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# Gender inequality, concentrated disadvantage, and homicide victimization: a sex and race specific analysis of homicide victimization rates in large U.S. cities

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GENDER INEQUALITY, CONCENTRATED DISADVANTAGE, AND HOMICIDE  
VICTIMIZATION: A SEX AND RACE SPECIFIC ANALYSIS OF HOMICIDE  
VICTIMIZATION RATES IN LARGE U.S. CITIES

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
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Doctor of Philosophy

in

The Department of Sociology

by

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For Aunt Minnie

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## ABSTRACT

This dissertation is designed to extend prior research on the structural correlates of homicide victimization among demographic subgroups in large U.S. cities. The present study draws on two broad theoretical traditions - the concentrated disadvantage perspective and gender inequality perspectives. Using Supplementary Homicide Reports data for 1990, race- and sex-specific homicide victimization measures were constructed for 120 U.S. cities. Due to the extremely rare prevalence of homicide victimization among some demographic subgroups, Poisson and Negative Binomial Regression techniques are used to test a series of hypotheses regarding the effects of concentrated disadvantage and gender inequality on homicide victimization for four groups: white women, white men, black women, and black men. The results from these analyses yield several significant findings. First, concentrated disadvantage has a strong positive effect on rates of homicide victimization for all four demographic groups, although the effects are generally more pronounced for males than for females, and for whites than for blacks. Second, the effects of gender inequality on homicide victimization are generally very modest, but are more pronounced for blacks than for whites. Further, the results indicate that, contrary to the inequality hypothesis, lower levels of gender inequality appear to be associated with higher levels of female homicide victimization. This finding is consistent with a growing body of research that has found that in communities where women experience greater inequality, their rates of victimization are lower. However, it should be noted that the effects of gender inequality on rates of homicide victimization are generally diminished by the effects of concentrated

socioeconomic disadvantage. Theoretical implications and suggestions for future macro-level research on group-specific homicide victimization are discussed.

## **CHAPTER 1: INTRODUCTION AND STATEMENT OF THE PROBLEM**

This dissertation is designed to extend previous research on the structural correlates of homicide victimization. More specifically, the study examines the determinants of homicide victimization among demographic subgroups of the U.S. population. Two main factors provide the rationale for this study. First, it has been clearly demonstrated that the risk of homicide victimization is not equally distributed across all segments of the population (Holmes and Holmes 1994; Messner and Rosenfeld 1999; Smith and Kuchta 1995; Smith and Zahn 1999). Homicide victimization varies greatly by sex, race, age, and socioeconomic status (Harries 1990; Messner and Rosenfeld 1999). However, it is well known that two of the strongest predictors of homicide victimization are sex and race.

For example, males account for roughly 75% of homicide victims and 88% of all arrestees in a given year (Harries 1990). Although the majority of homicide victims are male, the fact remains that one in four homicide victims is female. Because males tend to dominate violent crime statistics as both offenders and victims, females are often overlooked (exceptions are Bailey and Peterson 1995; Brewer and Smith 1995; Gartner, Baker, and Pampel 1990; Goetting 1991; Smith and Brewer 1992; Smith and Kuchta 1995; Vieraitis and Williams 2002). As a consequence, little is known about the social structural correlates of female homicide. But, there are no compelling reasons to ignore the issue of female homicide victimization. This is especially true given the fact that while some communities have extremely low rates of female victimization, others have relatively high levels. This variation across communities strongly implies that there are

social structural forces at work which generate differing levels of female victimization. Explaining such community level variation is one of the main goals of macro-level research on crime.

Involvement in homicide also varies by race. As an example, 1994 arrest statistics indicate that blacks accounted for 56.4% of arrestees for murder and non-negligent manslaughter, but only 12.5% of the U.S. population (Maguire and Pastore 1995: Table 4.10). When considering only urban areas, this same figure changes to 62.6%. In contrast, whites accounted for only 35.7% of homicide arrestees in urban areas in 1994, despite their greater representation in the population (Maguire and Pastore 1995: Table 4.12). Similar disparities are observable for homicide victimization. But much like the issue of gender and homicide, there is a great deal of variation across places in the levels of both black and white homicide, again implying the need for social structural explanations.

Although these disparities by race and gender are interesting and important, few analysts have opted to investigate the intersection of race and gender when examining homicide related issues. When sex specific involvement in homicide is examined within race, the patterns remain--black males are more likely to be homicide victims than black females, and the same is true for whites. However, this does not hold up when making comparisons across racial lines. Black males are at a far greater risk of homicide victimization than any other group. For example, the lifetime risk of being murdered for black males is 1 in 20, but for white males it is only 1 in 178 (Holmes and Holmes 1994). Black females also have a high likelihood of being murdered. The lifetime risk of being a

homicide victim for a black female is 1 in 132 compared to white females' extremely low risk of 1 in 495 (Holmes and Holmes 1994). These data suggest that black females are at greater risk of homicide victimization than both white males and white females.

United States mortality data for 1990 reveal a similar pattern (Vital Statistics 1990). These data demonstrate that the homicide death rate for the total population is 10 per 100,000 population. Examination of the race- and sex-specific rates, however, reveals striking differences. For example, the homicide death rate for all whites is 5.8 per 100,000, with the rate for white males and white females being 9.0 and 2.8, respectively. However, for blacks, the total homicide death rate is 39.8 per 100,000, nearly four times that for the total population. Moreover, the rate for black males is an alarming 69.2. Although lower than that for black males, the homicide death rate for black females is 13.5 per 100,000, still above the national average. Given these conspicuous sex and race differences, the need for race- and sex-specific examination of crime becomes evident.

A recent trend in criminological studies is the use of group-specific crime data, in particular, the use of race-specific homicide rates (Corzine and Huff-Corzine 1992; Harer and Steffensmeier 1992; Hindelang 1981; Peterson and Krivo 1993; Sampson 1985; Shihadeh and Steffensmeier 1994; Smith 1992). These studies provide a more complete picture of the social forces driving homicide by examining the impact of structural factors on specific groups in the population. Additionally, this body of literature provides a second rationale for the present study. Succinctly, several studies using racially disaggregated data find that many of the structural predictors of violent crime explain more variance in white rates than in black rates (Corzine and Huff-Corzine 1992; Harer

and Steffensmeier 1992; Lee 2000; Messner and Sampson 1991; Smith 1992), and that the same factors do not always explain black versus white homicide rates (e.g., LaFree, Drass and O'Day 1992; Harer and Steffensmeier 1992; Ousey 1999; Peterson and Krivo 1993). In fact, one recent study reports that the effects of several measures of disadvantage on homicide rates may actually be stronger for whites than for blacks (Ousey 1999), although McNulty (2001) argues that this is not always the case. Nevertheless, the available evidence does indicate that important variations across racial groups, in particular, warrant the disaggregation of homicide rates by race.

While these race-specific studies improve our understanding of racial differences in homicide, little remains known about the predictors of female homicide victimization, and even less about the covariates of black versus white female homicide victimization. Only a handful of studies attempt to link traditional social-structural factors to sex-specific homicide rates (Brewer and Smith 1995; Gartner et al. 1990; Peterson and Bailey 1995; Smith and Brewer 1992; Steffensmeier and Haynie 2000a, 2000b; Vieraitis and Williams 2002); only four of these focus on female homicide victimization (Gartner et al. 1990; Brewer and Smith 1995; Peterson and Bailey 1995; Smith and Brewer 1992; Vieraitis and Williams 2002). The findings from these studies suggest that the predictors of male homicide victimization effective in predicting female homicide victimization, but the effects are generally weaker for females (Brewer and Smith 1995; Smith and Brewer 1992). Few studies, however, appear to have taken into account the immense differences by race noted above (exception Vieraitis and Williams 2002). Because of the lack of research in this area, it is unclear whether the structural predictors of aggregate homicide

victimization rates are effective in predicting the homicide victimization rates of black females and white females alike.

The purpose of this study is to fill the gap in the literature on race, sex, and homicide. To accomplish this, I build on prior macro-level homicide research in several ways. First, I develop city-level measures of race- and sex-specific homicide victimization rates, which allows for the analysis of four outcomes: white female homicide victimization, white male homicide victimization, black female homicide victimization, black male homicide victimization. Second, I draw on several main theoretical currents prominent in the extant literature to develop hypotheses regarding the predictors of race and sex disaggregated rates of homicide victimization. Specifically, drawing on concentrated disadvantage and various gender inequality theories, I delineate a series of hypotheses relating both race-specific and sex-specific structural inequities to rates of victimization. Third, due to the rare nature of race- and sex-specific homicide victimization for some sub-groups, the statistical models employed in the multivariate analyses depart from the vast majority of prior research. Until recently, macro-level researchers typically utilized Ordinary Least Squares regression analysis to estimate the relationships between various independent variables and rates of crime for macro-level units such as cities. However, Osgood (2000) and others (Lee, Martinez, and Rosenfeld 2001; Lee and Ousey 2001) have recently made the argument for the use of regression models based on the Poisson and Negative Binomial distributions. Such models are appropriate when the outcome of interest is a rare event relative to the population at risk, and when the distribution of the outcome of interest is highly skewed. This estimation



technique is therefore more appropriate for the analysis of race- and sex-specific homicide victimization rates than the traditional Ordinary Least Squares approach.

In light of these departures from much of the existing research literature, this study attempts to make several contributions to sociological research on violence more generally. As I detail in the next chapter, prevailing theories of the link between concentrated disadvantage and violence provide little insight into race differences in the effects of disadvantage on violence, or sex differences. The following analyses explicitly take these issues under consideration. Additionally, the few studies investigating the links between gender inequities and violence do not provide a clear portrait of potential race-differences in the effects of gender inequality on violence. In the following chapters this issue is also taken into account. Finally, given the severe criticisms leveled against past research by Osgood (2000), who implies that much of the prior research has employed inefficient statistical techniques, it is anticipated that the present study will help set the standard for appropriate statistical analyses of macro-level data where outcomes are rare events such as race- and sex-specific rates of homicide victimization.

The remainder of this dissertation is organized in the following manner. In Chapter 2, previous research on race, sex and homicide victimization is detailed. The discussion focuses on the main theories used to explain cross-sectional variation in race- and sex-specific homicide rates, as well as the results of prior research. Based on prior research, a number of hypotheses are derived relating structurally embedded, concentrated disadvantage and gender based inequalities to race- and sex-specific rates of homicide victimization. In Chapter 3, the data employed in the empirical analyses are detailed, as

are the main theoretical and control variables. An extensive descriptive analysis of the data is also presented in Chapter 3, illuminating race and sex differences in rates of homicide victimization, the degree of concentrated disadvantage, and the levels of gender based inequality. Chapter 4 presents the multivariate analyses of the data, in which Poisson and Negative Binomial regression analyses are used to estimate the relationships between concentrated disadvantage, gender inequality, and group-specific victimization rates, net of various control variables. Chapter 5 concludes the study with a discussion of results, the limitations of the present study, and suggestions for future research on race and sex disaggregated rates of homicide.

## CHAPTER 2: REVIEW OF THE LITERATURE AND HYPOTHESES

### Introduction

Two current trends have swept the sociological research on homicide. First, an extensive amount of research has been devoted to macro-social or community level explanations of crime. Instead of focusing on individual level differences between offenders and non-offenders, these studies seek to establish a link between serious violence and social-structural factors, such as inequality, economic deprivation, joblessness, and the breakdown of community social ties (see Land, McCall, and Cohen 1990 for a review). Driven by the early work of Shaw and McKay at the University of Chicago, this branch of research views geographic variation in rates of violent crime as a phenomenon worthy of sociological explanation. These studies demonstrate that a considerable amount of the variation in homicide across cities and other aggregates is explained by differing structural conditions (Bailey 1984; Blau and Blau 1982; Brewer and Smith 1992; Corzine and Huff-Corzine 1992; Harer and Steffensmeier 1992; Lee 2000; Loftin and Hill 1974; Messner and Sampson 1991; Peterson and Krivo 1993; Rosenfeld 1986; Sampson 1985; Sampson and Groves 1989; Shihadeh and Steffensmeier 1994; Shihadeh and Flynn 1996; Smith 1992; Smith and Brewer 1992; Steffensmeier and Haynie 2000a, 2000b).

A second trend advancing sociological understanding of the correlates of serious violence is the use of demographically disaggregated data (Brewer and Smith 1992; Corzine and Huff-Corzine 1992; Harer and Steffensmeier 1992; Krivo and Peterson 2000; Lee 2001; Messner and Sampson 1991; Ousey 1999; Peterson and Krivo 1993;

Sampson 1983, 1985; Shihadeh and Steffensmeier 1994; Smith 1992; Smith and Brewer 1992; Steffensmeier and Haynie 2000a, 2000b; Vieraitis and Williams 2002). This approach emerged in response to efforts at assessing the differential impact of structural factors across various subpopulations. In the search for structural predictors of homicide, this type of group-specific study is necessary because failure to analyze group-specific data assumes that the effects of social structural conditions are invariant for all demographic subgroups, an assumption which much of this literature openly challenges. Below, a review of three components of this literature, race-specific, sex-specific, and race- and sex-specific research, is provided. The goal of this review is to lay the foundation for developing a series of empirically testable hypotheses relating social structural factors to the prevalence of homicide victimization rates disaggregated by both race and sex simultaneously.

### Race and Violent Crime

As indicated in Chapter 1, significant differences exist between blacks and whites in their rates of violent crime. A number of theories have been advanced to explain blacks' disproportionate involvement in violent crime, including cultural theories (see for example, Anderson 1999; Curtis 1975; Wolfgang and Ferracuti 1967), social disorganization and socioeconomic disadvantage theories (for example, Bursik 1988; Shaw and McKay 1942; Sampson and Groves 1989; Sampson and Wilson 1995), and theories of economic strain (Bailey 1984; Blau and Blau 1982; Harer and Steffensmeier 1992; Peterson and Krivo 1993). This line of theorizing was prompted by one of the most consistent findings in the macro-level criminological research, the positive

relationship between the proportion of a geographic unit that is black and rates of violent crime (see Land, et al. 1990 for a review). This relationship sparked an enormous amount of interest in and debate over violence in black communities.

Initially, the heavy involvement of blacks in violent crime, as both offenders and victims, was attributed to the presence of an inner-city subculture which legitimated aggressiveness and violence (Curtis 1975). Proponents of this view pointed to the persistent positive relationship between a measure of black population concentration - the percentage of the population in the unit that was black - and violence, that failed to disappear even when controlling for differing community characteristics such as unemployment and poverty rates. The failure of other structural factors to account for this relationship has been viewed by some as evidence of a violent subculture found in black communities (Rosenfeld 1986). However, there are two fundamental flaws with this interpretation. First, it is unclear whether a demographic measure such as percent black measures the cultural dimension of social life, especially given the heterogeneity among blacks (see Anderson 1999). Second, this argument assumes the sources of black violence differ from those of white violence.

Structuralists attacked the subcultural explanation, arguing that black violence, like white violence, was rooted in structural forms of disadvantage like poverty, socioeconomic inequality (Blau and Blau 1982) and family disruption (Messner and Sampson 1991). For example, the Blaus suggested that relative deprivation in the form of racial income inequality between blacks and whites, rather than absolute levels of poverty, produce feelings of frustration among blacks. In turn, this frustration is manifest

in aggression and violence, leading to higher rates of violence in black areas (Blau and Blau 1982). Although their conceptual model was appealing, the results of their study indicate that a positive relationship between percent black and violent crime remained even when controlling for racial inequality. Indeed, several studies indicate that the observed association between the percent black and the homicide rate remained when controlling for other structurally based socioeconomic factors, such as the Gini coefficient of income inequality or rates of poverty (Bailey 1984; Messner 1983).

Sampson (1985) was among the first to offer a fundamental methodological explanation for this persistent finding. He argues that not disaggregating rates by important demographic subgroups may not allow community level effects and individual level effects to be teased out (Sampson 1985). By this logic, if blacks have higher homicide offending rates, or victimization rates for that matter, than whites, we would expect a positive relationship between percent black and aggregate homicide rates across areas simply due to differing racial compositions (Sampson 1985). To address this issue, Sampson disaggregated the homicide measures by race. In doing so, he was able to explain away the significant relationship between racial composition and city-level homicide arrest rates for both blacks and whites. This approach was in contrast to prior research, such as that conducted by Blau and Blau (1982), which did not disaggregate the dependent variables by race, but rather employed a total homicide rate which included all racial and ethnic groups. In this study Sampson (1985) demonstrated statistically, what many others had argued theoretically, that the sources of violent crime lay in the differing

ecological environments in which the two groups (blacks and whites) live, rather than the presence of a subculture of violence unique to blacks.

### Concentration of Socioeconomic Disadvantage

According to William Julius Wilson (1987), the different social environments in which blacks and whites live are the result of a long series of social and economic changes. The end result of this process is that blacks are not only more likely to experience socioeconomic disadvantage than whites, but also that they are more likely to live in communities in which multiple forms of disadvantage are highly concentrated. That is, they are more likely to live among and interact with other people who are poor, unemployed, undereducated, etc. In order to understand the impact of living in this type of environment and how this may relate to crime, it is useful to detail the historical structural changes which culminated in the formation of the urban black underclass.

Wilson (1987) has proposed that there were a number of changes that occurred in black communities that brought about the concentration of various forms of disadvantage and the emergence of the black underclass. Starting in the early part of the century (and the preceding decade), large numbers of blacks migrated to cities in the Northeast and Midwest from the South. They were primarily attracted to these cities by an abundance of low-skill manufacturing jobs. For decades the availability of these low-skill jobs provided blacks and other ethnic minorities opportunities for social mobility. Once these groups had accumulated enough capital, they would move away from the center only to be replaced by a new wave of arrivals who followed this same process. But, by the late

1960s and early 1970s there were major changes in the labor force structure that would adversely affect the economic and social conditions of many center city neighborhoods.

First, between 1970 and 1980 there was a large decrease in low-skill manufacturing jobs that had been available in these cities (Kasarda 1993). Many of these jobs simply disappeared, some relocated to the suburbs (industrial drift), and some were replaced with knowledge-intensive administrative jobs. Those who could follow the jobs out to the suburbs did, leaving behind a large segment of economically marginal and poorly educated blacks. It was difficult for this latter group to reach these jobs if they didn't move, because many of them didn't have reliable transportation (Wilson 1996). Moreover, even though some of the jobs in central cities had been replaced by administrative, information processing jobs, those who had been left behind in these areas did not have the education or the skills necessary to fill them. This is what Kasarda (1993) refers to as spatial mismatch. That is, the jobs available are not commensurate with the education and skill level of the people available to fill them. Ironically, this has left large numbers of low-skilled workers in the center cities without jobs and a significant number of low-skill jobs in the suburbs with no one to fill them.

The loss of the low-skill job base in center cities has had a number of detrimental consequences for urban black communities. For example, lack of job access resulted in increased unemployment among black males, particularly young black males. In addition, not only has joblessness increased but it has become more long term. Indeed, a main theme of Wilson's (1996) treatise is that some inner-city communities suffer not only from high rates of unemployment, but from persistently high levels of



unemployment. Moreover, the high rates of unemployment and joblessness led to higher levels of poverty. The poor economic prospects of black males therefore reduced the pool of marriageable males and resulted in a rise in the number of female-headed households. And last, the exodus of middle and working class blacks from these areas has led to the concentration of the poor, the unemployed, and single parent families in center cities. The retreat of the working and middle classes led to the deterioration of the local social institutions, like churches and neighborhood businesses, and local schools, which serve to socialize youth into mainstream society.

These social and economic changes left these neighborhoods socially isolated. Wilson defines social isolation as “the lack of sustained contact with representatives of or institutions from mainstream (or conventional) society” (1996: 64). He explains that individuals in these communities rarely have contact, or sustained contact, with people who have steady jobs or stable families. Instead of seeing joblessness, unemployment, and family instability as the exceptions, they become the norm. In socially isolated communities joblessness begins to take on a new social meaning (Anderson 1999), undermining the importance of education as a conduit to social mobility. Thus youths see little purpose in completing high school and drop out. Because there is little contact with those who are steadily employed, youth do not learn important job-related behaviors such as punctuality, appropriate clothing styles, and other behaviors essential to getting and maintaining employment. This is especially troublesome given the new types of jobs that are often available in or near these areas. Wilson (1996) has suggested that employers discriminate against minorities (although subtly) who dress or speak like they are from

the inner-city because employers equate such behaviors with incompetence and untrustworthiness. Ethnographic work by Anderson (1999) has also suggested that in settings where joblessness is pervasive, alternative routes to status may emerge, such as the proclivity to use violence, especially among men. These cultural adaptations further distance individuals from conventional society. All of these things are what Wilson (1987) refers to as concentration effects: the negative outcomes associated with living in an area that is overwhelmingly disadvantaged.

Whereas Wilson argued that the concentration of poverty in urban areas increased (i.e., became more concentrated) because nonpoor blacks and whites moved out of poor black areas, Massey and Denton (1993) argue that the causes are rooted in a long history of racial segregation of blacks from whites. They argue that blacks and whites were not always as residentially segregated as they are today. Before industrialization, there was very little racial segregation. With the onset of industrialization and the availability of manufacturing jobs in the Northeast and Midwest, many blacks were attracted to these areas. This meant that the black populations in these areas increased dramatically in a relatively short period and as a result so did interracial contact. Not surprisingly, racial tensions were high and often ended in violence.

In order to limit interaction between the races a number of deliberate strategies were implemented. First, when blacks moved into an area they were often met with threats or violence which continued until they moved from the area. Second, real estate agents would not show blacks houses in white areas. Instead, blacks were funneled into densely populated black or racially mixed neighborhoods, usually located near the center

of the city. Third, when black families could accumulate enough wealth to move out of the center city areas, they faced difficulty securing loans to buy homes. The process of denying mortgages for homes in certain areas because the financial risk are too high is known as redlining. Unfortunately areas where middle-class blacks could afford to live were typically redlined. Thus, blacks were denied mortgages not because of their race, but because mortgage lenders would not lend money to purchase homes in these area. Fourth, as white families fled from encroaching black communities, homes in neighborhoods near the periphery of the inner city became available. Through a process known as blockbusting, agents would go into these areas and begin buying older houses to sell to middle-class minority families. In order to maximize profits, these homes were often turned into tenant houses which would house a number of families. And fifth, as whites fled from the cities out toward the suburban areas, they enacted neighborhood covenants restricting minorities entrance into these newly claimed areas. So even in the suburbs, blacks remained segregated from whites (Logan and Messner 1987). These campaigns have proved to be successful. By the late 1940s, residential segregation had risen dramatically, and by the 1970s it was deeply entrenched in American society (Massey 1990; Massey and Denton 1993). In fact, Massey and Denton show that the degree of residential segregation in most cities has changed very little over the past several decades, despite the Civil Rights movement.

Whereas Wilson argues that the departure of nonpoor blacks from central city areas increased the concentration of disadvantage in black urban communities, Massey and Denton argue that the causes are rooted in a long history of racial segregation of

blacks from whites. In other words, given segregation, when rates of poverty increase, the only outcome possible is the increase in the concentration of poverty (Massey and Denton 1993).

Although the theories differ in what they believe to be the driving forces behind the creation of the black underclass, they are in agreement over its adverse effects, including the increased risk of violence. Specifically, Wilson argues that in response to structural constraints, limited opportunities, and social isolation, cultural adaptations emerge which condone, or at least tolerate the use of violence (see Sampson and Wilson 1995; Anderson 1999). Massey and Denton, too, argue that in response to harsh social conditions resulting from long term discrimination and segregation, cultural adaptations have formed that somehow legitimize the use of violence (1993). This is not a recapitulation of the culture of poverty put forth by Oscar Lewis (1968) which focuses on the internalization of norms transmitted from generation to generation. Rather, they argue that these cultural adaptations are transitory and would disappear if economic conditions improved for the better (Sampson and Wilson 1995; Anderson 1999).

Overall, this literature clearly suggests that the segregation of disadvantage should be related to black violence. Several studies have empirically tested the association between the spatial concentration of disadvantage and urban black homicide. For the most part these studies report the expected positive relationship for blacks (Lee 2000; Krivo and Peterson 2000). However, to date, no studies have examined whether concentrated disadvantage equally influences levels of homicide victimization for men and women. I return to this issue after reviewing the literature on sex and crime.

## Gender and Homicide

Like race, sex, or gender, is a second variable that is strongly related to criminal victimization, homicide in particular. In fact, much like the large differences observed between blacks and whites in their rates of homicide, males and females tend to diverge markedly in their levels of homicide victimization, with males having much higher rates than females. Among the studies examining macro-level homicide patterns, few adopt the strategy of disaggregating by sex (Brewer and Smith 1994; Smith and Brewer 1992; Steffensmeier and Haynie 2000a, 2000b; Vieraitis and Williams 2002). As these studies argue, there are important reasons to disaggregate homicide rates by sex. For example, Smith and Brewer (1992) argue that by not using sex-specific data we fail to consider important differences in the patterns of homicide victimization between men and women. First, since males are over-represented as victims of homicide, accounting for about 75% of known cases, sex-aggregated rates do not reflect the greater contribution of male victims to the total rate (Smith and Brewer 1992). In other words, sex-aggregated homicide rates (or total rates) are essentially measures of male homicide victimization. Consequently, variations in female victimization could be washed out by the greater prevalence of male victims. This is analogous to the rationale provided above for disaggregating homicide rates by race.

Second, individual level research indicates that the situational contexts in which males and females are killed tends to vary significantly. One way this variation is illustrated is in the relationships between homicide offenders and victims. For instance, according to the Supplementary Homicide Reports, females are more likely to be killed

by intimates or other family members than males. Supplementary Homicide Report data from 1976-2000 show that 30% of female homicide victims were killed by intimates, and another 11% by a family member. For men the corresponding figures are 5.7% and 6.8% (Fox and Zawitz 2002). And so, while 41% of female victims were killed by an intimate or family member, these relationships account for less than 13% of male homicide victimizations. Drawing out this contrast further, 52% of male victims were killed by an acquaintance or stranger, whereas the corresponding figure for females is 31%. This has important implications for macro-level research because some studies suggest that the structural predictors of homicide differ by homicide type (i.e. family, acquaintance, or stranger). For example, Williams and Flewelling (1988) report that their measure of socioeconomic disadvantage has a much stronger association with rates of acquaintance and stranger homicide than it does with rates of family perpetrated homicide. In addition, Peterson and Krivo (1993) in their analysis of black homicide victimization rates find that their measure of residential segregation (the index of dissimilarity) has a significant positive effect on black acquaintance and stranger homicide rates, but no effect on black family homicide rates. Taking into account that the victim-offender relationship varies significantly by sex, and that the effects of important structural factors such as disadvantage and segregation vary significantly by homicide type, it is likely that sex aggregated rates conceal variation in the impact of structural predictors on male and female homicide victimization rates.

A second way the situational context varies is that the victim/offender relationship for female victims is more likely to cross the sex line than for males (Goetting 1991).

That is, 89% of males are killed by other males, which indicates that for males, homicide is largely a same sex phenomenon (BJS 2002). However, this is not the case for female victims. Of women killed, 91% were murdered by a male. Hence, female victimization is largely an opposite sex phenomenon. This is relevant to macro-level research, because structural level measures of gender inequality (which are discussed below) may have varying effects for men and women.

Smith and Brewer (1992) provide one of the first studies examining the effects of structural predictors on sex-specific homicide victimization. Their findings provide empirical support for the conceptual rationale to sex-disaggregate homicide rates outlined above. Their analysis demonstrates that social disorganization variables are associated with both male and female homicide victimization. However, they find that their models explain more variance in male homicide rates than female rates and measures are generally stronger predictors of male victimization than female victimization (Smith and Brewer 1992). Similar evidence is found when examining sex-specific homicide offending rates. A recent study by Steffensmeier and Haynie (2000a) reports that while the structural predictors of homicide offending are similar for men and women, the effects are generally stronger for men.

### Gender Inequality and Homicide

Due to the fact that men and women have extremely divergent levels of involvement in violence as both victims and offenders, gender-specific theories of victimization have been offered to account for this discrepancy. Generally speaking, these theories focus on gender inequalities and how they relate to violence. More

specifically, theories of gender inequality focus on gender roles, gender norms, and inequities in social power to explain the differences in the use of violence by men and women, and to explain the different ways in which men and women are victimized.

Because sexual violence is one of the most severe forms of violence perpetrated by men against women, much of the theoretical work relevant to violent victimization against women is rooted in this literature. One of the primary conceptual models in this literature is the feminist perspective. In contrast to perspectives stating that rape is a sexually motivated act, the feminist perspective broadly views rape as an act of male domination of women (Brownmiller 1975). Ellis and Beattie (1983) provide a nice summary of the assumptions that underlie this perspective.

First, the authors state that patriarchal social traditions are the ultimate factors responsible for the prevalence of rape. This is because in cultures having social traditions where males have higher status in all realms of social life, women are largely excluded from decision-making processes. This occurs at multiple levels. For instance, because they are excluded from decision making processes, women have little opportunity to enhance or promote their position in the power structure. In addition, under such conditions, women have little or no control over the depiction of women in popular cultural media such as television, movies, or advertising, which both reinforces the subordinate status of women, and socializes new members into accepting the gendered hierarchical power structure. Note that this socialization process is relevant to both men and women. Moreover, in such exclusive environments, women typically do not have a voice in decisions that could be critical to reducing violence directed against them.



Second, the authors argue that this limited access to social and economic power translates into inequality in interpersonal relationships, especially with men. If these factors translate into men possessing more social power than women, women may be viewed, as well as view themselves, as property belonging to men. At the behavioral level then, rape is a manifestation of the social inequities between men and women, because rape becomes simply an act of men exercising control over their property (Ellis and Beattie 1983).

Third, as a result of their perceived vulnerability to rape, women's fears of rape and violent victimization further undermine their attempts at gaining equality. Survey data repeatedly demonstrate that women have a much higher level of fear of crime than do men. However, this gender difference in fear is almost completely explained by women's greater fear of rape and sexual assault (Ferraro 1996). To manage this fear women may restrict their involvement in activities that they believe will put them at greater risk of sexual victimization. For example, they may not take classes at night, or may not take jobs that require them to work at night or to travel. Ultimately, these activities could enhance their social status and reduce the level of gender inequality. But because their overarching goal is generally to reduce their involvement in risky activities or activities that involve contact with men who are strangers, this further has the effect of reinforcing gender inequality by restricting women's involvement in many aspects of social life.

In summary, the mainstream feminist perspective views men's rape of women as an act of domination and control. This ability to dominate and control women through

the threat or actual use of sexual violence is rooted in male dominated power structures. The exclusion of women from societal participation in decision making may trickle down into interpersonal relationships, reinforcing a cycle of gender inequality through socialization. Finally, rape not only results from gender inequality, but can serve to reinforce existing gender inequalities as well. If this is correct, then eliminating the social inequities between men and women should reduce, if not eliminate, men's rape of women.

Although the early research in this tradition focused on rape, more recent research has extended these ideas to the explanation of female homicide victimization (see Bailey and Peterson 1995; Brewer and Smith 1995; Gartner et al. 1990). This is a straightforward extension, because it is assumed that homicidal violence against women is simply the most extreme form of domination and control. Relating this to the main theme of the present study, macro-level crime patterns, the argument is that macro-level variation in rates of female homicide victimization are a function of variation in the degree of gender inequality between men and women. That is, the more inequality there is between men and women, the more acceptable it is for men to use violence to control women, and by extension, the higher the expected rate of female homicide victimization (Bailey and Peterson 1995).

One assumption of the above framework, which is generally referred to as the inequality thesis, is that if women achieve equality with men, their rates of victimization will decline. This is in part due to the idea that under such conditions, violence against women would not be tolerated. However, it has also been suggested that the opposite

social process could be true (see also, Bailey and Peterson 1995). That is, as women make advancements toward parity with men, some men may respond to perceived threats to their status with violence against women. This has been termed the backlash hypothesis.

Russell (1984) has suggested that gender equality, at least early on, might actually increase violence against women rather than reducing it. She reasons that as women's overall social status relative to men improves through employment and education, men may feel their dominant position is being threatened. To keep women in their subordinate position, some men may respond to this threat with violence directed at women. It is important to note that not all men would respond in this manner. But, it is also important to note two other inferences. First, according to Russell (1984), although all men would not respond in this manner (in fact most would not), they all benefit from reactionary violence against women because it reinforces men's dominant position in the power structure. Second, it is not necessary for all women to be victims of rape to fear it, and consequently view themselves as potential victims (Brownmiller 1975; Russell 1984). This is an important point to consider, if enough men react to the socioeconomic gains of women with violence directed at women, fear of victimization among women may increase because the social environment, in which men tend to dominate, becomes supportive of the use of male violence for social control. The coping mechanisms in response to fear delineated above may alter the activity patterns of women, ultimately impeding their progress toward equality with men.

As is apparent from this review, the existing theoretical literature on gender inequality and violence provides competing expectations. According to the inequality

thesis, as women make gains relative to men in employment, income, education, and so forth, their rates of victimization should decline. In contrast, according to the backlash thesis, as women make gains in these sectors, they present an ever greater threat to the power and status of men, which causes some men to react with violence.

It should be noted that these are not micro-level arguments but are in fact macro-level in nature. Put another way, these theories do not anticipate that because a given woman is experiencing vertical mobility that her husband or intimate partner will kill her. To the contrary, both the inequality and backlash hypotheses are predicated on the idea that the local social climate will be more or less conducive to violence against women depending on women's overall status in the community. It would therefore be a mistake to presume that a particular woman is at greater risk of violent victimization, because the meaning of her status is dependent upon the overall social status of women in the community. In other words, the meaning of an individual's status is purely contextual in nature. Furthermore, if the norms of the community prohibit violence against women, even if an individual woman makes tremendous gains in status, she is not at greater risk of victimization. This is why gender inequality theories are macro-level in nature.

There is currently no consensus in the literature as to which thesis has received the most empirical support, but it should be noted that both perspectives argue for a relationship between gender stratification and female victimization. In fact, the empirical relationship between inequality (or equality) and female violence is very unclear. For example, while some studies find a positive relationship between gender equality and violence (Baron and Straus 1987; Peterson and Bailey 1992) - which is supportive of the

backlash thesis, others have found a negative relationship (Bailey 1999) - which is supportive of the inequality thesis, while others report both positive and negative relationships, depending on the measure of equality used (Bailey and Peterson 1995; Gartner et al 1990; Peterson and Bailey 1992). To add to this confusion, several studies report no statistically significant relationship between inequality and female violence once other structural variables are controlled (Brewer and Smith 1995; Ellis and Beattie 1983; Peterson and Bailey 1992; Smith and Bennett 1985). One possible explanation for these discrepant findings is that while these studies disaggregate by sex, they do not disaggregate by race and sex simultaneously, a potentially important distinction to which I now turn.

#### Gender, Race, and Homicide

There are several reasons why it is important to disaggregate rates of homicide victimization by both race and sex simultaneously. First, it is false to make the assumption that all women make up a homogeneous group, or that all men make up a homogeneous group. In fact, it is fair to say that white and black women live in different social worlds, as do black and white men. For example, black women earn significantly less than white women. In 1990, median income for black females was \$10,386, while for white women it was \$12,867 (CPR 2002), a relative discrepancy of 20%. Employment differences are also evident. According to the Bureau of Labor Statistics, in 1993, the annual rate of unemployment for white women was only 5.2%, whereas for black women it was 10.7%. Further discrepancies are observed in educational attainment. For example, in 1990, 24% of white women age 25-29 had completed four years of

college or more. The comparable figure for black women is 12%, which is a relative difference of 100%. Similar differences in the socioeconomic status of black and white women are observable in other aspects of their lives. Therefore, when linking the social structural conditions of their communities to their rates of homicide victimization, it may be important to differentiate by race because of the different social worlds in which black and white women reside.

Second, it is important to note that the degree of gender inequality observed for blacks and whites differs. For example, white females are farther behind white males in terms of socioeconomic status than is the case for black females relative to black males. Looking again at median incomes for 1990, while the ratio of median incomes for white women to white men was 49.4% (\$12,867/\$26,402), the corresponding figure for blacks was 64.7% (\$10,386/\$16,048). Such differences are observable for other social and economic areas as well. This is largely attributable to the fact that blacks as a group have depressed levels of socioeconomic achievement.

Third, while the level of gender inequality is greater for white women relative to white men than it is for black women relative to black men, there are reasons to expect that gender inequality itself may be more salient to the victimization experiences of black women than white women. The basic reason for this is that black men may be particularly sensitive to threats to their status presented by the gains black women make due to their highly compromised socioeconomic status to begin with. Thus, while the degree of inequality between black women and black men is relatively low to begin with, even small gains on the part of black women represent more of a potential threat to the

power and dominance of black men than would similar or even more pronounced gains for white women.

Given these various reasons for examining race- and sex-disaggregated rates of homicide victimization, it is surprising that almost no research has investigated the covariates of race- and sex-specific victimization rates. The one macro-level study I am aware of is instructive, but contains important limitations as well. Vieraitis and Williams (2002) provide a city level analysis of black and white female homicide victimization focusing on resource deprivation and gender equality. Their results suggest that resource deprivation is associated with higher rates of victimization for both black and white women, but that the effects of their gender equality variables are mixed for whites, and null for blacks. However, this study is limited in important respects. First, the authors do not use a measure of disadvantage which taps into the actual spatial concentration of disadvantage, but rather use a more global measure. And in fact, their inclusion of measures such as the percent black and the degree of population change as indicators of resource deprivation are at best indirect indicators. Second, their measures of gender differentiation are measures of relative equality instead of absolute inequality. Their failure to explore this alternative dimension of gender differences may be an important omission. Third, they also use Ordinary Least Squares Regression to estimate their models. But, as Osgood (2000) has argued, this technique may be inappropriate when trying to predict events which occur so rarely.

## **Summary and Hypotheses**

This chapter has reviewed the macro-level theoretical and empirical research on three main topics: race and violence, sex and violence, and the intersection of race, sex, and violence. From each of these literatures, testable hypotheses can be drawn.

### Concentrated Disadvantage Hypotheses

1. I expect concentrated disadvantage will be positively and significantly associated with rates of homicide victimization for both men and women and blacks and whites.
2. However, given the results of past sex disaggregated studies, I expect that the effects of the spatial concentration of socioeconomic disadvantage will be more pronounced (stronger) for males than for females within racial groups.
3. Further, given the results of past race disaggregated studies, I expect that the effects of the spatial concentration of socioeconomic disadvantage will be more pronounced (stronger) for whites than for blacks.

### Gender Inequality Hypotheses

4. According to the inequality thesis, the greater the level of inequality between women and men in terms of social power and status, the higher their level of victimization. If this hypothesis is true, then where gender inequality is high, rates of female homicide victimization will be high. In other words, the relationship between gender inequality and rates of female homicide victimization will be positive and statistically significant.
5. The backlash hypothesis states that as women make gains in equality with men, men may respond with violence directed towards women. Thus, gender inequality will be negatively related to rates of female homicide victimization.



6. I expect gender inequality to have a stronger effect on rates of homicide victimization for females than males.

7. Given the reasons discussed above, I expect the association between gender inequality and the rate of female homicide victimization will be stronger for blacks than for whites.

## **CHAPTER 3: DATA, VARIABLES, AND ANALYTICAL METHODS**

### **Unit of Analysis**

The unit of analysis for this study is central cities. In keeping with prior research, two selection criteria are implemented. First, the cities must have a total 1990 population size of at least 100,000 people, and second, the cities must have at least 5,000 black residents in 1990. There are two reasons for implementing these selection criteria. First, the literature on socioeconomic disadvantage discussed in Chapter 2 focuses almost exclusively on the problems of disadvantage experienced in large urban areas. Second, because the race-specific measures of socioeconomic disadvantage are constructed using the formula for a widely used measure of residential segregation, and because the measures of concentrated disadvantage are disaggregated by race, it is necessary to select cities with a large enough black population to ensure reliable estimation of the concentrated disadvantage indices. The data on homicide victimization and the social, economic, and demographic characteristics of central cities are derived from four main data sources, detailed below.

### **Dependent Variables**

There are four dependent variables employed in the analyses that follow. These outcomes are designed to tap into the intersection of race and gender as they relate to homicide victimization. The dependent variables are: white female homicide victimization, white male homicide victimization, black female homicide victimization, and black male homicide victimization. The data to construct these measures are drawn from the victims file of the *Supplementary Homicide Reports* (SHR), which are collected

by the FBI. The SHR data provide incident level details on homicides coming to the attention of the police, and can be aggregated to the city level.

Because homicide is generally a statistically rare event, it is convention in the literature to average multiple years of data to reduce the potential influence of large random year to year fluctuations in the data. This issue is especially critical when the homicide rates are disaggregated by both race and sex simultaneously, as is done here. To address this issue, I follow convention in the literature and average the number of homicides for each subgroup for the period 1988-1992.

Historically, analysts have expressed concern about official crime statistics. The most serious of these concerns is that official statistics only capture those offenses coming to the attention of the police. Not all crimes come to the attention of the police, and so, official statistics may underestimate the true volume of crime. However, this issue is not considered as serious a problem for homicide research as it is for less serious forms of violence (e.g., aggravated assault). Homicide is generally considered one of the most serious crimes and therefore few homicides go unreported to the police. Therefore, the accuracy for homicide data tends to be better than that for other index crimes, such as robbery or aggravated assault. In addition, homicide statistics derived from official data sources typically correlate highly with independent sources, such as the National Center for Health Statistics (NCHS) mortality data (see Cantor and Cohen 1980; Rokaw, Mercy, and Smith 1980; Zahn and Riedel 1983). For instance, in a seven-city study comparing police records with medical examiner data, Zahn and Riedel (1983) found a high level of agreement between the two sources in coding victim's race, sex, and age. These findings

suggest that the SHR and mortality or vital statistics data from the NCHS are comparable. Further, this also indicates that findings derived from studies using either data source should be substantively similar.

A concern specific to the use of SHR data is that the offender is unknown in a substantial proportion of cases (about 30%). This does not present serious problems for the proposed study because the focus is not on offending, but rather victimization. The victimization data are not plagued by missing data to the same degree as offending data, and should therefore serve as a relatively reliable source of information.

### **Theoretical Independent Variables**

Based on the review of literature in Chapter 2, I derive two clusters of theoretical variables to tap into concentrated disadvantage and gender inequality. Following recent research on urban disadvantage and race-specific crime rates, I develop four measures to operationalize concentrated disadvantage. These measures are based on the isolation index developed by Bell (1954), which is commonly referred to as P\*. The P\* index is a measure of residential segregation, which is often used to estimate the degree of residential segregation between blacks and whites. However, it can also be adapted to measure the degree of residential segregation between disadvantaged city residents and non-disadvantaged city residents.

The four variables are race-specific measures of the spatial concentration of female-headed households, high school dropouts, poverty, and unemployment. The construction of these measures requires socioeconomic data on subgeographic units within cities. The most common subunit used in prior research is census tracts, which are

designed to approximate neighborhoods. Holding to this convention, census tracts are also used in this study to derive the P\* indices. The socioeconomic data on census tracts are drawn from Summary Tape File 3A of the 1990 U.S. Census of Population and Housing. The formula for the isolation index is

$${}_xP^*_y = \sum_{i=1}^n [x_i / X][y_i / t_i]$$

To use the example of the spatial isolation of black unemployment, in this case x is the number of unemployed blacks in the census tract, X is the number of unemployed blacks in the city, y is the total number of unemployed people of any race in the census tract, and t is the total population of the census tract. As Bell (1954) and others have noted, the interpretation of this index is the probability of randomly drawing an unemployed black person, and randomly drawing a second person who is also unemployed. This measure is straightforwardly extended to the other measures of disadvantage, female headed households, poverty, and high school dropouts, for both blacks and whites. As the correlation matrices presented below indicate, these race-specific measures are highly correlated with one another. Because this could potentially create severe multicollinearity problems, I follow the example of Krivo and Peterson (2000) and create a total disadvantage index, in which the race-specific measures are first converted to their standardized form, added to together, and then averaged. This leaves two race-specific indices of spatially concentrated disadvantage to use in the multivariate analyses.

The second cluster of theoretical variables is designed to tap into the race-specific level of gender inequality in U.S. cities. To accomplish this, I identify three important dimensions of gender inequality: inequality in income, inequality in employment, and inequality in educational attainment. The race-specific measure of income inequality between men and women is constructed as the difference in median income for males and females. Thus, for example, the black income difference is measured as black male median income minus black female median income. An analogous measure is constructed for whites. To measure gender inequality in employment, the race-specific difference in the proportion of males and females in the labor force that are employed is constructed. Finally, gender inequality in educational attainment is measured as the race-specific difference in the proportion of males and females with a high school (for blacks) or college education (for whites).

### **Control Variables**

Because I am interested in assessing the effects of the theoretical variables described above on race- and sex-specific homicide rates net of the influence of other known correlates of homicide, it is necessary to control for other variables. To identify these control variables, I rely on previous research. First is the population size of cities, because several studies indicate that larger population units have higher rates of homicide (see Land et al. 1990). This variable is highly skewed, and so I follow convention in the literature and transform it to its natural logarithm in the multivariate analyses.

Second, to control for possible regional variations in homicide and potential cultural effects due to what is commonly called the “Southern subculture of violence” a

dummy variable for South is included, measured as 1 for those cities in the census south and 0 otherwise (Gastil 1971; Loftin and Hill 1974). Third, a good deal of research demonstrates that there are immense age-differences in participation in crime as both offenders and victims (Chilton 1986; Steffensmeier, Allan, Harer, and Streifel 1989). At the macro-level, a large proportion of the population in the crime-prone age group may serve to increase overall rates of offending and victimization. To take this possibility into account, I construct a race- and sex-specific measure of the proportion of the population between the ages of 15 and 29, which is designed to control for this groups high level of risk . Fourth, numerous studies document that divorce rates are positively associated with rates of both homicide offending and victimization (Blau and Blau 1982; Smith and Brewer 1992; Williams 1984). Blau and Blau (1982) argue that a high rate of divorce may signal a general deterioration of the local social fabric, undermining social control and social integration. I therefore construct race-specific divorce rates, by sex. These rates are measured as the proportion of each group over the age of 15 that is divorced.

The data for the measures of gender inequality and the control variables come from two main sources. The race- and sex-specific measures of gender inequality and divorce rates were extracted from Summary Tape File 4B of the 1990 U.S. Census of Population and Housing. The measures of population size, southern region, and race- and sex-specific age structures were drawn from Summary Tape File 3C of the 1990 U.S. Census of Population and Housing. Overall, the final sample size is 120 central cities in the United States. Table 1 provides a list of the cities used in the following analyses.

**Table 1. Cities Included in Sample (N=120)**

Albany, NY	Fresno, CA	Paterson, NJ
Albuquerque, NM	Garland, TX	Peoria, IL
Alexandria, VA	Gary, IN	Philadelphia, PA
Amarillo, TX	Grand Rapids, MI	Phoenix, AZ
Anchorage, AK	Greensboro, NC	Pittsburgh, PA
Ann Arbor, MI	Hampton, VA	Portland, OR
Atlanta, GA	Hollywood, FL	Portsmouth, VA
Aurora, CO	Houston, TX	Providence, RI
Austin, TX	Huntsville, AL	Raleigh, NC
Bakersfield, CA	Indianapolis, IN	Richmond, VA
Baltimore, MD	Jackson, MS	Riverside, CA
Baton Rouge, LA	Jersey City, NJ	Rochester, NY
Beaumont, TX	Kansas City, MO	Rockford, IL
Berkeley, CA	Knoxville, TN	Sacramento, CA
Birmingham, AL	Lansing, MI	St. Louis, MO
Boston, MA	Las Vegas, NV	St. Paul, MN
Bridgeport, CT	Lexington, KY	St. Petersburg, FL
Buffalo, NY	Little Rock, AK	San Antonio, TX
Charlotte, NC	Long Beach, CA	San Diego, CA
Chesapeake, VA	Los Angeles, CA	San Francisco, CA
Chicago, IL	Louisville, KY	San Jose, CA
Cleveland, OH	Lubbock, TX	Santa Ana, CA
Colorado Springs, CO	Macon, GA	Savannah, GA
Columbus, GA	Memphis, TN	Shreveport, LA
Columbus, OH	Miami, FL	Springfield, MA
Corpus Christi, TX	Milwaukee, WI	Stamford, CT
Dallas, TX	Minneapolis, MN	Stockton, CA
Dayton, OH	Mobile, AL	Syracuse, NY
Denver, CO	Montgomery, AL	Tacoma, WA
Des Moines, IA	New Haven, CT	Tampa, FL
Detroit, MI	New Orleans, LA	Toledo, OH
Durham, NC	New York, NY	Topeka, KS
El Paso, TX	Newark, NJ	Tucson, AZ
Elizabeth, NJ	Newport News, VA	Tulsa, OK
Erie, PA	Norfolk, VA	Virginia Beach, VA
Evansville, IN	Oakland, CA	Waco, TX
Flint, MI	Oklahoma City, OK	Waterbury, CT
Fort Lauderdale, FL	Omaha, NE	Wichita, KS
Fort Wayne, IN	Orlando, FL	Winston-Salem, NC
Fort Worth, TX	Pasadena, CA	Yonkers, NY



## **Descriptive Analysis**

### Dependent Variables

Before turning to the bivariate and multivariate analyses, I begin the empirical portion of the study with a descriptive analysis. Table 2 presents measures of central tendency and dispersion in the form of means and standard deviations for the dependent variables, the theoretical independent variables, and the control variables. Taking first the dependent variables, the first salient feature of this table is the considerable amount of variation that exists in homicide rates between blacks and whites and women and men.<sup>1</sup> As expected, black men by far experienced the highest rate of homicide victimization. Their position at the top of the order is followed by white men, black women, and white women, respectively. Black men's mean homicide rate in this sample is 62.36 per 100,000. This is more than 4 times the rate for white men, which is 14.54 homicide victims per 100,000 people. The standard deviations also provide useful information. The standard deviation of 33.03 for black men indicates that there is a tremendous degree of variation across cities in their rates of homicide victimization, as does the standard deviation of 12.72 for white men. In addition, in 42% of the cities (n=50) the average

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<sup>1</sup>

The homicide victimization rates presented here are computed as the average number of race and sex specific homicides for 1988 to 1992, divided by the relevant population at risk in 1990, and multiplied by 100,000. For example, the black male homicide victimization rate is computed as the average number of black male homicide victims between 1988 and 1992, divided by the black male population in 1990, and multiplied by 100,000. This same method is extended to black females, white males, and white females.

victimization rate of black men was above the maximum rate for white men (which was 65.23 per 100,000).

Although the racial difference among women is not as great as the difference for men, it is still significant. Black women's mean homicide rate is 11.86, more than 2 1/2 times the rate for white women. The sample minimum and maximum values reveal a moderate amount of variation in female victimization across cities. While the minimum sample value is 0 for both groups, the maximum values for blacks and whites vary considerably. The maximum sample value of 31.04 for black women is more than 2 times the maximum sample value for white women at 14.29. In addition, in only two cities in this sample does the white female rate exceed the average black female rate of victimization.

#### Main Independent Variables

Turning next to the measures of concentrated disadvantage, the P\* measures of disadvantage for blacks and whites illustrate the degree to which disadvantaged blacks and whites are spatially clustered within cities. Recall that these indices measure the probability that a randomly drawn person of a given race and status (unemployed, etc) shares a neighborhood with another randomly drawn person of any race who shares the same status.

The descriptive statistics for these measures generally illustrate that disadvantage is much more concentrated among blacks than it is among whites. The measure of concentrated poverty reveals that the mean for whites is .21, whereas the mean for blacks is .32. The analogous measure for unemployment has race specific means of .08 for

whites and .14 for blacks. The measure of female headed households has means of .15 for whites and .26 for blacks, while the measure of high school dropouts has a mean of .30 for whites and .39 for blacks. As is evident, and as I expected from the review of the literature, along all dimensions of socioeconomic disadvantage, blacks are more spatially concentrated than whites. Further, the standard deviations for each of these measures generally are greater for blacks than for whites, indicating more variation among blacks than among whites across cities.

**Table 2. Descriptive Statistics**

	White		Black	
	Mean	SD	Mean	SD
<b>Dependent Variables</b>				
Male Homicide Rate	14.54	12.72	62.36	33.03
Female Homicide Rate	4.11	2.54	11.86	6.29
<b>Concentrated Disadvantage Measures</b>				
Poverty	.21	.06	.32	.08
Unemployment	.08	.02	.14	.04
Female-headed Households	.15	.03	.26	.07
High School Dropouts	.30	.09	.39	.08
<b>Gender Inequality</b>				
M-F Difference in Income	9134.81	2346.01	4166.15	1449.85
M-F Difference in H.S. Ed.	.03	.02	-.01	.03
M-F Difference in College Ed.	.07	.03	.002	.02
M-F Difference in Employment	-.006	.01	-.02	.03
<b>Control variables</b>				
Male Divorce	.09	.02	.10	.02
Female Divorce	.12	.02	.13	.03
Males age 15-29	.26	.04	.27	.03
Females age 15-29	.23	.04	.26	.03
South	.43	.50		
Population size	427280	781097		

Before turning to the measures of gender inequality, it is instructive to first consider the absolute status of men and women by race along these socioeconomic indicators. On average, white men are the most educated and highest earners within the sample. White men's average median income of \$21,028.13 places them substantially above the other groups. Eighty percent of white men have completed high school and 30% hold a college degree. White men clearly are the most advantaged group whereas black women are the most disadvantaged. For example, black women are least likely to have a college degree and have the lowest average median income. Further, they, on average, earn only 43% of white men's average median income and 76% of white women's median income.

Despite the similarities in educational attainment between black women and black men, the average median income for black women is only 68% of that for black men. White women and black men fall somewhere between these two groups, depending on which indicator is observed. Black men's average median income is closest to that of white men, with black men earning 62% of white men's income. Although white women out-earn black women, white women earn only 57% of what white men do. And, although white women tend to be more educated than black men, their incomes do not necessarily reflect this. White women are nearly twice as likely as black men to hold a college degree, however, black men's average median income is roughly 10% greater than that of white women.

Turning now to the measures of inequality, gender inequality appears to be greater among whites than blacks. The mean difference between white males and white females

in median income is \$9,314.81, whereas the corresponding figure for blacks is \$4,166.15. In terms of differences in the proportion of each sex earning a high school degree, white men outdistance white women by 3%, but a slightly larger percentage of black women have earned a high school degree than black men. The distance in educational attainment when considering the proportion with a college degree is even greater for whites than it was for high school at 7%. Interestingly, black men and women are very similar in terms of the proportion of each sex that has earned a college degree.

For employment inequality however, not only is the difference between white men and women small, it's mean is negative, meaning that on average the proportion of white women that are in the labor force and employed is greater than the proportion of white men in the labor force that are employed. In only 15% of the cities is the difference in favor of men. The pattern is similar among blacks, but the difference is larger. On average, black women in the labor force are more likely to have employment than their male counterparts. In nearly 1/4 of the cities the difference is at least 5%, suggesting that it is not uncommon for black women to have higher rates of employment than black men.

### Control Variables

The descriptive statistics for the control variables indicate that rates of divorce are similar for blacks and whites. However, my auxiliary analyses of marital status for each race and sex group reveal that blacks are generally less likely to have ever married than is the case with whites (white females=75%, white males=67%, black females=62%, black males=57%). Also, the measures of age structure for each group do not indicate substantial race differences. On average for each group, roughly 1/4 of the population is

between the ages of 15 and 29. Finally, 43% of the cities in the sample are located in the Southern region, and the average population size is 427,280 people.

#### T-Tests for Significant Differences in Means

To analyze whether the differences observed across groups are statistically significant, Tables 3 and 4 present T-Tests for differences in means. First, looking at sex specific rates of homicide across race, the highly significant T-values for the male and female homicide rates in Table 3 indicate that black males and white males are significantly different from one another in terms of their mean homicide rates, and that black females and white females display a similar pattern. Second, the differences in means between blacks and whites for the measures of concentrated disadvantage are all statistically significant. Recall from Table 2 that for all four measures of concentrated disadvantage blacks had higher values than whites. These tests confirm that these apparently substantively significant differences are also statistically significant. Third, for the measures of gender inequality, the significant values confirm that for three of the four measures (income, high school education, and college education) inequality is greater among whites than blacks. Further, for the measure of gender inequality in employment, inequality is greater among blacks than whites. Lastly, among the control variables, even though the differences in means were small, they are all statistically significant across race.

Table 4 provides further evidence of significant differences between groups by providing the T-Tests for the group specific homicide rates by sex and race. This table indicates that white males and white females are significantly different from one another

**Table 3. T-Tests for Differences in Means by Race**

---

<b>Dependent Variables</b>	<b>T-Value</b>
Male Homicide Rate	19.98**
Female Homicide Rate	16.95**
<b>Concentrated Disadvantage Measures</b>	
Poverty	17.61**
Unemployment	20.15**
Female-headed Households	23.74**
High School Dropouts	15.97**
<b>Gender Inequality</b>	
M-F Difference in Income	25.58**
M-F Difference in H.S. Ed.	9.03**
M-F Difference in College Ed.	18.80**
M-F Difference in Employment	6.44**
<b>Control variables</b>	
Male Divorce	4.85**
Female Divorce	9.48**
Males age 15-29	2.41*
Females age 15-29	9.30**

---

\*  $p < .05$ , \*\*  $p < .01$

Note: Tests for differences between means are two-tailed tests of significance.

in their mean rates of homicide. In addition, black males and black females are also significantly different from one another in their mean homicide rates. And even though the difference in means between white males and black females is smaller than the difference between black males and black females, it is still statistically significant. Finally, as expected, the large difference observed in the mean homicide victimization rates between the highest group, black males, and the lowest group, white females, is highly significant.

**Table 4. T-Tests for Differences in Means by Sex and Race**

---

	<b>T-Value</b>
White Male and White Female Homicide Rate	10.73**
Black Male and Black Female Homicide Rate	19.47**
White Male and Black Female Homicide Rate	2.79*
Black Male and White Female Homicide Rate	20.36**

---

\*  $p < .05$ , \*\*  $p < .01$

Note: Tests for differences between means are two-tailed tests of significance.

### **Summary**

This chapter has described the sample selection criteria and unit of analysis, the sources of data, and the operationalization of measures to be used in the multivariate analyses. Further, the means and standard deviations for all measures were provided, as were T-Tests for group differences in means across sex and race. The descriptive analysis can be summarized with the following points.

1. Homicide victimization rates of blacks and whites differ both substantively and statistically from one another in this sample, both within sexes and across sexes.
2. Within sex, blacks have higher average homicide victimization rates than whites.
3. Within race, males have higher average homicide victimization rates than females.
4. The level of concentrated disadvantage, on average, is higher among blacks than it is among whites. This is true for all four measures.
5. Gender inequality is, on average, greater among whites than blacks.
6. Differences in the level of gender inequality across races are statistically significant.



Overall, these initial summary findings provide further empirical justification for the study of homicide victimization disaggregated by race and sex simultaneously. In the next chapter, these analyses are extended by examining the bivariate relationships among the variables of interest, and the multivariate relationships.

## **CHAPTER 4: ANALYTICAL METHODS AND RESULTS**

### **Introduction**

This chapter provides bivariate and multivariate analyses to test the hypotheses stated in Chapter 2. First, bivariate relationships between each of the independent variables and the homicide victimization rates are examined. The inter-relationships among the independent variables themselves are also examined. Second, the multivariate relationships between the theoretical and control variables and the dependent variables are estimated to test the main hypotheses of the study.

### **Analytical Strategy: Poisson and Negative Binomial Regression**

Historically in the macro-level literature on crime, convention has been to examine bivariate relationships between independent variables and crime rates using the correlation coefficient, and then to estimate the multivariate relationships between crime rates and explanatory variables using ordinary least squares (OLS) regression analysis. However, recently, Osgood (2000) has argued that there are many instances in which OLS regression is inappropriate for examining aggregate level crime rates.

As Osgood (2000) discusses, there are several problems related to relying on OLS regression analysis when examining macro-level crime rates. Further, there are two potential sources of these problems. First, when the population base of the unit of analysis is small to begin with, standard crime rates computed as the number of offenses or victimizations divided by the population at risk become unstable. For example, Osgood (2000: 22) states “in a county of 200,000 individuals, every additional crime increases the crime rate by half an arrest per 100,000, while in a neighborhood of 5,000

each crime corresponds to 20 crimes per 100,000.” This demonstrates that with a small population base, even a few crimes can result in a very high crime rate. Second, problems may arise when rates are disaggregated by offense type, gender, race, and so forth. In this case, even with a modest population size, some groups may have a very small number of offenses or victimizations, making such events statistically rare. This can present problems when using OLS regression as well.

The two main issues are as follows. First, one of the main assumptions of OLS regression is homogeneity of error variance, which means that the errors in prediction are uniformly distributed. Put another way, OLS regression assumes that the errors in prediction will not vary systematically according to a third variable such as population size. But as Osgood (2000: 22) notes, “because the precision of the estimated crime rate depends on population size, variation in population sizes across aggregate units will lead to violating the assumption of homogeneity of error variance.” In other words, it is generally expected that the difference between the observed value and the expected value decreases as population size increases. Second, when the absolute frequency of crime is very low, as is the case with, for example, female homicide victimization, Osgood (2000: 22) also argues that “normal or even symmetrical error distributions of crime rates cannot be assumed”, which is another violation of the assumptions of OLS regression.

These issues are relevant to the present study because of the fact that I disaggregate the dependent variable, homicide victimization, by both sex and race simultaneously. As the descriptive statistics indicated in Chapter 3, female homicide generally speaking, and white female homicide victimization in particular, is a rare

phenomenon, and so can be expected to create the problems identified by Osgood (2000) above. In addition however, the sample selection criteria used for this study were cities of at least 100,000 people and at least 5,000 black residents. There are therefore some cities in this sample having a relatively small black population, which is a main focus of Osgood's argument.

To address these problems encountered in the analysis of macro-level crime data, Osgood (2000) and others have been arguing for and publishing results of macrolevel studies on homicide using Poisson regression and one variant of it, negative binomial regression (see Lee, Martinez, and Rosenfeld 2001; Lee and Ousey 2001; Osgood and Chambers 2000). Poisson regression is a maximum likelihood estimator, similar to OLS when none of the assumptions are violated. However, Poisson regression is designed to accommodate dependent variables that have either a low count or a low rate, such as homicide victimization and other rare events.

There are two other issues related to the use of the Poisson estimator. First, while Poisson regression is often used to analyze dependent variables that are measured as counts, it can also be modified to analyze per capita rates of crime. This is accomplished by specifying the natural logarithm of the population at risk as an offset variable, which simply means that it is constrained to a value of 1 in the bivariate or multivariate context.

Second, a main assumption of the Poisson distribution is that the mean and the variance of the outcome of interest are equal. In other words, the fitted values and the residual variance are the same. In more common terms, this means that the independent variables explain all of the variation in the dependent variable. This is an extremely

restrictive assumption, because as Osgood (2000: 28) argues, “there is no more reason to expect that a Poisson regression will explain all of the variation in the true crime rates than to expect that an OLS regression would explain all variance other than error of measurement.” This, however, is often not the case for many social phenomena. When this assumption is violated, the data are said to be overdispersed. When this is the case, an error term needs to be introduced into the model, as is the case when using OLS regression. Failure to account for this may adversely affect the standard errors of the coefficients, and, of course, cause problems with calculating tests of statistical significance. The negative binomial regression model is a variant of the Poisson estimator which simply allows for the introduction of an error term. Where appropriate in the analyses that follow, negative binomial regression is used.

### **Bivariate Analyses**

The bivariate analyses begin with an exploration of the degree of intercorrelation among the independent variables. Table 5 presents the bivariate correlation coefficients between the P\* measures of concentrated disadvantage for Whites. The correlation coefficients between these measures range from .528 to .765, and all correlations are highly statistically significant. What this means is that in cities where female headed households are highly spatially concentrated, so are poverty, unemployment, and high school dropouts. This is not a surprising finding given the work by Wilson (1987) among others, documenting the high level of the spatial concentration of multiple forms of disadvantage in U.S. cities.

**Table 5. Bivariate Correlations Among the P\* Measures of Concentrated Disadvantage for Whites**

---

	I.	II.	III.	IV.
I. P* Female-headed households	--			
II. P* High School Dropouts	.584**	--		
III. P* Poverty	.528**	.528**	--	
IV. P* Unemployment	.765**	.615**	.672**	--

---

\* p < .05, \*\* p < .01

Note: P\* measures refer to the level of spatial concentration of each form of disadvantage within cities.

Table 6 provides the corresponding correlations for blacks. The correlation coefficients for blacks range from .488 to .775, with three of these correlations in excess of .700. As was observed for whites, the measures of the spatial concentration of disadvantage are highly correlated with one another. Because the measures of concentrated disadvantage are highly correlated with one another for both blacks and whites, there is the potential for multicollinearity problems in the multivariate models. To address this problem I follow the lead of Krivo and Peterson (2000) and use these measures to create an index. To generate the index each of the variables were first converted to their standardized score (with a mean of 0 and a standard deviation 1), added together, and then averaged. The final indices for whites and blacks are simply referred to as concentrated disadvantage indices.

Table 7 provides the bivariate correlations between the sex specific homicide victimization rates for Whites and each of the variables used in the following multivariate analyses. For white females, this table indicates that white concentrated disadvantage has a strong positive relationship with female homicide victimization. This is also the case for men, and the coefficient is slightly stronger for men than for women (.53 versus .47). Among the inequality measures, only the difference in college education is significantly related to both male and female homicide victimization rates. The negative coefficient indicates that where the degree of inequality in this sphere is high, homicide victimization rates for both sexes are low. Among the control variables, the age structure for females has a negative association with the female victimization rate, but the association is

**Table 6. Bivariate Correlations Among the P\* Measures of Concentrated Disadvantage for Blacks**

---

	I.	II.	III.	IV.
I. P* Female-headed households	--			
II. P* High School Dropouts	.533**	--		
III. P* Poverty	.775**	.615**	--	
IV. P* Unemployment	.704**	.488**	.756**	--

---

\* p < .05, \*\* p < .01

Note: P\* measures refer to the level of spatial concentration of each form of disadvantage within cities.



very modest. Finally, the total population size (logged) is positively associated with both white male and female rates of homicide victimization.

Table 8 presents the bivariate negative binomial regression coefficients for the effect of each independent variable on the sex specific victimization rate for Whites. There are both similarities and differences with respect to the previous table. First, white concentrated disadvantage continues to have a positive association with both male and female rates of victimization. These coefficients are interpretable as a percentage change, which effectively makes standardized comparisons across models feasible. To interpret these coefficients, Lee and Ousey (2001) suggest the following formula:

$$(((\exp^{(B_k * S_k)} - 1) * 100)$$

Following this formula, the coefficient ( $B_k$ ) is first multiplied by the corresponding standard deviation for that independent variable ( $S_k$ ). This number is then exponentiated, subtracted from 1, and multiplied by 100. The exponentiated coefficient then gives the percentage change in the per capita rate of homicide victimization for a one standard deviation increase in the relevant independent variable.

For example, the coefficient for white concentrated disadvantage on white female homicide victimization is .285. The standard deviation for the white concentrated disadvantage index is .842. Carrying through the equation,  $.285 * .842 = .23997$ . This figure exponentiated  $= 1.271$ . One is then subtracted from this number, and it is multiplied by 100. And so a one standard deviation increase in the level of white concentrated disadvantage is associated with a 27% increase in the rate of white female homicide victimization. The coefficient for males is markedly stronger at .5171.

**Table 7. Bivariate Correlations Between Homicide Victimization and Independent Variables for Whites**

	Homicide Victimization Rates	
	Females	Males
White Concentrated Disadvantage Index	.47**	.53**
<b>Gender Inequality</b>		
M-F Difference in Income	-.06	-.11
M-F Difference in H.S. Ed.	.04	-.03
M-F Difference in College Ed.	-.26**	-.19*
M-F Difference in Employment	-.06	-.05
<b>Control variables</b>		
White Male Divorce	----	.15
White Female Divorce	.17	----
White Males age 15-29	----	-.13
White Females age 15-29	-.19*	----
South	-.12	-.14
Population size (ln)	.25**	.42**

\* p < .05, \*\* p < .01

Carrying through the same formula, a one standard deviation increase in the level of white concentrated disadvantage is associated with a 55% increase in the rate of white male homicide victimization. These bivariate relationships suggest concentrated disadvantage has a stronger effect on male victimization than on female victimization for whites.

For white females, three other variables have statistically significant bivariate relationships with their rates of homicide victimization. The coefficient for the sex difference in median incomes reveals that a one standard deviation increase in the

difference between male and female median incomes is associated with a 7% decrease in the rate of homicide victimization for white females. In contrast, the white female divorce rate has a positive bivariate association with white female victimization, and the coefficient suggests that a one standard deviation (2%) increase in divorce for this group is associated with a 14% increase in the homicide victimization rate. Finally, the coefficient for the logged population size is also statistically significant, and this coefficient indicates that a one standard deviation change (.786) is associated with a 23.5% increase in white female homicide victimization. For white men, the only significant bivariate relationship aside from concentrated disadvantage is population size, which has an effect of 43.7%.

With both statistical techniques, the measures of concentrated disadvantage and population size are both positively and statistically significantly related to homicide victimization for white men and women. However, while the male-female income difference is significant for white women in the negative binomial model, it is not when looking at the Pearson correlation. In fact, the male-female difference in college attainment is significant when using the Pearson correlation coefficient but not when using the negative binomial technique. Similar differences are observed when looking at white female divorce rates and the white female age structure.

Tables 9 and 10 provide the corresponding bivariate relationships for blacks. As with whites, there are similarities and differences in significant bivariate relationships for blacks depending on which statistical technique is used. Most notably, none of the inequality measures is significantly related to homicide victimization for black females in

Table 9 when using the Pearson correlation coefficient. However, both sex differences in high school attainment and employment are negatively and significantly related to black female victimization in the negative binomial models. Otherwise, with the exception of the black male divorce rate, the remaining variables in Table 9 are consistent for both males and females in terms of statistical significance.

**Table 8. Bivariate Relationships Between Homicide Victimization and Independent Variables for Whites Using Negative Binomial Estimator**

	<b>Homicide Victimization Rates</b>	
	<b>Females</b>	<b>Males</b>
White Concentrated Disadvantage Index	0.285**	0.517**
<b>Gender Inequality</b>		
M-F Difference in Income	-0.032*	-0.059
M-F Difference in H.S. Ed.	0.980	-1.689
M-F Difference in College Ed.	-2.505	-4.482
M-F Difference in Employment	-0.833	-1.597
<b>Control variables</b>		
White Male Divorce	-----	5.769
White Female Divorce	6.468*	-----
White Males age 15-29	-----	-2.926
White Females age 15-29	-3.522	-----
South	-0.068	-0.237
Population size (ln)	0.269**	0.461**

\* p < .05, \*\* p < .01

Note: The coefficients are unstandardized bivariate negative binomial coefficients.

Turning to Table 10 the coefficients for black concentrated disadvantage indicate that a one standard deviation increase in this variable is related to a 23% increase in homicide victimization for females and a 31% increase in homicide victimization for

males. As was the case for whites, concentrated disadvantage has a stronger effect on black male victimization rates than on black female victimization rates. Also, relating these findings back to rates of victimization for white males and females, concentrated disadvantage tends to have a stronger effect on white homicide victimization than on black homicide victimization.

**Table 9. Bivariate Correlations Between Homicide Victimization and Independent Variables for Blacks**

	Homicide Victimization Rates	
	Females	Males
Black Concentrated Disadvantage Index	.33**	.42**
<b>Gender Inequality</b>		
M-F Difference in Income	-.15	-.08
M-F Difference in H.S. Ed.	-.04	-.18*
M-F Difference in College Ed.	-.01	-.10
M-F Difference in Employment	-.16	-.24**
<b>Control variables</b>		
Black Male Divorce	----	.11
Black Female Divorce	.25**	----
Black Males age 15-29	----	-.25**
Black Females age 15-29	-.31**	----
South	-.05	-.06
Population size (ln)	.30**	.37**

\* p < .05, \*\* p < .01

Turning to the gender inequality measures, the sex difference in high school education is related to a 12% decrease in rates of black female homicide victimization and an 11% decrease in rates for black males. Similarly, the sex difference in employment is associated with a 16% decrease in victimization rates for black females

and a 14% decrease in rates for black males. Among the control variables, the black female divorce rate is positively associated with homicide victimization for black women, but the black male divorce rate is not significantly related to victimization for black men. Population size (logged) is also positively related to victimization for both black males and black females; however, the effect is stronger for males. In contrast to expectations, the male and female age structure variables are negatively related to rates of male and female homicide victimization. Although it is unclear why this is the case, numerous studies report this same finding (e.g., Land et al. 1990).

**Table 10. Bivariate Relationships Between Homicide Victimization and Independent Variables for Blacks Using Negative Binomial Estimator**

	<b>Homicide Victimization Rates</b>	
	<b>Females</b>	<b>Males</b>
Black Concentrated Disadvantage Index	0.237**	0.316**
M-F Difference in Income	-0.075	-0.041
M-F Difference in H.S. Ed.	-4.189*	-3.864*
M-F Difference in College Ed.	-2.126	-3.257
M-F Difference in Employment	-5.774**	-5.143**
<b>Control variables</b>		
Black Male Divorce	-----	2.975
Black Female Divorce	4.764**	-----
Black Males age 15-29	-----	-4.486**
Black Females age 15-29	-6.308**	-----
South	-0.070	-0.062
Population size (ln)	0.168**	0.240**

\* p < .05, \*\* p < .01

Note: The coefficients are unstandardized bivariate negative binomial coefficients.

Table 11 presents the bivariate correlation coefficients for the independent variables for whites. The first noticeable feature of this table is that white concentrated disadvantage is negatively related to two measures of gender inequality, the male-female income difference and the male-female difference in college attainment. This suggests that where concentrated disadvantage is higher among whites, the degree of gender inequality is lower. The coefficients for these associations are  $-.266$  and  $-.466$ , respectively, and they are both statistically significant. One possible explanation for these inverse relationships is that in highly disadvantaged areas, opportunities for educational attainment and higher incomes are more limited. And so it is not surprising that gender inequality is lower where white concentrated disadvantage is higher, because the limited availability of opportunities may effectively level the playing field between men and women by undermining in particular the advantages of being a white male. It is also notable that white concentrated disadvantage has a moderate positive association with white gender differences in attaining a high school education ( $r=.270$ ). This suggests that although the sex based discrepancy in college attainment is less pronounced where white concentrated disadvantage is more extreme, the discrepancy in high school level attainment is more pronounced, suggesting that white concentrated disadvantage only limits the educational attainment of whites to a certain degree.

Table 11 also indicates that the level of white concentrated disadvantage is lower on average in the Southern part of the U.S. The measures of white gender inequality tend to have a moderate level of inter-correlation. For example, the gender difference in income among whites is positively associated with the gender difference in college

**Table 11. Correlation Matrix of Independent Variables for Whites.**

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
I	1.00										
II	-0.27 **	1.00									
III	0.27 **	0.03	1.00								
IV	-0.47 **	0.30 **	0.07	1.00							
V	-0.15	0.18 *	0.06	0.15	1.00						
VI	-0.02	-0.12	-0.06	-0.04	-0.19 *	1.00					
VII	-0.15	-0.14	-0.19 *	0.10	-0.12	0.89 **	1.00				
VIII	-0.07	-0.40 **	-0.07	0.02	-0.07	-0.35 **	-0.22 *	1.00			
IX	-0.04	-0.47 **	0.06	-0.02	0.07	-0.39 **	-0.28 **	0.91 **	1.00		
X	-0.27 **	0.05	0.15	0.43 **	0.48 **	-0.01	0.04	-0.07	0.03	1.00	
XI	0.16	-0.13	0.00	-0.01	-0.01	0.07	0.08	-0.08	-0.10	-0.12	1.00

Note: I. White Concentrated Disadvantage Index  
 II. M-F Diff. in Income  
 III. M-F Diff. in H.S. Ed  
 IV. M-F Diff. in College Ed.  
 V. M-F Diff. in Employment  
 VI. White Male Divorce  
 VII. White Female Divorce  
 VIII. White Females age 15-29  
 IX. White Males age 15-29  
 X. South  
 XI. Population size (ln)



attainment ( $r=.303$ ), which indicates that where the difference in college attainment between white males and females is high, the gender difference in median incomes among whites is also high. This same observation is true to a lesser extent for the relationship between gender differences in median income and employment among whites. Interestingly, the gender difference in employment is not associated with gender differences in either high school or college attainment for whites. In contrast to this, where the age structure is more concentrated in the 15 to 29 year old age range, the degree of inequality in male and female median incomes is lower. This is not surprising given the idea that at the early phases of their labor force participation, men and women are generally on more equal footing. However, as their tenure in the labor force progresses, the discrepancies between them generally increase. Finally, it is also apparent from this table that the gender gap in both college attainment and employment is much more pronounced in Southern cities than in other regions of the U.S. ( $r=.432$  and  $r=.480$  respectively).

Table 12 provides the corresponding correlation matrix for blacks. Similar to the situation for whites, black concentrated disadvantage is negatively related to the levels of gender inequality among blacks. Three of the four correlation coefficients are in the moderate to strong range (black high school difference =  $-.449$ , black college difference =  $-.287$ , black employment difference =  $-.195$ ), and each of these three are statistically significant. Like the case for whites, the correlations indicate that where black disadvantage is more concentrated, gender inequality is generally lower. However, there are some differences between blacks and whites worth noting. First, employment

inequality has a significant negative association with black disadvantage but not white disadvantage. Second, income inequality is not significantly related to black disadvantage, but it is to white disadvantage. Third, for the educational inequality measures, whereas the difference in college attainment had a stronger association with white concentrated disadvantage, it is actually the difference in high school attainment which has a stronger association with black concentrated disadvantage.

Another contrast is that where concentrated disadvantage among whites was lower in the south, there is apparently no significant regional variation in the level of concentrated disadvantage for blacks. Related to this are the regional variations in inequality among blacks. Differences in employment between black males and females are higher in the South, as was the case for whites. But in contrast to whites, gender inequality in college attainment is much lower in the south among blacks.

Turning next to the correlations among the inequality measures, sex differences in median income among blacks are positively associated with male-female differences in high school education and employment. Interestingly, this table also highlights that differences in high school attainment appear to be more salient for blacks, whereas differences in college attainment are more salient for whites. This is particularly evident where the correlation between black differences in median income is stronger for the difference in high school education ( $r=.308$ ), whereas for whites the correlation between income differences and college education is  $r=.303$ .

**Table 12. Correlation Matrix of Independent Variables for Blacks.**

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
I	1.00										
II	-0.17	1.00									
III	-0.45 **	0.31 **	1.00								
IV	-0.29 **	-0.10	0.41 **	1.00							
V	-0.19 *	0.35 **	0.25 **	-0.15	1.00						
VI	-0.09	-0.08	0.29 **	0.42 **	-0.05	1.00					
VII	-0.22 *	-0.11	0.33 **	0.41 **	-0.14	0.80 **	1.00				
VIII	-0.38 **	-0.06	0.02	0.00	0.24 **	-0.36 **	-0.31 **	1.00			
IX	-0.37 **	-0.02	0.12	-0.12	0.18 *	-0.49 **	-0.34 **	0.79 **	1.00		
X	0.10	0.00	-0.03	-0.48 **	0.42 **	-0.28 **	-0.32 **	0.10	0.12	1.00	
XI	0.19 *	-0.09	0.03	0.02	-0.14	0.12	0.16	-0.16	-0.04	-0.12	1.00

Note: I. Black Concentrated Disadvantage Index  
 II. M-F Diff. in Income  
 III. M-F Diff. in H.S. Ed  
 IV. M-F Diff. in College Ed.  
 V. M-F Diff. in Employment  
 VI. Black Male Divorce  
 VII. Black Female Divorce  
 VIII. Black Females age 15-29  
 IX. Black Males age 15-29  
 X. South  
 XI. Population size (ln)

Finally, for whites it was the case that where there was a larger proportion of both males and females in the 15-29 year old age range the differences in median income were smaller. For blacks this is not the case. However, it is the case for blacks that where the population is comprised of a larger proportion of males and female in this age range, sex differences in employment are greater.

It is helpful to relate the findings from these initial bivariate analyses back to the hypotheses stated at the end of Chapter 2, because they provide an initial, although limited, test of the study expectations. Focusing on the results from the bivariate negative binomial analyses, these findings generally support the first three hypotheses. That is, concentrated disadvantage was positively associated with rates of victimization for all four groups. Moreover, the effect of concentrated disadvantage was generally stronger for males than females, and stronger for whites than blacks. As for the gender inequality hypotheses, the bivariate results provide partial support for hypotheses 5, 6, and 7. That is, greater discrepancies between men and women are related to lower rates of female homicide victimization, depending on the measure, the effects of gender inequality are generally stronger for women than for men, and the effects of gender inequality are generally greater for blacks than for whites.

## **Multivariate Analyses**

### Diagnostics for Multivariate Analyses

Tables 13 through 16 present results for the multivariate analyses. Before discussing these results, a discussion of diagnostics is in order. The main problem encountered in macro-level research on crime is multicollinearity. Multicollinearity

occurs when two or more independent variables are so highly correlated with one another that their independent effects cannot be accurately estimated. Multicollinearity can bias both estimates from multivariate regression models, and tests of statistical significance. According to Land et al. (1990), the conflicting results of a great deal of prior research on macro-level homicide rates can be attributed to this problem. To probe for the presence of multicollinearity in the following analyses, all of the models presented in Tables 13 through 16 were re-estimated using Ordinary Least Squares regression to secure Variance Inflation Factors (VIF's). The convention in prior research is to consider VIF's near or in excess of 4.0 as indicative of a problematic level of multicollinearity. In all of the models below, the VIF's are below 2.0, which suggests that multicollinearity is not a problem with these data. The OLS regression models that were run to secure the VIF's are presented in Appendix A.

A second main statistical concern with respect to macro-level analyses of crime is the problem of heteroskedasticity, or unequal error variance. Unequal error variance occurs when the errors in prediction are large for some parts of the sample, and narrow for others. An example of this would be if errors in prediction were large for cities that have a smaller population size in the sample, but relatively small for cities that were very large. This basically means that the independent variables more accurately predict the dependent variable in large cities than they do in small cities. Like multicollinearity, the presence of heteroskedasticity can bias tests of statistical significance. As noted earlier in this chapter, by their nature, Poisson and Negative Binomial regression estimation techniques circumvent this problem.

A third main problem encountered in macro-level statistical analyses of crime is omitted variable bias. Omitted variable bias refers to the potential for an observed relationship between a given independent variable and a given dependent variable to be rendered insignificant when a third variable is controlled for. When this is the case, the initial relationship is said to be spurious in nature, meaning that it is not a true relationship. To probe for this possibility, several other models were re-estimated, controlling for potentially important independent variables. These are presented in Appendices B and C. I return to this issue later in the chapter.

### Results of Multivariate Analyses

A series of six negative binomial regression models predicting homicide victimization rates for white females is presented in Table 13. The first model is a base model that includes only the control variables. Only two of these variables are significant; however, they are in the anticipated direction. First, the proportion of divorced white females (8.823) is positively related to white female homicide victimization, with a one standard deviation increase in the proportion of divorced white women associated with a 19% increase in the rate of white female homicide victimization. The second significant variable is population size. The coefficient for this variable is .276 and corresponds to 24% increase in homicide victimization with a one standard deviation increase in population size. Model 2 introduces a measure of white concentrated disadvantage, and this model provides the first test of hypothesis 1. This variable is both significant and positively related to white female homicide victimization. A one standard deviation increase in concentrated disadvantage is related

**Table 13. Negative Binomial (Poisson) Regression Models Predicting White Female Homicide Victimization, 1990.**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)
Control Variables						
WF Divorce	8.823** (2.412)	11.583** (1.994)	8.360** (2.474)	9.809** (2.465)	8.833** (2.391)	12.539** (2.314)
WF Age 15-29	-1.299 (1.738)	-0.0231 (1.507)	-1.778 (1.833)	-1.017 (1.756)	-1.345 (1.718)	0.802 (1.788)
South	0.055 (0.112)	0.082 (0.091)	0.052 (0.111)	0.172 (0.121)	0.089 (0.129)	0.107 (0.119)
Population Size (ln)	0.276** (0.052)	0.244** (0.040)	0.268** (0.051)	0.305** (0.054)	0.279** (0.051)	0.253** (0.047)
White Concentrated Disadvantage Index		0.274** (0.055)				0.296** (0.066)
Gender Inequality						
M-F Income Difference			-0.021 (0.028)			0.029 (0.030)
M-F College Difference				-4.811* (2.273)		-0.261 (2.39)
M-F Employment Difference					-3.162 (6.270)	-0.568 (5.41)
Pseudo R <sup>2</sup>	.0653	.1069	.0664	.0747	.0658	.1090
Likelihood Ratio Chi <sup>2</sup>	32.85**	53.79**	33.42**	37.60**	33.10**	54.83**

\* p < .05, \*\* p < .01

Note: Models 2 and 6 are Poisson models based on a test for overdispersion. The remaining models use negative binomial regression.

Note: The coefficients for M-F income difference are multiplied by 1000.

to a 26% increase in the rate of homicide victimization for white women. As with model 1, the effects of divorce and population size remain significant. These two variables perform consistently across all six models.

Turning to gender inequality, models 3 through 6 present the results from these multivariate analyses. Each measure of gender inequality was entered into a model separately to see how it performed apart from concentrated disadvantage. The first measure of inequality examined is income inequality. As model 3 illustrates, the association between sex differences in median income and white female homicide victimization is not statistically significant in the presence of control variables. This is confirmed by an interpretation of the coefficient, that indicates that a one standard deviation increase in the income difference between men and women is only associated with a 4.8% decrease in the white female homicide victimization rate. Recall from table 8 that income inequality was the only measure of gender inequality significantly related to white female homicide victimization in the bivariate analyses. However, when relevant controls are held constant, it is not significant.

Model 4 includes the measure of the sex difference in college attainment for Whites. The coefficient for this relationship indicates that a one standard deviation increase in the male-female difference in college attainment is associated with a 13% decrease in the rate of white female homicide victimization. In other words, larger gaps in men's and women's level of education are associated with lower rates of white female homicide victimization. This finding is consistent with the backlash hypothesis. Although the bivariate relationship between the gender gap in college attainment and



white female homicide victimization was not significant, in the multivariate analysis it is. The correlation matrix in Table 11 indicates that this measure is correlated with the dummy variable for south ( $r=.43$ ). To determine if this finding is due to multicollinearity, I ran the same model using OLS regression to get VIF's. No VIF was above 1.3, suggesting multicollinearity was not a problem here.

The last measure of gender inequality is the difference in the percentage of men and women in the labor force who are employed. The results for this analysis are presented in model 5. Although the relationship between the male-female employment difference is negatively related to the rate of victimization, the coefficient is not statistically significant. Finally, the results for the full model, including all three measures of gender inequality and white concentrated disadvantage, are presented in model 6. As with model 2, the effect of white concentrated disadvantage is moderately strong and positive. A one standard deviation increase in white concentrated disadvantage is associated with a 28% increase in the rate of homicide victimization of white women. None of the gender inequality measures is statistically significantly related to homicide victimization when concentrated disadvantage is taken into account. Therefore, the data for white females fail to support hypotheses 4 or 5. Finally, the percentage of white females divorced and the total population size retain their effects in this final model. The auxiliary OLS models reveal that the highest VIF is 1.78, which suggests that multicollinearity is not a problem. The Pseudo R-square statistic indicates that about 11% of the variance in white female homicide victimization rates is explained by this model.

Table 14 presents the same models for white males. Comparing the models for women and men, there are several noticeable findings. First, like with women, population size has a consistent positive and moderately strong relationship with male victimization. In model 2, concentrated disadvantage exhibits a strong positive effect on male victimization. With a one standard deviation increase in white disadvantage, there is a corresponding 51% increase in rates of white male victimization. Note that this effect is twice as strong as was observed for white females, which provides support for hypothesis 2. Divorce also has a significant effect in this model and is associated with a 16% increase in white male homicide victimization. In model 3, sex based income inequality is not a significant predictor of male victimization, but in model 4, the effect of education inequality on male homicide victimization is similar to that for white females. The difference in college attainment between men and women is related to a 16% decrease in male victimization. Interestingly, the effect of education inequality is slightly stronger for men than it is for women. Employment inequality is not significantly related to rates of homicide victimization for white males in model 5, as was the case for white females. Turning to the full model, concentrated disadvantage has the strongest effect on white male victimization. The coefficient indicates that a one standard deviation increase in white concentrated disadvantage is associated with a 60% increase in the rate of white male homicide victimization. Moreover, the effect of concentrated disadvantage is nearly twice as strong for men as it is for women. Divorce is also positively and significantly related to male homicide victimization. This relationship appears to be significant only when concentrated disadvantage is in the model. An examination of the variance inflation

**Table 14. Negative Binomial Regression Models Predicting White Male Homicide Victimization, 1990.**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)
Control Variables						
WM Divorce	4.595 (3.543)	7.575* (3.097)	3.273 (3.647)	4.642 (3.529)	5.498 (3.665)	9.964** (3.338)
WM Age 15-29	-0.580 (1.788)	-0.086 (1.561)	-2.418 (2.230)	-0.785 (1.791)	-0.682 (1.788)	0.904 (1.944)
South	-0.183 (0.138)	0.036 (0.124)	-0.170 (0.137)	0.005 (0.158)	-0.233 (0.147)	-0.986 (0.151)
Population Size (ln)	0.442** (0.084)	0.396** (0.071)	0.411** (0.085)	0.464** (0.083)	0.440** (0.083)	0.392** (0.074)
White Concentrated Disadvantage Index		0.492** (0.077)				0.557** (0.088)
Gender Inequality						
M-F Income Difference			-0.053 (0.038)			0.028 (0.036)
M-F College Difference				-5.777* (2.499)		2.179 (2.593)
M-F Employment Difference					6.116 (6.387)	9.525 (5.823)
Pseudo R <sup>2</sup>	.0411	.0888	.0433	.0475	.0422	.0940
Likelihood Ratio Chi <sup>2</sup>	33.98**	73.33**	35.78**	39.25**	34.84**	77.63**

\* p < .05, \*\* p < .01

Note: The coefficients for M-F income difference are multiplied by 1000.

factors indicates that multicollinearity is not a problem, as the highest VIF for this model is 2.07, and the VIF for the measure of white male divorce is only 1.37. Overall, this model explains about 10% of the variance according to the Pseudo R-square statistic.

Table 15 presents the corresponding models for black females. Model 1 indicates, as was the case for white females, that black female divorce rates and the total population size are associated with higher rates of black female homicide victimization. A one standard deviation increase in the percentage of black females that are divorced is associated with a 9% increase in the rate of black female homicide victimization. The corresponding coefficient for the logged population size is 11%. In model 2, the measure of black concentrated disadvantage is entered into the equation. This variable, as expected, has a positive and statistically significant association with the black female homicide victimization rate. The coefficient of .235 indicates that a one standard deviation increase the level of black concentrated disadvantage is associated with a 22.4% increase in the rate of black female homicide victimization.

In models 3 through 5, each of the gender inequality measures is entered separately into the equation which includes the control variables. In model 3 the effect of the black sex difference in income is statistically insignificant, suggesting that it has little role in determining rates of black female homicide victimization. In contrast, the inequality measures in models 4 and 5 provide a preliminary indication that differences in the proportion of black males and females that have a high school education and the sex difference in employment for blacks are both associated with lower rates of black female homicide victimization. For these coefficients, a one standard deviation increase in the

**Table 15. Negative Binomial Regression Models Predicting Black Female Homicide Victimization, 1990.**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)
<b>Control Variables</b>						
BF Divorce	4.303* (2.041)	7.054** (2.054)	3.864 (2.074)	6.155** (1.997)	4.867* (1.945)	7.251** (1.974)
BF Age 15-29	-4.364 (2.282)	-0.979 (2.435)	-4.704* (2.302)	-2.923 (2.218)	-2.860 (2.267)	-0.344 (2.446)
South	0.119 (0.102)	0.119 (0.098)	0.105 (0.102)	0.131 (0.096)	0.229* (0.105)	0.200 (0.109)
Population Size (ln)	0.135** (0.051)	0.104* (0.046)	0.123** (0.051)	0.115** (0.046)	0.102* (0.047)	0.085* (0.044)
Black Concentrated Disadvantage Index		0.235** (0.073)				0.166* (0.079)
<b>Gender Inequality</b>						
M-F Income Difference			-0.053 (0.043)			0.002 (0.046)
M-F High School Difference				-4.603** (1.728)		-2.016 (1.906)
M-F Employment Difference					-5.177* (2.202)	-3.586 (2.446)
Pseudo R <sup>2</sup>	.0408	.0630	.0439	.0545	.0512	.0712
Likelihood Ratio Chi <sup>2</sup>	20.06**	30.99**	21.59**	26.79**	25.17**	35.01**

\* p < .05, \*\* p < .01

Note: The coefficients for M-F income difference are multiplied by 1000.

degree of inequality is associated with a 12.9% (high school difference) reduction and a 14.39% (employment difference) reduction in black female homicide victimization rates. This is consistent with the bivariate relationship for these two variables. It is also consistent with the backlash hypothesis, and supports hypothesis 5.

As model 6 in this same table indicates however, these effects are not sustained when all three inequality measures and the measure of black concentrated disadvantage are included in the regression model simultaneously. In model 6, the percentage of black females that are divorced retains its positive and statistically significant effect as does the logged population size and the black concentrated disadvantage index. A one standard deviation increase in each of these variables is associated with a 15.61% (% black females divorced), a 6.9% (logged population size), and a 15.35% (black concentrated disadvantage index) increase in the black female homicide victimization rate. The Pseudo R-square indicates that roughly 7% of the variance in black female homicide victimization rates is explained in the full model.

Relating the results of this final model back to the hypotheses stated at the end of Chapter 2, like the results for both white females and white males, hypothesis 1, again, receives support. In addition, when considering hypothesis 3, the results seem to indicate that whereas for white females the effect of concentrated disadvantage was 28.23% in the final model, and the effect of this variable was 59.66% in the final model for white males, the effect of 15.35% for black females is substantially less. This finding then provides some support for hypothesis 3. Some of the models in this table also provide support for the backlash hypothesis, and for the hypothesis that black women will especially be

affected by the degree of gender inequality, but since these variables do not perform well in the face of concentrated disadvantage, caution should be exercised in drawing inferences that are too strong.

Table 16 presents the results for black men. As model 1 indicates, the logged population size is positively associated with black male homicide victimization, with a one standard deviation increase in this variable corresponding to a 21% increase in the rate of black male victimization. In this model the measure of the age structure is also significant, but in the opposite direction. However, this measure does not perform consistently across models and its effect is generally null.

As was the case for black females, black concentrated disadvantage is positively associated with homicide victimization when it is entered into the equation in model 2. The coefficient is statistically significant, and corresponds to a 26% increase in rates of black male victimization. In addition, the effect is somewhat stronger for black men than for black women. As for the gender inequality measures, none was statistically significant at the .05 level; however, two of the measures reach significance at the .10 level. These measures are education inequality and employment inequality. Interestingly, if we allow for the more liberal level of significance, these forms of gender inequality have similar effects for both black men and women. For both, the gender gap in high school education as well as the employment gap are negatively associated with rates of homicide victimization. As with the previous groups, the introduction of the measure of concentrated disadvantage into the model renders the gender inequality measures

**Table 16. Negative Binomial Regression Models Predicting Black Male Homicide Victimization, 1990.**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)
Control Variables						
BM Divorce	-2.095 (3.003)	2.313 (3.006)	-2.269 (3.016)	0.095 (3.164)	-0.848 (3.013)	4.042 (3.221)
BM Age 15-29	-5.027** (1.890)	-1.567 (2.015)	-5.101 (1.894)	-3.627 (1.999)	-4.028* (1.923)	-0.373 (2.130)
South	0.029 (0.101)	0.001 (0.097)	0.025 (0.102)	0.030 (0.100)	0.112 (0.110)	0.083 (0.109)
Population Size (ln)	0.244** (0.062)	0.185** (0.058)	0.238** (0.063)	0.235** (0.060)	0.221** (1.973)	0.177** (0.058)
Black Concentrated Disadvantage Index		0.271** (0.068)				0.248** (0.071)
Gender Inequality						
M-F Income Difference			-0.020 (0.036)			0.031 (0.039)
M-F High School Difference				-3.102+ (1.673)		-1.041 (1.768)
M-F Employment Difference					-3.548+ (1.973)	-3.232 (1.098)
Pseudo R <sup>2</sup>	.0269	.0454	.0273	.0309	.0307	.0486
Likelihood Ratio Test	22.84**	38.46**	23.14**	26.23**	26.02**	41.17**

\* p < .05, \*\* p < .01

Note: The coefficients for M-F income difference are multiplied by 1000.



statistically insignificant. Overall, a small amount of variance in the black male homicide victimization rate is explained by this model.

### Alternative Models

In the past, several studies have included other potentially important variables in the study of macro-level crime rates. For example, as discussed in Chapter 2, a measure of percent black is often included to predict crime rates. Initially, percent black was used as a proxy measure for a black subculture of violence. However, more recently it has been used as a measure of disadvantage. It is commonly included in indices of disadvantage along with measures of female headed households, poverty, and unemployment (Land et al. 1990; Smith and Brewer 1995; Steffensmeier and Haynie 2000a). Because of its highly collinear relationships with these other measures, it is often necessary to collapse this measure into an index to reduce problems associated with multicollinearity.

Concentrated disadvantage as operationalized in this study taps into the actual spatial concentration of poverty, unemployment, female headed households, and high school dropouts. Because the measure of percent black is largely a demographic measure, it does not mesh well with this conceptualization. In addition, my preliminary analyses indicated that percent black was highly correlated with the disadvantage indices, especially the black concentrated disadvantage index  $r=.57$ . It was therefore excluded from the main models presented in the preceding tables. However, to probe for a possible problem with omitted variable bias, each model is re-examined including this measure, using both Negative Binomial Regression and Ordinary Least Squares regression. The

results of these models are presented in Appendices B. As these models indicate, the percent black is generally positively associated with homicide victimization for all groups excluding white males. However, a close examination of the models for blacks indicates that when this measure is included, the measure of concentrated disadvantage is no longer statistically significant. For both black males and black females, the variance inflation factors (VIFs) are highest for these two variables. Specifically for black females the VIFs for concentrated disadvantage and percent black are 1.96 and 2.11, respectively. The corresponding VIFs for black males are 2.07 and 2.10. Although these generally are not considered high values, the fact that concentrated disadvantage is no longer statistically significant when percent black is entered into the model suggests a slight case of multicollinearity. This may be an example of the partialling fallacy. According to Land et al. (1990), when two or more variables have a moderate to high correlation with one another and are entered in a regression model simultaneously, the variable with the highest correlation with the dependent variable is allocated all of the explanatory power. This is likely the case here and because my measure of concentrated disadvantage is the more direct operationalization of the concept of interest, I retain concentrated disadvantage in the models, rather than percent black.

A second variable that has received attention in prior research is a measure of black-white residential segregation. Racial residential segregation is often measured using the index of dissimilarity (for example, Peterson and Krivo 1993). The index of dissimilarity provides a measure of the proportion of blacks who would have to change neighborhoods (i.e., census tracts) in order to achieve evenness in the racial distribution

of residents in a city. To examine the effect of this measure on race- and sex-specific homicide victimization, net the effects of concentrated disadvantage and the set of control variables, auxiliary models were also run including this measure. The results from these models are included in Appendix C. Generally, the results show that the index of dissimilarity is not an important predictor of race- and sex-specific homicide victimization rates, particularly for blacks. As with the measure of percent black, the index of dissimilarity is highly correlated with concentrated disadvantage for blacks ( $r=.73$ ). As before, given that the conceptual focus is concentrated disadvantage, the index of dissimilarity was also excluded from the full models.

### **Summary**

Relating these findings to the hypotheses, hypothesis 1 is again supported. In terms of hypothesis 2, the effect of concentrated disadvantage is stronger for black males than for black females (as was the case for whites). For hypothesis 3, when considered within sex, concentrated disadvantage generally has a stronger effect on rates of homicide victimization for whites than it does for blacks. For the gender inequality hypotheses, the data do not support hypothesis 4, but do provide limited support for hypothesis 5, the backlash hypothesis. However, caution should be used when drawing conclusions with respect to this hypothesis because the gender inequality measures are generally statistically insignificant when concentrated disadvantage is controlled. Considering hypothesis 6, the gender inequality measures were more relevant to female than to male homicide victimization. Finally, with respect to hypothesis 7, the gender inequality measures were generally stronger for black females than for white females, but again,

caution should be exercised in drawing definitive conclusions. A further discussion of these results and how they relate to theory and future research on race- and sex-specific homicide victimization is discussed in greater detail in the following chapter.

## **CHAPTER 5: DISCUSSION AND CONCLUSION**

### **Introduction**

This chapter summarizes the results of the study and discusses the theoretical implications as well as directions for future research. The chapter is divided into four sections. The first section summarizes the findings and relates them to the seven research hypotheses presented at the end of Chapter 2. In the second section, I discuss the limitations of the present study. The third section delineates the theoretical implications of the findings from this study. Finally, suggestions for future research are presented in section four.

### **Summary of Findings in Relation to Research Hypotheses**

The purpose of this study was to extend macro-level research on homicide victimization in several ways. First, unlike most prior research, the measures of homicide victimization were disaggregated by race and sex simultaneously. The rationale for this is that failing to disaggregate by both of these dimensions at the same time may obscure important differences between groups. Second, I attempted to build on research in the concentrated disadvantage tradition by examining the effects of race-specific concentrated disadvantage on sex- and race-specific victimization rates. Third, I examined the effects of gender inequality within race on rates of homicide victimization in an attempt to determine the relevance of gender inequality for black and white rates of violence. Finally, instead of relying on traditional methods (OLS regression) to estimate these relationships I employed an estimation strategy designed specifically for rare event data (Poisson and Negative Binomial Regression). Overall, the study tested seven hypotheses.

These hypotheses are summarized in Table 17 with the results for each on the basis of the empirical findings.

The first hypothesis stated that the spatial concentration of socioeconomic disadvantage would be positively associated with rates of homicide victimization for men and women and for blacks and whites. Concentrated disadvantage was measured as an index of the standardized scores of four race-specific measures of concentrated deprivation: female-headed households, high school dropouts, poverty, and unemployment. As expected, concentrated disadvantage is positively and statistically significantly related to group-specific rates of homicide victimization, regardless of sex or race of the victims. Thus, hypothesis 1 was supported. These findings are consistent with prior research on disadvantage and group-specific rates of homicide. For example, Krivo and Peterson (2000) report similar results in their study of race-disaggregated homicide victimization rates, as does Lee (2000) in his race-disaggregated analysis of city-level homicide arrest rates.

Hypothesis 2 stated that the effect of concentrated disadvantage would be stronger for males than for females. This expectation was based in prior research documenting that macro-level socioeconomic conditions have a more severe impact on male crime rates than female crime rates (Brewer and Smith 1992; Steffensmeier and Haynie 2000a). The results indicate that within race, the effect of concentrated disadvantage on rates of homicide victimization is more pronounced for males than for females. Put another way, the positive effect of concentrated disadvantage is generally stronger for males than

**Table 17. Summary of Findings in Relation to Expectations.**

Hypotheses	Findings
<p>1. For blacks and whites, concentrated disadvantage is positively and significantly associated with rates of homicide victimization for both men and women.</p>	<p>In this study, concentrated disadvantage is measured as an index of the spatial concentration of four race-specific measures of deprivation: female-headed households, high school dropouts, poverty, and unemployment. As expected, concentrated disadvantage is positively and statistically significantly related to group-specific rates of homicide victimization, regardless of sex or race of the victims. Thus, this study provides support for hypothesis 1.</p>
<p>2. Within race, the effect of concentrated disadvantage on rates of homicide victimization is more pronounced (or stronger) for males than for females.</p>	<p>The positive effect of concentrated disadvantage is generally stronger for males than for females. This is the case for both blacks and whites. This finding supports hypothesis 2.</p>
<p>3. The effect of concentrated disadvantage on rates of homicide victimization is stronger for whites than for blacks.</p>	<p>The association between concentrated disadvantage and homicide victimization is generally stronger (i.e., associated with a greater percentage change) for whites than for blacks. These data support hypothesis 3.</p>
<p>4. The inequality thesis states that gender inequality is positively associated with rates of female victimization. That is, where gender inequality is high, rates of female homicide victimization will be high.</p>	<p>In this study, gender inequality is measured as male-female differences in three status variables: M-F differences in education, M-F differences in median income, and M-F differences in employment. None of these race-specific measures are positively associated with female homicide victimization for blacks or whites in either the bivariate or multivariate analyses. Thus, hypothesis 4 is not supported with these data.</p>

**Table 17 continued.**

Hypotheses	Findings
<p>5. The backlash hypothesis states that as women make gains in equality with men, men may respond with violence directed towards women. Thus, gender inequality is negatively related to rates of female homicide victimization.</p>	<p>Although education inequality and employment inequality are negatively associated with female homicide victimization, the effects become statistically insignificant once concentrated disadvantage is taken into account. Overall, these measures add very little to the explanation of female homicide victimization in the present study. At best, this study provides partial support for hypothesis 5.</p>
<p>6. The association between gender inequality and homicide victimization rates is stronger for females than for males.</p>	<p>Focusing only on the gender inequality models, the support for hypothesis 6 is mixed. Contrary to the hypothesis, education inequality is the only measure to be significantly related to homicide victimization for white males and females, and its effect is slightly stronger for males. For black males and females, the associations between both education inequality and employment inequality and homicide victimization are stronger for women. Thus, hypothesis 6 is supported only for blacks.</p>
<p>7. For females, the association between gender inequality and homicide victimization is stronger for blacks than for whites.</p>	<p>For black females, both education inequality and employment inequality are significantly related to homicide victimization. For white females, only inequality in college attainment exhibits a statistically significant relationship with victimization. However, when the strength of the education coefficients are compared, the effect is slightly stronger for white females. Thus, this study provides partial support for hypothesis 7.</p>



for females. This is the case for both blacks and whites. This finding then provides support for hypothesis 2.

Hypothesis 3 was that the effects of concentrated disadvantage would be stronger for whites than for blacks. This expectation was grounded in prior research such as that conducted by Ousey (1999) which reports that the effects of structural conditions are usually stronger for whites than for blacks. My analyses revealed that the effect of concentrated disadvantage on rates of homicide victimization was generally stronger for whites than for blacks. Therefore, these data support hypothesis 3.

With respect to gender inequality, hypothesis four tested the inequality thesis or feminist perspective. The inequality thesis stated that gender inequality would be positively associated with rates of female victimization. That is, where gender inequality is high, rates of female homicide victimization will be high. In this study, gender inequality was measured as male-female differences in three status variables: M-F differences in education, M-F differences in median income, and M-F differences in employment. None of these race-specific measures was positively associated with female homicide victimization for blacks or whites in either the bivariate or multivariate analyses. Thus, hypothesis 4 is not supported with these data.

Hypothesis 5 tested the backlash hypothesis. According to the backlash hypothesis, as women make gains relative to men in their social status, men may respond with violence directed toward women. Thus, gender inequality should be negatively related to rates of female homicide victimization. Although education inequality and employment inequality were negatively associated with female homicide victimization,

the effects became statistically insignificant once concentrated disadvantage was taken into account. Overall, these measures add very little to the explanation of female homicide victimization in the present study. At best, this study provides partial support for hypothesis 5.

Hypothesis 6 stated that the association between gender inequality and rates of homicide victimization would be stronger for females than for males. Focusing only on the gender inequality models (when concentrated disadvantage is not controlled for), the support for hypothesis 6 is mixed. Contrary to the hypothesis, education inequality is the only measure to be significantly related to homicide victimization for white males and females, and its effect is slightly stronger for males. For black males and females, the associations between both education inequality and employment inequality and homicide victimization are stronger for women. Thus, hypothesis 6 is supported only for blacks. But caution should be used in drawing strong inferences with respect to this hypothesis given the fact that the relationships are generally reduced to statistical insignificance in the presence of concentrated disadvantage.

Finally, hypothesis 7 stated that the effects of gender inequality would be stronger for black females than for white females. For black females, both education inequality and employment inequality were significantly related to homicide victimization (see models 4 and 5, Table 15). For white females, only inequality in college attainment exhibited a statistically significant relationship with victimization. However, when the strength of the education coefficients are compared, the effect is slightly stronger for white females. Thus, this study provides partial support for hypothesis 7, but again,

caution is suggested in drawing strong inferences based on these findings because concentrated disadvantage tends to overwhelm the effects of gender inequality.

### **Limitations of the Study**

While this study was intended to address some issues that had yet to be investigated, like most social science research, several limitations of the study are noteworthy. Perhaps most notable is that the gender inequality theories seem to suggest a causal process which unfolds over time. Because of the cross-sectional nature of the data used for this study, the processes of increasing or decreasing gender inequality were not tapped into. This may explain why the findings for the gender inequality measures were generally weak. To address this limitation, future research should consider exploring the longitudinal relationships between gender inequality and sex- and race-specific rates of violence.

A second limitation of this study is that the measures of concentrated disadvantage, while race-disaggregated, are not race- and sex-disaggregated. This may be an important issue to explore, because it is not clear whether the concentration of disadvantaged males has more of an impact on female homicide victimization than the spatial concentration of disadvantaged females. Brewer and Smith (1995) allude to this in their discussion of the weak performance of gender inequality measures in their models. As they argue, for female victims of homicide, the perpetrators are typically males living in extremely disadvantaged communities. So it may be that the spatial concentration of disadvantaged males represents a particularly severe threat to women

regardless of the status of females relative to men. While this study did not take this idea into account, it may be an issue worth exploring.

A third limitation to this study is that the rates of victimization were not disaggregated by the nature of the victim-offender relationship. There may be subtle variations in the effects of concentrated disadvantage or gender inequality on rates of sex- and race-specific homicide victimization when the victim and offender are spouses or intimate partners versus acquaintances or strangers. For example, gender inequality may be more relevant to homicides committed between intimates than between strangers because traditional gender roles are most clearly defined within the context of the family. Prior research on the sex ratio of intimate killing, known as the SROK, has explored these issues to an extent (e.g., Gauthier and Bankston 1997; Wilson and Daly 1992), but extending this line of inquiry to race-disaggregated analyses and broadening these measures of gender inequality are desirable paths to follow.

### **Theoretical Implications and Suggestions for Future Research**

One of the main theoretical models used in this study was the concentrated disadvantage perspective. This perspective is grounded mostly in the work of Wilson (1987), Sampson and Wilson (1995), and Massey and Denton (1993). As it has been formulated, the theory states that concentrated disadvantage is associated with high crime rates because it undermines community level social control processes. Specifically, the spatial concentration of disadvantaged city residents limits their access to conventional institutions of socialization and social mobility such as the labor force and education, and sets the stage for the emergence of unconventional norms and values which in part

condone the use of violence. The findings from this study reveal that concentrated disadvantage is strongly associated with rates of homicide victimization for all demographic groups studied. Further, levels of concentrated disadvantage were found to be a better predictor of victimization than gender inequality. The theoretical implication of this is that in extremely disadvantaged environments, there is a compression in the degree of gender inequality. Concentrated disadvantage therefore appears to have causal priority over gender inequality, because gender inequality can only flourish in environments where opportunities exist.

In terms of directions for future research, the emerging social capital paradigm probably has a great deal of relevance to macro-level studies of crime. As Rosenfeld, Messner, and Baumer (2001) argue, elements of social capital such as strong social networks and social resources are not equally distributed across social groups. Groups that have large stocks of social capital may be able to generate more opportunities for group members. For example, where social networks are especially strong, information sharing with respect to job opportunities is more likely to take place. With respect to female victimization, specifically, social capital may be particularly important. The social resources entailed in social capital may benefit women in several ways. For example, where there are high stocks of social capital, women may have an easier time getting employment. With employment comes a greater degree of financial independence, which effectively provides women with more alternatives. Such alternatives may include having the ability to live in communities with low levels of violence, or having more access to resources that may help them desist or leave abusive

relationships. While some research has been undertaken examining the relationships between various measures of social capital and aggregate crime rates (Rosenfeld et al. 2001), I am aware of no research that has examined the implications of social capital for race- or sex-specific homicide victimization. This is certainly an area of study worth pursuing.

Another potential area for future research to investigate is the relationship between gender inequality and homicide victimization in rural areas. Rural communities provide an interesting context in which to explore these dynamics because of the high degree of isolation, the persistence of traditional gender roles, and the often cited suspicion of law enforcement and governmental authorities which may lead to a culture of informal dispute resolution. It may be the case that gender inequality is more pronounced in rural areas, and that in the presence of very traditional gender roles, a backlash effect may be more evident. This is clearly an empirical question and may be a fruitful line of research for future studies to pursue.

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**APPENDIX A**

**OLS RESULTS AND COLLINEARITY DIAGNOSTICS FOR FULL MODELS**

**Table A1. OLS Model Predicting the White Female Homicide Victimization Rate.**

<b>Variable</b>	<b>Metric Coefficient</b>	<b>S. E.</b>	<b>VIF</b>
White Female Divorce	7.46**	(2.57)	1.26
White Females Age 15-29	3.82*	(1.83)	1.41
South	0.02	(0.14)	1.78
Population Size (ln)	0.19**	(0.07)	1.10
White Concentrated Disadvantage	0.37**	(0.07)	1.45
M-F Income Difference	0.08**	(0.03)	1.75
M-F College Difference	-2.35	(2.13)	1.74
M-F Employment Difference	-3.49	(1.20)	1.41
Intercept	-3.49**	(1.20)	
Adjusted R-square	.2595		
N	119		

\*p < .05, \*\*p < .01

Notes: Homicide rates are converted to their natural logarithm. The coefficients are multiplied by 1000.

**Table A2. OLS Model Predicting the White Male Homicide Victimization Rate.**

<b>Variable</b>	<b>Metric Coefficient</b>	<b>S. E.</b>	<b>VIF</b>
White Male Divorce	5.96	(3.54)	1.45
White Males Age 15-29	1.29	(1.89)	1.96
South	-0.03	(0.16)	1.71
Population Size (ln)	0.40**	(0.08)	1.11
White Concentrated Disadvantage	0.53**	(0.08)	1.41
M-F Income Difference	0.06	(0.04)	1.99
M-F College Difference	0.03	(2.39)	1.65
M-F Employment Difference	7.21	(5.95)	1.47
Intercept	-4.06**	(1.48)	
Adjusted R-square	.4049		
N	120		

\*p < .05, \*\*p < .01

Notes: Homicide rates are converted to their natural logarithm. The coefficients for M-F Income Difference are multiplied by 1000.

**Table A3. OLS Model Predicting the Black Female Homicide Victimization Rate.**

<b>Variable</b>	<b>Metric Coefficient</b>	<b>S. E.</b>	<b>VIF</b>
Black Female Divorce	5.04*	(2.35)	1.64
Black Females Age 15-29	-1.24	(2.45)	1.54
South	0.03	(0.12)	1.40
Population Size (ln)	0.14*	(0.07)	1.11
Black Concentrated Disadvantage	0.15	(0.08)	1.68
M-F Income Difference	0.0003	(0.04)	1.38
M-F High School Difference	0.31	(1.82)	1.55
M-F Employment Difference	-1.27	(1.22)	1.64
Intercept	0.27	(1.22)	
Adjusted R-square	.1181		
N	114		

\*p < .05, \*\*p < .01

Notes: Homicide rates are converted to their logarithm. The coefficients for M-F income difference are multiplied by 1000.



**Table A4. OLS Model Predicting the Black Male Homicide Victimization Rate.**

<b>Variable</b>	<b>Metric Coefficient</b>	<b>S. E.</b>	<b>VIF</b>
Black Male Divorce	2.18	(3.80)	1.45
Black Males Age 15-29	-1.23	(2.53)	1.96
South	-0.01	(0.14)	1.71
Population Size (ln)	0.21**	(0.07)	1.11
Black Concentrated Disadvantage	0.24**	(0.08)	1.41
M-F Income Difference	0.04	(0.05)	1.99
M-F High School Difference	0.68	(2.05)	1.65
M-F Employment Difference	-2.78	(2.44)	1.47
Intercept	1.26	(1.33)	
Adjusted R-square	.1753		
N	119		

\*p < .05, \*\*p < .01

Notes: Homicide rates are converted to their natural logarithm. The coefficients for M-F income difference are multiplied by 1000.

**APPENDIX B**

**ALTERNATIVE MODELS PREDICTING GROUP-SPECIFIC HOMICIDE  
VICTIMIZATION INCLUDING A MEASURE OF PERCENT BLACK IN CITIES**

**Table B1. White Female Models with Percent Black.**

Variable	NBR Coef.	OLS Coef.	VIF
White Female Divorce	14.46** (2.42)	9.91** (2.54)	1.36
White Females Age 15-29	2.00 (1.85)	5.36** (1.79)	1.49
South	0.07 (0.12)	-0.14 (0.14)	1.97
Population Size (ln)	0.27** (0.05)	0.20** (0.07)	1.10
Concentrated Disadvantage	0.25** (0.07)	0.29** (0.07)	1.61
M-F Income Difference	0.03 (0.03)	0.09* (0.03)	1.76
M-F College Difference	-0.69 (2.38)	-2.89 (4.76)	1.74
M-F Employment Difference	0.69 (5.53)	2.56 (4.76)	1.41
Percent Black	0.78** (0.30)	1.23** (1.17)	1.44
Intercept	-16.38**	-4.43**	
Pseudo R <sup>2</sup>	.1226	----	
Adjusted R <sup>2</sup>	----	.3306	
Likelihood Ratio Chi <sup>2</sup>	61.67**	----	
N	120	119	

\* p < .05, \*\* p < .01

Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.

**Table B2. White Male Models with Percent Black.**

<b>Variable</b>	<b>NBR Coef.</b>	<b>OLS Coef.</b>	<b>VIF</b>
White Male Divorce	10.14** (3.36)	6.04 (3.50)	1.45
White Males Age 15-29	1.04 (1.95)	1.24 (1.87)	1.96
South	-0.15 (0.16)	-0.14 (0.17)	1.93
Population Size (ln)	0.39** (0.07)	0.40** (0.08)	1.11
Concentrated Disadvantage	0.53** (0.09)	0.46** (0.09)	1.65
M-F Income Difference	0.03 (0.04)	0.05 (0.04)	2.02
M-F College Difference	2.04 (2.60)	-0.03 (2.36)	1.65
M-F Employment Difference	9.65 (5.81)	7.46 (5.87)	1.47
Percent Black	0.41 (0.37)	0.78 (1.46)	1.32
Intercept	-15.54**	-4.13**	
Pseudo R <sup>2</sup>	.0955	----	
Adjusted R <sup>2</sup>	----	.4201	
Likelihood Ratio Chi <sup>2</sup>	78.89**	----	
N	120	120	

\* p < .05, \*\* p < .01

Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.

**Table B3. Black Female Models with Percent Black.**

<b>Variable</b>	<b>NBR Coef.</b>	<b>OLS Coef.</b>	<b>VIF</b>
Black Female Divorce	8.89* (1.59)	6.18 (2.28)	1.68
Black Females Age 15-29	0.05 (2.17)	-0.37 (2.36)	1.56
South	0.11 (0.10)	-0.08 (0.12)	1.50
Population Size (ln)	0.12** (0.04)	0.15** (0.06)	1.11
Concentrated Disadvantage	-0.03 (0.07)	0.05 (0.08)	1.96
M-F Income Difference	-0.11* (0.05)	-0.03 (0.04)	1.48
M-F H.S. Difference	3.55 (2.03)	2.55 (1.88)	1.80
M-F Employment Difference	-3.36 (2.34)	-1.30 (2.14)	1.64
Percent Black	1.61** (0.33)	1.31** (0.41)	2.11
Intercept	-11.98**	-0.35	
Pseudo R <sup>2</sup>	.1162	----	
Adjusted R <sup>2</sup>	----	.1899	
Likelihood Ratio Chi <sup>2</sup>	57.14**	----	
N	120	114	

\* p < .05, \*\* p < .01

Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.

**B4. Black Male Models with Percent Black.**

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<b>Variable</b>	<b>NBR Coef.</b>	<b>OLS Coef.</b>	<b>VIF</b>
Black Male Divorce	6.10* (2.90)	4.04 (3.63)	2.03
Black Males Age 15-29	0.48 (1.90)	-1.17 (2.40)	1.95
South	-0.05 (0.10)	-0.14 (0.13)	1.56
Population Size (ln)	0.19** (0.05)	0.22** (0.07)	1.11
Concentrated Disadvantage	0.07 (0.07)	0.09 (0.09)	2.07
M-F Income Difference	-0.03 (0.04)	-0.01 (0.04)	1.52
M-F H.S. Difference	2.58 (1.78)	3.20 (2.05)	1.81
M-F Employment Difference	-3.38 (1.87)	-2.64 (2.31)	1.59
Percent Black	1.74** (0.36)	1.66** (0.44)	.10
Intercept	-10.98**	0.82	
Pseudo R <sup>2</sup>	.0735	----	
Adjusted R <sup>2</sup>	----	.2626	
Likelihood Ratio Chi <sup>2</sup>	62.34**	----	
N	120	119	

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\* p < .05, \*\* p < .01

Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.

**APPENDIX C**

**ALTERNATIVE MODELS PREDICTING GROUP-SPECIFIC HOMICIDE  
VICTIMIZATION INCLUDING THE INDEX OF DISSIMILARITY**

**Table C1. White Female Models with Segregation Measure (D).**

Variable	NBR Coef.	OLS Coef.	VIF
White Female Divorce	12.01** (2.47)	5.96* (2.60)	1.35
White Females Age 15-29	0.45 (1.88)	2.50 (1.89)	1.56
South	0.11 (0.12)	0.07 (0.14)	1.82
Population Size (ln)	0.26** (0.05)	0.24** (0.07)	1.19
Concentrated Disadvantage	0.29** (0.07)	0.39** (0.07)	1.47
M-F Income Difference	0.02 (0.03)	0.06* (0.03)	1.90
M-F College Difference	-0.14 (2.40)	-1.79 (2.10)	1.76
M-F Employment Difference	-0.88 (5.41)	1.04 (4.93)	1.42
Index of Dissimilarity	-0.23 (0.38)	-0.99* (0.44)	1.37
Intercept	-15.27**	-2.85	
Pseudo R <sup>2</sup>	.1097	----	
Adjusted R <sup>2</sup>	----	.2864	
Likelihood Ratio Chi <sup>2</sup>	55.20**	----	
N	120	119	

\* p < .05, \*\* p < .01 Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.

**Table C2. White Male Models with Segregation Measure (D).**

<b>Variable</b>	<b>NBR Coef.</b>	<b>OLS Coef.</b>	<b>VIF</b>
White Male Divorce	9.47** (3.21)	5.75 (3.45)	1.45
White Males Age 15-29	0.35 (1.89)	2.50 (1.89)	1.99
South	-0.01 (0.15)	0.05 (0.16)	1.78
Population Size (ln)	0.46** (0.07)	0.46** (0.08)	1.19
Concentrated Disadvantage	0.59** (0.09)	0.57** (0.08)	1.45
M-F Income Difference	0.02 (0.04)	0.04 (0.04)	2.04
M-F College Difference	2.85 (2.53)	0.30 (2.33)	1.65
M-F Employment Difference	7.97 (5.70)	6.48 (5.81)	1.47
Index of Dissimilarity	-1.23** (0.46)	-1.25* (0.48)	1.24
Intercept	-15.34**	-3.78*	
Pseudo R <sup>2</sup>	.1025	----	
Adjusted R <sup>2</sup>	----	.4345	
Likelihood Ratio Chi <sup>2</sup>	84.67**	----	
N	120	120	

\* p < .05, \*\* p < .01

Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.

**Table C3. Black Female Models with Segregation Measure (D).**

<b>Variable</b>	<b>NBR Coef.</b>	<b>OLS Coef.</b>	<b>VIF</b>
Black Female Divorce	7.55** (2.04)	5.00* (2.37)	1.66
Black Females Age 15-29	-0.07 (2.55)	-1.35 (2.50)	1.60
South	0.20 (0.11)	0.03 (0.12)	1.41
Population Size (ln)	0.08 (0.05)	0.14* (0.07)	1.20
Concentrated Disadvantage	0.14** (0.09)	0.16 (0.10)	2.38
M-F Income Difference	0.01 (0.05)	0.0003 (0.042)	1.48
M-F H.S. Difference	-2.01 (1.91)	0.23 (1.86)	1.60
M-F Employment Difference	-3.69 (2.45)	-1.22 (2.25)	1.65
Index of Dissimilarity	0.32 (0.59)	-0.15 (0.61)	2.57
Intercept	-11.52**	0.35	
Pseudo R <sup>2</sup>	.0718	----	
Adjusted R <sup>2</sup>	----	.1101	
Likelihood Ratio Chi <sup>2</sup>	35.31**	----	
N	120	114	

\* p < .05, \*\* p < .01

Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.



**Table C4. Black Male Models with Segregation Measure (D).**

<b>Variable</b>	<b>NBR Coef.</b>	<b>OLS Coef.</b>	<b>VIF</b>
Black Male Divorce	3.81 (3.23)	2.12 (3.80)	1.99
Black Males Age 15-29	-0.59 (2.15)	-1.38 (2.54)	1.95
South	0.09 (0.11)	0.003 (0.14)	1.48
Population Size (ln)	0.19** (0.06)	0.23** (0.08)	1.20
Concentrated Disadvantage	0.29** (0.09)	0.30** (0.10)	2.57
M-F Income Difference	0.02 (0.04)	0.03 (0.05)	1.47
M-F H.S. Difference	-1.21 (1.78)	0.34 (2.08)	1.66
M-F Employment Difference	-3.11 (2.10)	-2.72 (2.44)	1.59
Index of Dissimilarity	-0.41 (0.57)	-0.65 (0.66)	2.62
Intercept	-10.02**	1.45	
Pseudo R <sup>2</sup>	.0492		
Adjusted R <sup>2</sup>	----	.1751	
Likelihood Ratio Chi <sup>2</sup>	41.73**	----	
N	120	119	

\* p < .05, \*\* p < .01

Notes: Standard errors are in parentheses. The coefficients for M-F income difference are multiplied by 1000.

## VITA

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