kelling, a broken window left unfixed is both suggestive of a lack of care in the neighborhood and will engender further acts of disorder. Second, W. Skogan (1990) examined neighborhoods with community policing and postulated that since most areas are afraid of the same problems independent of demographics, then the main theoretical mechanism increased disorder. He suggested that disorder leads to further population shifts, which has an impact on the number of "good" versus "bad" people in a neighborhood; further disorder attracts those who will capitalize on the lack of controls by committing crime. The lack of controls increases fear among residents, which also serves to increase crime, according to Skogan. Like the broken windows hypothesis, this work tends to highlight the potential role of police (as a formal social control) in helping reduce crime within communities.

Collective Efficacy Model

The collective efficacy model developed in partial response to the systemic and disorder models. According to this model, the key concept for understanding social disorganization is "collective efficacy," which is a "task-specific construct related to shared expectations and mutual engagement… reflected in process of activating social capital towards an end" (Sampson, Morenoff, & Earls, 1999). The heart of collective efficacy is social cohesion and trust for a common good within a neighborhood. Like Shaw and McKay, structural concerns matter, but the role of human agency is preserved by noting that this efficacy must itself be "activated" in order to work as a mediating factor (Sampson & Raudenbush, 1999);

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this in part remedies the problems of determinism and embarrassment of riches

suggested by purely positivist theories.

Much of the work theorizing collective efficacy has been done by R. Sampson

and colleagues using data from the Project on Human Development in Chicago

Neighborhoods. For these researchers, collective efficacy is measured by the

capacity for informal social control and social cohesion, focused on observable acts

within a community (Sampson, Morenoff, & Gannon-Rowley, 2002). Social ties are

useful in building collective efficacy, but are not critical as areas can have weak or

loose ties yet still have high cohesion and mutual trust. Additionally, the collective

efficacy perspective sees disorder as an outcome and concurrent condition rather than

a cause of crime; since elements of disorder are themselves crimes, it can be argued

that low social control (reflected in a measure of collective efficacy) can be a cause

for both disorder and other criminal activity in a community.

Theoretical Problems

While these three perspectives build on the work of Shaw and McKay,

and each unpack social disorganization, they also share some theoretical problems.

First is definitional, as the mediating factors suggested are themselves concepts which

require unpacking. There is no consensus on what constitutes functional social ties or

networks, or whether said ties/networks have uniform, positive effects. As for

disorder, it draws closest to Shaw and McKay's problem of defining disorganization

as the outcomes; many types of physical or social disorder are themselves criminal

acts, meaning that "crime" and "disorder" may be concurrent rather than distinct.

Collective efficacy has the clearest codification of the mediating mechanism and

acknowledges that "observable acts" should be key to the measurement (Sampson & Raudenbush, 1999), yet the theoretical constructs are fundamentally perception-based attitudinal factors (e.g. perceived cohesion, mutual trust).[22] Additionally, collective efficacy rests on two poorly defined theoretical principles in the literature, namely social capital and human agency; while both topics have received attention and are part of numerous high-profile theories, the fact remains that the theoretical mechanisms for both are nebulous at this time. While seeking a mediating mechanism may useful, there are drawbacks when the mechanism itself reduces the clarity of how structural factors impact crime.

Second, while the systemic, disorder, and efficacy models rely on a macro-level social control mechanism, limited reason has been given as to why control theory is inherent to these formulations. While there is no fault for a theory to rely on assumptions (so long as said assumptions are made clear), there is a theoretical weakness when one's mechanism cannot be conceptualized independent of other theories; when such weakness exists, it may suggest that the theoretical justifications have not been fully unpacked (see my first criticism) or that there is a lack of confidence in the proposed mechanism (such as Kornhauser's example of deadpan sociology and strain). Disorder theories are especially poor in this regard, as a macro-level control theory may not even be the best theoretical alternative given the theory's reliance on "good" and "bad" people, thus confusing whether the main effect is a

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[22] This point will be expanded on during the review of empirical findings, where central measures of collective efficacy are based on survey responses to questions regarding perceived cohesion and attitudinal trust. While measures are also taken of objective community factors to link with collective efficacy, such as community involvement in local activities, the fact remains that the concepts of cohesion and trust are often only in the eye of the beholder and possibly fluid in the short term, even if stable in the long term (like the stock market's volatile daily ups and downs versus a typically smoother monthly trend of closing values).

place or individual level and begging for a cultural transmission/social learning micro explanation. Ideally, these macro theories need to establish clear differences between control and other assumptions, while also theoretically defending the role of control theory in the formulations.

Third, these perspectives have issues regarding causal ordering. As the thrust of these approaches is to uncover a mediating mechanism between structure and crime which is distinct of crime and other social ills, there are theoretical concerns that the mechanism may be too correlated to the outcome. This is particularly apparent in disorder perspectives, which themselves often argue for a theoretical feedback loop as disorder causing crime directly is not sufficient (Skogan, 1990), while efficacy approaches have yet to rule out the causal order and impact of crime on efficacy (Lowenkamp, Cullen, & Pratt, 2003). Additionally, when considering crime and neighborhoods, there are causal issues created by the spatial distribution of crime itself. These raise questions of how different communities can impact one another independent of the mechanisms working solely within a fixed space.[23] It is possible that the added complexity of looking for independent mechanisms may be the chief impediment to establishing proper causal order in these theories,[24] which then compounds with causal inference issues presented by the nature of geography and distribution of crime rates.

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[23] Never mind the inherent problem with defining a "neighborhood" in order to determine if effects are from the same or truly different community. Definitions of neighborhoods will be discussed further during the empirical review that follows the present theoretical review.

[24] This is not to imply that looking for and testing mediating mechanisms is a quixotic pursuit which should be abandoned. Rather, it highlights the difficulty in determining the mechanisms and the central definitional problems discussed previously. Solutions could be to refine the mechanisms further through theory/testing, or possibly to abandon parts of these constructs and seek something simpler or wholly different to explain the impact of structural factors on crime. In part, the later can be seen in the revival of cultural disorganization elements in the literature, though of course definitional and measurement issues are no stranger to that body of work either.

Empirical Findings

This section reviews the empirical findings within the social disorganization literature since the second revival post-Kornhauser. The pathway first cover the initial reformulations of Shaw and McKay's work, then elaborate on the specific findings in relation to the systemic, disorder, and collective efficacy approaches, respectively. At the conclusion of this section, there is a focus on the overall weaknesses in the literature in the context of what will be addressed in this study.

Revisiting Shaw and McKay

The initial revival of Shaw and McKay's work centered on the ecological stability assumption. The empirical research led by R. Bursik was instrumental in highlighting the limitations of Shaw and McKay and providing explanations to their initial findings while setting the path of undiscovered questions. Though a number of studies (e.g. Bursik & Webb, 1982; Bursik, 1986; 1988; Heitgerd & Bursik, 1987), Bursik and colleagues provided support that Shaw and McKay's results were a historical artifact. Changing demographics had not impacted Chicago's delinquency rates up through the 1940s; this finding was central to the Chicago school perspective that focused on places rather than people. While Shaw and McKay could explain their era of European migration, later changes during the 1950s ran contrary to their predictions in part because the post-war era yielded a fundamentally different migration. Following 1950, there was a large influx of blacks from Southern states who came to Northern urban centers such as Chicago. Once this

change occurred, the shifting demographics were seen to impact neighborhood delinquency. As noted in Shaw and McKay's original work, they had difficultly explaining the few areas populated mostly by blacks (pg. 389, 1942). As a result, it should be no surprise that a massive increase in black population, particularly into areas previously labeled as zones of transition for immigrants, produced poor results for the ecological stability assumptions. The examination of the population and delinquency records helped establish that communities still influenced crime, but just not under the same assumptions as seen with Shaw and McKay.

A different tenant of Shaw and McKay's work, namely the impact of structural factors on neighborhood crime, was established to be far sounder than ecological stability. Numerous studies have provided strong support for the role of structural covariates on neighborhood crime, often in the context of homicide. Land, McCall, and Cohen (1990) demonstrated the use of factor scores among independent variables in studying neighborhood homicide. The benefit of creating factor scores when examining structural factors and homicide rates is that using individual covariates can create model instability due to high collinearity among regressors. Given that Shaw and McKay relied on bivariate, non-regression analysis and correlations, Land et al.'s finding was critical in assessing the true impact of structure on crime, even if the exact mechanism was still to be determined.

R. Peterson and L. Krivo provided empirical support for structural factors (see Krivo & Peterson, 1996; Peterson & Krivo, 1993) using data from Columbus, OH. In Columbus, there were both black and white neighborhoods with comparable poverty, and they found a significant impact of structural disadvantage in relation to violence

across neighborhoods. This is critical as it is a rare occurrence within the same general geographic region. Due to the uneven distribution of violence, poverty, and race within urban settings, it is typically very difficult to untangle the true effect of race versus disadvantage (see Morenoff, Sampson, & Raudenbush, 2001; Sampson & Lauristen, 1994). Thus, having local areas with comparable poverty across race is a unique opportunity to potentially separate those effects.

Support for structural covariates on neighborhood homicide was also found in Morenoff et al. (2001), where structural variables were operationalized as weighted z-scores rather than factor scores. That study, which will be discussed later in relation to collective efficacy, suggested that both weighted and factor score approaches produce robust confirmation that structure impacts crime, though they argue through the mediating construct of collective efficacy.

Systemic Model

Social disorganization was initially conceptualized as a function of social ties in the systemic model. Though Bursik and Grasmick (1993) assumed that strong ties of multiple typologies were critical to repulsing social disorganization within a community, the findings regarding social ties are mixed and somewhat contradictory to theorizing. Sampson and Groves (1989) found support for less formal social ties, such as local friendships and peer groups, as being a significant predictor of neighborhood delinquency using the British Crime Survey data from 1982 and 1984; these results have been further confirmed through reanalysis and replication (Lowenkamp et al., 2003; Veysey & Messner, 1999). Bellair (1997) examined police services survey data from three cities to question the assumption that

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only strong ties could lead to controls. While frequent interaction among neighbors was important, the best mediating factor on crime (burglary, auto theft, and robbery) was an interaction term between frequent and infrequent contacts. This supported the importance of informal ties in that the weak ties may link small groups of frequently interacting individuals within a single neighborhood.

Warner and Roundtree (1997) used Census data and the results of community surveys in Seattle, WA to question the systemic assumption that social ties have uniform impact across neighborhoods. While they found support for structural factors impacting social ties, two other findings mitigated the role of ties – first, structural factors retained a significant, independent impact on crime (assaults and burglaries), and second, the ties were only effective in reducing assault in white neighborhoods as opposed to minority or mixed communities. Subsequent work by the same researchers using much of the same data (Roundtree & Warner, 1999) found non-uniform social ties across gender. While both males and females have similar experience of social ties (in other words, both genders had generally the same amount of meaningful ties), the ties for males were not impacted significantly by neighborhood factors. Given the nature of crime and especially violence, the finding that social ties for men were not impacted by structural covariates carried heavy implications for the use and measurement of the systemic model.

Empirical research into the role of public social control within the systemic perspective has been limited, though often in directions opposite to general assumptions. Rose and Clear (1998) questioned whether increased public ties and control forces from outside a community, in this case incarceration, could decrease

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neighborhood controls and thus lead to increased crime. They categorized the uneven

distribution of incarceration as representing a "coercive mobility" which would

undercut community controls. While their 1998 work was theoretical, a later

empirical work (Clear, Rose, Waring, & Scully, 2003) supported an explanation that

excessive formal social control can have a negative impact. The authors seem to

argue that the "coercive mobility" itself reduces social capital and removes sources of

neighborhood-level controls (such as the private and parochial controls seen in the

system model of Bursik and Grasmick). While they examine a "negative impact" of

social control, in that increased control leads to increased crime, they still rely on the

standard assumption regarding mobility. It seems there are problems with this

explanation as it relates to the "mobility" of jail time, and their findings suggest a

disconnect between assumption and conclusion. Shaw and McKay, among many

other researchers, note that residential mobility impacts crime through the mechanism

that controls are unable to form without a constant presence of norms in a

neighborhood. This is why the theory relies on "place" rather than "people," as the

assumption is that "people" with pro-social norms can be in a disorganized, high-

crime neighborhood; if they do not have a chance to impact the community (or are in

constant flux or conflict with other norms), then the structural lack of norms

undercuts control. Therefore, more stability would lead to less crime, because the

norm structure would be stable and likely pro-social. However, when it comes to

removing those convicted of crimes (independent of the charge, these individuals

were likely involved in activities that stemmed from low social controls), it is hard to

say that leaving them in the community would serve to stabilize norms and lead to

less crime, as the assumption would suggest. Many of these "coercive mobilizations" are likely among populations that do not embody conventional controls or role models, and there may be benefits to social control by their removal. In fact, Clear et al. (2003) find their strongest effect on increased crime came from reentry, and argued there was an incarceration "tipping point" since crime was lower initially. Another interpretation of this is that the traditional mobility mechanism/assumption does not hold, as "mobility" led to less crime until those removed returned to the same neighborhoods. Such an interpretation would be more consistent with the findings of Lynch and Sabol (2004), who found positive effects of incarceration on neighborhood collective efficacy (see also Kennedy, 1997 for a theoretical and historical discussion of removing criminals from minority neighborhoods).

Velez (2001) found that public controls are important factors in reducing perceptions of victimization in high risk neighborhoods, and the findings suggested that neighborhoods need to find ways to mobilize the public sphere (police, government) to take note of problems and provide resources.[25] Warner (2007) shifted the definition of public controls to mean indirect and informal control among neighbors, as opposed to private and parochial controls being direct in nature. The public controls here are initiated by residents themselves. Using a survey of sixty-six neighborhoods within a southern city, the findings indicated that social ties had a significant effect on direct controls but no effect on the indirect/public controls; the

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[25] Of course, there is likely a catch-22 with this advice. It is argued that low social control neighborhoods need to coordinate action and mobilize in order to direct public attention/resources; however, if said neighborhood could coordinate action and mobilize in this way, it's likely not a "low social control" neighborhood.

public controls were positively impacted by social cohesion and trust (a collective efficacy proxy) and negatively impacted by residential mobility.

Disorder Model

Given the general findings that social ties are not all-important in generating control, further research on disorder and collective efficacy is useful since neither perspective rests solely on ties or networks within communities. The empirical literature on disorder has been somewhat disappointing and plagued by logical and measurement issues[26], though there have been success in regards to disorder policing which will be important for the current work. The work of W. Skogan, particularly his 1990 book, directly examines the role of disorder. While his work is linked to policing strategies inspired in part by Wilson and Kelling, Skogan's 1990 work sought to measure fear of crime and theoretically link it to actual crime outcomes. Using survey research from various cities that implemented forms of community policing, he found that all neighborhoods feared the same things – disorder issues, ugliness, perceived lack of norms/controls). From this, the empirical work suggested a strong disorder and crime link in that disorder is both a cause and

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[26] In response to this disappointment, K. Keizer, S. Lindenberg, and L. Steg (2008) set out to conduct a number of controlled field experiments to assess whether a conflict of norms (for example, graffiti sprayed in a zone clearly prohibiting graffiti) would lead to increases in other disorder, such as littering or theft. Their argument was if given uniform opportunity (and in the experiments, paper flyers were put on parked bikes/cars in locations where individuals were going to leave with their vehicle), areas with clear disorder/disregard for rules will be undermined by more hedonistic goals such as the ease of littering, even when the rules were manifest and well-known. Keizer et al. observed multiple areas in a clean state, and then in a disorderly state, with the "disorder" created by the researchers. The design controlled for weather, time of day, and other factors. The results suggested that there were significant differences in whether people added to disorder between the two states, with littering (and in one case, theft) being considerably higher when other disorder existed. This finding held even for non-legal rules, such as the request of a supermarket to put back shopping carts. In that case, the researchers placed stray shopping carts throughout a parking garage. To deter people from putting those carts back, and thus requiring researchers to go out and replace the stray carts, Vaseline was spread on the cart handles; this trick was apparently effective, as the disorder carts were left in the placed locations.

symptom of reduced controls and fear within a neighborhood; the continued breakdown of any such neighborhood would then force "good" residents to flee and "bad" residents would stay or move into the neighborhood.[27] However, there have been studies which called Skogan's empirical findings into question. Harcourt (1998) reanalyzed Skogan's data and through slight changes to the operationalization of disorder found no disorder-crime link. Another analysis by J. Eck and E. Maguire (2000) suggested that the city locations had a number of outliers regarding key variables. The empirical results were drastically different without the outliers, which is indicative that Skogan's data were sensitive to outliers and "not a sound basis for policy." R. Taylor (1999) noted that the processes argued to take place, namely a feedback loop where disorder is a cause and symptom, is impossible to determine through a cross-sectional design. Support for this feedback loop was found by Bellair (2000), though that study was also cross-sectional in nature; in contrast, Markowitz et al. (2001) found no significant evidence of disorder in a feedback loop while using three waves of British Crime Survey data.

The issue of defining disorder apart from crime has been another problem addressed in the empirical literature. Sampson and Raudenbush (1999) noted that many types of disorder are crimes, and their research in Chicago found no direct links between disorder and crime. They argued that disorder can create a "matrix of risk"

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[27] Of the numerous theoretical problems previously noted, this issue of "bad" people may be most problematic to any place-based theory as multiple units of analysis are treated as equivalent. Skogan's main argument at first is to establish that all people and neighborhoods, independent of demographics, are afraid of the same things. This makes sense and serves the theoretical position of disorder well. However, once the theory becomes a slippery slope of people versus place, a whole class of people (bad residents) are created that are not afraid of everything that everyone else is scared of at the start of the discussion. Skogan starts with an objective concept of disorder, and then ends with either a subjective/cultural one or a concept that, while objective, has exceptions in regards to how people are impacted. Obviously, this transformation has an impact on the theory and the empirical testing/definitions of terms; further discussion of this point is found later in this work.

within a community, but there are no discernible causal mechanisms in which

disorder affects crime. This finding was central to the later work of M. Gau and J.

Pratt (2008), in which they sought to determine if residents could differentiate

between disorder and crime. The results suggested that perceptions tend to blur

disorder and crime within communities, though there are some problematic issues

with the study which could question the generalizability of the findings.[28] Skogan

(2008) responded that even if disorder and crime fit the same perceptual structure, it

is unlikely the fixes are one and the same. Many disorders are outside of police

jurisdiction, as opposed to crimes which can be directly responded to by law

enforcement, yet police can still help non-crime problems indirectly. However, as

Kubrin (2008) noted, this contribution serves to highlight the problem in defining and

measuring disorder as independent from crime.

More positive results have been found in the policing literature regarding the

impact of policing disorder and reducing crime. At the heart of this is the broken

windows paradigm[29] which suggests that police action can have an impact on crime.

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[28] The authors used survey data with only a 32% response rate, and their sample was from a fairly rural area which is unlikely to have the degree or variety of manifest disorder seen in urban environments. Also, the authors conducted a factor analysis to determine whether variables loaded on a one or two factor solution. While they concluded that the one factor solution was better, consistent with the inability to separate disorder and crime, it should be noted that a two factor solution would have been acceptable based on the fit indices and the pattern of loading variables presented a reasonable theoretical divide consistent with distinct disorder and crime. The two factor solution was instead rejected due to the high correlation among the variables, which begs the question as to why conduct a factor analysis at all. As a final note, the authors advanced a policy suggestion that police target the common cause of disorder and crime, such as collective efficacy. It is unclear how police can be tasked with building social cohesion and trust among neighbors, especially given the problems many police departments have with communities distrusting law enforcement in general.

[29] Many researchers seek to test "broken windows theory," usually with the suggestion that the "theory" says disorder causes crime (see Gau & Pratt, 2008 as a recent example). It is difficult to read the work of Wilson and Kelling accurately and get that impression. "Broken windows" does not have any theoretical constructs or testable hypotheses in regards to the causes of crime. The paradigm focuses on reducing crime independent of the cause. As such, the causes of crime could be any mechanism. Wilson and Kelling (1982) are very clear about not seeking the root causes of crime, and rather take a page from A. Vollmer (1933) in suggesting that police can prevent crime through

In terms of disorder, the primary relationship suggested is that disorder can lead to fear; police can reduce fear by targeting incivilities, but may not be able to target disorder itself (Hinkle & Weisburd, 2008; Kelling & Coles, 1996; Wilson & Kelling, 1982). Much of the empirical research directly examining order-maintenance policing have taken place in New York City, which had been the high-profile location for the initial broken windows implementation and subsequent crime drops in the early 1990s. Targeting disorder in the form of minor crimes/misdemeanor arrests was seen to decrease violent crime (Kelling & Sousa, 2001), though later studies highlighted more specific findings that these arrests impacted robbery (Rosenfeld, Fornango, & Rengifo, 2007) and homicide, either overall (Rosenfeld et al., 2007) or only gun-related killings (Messner et al., 2007). However, this line of research has less to do with disorder than with deterrence (Kelling & Sousa, 2001). It is important to emphasize that the police link to communities and crime stems from multiple perspectives, though more expansive discussion of policing research within this work is found in the sections focused on deterrence theory.

Collective Efficacy Model

The empirical research on collective efficacy has generally been positive, though most studies come from the same location and dataset. The initial theoretical unpacking of collective efficacy was coupled with an empirical examination using data from the Project on Human Development in Chicago Neighborhoods, or PHDCN (Sampson, Morenoff, & Earls, 1997). These data

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deterrence and not other prevention domains. The goal is to treat and manage crime, not cure criminality.

incorporated survey information taken in 1994-5 across 342 neighborhoods in Chicago. These neighborhoods were formed based on geography and local knowledge rather than census tracts. In the initial work, the authors examined factors which impact collective efficacy regarding the control of children within neighborhoods. Concentrated disadvantage, a structural measure of poverty, was found to be a major predictor in the shared expectation of control only, suggesting that this shared expectation is a significant mediating factor. The authors also discovered spatial interdependence in that the level of collective efficacy within a neighborhood was directly impacted by the levels in surrounding regions, independent of individual neighborhood characteristics. Sampson and Raudenbush (1999) continued this theme by examining collective efficacy as a mediating mechanism in contrast to disorder perspectives. While using the PHDCN data to measure efficacy, the researchers used systemic social observation to observe, witness, and code disorder within 23,000 face blocks.[30] They found that collective efficacy, measured though survey questions relating to mutual trust and perceived cohesion among a small sample of residents in each neighborhood,[31] was a better mechanism to predict disorder and crime. In the work of Morenoff, Sampson, and

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[30] While highly-spoken of in various works of R. Sampson and colleagues, the system social observation technique has some serious obstacles. Taking the method in Sampson and Raudenbush, observers drove slowly down blocks during the day in order to record disorder. There may be reactions to alter behavior/social disorder if those observed witness large vehicles with unknown persons driving very slowly down the roadway. While physical disorder is easily seen during the day, other physical and social disorder will likely be missed if not observed during the night (e.g. whether street lights work/work effectively, vice crimes popular at night). Though the technique can obviously be useful as a qualitative component within quantitative neighborhood studies, it is unclear whether the potentially limited scope of benefit is outweighed by the considerable time and cost necessary. It is also worth noting that the authors used the technique as a way to measure disorder independently from perceived notions of disorder by residents, as perceived notions were possibly biased in the face of independent observation; ironically, the measure of collective efficacy is based on perception surveys.
[31] While each neighborhood had approximately 8,000 residents and the overall response rate for all surveys was 75%, the specific community-level surveys with "collective efficacy" questions were given to approximately 25 people per neighborhood (Morenoff, Sampson, & Raudenbush, 2001).

Raudenbush (2001), homicide rates were prospectively predicted in part by collective

efficacy. Using the PHDCN data, homicide data from two sources, and 1990 census

measures, they found that collective efficacy had an independent effect on homicide

rates whereas social ties/networks did not. Like the original work on collective

efficacy, spatial dynamics played a role in the results; homicide rates were highly

spatially dependent and influenced by the proximity to neighborhoods with high or

low collective efficacy. One study which found evidence of collective efficacy

outside of Chicago was seen in Simons et al. (2005), which used data from two waves

of a community health study among minority families in Georgia and Iowa. Looking

at how collective efficacy impacts parenting, they found that authoritative parenting

was amplified by high efficacy in the community and mitigated by low collective

efficacy.

Common Empirical Issues

In general, there are recurring empirical issues which have limited the

study of communities and crime. First is the difficulty of measuring key factors.

When looking at mediating factors, often formal social controls are left out of the

picture. When formal controls are considered, the effects are hypothesized to be

negative, though there is a substantial stable of research findings suggesting that

police can have a positive impact and take action to reduce crime in neighborhoods.

Even more broadly, definitions for social ties/networks or disorder are hard to agree

on, let along measure. Collective efficacy, the best defined measure, is also the

hardest to capture as it generally requires specific attitudinal data though it maintains

to be based on observable acts (Sampson & Raudenbush, 1999).

There are additional problems in defining a neighborhood itself. Again, the best solution may be seen in the collective efficacy literature, but it is also the most complicated in that it uses geography and local knowledge with the same end product of semi-arbitrarily dividing geography into units. One key element for a neighborhood is shared territory or proximity (see Kirk & Laub, 2010). This does not require social ties or an element of community, which is consistent with the previously discussed literature on ties. Rather than share common, strong bonds, neighborhoods share a space and the circumstances which come with it (Bursik & Grasmick, 1993), which likely leads to common experiences and interactions with the outside world. In this way, the idea of a neighborhood may fall in line with a fixed geographic space that has a potential to activate collective efficacy.

Work by J. Hipp (2007) highlighted many potential issues with defining neighborhoods. Using the American Housing Survey, he examined perceived disorder and crime at a variety of geographic levels. Depending on the aggregation used to define a "neighborhood," different structural effects were seen. Certain structural factors, like heterogeneity, were only significant at larger units of aggregation whereas economic resources had a highly localized impact at the block level and not at larger aggregations.

Second, there have been data limitations. Most of the studies reviewed have cross-sectional or limited wave data, which is problematic when researching issues that develop and constantly change such as neighborhood (Kirk & Laub, 2010). Given the definitional issues, there are few datasets with the necessary measures for social ties or collective efficacy. Related to this, there has been a reliance on static

factors such as Census measures. Most structural factors have been measured this way. However, such data are often out of date proxies being used to examine neighborhoods, especially when the crime/other data used is longitudinal. Given that research has shown the importance of spatial factors and dynamic models for understanding crime, attempts to operationalize structural factors in a more fluid way to capture change over time should be pursued. Some may argue that the Census variables provide the ideal measures, but that idealism may not be worth the price of the data being unresponsive to known changes. Theories of communities and crime are, at their core, theories that speculate and rely on change (Kirk & Laub, 2010). Dynamic modeling of variables is needed as there are new data demands which require a shift to longitudinal datasets (Kubrin, 2003).

This study will help fill in these gaps in the communities and crime literature in a number of ways. First, the research considers the role of formal social control by measuring police action. Second, the data are longitudinal rather than cross-sectional, which allows a consideration of dynamic factors. Lastly, towards that end, the data incorporate dynamic variables for social measures in addition to Census data, which allows both for a test of dynamic factors and a direct comparison in performance to similar Census values.

Deterrence

"Just when you think you have all the answers, I change the questions."

- *Roderick G. Toombs*

Deterrence theory is primarily interested in preventing crime through punishment. The role of punishment is especially important since the theory assumes that crime reflects a choice and that crime can be deterred if the costs of illegal activity outweigh the benefits. Similar to ideas involving communities and crime, principles of deterrence are found throughout the Western intellectual tradition. The Book of Deuteronomy contains one of the many references to punishment in the Judeo-Christian framework by declaring that "those which remain shall hear, and fear, and shall henceforth commit no more any such evil among you. And thine eye shall not pity; but life shall go for life, eye for eye, tooth for tooth, hand for hand, foot for foot" (XIX, v.20-21)[32]. This conception of punishment and deterrence can itself be traced back to Hammurabi's Code from the ancient Babylonian Empire, though one could argue that Babylonian law as recorded had more nuance than generally

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[32] One may argue this speaks more towards retribution rather than deterrence. Many of these ancient laws seek justice through punishment, but given the public nature of punishments and public proclamations of potential punishments, there is undoubtedly a general deterrence element at work. To codify punishments within the society's sacred scripture serves to warn all as to the exact costs of crime. Of course, such costly physical punishments also can serve a specific deterrent to the criminal, especially since humans have a limited number of limbs to forcibly remove.

accredited to it.[33] In Plato's *Protagorus*, Socrates and another character discuss the nature of virtue and how it can be transmitted to others through education; one component is punishment, as "he who desires to inflict rational punishment does not retaliate for a past wrong which cannot be undone; he has regard to the future, and is desirous that the man who is punished, and he who sees him punished, may be deterred from doing wrong again. He punishes for the sake of prevention…." While the ideas seem straightforward both then and now, theorizing on these basic concepts has produced multiple re-conceptualizations and revealed numerous undiscovered regions. One such region, celerity, is a central tenant to deterrence and yet remains mostly unanswered. This section will review the theoretical development of deterrence then discuss the empirical literature to date, both with an eye towards celerity.

Classical Deterrence

While having a rich intellectual pedigree, deterrence theory as we conceptualize it was put forth during the Enlightenment period in Europe. A key component of the Enlightenment's philosophical tradition was to question the nature of society, how order is maintained, the social contract, and the role of government. While this "Hobbsian question of order" (Ellis, 1971) is ultimately central to all

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[33] While "an eye for an eye, a tooth for a tooth, etc." is popularly linked to Hammurabi's Code, those phrases never actually appear in the law (as opposed to the Old Testament, which uses those exact phrases in the King James translation). In the Code, Law 196 states, "If a man put out the eye of another man, his eye shall be put out." Clearly, this can be seen as "an eye for an eye," however the full law is conditional. The assumption in Law 196 is that the two men are equal social ranks, and subsequent laws demonstrate how the punishment changes depending on the nature of the victim. Law 198 reads, "If he put out the eye of a freed man [former slave], or break the bone of a freed man, he shall pay one gold mina," and Law 199 is, "If he put out the eye of a man's slave, or break the bone of a man's slave, he shall pay one-half of its value." This pattern is seen in the "tooth for a tooth" portion, in that the overarching law is, "If a man knock out the teeth of his equal, his teeth shall be knocked out," while subsequent laws condition the statement based on victim. According to ancient Babylon, knocking out the tooth of a former slave costs one-third the price of putting out the eye, while simply striking the body of a man of higher rank results in sixty blows and a public "ox-whipping."

theories of crime and punishment, the first systematic answers were produced by the classical school and rooted in deterrence.[34] M. Gottfredson and T. Hirschi (1990) suggested that classical thinkers generally saw crime as the use of force or fraud in the pursuit of self-interest; in this, the crime is a violation of the social contract, and human nature is seen as hedonistic yet rooted in a utility function, or in other words, humanity is both animalistic and rational.

One of the best expressions of this utility function can be seen in the work of J. Bentham. In his remarkable text, *Principles of Morals and Legislation* (1907[1789]), Bentham suggested that utility is the universal calculus of the pleasure-pain principle. Even those who oppose a utility function to describe how decisions are made in human life, such as moral or religious aesthetics, act in accordance with the principle, according to Bentham. For example, moralists seek a different type of pleasure than most others and religionists seek to avoid afterlife pain. In this framework, there are four sources/sanctions of pleasure and pain – physical, political, moral (public/popular opinion), and religious. Each can provide a basis for law, and physical sources are the grounding for the others. Bentham also advanced ideas on how to measure pleasure-pain, namely through intensity, duration, certainty, and swiftness. This final component was likely influenced by the reformist work of an earlier Continental commentator on government and punishment, C. Beccaria.

Beccaria's seminal work, *An Essay on Crime and Punishments*, was published in 1764 with the hope that "enlightened" governments (generally, some form of

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[34] It is worth noting that T. Hobbes himself gave an answer to the question in *Leviathan* (1651) by suggesting that the government must be coercive to compel people to obey laws, and that order is kept by fear of formal state punishment.

despotism in Europe at the time) would reform their systems of punishment.[35] He

covered a wide array of topics and explored numerous types of punishments, but the

main contribution which formed the backbone of deterrence theory was that sanctions

from society should be sufficiently severe,[36] certain, and swift following the offense

in order to appeal to humanity's duel nature (animal and rational) and thus maintain

order.[37] Beccaria also sought to have logical and easy to understand laws as a hedge

against unrest and crime, noting that, "happy the nation, where knowledge of the law

is not a science" (p. 40, 1983[1764]).

Following the upheavals of the Enlightenment, the classical school of thought

was gradually replaced with a more empirical and computational mode of thinking,

namely positivism. Whereas the classical school was a philosophical child of the

Enlightenment, the positivist school was a materialistic/empirical child of the

Scientific Revolution – this point is important because it is the development and rise

of the positivist school's methods which allowed classical theories to be carried from

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[35] While there is certainly concern for the plight of the masses in Beccaria's work (see his comment on punishing nobles and others alike based on the injury done to society), it is equally hard to deny that Beccaria was looking to make himself useful and appeal to the self-interest of governments. Much of the essay reads as a "how-to" manual of how to avoid rebellion/crime through the proper use of formal control/ deterrence principles. For example, while it is generally accepted that Beccaria opposed capital punishment, his two caveats to this opposition are less discussed – first, capital punishment is actually necessary when a criminal "though deprived of his liberty, has such power and connection as may endanger the security of the nation; when his existence may produce dangerous revolution of the established form of government," and second, "perpetual slavery, then, has in it all that is necessary to deter the most hardened and determined, as much as the punishment of death" (pgs. 65-66, 1983 [1764]).

[36] By this, classical scholars often described proportionality rather than maximum severity. As Beccaria (1983 [1764]) noted, "punishments... ought to be chosen, as will make the strongest and most lasting impressions on the minds of others, with the least torment to the body of the criminal" (p. 37) and "if punishments be very severe, men are naturally led to the perpetration of other crimes, to avoid the punishment due to the first" (p. 62). Maximum severity is counter-intuitive to deterrence theory when properly read. Deterrence theory as classically conceived is more nuanced than popularly portrayed or given credit for (see Tonry, 2008), even if subsequent research has not always operationalized these nuances.

[37] Though often treated as three equal components contributing to a deterrent effect, it should be noted that Beccaria suggested that "crimes are more effectually prevented by the *certainty*, then the *severity* of punishment" (emphasis in original, p. 62).

pure conceptualization into operationalization and scientific testing. As previously discussed, sociological positivism arose first and linked the uneven distribution of crime statistics to place; biological positivism would follow, drawing conclusions about hereditary influences and the uneven distribution of crime. This shift came with a change in how humanity was viewed – whereas classical theorists saw people as inherently hedonistic, positivist thinkers viewed humans through the lens of evolution and thus concluded that criminals could be changed/reformed into a better citizen. This later view of human nature would continue to be the dominant bedrock of theorizing until the 1960s.

Revival: Deterrence as Objective

Deterrence theory returned to the research agenda during a historical period in the 1960s which was similar to what spurred Beccaria to write two centuries prior; at both times, social unrest was evident and there was open questioning into the role of government and its legitimacy to enforce law. Positivist explanations and remedies for crime and disorder were seen as failures, especially cultural and strain perspectives, and people became interested in the impact of government action given that massive social engineering policies correlated with increased disorder. While many of the positivist principals fell out of favor through the 1960s as issues arose regarding the role of the state in maintaining and creating social order, the methodologies for testing ideas remained strong. Classical ideas filled the vacuum by addressing the state's role in punishment as well as providing theoretical explanations for crime and disorder in light of perceived positivist failures.

Likely a part of deterrence theory's appeal, in light of social research which sought to quantify and test hypotheses, is in the apparent simplicity and parsimony in Beccaria's work – increased severity, certainty, and swiftness of punishment should result is decreased crime.[38] Initially, the theoretical research centered on aggregate deterrence and government sanctions. In the spirit of Beccaria, objective deterrence and theorizing at the state-level was imagined as the best way to conceptualize punishment and measure deterrent effects. Given the theory's link to punishment severity and questioning government, often theorizing turned into debates regarding the morality of capital punishment (Chambliss, 1966).[39] However, little interest was taken in the theoretical use of celerity. Given the focus on objective, aggregate trends and the use of official data, swiftness took a backseat to certainty and severity. While this will be discussed in greater detail in the empirical review, the lack of celerity theorizing is critical to note as this oversight would generally carry through the numerous reconceptualizations of deterrence theory.

Reconceptualization of Punishment: Deterrence as Perceptual

As deterrence was theorized to the aggregate level of punishment, additional questions arose as to whether the theory could be applied at the individual level as

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[38] With critical emphasis on "apparent" in this description. See the previous two footnotes as the launching point for future theoretical misunderstandings.

[39] Of course, this revival coincided with the various legal challenges to the death penalty which would culminate in *Furman v. Georgia* (1972) and the temporary halt to capital punishment in the United States. In *Furman,* the Supreme Court found that the death penalty as applied by the states was "so wantonly and so freakishly imposed" as to violate the 8th and 14h Amendments. However, this case is far more complicated than even a typical 5-4 decision, as each justice wrote an opinion and no opinion alone garnered a full majority. In fact, three of the four dissents obtained more stand alone support than any concurring opinion. The crux of the argument seeking to end or limit the death penalty was that a racial disparity showing blacks more often given a death sentence constituted discrimination. While Justice P. Stewart rightfully noted that discrimination was not proven, later research has suggested that it is the victim's race, rather than the defendant's, that significantly increases the chance of a death sentence (see Baldus et al., 1997; Paternoster et al., 2004)

well. Given the lukewarm findings for aggregate deterrence, researchers pursued the concept of perceptual deterrence. This line of theorizing suggested that an individual's perception of punishment would dictate the deterrent effect, in that those who believed (rightly or wrongly) that there would be no proper sanction would not be deterred from deviance or crime. Perceptual theorizing differed from the first conceptualization of punishment, in that initially theory focused on the objective nature of the deterrent rather than perceptions; additionally, while objective deterrence focused on legal sanctions, perceptual deterrence expanded into informal sanctioning. Some researchers who had started with examinations of objective deterrence shifted gears to perceptual deterrence as perceptual perspectives would come to prominence starting in the 1970s (see Chiricos & Waldo, 1970; Waldo & Chiricos, 1972).

Perceptual deterrence allowed for a wider range of studies and theorizing because it was not limited to official records and aggregate computations. Much of the perceptual research has been directly collected using survey instruments. Initial studies asked about the respondents' (often college classes, where the researchers worked as professors) current perceptions of punishment along with any prior criminal behavior/deviance. As more research was conducted, the questions asked were demonstrated to pose a serious theoretical problem – one's prior crime and punishment/lack of punishment may itself impact current perceptions, thus a serious issue to potential time ordering of the key casual relationship (Saltzman, Paternoster, Waldo, & Chiricos, 1982). Later studies applied hypothetical vignettes to measure both perception and behavior concurrently, and others used experimental methods to

test perceptions in a way that properly established causal order. During this phase, little attention was given to celerity as a theoretical concept in testing or imagining deterrence.

Reconceptualization of Utility: Deterrence and Rational Choice

Another shift from objective deterrence and its focus on legal definitions resulted in a distinct conceptualization from the perceptual theorizing. Rational choice theory revised the utility function to include moral/social/physical costs as well as formal sanctions.[40] This perspective linked to the perceptive literature in that rational choice explored *how* perceptions were formed and the role of a subjective, expected utility function (Paternoster & Simpson, 1996). The scope of offending increased, and considerations were made for both time-stable and dynamic factors; this theory incorporated factors that were theorized to vary greatly at different stages of decision making and among different crimes (Cornish & Clarke, 1987). Here, the utility function could be impacted by individual propensity, environmental considerations, and the interaction of criminality and opportunity. Much of the later work on situational crime prevention is rooted in this perspective.

While a useful revival of Bentham in that numerous interesting and previously unexplored questions came about, there are theoretical problems with this rational choice perspective. Foremost is the lack of parsimony given that there is no clear method or limit to how factors in the utility function are selected. Since that an initial appeal of deterrence theory was its parsimony, it is ironic that a reconceptualization

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[40] This reconceptualization is much closer to the spirit of Bentham's work than initial utility functions which only considered the role of formal sanctions, so in a way this reconceptualization is more of a revival and updating of older ideas.

goes in the opposite direction. In this way, it could be argued that rational choice theory suffers from some of the worst excesses of positivism, another irony given deterrence's classical roots – the utility function can be prone to over quantification and excessive categorization with potential for different models for certain situations or crimes. Yet with this potential over over-specification, little attention was given to celerity outside of a limited sphere in behavioral economics.

Reconceptualization of Deterrence: Role of Avoided Punishment

Yet another spinoff within deterrence theory sought to ask questions regarding how the deterrent effect may be more nuanced that previously speculated. Towards this end, Stafford and Warr (1993) noted that the common division of specific and general deterrence had major theoretical holes – primarily, it ignores the idea of avoided punishment; as defined, specific and general deterrence cannot act on a person at the same time; finally, this division was not compatible with other advancements in social learning and rational choice theories, specifically the roles of vicarious and experiential learning and the need for expanded utility functions. Under this new model, there was no need for distinct theories of specific and general deterrence, but rather deterrent effects were seen through direct and indirect experiences. The experience of punishment would lead to increased perceived risk and decrease crime, whereas the experience of avoiding punishment would lead to decreased perceived risk and increasing crime.

While this reconceptualization sought to change the theoretical basis for deterrence, nothing has been pursued down this path regarding celerity. There is a clear avenue for an effect of swiftness, which will be expanded on during this study,

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but to date only severity and certainty are considered. Also, Stafford and Warr's reconceptualization did emphasize how perceived legal sanction threats are formed by information – this will be further discussed in using deterrence in this study as well.

Reconceptualization of Aggregate Deterrence: Policing

The final reconceptualization of deterrence theory varies from the previous pathways. In policing, much of the focus has always been on deterrence even before the theory's aforementioned revival in the 1960s within the literature. The work of A. Vollmer, one of the central figures in the history of policing and criminology, made this emphasis on deterrence clear. In a 1933 piece on developing professionalism with law enforcement, Vollmer noted that police action can prevent crime through a deterrence mechanism – while police cannot impact the "root causes" of crime, law enforcement can arrest criminals and thereby dissuade other citizens from engaging in criminal activity; this deterrence-based perspective took hold in the United States as the Professional Era in policing.

Vollmer's work was in part a reaction to the Wikersham Report, which concluded that the political roots of police power were the main problem in proper law enforcement. Politics led to corruption, disorganization, and lack of standardization within policing, per the Report, and the solutions were to make police autonomous enforcers of a uniform law and reduce responsibilities to crime control. Vollmer agreed for the most part, though he noted that crime prevention should be a main (rather than only) focus of police (1933). Hhe argued police could not impact the social causes of crime while still championing for educating law enforcement on these potential causes and founded UC-Berkeley's School of Criminology for this

purpose. While the Professional Era heeded Vollmer's advice when it came to a standardized police force and "prevention through deterrence" model, the time period by and large ignored Vollmer's push to understand the mechanics of social causes and problems. As social disorder helped bring down the Professional Era, the subsequent era in policing would be the true child of Vollmer is more ways – a mix of prevention through deterrence with an emphasis on community knowledge and involvement of social mechanics.

Interestingly, the Professional Era met its end at the same time that both community and deterrence theories of crime were revived in the research literature – this is not a coincidence, but rather outcomes of the same forces throughout society at the time. During the late 1960s and early 1970s, social disorder and crime rose while police were seen as increasingly detached from communities, a trend highlighted in the President's Crime Commission Report of 1967. This report detailed policing problems, such as lack of legitimacy within minority areas, detachment from the environment, over-emphasis on reaction to crime, and issues of selective enforcement. Police were seen as an arm of government, and government was less trusted to make decisions during this time period (see LaFree, 1994). Studies were done examining the effectiveness of two key policing metrics, preventative patrol and rapid response, with findings suggesting neither tactic as practiced made any difference on crime or citizen perceptions (see Spelman & Brown, 1984; Kelling & Moore, 1988; Kelling et al., 1974 for a review). Others criticized the attempts to regulate discretion through bureaucracy, noting that attempts to eliminate officer discretion through rules often serve to hide or ignore discretion as practiced; this ends

up undermining police authority within communities (see Goldstein, 1979; Wilson, 1970).

Due to this lack of legitimacy in past theories/actions and the specter of increasing disorder, some ideas about policing changed rapidly. Combating disorder and problem solving with communities became a central focus in this new policing (see Kelling & Moore, 1988). At the same time, the function of prevention through deterrence was maintained, as most agreed that the function of law enforcement should be to primarily address criminal activity (though the techniques to achieve this function changed from the pure reactive and detached policies of the Professional Era). J.Q. Wilson and G. Kelling (1982) suggested a broken windows approach where police can impact crime and fear by combating disorder without having to address the root causes, much in the same way as suggested by A. Vollmer decades prior.

Another avenue of policing that is rooted in deterrence theory is the current focus on hot spots (see Sherman & Weisburd, 1995). As technology advanced, the pin maps of Shaw and McKay have been recreated through computers and with far greater detail to consider change, density, and auto-correlation. Areas can be discovered to have disproportionate criminal activity though a number of techniques and the results are labeled as hot spots. Once identified, deterrence theory guides the recommended police action – the level of focus and law enforcement of police increases in the spatial area. While similar to the older "flood the area" deterrence-based tactic seen often in the Professional Era, the difference in hot spots policing is

that the intervention is focused on the particular type, time, and location of the problem.

These new techniques based on deterrence theory represent a different way to examine the impact of aggregate deterrence. From a theoretical standpoint, the role of aggregate deterrence and punishment focused on the state-level and entire criminal justice system. This would make sense from a reading of Beccaria given that no formal policing organization existed in Europe until the 19th century. Yet in policing, the unit of analysis for theorizing is not the individual but rather an aggregate space, albeit not generally as large as a state. This may explain why much of these theoretical developments in the policing literature are not often considered as part of the larger deterrence research – policing reflects a middle-ground between a previously rejected frame of reference (large aggregate) and the more popular individual-level (perceptions). In fact, many recent reviews of deterrence theory (see Pratt et al, 2006; Tonry, 2008 as examples) fail to fully acknowledge the theoretical or empirical results of deterrence-based policing as a potential aggregate assessment of deterrence. As the next section detailing results of deterrence research shows, this omission is curious given the apparent successes of deterrence-based policing; yet, these successes establish a justification for the further study of deterrence through measures of police action, specifically an examination of celerity which is not found either in formal deterrence or policing literatures.

Empirical Findings

As formal tests of deterrence theory began in the 1960s using the positivist tools for assessing data, these techniques often produced examinations of

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only severity and certainty in the main deterrence literature based largely on data

restrictions. Initial studies of deterrence looked at objective deterrence with state-

level, aggregate arrest/prison data; while severity and certainty were operationalized,

swiftness was either ignored as impossible with the given data or marginalized as less

important as the other deterrence components. Findings showed certainty as robust

and significant in decreasing crime but severity often insignificant, with no empirical

findings of celerity (see Chiricos & Waldo, 1970; Gibbs, 1968; Logan, 1975; Tittle,

1969). In fact, Tonry (2008) noted that the state of conclusions for the deterrent

effect of criminal punishments, and the overall criminal justice system, has been the

same since this early research – there is a general deterrent effect, with certainty more

powerful and severity often spurious at the aggregate-level.

        Perceptual Deterrence

                The reconceptualization of punishment and focus on perceptual

deterrence moved research away from aggregate measures and towards individual

crime and survey methodologies. While an important shift in technique, the primary

focus remained on severity and certainty, whether in the early surveys (Waldo &

Chiricos, 1972; Erickson, Gibbs, & Jensen, 1977; Jensen, Erickson, & Gibbs, 1978),

examinations of experiential effects in survey responses (Paternoster, 1987; Saltzman,

Paternoster, Waldo, & Chiricos, 1982), or in later hypothetical vignettes to measure

perception and behavior simultaneously (Bachman, Paternoster, & Ward, 1992;

Nagin & Paternoster, 1993; 1994). The results were often the same as with aggregate

deterrence where certainty was robust and often in the same direction as predicted

whereas severity often lesser or no effect, though the impact of severity was more constant in the hypothetical-based research methods (see Nagin, 1998 for overview).

Reconceptualizations based on rational choice and direct/indirect punishments also centered on certainty and severity, with a more important role assigned to certainty. Piliavin et al. (1986) found there was no difference between serious and non-serious offending, suggesting no significant role for severity, but also found support that opportunity had a significant impact on crime; theoretically, opportunity is a dichotomous outcome that reflects a reverse coding for certainty of punishment (in that recognizing an opportunity often is dependent on the initial certainty of success/lack of detection or punishment in the moment). Paternoster and Piquero (1995) examined the differences between direct/indirect perceptions of punishment among 10th graders. While finding that personal and vicarious experiences interacted in support of Stafford and Warr's reconceptualization, the critical result was seen in the context of certainty – a potential resetting effect was discovered regarding the punishment for drug use, in that the direct experience of punishment decreased perceived certainty and thereby increases criminal activity. Later studies (see Piquero & Paternoster, 1998; Piquero & Pogarsky, 2002) found support for these conclusions in other populations. The defiance finding has been described as similar to the "gambler's fallacy" in which a gambler who has been losing assumes s/he's "due" to win as play continues, which only serves to accelerate the pace of participation in hopes of hitting the point where luck changes. Still, even this fallacy remains tied to certainty of an event rather than an element of magnitude or speed.

In a recent meta-analysis of thirty years of deterrence research by Pratt et al. (2006), the authors concluded that the effectiveness of deterrence theory as studied was minimal, but this conclusion was only based on findings for severity and certainty effect sizes – the effect size celerity was not measured or even noted as a critical factor in assessing the theory. While other reviews (e.g. Nagin, 1998; Tonry, 2008) were more positive regarding the state of deterrence theory, neither considered the role of celerity to date nor as a critical component in future research. This dearth of celerity theorizing and testing is major gap in the criminological literature, one which is directly addressed in this current study.

Celerity

Tests of celerity are few and have been limited in scope and frequency to preclude them from the mainstream deterrence literature. W. Bailey (1980) examined celerity in relation to deterrent effects of the death penalty, with swiftness measured as the time from sentence to execution, and found mixed results once other covariates were added to celerity. Research by W. Selke (1983) studied the celerity of punishment for burglary, as measured by the time between arrest and adjudication, at the aggregate-level within a city over seven years, finding modest support for swiftness of punishment. J. Yu (1994) focused on drunk driving recidivism and deterrence principles, with swiftness of sanctions measured by the time from arrest to fine/license revocation; the author found mixed results for celerity with stronger effects on deterring recidivism for less criminal populations. Recent work by A. West (2002) used a pretest/posttest quasi-experimental design to examine the deterrent effect of a Louisiana law allowing for maximum severity (death) in child

rape cases. Like Selke (1983), celerity is operationalized as the time from arrest to

adjudication; unlike Selke's work, swiftness is not a significant player in study. The

few other studies which include measures of celerity are often based in quasi-

experimental designs of individual deterrence (Clark, 1988; Howe & Brandau, 1988),

in examinations of perceptual deterrence across individuals (Nagin & Pogarsky,

2001; Yu, Chin, & Perfetti, 2006), or in behavioral economics where swiftness is a

consideration for formation of discount rates in decision making (Loewenstein,

1987).[41]

 With extremely limited examination of celerity, in addition to a limited and

potentially inapt operationalization among the few studies incorporating celerity, it

would seem premature of render a verdict on the efficacy of deterrence theory. The

problem in studying celerity has been one of data and methods – limited sources of

quantifiable measures lead to limited approximations. While celerity has been

measured as the time from arrest to the end of court processing since such data are

available, it is hard to see how this time period actually captures the swiftness of

punishment. As such, there are at least two factors to consider in developing a truer

operationalization of theoretical celerity. First, the starting point for any measure of

celerity should be based on the actual incident for which the sanction is being

rendered. As Beccaria (1983 [1764]) stated, "the more *immediately after the*

commission of a crime, a punishment is inflicted, the more just and useful it will be"

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[41] This later work was interesting in that all three deterrence components were considered such that
certainty and severity (in terms of magnitude of an event) were held constant. A utility function was
suggested that incorporated a non-zero value of anticipation, which suggests that the swiftest action
may not be the most desired/most impacting on behavior when an individual actor is given the choice.
If nothing else, these results show that celerity has both a differential effect across outcomes and that
the effect may be more complex than initially theorized.

(p. 51, emphasis mine). The time from arrest to court disposition is "case processing

speed," which may be a useful measure to extend swiftness research but is not

consistent with the principles, assumptions, and theoretical works on deterrence

celerity. Second, previous measures of swiftness assume that police have no role in

deterrence. By making the starting point of celerity an arrest, the implicit assumption

is that the police themselves cannot have a deterrent effect – police act simply as the

funnel into the criminal justice system, where the true deterrent effect is felt. Police

speed is irrelevant, and court speed is paramount. This criticism is not to deny a

potential deterrent effect of courtroom outcomes, but rather to establish the potential

deterrent effect of police work in impacting crime. Such a deterrent effect by police

action has been suggested by the considerable experimental research into hot-spots

and pulling-levers policing tactics.

Role of Empirical Policing Literature in Deterrence

The transition from aggregate studies to individual/perceptual studies

of deterrence in criminology, both within the literature at large and within the limited

pool which addresses celerity, may also be premature. Aggregate-level deterrence

studies conducted on criminological topics is often done by economists focusing on

crime trends (e.g. Kessler & Levitt, 1999; Levitt, 1996) and concealed gun policy

(e.g. the line of research started by the work of Lott & Mustard, 1997). Like their

criminological cousins, the issue of celerity is not generally a part of the research.

Still, criminology has criticized such aggregate research on the grounds that the

economists assume an excessively high value of formal sanctions, as opposed to the

potential role of informal sanctions triggered by formal sanctions (Nagin, 1998;

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Tonry, 2008). In fact, Tonry (2008) goes so far as to say that "macro-level modeling of deterrent effects of changes in sanctions policies by economists and econometricians has reached a dead end." Tonry recommends further research in individual-level studies among different populations to examine layers of deterrence beyond formal sanctions.

Yet, he also notes the growing evidence of deterrence at the police policy level, in contrast to the limited evidence of deterrence at the sentencing policy level. These studies of police policy are at the aggregate-level, though at a localized neighborhood-type level rather than larger units of analysis, including studies of hot spots (Braga & Bond, 2008; Sherman & Weisburd, 1995; Weisburd & Braga, 2006) and pulling levers tactics (Braga, 2008; Braga, Kennedy, Waring, & Piehl, 2001) as well as "shallow" problem-oriented policing (Braga & Weisburd, 2006). Such studies represent Vollmer's (1933) idea of prevention through deterrence, in which police can have an effect on crime even if not addressing the root causes of prevention. Given that Tonry acknowledges the success of certain aggregate-level studies regarding deterrence, and that aggregate-level studies have ignored celerity equally as individual-level study, it is justifiable to test a new measure of celerity based on police action at the aggregate-level.

This study will help fill a major gap in the deterrence literature. Deterrence theory is composed of three components, though only two have been subject to rigorous empirical examination. Celerity has often been ignored, though it is the mechanism by which the causal link between crime and punishment is formed (Clark, 1988) and it may have been more important to classical theorists than severity (Tonry,

2008). Additionally, aggregate-level studies of deterrence have been often

marginalized and criticized within criminology – while much of these criticisms are

valid, police research has avoided many of the pitfalls and still produced deterrence

effects. Tonry (2008) notes that there is "little point in continuing to investigate

[deterrent effects] in the same old ways for another 30 years," and I agree with that

particular sentiment. Therefore, this research studies celerity using a new

operationalization and an examination at an aggregate level consistent with the

successes of recent deterrence-based police research.

In summary, the current study seeks to explore undiscovered territory, both

theoretically and empirically. Using data from 1998-2006, this study will ask two

main questions: Do structural factors influence homicide rates across neighborhoods?

Does aggregate deterrence influence homicide rates across neighborhoods? This

work will extend the communities and crime literature by including dynamic

structural factors, using longitudinal data, and incorporate formal social control as a

mechanism predicted to influence homicide rates. Deterrence theory provides the

foundation for this element of formal social control, as inspired by the successes of

aggregate deterrence in policing research and lack of previous study in the swiftness

of punishment. This test of celerity in this study is a clear extension that addresses a

major hole in deterrence research and theory.

Chapter 3: Data and Methods

"The standard by which working concepts ought to be judged is usefulness."
– Terence Morris

"Never desire that which is impossible."
– Spartan axiom

The two central questions in this study may seem straightforward and easy to assess. However, the simplest questions have a way of becoming more complicated when it comes to conceptualization and operationalization. While no measures or techniques are perfect in research, improvements or changes to prior work serve to expand on the body of knowledge. This work advances the current research by using multiple longitudinal data sources, one of which has been recently collected and never examined previously, which include dynamic structural factors, neighborhood controls, and a new test of celerity to reflect formal neighborhood control. This chapter will detail both the data and methodological choices necessary to address the key questions at hand.

Data

This study uses two primary data sources: homicide information collected from the Washington, D.C. Metropolitan Police Department (MPDC) and structural variables compiled by the Urban Institute and the Washington, D.C. Local Initiatives Support Corporation.   Combination of these sources allows for an opportunity to study dynamic change within a major U.S. city over time.

Homicide Data

The homicide data used here are part of a larger data collection effort by this author to establish a longitudinal dataset for the MPDC. More than three years were spent on the overall effort and it was partially funded by the Criminal Justice Coordinating Council (CJCC) of Washington, D.C. through a grant obtained by this author. A brief description of the data collection process highlights the scope of the project and its usefulness in this current work.

While the author served as a volunteer within the Research and Analysis office at MPDC, two data issues directly led to the collection of homicide data. First, MPDC did not have useable datasets which extended before the 21st century. Due to considerable problems in managing data quality and transitions between record management systems in years past, limited comprehensive data were archived by the department. Corrective efforts in data cleaning and management were implemented in 2007 under a new Chief of Police. These efforts had a primarily prospective focus, as there were limited resources to clean large-scale databases retroactively. This reality led to a lack of longitudinal data sources available for MPDC use, both for research and for public information requests.

Second, this author participated in a project seeking to update a report from the late 1980s consisting of descriptive statistics for homicide incidents over a three-year time span; the update would examine homicide cases from 2005 through 2007. During the course of this project, it was learned that MPDC had over a decade of homicide incident files stored on-site – additionally, these files had not been entered into an internal, useable database for research purposes due to limited resources and

prioritization of other data collection efforts.[42] Our project relied on using graduate

students to collect a wide array of incident data. However, through my role in

checking inter-rater reliability, major discrepancies both across individual readers and

between readers and this author came to light.[43] After discovering the depth of the

problems, the author worked with a team of trained interns and a full-time staff

member to revise the dataset with considerably higher reliability. The final product

of the collection, which included an examination of numerous trends in homicide,

demonstrated the usefulness of a longitudinal dataset with considerable incident-

based detail.[44]

Subsequently, this author obtained a grant through CJCC as the principal

investigator for a more ambitious data collection spanning all homicide incidents

from 1994 through 2004.[45] For this effort, the author expanded the variables

collected from the initial 2005-2007 project based on a review of variables collected

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[42] Previous efforts had been done for meeting the requirements of the Violent Criminal Apprehension
Program (ViCAP). This effort was managed by the F.B.I. with the purpose of linking homicides and
sexual assaults for investigative purposes. As such, the database is maintained by the F.B.I. and can be
queried on individual variables exclusively.
[43] It was later determined that the original coders had limited files to work with, did not keep track of
who was assigned individual cases, nor received training beyond basic descriptions of how homicide
case jackets are organized.
[44] As previously noted, no such homicide data existed for MPDC, as reporting to the Supplementary
Homicide Reports had ceased in 1997. That said, the collected 2005-2007 data provided far greater
detail than the SHR could, especially when it came to motive, geographic factors, and victimology
traits.
[45] The starting point of 1994 was at first a practical matter, in that the cases from 1990-1993 were in
boxed storage on-site whereas cases jackets from 1994 onward were on shelves in the Cold Case
office. The original intent had been to collect 1994-2004 and then go back to older cases in storage if
there was time within the grant period. However, as data collection started, this intent proved
impossible as the number of missing files among early 1990s cases proved to be a large percentage of
the total. For example, nearly 13% of all homicide cases from 1994 had missing case jackets. The
secondary source for information, a computerized case management system, became functional in
1995. This meant that cases prior to 1995 were generally not logged in the computer system, and any
missing physical documentation from those cases was effectively lost for purposes of this project.
Access to data was considerably better moving forward, as from 1995 onward the true missing
percentage (where a hard copy and computer copy of the documentation was not found) was at most
2% per year and most often was 0%.

in other well-known homicide datasets, particularly those of Chicago and St. Louis, and on prior work on the 2005-2007 collection project. This new dataset included variables expanding victim and offender characteristics such as employment, criminal histories, last known address, location characteristics, and revised motivational factors/descriptions. Towards the end of the data collection, data from 2005 and 2006 was revisited to incorporate the new variables included in the 1994-2004 effort. This author did most of the coding for over 3,000 cases, with trained interns[46] taking random selections of cases and testing for inter-rater reliability. The reliability was consistently greater than 90% overall, with the limited disagreement centered on the free form text portions of the dataset which focused on the details and timeline of investigations. These text-based variables were not used to compile any of the variables in this study.

Data collection relied on multiple sources. The primary source was the paper case jacket stored in the Cold Case office. Case jackets contained all paper documentation produced during an investigation, including victim data, initial crime scene reports, running resumes (continuous updates regarding investigative progress generally composed by the lead detective), evidence/toxicology reports, interviews, and suspect/offender information if available. Though there was considerable variability in terms of organization and specific documentation (for example,

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[46] These interns were trained for a homicide data collection project which sought to go forward in time (from 2008 onward) independent of my effort to collect backward. However, these interns had additional training on my larger set of variables before having them assist in this project. Incidentally, I also trained interns for other data collection efforts, including for one project by the Rand Corp. looking at factors impacting cold case solvability (see Davis, Jensen, Burgette, & Burnett, 2014). For both my own training and assisting in training interns, I am eternally grateful to the Cold Case office coordinator, Det. James Trainum (ret.).

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toxicology reports were uncommon in files before 2001), these case jackets generally contained the most detailed information about an incident.

Another source was the computerized case management system. This system went live in 1995 and most cases from that time forward are logged in with varying degrees of documentation. The system was generally made up of the running resume found in the case jacket, in addition to other important documents such as the main incident report and results of interviews. Rarely did these entries have more information overall than the case jacket, yet this computerized system was invaluable when the paper case jacket was either missing, incomplete, or unavailable for review.

Additional information was collected through numerous criminal record systems to collect histories on victims and known offenders. Often case jackets or computerized documents would include printouts/information from the Criminal Justice Information Services (CJIS) database, National Crime Information Center (NCIC), or local DC criminal records (through the Columbo or JUSTIS information system); however, when those documents were missing, it would be necessary to obtain records from those source databases. It is possible that these records are still incomplete regarding the true arrest history of the individuals – as such, any measures of criminal histories should be considered conservative estimates.

The homicide data used in this study spans from 1997 through 2006, with the 1997 homicides included as a lag variable to predict future homicide (see further description in the Variables subsection). Over this timeframe, there were 2,337 total homicides, with 2,311 valid for this analysis.[47] Figure 1 provides a representation of

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[47] A case is valid for analysis when it meets two criteria. First, the case includes substantive data for all variables examined in this work. Second, the case reflects an incident which occurred during the

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the totals and valid cases by year. Table 1 shows descriptive proportions for variables of general interest across the valid cases by year. Again, since Washington, D.C. did not submit data to the SHR during this time period, this table reflects the first reporting of such variables.

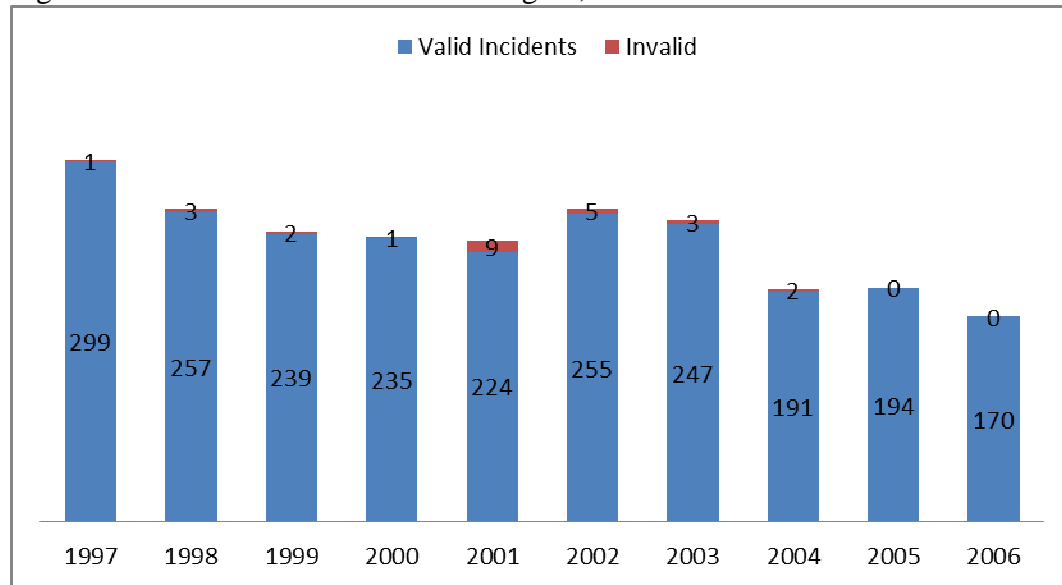Figure 1. Homicide incidents in Washington, D.C. 1997-2006

Table 1. Selected Descriptive Variables, Homicide Incidents in Washington, D.C., 1997-2006

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Valid Incidents	299	257	239	235	224	255	247	191	194	170
Victimology										
Male	0.87	0.89	0.88	0.90	0.88	0.87	0.90	0.91	0.89	0.91
Black	0.92	0.93	0.93	0.94	0.91	0.93	0.91	0.98	0.93	0.94
Age (mean)	28.3	30.5	28.9	29.0	29.7	29.0	31.6	29.8	30.1	30.0
Criminal History (y/n)	0.61	0.53	0.60	0.65	0.75	0.71	0.81	0.74	0.66	0.62
Case Characteristics										
Outdoors	0.75	0.72	0.75	0.83	0.79	0.75	0.74	0.76	0.78	0.77
Handgun	0.77	0.72	0.74	0.77	0.76	0.75	0.74	0.76	0.76	0.76
Drug Motive	0.18	0.13	0.15	0.17	0.17	0.15	0.15	0.14	0.08	0.14
Closure Rate	0.62	0.55	0.53	0.56	0.50	0.55	0.44	0.54	0.52	0.55

time frame; for example, a homicide where the incident happened in 1994 but was not ruled as a homicide until 1997 would not be included, as the incident itself was outside of the time frame. Cases are assigned a year based on incident date for this research, not date declared as homicide.

Spatial Data

Spatial data in this analysis are from the "NeighborhoodInfo DC" collaboration between the Urban Institute and the Washington, D.C. Local Initiatives Support Corporation to collect community information from both U.S. Census and D.C. data providers. This dataset has demographic and social welfare variables across a wide array of geographic groupings in Washington, D.C. For the purposes of this study, the divisions by census tract are the most relevant. There are 188 total tracts in the District, though only 182 are suitable for analysis.[48]

While there are potential pitfalls in using census tracts to approximate neighborhoods in criminological research (see Hipp, 2007), the decision to use tracts for this analysis is justified in two related ways. First, there are no formal neighborhood divisions and geographic boundaries established by the D.C. Office of Planning.[49] While various government outlets acknowledge between 120-130 different neighborhoods in the District, there are no agreed upon demarcations and thus no demographic data. While there are some agencies that track current neighborhood change, such as the Washington, D.C. Economic Partnership, no fixed boundaries exist in any analysis and most efforts are not retrospective (see WDCEP, 2014).

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[48] Given the amount of federal land and parks, only 182 census tracts maintain a population over 100 people.
[49] Additional efforts were made to obtain ACS data at a disaggregated level, though this was not fruitful for two main reasons: first, no questions ask as to what neighborhood the respondent lives, and as such, none of the questions asked would allow for any type of geographic demarcation other than the provided census tract or the smaller block group (American Community Survey, 2013); second, any such variables would be static in nature rather than dynamic, and since the level of aggregation was at best the census tract, this represented no considerable improvement on the dynamic factors also available at the census tract.

Second, all well-established geographic units used in D.C. city planning (aside from census tracts) are large aggregations that hide considerable diversity. The two aggregations closest to representing a "neighborhood" are the neighborhood cluster (N=39) and the Police Service Area (N=56)[50], whereas all other divisions are even larger, such as Advisory Neighborhood Commission (N=37), ward (N=8), and Police District (N=7). As a result, the census tract provides the best approximation of neighborhood division and diversity necessary to examine the local impact of dynamic change and formal social control over time, though this issue will be revisited in the final chapter of this work.[51]

The benefit of this data is the dynamic nature of the variables. While including time-invariant Census measures, the dataset also includes time-variant variables that reflect local planning and resources. Prior studies have assumed that the federal Census variables, though non-dynamic, were the best measures of a community. However, that assumption is an empirical question largely unexplored. Even studies that sought to explore dynamic change were limited to Census measures (see Kubrin & Herting, 2005). The data in this study capture variables important to D.C. local government, as planning and resource allocation is done on a yearly basis corresponding with the budget process. Such city planning cannot rely on decennial

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[50] Police Services Areas (PSAs) are themselves fluid in that the size, shape, and even count have changed over time. Redistricting, effective January 2012, led to the creation of eleven new PSAs. Smaller changes over the past decade have created or collapsed PSAs. The reason for changes is typically to balance workload across and within districts.

[51] As a matter of correlation, the count of census tracts and neighborhoods in the District (182 vs. 120-130) is considerably more similar than other cities where issues of tracts and neighborhoods have been highlighted, such as Chicago (865 vs. 342). While not a smoking gun, this does suggest that true differences between census tracts and neighborhoods in D.C. may be more minimal than seen elsewhere.

Census figures collected by the national government, and therefore it is possible that change over time is best seen in these dynamic factors across neighborhoods.

The data structure is in a place-year format, meaning that each valid Census tract is paired with each year in the data. This is necessary to capture the dynamic nature of many variables in this longitudinal data set. In this format, the total N=1,638 records, for nine years of data across 182 usable Census tracts.

Variables

Dependent Variable

The dependent variable in this analysis is the *homicide rate* within census tracts. In order to create this variable, the homicides were mapped through a GIS (Geographic Information System) by assigning incident location spatial coordinates; once mapped, these coordinates were displayed and spatially joined to another map layer, such as census tract. With the homicide count for each tract determined, the rate can be computed. However, two different denominators were used in order to account for population changes over the observed time period. For homicide rates up through 2002, the denominator is the 2000 Census population; for homicide rates from 2003 onward, the 2005-2009 American Community Survey population estimate as the denominator.

Independent Variables – Structural

The communities and crime literature has long found that structural factors are significant predictors of crime. However, few studies have examined dynamic structural factors due to limits on data availability and a preference for Census variables. This work considered four time-variant structural factors which are important to the local economies, alongside five time-invariant factors taken from the 2000 Census data, to help determine the predictive power of dynamic structural variables. These relationships to the dependent variable are summarized in Figures 2 and 3.

Figure 2. Predicted relationship between dynamic structural variables and homicide rate (+ is direct, - as inverse)
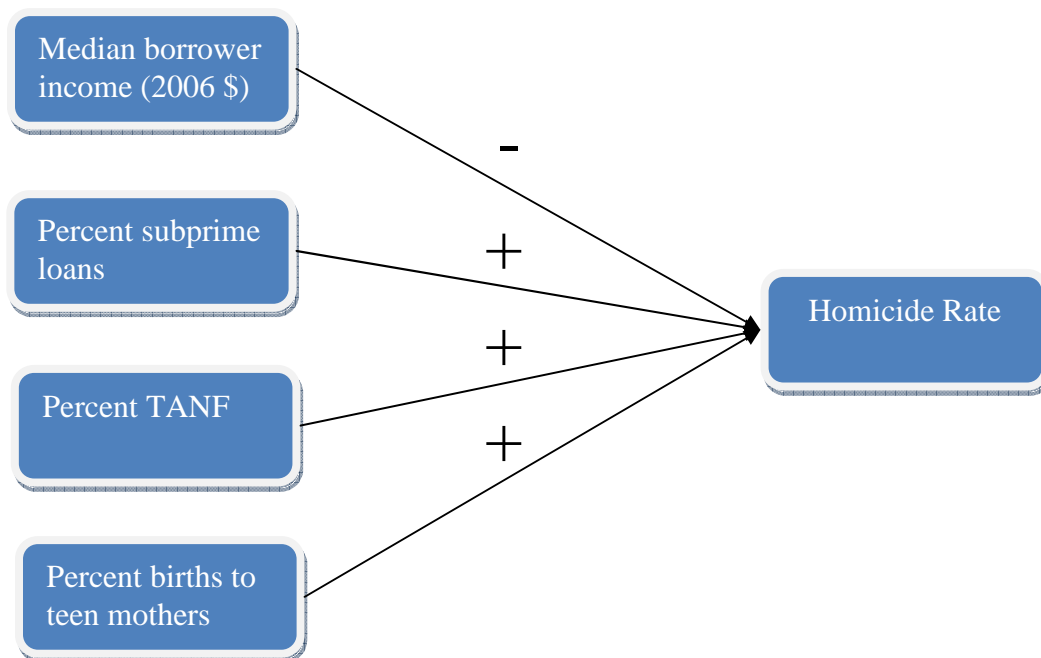
Figure 3. Predicted relationship between static structural variables and homicide rate
(+ is direct, - as inverse)
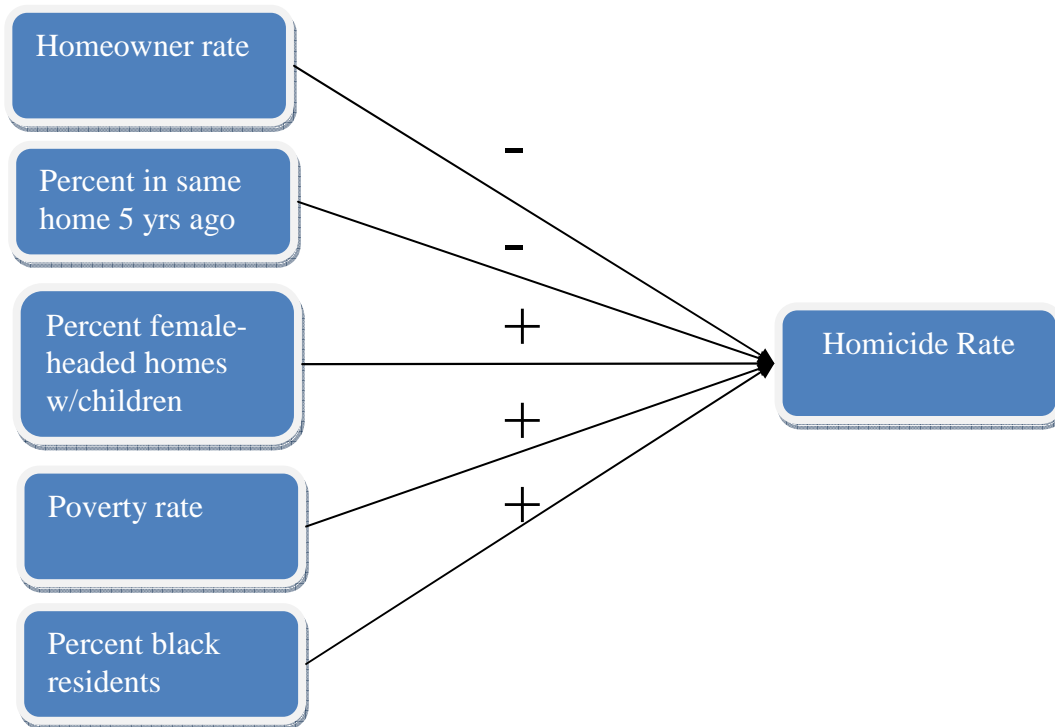
Two variables reflect dynamic residential/housing factors. First, *median borrower income (2006 $)* captures an average income for those obtaining a home loan for each year between 1998 and 2006, with prices standardized in 2006 dollars. Increases in this variable would reflect both desirability and potential stability within the neighborhood, and thus are predicted to be inversely related to crime. Second, *percent subprime loans* measures the proportion of housing loans given to high-risk borrowers. Increases in this variable could represent residential instability, as such borrowers are at a greater risk of default on loans and are more likely to relocate/be foreclosed on; as such, increases in this value are predicted to be directly linked to crime.

Dynamic socioeconomic factors are measured through two variables. *Percent TANF* reports the percentage of the tract population that receives assistance through the federally-funded (but locally-administered) Temporary Assistance for Needy Families program. Over the time period in this study (1998-2006), the national trend saw a steady decrease in recipients such that 2006 counts represented a reduction of nearly 50% from the 1998 counts (4.4 million versus 8.3 million, respectively). The average number of recipients across all census tracts in the District during this time, however, only saw a sizable drop in average recipients between 1998 and 2000 (313 versus 248), with values fairly constant since 2000. The variable in this study standardizes the count of TANF recipients by the population in a similar fashion to the dependent variable, in the 2000 Census population is used as the denominator for all values through 2002 and the 2005-2009 ACS population estimate as the denominator for calculations from 2003 onward. This measure is likely reflective of the changes in poverty within an area, such that increases would be predicted to contribute to increased crime.

The second socioeconomic variable is *percent of births to teen mothers*. Increases in this variable may represent difficulties in both family structure and the local economy, and would be predicted to have a direct relationship to any measure of crime.

The five time-invariant factors taken from 2000 Census data represent traditional structural measures found in the communities and crime literature. These variables are included both as controls and as a comparison to the potential predictive power of the dynamic measures. They fall into the same two groupings as the time-

variant variables, namely residential/housing and socioeconomic considerations.
Following the guidance first proposed in Land et al. (1990) when examining time-invariant structural covariates within a regression framework, two measures were by creating factor scores for residential/housing and for socioeconomic standing. The benefit of creating factor scores when examining static structural factors and homicide rates is that using individual covariates can create model instability due to high collinearity across time periods among regressors.[52]

Two variables will contribute to the residential/housing factor score, *homeowner rate* and *percent in same home 5 years ago*. High scores should correlate to lower levels of crime due to greater residential stability. Three variables will contribute to the socioeconomic factor score, *percent female headed homes with children*, *poverty rate*, and *percent black*. All are staples in previous communities and crime studies, and higher values are linked to higher crime.

Independent Variables – Formal Social Control and Deterrence

The key explanatory variables in this test of aggregate deterrence theory and formal control are the objective certainty and celerity of punishment.[53] These variables will be lagged by a year in order to avoid problems of temporal ordering found through previous deterrence research. The relationship to homicide rates is summarized in Figure 4. *Certainty* is measured by the closure rate within neighborhoods from 1997-2005 (as a lagged value with the dependent variable

[52] This is less likely when using dynamic factors which display both within and between group variability. As seen in the next chapter, no such model instability occurred with the time-variant factors, though if it had factor scores could be created for those structural variables as well.

[53] Severity is not examined directly in this study. Following my measures of celerity and certainty, the most thematically consistent measure of severity would likely be sentence length. Please see Chapter 2 for a further discussion of excluding severity.

measured from 1998-2006). *Celerity* is measured as the average speed of homicide

closures within neighborhoods. [54] This value is assessed for the same lagged time

period as certainty. Given the potential problems in treating celerity as a continuous

variable (wide variance and no right censoring for open cases), celerity is measured as

a dichotomous individual-level measure to indicate whether a case was closed in less

than 41 days. Incident-level celerity is given in days, with missing values given to

cases which were not closed. However, the range for this measure of celerity is

greater than 4,600 days. There is little theoretical guidance on determining what time

period would be "swift" versus "not swift," which is unsurprising given the limited

thought given to celerity in the literature. It stands to reason, though, that the

differences among large values is likely small and thus the large range is excessive in

capturing swiftness of punishment (e.g. once 600 days passes, it seems likely that

another 10 days will not have the same impact as the initial 10 days in assessing the

effect of celerity). As such, the full rationale for this metric is expounded on as part

of the descriptive analysis in the following chapter. These values were aggregated

and averaged within neighborhoods at each of the time points, such that the final

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[54] One may ask why this study does not treat celerity/swiftness of closure at the individual level rather than the neighborhood level. First, it is unclear how celerity would work as an individual level effect aside from specific deterrence for the individual offender(s). When considering the general or perceptual deterrent of a rapid case investigation and closure, the impact is extending beyond the individual and into the community. Therefore, the examination of an aggregate deterrence is more apt. Second, as a measure of formal social control and police impact, the target audience for closing cases is greater than the single offender. When conducting a homicide investigation, police seek both justice for the families and to alert the community that murderers will be held accountable for endangering other citizens. Again, the focus here is at a community level, and thus this is a valid level of measurement for deterrence.

celerity measure was the average proportion of homicide cases closed swiftly as opposed to cases either not closed or closed in a period longer than 41 days.[55]

Figure 4. Predicted relationship between formal control variables and homicide rate (+ is direct, - as inverse)
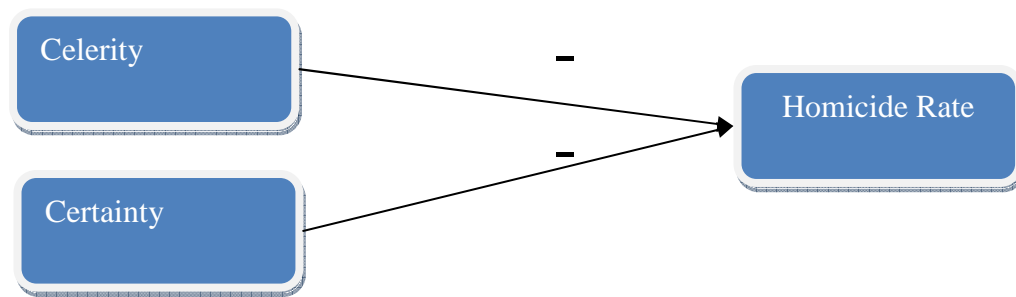
This measure is an improvement on measuring celerity as time between arrest and adjudication for two reasons: first, punishment does not begin with sentencing, especially for cases of homicide in which suspects are often kept in custody from the time of arrest through trial due to the seriousness of the crime; and second, the time between incident and arrest is a more proximate assessment of the reach of formal control within the community as it focuses on the actions of police, whereas the time between arrest and sentence is more accurately a measure of case processing speed by the courts outside of the community itself. For both deterrence measures, there will be an inverse relationship with homicide rates predicted. As certainty or celerity increases, there should be a subsequent decrease in homicide rates.

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[55] Due to the reliance of the celerity measure in part on the certain measure, a correlation matrix was run with each variable by year (1997-2006). The results indicated that same-year measures of certainty and celerity for the predictor years averaged .58 but never exceeded a correlation of .68 during any given year.

Controls

The controls for this study represent additional potential explanations for the homicide rate in a particular neighborhood that may confound or mediate the structural or formal control elements. The general relationships are summarized in Figure 5.

Figure 5. Predicted relationship between control variables and homicide rate (+ is direct, - as inverse)

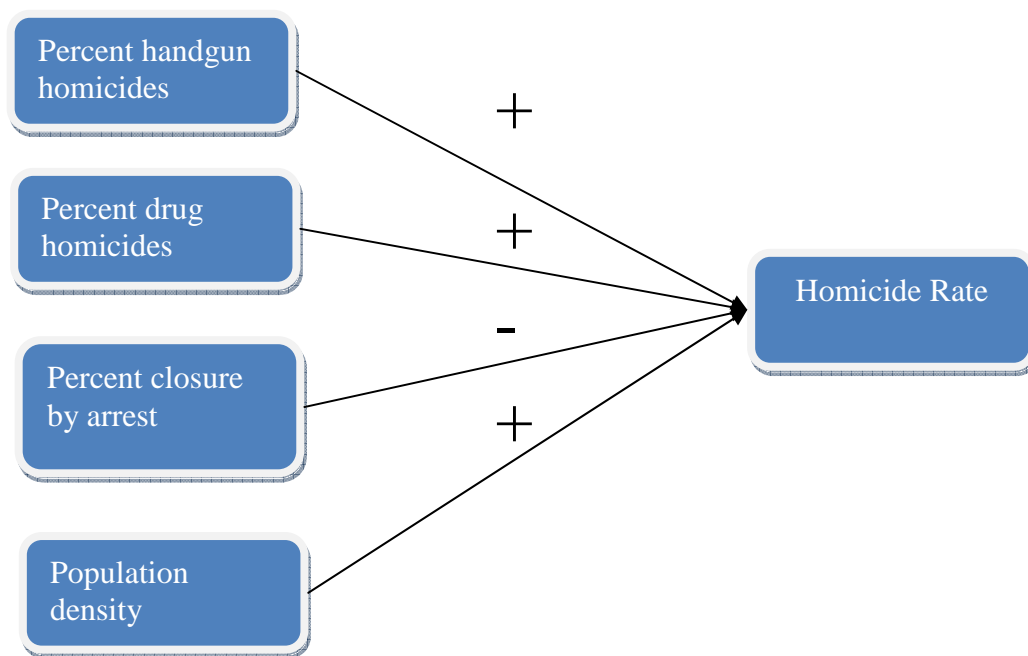Incident characteristics are often portrayed as driving factors in the national drop in homicides following the early 1990s. Decreases in both gun homicides (Fagan et al., 1998) and in drug-motivated homicides (see Blumstein & Rosenfeld, 1998) have been linked to changes in homicide rates. As such, any potential causal mechanism at the community level needs to control for these characteristics. *Percent handgun* complies the percentage of homicides within the neighborhood where a handgun wound was the cause of death. *Percent drug motive* captures the percentage

of homicides in the neighborhood where drugs or elements of the drug trade were a motivational factor in the homicide.

The type of closure may play a role in mediating aggregate celerity and are thus included as controls. *Percent arrest* measures the proportion of the closed cases cleared by arrest. Cases can be closed through administrative means other than arrest; for example, if the prime suspect dies during the time of the investigation and there would have been sufficient evidence to obtain a warrant if the suspect remained alive, the case can be closed administratively. This factor may impact the aggregate deterrence impact within a neighborhood. D. Black (pg. 3, 1976) noted that an "arrest is more law than no arrest" and a smaller percentage of arrest clearances may contribute to a smaller deterrent impact.

Three additional controls account for additional issues. *Lagged homicide rate* is included to control for the impact of previous propensities of lethal violence within neighborhoods. *Year* is a set of dummy variables for each year from 1998-2006. These variables will be included in the model to identify potential independent time effects; in the model, the dummy variables for 1999-2006 will be included with 1998 left out as the reference category. *Population density* is calculated using the same dual-denominator method as the homicide rate and is included to account for urban concentration often correlated with higher rates of crime.

Hypotheses

The two main questions for this study ask whether 1) structural factors and 2) aggregate deterrence factors impact homicide rates across neighborhoods. Using the

justifications and variables described so far, these questions can be operationalized into specific predictions:

- H1: Structural factors will have a significant relationship with homicide rates, all other factors considered.[56]

  o H1a: Dynamic structural factors will yield better explained variance, model fit, and stronger significance than static structural factors.

- H2: Aggregate deterrence factors will have an inverse, significant relationship with homicide rates, all other factors considered.

Both of the main hypotheses, H1 and H2, are one-tailed predictions since each variable is clearly predicted to either have a positive or negative impact on homicide rates rather than a general effect. The subset hypothesis, H1a, will be examined through a comparison of fit statistics and results. This hypothesis is important to highlight, as is can give important information on the utility and potential future use of dynamic structural factors. Given the current research generally uses either static structural factors or measures of informal social control with limited support and/or roots in perception rather than empiricism,[57] the potential for dynamic social factors

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[56] Most factors are predicted to have a direct relationship with homicide rates, with the previously noted exception of the median borrower income among the dynamic variables and the residential factor score among the static variables. See Figures 2 and 3 for specific predicted relationships.

[57] Of course, some from the Chicago School (among others) may object to this characterization in part. After all, it was W.I. Thomas who famously said that "if men define situations as real, they are real in their consequences." However, my point is not to dismiss perceptions entirely, especially given my use of deterrence theory and literature to guide my own research. It is to highlight that some conceptions of informal social control, such as collective efficacy, are measured through perception data but defined/advertised as mechanisms rooted in observable action. Yet, momentary perceptions are different than action, perceptions are difficult to independently verify, and perceptions may be subject to undetected variance within individuals. Given these potential drawbacks, it seems that not all of the oxygen has been sucked from the room of communities and crime by collective efficacy and there is still room to explore or even reassess old ground in a new way. This is where I see dynamic structural factors fitting in, potentially.

to augment future research is significant and needs to be compared to available alternatives where possible.

Method and Analytic Strategy

The modeling strategy for this study was a zero-inflated Poisson count model. The Poisson distribution was selected due to the outcome variable having a nearly equal mean and variance, as seen in Table 2.[58] Regarding the zero-inflated component, there are both statistical and theoretical arguments for selecting that model variant. The purpose of a zero-inflated model is to handle excess zeros by predicting zero counts using a logit distribution and predicting non-zero values with a different distribution, in this case the Poisson (Long, 1997).

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[58] The variance is the standard deviation squared. In this case, the mean homicide rate was .44 and the computed variance was .43 based on the standard deviation of .66.

Table 2: Variable Averages

Citywide (N=1638)

	Mean	SD	Min	Max
Residential (static)				
Homeowner rate	40.6	23.5	0	100
% in same home 5 yrs ago	50.4	15.2	1.6	83
Socioeconomic (static)				
% female-headed homes w/ children	46.2	25.4	0	92
Poverty rate	21.8	15.5	1.6	90
% black residents	64.7	36.3	1.4	100
Residential (dynamic)				
Median borrower income (2006 $, in 1000s)	89.7	40.4	17.2	316.9
% subprime loans	9.3	12.1	0	100
Socioeconomic (dynamic)				
% TANF	9.2	10.1	0	58.9
% birth to teen mothers	11.4	9.4	0	50
% Handguns	71.6	37.8	0	100
% Drug	13.5	27.6	0	100
% Arrest	42.9	40.1	0	100
Population (2000 Census)	3142	1353	149	7278
Population (2005-2009 ACS)	3304	1434	171	7976
Population Density (1,000 per sq. mi)	15.3	10.7	0.6	56.8
Homicide Rate (per 1,000)	0.44	0.66	0	6.7
Formal Control (N=853)				
Clearance Rate	51.7	40.5	0	100
within 41 days	36.1	43.4	0	100

Given that over 47% of the period-places in the data have a zero count in the dependent variable, the presence of excess zeros seems clear statistically. However, Long (1997) notes that zero-inflated models are most proper when there is also a theoretical backing as to why "certain zeros" (cases where the probability of a zero is effectively 1.0) may be part of the overall zero count population. In this study, 23 of the 182 used census tracts had a zero homicide rate each year from 1997-2006. With nearly 13% of all tracts having no homicides over a ten year span, it seems that

"certain zeros" exist in this data whose probability distribution would differ from the tracts predicted with a count model. Additional fit tests suggested by Vuong (1989) showed that the zero-inflated Poisson (ZIP) model was preferred to the standard Poisson. Tests of negative binomial models yielded identical results since there was no overdispersion in my dependent variable, and therefore the negative binomial effectively reverts back to its Poisson lineage (Long, 1997).

Modeling these certain zeros is a slightly different challenge than simply identifying them. The zero-count model uses a logit PDF, so the asked question changes from "what predicts differences among counts?" to "what predicts a zero as opposed to a non-zero?" The goal for the zero-count model is not simply to deal with excess zeros, but rather to posit that certain zeros are in some way distinct from non-zero count outcomes. In identifying variables for such a model, one has to select those which could theoretically predict a zero as a binary choice. Most of my independent variables are theorized to predict change along a distribution rather than a dichotomous choice, so they are difficult to justify in the zero-count model even if they are perfectly acceptable for a full count model. Scatterplots of the independent and dependent variables were examined for any variables with clustering at the zero homicide rate value. Any such variable would arguably be a better predictor of a binary zero/non-zero outcome than a variable with a wide distribution. Lagged homicide rate was the main variable that clustered near zero. Of the 785 total zero counts for homicide rate in the period-place data, 550 (70%) had a lagged homicide rate of zero. As a result, lagged homicide rate was the primary predictor for the zero-count model that allowed the count model to be identified.

Using longitudinal data from Washington, D.C., dynamic predictors, new measures of deterrence/formal control, this study addresses two main questions:

- Do structural factors influence homicide rates across neighborhoods?

- Does aggregate deterrence influence homicide rates across neighborhoods?

These questions represent an undiscovered country in the research literature. This research hypothesizes that the dynamic structural factors and aggregate deterrence measures will have a significant impact on homicide rates, all other factors considered. With these previously unexplored datasets, the hope is to build on the body of knowledge and contribute to explanations of homicide rates across neighborhoods.

Chapter 4: Results

Expect everything and the unexpected never happens.
- *The Phantom Tollbooth*

This study's hypotheses posit that both structural and aggregate deterrence factors will significantly impact homicide rate as follows:

- H1: Structural factors will have a significant relationship with homicide rates, all other factors considered.

    o H1a: Dynamic structural factors will yield better explained variance, model fit, and stronger significance than static structural factors.

- H2: Aggregate deterrence factors will have an inverse, significant relationship with homicide rates, all other factors considered.

Additionally, this work presents a test between static, time-invariant structural variables and dynamic, time-variant structural variables, with the prediction that dynamic variables will provide better predictions of homicide rates across neighborhoods over time than static constructs (see H1a). In order to examine these questions, the analysis is presented in two phases. First, this section reviews a descriptive analysis examining the variables citywide and across census tracts. Second, the multivariate analysis explains the magnitude and significance of the study variables (structural, deterrence, controls) in predicting the homicide rate within the census tracts.

Descriptive Analysis

Table 2 shows the citywide averages of the study's variables, using census tracts as the unit of analysis and structuring the data as a period-place format. These results use the 182 tracts with a population larger than 100 residents, multiplied by the number of time periods for an N=1638. Figure 6 shows all census tracts in Washington, D.C. (N=188) while Figure 7 highlights the six removed tracts in the context of the city (N=182). The areas removed from future analysis represent the National Mall, the White House, National Arboretum, and other land used primarily by the federal government.[59]

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[59] While these areas represent about 11% of Washington, D.C. by space at 6.35 square miles combined, less than 2% of homicides (33 victims) from 1997-2006 took place in these tracts.

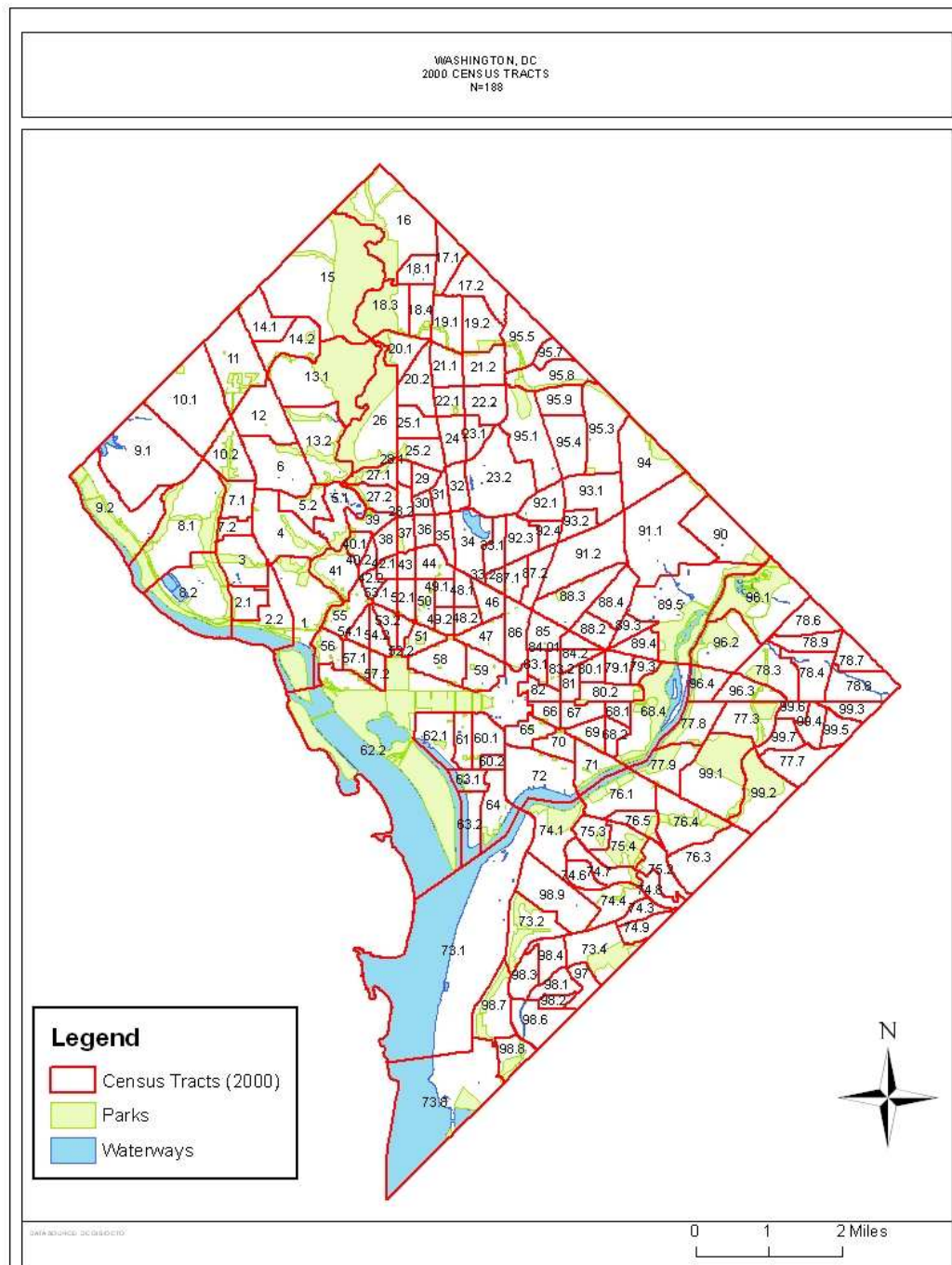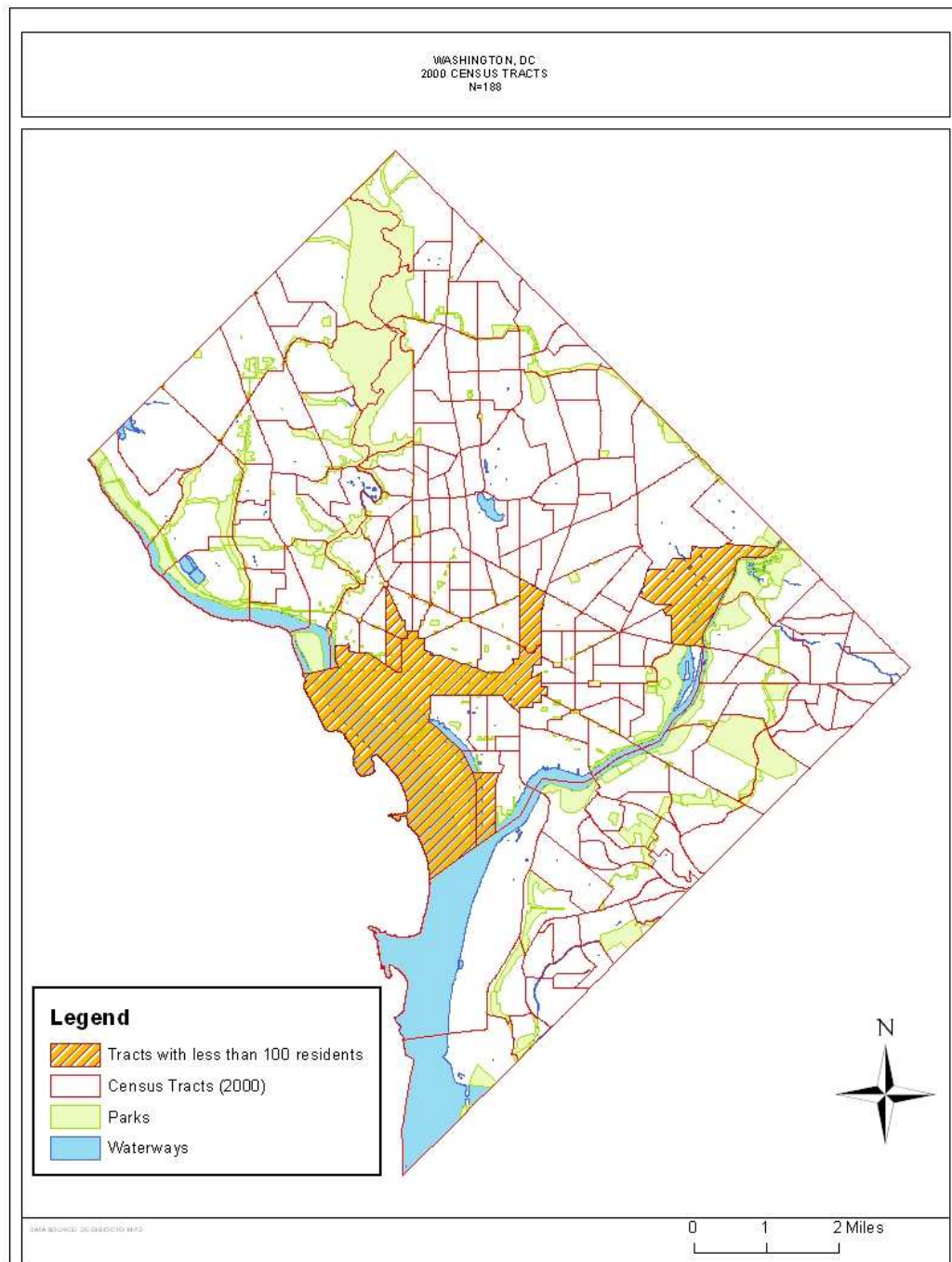Figure 6. Washington, D.C. Census Tracts (N=188)

Figure 7. Washington, D.C. Census Tracts, with low population tracts highlighted

Structural

The static structural factors suggest that the city faced more residential

instability and disadvantage as compared to the nation and urban areas in 2000.[60]

While the average homeowner rate in the United States was over 65% and the

national rate among black adults was near 47%, the D.C. citywide average was just

over 40% in 2000 (U.S. Census, 2013a). Poverty rates in the city were nearly double

the national average (NPC, 2013), and D.C. ranked as the 37th poorest city out of 245

nationwide with a population over 100,000 (CDF, 2014). As previously discussed,

the percentage of black residents is far higher in D.C. both during this time and

currently as compared to nationally, with D.C. having the 9th highest percentage of

black residents among cities with greater than 100,000 persons (McKinnon, 2001),

though it is worth nothing that six of the eight cities with greater black populations

also had a higher poverty rate.[61] Figures 8-12 show the quantiles for each static

variable as distributed across the city. [62] There is noticeable spatial overlap among

these variables[63] with clear divisions between areas east and west of the river.

---

[60] The purpose here is not to draw substantive conclusions about the nature of Washington, D.C., but
rather to establish a context to better visualize where D.C. fits into the snapshot of what was known
about the nation and urban areas in 2000.
[61] These cities were Gary, IN, Birmingham, AL, Detroit, MI, New Orleans, LA, Atlanta, GA, and
Jackson, MS.
[62]The other two structural variables, as measured, are slightly lower than national averages and similar
to other urban areas.
[63] Issues of potential multicollinearity are discussed later in this section.

Figure 8. Percent black population in 2000, Washington, D.C.
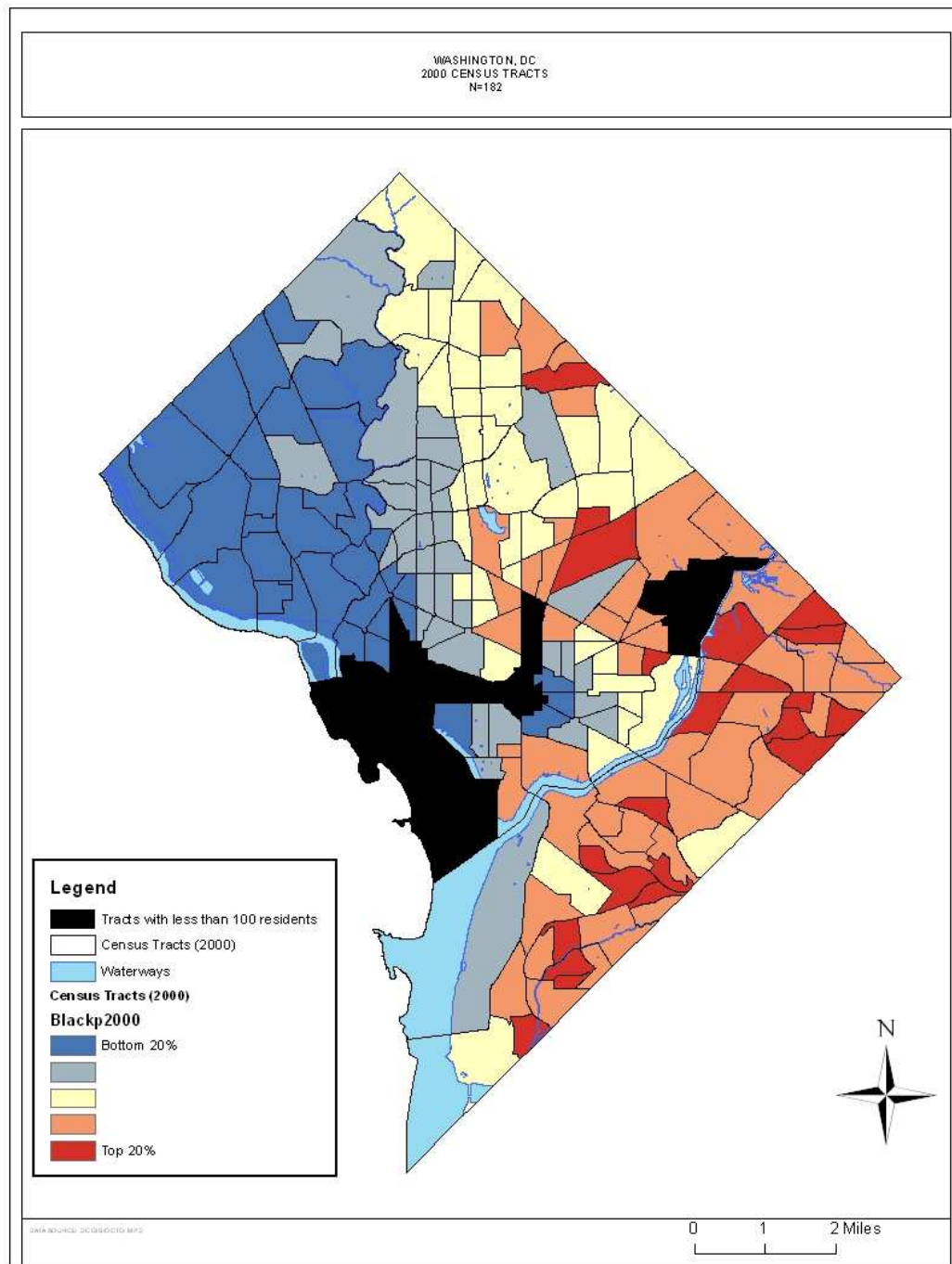
Figure 9. Poverty rate in 2000, Washington, D.C.

WASHINGTON, DC
2000 CENSUS TRACTS
N=182

Legend

Tracts with less than 100 residents
Census Tracts (2000)
Waterways

Census Tracts (2000)

Povertyp2000

Bottom 20%

Top 20%

N

0   1   2 Miles

DATA SOURCE: DC GIS/OCTO M.P.D.
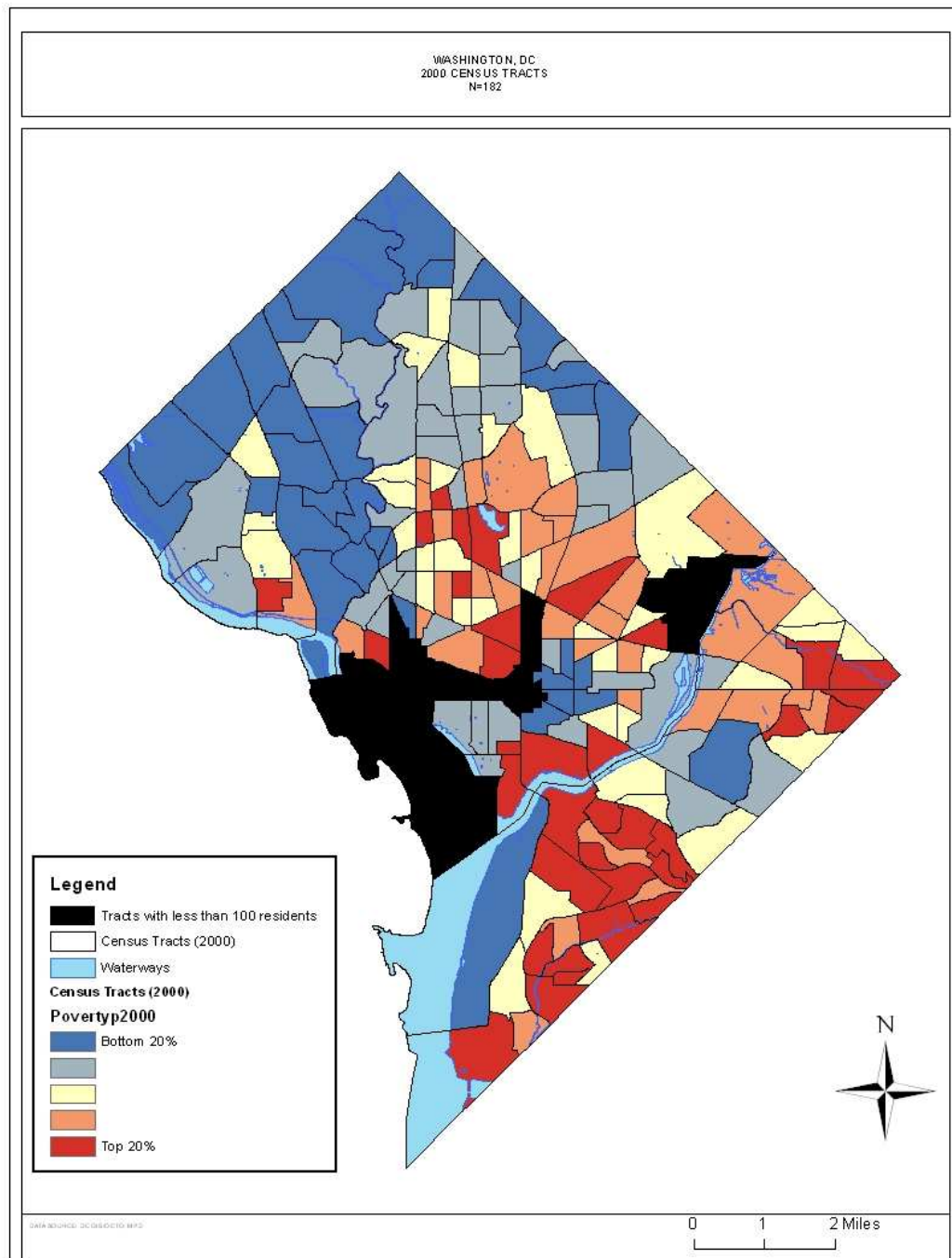
Figure 10. Percent female headed homes with children in 2000, Washington, D.C.
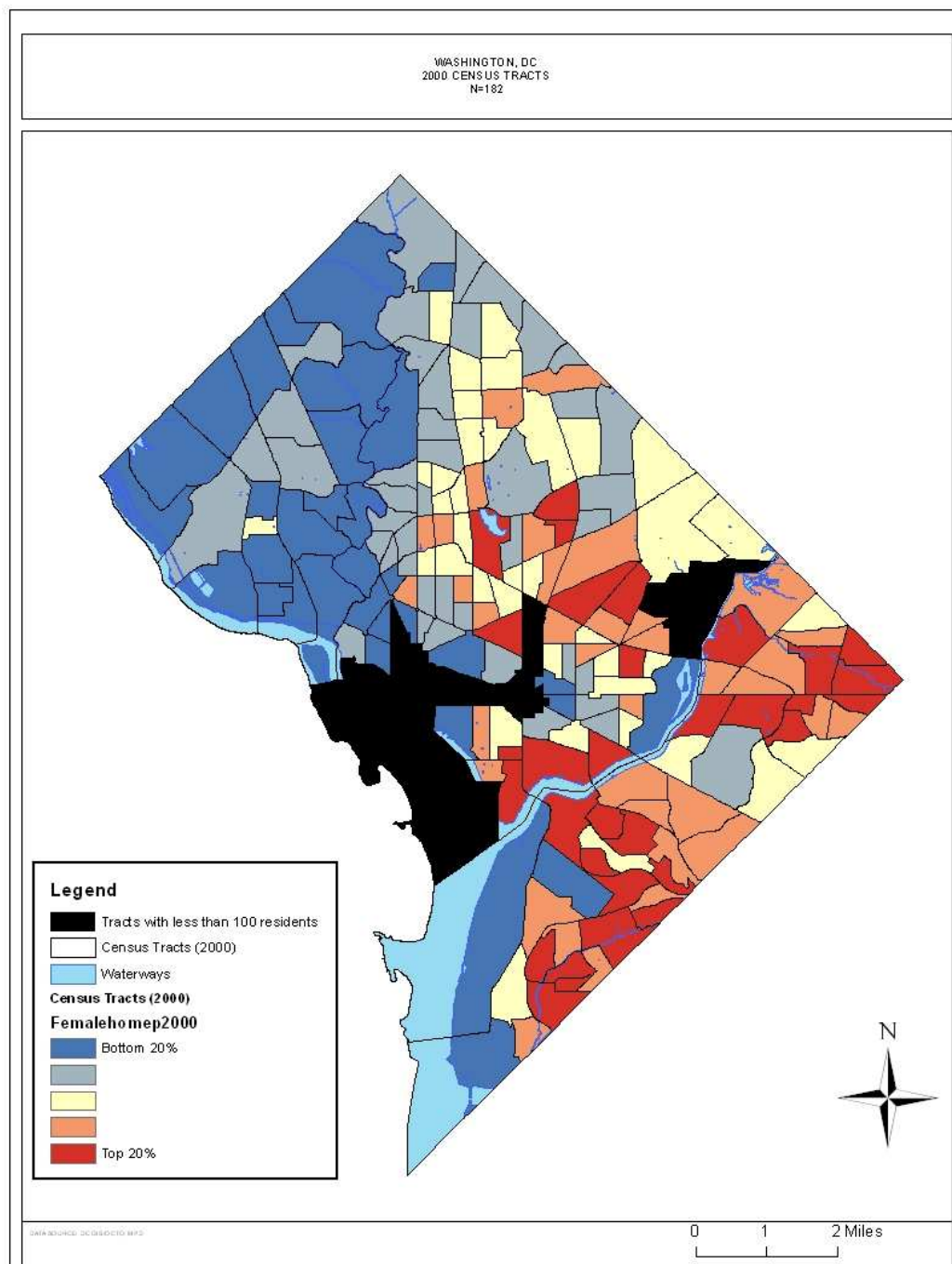
Figure 11. Percent in same home 5 years ago in 2000, Washington, D.C.

WASHINGTON, DC
2000 CENSUS TRACTS
N=182

Legend

Tracts with less than 100 residents
Census Tracts (2000)
Waterways
Census Tracts (2000)
Samehomep2000
Bottom 20%

Top 20%

0   1   2 Miles
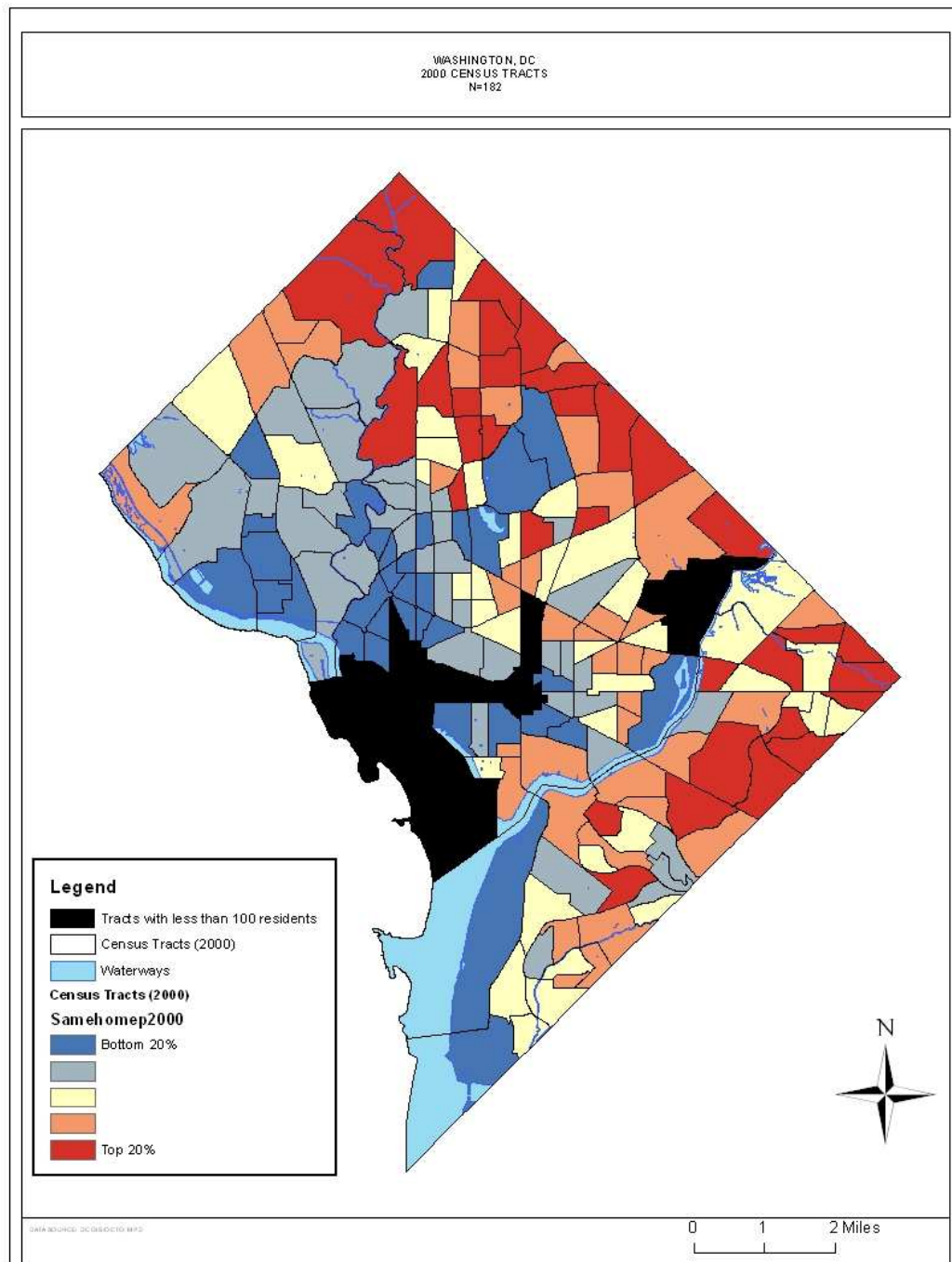
Figure 12. Homeowner rate in 2000, Washington, D.C.

WASHINGTON, DC
2000 CENSUS TRACTS
N=182

Legend

Tracts with less than 100 residents
Census Tracts (2000)
Waterways
Census Tracts (2000)
Homeownp2000
Bottom 20%

Top 20%

N

DATA SOURCE: DC DIS/DCTO; MPD

0   1   2 Miles
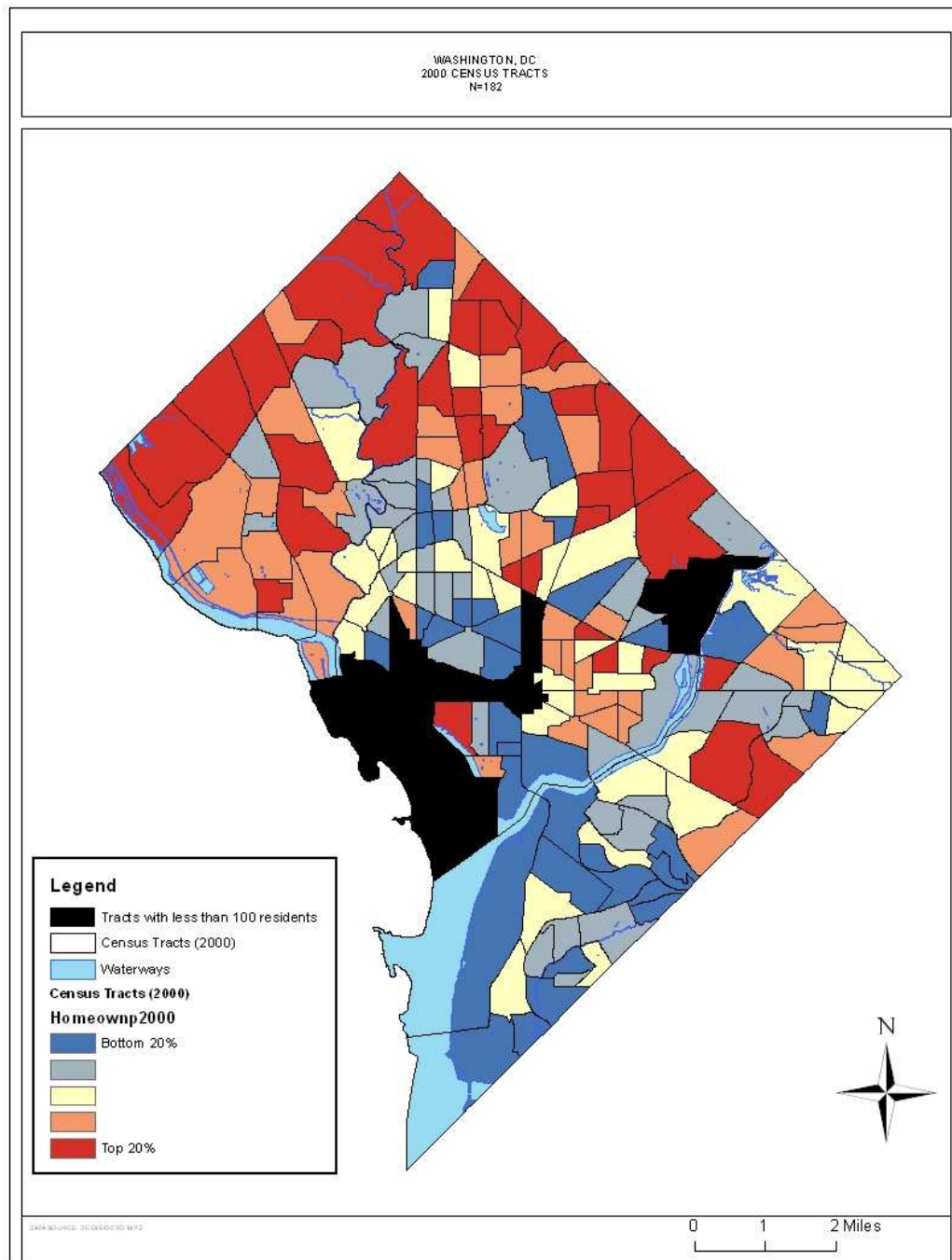
The dynamic structural factors were collected specifically for Washington so direct national or city-level comparisons are not fully possible; however, some comparable data are available to suggest that D.C. may be representative of some larger trends. While the overall averages from 1998-2006 are in Table 2, Figures 13-

16 show the trend of yearly averages. The percentage of teen births in Washington

saw a moderate decline over the time period, which is similar to national trends in

teen birth rates (Hamilton, Martin, & Ventura, 2013). The sharp drop and relative

stabilization of the percent of residents receiving TANF benefits compares to the

national trend of a sharp decrease in caseload in the late 1990s and subsequent

smaller reductions after 2000 (HHS, 2013). In terms of dynamic residential factors,

the patterns in both median borrower income and percent subprime loans for the city

reflect national trends. Income increases are not surprising given the boom in

housing prices as well as improving economic conditions, particularly after 2003.

According to national estimates, the median home price jumped from $152,200 in

1998 to $246,500 in 2006, with the single largest percent increase between 2003 and

2004 at 13% (U.S. Census, 2013b). National subprime loan rates also jumped

dramatically after 2003 in the lead up to the US housing bubble seen in 2006 (Smith

& Hevener, 2010). This trend is mirrored in D.C.'s local data, as seen in Figure 16.

Figure 13. Yearly trend of percent teen births citywide, Washington, D.C. 1998-2006
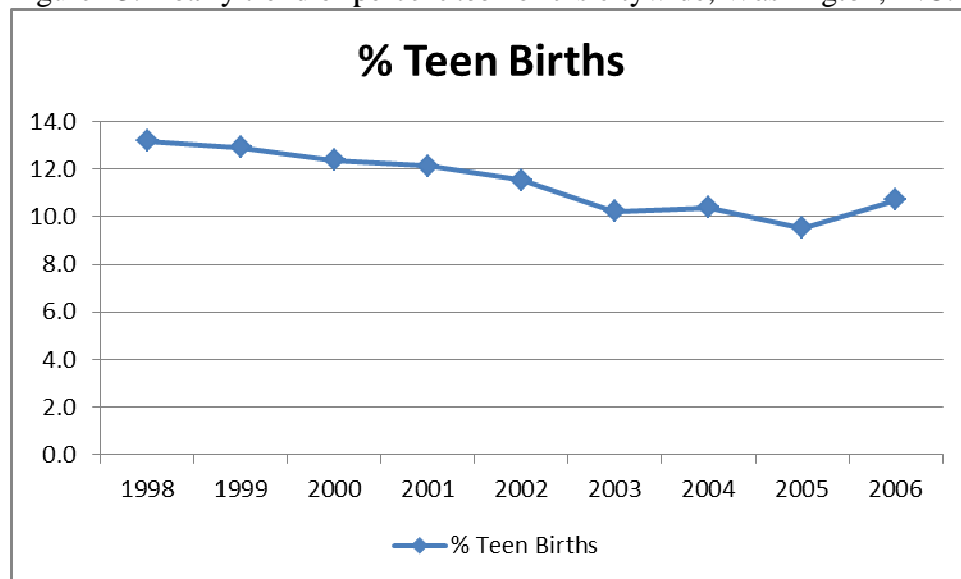
Figure 14. Yearly trend of percent on TANF citywide, Washington, D.C. 1998-2006

% TANF
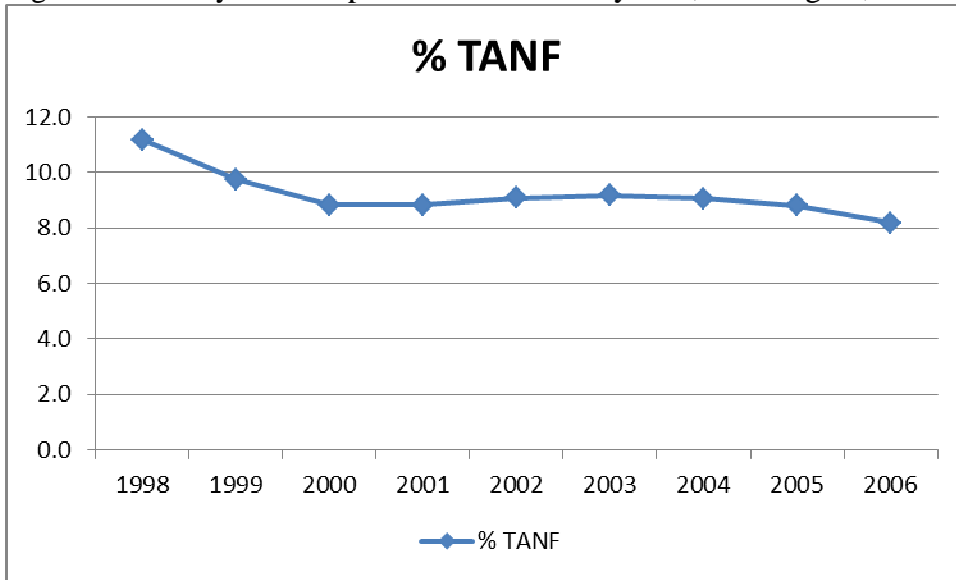
Figure 15. Yearly trend of median borrower income (2006 $) citywide, Washington, D.C. 1998-2006

Median Borrower Income (2006 $)
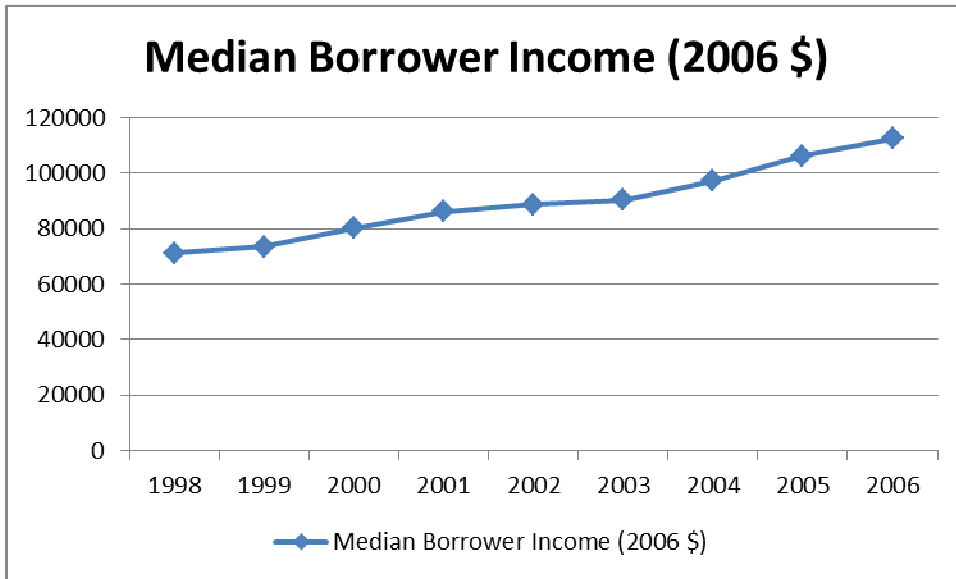
Figure 16. Yearly trend of percent subprime loans citywide, Washington, D.C. 1998-2006
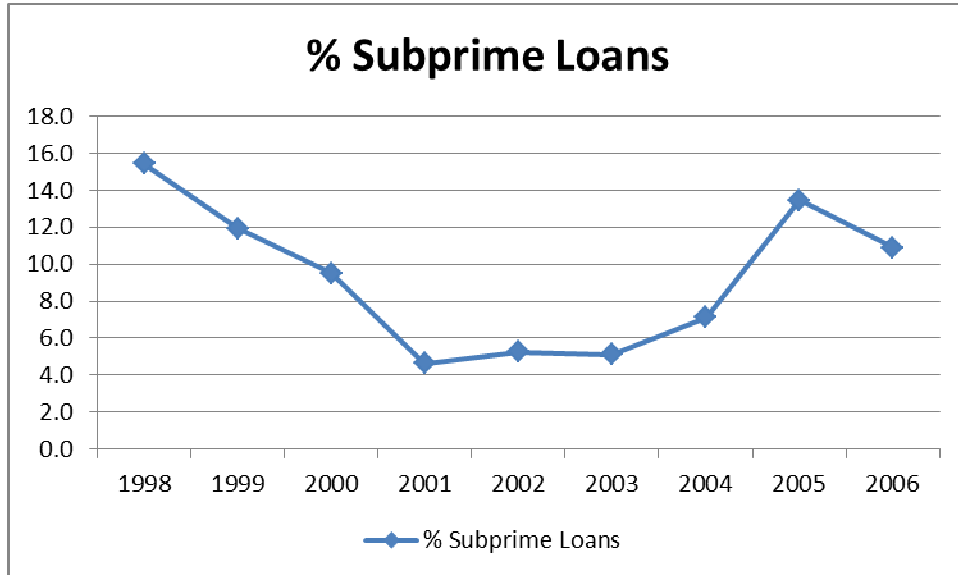
Formal Control/Deterrence

Regarding formal controls, there are two sets of descriptive statistics to consider. Table 3 reports descriptive statistics based on all valid homicide cases (N=2,311) to show clearance and time to closure. While this study focuses on the neighborhood level, it was important to explore the individual case level for two key reasons. First, it gives a snapshot of homicide that is easily compared to some national trends. Second, the distribution of celerity was a critical step in computing rates at the census tract level. It would be impossible to glean what may potentially be a "swift" closure without a picture of the cases before aggregation.

Table 3: Formal Control 1997-2006 (N=2,311)

Proportion Cleared	0.53	0.49	0	1
Celerity (days, of those closed)	268	533	0	4690
within 2 days	0.21	0.4	0	1
within 7 days	0.28	0.45	0	1
within 11 days	0.33	0.47	0	1
within 14 days	0.36	0.47	0	1
within 30 days	0.45	0.49	0	1
within 41 days	0.5	0.49	0	1
within 60 days	0.55	0.5	0	1

These variables represent two key components of deterrence theory – whether a case is closed or not reflects the certainty of punishment, while the speed of closure represents the celerity or swiftness of punishment. Approximately 53% of all cases from 1997-2006 were closed.[64] According to the UCR, on average 65% of homicides nationwide and 58% of homicides among cities with comparable population as Washington, D.C. were cleared during this time. Though there are some potential definitional issues regarding the FBI clearance calculation (see Chapter 3), the FBI numbers could only overestimate the clearance rate. This fact suggests that D.C. was likely comparable with the time period.

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[64]This is accurate as of July 2011. Since I use a computation of yearly clearance rate, this percentage increases over time as cold cases are solved. However, the rate at which cold cases are solved is marginal for these purposes. From July 2011 through November 2013, only eight cases from the 1997-2006 frame have been closed. Additionally, any closures would have no impact on the celerity function given all cases had the opportunity to be closed "swiftly" in the years between the incident and the July 2011 update.

Figure 17. Distribution of time to clearance in closed homicide cases, Washington, D.C. 1998-2006 (N=1,221)
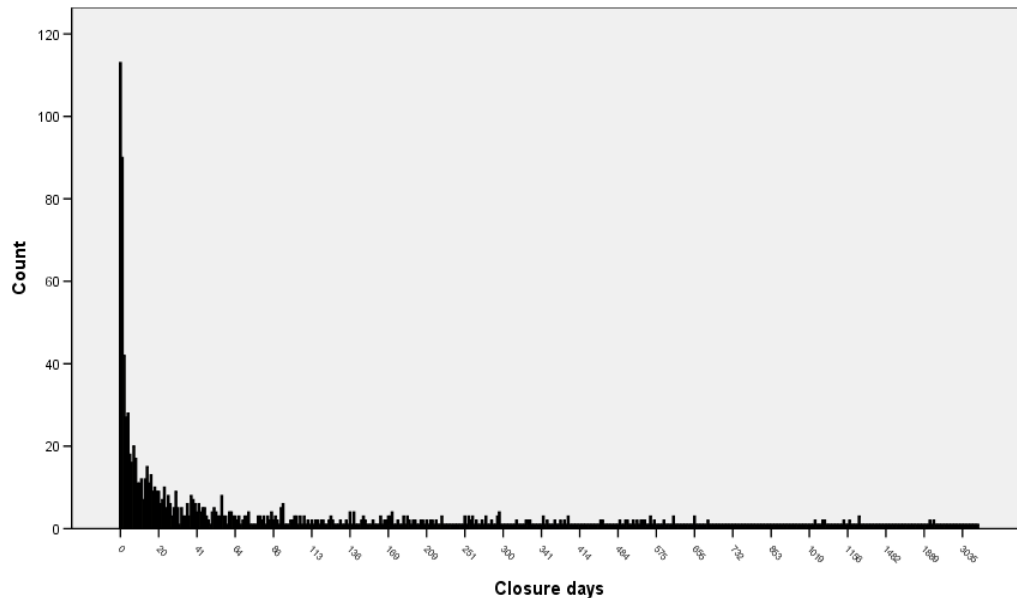
The average time to closure was highly impacted by large outliers, as seen in

Figure 17. The celerity measure has a heavy positive skew with the mean (268 days)

more than six times greater than the median (41 days). In fact, when divided into

quartiles, the 75th percentile mark (274 days) is marginally higher than the mean.

Table 3 shows that over 20% of cases were solved within 2 days. Table 2 has the

formal control variable means from the period-place dataset.[65] These are the average

expected values within each period-place and are similar to the values in Table 3,

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[65] N=853, indicating the period-places where there was at least one homicide and thus could have a valid clearance rate. For purposes of descriptive analysis, this gives the best snapshot as to how the period-places conform to the typical citywide measures. However, the values associated with the remaining 785 period-places are not "missing" in the truest sense and are not treated as missing further in my analysis. The role of deterrence and some homicide-based controls (percent handgun, percent drug, percent arrest) are accurately reflected as "zero" value even if justifiably missing. For example, the lack of any clearances or swift clearances does not provide the protective deterrent effect nor establish a control to prevent crime, thus there is no opportunity to form a bond that would dissuade future increases in homicide. Of course, it is an empirical question as to the strength of that process and whether it is superseded by other variables – while having no homicide prevents police from establishing additional deterrence through case closure, the protective power of positive socioeconomic factors or the lack of homicides themselves may reduce the predicted homicide rate far more than lack of opportunity to establish formal controls can increase the prediction. Without giving too many spoilers, the results of this study seem to suggest answers to this empirical question.

though the values in Table 2 reflect an aggregated rate for each tract per year. The average clearance rate for each period-place was nearly 52%, while the average percent of cases closed within 41 days in each period-place was about 36%. Data on three homicide-based control variables, percent handgun, percent drug motive, and percent arrest, are generally similar across period-place when compared to descriptive results using the homicide incident as the unit of analysis. Over 70% of cases involved a handgun and on average less than 14% of homicides were drug-related in each period-place. The percent arrest variable is about 10% lower than aggregated celerity, which indicates that while most homicide closures were achieved through arrest, there is still a sizable minority that were closed through exceptional means.

Population

Two measures of population were used to reflect the increasing migration to Washington, D.C. that started during this time period. The first population variable came from the 2000 Census and computations of all rates up to 2002 use this as the denominator. The second population variable came from the 2005-2009 ASC survey and computations of all rates from 2003 onward use this as the denominator. The average census tract population increased by over 5% between the two measures, though the tracts at the high and low end tended to see more growth as evidenced by the minimum and maximum values – the minimum tract size increased over 14% while the maximum tract size increased over 9%. From these measures and tract size information, population density is calculated. Table 2 shows the average population density overall as the number of 1,000 residents per square mile. The mean was

about 15,300 residents per square mile, with a low of only 600 residents per square

mile and a high of 56,800 residents per square mile.

Looking at the population density tables from the 2000 Census provides some

context for Washington's density (U.S. Census, 2013c). With over 15,000/sq. mi.,

D.C. would rank in the top 25 cities in the United States. Tracts with the lowest

density in D.C. are comparable to the overall population density of Chesapeake, VA

(585 / sq. mi.) and the highest tract is comparable to the overall density of Union

City, NJ (52,980 / sq. mi.). To further emphasize the divide between urban areas and

the rest of the nation, Manhattan had a population density of over 66,000 residents per

square mile, while the United States overall had a density of less than 80 and five

states (Alaska, Montana, Wyoming, North Dakota, South Dakota) had less than 10/sq.

mi.

Dependent Variable

Homicide rate is calculated per 1,000 residents. Of course, this value can be

easily transformed to the more common "per 100,000" expression and this is useful

when looking at the city as a whole. During this time period, Washington, D.C. had

an average homicide rate of about 44 per 100,000 residents. Figure 18 shows the

average homicide rate mapped per census tract while Figure 19 shows the yearly

average citywide. As noted in a previous section, this is more than double the recent

homicide rates in the city. Such rates are often computed per 100,000 residents,

though typically one looks at homicide rates between larger populations such as

cities. Since the unit of analysis for this study is smaller than a city, as the average

population is over 3,000 and peaks at nearly 8,000 residents within tracts, there seems

a better practical and theoretical consistency in keeping the rate linked to the general scale of the population examined in the study.[66] As no tract will ever approach the scale of 100,000 residents, and most are firmly within the thousands, using the larger rate calculation can greatly exaggerate perceptions on the high end.[67]

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[66] Beyond interpretation of descriptive data, the calculation of homicide rate per 1,000 has a practical impact on multivariate model selection. As seen in Table 2, the variance is nearly equal to the mean. Count data with equi-dispersion are best modeled with a Poisson or zero-inflated Poisson (Long, 1997). If all rates are transformed into "per 100,000", then the variance becomes far larger than the mean. When there is over-dispersion, Poisson distributions are not as well positioned for the data and a negative binominal model may prove superior. In light of this, I did this transformation of homicide rate as a sensitivity analysis using negative binominal model variants to replicate this study's findings. Relative coefficient magnitudes were not meaningfully changed and in all examined cases statistical significance was not impacted.

[67] For example, Tract 93.02(near the Brentwood neighborhood, along the north side of Rhode Island Avenue in NE D.C.) during 2002 had an average homicide rate of 3.8 per 1,000 residents, or transformed 380 per 100,000. While a violent area, the "per 100,000" rate is simply an unsustainable number on its face and strains credibility when applied to such a small geographic space. There seems little reason to believe that if the tract ever reached 100,000 people (and for argument's sake, expanded accordingly to maintain constant population density), the homicide rate would be that extreme. The differences in scale are simply too great to make the larger rate meaningful beyond a general warning rather than a useable expectation. However, it is realistic to expect 3.8 homicides per 1,000 residents given Tract 93.02s population is about 1300 and there would be between 1 and 5 homicides per year during this period.

Figure 18. Average homicide rate, Washington, D.C. 1998-2006
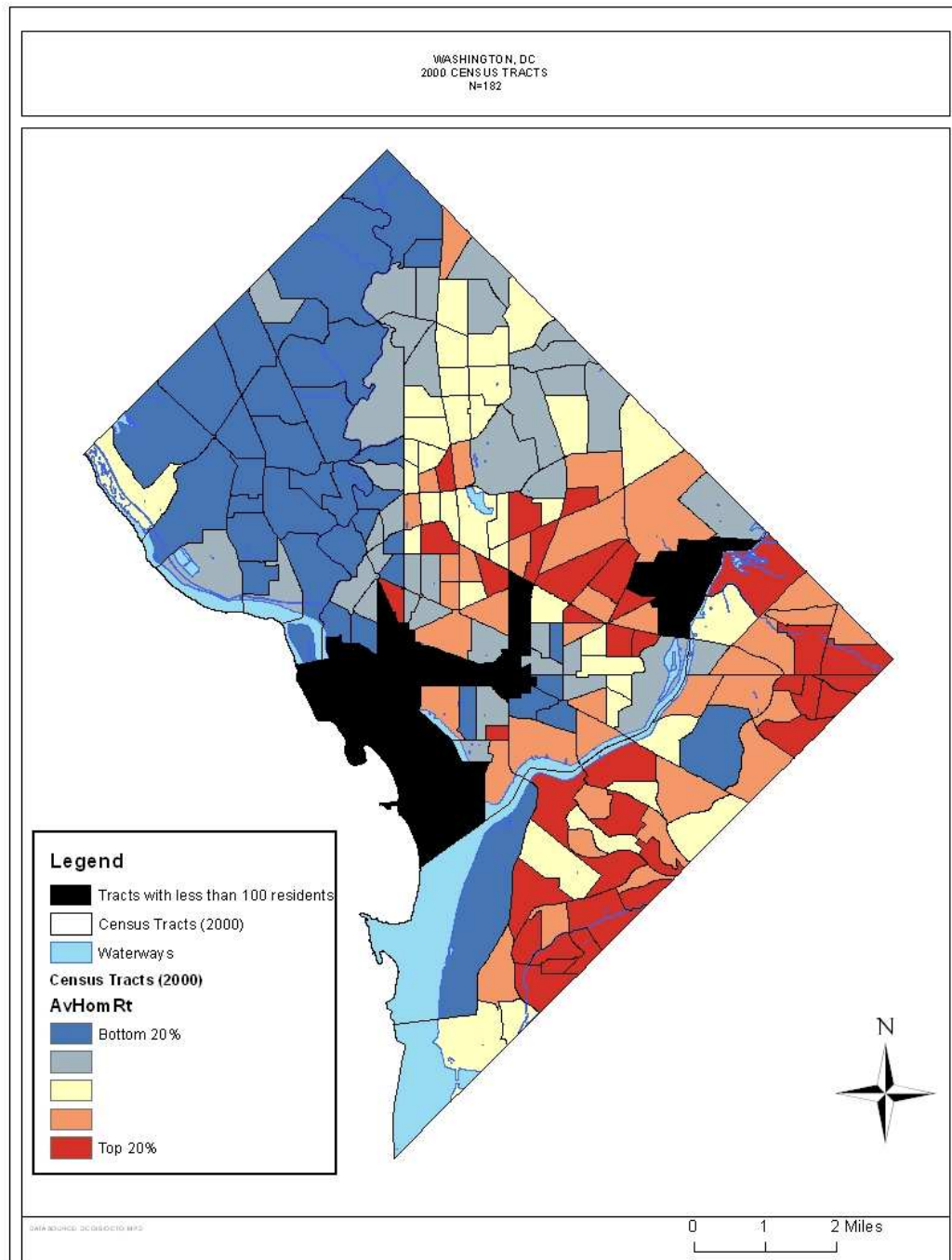
Figure 19. Yearly trend in homicide rate (per 1,000 residents) citywide, Washington, D.C. 1998-2006
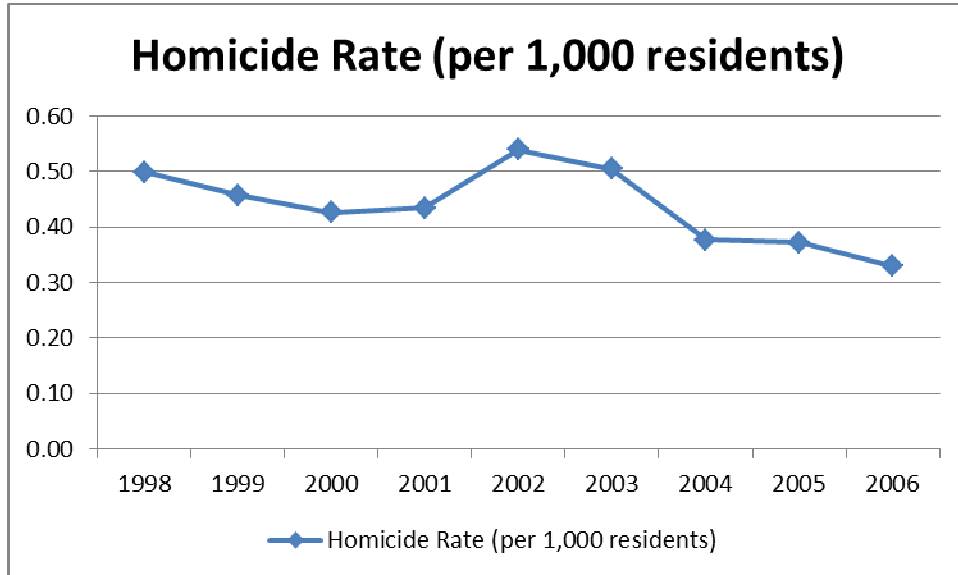
Multivariate Models

Multicollinearity

Before model selection, two potential issues of autocorrelation in the data were examined. First, a correlation matrix was run on the independent variables to assess possible sources of multicollinearity. Correlations were uniformly below .60 and mostly below .30, with the exception of three dynamic factors (median borrower income, percent TANF, and percent teen births) in relation to the static socioeconomic factor. The correlations with the static factor were -.69, .81, and .73, respectively. Since these dynamic factors would only share a single model with the static-based factor, the scope of collinear impact would be limited and did not require removal of variables from the analysis. As a precaution, during the single model where dynamic and static-based variables coexisted (Model 7 in Table 4), said model was run three times – one with all variables, one with the three dynamic removed, and

one with the socioeconomic static factor removed. Removal of variables did not

impact the significance of any covariates left in the model or the standard errors of

the covariates in a meaningful way.

Spatial Autocorrelation

Spatial autocorrelation is a concern whenever using geographic-rooted data.

Moran's I test assesses the magnitude and significance of clustering for an outcome

variable mapped in space. The process assigns each geographic space (in this case, a

census tract) a value based on the differential from the global mean of a variable

(homicide rate); then, the test measures the similarity of values from other spaces

within a fixed radius (Boba, 2010). The results indicate both statistical significance

and magnitude similarly to a correlation coefficient. The magnitude is expressed as a

range from -1 (dispersed) to +1 (clustered). The spatial autocorrelation was tested

both as an overall measure using the full sample and a year-by-year measure. Given

the longitudinal nature of the data, it was useful to determine if certain years may

prove significantly more autocorrelated than others. The presence of high-magnitude,

statistically significant autocorrelation may necessitate corrective variables and/or

additional modeling strategies (Dormann et al., 2007). For this study, the results of

Moran's I found significant but low-magnitude autocorrelation. The full sample

measure produced the highest magnitude with +.26, while the yearly tests yielded

magnitudes between +.10 and +.20 depending on the year. As interpreted, the results

suggest a degree of clustering is present, though it is not highly localized in space.

Figure 18 shows the average homicide rate by quantiles. While there is clear division

across space, the clusters tend to expand over a wide space rather than focus on a

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specific tract or two. These results were consistent using multiple search radius

values. As a result of such weak magnitudes, it is not consistent with general practice

to add corrective terms to the multivariate model (Dormann et al., 2007).[68]

Celerity

The final pre-modeling issue was that of celerity. However, there is no true

empirical guidance as to what a "quick" closure would be that represents this

diminishing return point. Therefore, the justification for determining a celerity metric

depends on a number of indirect factors. First, the homicide literature explores the

issue of *dunkers* (cases requiring little to no investigation) and *whodunits* (cases were

law enforcement must put pieces together and investigate) – this division is often

made at 2 days, where more than 2 days reflects an investigative case (Puckett &

Lundman, 2003). This was an initial guide, though there are additional reasons to

believe that a proper celerity marker is later in time.

Further examination of this time variable was in part adapted from the work of

Regoeczi, Jarvis, & Riedel (2008), who examined time to closure as a survival

function with divisions at 2, 7, 14, and 30 days. It should be noted that using 1998

NIBRS data, Regoeczi et al. found a far quicker decay function than would be seen in

Washington, D.C. from 1997-2006 as their median fell within 2-7 days as opposed to

41 days. As a guide, this work suggests that a tipping point in the survival curve may

be the point of diminishing returns.

---

[68] I did compute a yearly difference from the mean homicide rate for each period-place as a corrective
term based on the computation of the Moran's I test. The variable was moderately correlated with
lagged homicide rate and the socioeconomic variables (both dynamic and static). When added to
multivariate models, it did not alter the significance of the other variables.

Figure 20. Time to closure (in days) by survival rate (percentage), Washington, D.C. 1998-2006
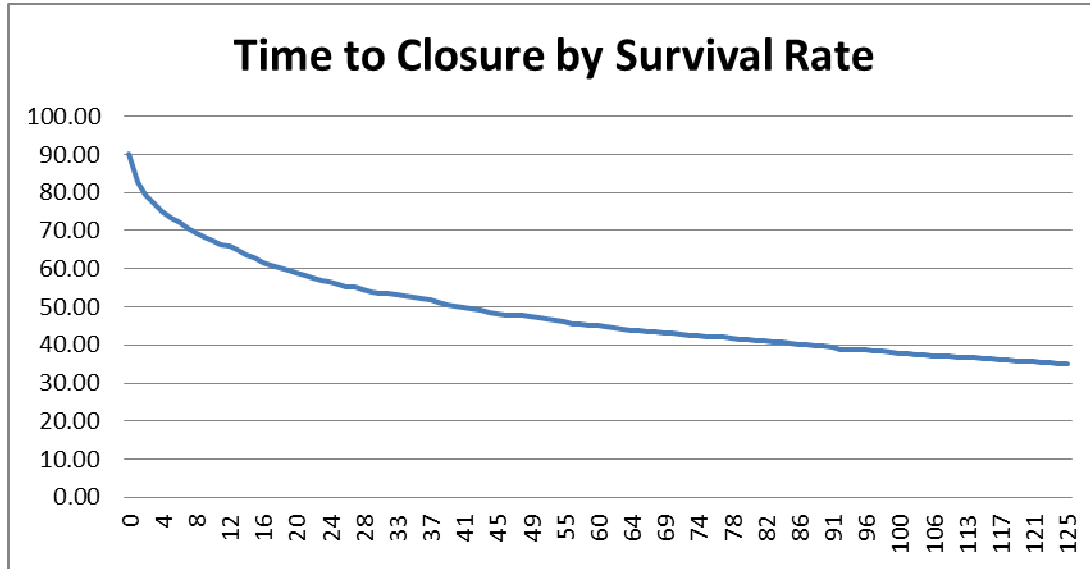
Figure 20 presents a survival function for time to closure across individual cases (N=1,221), similar to that seen in Regoeczi et al. Examining the blocks of days needed to account for 10% change in cases, the number of days increases quickly for further 10% reductions up to about 41 days (50%). While there is no plateau in the technical sense, there is a clear shallower slope of the survival function. This finding suggested that my pivot point for the celerity measure may be around the 41 day mark. So while following the general process as in Regoeczi et al., the specific value of the tipping point was vastly different. Herein lays an inherent difficulty in attempting to use the data itself to determine the metric rather than a theoretical basis, though without a theoretical basis this iterative process is the only option. If nothing else, this situation shows just how nascent the research into celerity as little is even known from a descriptive perspective, let alone an explanatory factor.

An additional consideration is that over time, police resources will likely diminish over time. Even for high-profile cases, as the investigation continues leads

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can dry up, focus can reduce as new cases occur, and witnesses can turn into dead ends. During the 1998-2006 time period, MPDC instituted periodic reviews at fixed intervals up to 60 days. Beyond that period, reviews were more sporadic if the case remained open. Given this information, the suggestion is that the immediate flurry of resources and attention may likely drop off after 60 days.

As a result, the potential range for celerity appears to be anywhere between 2 and 60 days with little formal guidance as to where the diminishing return point is beyond a tipping point in a survival function. The purpose here is to find a dichotomous measure for celerity. While it may be possible that celerity may be a linear or step function on an individual level, so far the research suggests the aggregate level may have a tipping point, though the value of this point may be data-dependent. However, this point speaks to why celerity may be better imagined as a binary function even from a theoretical viewpoint – even if a linear or step function exists, it likely only exists to a point until any further time does not impact the outcome calculus. Since celerity can be a continuous function, and in this data the range is from 0 to over 4,000 days, it seems difficult to imagine that any function is constant during the period. In the context of lacking any theoretical guidance, the most conservative approach appears to be finding the tipping point dichotomously rather than attempting to model an understudied variable. Of course, as celerity is explored in greater detail in the literature, it will be more informative to advance at that time to modeling celerity as a continuous function.

Looking at Figure 20 and celerity measures seen in Table 3, a number of days were examined within the potential range as a tipping point using both the survival

function and model fit within multivariate models. From the survival function, the 41

day mark (which was also the median) seemed the best fit. Along with additional

time before and after 41 days (e.g. 39, 40, 42, 43 days), each were used as the celerity

measure into Model 5 in Table 4. The model log-likelihood was the lowest at 41

days, with the fit statistics generally declining before and then increasing in

magnitude following 41 days. Given these findings, 41 days was used as the celerity

measure in this study.[69]

Model Results

Table 4 presents the results from multiple models. Models 1 and 2 assess the

static-based factors, with and without control variables. Models 3 and 4 use only

dynamic structural variables, again with and without control variables. Models 5 and

6 continue the pattern but with formal control/deterrence measures. Model 7 is the

combined model with all independent variables. The coefficients presented are from

the count models and zero-only models[70], though R-squared and log-likelihood

measures represent values for the combined model as a whole. The total N is slightly

lower in models using dynamic variables due to the removal of 42 period-places

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[69] The decision here is somewhat moot for the purposes of the larger model, as none of the celerity
measures were statistically significant even in the deterrence standalone model. However, it is still a
useful exercise especially in comparison to the work of Recogczi et al. Their NIBRS data showed far
quicker times to closure than D.C. did during a partial overlapping time period. It begs the question as
to whether there is an absolute, objective measure of celerity or rather it can/should vary between
smaller urban areas (as seen in NIBRS) and large urban cities. This question is picked up again in the
following chapter.
[70] The count models are the focus of the hypotheses, as they predict a more continuous change rather
than a binary outcome. As a result, the primary variable in the zero-count model was lagged homicide
rate. As seen in Table 3, that variable proved to have a significant, negative impact on homicide rate
that was very consistent across all models. As a sensitivity test variables from the count model in the
zero-only model as well (i.e. Model 1 would have both factor scores in the count and zero models
simultaneously) to see if the results were impacted. Most coefficients were insignificant in the zero-
count model, and the few cases of significance were marginal ($p<.10$, one-tailed), never robust across
model specifications, and did not impact the significance of the count model findings.

Table 4: Regression Results

		Model 1 (N=1638)		Model 2 (N=1638)		Model 3 (N=1596)		Model 4 (N=1596)		Model 5 (N=1638)		Model 6 (N=1638)		Model 7 (N=1596)	
		b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Static	Residential factor	.139**	(.039)	.064	(.047)									.048	(.048)
	Socioeconomic factor	.833**	(.073)	.417**	(.086)									.017	(.105)
Dynamic	Median borrower income					-.007**	(.001)	-.003*	(.002)					-.002	(.002)
	% subprime loans					.019**	(.004)	.016**	(.005)					.015**	(.005)
	% subprime loans (squared)					-.001*	(.001)	-.001*	(.001)					-.001*	(.001)
	% TANF					.035**	(.003)	.022**	(.003)					.023**	(.006)
	% birth to teen mothers					.025**	(.005)	.014**	(.005)					.013**	(.004)
Formal Control	Lagged Certainty									.005**	(.001)	.001	(.001)	.001	(.002)
	Lagged Celerity (within 41 days)									.001	(.001)	-.001	(.001)	-.001	(.002)
Model Controls	% Handguns			.011**	(.001)			.011**	(.001)			.014**	(.001)	.011**	(.001)
	% Drug			.001	(.001)			.002**	(.001)			.002	(.002)	.002**	(.001)
	% Arrest			.006**	(.001)			.005**	(.001)			.007**	(.001)	.005**	(.001)
	Population Density			-.009*	(.005)			-.007*	(.004)			-.013**	(.004)	-.006	(.008)
	Lagged Homicide Rate			.164**	(.044)			.137**	(.045)			.264**	(.045)	.141**	(.046)
	Y1999			-.119	(.107)			-.088	(.103)			-.098	(.104)	-.084	(.106)
	Y2000			-.225*	(.116)			-.059	(.117)			-.196*	(.109)	-.057	(.121)
	Y2001			-.043	(.113)			.033	(.119)			-.095	(.108)	.030	(.127)
	Y2002			-.001	(.011)			.178	(.142)			.002	(.101)	.171	(.159)
	Y2003			-.004	(.011)			.208*	(.119)			-.003	(.122)	.207	(.135)
	Y2004			-.325**	(.130)			-.161	(.124)			-.298**	(.127)	-.167	(.133)
	Y2005			-.303**	(.149)			-.134	(.157)			-.245*	(.144)	-.141	(.185)
	Y2006			-.369**	(.133)			-.259**	(.127)			-.309**	(.139)	-.269*	(.141)
	Constant	-1.134**	(.068)	-1.651**	(.143)	-1.237**	(.142)	-1.993**	(.206)	.966**	(.113)	-1.708**	(.141)	-2.023**	(.208)
Zero-Count	Lagged Homicide Rate	-1.444**	(.476)	-1.260**	(.431)	-1.453**	(.560)	-1.317**	(.646)	-1.450**	(.503)	-1.487**	(.706)	-1.416**	(.694)
	Constant	-.251**	(.024)	-.243**	(.018)	-.253**	(.021)	-.245**	(.016)	-.027**	(.007)	-.239**	(.017)	-.249**	(.017)
Pseudo R-squared	Pseudo R-squared	.131		.218		.152		.226		.023		.198		.227	
LL	LL	-1196.973		-1077.68		-1130.627		-1031.373		-1345.603		-1105.121		-1030.704	
	* p < .05, one-tailed														
	** p < .05, two-tailed														

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where median borrower income data were missing. Robust standard errors are reported.

Examining the totality of the models, the dynamic structural variables were the best predictors of the non-zero count of homicide rate. Most dynamic variables were highly significant and in the predicted directional relationship with homicide rate across the model variations. Only median borrower income saw a fade in significance as additional variables were included in later models, though its predicted direction remained constant. The static-based factor scores had weaker effects as other predictors were added, though the socioeconomic factor was strong in Models 1 and 2.[71] The formal control models were clearly the weakest, especially when looking at the fit statistics. The certainty variable was significant only in the initial model and became insignificant once additional controls were included. Interestingly, most of the deterrence coefficients were in the opposite direction as predicted, though not much can be interpreted given the statistical insignificance. The model controls tended to be significant and in the predicted direction, with the exception of population density having an inverse relationship with homicide rates. The most robust dummy variable years are the last three. As 1998 is the reference year, and also the peak of yearly homicide counts in the data, it is not surprising that the dramatic count decrease coupled with population increases would explain significant variation while controlling for other factors.

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[71] The large drop off in magnitude and significance in Model 7 is partially a product of the collinearity with some dynamic structural variables. I ran Model 7 without those dynamic variables and the socioeconomic factor was stronger and significant ($p<.05$, one-tailed), but the resulting log-likelihood was poorer than seen in Model 4, suggesting that a model missing the dynamic factors was a less ideal fit than when the static-based factor score was included as a substitute.

Model 7 had the best fit statistics though only slightly superior to Model 4. Given that the static-based factor scores and formal control variables were insignificant, what remained nested in Model 7 was Model 4. The models with dynamic structural factors (3 and 4) yielded better fit statistics than the comparison models with either static or deterrence predictors. The controls tended to contribute a good deal to model fit, though less than the structural factors, as evidenced by boosts seen in each model where controls were included. The contribution to pseudo R-squared was not limited to a single control, such as lagged homicide rate. When individual significant controls were dropped from the model to assess impact on pseudo R-squared, none produced a disproportionate drop as compared to the others.

Regarding interpretation, there are some differences between the static factor scores and the dynamic, continuous measures. The static factor scores are standardized and zero-centered, so as a result the regression coefficients represent the change in the dependent variable (homicide rate) per a standard deviation increase in the factor score. While the magnitudes of the factor scores (which combine either two or three high-loading static variables each) are initially higher than the dynamic factors, they drop precipitously across models as other variables are included suggesting an indirect effect of these latent constructs at best. Given this diminishing return on the factor scores, this work puts a greater emphasis on the stable and statistically significant coefficients.

By interpreting odds ratios computed from the significant logits in Model 7, quantifiable results are possible. Starting with the significant dynamic variables, most seemed to have relatively straightforward trends based on Figures 13-16 in the

descriptive analysis. However, Figure 16 shows a distinct non-linear curve for

percent of subprime loans.   As a result, this variable was modeled as a quadratic

function.[72] For a standard deviation increase in percent of subprime loans, the

homicide rate increases by 1.5%, holding all other variables constant.[73] This

represents the linear component of the curve. However, the significant negative

quadratic terms suggests that the positive linear subprime relationship is concave over

time. Considering both variables, the overall increase is marginally less than just the

linear factor would indicate, suggesting a decrease over time consistent with much of

the trend seen in Figure 16.

Two other dynamic variables, percent TANF and percent births to teen

mothers, had a direct positive relationship with homicide rate. For a 10% increase in

either variable, the homicide rate increases by 23% and 13%, respectively, holding all

else constant.[74]

Among the lagged control variables, the strongest predictor of homicide rates

was the previous year's rate. As the lagged rate increased by 1 homicide per 1,000

residents, the homicide rate increased by 15% while holding other variables at the

mean. In the zero-count model, the lagged homicide rate had the opposite

relationship – for a 1 unit increase in the lagged rate, the probability of the homicide

rate being zero decreased by over 76%. As the percent of homicides by handgun

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[72] A cubic function was also considered based on the nature of the curve in Figure 16. However, the cubic term was insignificant and did not impact the magnitude and significance of the linear and quadratic, so it was omitted from the analysis.
[73] The standard deviation is used because the variable was centered at zero through subtracting the mean from each value. Centering was done when adding the quadratic term to prevent multicollinearity between the two subprime variables.
[74] The odds ratio for percent TANF is 1.023 and for percent birth to teen mothers is 1.013. Since both variables are captured as percentages, a 1 unit change reflects 1%. The interpretation of a 1% increase linked to a 2.3% or 1.3% rise in homicide rate can be extended to a more practical result by multiplying by ten.

increased by 10%, the homicide rate increased 11% holding all other variables constant. For a 10% rise in drug-motivated homicides, the homicide rate will increase by only 2% once other factors are controlled. Contrary to expectations, arrest rate and homicide rate were positively related as a 10% increase in arrests yielded a 5% increase in homicide rate, all else constant.

In summation, the results found support for two of the three hypotheses in this study. Given the three predictions:

-   H1: Structural factors will have a significant relationship with homicide rates, all other factors considered.

    o   H1a: Dynamic structural factors will yield better explained variance, model fit, and stronger significance than static structural factors.

-   H2: Aggregate deterrence factors will have an inverse, significant relationship with homicide rates, all other factors considered.

Hypothesis H1 was generally supported across most structural variables. Some individual variables, such as the static residential factor and the dynamic median borrower income, were insignificant in fuller models. However, the other dynamic factors tended to be robustly significant across model specification. As for H1a, this prediction was supported through the comparison of Model 1 to 3 and 2 to 4 where the dynamic factors produced better pseudo R-squared values, fit statistics, and more consistent significance – the later is also seen in the final Model 7. Hypothesis H2 was not supported as aggregate deterrence factors were insignificant once other

factors were included.[75] Additionally, the aggregate deterrence measures did not

follow the prediction model in that certainly was directly related to homicide rate.

The following section will attempt to explain these findings and suggest the

implications and future directions for research considering the quantitative results.

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[75] While this may suggest the potential that deterrence has an indirect effect on homicide rates, this
seems less likely given the overwhelmingly insignificant and low magnitude coefficients. The reasons
why deterrence as measured yielded such underwhelming results are explored in depth within the next
chapter.

Chapter 5: Discussion and Conclusion

"It is an old maxim of mine that when you have excluded the impossible, whatever
remains, however improbable, must be the truth."
- *Sherlock Holmes*

The results provide a glimpse into an undiscovered country that both support

previous research while also revealing outcomes not predicted by theory. When

travelling within unexplored places, it is important to explain why the journey may

have unfolded as it did, assess the ramifications of the trek, note the limits and

suggest future paths to explore. This final chapter will review potential explanations

for the results, consider the theoretical and policy implications of the findings, mark

the limitations and suggest future research based on both the results and limits of the

current study.

Potential Explanations

This work examined the impact of structural factors and deterrence factors on

homicide rates within census tracts. Given the partial support for the two structural-

based hypotheses and lack of support for the deterrence hypothesis, the potential

explanation of the former are well-covered in the literature review; conversely, the

explanation for deterrence require considerably more discussion as the results

deviated from theoretical predictions.

Structural

Structural results were consistent with predictions that such variables would

have a significant impact on homicide rates, and the performance of dynamic factors

was consistent with hypotheses. Though not all variables were significant within all models, the directionality was as hypothesized and it is apparent structural factors were key predictors of homicide rate-based on statistical significance and model fit. Socioeconomic factors tended to be significant while the residential heterogeneity variables were less robust. This is generally consistent with the findings in Hipp (2007) were economic variables had a more localized impact at smaller aggregations like tract and block while heterogeneity factors required larger geographic units to detect a significant effect. The potential advantage of dynamic structural variables over static ones had been suggested previously (see Sampson et al., 2002), but that these findings were consistent with those untested predictions is an important empirical glimpse into unexplored ground.

Deterrence

The results for deterrence are more puzzling, at least from a theoretical point of view. While predicted in the hypotheses as having an inverse, significant relationship to homicide rates, the certainly and celerity variables were insignificant when controlling for other factors. While the direction of the certainty variable was also opposite to predictions, it is difficult to divine much meaning from such weak and generally insignificant findings. As a result, on the focus for explanations goes towards the weakness in general rather than the counter-directionality of a mostly insignificant variable contributing next to nothing in explained variance. Initial speculation as to why deterrence/formal social control variables preformed so tepidly focuses around four potential explanations:

- Deterrence doesn't work[76]

- Deterrence doesn't work, for these data

- Measuring formal social controls doesn't work

- Measuring formal social controls doesn't work, for these data

Explanation #1

The first explanation is that deterrence is simply not a viable theory at the aggregate level. This is the easiest and certainly most parsimonious rationalization. Such a conclusion would not be alone within the research literature, as Tonry (2008) detailed. Even reviews by Nagin (1998) and Paternoster (2010) note that even when evidence for deterrence exists, it is not particularly strong. However, the hypothesis in this work was rooted in deterrence-based police strategies at the aggregate level, such as hot spots or pulling levers, which have produced some successes using targeted, high-profile enforcement. The current study's findings do not negate prior policing works, but then this study also did not examine hot spot policing, which leads in part to the second possible explanation.

Explanation #2

The second explanation is that aggregate deterrence may not work for this time, place, and/or crime. In other words, deterrence may function in a limited context but it is not a complete general theory of criminal activity. Under this

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[76] This phrasing is a reference to the numerous studies of "what works, doesn't work, and is promising" in criminal justice noted by Sherman et al. (1997), which itself was inspired by the phrasing of Martinson's (1974) influential piece on corrections. Given the findings of this study show nothing that either worked or was directly promising regarding deterrence, all explanations will be rooted in explaining why deterrence seemed to not work in this study.

explanation, the lack of results stem from the data representing an anomaly for an otherwise functioning deterrence theory. Regarding time and place, there is no theoretical reason to believe that deterrence principles would be suspended from 1998-2006 in Washington, D.C. There is nothing so remarkable about the turn of the 21st century or this American city to suggest that deterrence-based prediction should not apply.

As for the issue of crime, the applicability of deterrence for homicide could be challenged on two fronts, though neither seems to fully pan out: first, that homicide is too rare an event to provoke a deterrent effect; or second, that homicide is a unique crime which is cannot be deterred. Toward the former, it is worth noting that nearly half of the period-places had zero homicides which further stress the rarity. However, being a rare event does not negate the high social impact of homicide. Beccaria (1983[1764]) noted the importance of people knowing the law and punishments for maximum potential deterrence, and homicide is clearly one crime where there can be an expectation of wide knowledge regarding legality and potential sanction. Even if offenders are unsure of punishments for other crimes (see Paternoster, 2010) it seems a fair assumption that the potential sanction for ending another person's life is more universally grasped (see also Gibbs, 1968; Tittle, 1969 regarding the impact of severity on homicide). So while an uncommon event, homicide has a social weighting that suggests it may be one of the theoretically ideal crimes to test for deterrent effects since the possible severe punishment is not unexpected.

Toward the later, it can be suggested that homicide is a crime type unable to be deterred. Research on the expressive nature of homicide (see Chambliss, 1967;

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Miethe, 1999) could support an argument where homicide is a particular outcome of spur of the moment behavior which is independent of potential consequences. Of course, this argument could easily be generalized to all criminal activity and some notable theories suggest that crime itself reflects impulsive action in favor of prospective short-term gains in lieu of long-term punishment (see Gottfredson & Hirschi, 1990). Such theories actually dovetail well with deterrence because of shared assumptions regarding human nature and since finding ways to remove pains and elucidate punishments falls squarely into the realm of Beccaria and Bentham's work.

Yet, the issue at hand is not whether an assumed impulsive act can be deterred in theory, but whether there is a reason why if deterrence works then homicide would be exempt. It is worth noting that two of the initial deterrence revival studies from the 1960s, Gibbs (1968) and Tittle (1969) both showed homicide as the only major crime impacted by severity. While this current work did not examine the implication of severity for reasons mentioned earlier, and revival studies used limited aggregate measures, it is interesting that the literature suggests that if there is a "homicide exemption" for deterrence, it may be that homicide provides better prospects of finding a deterrent effect rather than homicide being unable to be deterred.

Still, if homicide is an exception, then there should be other tacit evidence showing how homicide trends diverge from other crime. Examining UCR data from 1960-2012, there is a strong, positive correlation (r=.65) between violent crime rates and homicide rates; this correlation is considerably stronger (r=.98) when looking from 1990-2012 (BJS, 2013). While this hardly proves that homicide is exactly like

other crime[77], it would certainly undercut the suggestion homicide is impacted differently by theory than other crimes. Additionally, other findings in this study suggest that varying homicide rates are impacted by structural factors, guns, and drugs just as would be predicted for other types of crime. It seems unlikely that null findings for deterrence are simply due to the selection of homicide itself given the other rejected null hypotheses.

Explanation #3

The third explanation is that measuring formal social controls does not work due to structural limitations within the criminal justice system itself. In other words, our system may not be well equipped to promptly associate the event with the punishment even if the theory, in principle, could work on human beings (Paternoster, 2010). Therefore, any measurements of formal deterrence are canceled out by the inability of the criminal justice system to meet the necessary condition of allowing such formal deterrence to be possible. Deterrence relies on a classical assumption of rationality, but the police process of gathering evidence within a legal framework alters the discount rate for both specific and general deterrence since any formal punishment is not immediate to the classically-motivated offender.[78] If this explanation is true, then it is no surprise that deterrence measures find no significant results, as formal aggregate deterrence is effectively negated by the criminal justice system itself. However, to the extent that this is not baked into the cake as an

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[77] Taking the correlations for homicide rate and disaggregated violent crimes, as well as property crimes, found consistent results as found between violent crime overall and homicide.

[78] As Paternoster (2010) noted, this is not to say police should abandon process as a policy, but rather that the criminal justice system has additional goals (legality, fairness, burden of proof) which can and should trump speed – an unintended side effect, however, may be to neuter deterrence.

unavoidable consequence of a formal, bureaucratic justice system, there were

homicide cases where the swiftness is effectively instant. If deterrence would be

otherwise viable beyond the constraints of the justice system, there should be some

significant impact, even if small, among these instant clearances. When examining a

subset of cases with zero days to closure, no significant deterrent effect was found.[79]

This suggests that the reasons behind null results for deterrence may be larger than

simply the criminal justice system being ill-equipped to leverage human rationality,

though not so large to be universal as there have been successes in formal aggregate

deterrence within policing.

Explanation #4

This leads to the fourth explanation, which is that while deterrence may work,

the measures themselves are faulty within the study. For example, this work uses a

one-year lag for both celerity and certainty. There are solid theoretical reasons for

having a lag in measuring deterrence, as detailed in the experiential effect literature

(see Saltzman et al., 1982). The year lag is consistent with the use of other lagged

variables (such as lagged homicide rate) in the literature and is a constraint of having

other study variables captured on a yearly basis. That said, it may be possible the null

results are due to a one year lag being too long, as a deterrent should have maximum

impact the closer in time it is to the potential for new offending. While it would be

difficult to accurately assess a shorter lag, given other structural variables are

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[79] It could be argued that even these cases do not reflect "instant" formal sanction, as a few minutes or
hours may pass between the incident and the clearance. Still, such a time period reflects the quickest
range where any sanctions, whether formal or informal, are likely to occur and it reasons there should
be at least a probabilistic impact of short time spans since deterrence theory is fundamentally non-
deterministic in predictions (see Paternoster, 2010 regarding the probabilitistic nature of deterrence).

measured yearly and due to a likely increase of zeroes in my dependent variable, as a separate sensitivity analysis I tested a non-lagged pair of deterrence variables to see whether a known faulty and biased measure could yield a positive result. If concurrent measures showed significance while the lagged were insignificant, it may be possible there is a pivot point of time between concurrent (which is known to be a bad measure) and one year, even if it could not be tapped into during this study. However, the non-lagged deterrence variables were also non-significant in the complete model and altered no other covariates. Therefore, it seems unlikely that any other lags would uncover a functioning deterrent impact.

Conversely, the one year lag may be incorrect because it is too short. Such a finding would strike at the core of deterrence theory, given the crucial belief in *swift* punishment, and with research which seeks to minimize lag under the assumption that a more proximate event/measure will have greater impact than the same event/measure from further back in time. Potential mechanisms for a longer lag could be that police rest on their laurels when they do a great job one year, or that police lose considerable legitimacy when clearance/celerity fail to materialize such that subsequent good performances do not contribute to outcomes. Still, it would seem the longer lag is not theoretically supported or expected, and the potential mechanisms could alternatively be seen as constructs of police fidelity, which itself will be discussed shortly.

Ultimately, none of the four explanations alone are satisfying. Yet, one purpose of fleshing out these potential explanations for the null deterrence findings is to highlight how much of deterrence may constitute an undiscovered country. While

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each rationalization has an appeal, there also seems a fundamental undercut to each account of the null findings. As a result, it is difficult to fully explain the deterrence results in a linear, pre-packaged way. There are some common lessons which, when coupled with prior research, may provide adequate speculation if only by ruling out the most immediate reactions. Through synthesizing these interrelated explanations, a plausible fifth reasoning tends to fit the facts better than the previous four individually.

Explanation #5

The starting point for a final explanation is an assumption of fidelity which, if relaxed, can provide a working rationalization that keeps prior explanations' strengths without notable undercutting. Fidelity refers to faithfulness between conceptualization and operationalization. The term is often seen in experimental criminology where the treatment fidelity must be monitored and verified to maintain the strong validity of the experimental design – accurate results are contingent on the treatment program being implemented as designed. In this work, the concept of fidelity is linked to whether the assumption of targeted, high-profile police effort for all homicide cases holds in the data. When relaxing this assumption, the conceptualization of high priority investigations is not fully operationalized and thus fidelity suffers. While not every homicide case is worked to an idealized investigative level, if only because no human system is perfect, there may be a point where loss of fidelity undermines the function of formal social control.

Fidelity may be critical to understanding why some aggregate action like hot spots or pulling levers, both experimental research, can demonstrate successes while

other aggregate actions do not (explanation #1). Such an assumption is generally considered reasonable for homicide investigations, given the high-profile nature of the crime, policy significance, and resources dedicated which indicate a potential maximum effort by police. However, speculation that this fidelity assumption does not hold here could yield results inconsistent with predictions based on the particular time/place of this data (explanation #2). The police action as measured in this study is a wholly post-incident metric which is insufficient to capture the magnitude and fidelity of a "targeted" intervention, potentially making the measures theoretically valid but ill-suited for the data (explanation #4) when the initial assumption does not hold. The reason why such variables fail to capture deterrence is because the post-incident metric taps into an output too far removed from the incident due in part to the constraints of the criminal justice system (explanation #3), whereas assessing a measure of case fidelity could be more proximate than even the closure time. Obviously, this issue of fidelity as described is an untested assumption, though prior hot spots and experimental policing research emphasize the importance of fidelity (Lum, Hibdon, Cave, Koper, & Merola, 2011; Weisburd & Braga, 2008) in yielding positive results.

Theoretical Implications – Structural

The key finding from this study for the testing of structural/disorganization perspective is the use of dynamic variables. Prior work (see Kubrin & Weitzer 2004; Sampson et al. 2002) noted the potential of time-variant structural measures as part of their recommendations for future research. The findings of this study provide

evidence that local dynamic variables can be more powerful than static factors in predicting homicide rates.

There are two theoretical ramifications. First, the dynamic factors further bolstered general theoretical predictions regarding the impact of structure on crime. As noted, the results were consistent with theoretical predictions for structural variables impacting homicide. Given that there was variability in the dynamic variables across time within neighborhoods, there was potential the additional variability would not predict the varying homicide rate over time. In other words, prior studies used structural variables rooted in measures ten years apart and there was potential that previous positive findings were an artifact of the stability of such measures. The addition of yearly variation with short-term change, rather than overall structural conditions and long-term change, could be a ready-made explanation if insignificant or contrary findings came from this study. However, the use of dynamic factors reflected and somewhat exceeded the static-based factors. The fact that both sets of structural measures told the same empirical story is a testament to the robust impact of structure on crime.

The second ramification is that these results validated the potential of using differently sourced structural variables. Such measurement issues strike at the heart of empirical theory testing. Dynamic variables represent an undiscovered country for research, as the findings strongly suggest that local, pre-existing measures can tap into classic residential and socioeconomic concepts better than static-based measures and without the large monetary cost associated with original data collection, like the Census. It seems plausible that regularly collected data used to assess structural

factors by local government can be a rich source to explain local variation in homicide. By including new options for data, there is the potential for new questions which serve to build and test theory further; I will note some of these new avenues when I discuss future research.

Related to both ramifications, it is worth noting the performance of the Census measures. While they did not perform as well as the dynamic and required re-operationalizing as factor scores for use in the models (per Land et al., 1990), the Census variables have a remarkable elasticity given their weaknesses. While dynamic measures produced models with better pseudo R-squared values and fit statistics, the static Census measures were not far behind. For example, the dynamic-only regression (Model 3) had a pseudo R-squared of .152. While the static-only Census regression (Model 1) was less at .131, the computations are only about 15% different. Given the low cost, ability to keep variables non-transformed, additional options provided by longitudinal measures, and the specific superior performance in head-to-head models, it seems worthwhile to use the dynamic variables for especially given the extra boost of 15% "explained variance." It begs the question as to whether an expensive and time-consuming independent data collection of structural data would be worth the extra 15%, though.

Theoretical Implications – Deterrence

For the aggregate deterrence variables, the results yielded another underperformance of theoretical predictions for the deterrence literature. My earlier discussion of explanations touched on numerous issues directly relevant to theory, so in lieu of belaboring the same points this section will limit the assessment to two key

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ramifications: first, the limits of formal social control, and second, the potential for lingering and counterproductive theorizing regarding deterrence in criminology.

The findings here suggest a clear limit to aggregate formal social control. If nothing else, the impact of general deterrence, rooted in police action regarding the most serious, high profile crimes, was insignificant on the future homicide rate. Prior research found evidence of deterrent effects based in indirect and vicarious experiences at the individual level (see Paternoster & Piquero, 1995; Piquero & Paternoster, 1998), but the findings here suggest the same mechanisms may not work within small geographic spaces. That said there is support for aggregate police-based control in the successes of geographic and targeted interventions,[80] so there can be a functioning aggregate control impacting crime in theory. The limit and potential space for theoretical differentiation between positive and null results may be rooted in fidelity, which I mentioned during the explanation section, as evidenced in more positive results among experimental hot spots studies.

The fidelity of aggregate formal control touches on two key theoretical considerations – the immediacy of action which is often missing in the criminal justice system, and manifest knowledge of the law and consequences required by Beccaria for effective deterrence.[81] For successful aggregate deterrence, the targeted

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[80] Of course, these successes also have limits. Crime reductions from hot spots or pulling levers can be short-term or lost without follow up by other services (see Rosenbaum, 2008) and neighborhoods may suffer unintended consequences such as decreased police support due to specific tactics (Hinkle & Weisburd, 2008; Weisburd & Braga, 2008). Additionally, crime displacement is a constant concern which, while disappointing for the impact of the intervention, ironically gives support for deterrence/rational choice theories of offending since rational, motivated actors will avoid increased likelihood of punishment by moving outside the intervention area for criminal purposes (Paternoster, 2010).

[81] Beccaria noted that education would ultimately be a superior preventative to crime/revolution than deterrence and punishment. His section *On Education* within his 1764 work (1983[1764]), he provides no specifics and in fact he notes the issue is, "too vast" for his knowledge and is "so intimately

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"flooding the zone" or the meeting with high risk individuals/groups may provide an

overt immediacy of action where both specific and general deterrence is theoretically

maximized when law enforcement suggests nothing will slip through the cracks; the

manifest knowledge of law and punishment is made as a direct prelude to intervention

actions (Braga et al., 2001). As noted, the assumption of fidelity may not hold within

the data for this study, and if not then null results could be expected.

The second implication is that deterrence theory may represent a vapid,

unsupported construct in criminology rather than a wholly functional, workable

theory with regards to formal social controls at the aggregate level. The criminal

justice system itself may be ill-equipped to leverage the human rationality required

for noticeable formal deterrence (see Paternoster 2010). So even accounting for

successes with some deterrence- and place-based police tactics, or the potential role

of fidelity, the search for predictable and significant aggregated formal deterrent

effects may be more akin to the search for the Northwest Passage during the

European colonial era.[82] The null findings here are consistent with a more pessimistic

view of the theory, and while it cannot be concluded deterrence is to be buried based

connected with the nature of government, that it will always remain a barren spot, cultivated only by a few wise men" (pg. 97). One interpretation of this could be that Beccaria is referring to education about government and policies rather than a general education/schooling as modern ears may hear. This is supported by his commentary far earlier and foremost within the chapter *On the Obscurity of Laws* where he writes, "crimes will be less frequent, in proportion as the code of laws is more universally read, and understood" (pg. 25). The lesson seems to be that education in the laws specifically (and implied only a general education sufficient to understanding the law) will reduce crime and disorder.

[82] Numerous European explorers sought out the Northwest Passage, an elusive sea trade route to Asia, over the centuries. I link the quest of a social science theory to this obscure historical reference due to the following: while none found or navigated it until the famous explorer R. Amundsen did at the start of the 20th century, it is important to note that numerous other discoveries were made during or because of previous failed expeditions by other explorers. The search for the Passage was worthwhile in that it led to other unexpected lands in the New World and led to alternative routes for circumnavigating and mapping the globe. If nothing else, null findings can yield new starting points for future adventures in world exploration, whether than in on the seas or in science.

solely on the results here, the theoretical implication of insignificant, weak findings is not positive. Alternative explanations and future avenues still exist, but as those run out and if null findings continue, at least part of deterrence theory marches closer to the realm of a theory which retains a known frame but has no lifeblood properly coursing through the veins.

Policy-Related Findings

The selection of the dependent variable was in large part a matter of policy importance. Homicide is a high-profile measure for both communities and police. The findings presented in this study interact with policy considerations and may even impact the potential reduction of homicides within neighborhoods. One linkage is that encouragement of economic development, particularly some factors reflecting "root causes" outside of the criminal justice system, will yield significant results in curtailing homicide. Another policy-related outcome is that, while formal social control variables did not demonstrate an impact, police action can still have an important role reducing homicide by targeting drug/gun use.

One key policy lesson centers on support for structural economic development, with one potential outcome as providing a reduction in homicide. While this general finding is certainly not new given that the relationship was hypothesized and it seems redundant that any city would need to be sold on improving the structural characteristics of neighborhoods, the implications of addressing "root causes" manifests in two related ways based on this study. First, the success of dynamic structural factors suggests that even year-to-year change can make a positive impact on the homicide rate in a community. This finding contrasts

somewhat with prior work noting potential short-term crime increases as neighborhoods see more economic success (Bowes, 2007; McDonald, 1986) though those studies found most increases among property crime and additionally find evidence that a different mechanism may exist for violent crime (see also Taylor & Covington, 1988). Even incremental change to structural factors may yield relatively quick dividends in the homicide rate. Such results held significance even while controlling for year within the models. Though not directly tested in this study, the more recent anecdotal history of economic development and homicide in Washington, D.C. supports this policy assertion. As the city has increased with more affluent population (US Census, 2013a) and previously high disadvantage/homicide neighborhoods are developed (such as Barracks Row, Columbia Heights, the H St NE corridor, and the Waterfront as recent examples), the overall frequency of homicide dropped to generational lows. Of course, there are certainly other factors at play but the anecdotal evidence is consistent with the findings that yearly change in structural factors could impact homicide rates.

The second policy finding focuses on the nature of the dynamic variables used to assess structure. The significant measures (percent subprime, percent TANF, and percent births to teen mothers) represent local factors touched by government assistance, and the findings suggest that decreased dependence on formal means of socioeconomic help at the neighborhood level can also decrease the homicide rate, holding other factors constant. This may seem counterintuitive, as government assistance is interpreted as a safety net within disadvantaged communities and that a reduction in aid could theoretically lead to further structural weakness and therefore

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homicide within neighborhoods. The policy suggestion here is not to simply cut such assistance,[83] but rather find ways to reduce the necessity. In following with the general lessons of hot spots policing, government involvement in solutions may have the most impact when locally tailored and limited to the problem. Such ways may not involve the government primarily or even directly, whether it is by private sector job creation, strengthening of informal social control or networks, or education in fiscally responsible lending and borrowing. Ultimately, independent of the particular temporal or causal mechanism, the study's findings give some support that less government assistance will predict less homicide at the neighborhood level, so policy efforts should target reducing the need at the very least. If nothing else, efforts to reduce dependence could manifest as local, tailored programs of limited scope that aim to create private sector job creation while also promoting values to combat feelings of nihilism often seen in disadvantaged communities (Anderson, 1999). Of

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[83] The potential for unintended consequences of large social programs should not be ignored, nor should the possibility that decreasing the magnitude or ease of funding may also see some benefits. Like the War on Drugs, the War on Poverty can be interpreted as an ill-guided failure, albeit well-meaning at times, given the durable nature and concentration of disadvantage found by scholars such as R. Sampson and W.J. Wilson (1987; see also Sampson & Wilson, 1994) following increased social spending and programs. In theory, a successful anti-poverty program would see continued reductions of poverty or at least a complete turnover of population assisted, as the purpose of such spending is to assist those individuals and neighborhoods out of disadvantage and the tangle of pathologies. Towards that point, the national poverty rate has remained fairly stable between 10-15% since the War on Poverty and associated spending started (NPC, 2013). Additionally, as noted in Wilson (1987), disadvantaged communities in minority areas tend to be more static following the 1960s than before, as those only held back in society due to codified racial prejudices subsequently left when possible, further weakening communities by depriving those left behind of examples of success and the local economic engine (see also Anderson, 1999). Rather than help, it may be possible that this government spending contributes to the stagnant nature of disadvantaged communities by providing enough assistance to make conditions more tolerable, discouraging pro-social risk, but not enough to truly transform a community (Murray, 1984; Sowell, 1995). Though a full treatment of this topic would likely require a second dissertation in another department, it would seem increased government spending on poverty may not have a grand impact at the aggregate level, and that cuts or restructuring of said spending could undo some current unintended consequences. From the policy side, a similar restructuring was central to the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, which itself authorized the creation of TANF, and is temporally correlated with increased economic activity and decreasing rates of crime.

course, such conjecture is easier said than done as evidenced by decades of anti-poverty programs yielding concentrated poverty.

In addition to the importance of root causes, this study suggests that police action can still have an impact on homicide. Given the controls for root causes in the models, there is also support for Vollmer's (1933) belief that police can impact crime even if socioeconomic factors remain constant. While the deterrence variables of certainty and celerity were not significant in reducing overall homicide rates[84], other variables within the police purview did significantly impact homicide. Two controls, percent handguns and percent drugs, had direct, positive relationships with the homicide rate. Police action that can target those variables and reduce their values may have a benefit of decreasing the homicide rate within neighborhoods, even after controlling for other variables. The pulling levers approach and recent implementations of Operation Ceasefire have roots in the Boston Gun Project, which sought to address gun conflict through targeted, deterrence-based enforcement (Braga et al., 2001). The current findings from Washington, D.C. lend support consistent with the general philosophy behind these programs.

One concern, however, is found in the direct relationship between percent arrest for homicide and homicide rate. This may be an instance of unintended consequences of police work (Hinkle & Weisburd, 2008), a reflection of lack of police legitimacy (Anderson, 1999), or simply self-selection in that neighborhoods with more prior arrests are the more dangerous neighborhoods where an increase in

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[84] There are other reasons for police to close homicides, and close them quickly, independent of any potential reduction in future homicides. General public safety, a sense of justice and psychological closure for survivors, community satisfaction, and a positive media perception/reporting come to mind as important factors besides future homicide trends.

arrests may signify an underlying increase to violence (e.g. building crew conflicts or new drug markets). If nothing else, the finding here may reflect the limits of formal control in that "more law," to paraphrase D. Black, is significantly linked to more homicide. While this finding could normally be an argument for greater police discretion and handling crimes without making arrests, it may present a challenge since this study's outcome was homicide, a crime where there generally is not an option for discretion, at least not without considerable public and media backlash. Given the limited option in dealing with homicide suspects, the direct effect of percent arrested may be a necessary cost in combating homicide. Yet, it still suggests an opportunity to take procedure justice or legitimacy issues to heart in that if formal control needs to be established, some costs may be mitigated by a better quality of justice in communities.

Limitations

Like all research, there were limitations to this study. First, it was not possible to define and delineate exact named neighborhoods within Washington, D.C., and as a result the census tract was the geographic unit of analysis. Neighborhoods represent a geographic space where people share territory and the circumstances which come with it (see Bursik & Grasmick, 1993; Kirk & Laub, 2010). Ideally, known divisions with known data would exist to capture the spatial and social element of neighborhoods, and thereby determine how the nature of common space impacts homicide. A great deal of effort and work went into such a task for the PHDCN, reducing 865 census tracts into 342 distinct neighborhoods in Chicago. Such an effort has not been undertaken in most cities, including

Washington, D.C. Neither local officials nor the U.S. Census had sufficient information on precise neighborhood boundaries, which led to a lack of aggregated structural data cut to that level of measurement.[85] While census tracts are arguably a good proxy within Washington, D.C. given their count compared to the estimated number of neighborhoods, as noted previously, the tracts are a proxy none the less and likely miss a degree of specificity along with potential shared values.

Second, the measures of formal social control focused on police outcomes rather than the fidelity of investigation. The issue of fidelity may be an important factor for deterrence and an assumption which cannot be made in the data without giving up some potential explanatory power. Related, the models have limited "explained variance" which suggests there is ample room for influential missing variables. While the concept of R-squared is more of an approximation with non-linear models as opposed to explained variance with OLS (Long, 1997), it is still useful for model comparison by assisting in the determination of best fit. Given the low values, it seems clear there would be room to grow even if the precise variation in homicide rate by the independent variables cannot be definitively quantified as in a linear regression.[86]

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[85] In part, this confusion is likely linked to the same confusion among D.C. residents and other partners. In a conversation with MPDC officials unrelated to this study, the topic of neighborhoods came up when discussing citizen requests for crime data in the "Hillcrest" community, a well-known neighborhood along the Maryland border in Southeast Washington. Three different ideas for the boundaries existed – citizens believed the neighborhood was roughly the size of a PSA (approximately the area covered by census tracts 76.3, 76.4, 99.1, and 99.2 in Figure 6), D.C. Office of Planning roughly defined it as about half the citizen-recommended size (about tracts 76.3 and 76.4), and police suggested the size to be about one-third the PSA size (most of tract 76.3 and some of 76.4).

[86] In this study, I used the McFadden's pseudo R-squared calculation. While there is no consensus on which calculation is best, the McFadden's has a number of favorable qualities which make it a reasonable approximation of a true R-squared (Menard, 2000) and does not require additional computation to simulate a linear R-squared ranging from 0 to 1 like the Cox-Snell.

Finally, the specific research findings are limited in generalizability to the time and place of my data. Even if there is nothing unique about this period and this city, it still stands to reason that my sampling frame does not allow a universal, national conclusion without further samples from beyond this time and place. Of course, this limitation does not mean the general lessons, such as the viability of dynamic factors or weakness of deterrence, cannot be moved forward into the literature base. Rather, it stresses the need for replication among other samples in the future.

Future Research

There are a number of avenues for future research based on this study. First, the search for and use of dynamic structural variables can be expanded and further tested against Census measures, as this study demonstrated at least a proof of concept for the viability of dynamic factors. Related to this, the introduction of functioning, reliable dynamic measures of structure allows for a greater range of longitudinal and growth studies to assess the impact of structure on homicide rates without relying on static Census measures (Wadsworth & Kubrin, 2004).

Second, further study of deterrence can expand on celerity as it remains under examined in the literature. Given that celerity is stressed highly by Beccaria and may be a key factor in any potential deterrent impact of the criminal justice system at large, it seems worthwhile to flesh out the concept enough to catch up with certainty and severity. In the descriptive analysis here, the time to plateau in the survival function for clearance was far greater for Washington, D.C. than in the NIBRS sample seen in Regoeczi et al. (2008). Given the lack of research into celerity, it is

difficult what to make of this difference. The primary distinction between the study

samples is that NIBRS reflects smaller sized agencies than MPDC. While certainty

can be universally measured through a dichotomous clearance measure, and severity

is consistent across jurisdictions regarding homicide, the findings here may suggest

that there may be more subjectivity to the idea of celerity. What is "expected"

celerity and how will it matter depend on agency size? The literature gives little

guidance, and the results here only muddy the water somewhat as there seems no

universal metric for celerity – of course, part of that reason is that the measure was

insignificant at any value. Still, it seems worthwhile to further explore the issue of

celerity if only to confirm that this measure does not impact the rate of homicide in a

community.

However, such measures may be consigned to failure if some

conceptualization and operationalization checks of fidelity are not also applied.

Given that fidelity seems to be a key difference between successful and unsuccessful

tests of aggregate formal control, future research which takes fidelity into account

may be better positioned to yield either significant results for deterrence theory or

more conclusive evidence of deterrence theory's inability to impact homicide. This

could be done through greater data collection to not simply include case reviews but

interviews with detectives and key personnel to assess the difference between what

should be done and what is done during investigations (see Wellford, Bond, &

Goodison, 2011). Examples of potentially useful metrics for investigating fidelity

would reflect overt action that shows the homicide being "worked" by investigators.

Numerous studies have expanded on general best practices for homicide

investigations (see Carter, 2013; IACP, 2013; Wellford & Cronin, 1999). From this research, such investigative practices are intertwined with this fidelity assumption, such as breath/scope of witness interviews, neighborhood outreach efforts (creation of posters, canvassing, media campaigns), or subsequent increases in other police activity within the area after the homicide. Even if insignificant, controlling for fidelity can be an important step in reducing explanations for the underperformance of deterrence, thereby leading to a more accurate assessment of deterrence theory in practice.

Third, given that homicide data often have a rich individual-level component, further examinations should explore the multi-level nested linkages between incidents and neighborhoods; any such research could easily dovetail into a gap into the disorganization literature as well (see Wikstrom & Loeber, 2000). While this study and others have provided evidence that structure impacts homicide rates, it is still unclear as to how strong neighborhood effects would be when properly considering individual factors or conversely how strong individual risk variables would prove when nested within neighborhoods. When imagining fidelity as measured by investigation, it may be better assessed at an individual level, thus giving more motivation for future use of multi-level models in deterrence research. The inclusion of investigative characteristics which tap into fidelity or a richer array of individual-level variables, such as arrest records or even conviction history, could provide a clearer picture of key variable relationships and explain greater variation in the dependent variable.

Finally, there is a potential that there are differential effects based on disaggregated homicide. While this work used a limited measure of disaggregated homicide to create the drug-motive homicide measure, the outcome variable was an aggregated homicide rate. Future studies, particularly those incorporating a multi-level model to leverage the maximum use of individual-level disaggregation, can examine whether the effect of structural and deterrence factors varies across homicide type. One can imagine how felony-related homicides (e.g. drug or robbery) or retaliation-based homicides may be susceptible to formal social controls, as opposed to argument or domestic homicides. Disaggregated homicide is considered to impact the general clearance rate, as the recent drop in overall homicide closures is partially attributed to the transition to more stranger rather than domestic cases (see Wellford and Cronin, 1999). In this way, disaggregation may also influence celerity, albeit limited to the full context of the homicide.

Conclusion

The purpose of this research was to explore an undiscovered country of how dynamic structural factors and deterrence impacted homicide rates. Using Washington, D.C. data from 1998-2006, findings suggest that dynamic structural variables perform better than decennial Census variables and that these dynamic variables predicted homicide rates significantly. However, measures of deterrence were not successful in predicting homicide rates, suggesting that the impact of case closure as police-dependent formal social control was minimal within neighborhoods. While structural variables performed according to predictions, the lack of significance for deterrence variables in this study may hinge on the concept of fidelity given prior

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police/deterrence successes in research. Beyond theoretical implications, the results suggested important directions for policy, such as the ability for police to reduce homicide without addressing root causes of crime even if not through celerity or certainty. While not without limitations, this study posits that future research can further explore the unknown and clarify what has been glimpsed here. For that is the purpose of science, to incrementally build upon the body of knowledge towards greater understanding. Ideally, the research here has helped reveal at least a small portion of this undiscovered country.

Bibliography

Agnew, R. (1992). Foundation for a General Strain Theory. *Criminology, 30*(1), 47-87

Agnew, R. (2006). *Pressured into crime: An overview of general strain theory*. Los Angeles, CA: Roxbury Publishing Company.

Akers, R. L. (1996). Is differential association/social learning cultural deviance theory? *Criminology, 34,* 229-247.

Akers, R. L. (1998). *Social learning and social structure: A general theory of crime and deviance*. Boston: Northeastern University Press.

Alexander, T. S. (2012). *Homicide clearances: An examination of race and police investigative effort*. (Doctoral dissertation).

American Community Survey. (2013). *Questions on the form and why we ask – About the survey*. Retrieved November 16, 2013, from https://www.census.gov/acs/www/about_the_survey/questions_and_why_we_ask/

Anderson, E. (1999). *Code of the street: Decency, violence, and the moral life of the inner city*. New York: W.W. Norton.

Bachman, R., Paternoster, R., & Ward, S. (1992). The rationality of sexual offending: Testing a deterrence/rational choice conception of sexual assault. *Law & Society Review*, *26*(2), 343-372.

Bailey, W.C. (1980). Deterrence and the celerity of the death penalty: A neglected question in deterrence research. *Social Forces*, *58*(4), 1307-1333.

Beccaria, C. (1983[1764]). *An essay on crimes and punishments.* (A. Caso, Ed.). Boston: International Pocket Library.

Bellair, P.E. (1997). Social interaction and community crime: Explaining the importance of neighbor networks. *Criminology, 35*, 677-703.

Bellair, P.E. (2000). Informal surveillance and street crime: A complex relationship. *Criminology, 38,* 137-167.

Bentham, J. (1907[1789]). *An introduction to the principles of morals and legislation*. New York: Oxford University Press.

Black, D. (1976). *The behavior of law*. New York: Academic Press.

Blau, J. & Blau, P. (1982). The cost of inequality: Metropolitan structure and violent crime. *American Sociological Review, 47,* 114-129.

Blumstein, A. & Rosenfeld, R. (1998). Explaining recent trends in homicide in the United States. *Journal of Criminal Law and Criminology, 88,* 1175-1216.

Boba, R. (2010). *Crime analysis and crime mapping*. New York: Sage Publications.

Braga, A. (2008) *Problem-oriented policing and crime prevention.* Monsey, NY: Criminal Justice Press.

Braga, A., & Bond, B. (2008). Policing crime and disorder hot spots: A randomized controlled trial. *Criminology*, *46*(3), 577-607.

Braga, A., Kennedy, D., Waring, E., & Piehl, A. (2001). Problem-oriented policing, deterrence, and youth violence: An evaluation of Boston's Operation Ceasefire. *Journal of Research in Crime & Delinquency*, *38*(3), 195-226.

Brown, S.E., Esbensen, F., & Geis, G. (2010). *Criminology: Explaining crime and its context (7th ed.)*. New Providence, NJ: Anderson Publishing.

Browning, C. R. (2009). Illuminating the Downside of Social Capital Negotiated Coexistence, Property Crime, and Disorder in Urban Neighborhoods. *American Behavioral Scientist*, *52*(11), 1556-1578.

Bursik, R.J. & Grasmick, H.G. (1993). *Neighborhoods and crime*. New York: Lexington Books.

Bursik, R.J. & Webb, J. (1982). Community change and patterns of delinquency. *American Journal of Sociology, 88*, 24-42.

Bursik, R.J. (1988). Social disorganization and theories of crime and delinquency: Problems and prospects. *Criminology, 26*, 519-551.

Bursik, R.J. Jr. (1986). Ecological stability and the dynamics of delinquency. In A.J. Reiss, Jr. & M. Tonry (Eds.), *Crime and justice, 8 (pp. 35-66),* Chicago: University of Chicago Press.

Carter, D.L. (2013). *Homicide process mapping: Best practices for increasing homicide clearances.* Washington, DC: Bureau of Justice Assistance.

Chambliss, W.J. (1966). The deterrent influence of punishment. *Crime and Delinquency, 33*: 70-75.

Chambliss, W.J. (1967). Types of deviance and the effectiveness of legal sanctions. In W.J. Chambliss (Ed.) *Criminal law in action*. New York: Wiley.

Children's Defense Fund. (2014). *2000 Census: Child Poverty Data for All Major Cities.* Retrieved May 24, 2014, from http://www.childrensdefense.org/child-research-data-

publications/data/state-data-repository/census/census-2000-child-poverty-data-cities.html

Chiricos, T.G., & Waldo, G.P. (1970). Punishment and crime: An examination of some empirical evidence. *Social Problems*, *18*(2), 200-217.

Clark, R.D. (1988). Celerity and specific deterrence: A look at the evidence. *Canadian Journal of Criminology, 30*(2), 109-120.

Clear, T., Rose, D., Waring, E., & Scully, K. (2003). Coercive mobility and crime. *Justice Quarterly, 20*, 33-63.

Cole, D. (2003). The effect of a curfew law on juvenile crime in Washington, D.C. *American Journal of Criminal Justice, 27*(2), 217-232.

Cornish, D.B. & Clarke, R.V. (1987). Understanding crime displacement: An application of rational choice theory. *Criminology, 25,* 933-948.

Cressey, D. (1960). Epidemiology and individual conduct: A case from criminology. *Pacific Sociological Review, 3, 47-58.*

Davis, R.C., Jensen, C.J., Burgette, L. and Burnett, K. (2014). Working smarter on cold cases: Identifying factors associated with successful cold case investigations. *Journal of Forensic Sciences*, 59: 375–382.

Dormann, C., M McPherson, J., B Araújo, M., Bivand, R., Bolliger, J., Carl, G., ... & Wilson, R. (2007). Methods to account for spatial autocorrelation in the analysis of species distributional data: a review. *Ecography*, *30*(5), 609-628.

Douglas, J.E., Burgess, A.W., Burgess, A.G., & Ressler, R.K. (1997). San Francisco: Jossey-Bass Publishers.

Eck, J. E., & Maguire, E. R. (2000). Have changes in policing reduced violent crime? An assessment of the evidence. In A. Blumstein & J. Wallman (Eds), The crime drop in America (pp 207-265). New York: Cambridge University Press.

Ellis, D. (1971). The Hobbesian problem of order: A critical appraisal of the normative solution. *American Sociological Review, 36(4), 692-703.*

Erickson, M., Gibbs, J., & Jensen, G. (1977). The deterrence doctrine and the perceived certainty of legal punishments. *American Sociological Review*, *42*(2), 305-317.

Fagan, J., Zimring, F.E., & Kim, J. (1997). Declining homicide in New York City: A tale of two trends. Journal of Criminal Law & Criminology, 88(4), 1277-1324.

Flewelling, R. L., & Williams, K. R. (1999). Categorizing homicides: The use of disaggregated data in homicide research. *Homicide: A sourcebook of social research*, 96-106.

Gau, J. M., & Pratt, T. C. (2008). Broken windows or window dressing? Citizens' (in)ability to tell the difference between disorder and crime. *Criminology & Public Policy, 7*(2), 163–194.

Gelman, A. & Hill, J. (2005). *Data analysis using regression and multilevel/hierarchical models*. New York: Cambridge University Press.

Gibbs, J. (1968). Crime, punishment, and deterrence. *Southwestern Social Science Quarterly*, *48*(4), 515-530.

Goldstein, H. (1979). Improving policing: A problem oriented approach. *Crime and Delinquency, 24*, 236-258.

Gottfredson, M.R. & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

Greenwood, P.W., Chaiken, J.M., & Petersilia, J.R. 1975, *The criminal investigation process*, vol. 3: *Observations and analysis*: Rand Corporation, Santa Monica, CA.

Gurrey, A-M. (2012[1833]). *The moral statistics of France*. Nabu Press.

Health and Human Services [HHS]. (2013). *Data and Reports – Office of Family Assistance*. Retrieved November 18, 2013, from http://www.acf.hhs.gov/programs/ofa/programs/tanf/data-reports

Heitgard, J. & Bursik, R.J. (1987). Extracommunity dynamics and the ecology of delinquency. *American Journal of Sociology, 92*: 775-787.

Hinkle, J., & Weisburd, D. (2008). The irony of broken windows policing: A micro-place study of the relationship between disorder, focused police crackdowns and fear of crime. *Journal of Criminal Justice*, *36*(6), 503-512.

Hipp, J.R. (2007). Block, tract, and levels of aggregation: Neighborhood structure and crime and disorder as a case in point. *American Sociological Review, 72*(5), 659-680.

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

Hirschi, T. (1996). Theory without ideas: Reply to Akers. *Criminology, 34,* 249-256.

Hobbes, T. (1994[1651]). *Leviathan.* New York: Hackett Publishing.

Hooton, E. A. (1939). *Crime and the man*. Cambridge, MA: Harvard University Press.

Howe, E.S., & Brandau, C.J. (1988). Addictive effects of certainty, severity, and celerity of punishment judgments of crime deterrence scale value. *Journal of Applied Social Psychology*, *18*(9), 796-812.

International Association of Chiefs of Police (2013). *10 things law enforcement executives can do to positively impact homicide investigation outcomes*. Washington, DC: Bureau of Justice Assistance, October.

Jensen, G., Erickson, M., & Gibbs, J. (1978). Perceived risk of punishment and self-reported delinquency. *Social Forces*, *57*(1), 57-78.

Kasarda, J. & Janowitz, M. (1974). Community attachment in mass society. *American Sociological Review, 39*: 328-339.

Keizer, K., Lindenberg, S., & Steg, L. (2008). The spreading of disorder. *Science*, 1681-1685.

Kelling, G. L., & Moore, M. H. (1988). The evolving strategy of policing. *Perspectives on policing* (Vol. 4, pp. 1–15). Washington, DC: National Institute of Justice.

Kelling, G., Pate, A., Dieckman, D., & Brown, C. (1974). *The Kansas City preventative patrol experiment: Summary report*. Washington, DC: Police Foundation.

Kelling, G.L., & Coles, C.M. (1996). *Fixing broken windows: Restoring order and reducing crime in our communities*. New York: Touchstone.

Kelling, G.L., & Sousa, W.H. (2001). *Do police matter? An analysis of the impact of NYC's police reforms.* New York: Center for Civic Innovation at the Manhattan Institute.

Kennedy, R. (1997). *Race, crime, and the law.* New York: Pantheon Books.

Kessler, D. & Levitt, S. (1999). Usin sentence enhancements to distinguish between deterrence and incapacitation. *Journal of Law and Economics, 42*: 343-363.

Kirk, D.S. & Laub, J.H. (2010). Neighborhood change and crime in the modern metropolis. In M. Tonry (Ed.), *Crime and justice, 39* (pp. 441-502). Chicago, IL : University of Chicago Press.

Kornhauser, R. (1978). *Social sources of delinquency.* Chicago: University of Chicago Press.

Krivo, L.J. & Peterson, R.D. (1996). Extremely disadvantaged neighborhoods and urban crime. Social Forces, 75(2), 619-650.

Kubrin, C.E. & Herting, J.R. (2003). Neighborhood correlates of homicide trends: An analysis using growth-curve modeling. *Sociological Quarterly, 44, 329-350*.

Kubrin, C.E. & Weitzer, R. (2003). Retaliatory homicide: Concentrated disadvantage and neighborhood culture. *Social Problems, 50, 157-180*.

Kubrin, C.E. (2003). Structural covariates of homicide rates: Does type of homicide matter? *Journal of Research in Crime and Delinquency, 40,* 139-170.

Kubrin, C.E. (2008). Making order of disorder: A call for conceptual clarity. *Criminology & Public Policy, 7*: 203-214.

Land, K., McCall, P., & Cohen, L. (1990). Structural Covariates of Homicide Rates: Are There Any Invariances across Time and Social Space?. *American Journal of Sociology*, *95*(4), 922-963.

Laub, J.H. & Sampson, R.J. (2003). *Shared beginnings, divergent lives: Delinquent boys to age 70*. Cambridge: Harvard University Press.

Lauritsen, J., Sampson, R. & Laub, J. (1991). Link between offending and victimization among adolescents. *Criminology, 29*(2): 265-291.

Levitt, S.D. (1996). The effect of prison population size in crime rates. *Quarterly Journal of Economics*, 111, 319-325.

Litwin, K.J. (2004). A multivariate analysis of factors affecting homicide clearances. *The Journal of Research in Crime and Delinquency, 41*(4): 327-351.

Logan, C. (1975). Arrest rates and deterrence. *Social Science Quarterly (Southwestern Social Sciences Association)*, *56*(3), 376-389.

Long, J.S. (1997). *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage Publications.

Lotke, E. (1998). Hobbling a generation: Young african american men in Washington, D.C.'s criminal justice system - five years later. *Crime & Delinquency, 44*, 355-366.

Lott, J.R., & Mustard, D.B. (1997). Crime, deterrence, and right-to-carry concealed handguns. *Journal of Legal Studies*, *26*, 1-68.

Lowencamp, C. T., Cullen, F. T., & Pratt, T. C. (2003). Replicating Sampson and Groves' test of social disorganization theory: Revisitng a criminological classic. *Journal of Research in Crime and Delinquency, 40*, 351–373.

Lynch, J.P. & Sabol, W.J. (2004). Assessing the effects of mass incarceration on informal social control in communities. *Criminology & Public Policy, 3*(2): 267-294.

Markowitz, F.E, Bellair, P.E., Liska, A.E., & Lui, J. (2001). Extending social disorganization theory: Modeling the relationships between cohesion, disorder, and fear. *Criminology, 39,* 293-319.

Martin, J. A., Hamilton, B. E., & Ventura, S. J. (2013). Births: preliminary data for 2012. Hyattsville, MD: National Center for Health Statistics.

Martinson, R. (1974). What works? — Questions and answers about prison reform. The Public Interest, 35, 22-54.

Matsueda, R.L. (1988). The current state of differential association theory. *Crime and Delinquency, 34*: 277-306.

Matza, D. (1964). *Delinquency & drift*. New Brunswich, CT: Transaction Publishers.

McDonald, S.C. (1986). Does gentrification affect crime rates?. In A.J. Reiss, Jr. & M. Tonry (Eds.), *Crime and justice, 8 (pp. 163-202),* Chicago: University of Chicago Press.

McKinnon, J. (2001). *The Black Population, 2000*. US Dept. of Commerce, Economics and Statistics Administration, US Census Bureau.

Menard, S. (2000) Coefficients of determination for multiple logistic regression analysis. American Statistician, 54, 17–24.

Messner, S.F., Galea, S., Tardiff, K.J., Tracy, M., Bucciarelli, A., Piper, T.M., Frye, V. & Vlahov, D. (2007). Policing, drugs, and the homicide decline in New York City in the 1990s. Criminology, 45*: 385-413.*

Morenoff, J.D., Sampson, R.J.,&Raudenbush, S.W. (2001). Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence. Criminology, 39(3),517-560.

Moynihan, D.P. (1965). *The negro family: The case for national action*. Washington, D.C.: Office of Policy Planning and Research, U.S. Department of Labor.

Murray, C. (1984). *Losing ground: American social policy 1950-1980.* New York: Basic Books.

Nagin, D. (1998). Criminal deterrence research at the outset of the twenty-first century. In M. Tonry (Ed.), *Crime and Justice: A Review of Research Vol. 23* (pp. 1-42). Chicago, IL : University of Chicago Press.

Nagin, D., & Paternoster, R. (1993). Enduring individual differences and rational choice theories of crime. *Law & Society Review*, *27*(3), 467-496.

Nagin, D., & Paternoster, R. (1994). Personal capital and social control: The deterrence implications of a theory of individual differences in criminal offending. *Criminology*, *32*(4), 581-606.

Nagin, D., & Pogarsky, G. (2001). Integrating celerity, impulsivity, and extralegal sanction threats into a model of general deterrence: Theory and evidence. *Criminology*, *39*(4), 865-891.

National Poverty Center [NPC]. (2013). *Poverty facts.* Retrieved November 16, 2013, from http://www.npc.umich.edu/poverty/#3

O'Brien, R.M. (2003). UCR violent crime rates, 1958-2000: Recorded and offender-generated trends. *Social Science Research, 32*: 499-518.

Ousey, G.C., & Augustine, M.C. (2001). Young guns: Examining alternative explanations of juvenile

firearm homicide rates. *Criminology*, *39*(4), 933-968.

Park, R.E. & Burgess, E.W. (1967[1925]). *The city*. Chicago: University of Chicago Press.

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

Paternoster, R. & Piquero, A. (1995). Reconceptualizing deterrence: an empirical test of personal and vicarious experiences. *Journal of Research in Crime and Delinquency, 32*(2): 251-286.

Paternoster, R. (1987). The deterrent effect of the perceived certainty and severity of punishment: A review of the evidence and issues. *Justice Quarterly*, *4*(2), 173-218.

Paternoster, R., & Simpson, S. (1996). Sanction threats and appeals to morality: Testing a rational choice model of corporate crime. *Law and Society Review, 30*, 549–583.

Peterson, R.D. & Krivo, L.J. (1993). Racial Segregation and Black Urban Homicide. *Social Forces, 71*: 1001-1026.

Piliavin, I., Gartner, R., Thornton, C, & Matsueda, R. (1986). Crime, deterrence, and rational choice. *American Sociological Review, 51* (1), 101-119.

Piquero, A. & Pogarsky, G. (2002). Beyond Stafford and Warr's reconceptualization of deterrence: personal and vicarious experiences, impulsivity, and offending behaviors. *Journal of Research in Crime and Delinquency, 39*(2): 153-186.

Piquero, A., and Paternoster, R. (1998). An application of Stafford and Warr's reconceptualization of deterrence to drinking and driving. *Journal of Research in Crime and Delinquency, 35*: 3-39.

Pittman, D.J. & Handy, W. (1964) Patterns in criminal aggravated assault, 55 *J. Crim. L. Criminology & Police Sci*. 462.

Plato. (1992). *The republic*. A.D. Lindsay (trans.). New York: Knoff.

Plato. (2006). *Protagorus and Meno*. A.Beresford (trans.). New York: Penguin Classics

Pratt, T.C., Cullen, F.T., Blevins, K.R., Daigle, L.H. & Madensen, T.D. (2006). The empirical status of deterrence theory: A meta-analysis. In F.T. Cullen, J.P. Wright & K.R. Blevins (Eds.), *Taking stock: The status of criminological theory*. New Brunswick, NJ: Transaction.

Puckett, J.L., & Lundman, R.J. (2003). Factors affecting homicide clearances: Multivariate analysis of a more complete conceptual framework. *Journal of Research in Crime and Delinquency, 40*, 171-193.

Regoeczi, W. C., Jarvis, J., & Riedel, M. (2008). Clearing Murders Is It about Time?. *Journal of Research in Crime and Delinquency*, *45*(2), 142-162.

Reiss, A.J. Jr. & Tonry, M. (1986). *Crime and justice, 8 (pp. 1-34),* Chicago: University of Chicago Press.

Reiss, A.J. Jr. (1986). Why are communities important in understanding crime?. In A.J. Reiss, Jr. & M. Tonry (Eds.), *Crime and justice, 8 (pp. 1-34),* Chicago: University of Chicago Press.

Rose, D. & Clear, T. (1998). Incarceration, social capital, and crime: Implications for social disorganization theory. *Criminology, 36,* 441-479.

Rosenfeld, R., Fornango, R., & Rengifo, A.F. (2007). The impact of order-maintenance policing on New York City homicide and robbery rates: 1988-2001. *Criminology, 45*(2), 355-384.

Roundtree, P.W. & Warner, B.D. (1999). Social ties and crime: Is the relationship gendered?. *Criminology, 37*(4): 789-814.

Saltzman, L., Paternoster, R., Waldo, G.P., & Chiricos, T.G. (1982). Deterrent and experiential effects: The problem of causal order in perceptual deterrence research. *Journal of Research in Crime and Delinquency*, *19*, 172-189.

Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing neighborhood effects: Social processes and new directions in research. *Annual Review of Sociology, 28,* 443–478.

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

Sampson, R.J. & Lauritsen, J.L. (1994). Violent victimization and offending: Individual-, situational-, and community-level risk factors. In A.J. Reiss, Jr., K.A. Miczek, and J.A. Roth (Eds.) Understanding and preventing violence: Vol. 3. Social influences (pp. 1-114). Washington, DC: National Academy Press.

Sampson, R.J. & Morenoff, J.D. (2006). Durable inequality: Spatial dynamics, social processes, and the persistence of poverty in Chicago neighborhoods. In S. Bowles, S.N. Durlauf, & K. Hoff (Ed.), *Poverty Traps* (pp. 176-203). Princeton, NJ : Princeton University Press.

Sampson, R.J. & Raudenbush, S.W. (1999). Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *American Journal of Sociology,* 105, 603-651.

Sampson, R.J., Morenoff, J.D., & Earls, F. (1999). Spatial dynamics of collective efficacy for children. *American Sociological Review, 64, 633-660.*

Savage, J. (2006). Interpreting "percent black": An analysis of race and violent crime in Washington D.C. *Journal of Ethnicity in Criminal Justice, 4*(1/2), 29-63.

Selke, W.L. (1983). Celerity: the ignored variable in deterrence research. *Journal of Police Science and Administration*, *11*(1), 31-37.

Shaw, C.R. & McKay, H. (1942). *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press.

Shaw, C.R. (1974[1930]). *The Jack-Roller: A delinquent boy's own story.* Chicago: University of Chicago Press.

Sherman, L.W., & Weisburd, D. (1995). General deterrent effects of police patrol in crime 'hot spots': A randomized, controlled trial. *Justice Quarterly*, *12*(4), 625-648.

Simons, R.L., Simons, L.G., Burt, C.H., Brody, G.H., & Cutrona, C. (2005). Collective efficacy, authoritative parenting and delinquency: A longitudinal test of a model integrating community- and family-level processes. *Criminology, 43*(4), 989-1029.

Skogan, W. (1990). *Disorder and decline*. Berkeley: University of California Press.

Smith, M. M., & Hevener, C. C. (2010). Subprime lending over time: the role of race. *Journal of Economics and Finance*, 1-24.

Sowell, T. (1995). *The vision of the anointed*. New York: Basic Books.

Spelman, W. & Brown, D.K. (1984). *Calling the police: Citizen reporting of serious crime*. Washington, D.C.: National Institute of Justice.

Stafford, M.C. & Warr, M. (1993). A reconceptualization of general and specific deterrence. *Journal of Research in Crime and Delinquency, 32* (2), 123-135.

Taylor, R.B. (1999). *Crime, grime, fear, and decline: A longitudinal look.* Washington, D.C.: National Institute of Justice.

Thomas, T.I. & Znaniecki, F. (2006 [1918]). *The polish peasant in Europe and America*. University of Illinois Press.

Thrasher, F.M. (1963[1927]). *The gang: a study of 1,313 gangs in Chicago*. Chicago: University of Chicago.

Tittle, C.R. (1969). Crime rates and legal sanctions. *Social Problems*, *16*(2), 409-423.

Tonry, M. (2008). Learning from the limitations of deterrence research. In M. Tonry (Ed.), *Crime and Justice: A Review of Research Vol. 37* (pp. 279-312). Chicago, IL : University of Chicago Press.

U.S. Census. (2013a). *Housing Vacancies and Homeownership – Historical Tables*. Retrieved November 12, 2013, from http://www.census.gov/housing/hvs/data/histtabs.html

U.S. Census. (2013b). *Median And Average New Home Prices since 1963*. Retrieved November 12, 2013, from http://www.census.gov/const/uspricemon.pdf

U.S. Census. (2013c). *Density Using Land Area*. Retrieved November 16, 2013, from
    https://www.census.gov/population/www/censusdata/2000places.html

Velez, M. (2001). The role of public social control in urban neighborhoods. *Criminology, 39,* 837-863.

Velez, M.B., Krivo, L.J. & Peterson, R.D. (2003). Structural inequality and homicide: An assessment
    of the black-white gap in killings. *Criminology*, *41*(3), 645-672.

Veysey, B.M. & Messner, S.F. (1999). Further testing of social disorganization theory: An
    elaboration of Sampson and Groves's "community structure and crime." *Journal of Research
    in Crime and Delinquency, 36,* 156-174.

Vollmer, A. (1933). Police progress in the past twenty-five years. *Journal of Criminal Law and
    Criminology*, *24*(1), 161-175.

Wadsworth, T. & Kubrin, C.E. (2004). Structural factors and black interracial homicide: A new
    examination of the causal process. *Criminology, 42*: 647-672.

Waldo, G., & Chiricos, T. (1972). Perceived penal sanction and self-reported criminality. *Social
    Problems, 19*, 522-540.

Warner, B. D. & Roundtree, P.W. (1997). Local social ties in a community and crime model:
    Questioning the systemic nature of informal social control. *Social Problems, 44*, 520-536.

Warner, B.D. (2007). Directly intervene or call the authorities? A study of forms of neighborhood
    social control within a social disorganization framework. *Criminology, 45*(1), 99-129.

Washington, D.C. Economic Partnership [WDCEP]. (2014). *2014 Neighborhood Profiles*.
    Washington, D.C.

Weisburd, D., & Braga, A.A. (2006). Hot spots policing as a model for police innovation. In D.
    Weisburd & A.A. Braga (Eds.), *Police innovation: Contrasting perspectives* (pp. 225-244).
    New York: Cambridge University Press.

Weisburd, D., Einat, T., & Kowalski, M. (2008). The miracle of the cells: An experimental study of
    interventions to increase payment of court-ordered financial obligations. *Criminology &
    Public Policy*, *7*(1), 9-36.

Wellford, C., Bond.B, & Goodison, S. (2011). *Crime in New Orleans : Analyzing crime trends and
    New Orleans' responses to crime*, Bureau of Justice Statistics, Washington D.C.

Wellford, C. & Cronin, J. (1999). *An analysis of variables affecting the clearance of homicides: A
    multi-state study,* Justice Research and Statistics Association, Washington DC.

West, A.D. (2002). Death as deterrent or prosecutorial tool? Examining the impact of Lousiana's

child rape law. *Criminal Justice Policy Review*, *13*(2), 156-191.

Wikstrom, P.H. & Loeber, R. (2000). Do disadvantaged neighborhoods cause well-adjusted children to become adolescent delinquents? A study of male juvenile serious offending, individual risk and protective factors, and neighborhood context. *Criminology, 38,* 1109-1142.

Wilson, J.Q. (1970). Varieties of Police Behavior. Cambridge, MA: Harvard University Press.

Wilson, J.Q. (2009). Pat Moynihan thinks about families. *The ANNALS of the American Academy of Political and Social Science, 621,* 28-33.

Wilson, J.Q., & Kelling, G.L. (1982). Broken Windows: The police and neighborhood safety. *The Atlantic Monthly, 249*, 29-38.

Wilson, W.J. (1987)*. The truly disadvantaged: The inner city, the underclass, and public policy.* Chicago: University of Chicago Press.

Yu, J. (1994). Punishment celerity and severity; Testing a specific deterrence model on drunk driving recidivism. *Journal of Criminal Justice*, *22*(4), 355-367.

Yu, J., Chin, E.P. & Perfetti, C.L. (2006). Alcohol addictions and perceived sanction risks: Deterring drinking drivers. *Journal of Criminal Justice, 34*(2), 165-174.