AMERICAN INDIAN HOMICIDE IN NORTH CAROLINA: AN EXAMINATION OF THE IMPACT OF STRUCTURAL AND ECONOMIC FACTORS

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ABSTRACT

Criminological research has long analyzed the relationship between economic and structural conditions and homicide rates among various racial/ethnic groups and geographic areas. American Indians are often neglected in these studies, in spite of homicide being one of the leading causes of deaths among the group (Heron, 2013). According to the North Carolina Violent Death Reporting System (2013), American Indians had the second highest rate of homicide in North Carolina in 2011. This examines past homicide research along with the little research that has included American Indians. Using strain/deprivation theory and social disorganization theory, this paper analyzes American Indian homicide victimization in North Carolina census tracts with at least 1% American Indian population. A negative binomial regression method is used to conduct the analysis because of the small population of American Indians within North Carolina, making it rare that homicides occur among the group.

Findings of this study show that ethnic heterogeneity has a statistically significant impact on American Indian homicide in North Carolina. While this study shows no support for strain/deprivation theory and little support for social disorganization, limitations, future research and policy implications are explored. Due to the high concentration of homicides occurring in Robeson County, North Carolina, a brief section is dedicated to explaining what might be able to be done to prevent American Indian homicide victimization in the county.
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DEDICATION

This work is dedicated to my dad, who passed away last summer. Without his support, I would not have gotten this far.
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INTRODUCTION

Criminological research has extensively examined the relationship between economic and structural conditions on homicide rates within various geographic areas. The vast majority of studies have focused on homicides among Whites, Blacks, and/or Hispanics. American Indians have had a history of high violent victimization rates, including homicide however, many scholars have neglected to include this racial group in research. According to the Centers for Disease Control (CDC), the 2013 homicide rate among American Indians (5.4 per 100,000) was higher than the homicide rate among Whites (3.0 per 100,000) and slightly higher than the overall homicide rate (5.1 per 100,000) (CDC, 2013). Moreover, homicide was the third leading cause of death among American Indians age 15-24 in 2013 (Heron, 2013). A similar trend in American Indian homicide exists in the state of North Carolina. Data from the North Carolina Violent Death Reporting System reveal American Indians had a higher homicide rate than any other racial/ethnic group in five of the eight years examined (2004-2011). The peak of homicide victimization rates for American Indians in North Carolina was 2005 when the rate was 21.1 per 100,000 persons, while the state rate was 7.5 (NC-VDRS, 2008-2013).

In addition to high rates of violent victimization, American Indians experience a higher level of economic and social deprivation than other racial and ethnic groups. Issues such as poverty, unemployment, low educational status, etc. continually plague this population. For example, data from the 2007-2011 American Community Survey found that American Indians and Alaskan Natives had the highest poverty rate among all racial groups at 27%. The national poverty rate for the same time period was only 14.3% (Macartney, Bishaw, & Fontenot, 2013). Unemployment rates among American Indians “…range from 14.4% overall to as high as 35% in some reservation communities” (Sarche & Spicer, 2008). Given these conditions, the few studies that have examined homicide among American Indians have generally utilized social
disorganization theory to understand and explain this social phenomenon (Bachman, 1991; Lanier and Huff-Corzine, 2006; Lanier, 2010; Painter-Davis, 2012). Along these same lines, the current study examines the application of social disorganization theory to American Indian homicide in North Carolina. In addition, this study extends previous research by also utilizing strain/deprivation theory in the theoretical framework.

In sum, this study seeks to explore the relationship between structural and economic factors related to social disorganization theory and strain/deprivation theory and American Indian homicide rates in North Carolina. The paper will first provide an overview of the historical context of American Indians in the United States followed by a discussion of current status of American Indians in North Carolina. Next, a presentation of research using strain/deprivation theory is provided, as well as social disorganization theory. This will be followed by previous research examining American Indian homicide. The final sections will present the data and methods, findings, and the discussion and conclusion.
American Indian History

In order to further understand American Indian homicide, an evaluation of the historical context within the United States and North Carolina is necessary. Colonization and forced assimilation have had a significant impact on the present conditions of American Indians. American Indians have suffered through a Holocaust-like history since the arrival of Christopher Columbus in 1492 (Braveheart and DeBruyn, 1998). According to Hacker and Haines (2006), American Indians suffered a significant population decrease (85%) from the time of Columbus’ arrival in 1492 through 1900 (p.6). Disease was the greatest contributor to the population decrease, as there were an estimated 27 epidemics that included smallpox, influenza, and measles among others (p.6). American Indians were not the victim of nature when it came to disease, as they were the victims of colonists’ use of biological warfare to spread diseases among the tribes and eliminate them (Fenn, 2000). Specifically, the colonists sent two contaminated blankets and a handkerchief that was had previously been at the smallpox hospital in Fort Pitt in 1763. This is one of the many accusations of the use of biological warfare on American Indians by the colonists (Fenn, 2000, pgs.1553-1554).

Other major contributors to the death of American Indians were warfare and the Indian Removal Act of 1830. The Creek and Seminole Wars, along with wars west of the Mississippi and the Civil War, led to numerous American Indian casualties. Andrew Jackson’s passage of the Removal Act led to the loss of approximately 10,000 Cherokees, 15% of the Choctaw population, and half of the Creek and Seminole population (Thornton, 1987, Hacker & Haines, 2006).
The loss of life, trust, and culture for American Indians was also impacted by 19th century allotment acts, broken treaties, sterilization, and boarding school developments. Smith (2005) argues that gendered violence was introduced to American Indians at boarding schools. She states, “Violence against women and children was infrequent or unheard of in many tribes” (Smith, 2005, 126). She argues that violence against women and children was extremely rare in American Indian communities, and men and women were of equal status. Smith maintains that in these boarding schools, Native children were forced to be involved in the physical punishment of other Native children. Smith’s arguments suggest that violence in American Indian communities would not be as prevalent if it were not for the development of boarding schools and European colonization in general.

The issues listed above led to what Braveheart and DeBruyn (1998) term historical unresolved grief. They argue that historical unresolved grief begins with disenfranchised grief, which is a loss that a person is unable to openly or publicly mourn or acknowledge. In the dominant United States culture, only deaths of immediate family members are recognized as legitimate grief, vastly different from American Indian culture. Not only did the dominant U.S culture not recognize the unique grieving of American Indians, but it also stereotyped American Indians as stoic, savage, and “…incapable of having feelings” (Braveheart and DeBruyn, 1998, 67). The result of disenfranchised grief is the intensification of emotions including anger, resentment, guilt, and sadness that are normally constrained in the dominant culture through funerals. However, the dominant cultures’ view that American Indians do not have the right to grieve, limited resolution of the grief that existed for American Indians. Braveheart and DeBruyn argue that the limitations placed on the American Indian grieving process led to disenfranchised grief.
Braveheart and DeBruyn (1998) also argue that the first generation of American Indian people suffered from Post Traumatic Stress Disorder (PTSD). Along with transmitting the symptoms of PTSD (depression, anxiety, and substance abuse), the first generations of American Indian people transmitted disenfranchised grief. Historical unresolved grief is then the transmission of disenfranchised grief and symptoms of PTSD continue to be passed down.

American Indians suffer repeated trauma through the loss of family due to alcohol abuse, homicide and suicide (Braveheart and DeBruyn, 1998, 68). When symptoms of grief and PTSD are left unsolved, problems of child abuse and domestic violence develop, which continues to perpetuate grief.

Although historical unresolved grief and boarding school abuses are not measurable and beyond the scope of this study, the issues associated with both are important to acknowledge when examining American Indian communities in the United States. Without issues of historical unresolved grief and boarding school abuses, one might argue that issues of homicide and violence in American Indian communities might be non-existent.

American Indians in North Carolina

While examining the historical contexts of American Indians is important, it is imperative to also examine the present economic and mortality data of American Indians in North Carolina\(^1\). According to the American Community Survey’s five-year estimates from 2009-2013, American Indians made up 1.2% of North Carolina’s population. However, the economic indicators for American Indians continue to be lower than the overall state. For example, the percentage of American Indians living below the poverty line is 30.6%, while the state poverty rate is 17.5%.

\(^1\) There are eight American Indian tribes recognized by the state of North Carolina: (1) Coharie Tribe, (2) Eastern Band of the Cherokee Nation, (3) Haliwa-Saponi Indian Tribe, (4) Lumbee Tribe, (5) Meherrin Indian Tribe, (6) Occaneechi Band of the Saponi Nation, (7) Sappony, and (8) Waccamaw Siouan Tribe. The Cherokees Tribe is the only federally recognized tribe.
American Indian’s unemployment rate in the North Carolina is 14.5%, while the state unemployment rate is at 6.9%. The percentage of American Indians over the age of 25 with less than a high school diploma is 29.3%, while the state rate of those without a high school diploma over the age of 25 is 15.1%.

In addition to economic indicators, mortality rates in the state of North Carolina are consistently higher for American Indians than for other groups. According to the North Carolina Department of Health and Human Services (NCDPHHS, 2011), American Indians had a higher infant mortality rate than the state from 2005-2009 (A.I.- 13.0 per 1,000 live births, State- 8.2), higher homicide rates (A.I- 19.0 per 100,000, State- 7.0), higher unintentional death rates (A.I.- 30 per 100,000, State- 28.6), higher unintentional motor vehicle deaths (A.I.- 37.7 per 100,000, State- 17.6), and higher death rates from diabetes (A.I.- 43.9 per 100,000, State- 23.6). High mortality rates for American Indians compared to other groups coupled with the economic conditions of American Indian communities’ presents a horrid picture for American Indians in North Carolina.

Strain/Deprivation Theory

Strain/deprivation theory has long been used in an attempt to explain varying crime rates in communities, cities, and states. The concept of strain originated with Durkheim who introduced the term, anomie, as “a weakening of the normative order in society” (Messner and Rosenfeld, 2013, p. 11). Merton reconceptualized anomie in his strain theory. Merton (1938) noted that strain is caused when certain goals defined by society are not aligned with the means of obtaining those goals. Merton (1938: p. 675) believed that, “the extreme emphasis upon the accumulation of wealth as a symbol of success in our own society militates against the completely effective control of institutionally regulated modes of acquiring a fortune.” His
assertion was that despite being widely shared the goal of obtaining wealth is not available to
everyone, and those who realize they are unable to achieve that goal legitimately may look to
illegal ways to obtain that wealth and success. The goal of wealth and success may thus
perpetuate problems of crime and delinquency.

Merton (1938) described five categories that arise from the pressure to conform to
mainstream success: (1) conformist, (2) innovator, (3), ritualism, (4) retreatism, and (5) rebellion.
Merton’s main focus was the innovator, who after attempting to conform is closed off from the
legitimate means to effectively obtain the cultural goal. Constantly faced with the ideology that
if they work hard they will obtain the desired goals, people become frustrated and realize that
their class, status, or race block them from obtaining this goal legitimately (Merton, 1938).
Thus, Merton’s ultimate argument is that if universal goals, such as the American Dream, exist,
economic deprivation, such as inequality in resources is likely to produce criminal behavior
(Messner, 1982; Messner and Rosenfeld, 2013). Merton asserted that differences in class goals
and successes would not produce the same amount of frustration, as those goals may not imply
as much failure as the universal goal (Messner, 1982).

While Merton (1938) used his theory in an attempt to explain antisocial behavior,
scholars have also used and adapted strain theory to explain variations in crime rates in and
between communities. However, inconsistencies in operationalizing strain theory have persisted,
most often focused on the differences between absolute deprivation and relative deprivation.
Absolute deprivation is measured as income in relation to the poverty line, while relative
deprivation is the comparison of incomes among individuals within one community or between
multiple communities. Adding to the issue are contradictory findings with regard to these
measures. For instance, in a study of violent crime using standard metropolitan statistical areas
(SMSA’s) as their unit of analysis, Blau and Blau (1982) utilized two measures of relative deprivation: (1) the Gini coefficient\(^2\) of income inequality and (2) the difference in socioeconomic status between Whites and non-Whites. Blau and Blau measured absolute deprivation using the percentage of individuals living below the poverty level. Blau and Blau (1982) found that when income inequality and poverty were included in the same multivariate model, income inequality retained a positive, significant relationship to violent crime, eliminating the effect of poverty. They also found racial socioeconomic inequality to have a positive, significant relationship on violent crime rates in SMSA’s when included in the model with population size, Gini coefficient, the percent divorced, and the percent Black. Blau and Blau’s findings suggest the importance of measuring relative deprivation in studies of violent crime.

Messner (1982) also examined the relationship between strain theory and urban homicide in 1970. He used the Gini coefficient to measure inequality as well as the poverty measure used by Blau and Blau (1982). Using SMSA’s as the unit of analysis, Messner (1982) found no relationship between relative deprivation and homicide rates in the South, but found an inverse, significant relationship between poverty and homicide rates. He then changed his measure of poverty to the proportion of families that bring in less than $1000, but that figure also was negative and significant. While he suggested that SMSA’s may not be the appropriate unit of analysis when examining relative deprivation, Messner (1982) also suggested the links between poverty, inequality and homicide need to be reconsidered and re-established.

Due to the inconsistencies in the studies conducted by Blau and Blau (1982) and Messner (1982), scholars have continued to operationalize strain theory in various ways (Pridemore, \__________________________
\[^2\] Based on combined income for families and includes all forms of wages (Blau and Blau, 1982, p. 120-121).
Kovandzic, Vieraitis, and Yeisley (1998) measured absolute deprivation as the percentage of the population living below the poverty line. They measured relative deprivation as the Gini index of family inequality, as well as the ratio of the U.S. top 20% family incomes to the lowest 20% family incomes. Kovandzic and colleagues found that their measures of inequality and poverty were both positive and significantly related to increases in homicide rates from 1989-1991 at the city level.

Parker and McCall (1999) continued the evolution of operationalizing strain theory. Parker and McCall argued that the local opportunity structure has a significant impact on homicide rates among races. The local opportunity structure consists of the ability of people within a community to obtain desirable, stable, and sufficient jobs. According to Parker and McCall (1999: p. 451), “economic instability and labor market fluctuations provide a breeding ground for strain and, hence, conflict…” They argue that examining the local opportunity structure alongside the racial competition between groups is important when examining strain. Parker and McCall used two resource deprivation indices to measure inter and intra-racial homicides among Blacks and Whites. For the Black model, Parker and McCall (1999) used poverty, income inequality (using the Gini index), the percentage of Black people not employed, and the percent of Black children that are not living with both of their parents to devise an index of resource deprivation/segregation. They also included the index of dissimilarity, which is a measure of racial residential segregation. Parker and McCall found that this index had a statistically significant, positive impact on intra-racial homicide rates among Blacks, but no impact on Black inter-racial homicide rates. Their explanation for this finding was that isolation and economic deprivation of the Black population is caused by the constant attempt by Whites to, “…exclude blacks from employment opportunities and economic advancement, as well as
whites’ continual resistance to racially integrated residential areas” (Massey et al., 1991, as cited in Parker and McCall, 1999 p.463).

Parker and McCall (1999) also analyzed White inter and intra-racial homicide rates using a slightly different index. Their race-specific measures of poverty, income inequality, and family disruption remained, while the index of dissimilarity was not included. These race-specific measures are included in the resource deprivation/affluence index. Parker and McCall found these measures to positively and significantly impact inter- and intra-racial homicide offending rates among Whites. Parker and McCall argue that these findings are supported by past research examining economic conditions among Whites. They state, “…as whites face economic declines and hardships, they may take out their resentment and frustration on blacks in the form of white interracial homicide” (Parker and McCall, 1999: 463).

While most studies of racial differences in deprivation and homicides have focused on Blacks and Whites, Martinez (1996) focused on Latinos and Whites. Martinez measured economic inequality by examining the ratio of White to Latino median family income and the Gini coefficient among Latinos to measures income inequality within the Latino population. He also measured absolute deprivation by using the poverty rate of Latinos. Martinez found that among Latinos, the poverty rate had an inverse, significant relationship to the homicide rates among the group. While he concludes that his finding is contradictory to the absolute deprivation hypothesis, he cites other literature that found similar relationships. Martinez (1996) also found that inequality within Latino groups has a positive, significant relationship with Latino homicide rates, while inter-group inequality among Latinos and Whites did not have a significant impact on Latino homicide rates. He argued that within-group inequality for the Latino population may affect their homicide rates more because the Latino income gap is
“…more immediate and widespread across the Latino community. Martinez contends that his study shows the differences that must be evaluated when examining various race-specific homicide rates.

While many race-disaggregated studies have used strain theory approaches, these studies have been limited to examining Whites, Blacks, and Latinos. Studies examining strain theory have neglected examining the impact of strain on American Indian homicide offending or victimization. Although some measures of strain have been used to examine lethal violence among American Indians, Bachman (1991) and Lanier (2010) did not evaluate deprivation in relation to other races. Also, Lanier (2010) used only the Gini coefficient, which as noted earlier, Messner (1982) argues may not be a sufficient measure for income inequality. Also important is that Bachman (1991) was measuring social disorganization, while Lanier (2010) was measuring the impact of the Gini index on the direction of lethal violence toward homicide. Therefore, a comprehensive study is non-existent in examining the impact of strain on the homicide rates of American Indians.

Social Disorganization Theory

The conceptualization of social disorganization theory began with the work of Park and Burgess at the University of Chicago in the early twentieth century (Sampson, 2012). With the help of some students, Park and Burgess developed the concentric zone map. The center of the map consisted of the business district with other divided areas that experienced unique physical and cultural aspects (Sampson, 2012).

Clifford Shaw began using the concentric zone map to explore juvenile delinquency in 1929. He stated, “…the study of such a problem as juvenile delinquency necessarily begins with a study of its geographical location” (as cited in Sampson, 2012, p. 35). Alongside Henry
McKay, Shaw found that juvenile delinquency rates were highest in Chicago in areas that were deteriorated and in transition through urbanization, immigration, and industrialization, which were closest to the business district. As the distance became further from the center, juvenile delinquency rates would decrease (Sampson, 2012). They identified three aspects of neighborhoods that were important to explaining the high delinquency rates: residential instability, ethnic heterogeneity, and low economic status (Sampson, 2012). Social disorganization theory has become widely used throughout criminology in the study of violent crimes, including homicide. Social disorganization is defined as the impact of structural factors that inhibit a community’s ability to establish the standard values and norms of the people to solve common, everyday problems (Bursik, 1988; Sampson and Groves, 1989; Parker and McCall, 1999; Nielsen, Lee, and Martinez 2005). What follows is a review of the structural factors most often associated with the theory.

Residential Instability

Social control is affected by the constant moving in and out of people in communities, negatively affecting the strength of these communities to regulate themselves (Bursik, 1988). With a constant turnover of population, people are less likely to know those around them in their neighborhood, hindering their perceived ability to intervene on behalf of their neighbors (Sampson and Groves, 1989; Bursik, 1988). Operationalization of residential stability has varied across studies.

Sampson and Groves’ (1989) examination of various forms of victimization within wards (equivalent to census tracts in England and Wales), conceptualized residential stability as the percentage of individuals living within a fifteen minute walk of where they were raised. They found that increased residential stability had an inverse, significant relationship on auto theft and
vandalism victimization. However, they found no significant effect on other property or violent offending rates. McNulty and Bellair (2003) calculated a residential stability index using the percent of owner-occupied housing units and the percent of residents that lived at their current address five years before at the block group level. However, this factor was not significant in predicting serious adolescent violence.

Martinez et al. (2008) used a neighborhood stability index in their analysis of Homicide in San Diego and San Antonio. The index included the percentage of the population that were at their address five years prior and the percentage of housing units that are owner-occupied at the census tract level. Similar to McNulty and Bellair (2003), no significant relationships were revealed. Nielsen et al. (2005) used percentage of population not at their address five years prior and the percentage of vacant housing units as a measure of residential instability in their studies of types of homicides (e.g. escalation, intimate, and drug-related). Nielsen et al. found residential instability to have a positive, significant relationship with Black escalation homicides in Miami, San Diego, and Black intimate homicides in San Diego. They also found a positive, significant relationship with residential instability and Latino escalation and drug-related homicides in San Diego. Lee, Hayes, and Thomas. (2008) used the percentage of the population five years and older that were not at their address five years prior at the county level, as their measure of population turnover. They found that population turnover had a positive and statistically significant effect on White homicide in rural counties. Phillips (2002) used the percentage of those not at their address five years prior and the percentage of foreign-born population at the metropolitan standard area (MSA) and primary metropolitan area (PMSA) level, arguing that high immigration creates instability. She found that her measures of neighborhood instability had a positive, significant effect on the homicide rates for Whites, while
a negative, but not significant effect on Latino homicide rates. Phillips conceded, “…this relationship is not entirely unexpected and may well be due to the characteristics of those who comprise the Latino foreign-born population” (2002: 362). These characteristics, according to Phillips, include a strong work ethic and strong social bonds and/or networks, which might outweigh the marginalization they may encounter.

Ethnic Heterogeneity

Shaw and McKay also identified ethnic heterogeneity as an issue that perpetuated socially disorganized neighborhoods. Residential mobility and ethnic heterogeneity work together, in that the people who are constantly moving in and out of these neighborhoods have various ethnic/racial backgrounds (Bursik, 1988). As Bursik noted, “…while various ethnic groups may share conventional values (e.g., reducing crime), heterogeneity impedes communication and patterns of interaction” (781). For example, Shapiro (2004) discovered in interviews with White families that once Blacks began to migrate to mostly White neighborhoods, the White families would leave. He cites one interview in which a White family goes to a different part of the county to eat because their side of town consists of, “Chinese and fried chicken,” and the one place they did eat before was “…predominately black and very, very loud” (129-130). Shapiro’s book is a clear example of the interrelationships of residential mobility and ethnic heterogeneity. When Blacks came into the predominately White neighborhoods observed by Shapiro, the Whites would move out, which also drove down housing prices, in turn decreasing the amount of wealth Blacks could accumulate (Shapiro, 2004).

Other studies have used different measures of ethnic heterogeneity. Many studies have utilized the index of dissimilarity to measure residential segregation in communities (Krivo and
Peterson, 2000; Stansfield and Parker, 2013; Velez, Krivo, and Peterson, 2003; Phillips, 2002). The index of dissimilarity provides a score of 0-100 that examines the distribution of Whites and Blacks across a community. A lower score indicates that Blacks and Whites are more evenly distributed across an area while a higher score indicates increased segregation (Krivo and Peterson, 2000).

Low Socioeconomic Status

As discussed, ethnic heterogeneity in neighborhoods creates tensions among Blacks and Whites in the United States (Shapiro, 2004). As Whites move out of neighborhoods that are becoming increasingly minority, the socioeconomic status of the neighborhood is negatively affected. Low socioeconomic status has consistently been found to influence crime in communities or neighborhoods (Blau and Blau, 1982; Sampson and Groves, 1989; Bachman, 1991; Parker and McCall, 1999; Krivo and Peterson; 2000). Shaw and McKay argued that areas with low socioeconomic status lack the resources and social organization of higher class neighborhoods, which will increase crime (Bursik, 1988).

Studies examining the effects of low economic status on crime have revealed interesting and, in some cases, contradictory results. Operationalization of socioeconomic status has varied in homicide research, which may be a contributing factor. For instance, Sampson and Groves (1989) measured socioeconomic status as the sum of z-scores of educational attainment, occupation, and income at the ward level in England and Wales. They found no significant relationship between socioeconomic status and violent and property offending rates. However, Sampson and Groves did find expected results when victimization was analyzed. Increased socioeconomic status significantly decreases auto-theft and vandalism victimization, but
increases burglary victimization. Sampson and Groves note that the burglary finding is “…not an unreasonable finding since wealthier communities offer more to steal than poorer ones” (791).

Similar to Sampson and Groves (1989), some scholars have used socioeconomic status to explain variations in homicide rates in communities. Phillips (2002) measured socioeconomic status at the MSA/PMSA using families in poverty, intra-racial income inequality, college education, and male unemployment. She found poverty to have a positive significant impact on Latino homicide rates in. However, some studies have found socioeconomic status to have a larger effect on Whites than minorities. For instance, Ousey (1999) measured socio-economic status using the percentage of people living below the poverty line. He found that poverty had a positive and significant relationship on Black and White homicide rates. Ousey’s findings were interesting in that the effect was greater for Whites than it was for Blacks. He concludes that poverty and other socioeconomic factors cannot explain the racial variance in homicide rates. Stansfield and Parker (2013) also measured socioeconomic status at the city level using the percentage of families living below the poverty line. Similar to Ousey (1999), poverty was found to have a greater positive effect on White homicide rates than Black homicide rates in 1980.

Family Disruption

Although Shaw and McKay cited residential mobility, ethnic heterogeneity, and low socioeconomic status as aspects of social disorganization, Sampson (1987) argues for the inclusion of family disruption as a factor of social disorganization. He contended that single-parent households did not provide the social control equivalent to that of the social control provided by two-parent households within the family and community. Sampson defined family disruption as the total number of female-headed households and found that to have a positive and
significant effect on robbery and homicide offending in urban cities among Whites and Blacks. Sampson’s argument that the social control of a community and neighborhood crime are affected by family diversity and disruption has been validated in later studies (Ousey, 1999; Krivo and Peterson, 2000; Cubbin, Williams, and Fingerhut, 2000; Baller et al., 2001; Velez et al., 2003; Martinez, Stowell, and Cancino, 2008; Ulmer, Harris, and Steffensmeier, 2012). Others have also defined family disruption as the percentage divorced (Land, McCall, and Cohen, 1990; Kowalski and Duffield, 1990; Parker, 2001, Stansfield and Parker, 2013), single-parent families (Sampson and Groves, 1989), and the percentage of children not living with both parents (Land et al. 1990; Parker and McCall, 1999).

Although Sampson (1987) used the total number of female-headed households to measure family disruption, Sampson and Groves (1989) used a different definition in a later study. They developed a family disruption index that included the percentage of divorced or separated adults along with the percentage of single-parent households. They found family disruption had a positive and significant relationship on violent and property victimization rates, excluding vandalism, when included in their social disorganization and community structure model.

McNulty and Bellair (2003) measured family structure using the percentage of children who live in a two-parent household with one step parent, single and never married, and single but separated at the block group level. They found that when measured separately, single and never married had a positive, significant influence on the risk for violence among adolescents for all racial groups included. However, in their study they also used the percentage of female-headed households in their concentrated disadvantage index. When the concentrated disadvantage index was included with measures of family structure in the multivariate model, concentrated
disadvantage was the only positive, significant risk of adolescent violence among all racial
groups (McNulty and Bellair, 2003).

Additionally, homicide scholars have also defined family disruption in various forms.
Land et al. (1990) used the percentage of the male population divorced and the percent children
not living with both parents. Land et al. found that the percentage of the male population that
was divorced had a positively significant relationship on state homicide rates in 1950, as well as
city, SMSA’s, and state homicide rates in 1960, 1970, and 1980. In addition, the authors
included the percentage of children not living with both parents in their deprivation/affluence
index, to be discussed in the next section. Similar to Land et al., Parker (2001) used the
percentage of the total population divorced and found a positive, significant impact on Black and
White family homicides, along with the overall Black homicide rate.

However, issues arise when describing higher numbers of divorced people and female-
headed households as family disruption. The main issue is that the concept of marriage has
historically been a value of white culture. Describing increased rates of female-headed
households as family disruption is from the perspective of white, middle-class values. Therefore,
other whites and minorities may not describe single-parent households as family disruption, but
as something that may have prevented family disruption.

The idea that marriage is a white, middle-class value is examined in a study conducted by
Parker and Johns (2002). In that study, Parker and Johns use a family diversification index,
which is a measure of family structure that includes: non-married families, female-headed
households, and children not living with both parents (p.286). They find that as the diversity in
families’ increases among Blacks, acquaintance and family-related homicides decrease.
Interestingly, Parker and Johns found that as diversity in families’ increase among Whites,
acquaintance related homicides, stranger-related homicides, and the total homicide rates for Whites increased. While Parker and Johns measured family disruption, this measure was conceptualized using the percentage of the population divorced and a marriage pool index. The marriage pool index was a measure of the number of employed men over the age of 16 per 100 women. Parker and Johns found that divorce among Whites had a positive and significant relationship on all types of White homicides. No statistically significant relationship was found among any type of Black homicide. Also, no statistically significant relationship was found for the male marriage pool index on any type of race-specific homicide rate. Parker and Johns findings suggest that while married families may provide the necessary social control within white families, minority families may have other ways of providing that social control.

Previous American Indian Homicide Studies

Despite high homicide victimization rates for American Indians, little research has been conducted examining the factors that may influence homicides within American Indian communities. Some government agencies have conducted studies concerning American Indian violent death issues. For instance, Wallace et al., (1996) found that homicide was the second leading cause of death for American Indians ages 10-34 from 1990-1992, and the third leading cause of death for American Indians ages 15-34. They also found that homicide accounted for 7% of potential life lost among American Indians, which is a measure of premature death and the amount of years of life lost when someone dies before they turn 65. The Bureau of Justice Statistics conducted a report and found a decreasing homicide rate for American Indians from 6.6 per 100,000 in 1995 to 3.6 per 100,000 in 2001 (Perry, 2004). The study reported that 75% of American Indian homicides from 1976-1999 took place in ten states where 61% of American Indians lived in 2000. According to this report, North Carolina was fourth, with 297 of the
American Indian homicides taking place from 1976-1999. Overall, the homicide rates for American Indians were second to African-Americans from 1991-2001 (Gilmour et al., 2011).

A descriptive study conducted by Becker et al. (1990) examined lethal violence among non-Hispanic Whites, American Indians, and Hispanics in New Mexico from 1958-1987. They found that homicide rates among American Indian males were routinely higher than other racial and ethnic groups. The rates also doubled from 1958-1962 at 17.2 per 100,000 to 33.2 per 100,000 in 1983-1987.

Some researchers elected to focus on specific tribes and the surrounding areas. French and Hornbuckle (1977) examined Cherokees in North Carolina. They determined that a combination of frustration, alcohol abuse, and a subculture of violence helped to explain the homicide rates among the Cherokees. Kupferer and Humphrey (1975) also explained higher homicide rates among Cherokees and Lumbee Indians as a cultural issue. These studies were products of their time as many homicide studies attempted to use the subculture of violence explanation (Wolfgang and Ferracuti, 1967; Hackney, 1969; Gastil, 1971). The subculture of violence theory has been called into question, giving rise to more structural theories that examine deprivation within communities.

While early studies were either descriptive or focused on specific tribes, Bachman (1991b) conducted qualitative interviews of thirty American Indian homicide offenders in an attempt to explain higher homicide rates among this group. She found evidence in the narratives to support a variety of theories including internal colonization, social disorganization, culture conflicts, and a subculture of violence. She also found that 97% of the offenders in her study were under the influence of drugs or alcohol in the commission of the homicide.
Bachman’s (1991b) qualitative study led to the application of social disorganization in American Indian homicide literature. Bachman (1991a) examined the effects of social disorganization and economic deprivation on American Indian homicide rates in counties in close proximity to a reservation. She found a positively significant relationship for social disorganization and economic deprivation that helped to explain American Indian homicide rates.

Another study using multivariate models to examine American Indian homicide rates is the research conducted by Lanier and Huff-Corzine (2006). They tested social disorganization using poverty, population mobility, ethnic heterogeneity, and family disruption to observe American Indian homicide at the county level. Population mobility is defined by Lanier and Huff-Corzine as those 5 years of age and older who have lived in the same state but a different county (2006). Ethnic heterogeneity is the proportion of Whites, Blacks, and American Indians within the county, while family disruption is defined as the percentage of female-headed households with children under the age of 18 (2006). Lanier and Huff-Corzine used county population and the percent of population between the ages of 15-29 as control variables (2006). They found that the percentage of female-headed households and ethnic heterogeneity were significant predictors for American Indian homicide. A 46% increase was seen in American Indian homicide with a one standard deviation increase in American Indian female-headed households (Lanier and Huff-Corzine, 2006). A 12% increase was seen with a one standard deviation increase in ethnic heterogeneity (Lanier and Huff-Corzine, 2006). Lanier and Huff-Corzine argued that their study provided support for the use of social disorganization when examining American Indian homicide.
Also, Lanier (2010) uses similar data to investigate the direction of lethal violence among the American Indians in a more recent study. She uses similar variables that Huff-Corzine and Lanier used in the previous study, but Lanier also includes divorce, economic index, a Gini coefficient, and a social status measure which is the percentage of American Indians who have attended college. Her three control variables were percentage of American Indian population within the county, the percent of the population that is rural, and the percentage of American Indians who are between the ages of 15-29 (Lanier, 2010). Lanier found that the percentage of American Indian female-headed households with children under 18 was the only variable to influence the direction of lethal violence to homicide.

The most recent study examining American Indian homicide is somewhat dissimilar from the two mentioned above. Painter-Davis’ (2012) study uses structural disadvantage similar to the studies above. Painter-Davis uses these variables to delve into American Indian homicide and robbery offending. “…American Indian homicide victimization is a weak proxy for American Indian violent offending because (a) American Indians are more likely to be victimized by individuals of another race, and (b) the race of American Indians is often misclassified in coroners’ reports” (Painter-Davis, 2012, 220). According to Arias et al. (2008, as cited in Painter-Davis, 2012), 55% of respondents on the Current Population survey who said they were American Indian were identified as such on their death certificate.

Painter-Davis (2012) focuses specifically on California due to the size of the American Indian population in the state. Additionally, he focused on offending because the offender normally self-reports their race, which is more reliable. He also examines violent offending on the county level and the census place, as opposed to counties as in the previous studies. The
evaluation of census places is done so that the populations do not overlap with reservations in California (Painter-Davis, 2012).

Painter-Davis (2012) used some of the same measures utilized by Lanier and Huff-Corzine (2006) and Lanier (2010), including: poverty, female headship, unemployment and educational attainment. However, Painter-Davis combines poverty, female headed-households, and unemployment to make a disadvantage index using principal component analysis (2012). Painter-Davis also uses similar control variables that include residential instability, population density and the young male population. He also uses police per capita along with entropy, which is the proportion of people in a specific racial group (Painter-Davis, 2012).

Painter-Davis (2012) found higher homicide rates in counties versus census places, and higher robbery rates in census places versus counties. One major difference between Lanier and Huff-Corzine (2006) and Painter-Davis (2012) is that poverty actually had a positive, significant relationship on American Indian homicide offending, where it had no effect on victimization. He concluded that structural disadvantage influences the rate of American Indian violent offending in counties and census places.

Following the work of past homicide researchers, this study utilized variables that have consistently been used to measure strain/deprivation and social disorganization. Strain/deprivation has often been used to study inequalities that might exist within a community, and it is used in this study in order to evaluate such inequalities that may exist in American Indian communities in North Carolina. It is my hypothesis that income inequality along with other measures of strain/deprivation has a significant influence on American Indian homicide in North Carolina.
Also, social disorganization has been the most used theory in analyzing American Indian homicide because of the persistent poverty that exists among American Indians. For instance, according to the 2010 United States Census, tribal land conditions are compared to the conditions of classified third world countries with poverty rates ranging from 38% to 63% (“Native American Aid”). Poverty is one of the characteristics that can cause social cohesion and economic success to decrease, which then perpetuates conditions of socially disorganized communities and increases the likelihood of homicide victimization. It is my hypothesis that poverty and other measures of social disorganization theory will have a significant influence on American Indian homicide rates in North Carolina.

Lastly, my final hypothesis involves combining strain/deprivation and social disorganization theory. While social disorganization has been used in past research to examine American Indian homicide, it is my hypothesis that the issues measured for strain/deprivation theory are what perpetuate the conditions in socially disorganized communities.
DATA AND METHODS

Data for this research were obtained from two sources. The homicide victimization data come from the North Carolina Violent Death Reporting System (NC-VDRS) from 2004-2011. The NC-VDRS is a branch of the North Carolina Department of Public Health funded by the Center for Disease Control (CDC) and combines information from death certificates, medical examiner/coroner reports and police reports in an attempt to collect detailed information on violent deaths in the state (Karch et al., 2009). They use other sources of data including supplementary homicide reports and criminal lab data, combining all of these documents for each violent death. Also, they link multiple homicides together in one incident using all of the possible documents. A violent death is defined as “…a death resulting from the intentional use of physical force or power against oneself, another person, or a group or community” (Karch et al., 2009; n.p.).

The NC-VDRS analyzes 250 variables for violent deaths, including the manner of death, precipitating circumstances, relationship to the victim, address of the incident and the type of incident among other things (Karch et al, 2009). The race categories that are reported include non-Hispanic white, non-Hispanic black, Asian Pacific Islander, American Indian/Alaska Native, other, and unknown, which are classified by the medical examiner and other reports that are collected.

The independent variables come from the United States Census Bureau’s American Community Survey (ACS) 5-year estimates 2005-2009. The ACS invites approximately 1 in 38 households in the United States per year to fill out their questionnaire either online or in paper form (“How the American Community Survey Works for Your Community,” n.d.). The data

3 A data sharing request agreement was reached with the North Carolina Violent Death Reporting System August 19, 2014.
they collect are then reported to the United States Census Bureau, which combines the data into reports and tables. The ACS has recently replaced the U.S. Census’ SF3 and SF4 files beginning with the 2010 U.S. Census.

Unit of Analysis

The units of analysis for this study are census tracts, which range in population size from 1,200 people to 8,000 people while geographic size varies (U.S. Census Bureau, 2010). Specifically, North Carolina tracts that contain at least 1% American Indian population according to the American Community Survey were selected. Census tracts are appropriate for this study because it allows for a closer examination of neighborhood characteristics than county level analysis. Past studies have used the 1% designation (Lanier and Huff-Corzine, 2006; Lanier, 2010) since that is reflective of the American Indian population of the United States, as well as North Carolina. Using this criterion, 261 out of a possible 1,563 census tracts were selected for this analysis.

Dependent Variables

The dependent variable is the number of American Indian homicides occurring in North Carolina from 2004-2011. Homicides were classified as American Indian using the race of the victim provided by the NC-VDRS. The homicides were geocoded based on the address of the incident provided by the NC-VDRS (addresses were reported by the police) and placed in a census tract using the 2000 U.S. Census tract shape file. The ArcMap software automatically matched 80 of the 163 homicides. The remaining 83 homicides were hand matched using Google maps alongside ArcMap to distinguish the location of the homicide incident. Due to possible reporting errors, ten homicides were not matched with a location based on the address
provided and therefore, excluded\(^4\). Also, fourteen homicides were not a part of the analysis because the incident did not occur within a census tract that contained at least 1% American Indian population and also excluded. Additionally, one more homicide was excluded because it occurred in a census tract with missing data, leaving me with 138 American Indian homicides. Due to the rare occurrence of American Indian homicides in North Carolina, a high number of zero counts of homicide are present in census tracts.

**Independent Variables**

Three indicators of strain/deprivation will be utilized in this study: (1) the percentage of the American Indian population twenty-five years and older that have obtained less than a high school diploma, (2) the American Indian unemployment rate, and (3) the percentage of American Indian households that bring in income less than the median household income for the entire census tract. The percentage of the American Indian population twenty-five years old and over that has less than a high school education was calculated by adding the number of American Indian males and females with less than a high school diploma, and dividing that number by the total American Indian population over the age of twenty-five. If there were zero American Indians over the age of 25 within the census tract, the percentage was listed as 0.

The unemployment rate for American Indians within each census tract was calculated by adding together unemployed, American Indian males in the civilian labor force ages 16-64, 65 and over, and unemployed, American Indian females in the civilian labor force ages 16-64 and 65 and over. That number was divided by the total number of American Indian males in the civilian labor force ages 16-64 and 65 and over in addition to the total American Indian females in the civilian labor force ages 16-64 and 65 and over. If there were zero people in the labor

\(^4\) Appendix provides map of 153 American Indian homicides. The map does not reflect exact location of the homicide as part of the data sharing agreement with the NC-VDRS.
force within the census tract, the unemployment rate for the tract was listed at 0% because there were no American Indians that fit the criteria, even though there were American Indians within the census tract.

The final variable used to measure strain/deprivation was the percentage of American Indian households that brought in income less than the median household income for the entire census tract. This measure was calculated by adding the number of American Indian households that made less than the median household income for the entire tract. That number was then divided by the total number of American Indian households in the tract. If the median household income for the entire tract fell into a value range that included American Indian households, those households were not included in the American Indian households that made below the median household income.

For social disorganization theory, four measures were included in the analysis: (1) socioeconomic status (2) residential instability, (3) ethnic heterogeneity, and (4) family structure. Poverty was used as a measure of socioeconomic status. Specifically, the percentage of American Indians living below the poverty level within each census tract was used.

Residential instability was measured as the percentage of the American Indian population that was not at their present address in the previous year. To calculate this variable, the percentage of the American Indian population that has moved within the same county, the percentage that moved from a different county, but the same state, the percentage that moved from a different state, and the percentage that moved from abroad were added together.

To measure ethnic heterogeneity, the White, Black, and American Indian populations were divided by the total population within each group. Next, each proportion value is squared,
summed across all three groups, and subtracted from one. The range is between 0 and 100% with higher values indicating higher racial heterogeneity\(^5\).

\[
1 - (P^2_w + P^2_{aa} + P^2_{ai})(100)
\]

where
\[
P_w = \text{proportion of the census tract population White} \\
P_{aa} = \text{proportion of the census tract population African American} \\
P_{ai} = \text{proportion of the census tract population that is American Indian.}
\]

(Messner and South, 1992)

Lastly, two measures of family structure were included in the analysis: (1) the percentage of American Indian female-headed households with children under the age of 18 and (2) the percentage of the American Indian population that was divorced. To calculate the percentage of American Indian female-headed households with children under the age of 18, the number of American Indian female householders with related children under 18 below poverty level and the number of American Indian female householders with related children under 18 at or above poverty level were summed and divided by the total number of American Indian households. The percentage of the American Indian population that was divorced was readily available in the ACS data.

Analytical Approach

This study analyzed the independent and dependent variables at the univariate level by examining the frequency tables and descriptives of the variables. For the multivariate analysis, I used negative binomial regression (NBR). NBR was used for the American Indian model due to the scarcity and rare occurrence (see Table 1) of American Indian homicide victimization (Osgood, 2000). Ordinary Least Squares Regression (OLS) would be problematic because count data violates three assumptions that are necessary to perform OLS (Walters, 2007). Specifically, the assumptions of homoskedasticity, normality, and linear relationships are violated due to

\(^5\) In order to standardize the variable, the ethnic heterogeneity proportion was multiplied by 100.
variations in error variance, the nonnegative integer characteristic of homicide count data, and the lack of a linear nature to count data.

Table 1: Frequency Distributions of American Indian Homicides for Selected North Carolina Census Tracts 2004-2011

<table>
<thead>
<tr>
<th>Total number of American Indian homicides</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>230</td>
<td>88.1</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>6.2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>1.2</td>
</tr>
<tr>
<td>5 or more</td>
<td>9</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Note: N = 261 census tracts

Poisson regression is another possibility to use with count data. Poisson regression assumes that equidispersion exists in the dependent variable (Walters, 2007). However, for this study that is not the case as the mean homicide count equals .53 while the variance is 5.296, violating the equidispersion assumption necessary to perform Poisson.

The next method Walters suggests (2007) is negative binomial regression (NBR), which is conducted when differences between cases cannot be explained and unobserved heterogeneity exists, thus can account for overdispersion (“Stata Data Analysis Examples,” n.d.). While excess zeros are present in the data, there is no truncation or censoring present, which leaves the NBR model as the only procedure to conduct the most effective analysis. Additionally, zero-inflated models would not be necessary for this data, because there is only one type of zero that existed among the dependent variable. The software used to estimate the models were SPSS and STATA.
Description of the Census Tracts

Prior to delving into the analysis and results of the multivariate models, it is necessary to discuss the makeup of the census tracts that have been included in the analysis in order to outline a summary of the types of census tracts American Indians reside within in North Carolina. Within the 261 eligible census tracts, the American Indian total population ranges from 10 to 7,317 with a mean of 327 total American Indians. The percentage of American Indians within census tracts in the analysis ranges from 1% to 77%, with a mean of 5.4%.

As in past research on American Indians, the economic and social disorganization variables are higher for American Indians than for the state of North Carolina. According to the ACS five-year estimates from 2005-2009, the poverty rate for the state was 15.1%, while the rate for American Indians within the census tracts was 25.95% (see Table 2). Unemployment in the state was 7.7% while the rate for American Indians was 11.58%. American Indians within the analyzed census tracts also had a higher rate of female-headed households with children under 18 at 13.07% while the state rate was 7.9%. The divorce rate was slightly higher for American Indians at 11.58% while the state rate was 8.8%. The most interesting finding was that the percentage of American Indians over the age of 25 with less than a high school diploma was slightly more than double the state rate. The American Indian rate for the analysis was 34.58% while the state rate was 17%.
Table 1: Means and Standard Deviations for all Variables Included in the Models

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.I. Homicide counts</td>
<td>261</td>
<td>0.53</td>
<td>2.301</td>
</tr>
<tr>
<td>A.I. FHH w/ children &lt; 18</td>
<td>228</td>
<td>13.07</td>
<td>26.25</td>
</tr>
<tr>
<td>A.I. Divorce</td>
<td>261</td>
<td>11.53</td>
<td>19.13</td>
</tr>
<tr>
<td>A.I. Poverty</td>
<td>261</td>
<td>25.95</td>
<td>32.51</td>
</tr>
<tr>
<td>Ethnic heterogeneity</td>
<td>261</td>
<td>44.01</td>
<td>18.05</td>
</tr>
<tr>
<td>A.I. Mobility</td>
<td>261</td>
<td>20.46</td>
<td>30.21</td>
</tr>
<tr>
<td>A.I. &lt; HS diploma</td>
<td>261</td>
<td>34.58</td>
<td>34.85</td>
</tr>
<tr>
<td>A.I. Unemployment</td>
<td>261</td>
<td>11.58</td>
<td>23.29</td>
</tr>
<tr>
<td>A.I. HH below median tract HH income</td>
<td>228</td>
<td>52.8</td>
<td>37.89</td>
</tr>
</tbody>
</table>

N=census tracts

Results from the Negative Binomial Regression Models

Tables 2 through 5 present the results of the models examining the effect of measures derived from strain/deprivation theory and social disorganization theory on American Indian homicide victimization in North Carolina from 2004-2011. These models also included an offset population variable. This variable is the natural logarithm of the total American Indian population in each census tract. This variable is then provided a fixed coefficient of one in order to standardize the models (Osgood and Chambers, 2000). The offset population variable allows for the models to factor in the size of the population in the analysis of homicide counts (SAS annotated Output: Negative Binomial Regression, n.d.).

Table 3 shows the results of the strain/deprivation theory model and its effects on American Indian homicide in North Carolina\(^6\). None of the measures was found to be a significant predictor of the dependent variable.

\(^6\) Tests were conducted to check for multicollinearity using variance inflation factor (VIF) and tolerance levels. Allison (1999) determined that multicollinearity issues exist when any of the independent variables has a VIF of 2.50 and a tolerance level below .40. All independent variables passed the multicollinearity test. Also, regression diagnostics were conducted to identify any outliers and/or influential cases. The results indicated no such cases.
Table 2: Results of the Negative Binomial Regression Using Strain/Deprivation Theory (n=228)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
</tr>
<tr>
<td>A.I. &lt; HS diploma</td>
<td>0.005</td>
</tr>
<tr>
<td>A.I. Unemployment</td>
<td>-0.016</td>
</tr>
<tr>
<td>A.I. HH below median tract HH income</td>
<td>-0.005</td>
</tr>
<tr>
<td>Constant</td>
<td>-6.582*</td>
</tr>
</tbody>
</table>

*p<.05

Table 4 reveals the results of the social disorganization theory model. Ethnic heterogeneity is the only variable significant in the model. In order to interpret the relationship, the coefficient is multiplied by \( \exp(0.026) \), which is 1.026. That number is treated as an odds ratio, subtracted by one and then multiplied by 100 to reflect a percentage (1.0263-1=.0263*100=2.63). Therefore, a one unit increase in ethnic heterogeneity increases the homicide rates by 2.63% in the analysis (Osgood, 2000). American Indian poverty, family structure, and residential instability have no significant effect on American Indian homicide rates.

Table 3: Results of the Negative Binomial Regression using Social Disorganization Theory (n=228)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
</tr>
<tr>
<td>A.I. Poverty</td>
<td>0.001</td>
</tr>
<tr>
<td>A.I. Divorce</td>
<td>0.001</td>
</tr>
<tr>
<td>A.I. FHH w/ children &lt; 18</td>
<td>0.003</td>
</tr>
<tr>
<td>A.I. Mobility</td>
<td>-0.011</td>
</tr>
<tr>
<td>Ethnic heterogeneity</td>
<td>0.026*</td>
</tr>
<tr>
<td>Constant</td>
<td>-8.124*</td>
</tr>
</tbody>
</table>

*p<.05.

Lastly, all of the variables were included in one model to determine the effects of strain/deprivation theory and social disorganization theory on American Indian homicide
victimization in North Carolina together, as seen in table 5. Similar to the social disorganization model, ethnic heterogeneity is the only significant variable. The coefficient is transformed in order to account for the population as conducted in the previous model. Once calculated, a one unit increase in ethnic heterogeneity increases homicide rates in the analysis by 3.15%. Once again, the strain/deprivation theory American Indian measures and American Indian poverty, family structure, and residential instability were not found to be significant.

Table 4: Results of the Negative Binomial Regression using Strain/Deprivation Theory and Social Disorganization Theory (n=228)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>S.E</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.I. Poverty</td>
<td>0.007</td>
<td>0.009</td>
</tr>
<tr>
<td>A.I. Divorce</td>
<td>-0.001</td>
<td>0.016</td>
</tr>
<tr>
<td>A.I. FHH w/ children &lt; 18</td>
<td>0.004</td>
<td>0.009</td>
</tr>
<tr>
<td>A.I. Mobility</td>
<td>-0.012</td>
<td>0.010</td>
</tr>
<tr>
<td>Ethnic heterogeneity</td>
<td>0.031*</td>
<td>0.013</td>
</tr>
<tr>
<td>A.I. &lt; HS diploma</td>
<td>-0.002</td>
<td>0.008</td>
</tr>
<tr>
<td>A.I. Unemployment</td>
<td>-0.026</td>
<td>0.018</td>
</tr>
<tr>
<td>A.I. HH below median tract HH income</td>
<td>-0.010</td>
<td>0.009</td>
</tr>
<tr>
<td>Constant</td>
<td>-7.551*</td>
<td>0.667</td>
</tr>
</tbody>
</table>

*p<.05
DISCUSSION/CONCLUSION

The purpose of this study was to examine the relationship between structural disadvantages and American Indian homicide victimization in North Carolina. Specifically, this study utilized social disorganization theory and strain/deprivation theory. While the findings did not support the use of strain/deprivation theory, and only slight support for social disorganization theory, a discussion of the study’s findings and contributions is below. In addition, limitations, directions for future research, and policy implications are examined.

Ethnic heterogeneity was found to be the sole significant variable across all models. An increase in ethnic heterogeneity was associated with an increase in the American Indian homicide victimization rate within census tracts with 1% American Indian population in North Carolina. From the social disorganization theoretical perspective, ethnic heterogeneity may prevent racial groups from reaching a consensus within the community (Sampson and Groves, 1989). While the groups within the community may follow the same conventional values, ethnic heterogeneity may create communication barriers between those groups. Those communication and cultural barriers may create stereotypes, fears, and vitriolic attitudes that could lead to homicides in extreme situations. This finding is also supported by previous literature on American Indian homicide (Lanier & Huff-Corzine, 2006).

Along with the possible communication barriers, American Indians are most likely to be victimized by someone of another race. Therefore, increased ethnic heterogeneity among census tracts might increase the likelihood for American Indians to be victimized. According to a report, 66 percent of violent victimization experienced by American Indians is perpetrated by someone from another race, as described by the victim (Gilmour et al., 2011, p.3). According to Perry (2004; p. 14) American Indians homicide victims were killed by another American Indian
58% of the time from 1976-1999, while Whites were killed by Whites 86% of the time and Blacks killed by Blacks 94% of the time.

The finding that female-headed households with children under 18 is not significant is inconsistent with the findings of previous literature on American Indian homicide offending (Bachman, 1991a) and victimization (Lanier & Huff-Corzine, 2006). One explanation for this difference may be the unit of analysis, given that previous studies used county level analysis while the current study uses census tracts. The divorce rate of American Indians was also found to not be significant. As Parker and Johns (2002) argued, family structure variables utilized in this study, may reflect the white, middle-class bias that is prevalent within the assumptions of these measures.

Additionally, poverty was found to have no significant effect within the analyses. Inconsistencies have been bound in previous American Indian homicide research, as poverty has been found to have a significant effect on homicide offending (Painter-Davis, 2012) while no relationship was found on homicide victimization (Lanier & Huff-Corzine, 2006). It has also been shown in previous literature that poverty has a greater impact on homicide offending for Whites than it does minorities (Ousey, 1999). The effect of poverty on American Indian homicide victimization is a question that is left unanswered.

Lastly, residential mobility was also found to have no significant effect on American Indian homicide rates in North Carolina. One possible reason for this finding is that the residential mobility measure in this study only accounted for those that had moved in the last year. Because the homicide data are measured across eight years, this residential mobility variable may not be an accurate measure of mobility. A more accurate measure might be the percentage of the population that was at their address five year prior. However, previous
American Indian homicide research is consistent with the findings of this study (Lanier & Huff-Corzine, 2006; Painter-Davis, 2012).

The measures of strain/deprivation theory were not found to be significant. One explanation may be that high rates of unemployment and high school dropouts are common within American Indian communities. This may diminish the effect those structural factors have on American Indian homicide victimization. Therefore, it may be necessary to operationalize strain/deprivation theory in other ways that acknowledge economic and educational hardships among American Indians, possibly by comparing those hardships directly to other races. Also, due to the lack of available census data for American Indians, it was difficult to measure strain/deprivation theory as it had been done in previous studies. For example, the inequality measure, American Indian households making less than the tract median household income, may not be an accurate measure of the inequality that may exist in these communities.

While mainstream criminological theories such as social disorganization theory and strain/deprivation theory can provide an avenue for further understanding homicide victimization among American Indians, it is important to acknowledge that this research does not operationalize culture and historical trauma within the models. Future qualitative research is needed to determine the effects of culture and historical trauma, as statistical analysis of these concepts is not possible. It might also be useful to examine tribes independently of each other, as many tribes have suffered many different forms of abuses throughout history (Thornton, 1987).

Limitations

As with other research, limitations of the current study must be addressed. First, the data for the homicide counts come from the North Carolina Violent Death Reporting System (NC-
VDRS). The NC-VDRS compiles police and death records when classifying the homicides by race. Therefore, the medical examiner is the person who classifies the race of the homicide victim. As Painter-Davis (2012) mentioned, American Indian homicide has the possibility of being severely undercounted due to the possible misclassification of the race of the homicide victim by the medical examiner. This also works the other way, in that the medical examiner could be wrong in classifying a victim as American Indian as well. Without one’s race being self-reported, there is no sure way to know whether the race classification of the homicide victim is accurate.

The second limitation involving the data from the NC-VDRS is in regards to the addresses reported by the police. The placement of these homicides in census tracts was reliant on the accurate reporting of the addresses of the homicide incident. Due to inaccurate addresses, ten homicides were left out of the analysis. This inaccuracy included the reporting of the wrong zip code or city or the misspelling of a road name.

Limitations in regards to the census data also existed. The main issue involved the number of American Indian households that were within each census tract. Although a census tract met the 1% American Indian criteria, the American Community Survey (ACS) had some census tracts with zero households. Due to the reporting of zero American Indian households in 33 census tracts, these tracts were eliminated from the analysis. Within those 33 census tracts, one homicide occurred, which decreased the total number of homicide counts to 138.

Also due to the small number of American Indians within North Carolina, I was unable to include some census tracts where an American Indian homicide took place. Twelve homicides were not included in the analysis because they could not be placed in a census tract with the 1% American Indian population designation.
Furthermore, due to the small number of American Indian female homicide victims, gender effects could not be examined in this analysis of American Indian homicide in North Carolina. However, it must be acknowledged that the effects of strain/deprivation factors and social disorganization impact men and women differently and thus, would indeed affect the outcome of the analysis (Steffensmeier and Allan, 1996).

Policy Implications

Although there is only one significant finding within the three models, there are relevant policy implications that should be discussed. The majority of the American Indian populations analyzed in this study are Lumbee Indians that reside in Robeson County, where eighty-one percent of the homicides (112 out of 138) took place. The Lumbee Indian Tribe lacks federal recognition by the United States government. According to the United States Department of the Interior (DOI), federal recognition would provide the Lumbee tribe with programs to further development their tribal government, economy, and other additional programs. In addition, the tribe would be provided with federal health services through the Indian Health Service (IHS), along with help from other departments including the Housing, Justice, Education, and Labor departments. One can speculate that the programs and services federal recognition brings would have a positive impact on Lumbee Indian homicide victimization rates, and also the well-being of the tribe as a whole.

Another policy implication that springs from this research is the need for improved race relations, specifically in Robeson County. As shown in the analysis, racial composition of census tracts has an effect on American Indian homicide victimization. This could be due to a distrust that exists between the Lumbee Indian community and authority figures of the county, most of whom are White. Similar to the recent events in Ferguson and North Charleston,
Lumbee Indians have been subject to misconduct by police and court officials. The Lumbee Indians have insisted for years that the police department within the county was corrupt. By 2004, those assertions were validated after an investigation into the Robeson County Sheriff’s Office led to the dismissal of 22 deputies and the sheriff (Rockett, 2013). Policies should be in place that helps to improve the relationships between the courts, police, and Lumbee Indians. Improvement of race relations at the top institutions within the county would hopefully help the race relations within the individual Lumbee Indian communities.

Future Research

This study contributes to the dearth of research on American Indian homicide victimization. Specifically, the lack of significance for strain/deprivation theory may be indicative that this theory is not pertinent to American Indian homicide victimization as it may be for other racial and ethnic groups. Future research should examine the different racial effects of employment, education, and income on the homicide rates within those groups. Future studies of homicide rates by race should include American Indians because they consistently have some of the highest homicide rates. While previous studies have compared Whites, Blacks, and Hispanics, only one study has compared American Indians to other racial groups (Lanier, 2006). Studies such as this comparing American Indians to other racial groups is important in order to develop a general, criminological theory of homicide and crime.

In addition, future research utilizing qualitative methods would augment our understanding of violence and homicide among American Indians. Qualitative research would need to evaluate the impact of culture, historical trauma, and racism within American Indian communities. With the significant effect of ethnic heterogeneity on the homicide rates in the analysis, it is important to analyze possible racial tensions that exist within the Robeson County
community. Police relations would also be important to analyze within this community, as the Sheriff’s Office within the county recently went through a corruption scandal that resulted in the firing of sheriff deputies and prison time for the sheriff overseeing those deputies. While statistical analysis here shows that heterogeneity has an affect on homicide rates, qualitative analysis is important to understand and solving racial tension in the area.
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[http://www.census.gov/acs/www/about_the_survey/how_the_acs_works/](http://www.census.gov/acs/www/about_the_survey/how_the_acs_works/)


APPENDIX