Crime Across the United States since the End of the Great American Crime Decline: A Gathering Storm or Astonishingly Flat

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CRIME ACROSS THE UNITED STATES SINCE THE END OF THE GREAT AMERICAN CRIME DECLINE:
A GATHERING STORM OR ASTONISHINGLY FLAT

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I dedicate this to my grandfather Harold Ganshirt. After 89 years on this earth accomplishing tremendous things he left us on September 17, 2009. His intelligence and humor have always inspired me to follow in his footsteps.
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ABSTRACT

Much scholarly attention has been given to crime trends during recent decades in which the United States and the world experienced a spike in violent crime during the late 1980s into the early-mid 1990s, followed by an unanticipated and unparalleled decline during the mid to late 1990s. These trends have been described in detail by a number of scholars that have offered explanations ranging from record increases in incarceration to the rise and fall of crack cocaine. A lack of consensus regarding the main factors driving these trends has kept researchers interested, and arguably stuck in this period. As a result, we lack an understanding as to what has occurred in the last decade, begging the question, “What has happened since the 1990s?” The purpose of this paper is threefold: First, to determine whether there have been any significant changes in crime across cities in the U.S. since the end of the Great American Crime Decline, as well as to explore what economic, social, and criminal justice factors may be associated with these changes. Secondly, with an eye towards theory, a commonly used variable is reconceptualized and explored in depth. Finally, the existence of a national trend is examined in the context of a large sample of U.S. cities with hopes of guiding future research in the area of crime trends.
CHAPTER 1
INTRODUCTION

Unanticipated increases and decreases in American crime trends during the last decades of the twentieth century propelled a large research effort in which scholars have considered many factors to be driving forces of these trends. Despite the wide range of explanations proposed, a picture of what happened to crime across the United States during the last 30 years has become somewhat clear. During the late 1980s and early 1990s, the U.S. witnessed large increases in youth homicide, robbery, and motor vehicle theft. This increase was followed by a period of dramatic decline in all crime types across most of the U.S. and has since been dubbed “The Great American Crime Decline” (Zimring, 2006). In the early part of this decade, however, the decline began to slow, and it eventually flattened out. By the early part of this century crime rates were back to relatively low levels, similar to those seen in the 1960s (Blumstein and Wallman, 2006).

Although periods of dramatic change in crime rates are tremendous interest to researchers and policy makers, it is also important to consider those periods in which crime has remained relatively stable. The fact that the steadily decreasing trends seen in the 1990s slowed to a remarkably flat trend that continued through the first several years of the 2000s is just as important to understand as the decline itself. While few observers would have predicted that crime rates would continue to fall through the 2000s, the ensuing stability in the decade amidst significant economic and social change was not predictable given the current knowledge on factors that affect crime trends (Blumstein and Rosenfeld, 2008). Given what we know about how factors affect crime trends it is difficult to accurately predict that crime would remain at its low level for most of the decade given fluctuations in many of the commonly associated social characteristics. With these facts in mind, the current study examines this period of relatively flat trends in relation to changes in many of the social characteristics commonly used in the study of crime trends.

Although a number of compelling explanations have been proposed to explain crime trends during past decades, only a small amount of research has been conducted regarding how these factors are associated with trends during the most recent decade (see Rosenfeld, 2009; Rosenfeld and Oliver, 2008; Rosenfeld and Messner, 2009). By using extant research as a guide, the current study hopes to reevaluate how commonly used characteristics are related to trends during the period of 2002-2008 in order to expand
our knowledge on how changing social, economic, and criminal justice characteristics may translate into changes in crime.

In the thesis, I address three specific issues. First, with an eye toward past research, I explore how commonly related economic, social, and criminal justice factors may be associated with crime trends during the most recent decade. Second, I examine the possibility of a national-level influence on crime trends, net of city factors. Finally, I present a discussion of relevant theory, argue for the re-conceptualization of a commonly used variable (age structure), and examine how it relates to contemporary crime trends in depth.

In order to address how commonly used covariates are related to crime trends during the current decade, the present research employs a fixed-effects modeling strategy. This analysis includes covariates commonly included in previous research on crime trends with the goal of obtaining the timeliest and most complete data available for a large set of cities across the U.S. The effects of one significantly related variable, a new measure of age structure, are explored through additional analyses to assess the possibility of interactions between it and other variables included in the model. A discussion of all results is included in addition to directions that future research may take.

To assess how past research in the area of crime trends may be relatively narrowly focused, and must look at the possibility of national level factors, the current research discusses the theoretical foundation on which many of the covariates have been loosely based. Additionally, building on recent research, the current paper examines how, net of city-level factors, the existence of a national level trend may help to explain trends in crime unfolding across the U.S. It may be due to these national level factors that are not generally included in crime trends research, that we are unable to accurately predict major swings in the crime rate. An examination of past research illustrates how some researchers have taken advantage of the relatively atheoretical approach present in the crime trends literature to develop provocative, variable driven explanations of shifts in crime during past decades. In order to improve on past research, the presence of national level factors must be considered and future research must address this in detail.
CHAPTER 2

THE NATURE OF RECENT CRIME TRENDS

Research on crime trends can be considered a relatively new approach to the study of human behavior, as investigations into crime trends since the 17th century have proven to be imprecise at best. What we can be certain of is that recent trends are part of a long and dramatic decrease in violence going back as far as several centuries (Eisner, 2003). Albeit tedious, time-consuming work, historical analyses reveal that when compared to the 19th or 18th centuries, the 20th century is significantly less violent overall. Specifically, research conducted by Eisner (2008) suggests that long-term trends in violence result from the temporal variation in physical aggression between men in public spaces and further proposes that a shift in culturally transmitted values may provide an explanation for the long-term decline.

Zeroing in on trends in violence during the last 50 years, social scientists have documented a steady increase in rates of homicide and other forms of street crime in the U.S. between the early 1960s and the late 1970s. Additionally, trends remained at this relatively high level until a decline occurred between 1980 and 1985. This decline however, was short lived and overall rates of homicide, particularly youth homicide, witnessed a spike between approximately 1985 and 1991. It was at this point that aggregate rates of homicide and many other forms of crime declined steadily from 1992 until 2001, at which point they appeared to level off (Baumer, 2008; Blumstein and Wallman, 2006; O’Brien, 2003; Zimring, 2006). After periods of extreme variation, crime began to stagnate at a level not seen since the 1960s, in which it has now remained for several years. It was not until well into the first decade of the twenty-first century that available evidence began to suggest that violent crime was on the rise in cities across the U.S. (PERF, 2006). The small increases in violent crime witnessed in the middle years of this period were countered by decreases in the rest of the period, leaving the decade relatively flat in comparison to the fluctuations in crime that had occurred at the end of the twentieth century.

Looking even closer at a period which has gained a lot of attention from experts in the field, during the late 1980s into the early 1990s, certain types of violent crime, specifically rates of gun related youth homicide, spiked during this period dramatically; leading to warnings of a crime wave of epidemic proportions (e.g. Fox, 1996). However, just as scholars and experts in the field were predicting, in the early 1990s, a generation of “super predators,” and that crime would continue to increase to epidemic proportions, the crime trend suddenly shifted and began heading in the opposite direction.
When crime continued to decline through the later years of the decade and into the beginning of the new century, researchers became even more intrigued. The size and the breath of the crime decline observed during the 1990s was unlike anything we had seen since crime statistics had been collected on a nationwide basis. During the 1990s, trends in all seven of the index crimes declined between 23% and 44%. Looking at the two outcomes examined in this paper, we see that rates of homicide and acquisitive crime (a composite measure that combines robbery, burglary, and motor vehicle theft) declined nearly 40% during the 1990s (Zimring, 2006). These major declines, remarkably, brought crime rates down to levels comparable to the 1960s. The geographic distribution of the decline was also quite surprising. Crime was down in all regions in the U.S., although the Northeast saw larger declines during this period. Crime also declined in both big cities (greater than 250,000) and smaller cities, and in both suburban and rural areas in nearly the same magnitude. Big cities are especially of importance here because they are often known for their higher rates of crime. During this period, however, large cities also saw equivalent decreases in crime. In sum, the relative magnitude, breath, and length of the decline has prompted social scientists to not only monitor trends, but also to identify factors that may cause crime to ebb and flow.

The unanticipated changes in crime rates during the past few decades has created a large amount of interest and subsequent research in the area of crime trends, ultimately leading to some thought provoking conclusions. Several contributing factors have been proposed, some of which have been agreed upon, and some of which are still being debated (see Baumer, 2008, for a review). In addition to the scholarly debate, the pronounced crime decline of the 1990s allowed policy makers and law enforcement personnel to claim responsibility for a trend that may have been explained better by shifts in the economy or by changes in demographic characteristics. The consensus reached, however, suggests that there are multiple causes underlying the fluctuation in crime across the U.S. and that simplistic and singular explanations will not suffice. The current research stems from the existing knowledge on crime trends by using commonly associated predictors to assess the nature of these trends in the first decade of the twenty-first century.

As explained above, U.S. crime trends have shifted a number of times during the past several decades. To put into context how remarkably flat the most recent decade has been, Figure 1 illustrates the fluctuation in national trends in homicide and acquisitive crime between 1960 and 2008. The acquisitive crime rate, per 100,000 population has been divided by 250 in order to include in on the same scale as homicide rates for the period. It can be seen from this figure there while there has been significant variation in homicide and acquisitive crime over the last 50 years, most of this variation has come before the most recent decade. It is also apparent that, for the most part, acquisitive crime and homicide track each other
fairly well over the period. Although there is some divergence during the 1980s and throughout the 1990s, the overall trends illustrated here are very similar.

![Graph of U.S. National Rates of Homicide and Acquisitive Crime 1960-2008.](image)

Figure 1: U.S. National Rates of Homicide and Acquisitive Crime 1960-2008.

By visually examining national crime rates, it is possible to determine that the 2000-2008 period is relatively flat in relation to the previous forty years. This leads to questions about how other commonly associated factors have changed during this period. Specifically, have factors often mentioned as covariates of crime rates, such as levels of unemployment, changed significantly during this period? Figure 2, and subsequent figures in the following sections suggest the answer is yes; unlike the apparent trends in crime, factors commonly thought to influence levels of crime, such as unemployment have not remained stable during the most recent decade. This disjunction between the variation in predictors and the variation in the outcome is what spurs the investigation of trends during the most recent decade in a multivariate context in order to determine what factors are significantly related.

In addition to describing crime trends over the last several decades in a historical context, the previous section illustrated the differences seen across periods in recent U.S. history. Figure 1 illustrates variation in both homicide and acquisitive crime rates that have been substantial up until the most recent period, at which point they appear to have flattened out. The following sections of this paper describe
which theoretical traditions many of the commonly used covariates in crime trends research may have
developed. Additionally covariates that may be more variable driven or opportunistic and provocative in
nature are discussed. Following this discussion, using prior research as a guide, commonly used covariates
will be included in a model predicting crime trends during the 2002-2008 period.

Figure 2: U.S. National Unemployment Rate 1960-2008.
CHAPTER 3
THEORECTICAL AND EMPIRICAL BACKGROUND OF CRIME TRENDS RESEARCH

While other research areas of criminology have been highly driven by theory (e.g., research on self-control theory), crime trends research is relatively atheoretical in its approach to explaining the connection between social, economic and criminal justice factors and changes in crime. While a number of commonly included measures stem from theory, several often considered factors do not have clear origins in extant theoretical work or are at least not well developed as such the crime trends literature. In addition to falling away from theoretically based measures, researchers have not considered the possibility of even larger social changes, perhaps on a national or even global scale, which have occurred over the past fifty years that may have had an impact on trends in violence and criminal behavior. The next section of this paper discusses criminological theories relevant to explaining aggregate level crime trends in relation to variables commonly included in crime trends research. It illustrates that a number of variables commonly used in crime trends research stem from sources other than theory.

Albeit supported by a rich background in criminological theory, recent studies of crime trends have began to pull further away from traditional measures of social disorganization and economic strain in favor of new and provocative explanations for the dramatic decline in crime witnessed in the 1990s. Factors such as the emergence of powerful and abundant crack cocaine markets have been proposed to be a major contributor to increased levels of violence during the early part of the decade (Baumer et al. 1998), leading some to speculate that a decline in crack may be responsible in part for the large declines in crime observed in the 1990s (Blumstein and Wallman, 2006). Additionally, and arguably a more sensitive subject, some have proposed that changes in abortion legislation during the 1970s led to smaller numbers of disadvantaged youths, which contributed to the decline (Donohue and Levitt, 2001). Recently, changes in childhood exposure to lead have been used to explain the decline as well (Nevin, 2007). While interesting, and intuitively persuasive, crime trends researchers are often criticized for taking advantage of this relatively loose connection to theory. An increasing amount of alternative proposals for the decline have developed, with few systematic approaches that incorporate a large number of variables which are based on theory. The discussion of theory and its relation to commonly included measures hopes to shed light on this issue in order to advance the study of crime trends.
While many of the covariates that have been included in the study of crime trends have not been drawn from formal criminological theories, changes in age structure can be connected to several theoretical perspectives and has been consistently connected to crime (Ferdinand, 1970; Cohen & Land, 1987; Lott 1998; Levitt, 2001; Phillips, 2006). One theoretical perspective, strain theory, may help explain the influence of age structure on crime through the disadvantaged position of youths in the labor market. Strain, identified as a disagreement between goals and the availability of legitimate means, induces individuals to explore nonconformist alternatives directly and indirectly by reducing the perceived legitimacy of conventional norms (Cloward and Ohlin, 1960). As economic conditions deteriorate, people who are forced out of the labor market, and/or face reductions in their wages may turn to income-generating criminal activity as a response. Whether out of frustration or need, those facing high levels of economic strain in their communities may be more likely to reject conventional behavior and engage in criminal activity (Merton, 1938).

In addition to their low status on the career ladder, youths often experience intense peer pressure to meet and achieve a certain status (Phillips, 2006). It is because of this disjunction between the means and the goals that youths may be drawn to criminal behavior. Although strain theory may explain the relationship between age structure and crime more clearly for acquisitive crime, it offers an explanation for violent crime as well. Strain experienced by youths can lead to high levels of frustration and aggression ending ultimately in violent behavior (Agnew, 1992; Felson, 1992).

Included in its relationship to strain and social control, age structure can be related to criminal behavior through the theory of cohort size which asserts that some behaviors may be more common among certain age groups as a result of the cohort size (Easterlin, 1978). Because of their size, large cohorts of young people may be subject to greater levels of competition in the labor force, which may led to higher levels of strain.

In addition to these economic disadvantages, large cohorts may also be less socially integrated into society because of the lack of supervision from parent, teachers, and other adults due to the high ratio of children to adults. In line with this perspective, age structure can be used to explain changes in crime through its affect on social control. Social control theory, as developed by Travis Hirschi, suggests that strong social bonds promote conformity. These social bonds are created through both social and familial attachment during childhood and young adulthood. It is during the ages of adolescence and young adulthood that these bonds are loosened and social control is weakened, allowing youths to rebel against authority through delinquency and criminal behavior (O’Brien and Stockard, 2006). As people mature, obtain gainful employment, get married, and form families, these social connections are once again
strengthened, leading to a decrease in anti-social and criminal behavior. As a result of the size of their population in relation to the other population, large youth cohorts may be subject to lower levels of social control which increases the propensity to commit crime.

In relation to contemporary trends, some experts predict that changes in age composition are not likely to influence crime rates during the next twenty years (Blumstein and Rosenfeld, 2008). They come to this conclusion because there has not been any evidence of dramatic shifts in the size of cohorts in recent years when looking at aggregate cohort sizes. This approach, however, does not take into the account the spatial distribution of young people. The distribution of youth populations varies across cities in the U.S., and year-to-year changes may also be different. It is important not to discount the role of the young population when considering contemporary crime trends.

Along these lines, it is expected that changes in the age structure of the population will produce corresponding changes in crime rates across both place and time. Places which experience an increase in the youth population relative to the older population may experience larger increases in homicide and acquisitive crime. The panel method being used in this paper is well suited to assess if and how changes in the youth population have an effect on different forms of crime.

Age structure has been conceptualized in a number of different ways in previous research including the percent of people age 15-29, percent 25-34, and percent of people age 15-34, and the lagged number of at-risk births (Donohue and Levitt, 2001; Phillips, 2006; Baumer, 2008). While it represents a simplistic version of what many have done, the current study departs from extant literature by using the ratio of individuals age 15-29 to individuals over the age of 40, excluding the percentage of individuals under the age of 15. This ratio is hypothesized to be a better fit than the conventional percent of the population age 15-29 because it considers the population which is subject to less social control because of their social ties in relation the population which is more likely to have strengthened bonds to conventional behavior. Older populations are less transient on average, than younger populations, they are also more likely to be better established economically and therefore less likely to engage in crime as well as improve levels of social control in the areas in which they live. Thus, trends in the ratio of the former to the latter should better capture the role that age structure plays in generating differential crime trends.

Two variables included in the current study which also have roots in social control theory are the percent of female headed households and percent divorced. While both have been discussed as indicators of strain or distress (e.g., LaFree, 1998), most typically these variables are considered as measures of the amount supervision to which youths in an area are subject. Households with only a single adult present, due to a divorce, or other means, are less likely to have time to devote to the supervision of children and
therefore may exert a lower level of social control. In context of the most recent decade divorce rates have remained at relatively high levels compared to decades past, which may have implications for levels of social control and ultimately levels of crime.

In addition to age structure, a number of other measures included in the study of crime trends can be traced to the conflict and strain perspectives of criminal behavior. Measures of unemployment, poverty, and income inequality have commonly been used in past research as explanatory variables, and can be thought of as the level of strain which a population experiences. The current study includes a measure of each of these in attempt to capture the level of strain which may be experienced by the population in each city.

Unemployment is theorized to be positively associated with crime. While the bulk of evidence from work conducted at the state, regional, or national levels has found support for this idea, at other levels of aggregation, decreases in unemployment are only associated with small decreases in property crime and appear to be unrelated to violent crime (Levitt, 2004). A review of the aggregate literature on the effects of unemployment found a wide range of conclusions in the literature, some positive, some negative, and many find no significant association at all (Kleck and Chiricos, 2002).

However, in a recent study using a sample of metropolitan areas, Stowell and colleagues (2009) find that falling unemployment is generally associated with falling violent crime rates except for that of aggravated assault. In another recent study, Rosenfeld and Oliver (2008) explore how these economic variables are associated with changes in violent crime since the 1960s through the middle of the present decade. The authors illustrate that short-term jumps in homicide and robbery can be explained by short-term variation in economic conditions as well as discuss the possible implications of the recent economic downturn (Rosenfeld & Oliver, 2008). While Arvanites and Defina (2006) found no impact of unemployment, they did find the gross state domestic product was related to both robbery and property crime rates at the state level. The reason behind these inconsistent results in the relationship between unemployment and crime rates is unclear, although one can surmise that it may be due to the different units of analysis employed across studies, differences in model specification, or time periods examined (Cantor and Land 2001, Greenberg, 2001). However, it is difficult to dispute theoretically that economic conditions may be in some way linked to crime across cities in the U.S. While a number of economic indicators are preferred, not all are available at the city level for every year in the study. The current study includes city unemployment rates for the period in question as a measure of economic conditions.

In addition to the theoretical perspectives above, a number of criminological theories could be used to guide crime trends research. The social disorganization perspective has provided the theoretical basis for
several of the covariates commonly used in crime trends research (see Land, et al 1990; Meithe, et al., 1991). Theories of social disorganization have long recognized that characteristics, such as unemployment, economic inequality, cultural conflict, and the breakdown of institutional control lead to increased amounts of crime. Shaw and McKay (1942) assert that it is the structural characteristics of the urban characteristics of the neighborhoods they observed, rather than the characteristics of the people in the neighborhoods that make them more crime prone. From these observations, more recent work has been done to clarify what characteristics can be measured and associated with levels of criminal behavior. For example, Sampson and Groves (1989) assert that social disorganization theory includes three commonly used structural characteristics (economic deprivation, residential mobility, and racial heterogeneity) that can be used to characterize the social organization of places. Changes in these dimensions of social disorganization, such as an increase in residential mobility or racial and ethnic heterogeneity, are theorized to affect levels of informal social control, community control, and levels of effective guardianship, ultimately leading to increases in crime and delinquency (Kornhauser, 1978; Sampson and Groves, 1989).

In line with the school of social disorganization theory, immigrant concentration has also been used in a number of prior studies on crime trends (Martinez, 2002; Ousey and Kubrin, 2009; Stowell et al., 2009). Immigration is theorized to be a disruptive force. The disruption is caused high levels of immigration, is due to the language barriers which and the cultural differences which are maintained when a diverse group of people live in proximity. These barriers and cultural differences have implications for the creation of social networks which influence levels of social control. Due to the lower levels of social control present in diverse areas higher crime rates are expected. Alternatively, non-criminological theories tend to believe the opposite is true. Due to the fact that those that immigrate do so in order to improve their own living conditions, they make be more motivated to improve their own circumstances and are therefore less likely to resort to crime when moving to the U.S. (Palloni and Morenoff, 2001). Ousey and Kubrin (2009) also find that increased levels of immigration may negatively affect levels of violent crime through by increasing intact family structures. Past research has elaborated on this relationship and has shown that the likelihood of criminal involvement increases across immigrant generations, meaning that first generation immigrants are less likely to be involved in crimes than subsequent generations (Hagan, Levi and Dinovitzer, 2008). Overall, much of research literature indicates a non significant or negative effect of immigration on both violent and property crime (Hagan and Palloni, 1998, Ousey and Kubrin, 2009; Palloni and Morenoff, 2001; Stowell et al., 2009). The current research uses a measure of immigrant concentration drawn from prior research to assess the relationship between immigration and crime rates across U.S. cities.
It is clear through the examination of this literature that measures of such things as economic inequality, social mobility, and racial heterogeneity should be included in the study of crime trends. Interestingly enough, measures of all three of these variables are rarely included in the study of crime trends. While most studies capture, in some way levels of economic inequality, many rarely include measures of all three. As an example, Raphael and Winter-Ebmer (2001) state-level examination of the effect unemployment rates on crime does not include measures income inequality or social mobility for each state. This is one of many studies which fall short when it comes to including a comprehensive list of covariates. The present study itself cannot claim to have included a comprehensive list of the covariates relevant to criminological theory; however it does include a relatively large number of covariates used in past research.

In line with previous research, several city characteristics that have been associated with recent crime trends in the U.S. are included in the present analysis. Consistent with prior research a measure of resource deprivation was created by combining a number of variables well known to be closely associated to one another (Land et al., 1990). As elaborated in Chapter 3, due to collinearity problems between many of the explanatory variables, and index representing resource deprivation was created by using the sum of the z-scores for each of the following variables: percent of the population in poverty, logged median family income, the Gini coefficient of income inequality, percent of female headed households, and the percent of the population which is non-Latino black. These variables have been shown in past literature, as well as through principal component analysis, to load statistically together across time and place. The combination of these scores into an index creates an appropriate measure of resource deprivation for use in the present analysis.

In addition to the demographic and economic characteristics of an area, two additional factors that have received a great amount of attention in relation to crime trends are changes in policing and incarceration. Both of these variables are related to deterrence theory through dimensions of severity of punishment and certainty of being caught. A sizable amount of resources are spent each year on policing and incarcerating over 6 million people across the U.S. While law enforcement officials are happy to say that it crime is under control due to their efforts, this relationship must be examined empirically. It has been common practice to include both measures of incarceration and police force size in crime trends research in order to assess their effects.

Researchers have examined how changes in both the size of the police force as well as the approaches utilized by police may have contributed to the decline seen in the 1990s. In a recent study of policing efforts across U.S. cities authors find that proactive policing leads to a significant reduction in robbery rates (Kubrin et al., 2010). It is expected by the deterrence perspective that larger numbers of police
increase the perception of arrest in the population of would-be offenders, leading to reductions in crime. However, many studies have examined the link between the number of police and their ability to control crime and have generated inconsistent results (Eck & Maguire, 2006; Levitt, 1997; Sampson and Cohen, 1988, Weiss and Freels, 1996). More recent research has found that changes in police force size do yield significant effects in the expected direction. The bulk of evidence suggests that those cities increasing their police force size, experienced greater declines in robbery, burglary, and motor vehicle theft during the 1990s (Baumer, 2008). The current study utilizes the Uniform Crime Report data, on number of sworn officers within each department to create a rate per 100,000 population. During a period of great growth for many areas included in the sample, it is seemingly important to determine if increasing the number of police officers in these areas proved to prevent increases in crime.

The second criminal justice factor that has been tied to crime trends in the U.S. is the increased use of incarceration. Incarceration has often been linked to crime and is thought to limit crime in a number of ways, including incapacitation and deterrence (Zimring and Hawkins, 1973). Scholars generally attribute incarceration’s effect on crime to the removal of offenders from the community, therefore preventing any further offenses that such criminals would have committed. The bulk of evidence supports the notion that the increased use of incarceration was responsible for a sizeable portion, perhaps 25 percent, of the crime decline seen in the 1990s. For example, Rosenfeld and Fornango (2007) estimate that rising incarceration accounted for nearly 23% of the decline in burglary and 19% of the decline in robbery during the 1990s, these estimates are generally consistent to those reported by others (see also Baumer, 2008, Levitt, 2004; Spelman, 2000, 2006). It has also been suggested that incarceration’s effect on crime may decline as incarceration reaches extremely high levels. This “diminishing return” effect has led researchers to explore this topic in more detail, looking at measures of both the “stock” and “flow” of incarceration and to consider non-linear effects (Baumer, 2008). Models including both measures of incarceration stock (i.e. the state incarceration rate per 100,000) and incarceration “flow”, (i.e. the state’s prison admission rate and the state’s prison release rate) are included in the current study to examine if changes in incarceration practices are significantly associated with crime trends during the present decade. Well known is the dramatic increase in incarceration in the U.S. during the past 30 years of our history, this has been tied to the crime drop in various ways in previous literature. But as we enter another period, one in which people may be less open to spending tremendous amounts of money on locking up a large percent of the population for extended amounts of time, it is important to see how this relates to crime trends in the most recent decade.

As an example of the atheoretical approach that some researchers have taken in their examination of crime trends, another dimension commonly related to crime trends, are measures of alcohol use and drug
market activity. Additionally, drug market activity has been tied to the rise in violence during the late 1980s when crime was rising (Blumstein and Wallman, 2006, Levitt, 2004). While evidence is mixed on the relationship between drug market activity and crime, the current study addresses the relationship in the context of the past decade (Baumer, 2008).

Alcohol use has also been related to violence in past literature (Fagan, 1990). However, the majority of studies that have been conducted have not included a measure of this in their work, the exception being Baumer (2008) which included a measure of percentage of fatal traffic accidents involving alcohol. Alcohol could lead to violent or property crime through the suppression of inhibitions, therefore populations which consume more alcohol may be more crime prone. Although Baumer found no evidence of a relationship between trends in alcohol consumption and violent crime, the current study utilizes a measure of alcohol use, derived from arrest data to determine if it is related to crime in the current decade.

In addition to missing a number of variables that may theoretically relevant and including some which seem to be variable driven, crime trends researchers have failed to explore broader explanations which may have an impact on crime trends across the country as a whole. A recent look at crime across large urban areas suggests that beneath a large amount of variability across places, exists a meaningful national trend (McDowall & Loftin, 2009). Additionally, there is increasing evidence that the decline in crime during the 1990s was not only present in the U.S. Other developed countries, such as Japan and Canada and parts of Europe appear to have witnessed declines similar in magnitude to that of the U.S. during this period (Roberts and LaFree 2004; Rosenfeld and Messner, 2009; Zimring, 2006). The shared nature of these trends suggests that there may be differences from generation to generation, or decade to decade in the propensity for violence and crime. In other words, there may be something much larger than rates of inequality and incarceration at play, which allows for societies to be more (or less) prone to criminality from one period to the next. One example of research that considers the possibility of a national or cross-national influence on crime rates examines the effect of increased democratization on violent crime (LaFree and Tseloni, 2006). In order to expand our knowledge of crime trends we must consider this type of argument as well. While the current research is not capable of exploring what these factors may be in depth, the analysis will make it possible to determine whether the effect of a national level trend is significant net of all the city level factors considered.

In conclusion, the current research utilizes the efforts of past research to identify those variables which are highly associated with crime trends during recent decades in the U.S. After a description of their variation during this period is undertaken it will be determined which, if any are related to crime trends in the most recent decade. Results from this, and supplementary analyses will be used to paint a picture of
most recent decade, then conclusions will be drawn on how well the included covariates are able to explain trends unfolding across cities in the U.S. and then limitations and directions for future research will be discussed.
CHAPTER 4

METHODS

To address the first goal of this thesis, I explore how commonly related economic, social, and criminal justice factors may be associated with crime trends during the most recent decade. To do this, I utilize a panel data comprised of 428 cities for which data is available for the years 2002-2008 ending up with a total of 2,996 city-years. Through the analysis of this dataset, utilizing the most appropriate methods available, the goal of determining the relationship between city characteristics and crime trends is possible. Second, through further analyses, I explore how the association between age structure and crime is affected by socioeconomic condition. Finally, using the properties of the temporal dummy variables included the fixed-effects models, elaborated on below, I examine the possibility of a national-level influence on crime trends, net of city factors.

4.1 Data and Sample

The sample used in this study was constructed by selecting all cities with populations of 50,000 and greater based on the 2005 version of the American Community Survey (ACS), a universe that includes 499 cities ranging in population size from 50,000 to over 8,000,000. The justification for use of this sample was to broaden the scope typically applied in crime trends research. Using ACS data, collected annually by the U.S. census is a strength of the current research since most previous research rely only on data interpolated between years in which a census was conducted. Since the goal is to address how year to year changes in the covariates are associated with year-to-year changes in crime, it seems inappropriate to assign a linear trend to many of the covariates which are used to explain yearly changes in crime. Although annual data from the ACS is only available for the last 4 years of the sample, including it is an improvement over strictly interpolated data.

The majority of cities in Illinois and Florida were removed because they do not participate in the Uniform Crime Reporting Program (UCR) for a number of years included in the study. Additionally, many of the smaller cities included in the ACS lack data for every year in the period from the UCR. Cities with any missing crime data were dropped from the sample. Due to this deletion, a total of 71 cities were removed from the sample, leaving a total of 428. In order to account for missing data on the predictor variables, the
period average of each was computed and put in place for missing values. The majority of the variables included had were not missing values for the cities included. However, a total of 16 cities were missing at least on component necessary to compute the age structure variable while 10 of these same cities were missing values for the percent of families living in poverty. The cities affected by this were primarily the cities between 50,000 and 100,000 population for which the estimated value included zero when the margin of error was taken into consideration. This is presumably due to small samples within these areas, when led to greater margins of error. Mean replacement was also used for Washington D.C. on the incarceration variables because it does not maintain a state-level prison. Mean replacement on such a small number of data points did not affect the results of the analysis. Additional analysis, available upon request, confirm that in a sample with the cases missing data removed (n=411) the results are unchanged.

In addition to the analysis conducted on the dataset containing 428 cities some analyses were conducted on a subsample of 359 cities for which UCR arrest rates were available. While the majority of results are not substantively different for the two analyses, the results from both are presented in the results section for purposes of comparison with prior research.

4.2 Measures

4.2.1 Dependent Variables

The data included in the analysis of recent crime trends comes from a number of sources. The dependent variables specified in the analysis are the homicide rate and acquisitive crime rate per 100,000 persons provided by the FBI’s Uniform Crime Reporting program. These variables were selected because homicide is accepted by many to be the most reliable of all crime types given the accuracy in police recording. The measure of acquisitive crime is rather distinct from the measure of homicide, and therefore of interest given the variety of explanatory factors that may influence trends in these variables. Acquisitive crimes are defined here as offenses committed for the purpose of obtaining things of value; the measure is the sum of the number of robberies, burglaries and motor vehicle thefts per 100,000 persons. All crime statistics were taken from the UCR for years 2001-2008. Although the period under study is 2002-2008, lagged measures for both the dependent variables and police for size, drawn from the UCR, are included, yielding a need for 2001 data for these measures as well. Population counts, used to create the crime rates and the police force size variable were taken from the UCR. To reduce skewness of the homicide measure, homicide rates were transformed into their natural log.
4.2.2 Explanatory Variables

The current study includes a number of covariates that have been shown to influence crime rates, including the logged population size, racial composition, percent female headed households, poverty rate, the Gini index of inequality, a ratio of the population ages 15-29 to 40 and over, and logged median family income from the U.S Census Bureau (Levitt, 2004; Rosenfeld, 2004; Zimring, 2006; Baumer 2008). These data were available for the years 2000 from the Decennial Summary files and for 2005-2008 from the ACS, therefore values for 2001-2004 were linearly interpolated. Linear interpolation between 2001 and 2004 was done by taking the average yearly change from 2000-2005 and adding it to the preceding year’s value in order to fill missing values for the years between measures.

As many of the covariates are highly correlated a principal components analysis was conducted on these variables in order to identify which variables commonly move together. This analysis was conducted for each of the periods and pointed consistently to the creation of two factors; resource deprivation and immigrant concentration. Results of the principle components analysis are available upon request. Using the results of the principle components analysis, measures of resource deprivation and immigrant concentration were created using a standardized additive procedure to create indices representing city characteristics. Consistent with prior research, resource deprivation is composed of the summed z-scores of each of the following: percent non-Latino black, percentage of families living in poverty, percent of female headed households, the Gini coefficient of economic inequality and the logged median family income (Land, McCall and Cohen, 1990). The method of summing the z-scores was used instead of using the weights generated by the principle components analysis for ease of interpretation. In practice, the correlation between measures created in each of these ways is extremely high and therefore this is not expected to affect the results. To confirm this, the correlations between the two differently constructed measures of resource deprivation and immigrant concentration were 0.808, and 0.964 respectively for the year 2002.

Additionally, an immigrant concentration index was created including the percentage of residents who were born outside the U.S. and the percentage Latino (Morenoff and Sampson 1997, Stowell et al. 2009). As Baumer (2008) points out, it would be favorable to create measures which capture the “flow” of immigration into and out of areas. However, since one purpose of this study is to evaluate how previously used covariates relate to crime trends during the most recent decade, annual data on the percent of the population which are foreign born and the percent which are Latino are used to construct level of immigrant concentration which is present in a given year.
For the analysis involving the subsample of cities with available arrest data, arrest measures were created for both drug and alcohol related offenses. These measures were created by selecting the total number of arrests coded as the sale, manufacture, or possession of all drugs excluding marijuana. The measure of alcohol related offenses includes arrests for driving under the influence, liquor law violations, and general drunkenness. These counts were converted into rates per 100,000 population provided by the UCR.

The measure of drug arrests have been used in previous research as a proxy for city-level difference in crack involvement (Baumer et al., 1998; Fryer et al., 2005). While the crack epidemic has fallen dramatically from its peak in the early 1990s there is no doubt that drug markets continue to exist in cities throughout the county. These markets create a situation where violence may be the only form of retaliation for theft or dishonesty. In that way, drug markets may be closely tied to levels of violence and rates of robbery within cities. In the same manner, alcohol use has long been associated with violence; perhaps even more so than drug use (Parker and Auerhahn, 1998). For that reason, the current analysis also includes a measure of alcohol related arrests per 100,000. Because measures of alcohol consumption are not available at the city level the current study uses the alcohol related arrest rate as a proxy for alcohol consumption of a population. This measure is different than one used in previous research, the percentage of traffic fatalities involving alcohol, which was shown not to significantly influence crime trends (Baumer, 2008). Because of their relation to proactive policing, as well as possible levels of alcohol consumption, a previously unused measure of arrests involving any alcohol offense are included in the current study. Although the arrest rate may be a measure of concepts other than alcohol consumption, such as police behavior, it is also thought to measure levels of disorder and misbehavior, severe enough to warrant arrest, within a city. The arrest measures included here are used to represent general amount of drug activity and alcohol use present in the city from year to year.

Additional measures included as predictors of these models came from other sources including lagged police force size, as well as unemployment rates collected annually for each city. These variables have been shown to be potentially important predictors in the change in crime rates in past research, and also happen to be some of the few variables that can be collected annually for the period in question (Levitt, 2004, Baumer, 2008). Police force size is measured as the total number of sworn police officers per 100,000 population from the 2001-2007 Police Employee (LEOKA) program. Annual unemployment rates for the cities in the sample were obtained from the Bureau of Economic Analysis Local Area Unemployment Statistics (LAUS) program.
Changes in incarceration practices have long been connected with changes in crime in prior research (Zimring and Hawkins, 1973, Spelman, 2008). For the purposes of this study, overall incarceration rates, admissions rates, and release rates were taken from the annual *Prisoners in 2001-2007* reports from the Bureau of Justice Statistics. To evaluate the difference between measures of the overall “stock” and “flow” of incarceration, I estimated models which included only the lagged state incarceration rate as well as models which included both the admissions and release rates. Although, substituting one measure of incarceration for the other did not affect the results significantly, measures of prison admission and release rates improved the fit of the model and therefore the results presented include these measures.

Missing most noticeably from the current analysis is a measure of gun availability which has been linked to levels of violence in prior research (Cook, 1983). While proxy measures of gun availability have been debated, a measure shown to be a valid which was not included in the current analysis is the percentage of suicides committed with guns (Kleck, 2004; Baumer, 2008). While it is a limitation of the current research not to include this measure in the analysis, gun availability has been shown to be relatively stable over time, and it is most likely that its inclusion would not affect the results significantly over this short time period. Additionally, as Kleck (2004) states, the measure of percentage of suicides committed with guns has been shown to be an invalid indicator of gun ownership across time. This concern, of omitted variable bias is mitigated by the use of fixed effects.

Additionally, using state incarceration rates in a city level analysis may also have an effect on the results. Since regression assumes that each observation is independent of each other, the fact that cities within the same state have the same value for the state level data may have an effect on the results. One way to correct for this would be to conduct a multi-level model with cities imbedded in states; this approach however becomes increasingly difficult when analyzing panel data. Furthermore incarceration may be expected to affect homicide and acquisitive crime rates in different ways. It would be preferable to have annual crime-specific incarceration measures for each of the 50 states in order to assess the affect of incarceration practices; however this data is unavailable, therefore this study uses one year lagged overall admission and release rates to measure the effect of incarceration.

Descriptive information for all variables is included in Table 1. The list of covariates included in the current study covers many of the covariates commonly used in the study of crime trends; however, the list of covariates analyzed in this study is certainly incomplete. To further protect the results from the effect of unobserved variables, the current analysis exploits the strengths of the panel dataset and conducting fixed-effects models described further in the next section.
4.3 Methods

To determine the association between the covariates and levels of crime within cities over time I constructed a cross-section time-series data set containing repeated measures for each of 428 cities in the sample for a total of seven years. The total number of cases to be analyzed in the first sample becomes 2,996 city-years. In a subset of 359 cities in which UCR arrest data was available for the years 2001-2007 two additional variables were added into the model: the alcohol-related arrest rate per 100,000 and the drug-related arrest rate per 100,000 population.

Previous research on crime trends has employed a wide range of statistical techniques in the analysis of panel data. One approach, growth curve modeling, uses a form of multi-level modeling to examine the effect of time and other regressors on the dependent variable (Kubrin and Herting, 2003; Rosenfeld and Fornango, 2007). The second common approach to analyzing crime trends data, developed by econometricians, uses pooled time-series data and introduces fixed effects for time points and either fixed or random effects for cases (see Baumer, 2008; Stowell et al. 2009, Kubrin et al. 2010 as examples). While each of these methods has their own advantages, one in particular appears to be the most appropriate for the current analysis. Although one clear disadvantage of using a fixed-effects approach is the inability to compute coefficients for time-invariant covariates, due to its ability to more effectively control for unmeasured variables this approach is used in the current analysis (Phillips, 2006).

A two-way fixed-effects approach is adopted to estimate the relationship between changes in each of the covariates and changes in crime. While some previous research has been conducted using random-effects models in order to obtain estimates for time-invariant variables, such as region, these models run the risk of omitted variable bias by not including the city effect variables (Phillips, 2006). A two-way fixed-effects model, on the other hand, is appropriate to determine the relationships being examined because it controls for all unmeasured city characteristics as well as omitted aspects of the period common to all cities; providing the best test of the factors associated with changes in the crime rate. By including city fixed effects, the variation in crime rates caused by unmeasured factors that vary between places but are constant over time is removed. Additionally, by including year fixed effects, the influence of shared factors that cause year-to-year changes in crime rates across cities is removed (Allison, 2006). In addition to controlling for factors shared across all cities, use of year effects addresses the second goal of this paper, to examine the possibility of a national-level effect which influences crime trends across all cities in a given period. This year effect, measured by the coefficients of the year dummies can be thought of as the average impact of national-level variables on the city crime rates net of city-level factors (McDowall and Loftin, 2009). If the
coefficients for the year dummies are significant, there is evidence of an unmeasured, significant, national-level influence on crime trends during the year in question. If evidence of a national level trend is found, it can be suggested that although city crime rates exhibit significant variation, they do in fact, follow a nationwide trend.

Several additional methodological issues were addressed in the analysis. Including the lagged outcome in the model removes serial correlation in the within-panel errors of the outcome. Although there has been some debate on the issue as to whether one should follow precedent in prior research by including a lagged measure of the dependent variable in the model, this study will employ this method, as it is reasonable to expect that previous levels of crime, for many reasons, may influence future levels of crime (Kubrin et al., 2010). Additionally, although past research has also included a linear trend indicator in their models, preliminary analyses show that its inclusion does not improve model fit, and therefore the trend term was not included in the presented analysis (Raphael and Winter-Ebmer, 2001; Baumer, 2008; Rosenfeld and Messner, 2009). Furthermore, the issue of stationarity has been raised in the analysis of crime trend data. If crime rates and explanatory variables are stationary than proceeding with traditional panel models is appropriate, if this is not the case however, non-stationarity may lead to spurious regression results (Bushway and McDowall, 2006; Spelman, 2008). An approach to assure stationarity that has been employed in the crime trends literature is to first difference all variables and to estimate panel models using the transformed variables (Rosenfeld, 2009; Rosenfeld and Messner, 2009; Stowell et al. 2009). However, taking this transformed variable approach has other implications, such as suppressing long-run trends that may exist between variables, known as cointegration (Baumer, 2008; Spelman, 2008). The complexities of exploring the existence of cointegration is enormous and beyond the scope of this paper (see Spelman, 2008, for an example). It is mentioned however, because it may have an effect for the specified results.

Preliminary tests of the data used here indicated the presence of heteroskedasticity, cross-sectional dependence, as well as the presence of first order autocorrelation. In order to correct for these issues, the results reported reflect models using the XTGLS function in STATA with standard errors which are robust to panel-level heteroskedasticity and autocorrelation. It is important to note that these results are fairly robust to alternative specification and were similar to those obtained using the XTREG, robust option, and the XTPCSE option in STATA. The small differences present across specification are due to the specific estimation of standard errors and are discussed in the results section. There are two reasons that XTGLS was chosen over XTREG and XTPCSE. First, neither of the OLS based specifications will estimate a coefficient for a time invariant measure, which would make the investigation of the interactions of interest infeasible. Additionally, OLS estimates such as XTREG and XTPCSE have been shown to provide
inefficient estimates if using a large sample and a small time series (Beck, 2001; Wiggins, 2001). Therefore, results from the generalized least squares estimation using fixed-effects dummy variables are presented in the next section and results from the alternative specifications are discussed.
CHAPTER 5

RESULTS

5.1 Description of Trends

One main goal of this paper is to describe the current crime trends in cities unfolding across the United States. To that end, after large declines across all major crime types in the U.S. during the 1990s, crime in the present decade is incredibly flat. While the 1990s brought declines as large as 40% for many crime types, crime rates for homicide and acquisitive crime have remained quite low and remarkably stable during the more recent period.

Figure 3 illustrates average observed homicide rates across different size cities for the period of 2002-2008. The average homicide rate for the entire sample of cities for the period is 7.42 per 100,000 population. If one looks over the whole period, there is no evidence of a significant trend in either a positive or negative direction. In fact, the average homicide rate in 2002 (7.1088) is almost identical to that of 2008 (7.1866).

Figure 3 allows us to observe a slight year-to-year increase in the homicide rate during 2005-2006, consistent with PERF’s report finding an increase in violence during this period. However, the trend is seen to reverse itself during the most recent years, creating a non-linear trend over the entire period. Interestingly, the trend differs according to different city sizes included in the sample. Medium size cities, defined here as cities with a population of between 83,000 to nearly 140,000, witnessed a larger spike in homicide rates during 2005 and 2006. Again this is consistent with the observations in the PERF report that warned of a wave of violence (PERF, 2006). Opposite of PERF’s predictions, however, homicide rates actually decreased between 2007 and 2008 across the majority of cities in the sample. One exception is that of small cities, with a population less than 83,000, as such cities witnessed a relatively small increase of homicide rates between 2005 and 2006, remaining at that higher level, or near 5.17 per 100,000, when comparing these rates to those of larger cities for this period, homicide rates for smaller cities were much lower.
Using a fixed-effects framework it is possible to generate figures which are identical to the ones created by averaging crime rates for each year. Using the XTREG, FE option in STATA the constant term is converted to the average crime rate for the omitted year variable. The remaining coefficients can be combined with the constant term in order to derive average crime rates for each year in the period. The advantage of using the fixed-effects method to generate these results is it is possible to conclude that there are significant year-to-year increases for a number of years in the period. By alternating the year variable which is omitted from the model it is possible to examine whether significant changes from one year to the next exist. Results suggest that there was a significant increase in homicide between 2004 and 2005 as well as 2005 and 2006.

Now, turning to acquisitive crime during the period of 2002 through 2008, trends in acquisitive crime appear to remain relatively stable for the majority of the period examined here. While smaller cities witnessed a small rise in the acquisitive crime rate during the early years of this decade, it was countered with a decrease in the most recent years which actually led to a decline in acquisitive crime overall. Evident in Figure 4 is a decline in acquisitive crime across all city sizes during the later years of this period. The average acquisitive crime rate in 2002 was 1805.66 per 100,000 population, and by the end of the period the average rate had decline to 1693.92 in 2008. The average decline for the entire sample is 6.2% from 2002 through 2008. Using the fixed effects coefficients as estimates for the year-to-year change in acquisitive crime, it is possible to confirm, that on average, changes during the first 3 years of this period were not statistically

Figure 3: Average Observed Homicide Rates Across U.S. Cities 2002-2008.
significant while the more dramatic decline from 2006 through 2008 was in fact, significant. Overall, the declines over the period are between a 4.3% decline in acquisitive crimes for medium cities, to a 7.7% decline in the largest cities.

![Figure 4: Average Observed Acquisitive Crime Rates Across U.S. Cities 2002-2008.](image)

While it is important to have a good sense of how crime rates have changed during the most recent period, it is also important to know what changes is other factors may have affected changes in these trends across the U.S. during this period. The next section discusses the changes in the covariates during the 2002-2008 period and how they might be expected to influence crime rates.

### 5.2 A Description of Covariates since 2000

While it has been shown that compared to past periods the crime trends during the past decade have been relatively stable on average. This however, masks the enormous amount of variation across cities. It is this variation across time and place that criminologists must explain through the use of explanatory variables. Additionally, although crime rates have remained relatively stable during this period, should this have been expected given changes in the covariates commonly associated with changes in crime? The following section explores the variation present in the explanatory variables in order to assess if this period
of stability could have been expected. After a description of the trends in the explanatory variables is undertaken, the paper will move into the multivariate analysis in order to determine which variables significantly affect crime trends during the 2002-2008 period.

![Figure 5: Comparison of Interpolated Versus Annually Collected Data](image)

By looking at the within-city standard deviations in Table 1 it is possible to determine which of the covariates have changed most dramatically during the 2002-2008 period. The within-city standard deviation represents the change exhibited within cities across time during this period. Some, such as percent divorced and police force size vary less, in relation to their mean, than others, such as the unemployment rate and the incarceration variables. Overall, many of the variables included in the current study do vary significantly during the 2002-2008 period indicating that if crime is affected by these variables than it too, should vary accordingly.

While several of the values for the demographic characteristics had to be linearly interpolated between 2002-2004, one strength of the current analysis is that it utilizes annual data available from the ACS for the years 2005-2008. A visual inspection of these variables indicates that these variables do shift in ways which are not well captured by linear interpolation. Year to year measures of age structure and immigrant concentration indicate relatively large shifts between certain years. Whether due to estimation procedures undertaken by the census bureau, or actual shifts in city characteristics, these shifts would be otherwise lost in the period between decennial censuses. Exploiting the strength of annual data may be paramount in finding a relationship between the social and demographic characteristics and crime.
trends. Figure 5 illustrates the potential loss of data due to the lack on annual estimates for many of the measures commonly used in the study of crime trends. The current analysis utilizes the recently available annual data in order to more fully explore the effects of year to year changes in city characteristics on crime trends.

Figure 6: Average Unemployment Rates for U.S. Cities 2000-2008.

Figure 7: Variation in Unemployment Across Select U.S. Cities 2000-2008.
Looking at the variables for which a complete set of annual data is available, both the unemployment and criminal justice variables exhibit a significant amount of variation during this period. Figure 6 provides further illustration of the average variation in the unemployment rate across U.S. cities during the most recent decade. Considering unemployment’s supposed effect on crime, it is feasible that expect that crime trends would tend to react to the swings in unemployment during this period. On average, Figure 6 illustrates that unemployment rates tend to move together consistently across different size cities. This fits in with the presence of national or cross-national influences on conditions across the county. While the current research does not examine how covariates themselves may be influenced by a national trend, this is a possibility that future research should examine. It is feasible that unemployment rates across U.S. cities are a function of both the national factors as well as local industry conditions. While on average these trends tend to move in similar ways, this illustration masks a large amount of variation across individual cities as shown in Figure 7. Cities such as Detroit, saw large increases in unemployment during the first years of the twenty-first century and remained at these high levels for several years, only to increase even further during the last year of the period. At the same time Detroit was experiencing a large growth in unemployment, Yuma, Arizona witnessed a slight decrease, but it also witnessed an increase between 2007 and 2008. Conversely, Pleasanton California witnessed lower than average unemployment rates throughout the entire period, with some fluctuation occurring during the 2004-2006 period. This figure helps to illustrate that while, on average, cities face similar changes in unemployment, many face very different realities which must be accounted for in criminological research.

In addition to unemployment rates, the state prison admission and release rates show signs of fluctuation during the most recent decade. Considering that incarceration has been determined to be a significant factor in shaping recent crime trends, knowledge of variation in prison admission and release rates can lead to predictions regarding the direction of changes in during the same period. As show in Figure 8 overall, the rate of person being admitted to and released from prison has increased from 2002-2008. These variables, while they tend to move together across the period, have different presumed effects on the direction of crime trends. Prison admissions are assumed to have a negative effect on crime, with higher admissions rates leading to lower levels of crime. At the same time however, greater numbers of people are being released from prison, back into the communities from which they came, which may lead to increases in crime. While the net effect of these two variables is hard to determine in this descriptive context, it is possible that one, more than the other, influences crime across time, this can be addressed in the next section utilizing multivariate analysis.
A final measure the criminal justice apparatus, the number of police officers per 100,000 residents has also changed during this period. While the average change in police force size for this large sample of cities, is not as large as described by Fox and Swatt (2008) there is evidence of a small decline (1.6 percent) during 2002-2007 before a more substantial increase (2.6 percent) between 2007 and 2008. These findings are consistent with the authors’ analysis, which points out that the majority of the decline was seen in cities with a population over 250,000, while smaller cities have remained relatively stable during this period. Police are believed to be the first line of defense against crime and clearly reducing their numbers is expected to lead to increases in crime. Conversely, the increase in police force size, during the last year of the period may be seen to have a crime reducing effect.

Overall, this description section provides insight into the past decade in terms of how the commonly associated variables changed. Through this investigation it is possible to predict that some of these changes could lead to changes in crime as well. The next section explores, in a multivariate context, which of these factors influence trends between 2002 and 2008 across U.S. cities.

5.3 Two-Way Fixed Effects Results

The bi-variate correlations between the variables included in the analysis pooled across the 428 cities are displayed in Table 2. Significant relationships among the crime types and independent variables exist
and are comparable to previous research. Consistent with research in the area of immigration, higher levels of immigrant concentrated are negatively correlated with homicide and levels of acquisitive crime. Similarly, higher rates of prison admission are associated with lower rates of homicide and acquisitive crime, although the relationship is much stronger for acquisitive crime. As expected, larger populations are associated with higher crime rates, and similarly, so are higher levels of resource deprivation, percent of the population divorced, and unemployment rates. These results are consistent with past research in the area of macro crime trends.

Table 3 presents the results from the two-way fixed effects estimation of the effects on 2002 through 2008 yearly changes in homicide and acquisitive crime rates of yearly changes in the explanatory variables. Included in Table 3 are two models for each crime type for the period 2002-2008. Models 1 and 2 include all the covariates discussed available for the sample of 428 cities across the U.S. for the period. Models 3 and 4 of the Table 3 include the arrest measures available for the majority of the cities included in the original sample (n=359), as well as all other explanatory variables. This progression of models is done in order to try to present a more complete list of variables that have been used to explain crime trends in past studies. Although adding in the arrest measures to the model increases the goodness of fit, neither of the arrest measures significantly explain changes in homicide during this period. Nor does adding them into the model dramatically affect the coefficients for the other variables. Drug arrest rates are however, shown to be positively related to acquisitive crime. One variable which is affected by the inclusion of the arrest measures for acquisitive crime is age structure, which is reduced just to a point of non-significance in model 4. This may be explained by the moderate correlation between drug and alcohol-related arrests and the proportion of the population aged 15 to 29 within the sample of 359 cities; .2018 and .2193 respectively.

Several variables emerge as significantly related to year-to-year changes in the homicide rate. The age structure variable emerges as positive and significant at the .05 level, indicating that cities whose younger populations grew faster relative to their older populations witnessed larger increases in homicide during this period. In comparison to the coefficients for the other variables, the one for age structure is relatively large. Considering the small amount of variation in the trend to begin with this still only represents a small increase in the overall homicide rate, however, it is statistically significant. In addition to the age structure variable, changes in resource deprivation was positively associated with the changes in the homicide rate. City population was negative and significant at the .01 level, indicating that cities which saw larger increases in their population witnessed smaller increases in homicide. Additionally, the immigration concentration variable also emerged as positive and significant. Places with larger year-to-year increases in foreign-born population and percent of the population Latino had larger increases in the homicide rate during the 2002-
In addition to the demographic variables that were shown to be significantly related to crime trends during the 2002-2008 period, the lagged prison admission rate was also associated with changes in the homicide rate, in the predicted, negative direction. Police force size also exhibits a significant, negative association with homicide trends, leading to the conclusion that cities which retained more, or lost less of their police force also witnessed smaller increases in homicide.

Looking at model 3, for homicide, the coefficients for many of variables remain relatively unchanged when arrest rates are included. The three exceptions to this, in the case of homicide, are the effects of changes in the police force size, the prison release rate, and immigrant concentration. Their small effects seen in model one are reduced to a point of non-significance when arrest rates are included. In the case of police force size, this is most likely due to the presumed correlation between the number of police and the number of arrests which can be made. It is less clear in the case of prison release rates and immigrant concentration why the inclusion of arrest measures would attenuate their effects. This progression of models, does however illustrate the importance of including a large number of relevant covariates when researching crime trends.

Turning attention to the results for acquisitive crime rates, again we see a number of predictors found to be significant predictors of year-to-year changes in crime. The first, changes in population size were shown to be negatively associated with changes in acquisitive crime. Cities which grew by greater amounts during this period also witnessed larger declines in acquisitive crime. This is supported by the information provided in Figure 4. Large cities, which have large year to year changes in population, witnessed larger declines in acquisitive crime than cities with smaller populations. The age structure variable was found to be significantly related to increases in acquisitive crime. Places which had year-to-year increases in the youth population had smaller declines in acquisitive crime during the period. Although this coefficient does not remain significant in the model containing arrest rates, it does have a sizable and positive effect on acquisitive crime.

In addition to the demographic characteristics, three of the criminal justice variables were shown to be related to the acquisitive crime rate in this sample of cities. Both the prison admission and prison release rates were shown to impact acquisitive crime in the expected directions. While the release rate drops out of significance when the arrest variables are included, the prison admission rate continues to exhibit a negative association on acquisitive crime. This indicates, that cities, in states which increased prison admissions over the 2002-2008 period witnessed relatively larger decline in acquisitive crime. In subsequent analyses, not presented in this paper, comparisons were made between models containing the state stock incarceration rate per 100,000 to the models presented here. Models containing the prison admissions and release rates...
were slightly better at explaining the variation in the acquisitive crime rate than those containing only the incarceration rate. Despite the very high correlation with the prison release rate, the coefficient for the prison admission rate per 100,000 remains significant and in the expected direction. While the effect was much larger for explaining changes in the acquisitive crime rate, the coefficient is in the expected direction, and statistically significant for the homicide rates as well. Overall, consistent with prior research, a number of variables were shown to be associated with year to year changes in homicide and acquisitive crime in these models.

It is important to note that the findings described here are contingent of the specification used. As discussed briefly in the methods section there are a number of ways to estimate these fixed effects models, each with their own caveats and inefficiencies. Because a major goal of this paper was to further explore the relationship between age structure and crime, and to determine how this relationship is affected by levels of other covariates, feasible generalized least squares regression was used instead of OLS. In addition to the models presented in Table 3, models were run using both XTREG and XTPCSE in order to determine the robustness of these findings when using OLS estimators. Evidence from these additional models indicates that several of the findings may not be robust across specification. This may due to the fact that OLS estimators have been shown to be inefficient when using panels with short time series. However, in this thesis I try to take into account the available evidence in its entirety, in order to drawn the most accurate conclusions.

In the case of homicide a number of covariates which had comparably small coefficients in the models presented were found to be insignificant in the OLS specifications. While the coefficients remain small and relatively unchanged across specification, the difference in the estimation of the standard errors leads to the differences in significant findings. Specifically, the coefficients for resource deprivation, population size, both the prison admission and release rate, and police force size variable were reduced to the point of being non-significant. In the case of acquisitive crime, the results across specifications are more stable. The only coefficient seen to be affected by differences in the estimation procedure used is that of the prison release rate which is reduced to being non-significant. It is possible that the results are more stable in the case of acquisitive crime because the model proves to be a better predictor of changes in this crime type than it is of changes in homicide during this period. This illustrates the need for researchers to be aware of the caveats of the procedures they are using to estimate relationships in panel data. Each estimation procedure has its own conditions what must be satisfied in order to produce reliable and efficient estimates. By looking across these specifications it is possible to draw some conclusions on which factors may have mattered most during the past decade.
Coefficients for both the age structure and immigrant concentration variables were found to be robust across all specifications, and are considered to be the most significant contributors to changes in homicide rates during the past decade. Similarly, findings for the age structure variable and population size were robust in the case of acquisitive crime and are considered to be the most consequential. These findings will be discussed in more detail in the conclusion section.

As shown above, the age structure variable was seen to contribute significantly to both the homicide rate, as well as the acquisitive crime rate for the sample of 428 cities. In order to explore under what conditions changes in the age structure affect changes in crime, several additional models were run with interaction terms included in line with past research (Phillips, 2006). These interaction terms were created by computing the average levels of several of the covariates for each county over the entire period and multiplying by the age structure variable. Results from these models are shown in Table 4.

Results in Table 4 examine whether or not the positive association between age structure and crime, shown in table 3, is affected by socioeconomic conditions. The models for homicide indicate that changes in the age structure are significant at average levels of resource deprivation, immigrant concentration, population size and unemployment. Several significant interactions between age structure and levels of socio-economic characteristics emerge. For homicide, a significant positive interaction is seen between changes in age structure and levels of unemployment. This indicates that there is evidence that increases over time in the youth population have a stronger association with homicide rates in cities with higher than average levels of unemployment. Additionally, the interaction with population size indicates that the age structure variable has a stronger negative association with homicide in small cities will this negative effect is not as pronounce in average size cities and even weaker in large cities. These findings are consistent with previous findings at the county level (Phillips, 2006). In addition to the variables tested in past literature, the current study examines how the association between age structure and homicide is affected by levels of immigrant concentration. Results indicate that the affect of age structure on homicide is significant at average levels of immigrant concentration; furthermore this association becomes stronger in areas with higher levels of percent foreign born and percent Latino. This finding may provide some additional support for the findings that second generation immigrants tend to have a violence inducing effect while first generation immigrants tend to reduce crime.

Similarly, for acquisitive crime, changes in the age structure variable had a significant impact in cities with average levels of resource deprivation, immigrant concentration, population size, unemployment as well as divorce. A significant interaction between age structure and average levels of resource deprivation indicates that the positive association between age structure and acquisitive crime increases in areas which
are relatively deprived. Additionally, although the age structure variable is negatively associated with acquisitive crime in average size cities, this negative relationship is much weaker in larger than average cities. Furthermore, the negative association between age structure and acquisitive crime seen at average levels of divorce becomes much weaker in areas which have high levels of divorce.

Overall, the analyses point to a number of the commonly associated variables when looking at crime trends during the recent period. Again, the trends themselves remain at remarkably low levels with little indication of and dramatic fluctuations. Interestingly, a number of the commonly associated variables did not turn out to be significant for this sample during this time period. One possible reason for this could be the existence of a national trend which is not captured by the city-level differences captured by both the covariates and the city dummies included in this analysis. McDowall and Loftin (2009) examine this issue in a fixed effects framework and conclude that a meaningful national trend, which operates across the nation’s cities, does exist. Using the authors’ analysis as a guide, it is possible to further examine the year dummies included in the fixed-effects analysis of homicide and acquisitive crime rates during the period under examination. Table 5 shows that for homicide, for every year in the analysis, that the state-effect dummy variables are significant. This result indicates that, net of all city level effects, the average impact of some national-level variable(s) on changes in homicide is significant. Furthermore, while the coefficients for the year dummies are not significant for every year when looking at acquisitive crime, they are for the last two years in the period, the two years in which we saw the greatest declines in acquisitive crime. This use of a newly developed analytical technique leads to some additional questions for crime trends researchers to consider. These questions will also be addressed in the conclusion section.

Overall, cities in the U.S. are experiencing levels of homicide that are remarkably low when compared to previous decades. Additionally acquisitive crime rates have also remained very low and show evidence of continuing a slight decline during the present decade. Several of the covariates are significantly related to the changes in crime seen during the past decade, but there is evidence that something larger, such as a national or cross-national trend may also explain the low levels of crime being experienced by cities across the U.S. A discussion of the trends as well as the variables associated with them is included in the conclusion section. In addition discussion of the results, the importance of theory within research is highlighted with an eye towards improving the state of knowledge on crime trends. Following this, the limitations of the current research and possible directions for future research to take are discussed.
Table 1. Descriptive Statistics for Variables Included in Analysis of Recent Crime Trends (N=428).

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Overall SD</th>
<th>Within-City SD</th>
<th>Between-City SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCR Homicide Rate per 100,000</td>
<td>7.42</td>
<td>8.85</td>
<td>3.03</td>
<td>8.32</td>
</tr>
<tr>
<td>UCR Acquisitive Crime Rate per 100,000</td>
<td>1743.60</td>
<td>921.09</td>
<td>272.30</td>
<td>880.80</td>
</tr>
<tr>
<td><strong>Explanatory Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Deprivation Index</td>
<td>0.00</td>
<td>2.31</td>
<td>0.76</td>
<td>2.19</td>
</tr>
<tr>
<td>Immigration Concentration Index</td>
<td>0.00</td>
<td>1.78</td>
<td>0.32</td>
<td>1.76</td>
</tr>
<tr>
<td>Logged Population</td>
<td>11.81</td>
<td>0.72</td>
<td>0.06</td>
<td>0.72</td>
</tr>
<tr>
<td>Ratio of Population Aged 15-29 over Population Aged 40 and Older</td>
<td>0.63</td>
<td>0.26</td>
<td>0.08</td>
<td>0.25</td>
</tr>
<tr>
<td>Percent Divorced</td>
<td>11.87</td>
<td>2.78</td>
<td>1.60</td>
<td>2.27</td>
</tr>
<tr>
<td>City Unemployment Rate</td>
<td>5.66</td>
<td>2.06</td>
<td>0.94</td>
<td>1.84</td>
</tr>
<tr>
<td>Lagged State Prison Admission Rate</td>
<td>246.80</td>
<td>96.42</td>
<td>21.59</td>
<td>94.06</td>
</tr>
<tr>
<td>Lagged State Prison Release Rate</td>
<td>238.27</td>
<td>94.87</td>
<td>22.06</td>
<td>92.36</td>
</tr>
<tr>
<td>Lagged Police Force Size</td>
<td>202.83</td>
<td>91.05</td>
<td>14.59</td>
<td>89.97</td>
</tr>
</tbody>
</table>
Table 2. Correlation Matrix N=428

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 UCR Homicide Rate per 100,000 Population</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Acquisitive Crime Rate per 1000,000 Population</td>
<td>0.678**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 UCR Homicide Rate per 100,000 Population T-1</td>
<td>0.889**</td>
<td>0.658**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Acquisitive Crime Rate per 1000,000 Population T-1</td>
<td>0.663**</td>
<td>0.956**</td>
<td>0.672**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Resource Deprivation Index</td>
<td>0.673**</td>
<td>0.592**</td>
<td>0.668**</td>
<td>0.595**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Immigrant Concentration Index</td>
<td>0.079**</td>
<td>-0.08**</td>
<td>0.073**</td>
<td>0.076**</td>
<td>0.104**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Logged Population</td>
<td>0.295**</td>
<td>0.332**</td>
<td>0.31**</td>
<td>0.342**</td>
<td>0.326**</td>
<td>0.089**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Age Structure Ratio</td>
<td>0.041*</td>
<td>0.027</td>
<td>0.013*</td>
<td>0.023</td>
<td>0.019</td>
<td>0.007</td>
<td>0.0371*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Percent Divorced</td>
<td>0.233**</td>
<td>0.389**</td>
<td>0.235**</td>
<td>0.397</td>
<td>0.232</td>
<td>0.301**</td>
<td>0.091**</td>
<td>0.332**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 City Unemployment</td>
<td>0.428**</td>
<td>0.442**</td>
<td>0.426**</td>
<td>0.431**</td>
<td>0.385**</td>
<td>0.173**</td>
<td>0.075**</td>
<td>0.14**</td>
<td>0.109**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 State Prison Admission Rate T-1</td>
<td>-0.038*</td>
<td>0.101**</td>
<td>-0.039*</td>
<td>0.102**</td>
<td>0.172**</td>
<td>0.405**</td>
<td>0.013</td>
<td>-0.021</td>
<td>0.127**</td>
<td>0.066**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 State Prison Release Rate T-1</td>
<td>-0.032</td>
<td>0.096**</td>
<td>-0.034</td>
<td>0.101**</td>
<td>0.156**</td>
<td>0.399**</td>
<td>0.012</td>
<td>-0.006</td>
<td>0.141**</td>
<td>-0.047*</td>
<td>0.99**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>13 Police per 100,000 Population T-1</td>
<td>0.572**</td>
<td>0.506**</td>
<td>0.576**</td>
<td>0.527**</td>
<td>0.676**</td>
<td>0.247**</td>
<td>0.308**</td>
<td>0.021**</td>
<td>0.229**</td>
<td>0.212**</td>
<td>0.346**</td>
<td>0.332**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: Correlations computed on untransformed data for pooled data, 2002-2008. T-1 represents a one-year lagged measure.

*p ≤ .05, **p ≤ .01.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>(1) Homicide Rate (Logged) N=428</th>
<th>(2) Acquisitive Crime Rate N=428</th>
<th>(3) Homicide Rate (Logged) N=359</th>
<th>(4) Acquisitive Crime Rate N=359</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Year Lagged Measure of Dependent Variable</td>
<td>-0.068** (.015)</td>
<td>0.495** (.014)</td>
<td>-0.066** (.169)</td>
<td>0.500** (.016)</td>
</tr>
<tr>
<td>Resource Deprivation Index</td>
<td>0.029** (.008)</td>
<td>3.324 (.2649)</td>
<td>0.022* (.008)</td>
<td>3.76 (.279)</td>
</tr>
<tr>
<td>Immigrant Concentration Index</td>
<td>0.031* (.011)</td>
<td>-8.42 (.660)</td>
<td>0.011 (.022)</td>
<td>-4.98 (.714)</td>
</tr>
<tr>
<td>City Population (Logged)</td>
<td>-0.424** (.118)</td>
<td>-276.23** (.4341)</td>
<td>-0.515** (.139)</td>
<td>-267.04** (.4845)</td>
</tr>
<tr>
<td>Age Structure Ratio</td>
<td>0.424** (.128)</td>
<td>76.76* (.3723)</td>
<td>0.530** (.139)</td>
<td>63.66 (.3845)</td>
</tr>
<tr>
<td>Percent Divorced</td>
<td>-0.014** (.005)</td>
<td>-1.09 (.179)</td>
<td>-0.017** (.006)</td>
<td>-2.16 (.189)</td>
</tr>
<tr>
<td>City Unemployment Rate</td>
<td>-0.004 (.007)</td>
<td>3.98 (.349)</td>
<td>-0.003 (.009)</td>
<td>-5.21 (.382)</td>
</tr>
<tr>
<td>1 Year Lagged State Prison Admission Rate</td>
<td>-0.002** (.0005)</td>
<td>-1.02** (.219)</td>
<td>-0.001* (.0006)</td>
<td>-.731** (.236)</td>
</tr>
<tr>
<td>1 Year Lagged State Prison Release Rate</td>
<td>0.001* (.0003)</td>
<td>0.418* (.210)</td>
<td>0.0007 (.0005)</td>
<td>0.361 (.227)</td>
</tr>
<tr>
<td>1 Year Lagged Police Force per Capita</td>
<td>-0.0009** (.0003)</td>
<td>-.351 (.210)</td>
<td>-0.00007 (.0001)</td>
<td>-.647** (.264)</td>
</tr>
<tr>
<td>Drug Related Arrest Rate per 100,000 population</td>
<td>-0.0004 (.0002)</td>
<td>-0.283** (.078)</td>
<td>0.09 (.0001)</td>
<td>0.46 (0.046)</td>
</tr>
<tr>
<td>Alcohol Related Arrest Rate per 100,000 population</td>
<td>0.0007 (.0007)</td>
<td>0.09 (.0001)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ .05, **p ≤ .01. Note: Estimates shown are generalized least squares estimates with standard errors in parentheses.
Table 4. Regression of Acquisitive Crime and Homicide Rates on Age Structure, and other Factors (N=428).

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>(1) Logged Homicide Rate</th>
<th>(2) Acquisitive Crime Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Structure Ratio</td>
<td>.445**</td>
<td>101.77*</td>
</tr>
<tr>
<td></td>
<td>(.130)</td>
<td>(40.08)</td>
</tr>
<tr>
<td>Age Structure Ratio x Resource Deprivation</td>
<td>.063</td>
<td>41.16**</td>
</tr>
<tr>
<td></td>
<td>(.035)</td>
<td>(16.65)</td>
</tr>
<tr>
<td>Age Structure Ratio</td>
<td>.398**</td>
<td>74.86*</td>
</tr>
<tr>
<td></td>
<td>(.130)</td>
<td>(37.48)</td>
</tr>
<tr>
<td>Age Structure Ratio x Immigrant Concentration</td>
<td>.083*</td>
<td>2.11</td>
</tr>
<tr>
<td></td>
<td>(.037)</td>
<td>(13.61)</td>
</tr>
<tr>
<td>Age Structure Ratio</td>
<td>-2.66**</td>
<td>-1867.6**</td>
</tr>
<tr>
<td></td>
<td>(.836)</td>
<td>(388.34)</td>
</tr>
<tr>
<td>Age Structure Ratio x Population Size</td>
<td>.258**</td>
<td>168.52**</td>
</tr>
<tr>
<td></td>
<td>(.067)</td>
<td>(33.34)</td>
</tr>
<tr>
<td>Age Structure Ratio</td>
<td>.615*</td>
<td>219.93**</td>
</tr>
<tr>
<td></td>
<td>(.269)</td>
<td>94.44</td>
</tr>
<tr>
<td>Age Structure Ratio x Unemployment</td>
<td>.277**</td>
<td>-27.58</td>
</tr>
<tr>
<td></td>
<td>(.065)</td>
<td>(17.41)</td>
</tr>
<tr>
<td>Age Structure Ratio</td>
<td>.037</td>
<td>-335.41**</td>
</tr>
<tr>
<td></td>
<td>(.369)</td>
<td>(122.06)</td>
</tr>
<tr>
<td>Age Structure Ratio x Percent Divorced</td>
<td>.037</td>
<td>41.14**</td>
</tr>
<tr>
<td></td>
<td>(.031)</td>
<td>(11.53)</td>
</tr>
</tbody>
</table>

*p ≤ .05, **p≤.01 Note: Generalized least squares estimates with standard errors in parentheses shown.
Table 5. Regression of Acquisitive Crime and Homicide Rates on Year Dummies (N=428).

<table>
<thead>
<tr>
<th>Year-Effect Variables (2002 Omitted from Analysis)</th>
<th>(1) Logged Homicide Rate</th>
<th>(2) Acquisitive Crime Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year-Effect Dummy Variable 2003</td>
<td>0.072**</td>
<td>-7.58</td>
</tr>
<tr>
<td></td>
<td>(.021)</td>
<td>(8.21)</td>
</tr>
<tr>
<td>Year-Effect Dummy Variable 2004</td>
<td>.096**</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>(.025)</td>
<td>(9.25)</td>
</tr>
<tr>
<td>Year-Effect Dummy Variable 2005</td>
<td>.240**</td>
<td>19.450</td>
</tr>
<tr>
<td></td>
<td>(.032)</td>
<td>(11.15)</td>
</tr>
<tr>
<td>Year-Effect Dummy Variable 2006</td>
<td>.214**</td>
<td>11.95</td>
</tr>
<tr>
<td></td>
<td>(.030)</td>
<td>(10.94)</td>
</tr>
<tr>
<td>Year-Effect Dummy Variable 2007</td>
<td>.228**</td>
<td>-25.44*</td>
</tr>
<tr>
<td></td>
<td>(.030)</td>
<td>(10.87)</td>
</tr>
<tr>
<td>Year-Effect Dummy Variable 2008</td>
<td>.198**</td>
<td>-87.40**</td>
</tr>
<tr>
<td></td>
<td>(.033)</td>
<td>(11.60)</td>
</tr>
</tbody>
</table>

*p ≤ .05, **p≤.01 Note: Generalized least squares estimates with standard errors in parentheses.
CHAPTER 6

CONCLUSIONS

6.1 Discussion

The current paper has described, in some detail, the trends in homicide and acquisitive crime over the past decade. After large declines across all crime types in the 1990s, the past decade, in general, is relatively flat overall. Trends in homicide remain nearly the same throughout the period. Acquisitive crime shows some evidence of a declining trend toward the end of the period after a number of years at nearly the same, extraordinarily low level. Although there is evidence that differences exist between different size cities across the U.S., the picture remains relatively the same on average. But was this expected given the variation in the covariates which have been used to predict crime? The answer is most likely not. The concluding section of this thesis discusses the findings of the present research as well as their implications for the study of a national trend which affects crime rates across the county in future research.

Although there is evidence of a short-lived, yet significant increase in homicide between 2004 and 2005, these year-to-year changes quickly reversed direction ending in a net change of nearly zero for the period. This uptick was slightly more pronounced in medium size cities as PERF stated in their report. Along with claims of a gathering storm, PERF provides a list of factors which they believe are connected to the rise in crime that they observed. Included in their list were a couple of variables included in the present research. PERF claims that decreasing staffing levels of police departments as well as the increase in the number of offenders re-entering the community who commit new crimes will contribute to an increase in crime in the future. PERF draws these conclusions without a tremendous amount of empirical support, and the present analysis is able to examine their claims. Contrary, to their claims, neither police force size or prison release rates, as conceptualized in the present study, have been shown to influence crime trends during the past decade. In fact, while some departments almost certainly have reduced staffing levels, on average police per capita have increased slightly from 203.8 to 205.2 over the period, and this small increase has not lead to significant decreases in either homicide or acquisitive crime. Additionally, while the state prison release rate has increased by nearly 10% over the period (229.5 to 247.3 per 100,000), this increase is not significantly related to crime trends across cities in the sample. Alternatively, the prison admission rate, which also increased during the period, was seen to be significantly related to the decline in acquisitive
crime. Conclusions, such as PERF’s have important policy implications and must be accurate to inform public policy and these policies must be continually re-evaluated given new evidence from research in the area.

6.2 Findings on Age Structure

The current analysis provides evidence that age structure continues to play a significant role in shaping trends of violence, even in a period where large shifts in cohort size are not present. The results indicate that a positive association between the proportion of young people and both homicide and acquisitive crime exists, which is consistent with past research conducted at both the county and national level (Phillips, 2006). Contrary to conclusions drawn by experts in the field, it is possible that when location and year-to-year change are taken into account that changes in the age structure may significantly affect both homicide and acquisitive crime rates. Additionally results from subsequent analyses indicate that the direction and magnitude of the association between age structure and crime is affected by several social and economic conditions present across cities. Specifically, the strength of the association between age structure and homicide rates is strengthened in areas with higher levels of unemployment. This is consistent strain theory, which suggests that unemployment may raise the motivation to commit crime and that youth may be particularly susceptible to this type of strain. In addition results indicate that the affect of the age structure variable on homicide is strengthened in areas with larger immigrant populations. Although not a direct test of the effect of second generation immigrants on crime, this finding could be developed in future research to provide support for the notion that second generation immigrants are more susceptible to the criminogenic conditions they are subjected to in the U.S. and therefore may end up contributing to crime trends.

Cities which attract large populations of young people and do not retain larger proportions of the older population may find themselves with a more crime prone population and therefore higher rates of crime than may otherwise be expected. Although the effect of age structure on both homicide and acquisitive crime is negative in average size cities, this negative effect is attenuated in larger cities. This finding fits well into the context of social control. Without sizable proportions of the older population to supervise and maintain levels of informal control, increases in the size of the younger population may lead to increased levels of crime. In addition to the interaction involving population size, age structure is shown to interact with levels of resource deprivation. The positive relationship between age structure and acquisitive crime becomes stronger in areas with higher levels of resource deprivation. Consistent with
predictions from social disorganization and social control theories, that these areas are not able to sustain the levels of informal control necessary to prevent young populations from committing crime.

Overall evidence regarding the effect of changes in age structure on crime from this thesis is consistent with prior research (Phillips, 2006). The current research expands on past work by looking at the relationship between age structure and crime trends across a large sample of U.S. cities. In addition to the level of aggregation under study, the current research expands the conditions in which the effect of age structure is explored by including a measure of immigrant concentration. One fact that must be considered is that the presented analysis does not take into account that the levels of the associated characteristics also change year by year. Future research in this area may provide an important insight into how year to year changes in age structure interact with changes in other characteristics. By exploring how these characteristics effect one another in a dynamic way it may be possible to identify places in which the conditions are becoming more conducive to crime as well as what can be done about them.

6.3 Findings on Immigrant Concentration

Although contrary to the results presented by leading researchers in the field, in the current sample of cities, immigrant concentration was found to be positively associated with homicide. Although unexpected, this relationship was significant at the .05 level, indicating that places which grew in foreign born and percent Latino populations had larger increases in homicide during this period. It is important to consider that while not consistent with previous findings, this study took into consideration a large sample of cities for a period that has not been closely examined in previous literature. Using the most current methodological approaches available, and including a number of commonly used covariates, evidence points in the opposite direction for this sample.

This may be due to the fact that evidence on immigration has generally concentrated on larger levels of aggregation such as MSAs as well as past time periods (Stowell et al., 2009). The level of aggregation and time period included are both very important for what conclusions can be drawn from current research. It may be the fact that immigrant concentration affects small towns in very different ways than it does large, heterogeneous cities. It is plausible that an influx of immigrants into a small, relatively homogenous city may lead to more violence than the same increase would in a large city. Future research would be able to explore this in more detail. It may also be related to the characteristics of the immigrant population which is changing the landscape of these cities. It is possible that due to new measures to keep illegal immigrants out of the U.S., that only the more violent and more dangerous immigrants are the ones changing levels of
immigration in towns across the U.S. Future research in the area of immigration may want to address these questions.

6.4 Additional Contributing Factors

While a number of the commonly used covariates do not significantly impact of year-to-year changes in homicide or acquisitive crime rates in the current analysis, prior research and criminological theory have demonstrated that they are necessary when examining changes in crime across space and time. However, this result in itself is not uninteresting. It could be the case that the relationship between changes in these covariates and changes in crime has changed over time. Changes in conditions which exhibit influence on crime trends during the 1990s may not be as salient during the more recent period due to changes in globalization and communication. It is impossible to tell from the present analysis if this is truly the case, but the fact that many of the variables, shown to effect crime trends in other periods of history, do not have a significant effect on trends during this period is an important finding.

With that said, what is it then, that accounts for the stable crime rates seen during the past decade? As illustrated earlier, it is not the fact that the covariates commonly associated with crime trends have not varied much during the period. There is evidence of substantial variation in many of the explanatory variables included. In line with recent research which explored the possibility of the existence of a national level influence on local crime trends, the current research examines the effect of national level forces, net of city level characteristics, as measured by the temporal dummy variables. Results for homicide indicate that, net of all city level factors considered, that national factors explain a significant amount of the variation in local crime trends for year-to-year. This is a substantial finding. The even when controlling for a modest number of city level attributes, as well as including city dummies, the temporal dummies still exert a significant force on city level trends in homicide.

In addition to further exploring the possibility of a national influence on local crime trends, future research can apply this technique to explore how much of the variation in the covariates is due national influences. It is feasible to suggest that local labor market conditions are influenced by both local industry and national economic realities. In the same fashion, changes in incarceration may be influenced both by state and federal budgeting decisions. When considered in this fashion, even year to year changes in the factors which vary across cities, may be partially explained by the existence of a national trend. Through this exploration it may be possible to determine, with more certainty, how much of the variation in crime trends is really due to local-level factors, and how much is due to national or global influences. From there it
makes it possible to decide what types of explanations researchers should focus on in future research in order to broaden our knowledge on crime trends.

6.5 Limitations

The current research adds to the literature by examining the most recent data available for a larger number of U.S. cities. As in all research, a number of limitations should be noted. First and foremost, it is important to note that these results are highly conditional due to model specification, as are any multivariate results. Many decisions were made based on prior literature to determine the most appropriate approach to modeling change in crime. There are a number of analytical techniques that have been used, each with their own peculiarities which must be taken into consideration. Additionally, due to the desire to account for the largest number of cities possible, certain variables were not included in the analysis which may have had an effect on the final conclusions. First, research has shown that using disaggregated measures of crime trends can sometime lead to separate and more interesting conclusions (Blumstein and Wallman, 2006). Using the overall homicide rate, instead of disaggregating by age and race may mask some intricacies of the data. Using more detailed data, such as data from the Supplementary Homicide Reports from the FBI would add significantly to the present analysis. Secondly, the possibility for omitted variable bias due to the fact that not all of the commonly associated variables were included in the present study is a concern in the current research. This concern however, is mitigated by the use of fixed-effects estimation in this analysis (Johnston and DiNardo, 1997). Using city dummy variables, the effect of unmeasured city characteristics that are stable over time is removed. Factors such as gun availability, which are thought to be stable over time, therefore may be effectively dealt with in this manner. Finally, previous research has shown that that incarceration rates and police per capital may be associated with homicide and acquisitive crime rates within cities, over time and vice verse, which leads to endogeneity (Levitt, 1996; Marvell and Moody, 1996). Endogeneity, or the existence of endogenous variables can lead to inconsistent regression estimates (Wooldridge, 2002). The effect of endogeneity may not be as consequential in practice as it sounds, although it does affect the size of the coefficients, this affect may not be of tremendous magnitude (see Levitt, 1996 for an illustration). The most common way to deal with this problem in the economics literature is to the instrumental variable approach, but it is difficult to come up with a good instrument in the case of city crime rates and using a poor instrument may only increase the problem (Wooldridge, 2002). Additionally, the use of variables such as police force size, and incarceration rates have become common place in the crime trends literature, with little, if any, discussion about this particular problem. Overall, as in all research, the
current study has its limitations. These limitations are not believed to be so serious that meaningful conclusions can be drawn from the research. As the use of theory, available methods and data available continue to improve it will be possible to continue efforts to explain crime trends across the country and the world.

6.6 Conclusion

Despite these limitations, the current research accomplishes its goal of determining how commonly used the covariates are related to contemporary trends. Findings suggest that a few of the commonly used measures do in fact, partially explain fluctuation in crime trends during the past decade but that this stability may be better accounted for by national factors. Finally, this thesis presents a discussion of the relevant theory, as well as incorporates a new measure of age structure and examines how it relates to contemporary crime trends in depth.
REFERENCES


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BIOGRAPHICAL SKETCH

Kevin Tyler Wolff

Kevin T. Wolff completed his Bachelors in Psychology with a minor in Criminal Justice at the University of Nevada, Reno during spring, 2007. He began attending Florida State University in the fall of 2008 as a graduate student in the College of Criminology and Criminal Justice. Under the advisement of Dr. Eric P. Baumer, he completed all requirements to obtain his Master’s degree in Criminology during the summer of 2010. He is currently continuing his work towards a Ph.D. in Criminology from Florida State University.

Kevin’s research interests include the spatial and temporal distribution of criminal behavior, how structural and cultural features of society influence behavior, criminological theory, as well as quantitative methods in criminology.