

# Explaining the Gaps in White, Black, and Hispanic Violence since 1990: Accounting for Immigration, Incarceration, and Inequality

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## Abstract

While group differences in violence have long been a key focus of sociological inquiry, we know comparatively little about the trends in criminal violence for whites, blacks, and Hispanics in recent decades. Combining geocoded death records with multiple data sources to capture the socioeconomic, demographic, and legal context of 131 of the largest metropolitan areas in the United States, this article examines the trends in racial/ethnic inequality in homicide rates since 1990. In addition to exploring long-established explanations (e.g., disadvantage), we also investigate how three of the most significant societal changes over the past 20 years, namely, rapid immigration, mass incarceration, and rising wealth inequality affect racial/ethnic homicide gaps. Across all three comparisons—white-black, white-Hispanic, and black-Hispanic—we find considerable convergence in homicide rates over the past two decades. Consistent with expectations, structural disadvantage is one of the strongest predictors of levels and changes in racial/ethnic violence disparities. In contrast to predictions based on strain theory, racial/ethnic wealth inequality has not increased disparities in homicide. Immigration, on the other hand, appears to be associated with declining white-black homicide differences. Consistent with an incapacitation/deterrence perspective, greater racial/ethnic incarceration disparities are associated with smaller racial/ethnic gaps in homicide.

## Keywords

homicide, racial/ethnic inequality, mass incarceration

Sociologists have long viewed group disparities in criminal violence as important indicators of assimilation and reflections of broader patterns of stratification (Du Bois [1899] 1967). For this reason, a substantial amount of research on racial disparities in violent crime (for a review, see Peterson, Krivo, and Hagan 2006) has coincided with a wealth of studies on the trends in racial inequality across broad measures of well-being, including income and family structure (Bloom 2015), residential integration (Massey and Denton 1993), and educational

attainment (Hauser 1993). This work, however, has not been paralleled for Hispanics in the United States. Despite considerable research on trends in Hispanic assimilation in various other

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social domains (Alba and Nee 2003), there has been no systematic examination of the long-term patterns of violent crime for Hispanics relative to non-Hispanic whites and African Americans.<sup>1</sup> As a result, we know comparatively little about whether racial/ethnic gaps in criminal violence have converged or widened in recent decades, or the relative influence of racial/ethnic inequality in social, economic, and demographic conditions in driving these trends.

This dearth of longitudinal research is consequential given the scale of recent changes to the racial/ethnic composition of the United States. Since 1990, Hispanics have become the largest minority group in the United States, surpassing African Americans for the first time in U.S. history. Between 1990 and 2010, the U.S. Hispanic population has more than doubled, from 22.4 million to 50.5 million, accounting for the majority of total population growth since 2000 (Pew Research Center 2011). Moreover, increasing diversity has redefined the racial/ethnic composition of the metropolitan United States. Between 1990 and 2010, the white share of the population in the nation's largest metropolitan areas decreased from 71 to 57 percent, while the Hispanic share grew from 11 to 20 percent (Frey 2011). Thus, a thorough empirical investigation into the trends in criminal violence between whites, blacks, and Hispanics over this period is timely and important.

In addition, such an analysis offers an important research setting for informing ongoing debates regarding the extent to which differential exposure to criminogenic conditions explains racial/ethnic differences in criminal violence—often referred to as the “racial invariance” hypothesis. While some scholars argue that the weight of the evidence supports the racial invariance thesis (Peterson and Krivo 2005), others suggest the racial invariance issue remains largely unsettled (Steffensmeier et al. 2010). To date, however, research on this topic has failed to examine the determinants of the gaps in white, black, and Hispanic violent crime *over time*. This is largely a function of data limitations, as ethnic identifiers are rarely collected in official crime statistics.

In this article we go beyond prior research by developing the first longitudinal, nationally representative dataset that includes race/ethnicity-specific measures for homicides and theoretically relevant indicators from 1990 to 2010. Combining geocoded death records provided by the Centers for Disease Control (CDC) with multiple data sources capturing relevant features of the socioeconomic, demographic, and legal context of 131 of the largest metropolitan areas, our study is the first to provide even descriptive information on the trends in racial *and* ethnic gaps in criminal violence over the past two decades. This is an important contribution given that homicide mortality plays a major role in racial disparities in life expectancy (Lariscy et al. 2013).

We leverage these unique data to investigate the influence of three of the most significant societal changes over the past 20 years—rapid immigration, mass incarceration, and rising wealth inequality—on racial/ethnic inequality in homicide. While each of these trends has been instrumental in the study of racial/ethnic stratification and assimilation processes generally, they have largely escaped contemporary inquiry in our understanding of the changes in racial/ethnic violence. Drawing from criminological theory on social disorganization, strain/relative deprivation, and rational choice, we derive specific hypotheses about how these recent transformations have influenced the patterns of racial/ethnic violence since 1990.

## PRIOR RESEARCH ON RACIAL-ETHNIC VIOLENCE

The race gap in violence has produced a voluminous literature that almost exclusively uses cross-sectional data to either (1) explain crime rates across communities with varying racial compositions or (2) estimate race-specific analyses to test whether white and black crime rates are affected by the same processes (for a review, see Peterson and Krivo 2005). Despite this substantial research attention, this body of work has elided a sustained focus on the actual determinants and trends in black-white differences in

violence over time. There are, however, two notable exceptions. Vélez, Krivo, and Peterson (2003) use racially disaggregated homicide offender rates for whites and blacks across 125 large U.S. cities to evaluate the structural determinants of the racial violence gap in 1990. More recently, LaFree, Baumer, and O'Brien (2010) provided the first longitudinal assessment of the white-black gap in violence and found substantial convergence in white-black homicide arrest rates between 1960 and 2000.

However, with the rapidly increasing Hispanic population in the United States, Steffensmeier and colleagues (2011) caution against drawing strong inferences from contemporary research on the white-black gap in violent crime for two reasons. First, Hispanics' level of violence tends to fall between white and black rates (Steffensmeier et al. 2010). Second, crime-reporting programs often report Hispanic arrestees as white. Combining Hispanics and non-Hispanic whites thus limits our understanding of ethnic involvement in crime, leading to inaccurate estimates of the true disparities in violence between whites and blacks. For example, using data from California and New York that have separate indicators for white, black, and Hispanic arrestees, Steffensmeier and colleagues (2011) show the white-black violence gap is significantly more pronounced when Hispanics are not counted as "white," and that there has been little convergence in white-black violence rates since 1980.

As a response to these substantive and methodological issues, a growing number of recent studies have begun investigating white, black, and Hispanic violent crime separately (Harris and Feldmeyer 2013; Martinez 2003; Steffensmeier et al. 2010). But only one study of which we are aware directly evaluates the effects of structural characteristics on racial/ethnic violence gaps. Using data from New York and California, Ulmer, Harris, and Steffensmeier (2012) combine race-ethnicity disaggregated arrest information with census data on social and economic characteristics of 232 census places in 2000. They find partial support for the racial invariance hypothesis, such that black-white, black-Hispanic, and Hispanic-white

homicide gaps are greater in places where there are greater between-group differences in poverty and female-headed households. However, as the authors note, it remains to be seen whether their findings can be replicated beyond New York and California.

More importantly for our purposes, Ulmer, Harris, and Steffensmeier (2012) found that racial differences in structural disadvantage did not completely explain black-white and black-Hispanic gaps in violent crime. This raises questions about what additional macro-level factors or social changes might need to be considered to account for such gaps. In addition, virtually all of the research utilizing white, black, and Hispanic comparisons is cross-sectional, focuses on only certain jurisdictions, does not include data beyond the early 2000s, and overlooks some of the most noteworthy societal changes in recent years (e.g., mass incarceration). As a result, we currently lack a clear picture of the national trends in racial and ethnic violence over the past two decades, whether the same theoretical constructs are associated with changes in the racial/ethnic gaps in homicide, or how some of the most significant social changes over this period have affected these trends.

In the present study, we address each of these issues using race-ethnicity disaggregated homicide information for 131 of the nation's largest metropolitan areas from 1990 to 2010. We combine this information with several rich data sources to explore whether racial/ethnic rates of serious violence have changed significantly in recent decades, and which social processes influence white-black-Hispanic homicide gaps—and changes in these gaps—over time. In addition to explanatory processes that feature prominently in prior research, we examine the criminogenic consequences of three of the most significant contemporary social trends in the United States, all of which have been widely discussed in stratification research but have received limited attention in the study of racial/ethnic disparities in violence: immigration, incarceration, and income inequality.

## CONTEMPORARY SOCIAL CHANGES

### *Contemporary Immigration*

Whether immigration increases crime has been a central question in sociology and criminology dating back to the Chicago School (Shaw and McKay 1942). This issue has received resurgent interest in recent years as the United States experienced the largest influx of immigrants over the past two decades—in both absolute and relative numbers—in its history. Between 1990 and 2010, the foreign-born population more than doubled, from 19.8 million to 40 million, driven primarily from Latin American immigration. Equally important, during this period the settlement patterns of many newly arriving immigrants shifted away from traditional receiving communities (e.g., California and New York) to areas with little history of immigration (e.g., North Carolina and Georgia).

This new wave of immigration has triggered substantial public angst regarding the criminality of immigrants, resulting in immigration-reform legislation and public policies presumptively aimed at reducing immigration-induced crime (Bohn, Lofstrom, and Raphael 2014). Yet, despite the widespread perception that immigrants are associated with increases in criminal activity, research suggests that immigration helps revitalize disadvantaged neighborhoods and may actually be associated with reductions in criminal violence (Lyons, Vélez, and Santoro 2013; Ousey and Kubrin 2009). This occurs through two primary mechanisms. First, immigrants may increase informal social control by emphasizing family structure and strengthening community institutions such as churches and schools. Second, influxes of immigrants into ethnic enclaves can invigorate local economies by stimulating job and wage growth through dense social capital networks. Because these conditions influence broader community-level processes (e.g., increasing organization and cohesion), we might expect immigration to be associated with reductions in rates of violence for all racial/ethnic groups and perhaps lessen gaps in racial/ethnic violent crime over time.

However, a series of recent macro-level studies gives pause to think that the crime reducing benefits of immigration apply equally well for all racial/ethnic groups. Shihadeh and Barranco (2010), for instance, argue that recent immigration increases black violence by displacing low-skilled black workers. In a similar vein, Harris and Feldmeyer (2013) argue that recent Latino immigration may destabilize communities unaccustomed to the arrival of immigrants, and thus increase criminal violence for blacks and Hispanics in these areas (see also Shihadeh and Barranco 2013). By elevating rates of violence among blacks and Hispanics, this perspective suggests there will be larger violence gaps between whites and minorities as the foreign-born population increases. Given long-standing sociological interest in the immigration-crime nexus, we see this as a unique opportunity to adjudicate between these contrasting predictions.

### *Mass Incarceration*

Between 1975 and 2009, the incarceration rate in the United States increased nearly fivefold, from roughly 100 per 100,000 residents to 497 (Raphael and Stoll 2013). By 2010, approximately 2.3 million people were incarcerated in U.S. prisons and jails, and over 7 million individuals were under supervision of adult correctional authorities (Glaze 2011). This unprecedented expansion of incarceration in recent decades—both historically and internationally—has been vastly unequal across racial/ethnic groups. In 2008, less than 1 percent of white men were incarcerated, compared to 2.7 percent of Hispanic men and nearly 7 percent of black men (Pew Center for the States 2008). Even more glaring are the disparities in the lifetime risks of imprisonment, which are greater today than in earlier generations (Western 2006). For the cohort of men born in the early 1990s, over 29 percent of blacks are likely to serve a prison sentence during their lifetimes, compared to 16.3 percent of Hispanics and less than 5 percent of whites (Bonczar 2003).

These two trends together—manifest increases in incarceration combined with dramatic racial

disparities in punishment—have sparked substantial research into the efficacy of imprisonment and its consequences for broader patterns of stratification. One body of work investigates the relationship between incarceration and crime rates. While there is debate as to the magnitude of the effect of incarceration on crime (Western 2006), the most careful and systematic studies of this relationship suggest that increases in the size of the prison population are associated with decreases in crime (Buonanno and Raphael 2013; Levitt 1996), although the effect of incarceration on crime decreases with scale (Johnson and Raphael 2012).

A second body of work focuses on the increasingly common experience of incarceration for disadvantaged men and its implications for racial inequality. Within this literature, mass incarceration has been implicated in exacerbating racial disparities in labor market participation (Pager 2003), health functioning (Massoglia 2008), single-parent families (Western and Wildeman 2009), and childhood well-being (Wakefield and Wildeman 2013), among other outcomes (for a review, see Wakefield and Uggen 2010). In addition, this research suggests the effects of the prison boom distort statistical portraits of the U.S. population in ways that skew our understanding of racial stratification (Pettit 2012). Western and Pettit (2000), for example, document how mass incarceration has created the illusion of racial economic progress in recent decades by removing imprisoned individuals from official labor statistics, thus masking the true consequences of the prison boom as a primary engine of contemporary social inequality.

Given the considerable amount of research on the links between incarceration, crime, and racial/ethnic inequality, it is surprising that research has yet to study the relationship between mass incarceration and white-black-Hispanic *disparities* in criminal violence. By investigating these links in the current study, we test two competing theoretical perspectives on the consequences of mass incarceration. One view, derived from incapacitation and deterrence models of crime and punishment (Becker

1968), suggests that increasing racial/ethnic disparities in incarceration will be associated with decreasing gaps in violence between whites, blacks, and Hispanics.<sup>2</sup> The logic for this prediction is based on three interrelated propositions. First, criminal behavior—through deterrence and incapacitation—is responsive to punishment. Second, blacks and Hispanics tend to have higher rates of violence than whites. Third, the incarceration boom disproportionately entangled racial and ethnic minorities. Thus, we would expect to see black and Hispanic rates of violence converge toward white rates in areas where racial/ethnic disparities in incarceration are greatest.

However, an alternative perspective, rooted in social disorganization theory, suggests mass incarceration may increase crime in minority communities by concentrating the deleterious consequences of incarceration in a few, already disadvantaged neighborhoods. Each year roughly 700,000 individuals enter and exit prisons in the United States, and research on prisoner reentry patterns suggests a high degree of geographic clustering. For instance, an analysis of Chicago showed that of 77 total community areas, more than half of released inmates settled in just seven of the most disadvantaged communities in the city (Visser and Farrell 2005). Given the research on the collateral consequences of incarceration and the coercive mobility it entails, several commentators suggest that the geographic concentration of incarceration in poor minority neighborhoods may increase levels of social disorganization by weakening family formation and labor force attachments, disrupting network ties, increasing alienation, and diminishing the capacity for political efficacy due to felon disenfranchisement (Lynch and Sabol 2004; Rose and Clear 1998). As a result, mass incarceration may exacerbate criminal violence in minority communities. Based on this perspective, and contrary to the incapacitation/deterrence model, we would expect to see black and Hispanic rates of violence diverge from white rates in areas where racial/ethnic disparities in incarceration are greatest.

### *Wealth Inequality*

Income inequality is critical to major theoretical traditions in sociology and economics, and the concentration of wealth among top earners has garnered increasing attention as the income distribution in the United States has grown markedly unequal in the past 30 years (Atkinson, Piketty, and Saez 2011). While there had been a general pattern of income equalization since the 1930s, between 1981 and 2007 the income share held by the top 1 percent increased from 10 percent to nearly 24 percent. Against this backdrop, a substantial amount of research has investigated the consequences of the growing concentration of affluence across a host of social domains, including economic growth (Andrews, Jencks, and Leigh 2011), democratic accountability (Stiglitz 2012), and most important for this study, violent crime (Fajnzylber, Lederman, and Loayza 2002).

Yet, despite this research attention, there has been limited empirical inquiry into how rising wealth inequality affects racial/ethnic disparities in violence (but see Vélez et al. 2003). This is an important omission for two reasons. First, foundational economic and sociological theories of crime point to economic inequality as playing a major role in explaining group differences in criminal behavior (Becker 1968; Merton 1938). In their classic articulation of strain theory, Blau and Blau (1982) argue that when economic inequalities are rooted in ascribed positions such as race, this creates alienation, despair, and conflict, resulting in increased violent crime. As they put it, “high rates of criminal violence are the apparent price of racial and economic inequalities” (Blau and Blau 1982:126). It is important to recognize that from this perspective, even absent disadvantage, racial/ethnic inequality leads to violent crime by fostering group-level status frustration and aggression.

Second, the increasing concentration of affluence has exacerbated wealth inequalities between whites, blacks, and Hispanics. In 2009, the median wealth of white households was 20 times that of black households and 18 times that of Hispanic households—the largest gaps in wealth ratios by far in a quarter century

(Kochhar, Fry, and Taylor 2011). These widening wealth gaps coincided with increasing residential segregation by income in recent decades, where low-income black and Hispanic families are now much more isolated from middle-class blacks and Hispanics than are low-income whites from higher earning white families (Reardon and Bischoff 2011). This type of racial-economic sorting is consequential for macro-structural theories of crime. Just as disadvantaged neighborhoods may encourage violence by heightening social disorganization and producing higher levels of anomie, areas of concentrated affluence may provide a separate set of protective mechanisms from violence, such as greater political efficacy to prevent crime, the resources to stabilize institutions that foster social control (e.g., schools, churches, and local businesses), and greater ability to garner law enforcement efforts to control crime (Vélez et al. 2003). In this regard, disadvantage and affluence may not reflect the same underlying construct (i.e., affluence is not simply the absence of poverty), and a focus on disadvantage alone could obscure potential protective effects of concentrated affluence (Sampson, Morenoff, and Gannon-Rowley 2002). For example, Sampson, Morenoff, and Earls’s (1999) study of Chicago neighborhoods found that net of measures for disadvantage, concentrated affluence had an independent and significant influence on collective efficacy for children—a key factor in the informal social control of crime.

Thus, to the extent that white, black, and Hispanic differentials in affluence represent gaps in conditions that protect communities from criminal violence—combined with strain arguments that relative racial-economic inequality is linked to group differences in violent crime—we expect to see greater divergence in white-black-Hispanic violence rates in areas where gaps in concentrated affluence between racial/ethnic groups are greatest.

### **PERENNIAL CRIMINOGENIC STRUCTURAL CONDITIONS**

While scholars have relied on diverse theoretical traditions to explain the race-violence

relationship, a unifying theme across relevant perspectives is that racial/ethnic differences in criminal violence reflect structural inequalities in other social institutions (e.g., family structure and economic stress) and result from differential exposure to criminogenic community conditions, especially entrenched structural disadvantage (Sampson and Wilson 1995). This view is consistent with the foundational work on social disorganization theory by Shaw and McKay (1942)—who found that crime rates remained high in certain structurally disadvantaged areas in Chicago regardless of which racial or ethnic group occupied those areas—as well as contemporary theoretical perspectives that suggest racial and ethnic differences in crime “requires a recognition that criminal inequality is a by-product of structural inequality in society at large” (Peterson and Krivo 2010:110). In general, this means that to the extent that racial and ethnic inequalities in key criminogenic features of U.S. society have waned in recent decades, we should observe declines in racial/ethnic differences in homicide. Against this backdrop, prior research on race and violent crime highlights several structural features of community contexts that are likely to produce variation across metro-areas in the white-black-Hispanic gaps in violence and trends in these gaps in recent decades. These include indicators of disadvantage such as family structure and economic inequality, residential segregation, drug activity and gun availability, and population composition.

### *Structural Disadvantage*

Within the sociological study of crime, structural disadvantage has received the most attention in explaining racial gaps in violence. In his classic statement, *The Truly Disadvantaged*, Wilson (1987) linked racial differences in crime and other urban social problems to the uniquely high rates of poverty, joblessness, and family disruption plaguing black communities due to the social transformation of cities from macrostructural forces, such as the loss of inner-city manufacturing jobs. Building off this insight, Sampson and Wilson (1995:44) argued that “the most

important determinant of the relationship between race and crime is the differential distribution of blacks in communities characterized by structural social disorganization.” From this perspective, the disadvantages characteristic of black urban communities erode local systems of informal social control and collective efficacy, limit interactions with pro-social institutions and role models, and may foster subcultural adaptations favorable to violence (Massey 2001).

This perspective has coalesced into what is known as the “racial invariance hypothesis” and has motivated a substantial amount of research on race and crime, including recent extensions beyond white-black comparisons to include analyses of Latinos (Steffensmeier et al. 2010). In contrast to the strain hypothesis discussed earlier, the racial invariance hypothesis places little emphasis on the relative socioeconomic status of each racial/ethnic group, but rather focuses on the gaps in concentrated levels of disadvantage between racial/ethnic groups. Though not without qualification, the weight of evidence suggests structural disadvantage is a major contributor to violence for all racial/ethnic groups. Based on extant theory and research linking structural disadvantage and violent crime, we expect to observe convergence in white, black, and Hispanic violence in metro-areas that have also experienced convergence in poverty, joblessness, and family disruption between each racial/ethnic group.

### *Residential Segregation*

While prior research has highlighted the deleterious effects of racial/ethnic differences in structural disadvantage, other work draws attention to the pernicious consequences of the geographic concentration of community disadvantages resulting from racial segregation (Krivo, Peterson, and Kuhl 2009). According to Peterson and Krivo (2010:26), to the extent that the race-crime relationship is a by-product of structural inequality in society at large, “residential segregation is the linchpin that connects the overall racial order with the dramatic racial and ethnic differentials in violent . . . crime across communities.” By geographically concentrating

the social ills that disproportionality affect urban blacks—such as poverty, unemployment, eviction, and crime—racial segregation creates an ecological niche that inhibits employment networks (Wilson 1987), increases residential mobility (Desmond 2012), impedes social organization (Sampson and Wilson 1995), reduces public investment (Massey and Denton 1993), and gives rise to an oppositional set of values and behaviors where respect and status are cultivated through the strategic use of violence (Anderson 1999).

Although the findings are not entirely consistent, previous empirical research on residential segregation and crime suggests that cities with higher levels of segregation have higher rates of violence (Massey 2001; Ousey 1999; Shihadeh and Flynn 1996), regardless of the racial/ethnic composition of neighborhood residents (Krivo et al. 2009). In addition, race-specific analyses suggest that racial segregation increases homicide for blacks (Peterson and Krivo 1993) and Hispanics (Bisciglia 2014), and that black-white differences in homicide are smaller in more integrated cities (but see LaFree et al. 2010). Over the past two decades, U.S. metropolitan areas have seen varying levels of racial/ethnic integration, depending on characteristics of the city and the comparison groups. For example, African Americans became less segregated from both whites and Hispanics, but white-Hispanic levels of segregation have remained fairly stable over this period (Iceland and Sharp 2013). Given the deleterious consequences associated with racial/ethnic segregation, we anticipate convergence in white, black, and Hispanic homicide rates in metro-areas where residential integration increased most between respective groups.

### *Drug and Gun Markets*

Previous research links illicit drug markets to both overall levels of violence and to differences in white-black mortality (Blumstein 1995; Fryer et al. 2013). Violence associated with drug activity is often attributed to attempts to establish and maintain property

rights not enforceable via legal means (Chitwood, Rivers, and Inciardi 1996), particularly among urban street gangs operating in disadvantaged minority communities. Accounting for this drug-crime connection is especially relevant for the current study given that the crack epidemic peaked around 1990, which had devastating effects on inner-city black and Hispanic communities. Between 1984 and 1989, Fryer and colleagues (2013) attribute the rise in crack to a roughly 150 percent increase in homicide among young black males, while having virtually no effect on white male homicide. Blumstein (1995) suggests that a major contributing factor to the violence associated with drug markets is the availability of guns. Between 1985 and 1992, the number of youth homicides committed with a gun more than doubled, while non-gun homicides remained stable. Because participants in the illegal drug market are likely to possess considerable amounts of drugs and money, they are likely to carry guns for self-protection and dispute resolution. According to Blumstein, this leads to an escalating process throughout the community—as more guns appear on streets, the incentive for individuals to arm themselves increases. Previous research demonstrates considerable variation in gun availability across cities that is linked to violent crime (Cook 1979) as well as substantial racial/ethnic disparities in gun homicides; in 1998, the firearm homicide rate for young black males was 2.4 times as high as that for Hispanic males, and 15.3 times higher than the white male rate (Cook and Ludwig 2002). Given the racial/ethnic character of the associations between drug markets, guns, and violent crime, we expect white, black, and Hispanic homicide rates to diverge along with illicit drug activity and gun availability.

### *Demographic Composition*

Demographic characteristics have also been implicated in the race-crime relationship. LaFree and colleagues (2010), for instance, found that the ratio of white to black homicide arrests decreased between 1960 and 2000 in

cities where the relative black population increased. Consistent with Allport's contact hypothesis, they argue that increases in the relative black population can reduce social distance and negative stereotypes by encouraging interracial contact. Criminologists have shown renewed interest in this idea in recent years. Krivo and colleagues (2009:1792), for example, argue that interracial isolation produces criminogenic conditions in both minority and white communities by making it difficult for "separate and unequal groups to work together to foster common goals and solve shared problems," such as neighborhood crime. Taken together, this suggests we should expect to see smaller racial/ethnic gaps in homicide in metro-areas with relatively larger minority populations, and greater convergence in these gaps where blacks and Hispanics are becoming comparatively more numerous.

A second demographic factor that has received attention in previous research concerns racial/ethnic differences in population age structure. Because the majority of violent crimes are committed by younger men, differences in the size of the youth population between groups may be a precursor for criminal violence (Cohen and Land 1987). Indeed, a notable portion of the variation in crime rates over time can be explained by changes in the proportion of the population in the "crime-prone" age group (Steffensmeier and Harer 1999). Contemporary demographic research demonstrates substantial variation in the age distributions of racial and ethnic groups in the United States, with Hispanics and to a lesser extent blacks, clustered around more crime-prone age ranges. In 2010, 18.6 percent of Hispanic men were between 15 and 24 years old, compared to 17.6 percent of black men and only 13.1 percent of white men. Such age disparities vary widely across metropolitan areas (Frey 2011) and have increased in recent decades. For instance, between 2000 and 2010, the median age for whites increased 3.4 years, whereas the median age of blacks increased by 2.1 years, and the median age of Hispanics increased by just 1.3 years. Thus, the association between age and violent crime,

combined with differences in age structure across racial/ethnic groups, suggests we should see smaller white-black-Hispanic gaps in violence where the age-distribution is more similar, and convergence in these gaps in metro-areas that have experienced comparable shifts in their age structure across racial/ethnic groups since 1990.

## DATA AND METHODS

We draw from multiple data sources to examine the trends in racial/ethnic violence since 1990. Our measure of violence comes from restricted geocoded homicide deaths provided by the CDC Underlying Cause of Deaths files for 1989 to 2010, which includes all death records in the United States.<sup>3</sup> These data fill a unique gap in data collection for several reasons. First, no nationally representative crime data source includes information on both race and ethnicity for the full period covered in our study. As such, all of the research comparing white-black-Hispanic differences in criminal violence has been limited to cross-sectional data (Phillips 2002; Steffensmeier et al. 2010). Second, research shows that race and ethnicity indicators on death certificates show a high degree of reliability (Riedel 1999). Third, direct comparisons between the CDC death records and the Supplementary Homicide Reports (the most widely used measure of homicide) suggest that the CDC data are more accurate and complete (Loftin, McDowall, and Fetzer 2008). Fourth, the overwhelming majority of homicides are intra-racial, which suggests data on victim race track offending data well (Wiersema, Loftin, and McDowall 2000). Finally, our use of death records obviates long-standing concerns regarding the use of official crime data, which scholars argue reflect a combination of actual criminal behavior and the processing decisions made by police (O'Brien 1996).

To obtain stable estimates of the homicide rate for each racial/ethnic group in our study, we chose metropolitan statistical areas (MSAs) that had a minimum of 5,000 blacks and Hispanics for the two decades covered in our data.<sup>4</sup> The use of metropolitan-level analysis is

appropriate as the overwhelming majority of homicides occur in metropolitan areas.<sup>5</sup> Moreover, research on racial/ethnic stratification (Massey and Denton 1993) and group differences in violent crime (Philips 2002) have focused on the nation's largest metro-areas, and the inclusion of regions beyond central cities captures the demographic reality of shifting residential patterns toward greater suburbanization in recent decades and the increasing racial-spatial divide this entails (Peterson and Krivo 2010). We aggregated separately the homicide deaths for whites, blacks, and Hispanics using the Office of Management and Budget 2008 metropolitan area definitions for all years to ensure comparability of the results over time, and calculated the average homicide rate for each group across the following years: 1989 to 1991, 1999 to 2001, and 2008 to 2010. The use of three-year averages reduces the influence of yearly fluctuations in violent crime.

Most of the race/ethnicity-specific data on the socioeconomic and demographic characteristics of our sample of MSAs comes from the U.S. Census Bureau 5 Percent Public Use Microdata Sample for 1990 and 2000, and the American Community Survey three-year estimates for 2010. In addition, we use data from the National Prisoner Statistics to capture incarceration trends, and police employee data provided by the FBI Uniform Crime Reports to account for changes in police presence.

Our final sample consists of 131 metropolitan areas, yielding 393 period-specific observations. The sample is highly representative of large, racially diverse metropolitan areas, accounting for 80 percent of the total U.S. metropolitan population and 85 and 89 percent of all metropolitan blacks and Hispanics, respectively. Thus, this sample provides an opportunity to explore a wide range of metro-areas of varying levels of violence and racial/ethnic inequality and make generalizable conclusions about the trends and determinants of racial/ethnic homicide.

### *Dependent Variables*

Table 1 presents the operationalization of all variables in the analysis along with their means

and standard deviations. We utilize three dependent variables to investigate the trends for each comparison group: (1) the *black-white homicide gap*, (2) the *Hispanic-white homicide gap*, and (3) the *black-Hispanic homicide gap*. For each racial/ethnic group, we compare the differences in per capita homicide rates (e.g., black homicides per 100,000 minus white homicides per 100,000).

### *Focal Measures*

Given the paucity of contemporary research on the role of mass incarceration, immigration, and wealth inequality on the gaps in racial/ethnic violence, we draw specific attention to these measures in our analysis. We extracted race/ethnicity-specific incarceration rates (per 100,000) from state-level prison data. Using state-level data is appropriate because although most violent crime occurs within urban communities, most offenders are incarcerated in prisons located outside metropolitan regions (Huling 2002). To capture the increasing racial/ethnic disparities at the top of the income distribution and their potentially unique implications for crime beyond economic disadvantage, we created an *affluence index* which combines measures for household incomes 500 percent above the poverty line and people with postgraduate degrees using principle component methods (average  $\alpha = .74$ ).<sup>6</sup> Finally, following previous immigration-crime research (Shihadeh and Barranco 2013), we measure immigration as the percentage foreign-born for each racial/ethnic group.

### *Other Explanatory Variables*

We identified several race/ethnicity-specific measures to create an index of *structural disadvantage*, including poverty, unemployment, and the percentage of children in single-parent families (average  $\alpha = .69$ ). Macroeconomic conditions are captured by the percentage of workers employed in manufacturing industries. Racial/ethnic segregation is measured using the index of dissimilarity for each comparison in the analysis (e.g., white-black

dissimilarity, white-Hispanic dissimilarity), and population composition is measured using the relative size of each group. We also include a race/ethnicity-specific indicator for the amount of residential instability within metro-areas, measured as the percentage of individuals of that racial/ethnic group who moved in the past two years.<sup>7</sup> To account for differences in the crime-prone population between groups, we include a measure for the percentage of men between ages 15 and 24.

Because official crime statistics lack longitudinal measures of race and ethnicity, we identified alternative data sources to measure gun availability and drug activity. Drawing from prior research (Kubrin and Wadsworth 2009), we measure gun availability as the percentage of suicides committed by firearm. Previous homicide research demonstrates that this measure is a strong proxy for firearm availability, showing significant correlations with survey-based measures of gun ownership (Miller, Azrael, and Hemenway 2002).<sup>8</sup> We use the drug overdose mortality rate to measure racial/ethnic differences in drug activity (for a similar application in homicide research, see Fryer et al. 2013). Finally, we include the number of police per capita to capture variation in law enforcement presence across cities and over time. Including this predictor thus allows us to assess the independent influence of incarceration beyond policing practices.

### *Analytic Strategy*

We constructed two distinct forms of each explanatory variable to examine racial-ethnic homicide differences between and within metro-areas—the mean for each metro-area across the study period (the between-MSA effect) and a deviation score to capture within-MSA variation over time. The difference from the MSA-specific mean is uncorrelated with the time-constant MSA values and, therefore, the coefficient yields a consistent estimate of the true within-MSA relationship between the explanatory variables and the gaps in racial/ethnic homicide. Indeed, the estimated coefficients and standard errors for

the deviation scores are identical to those using fixed-effects models, where only within-MSA variance is calculated. We then model these between- and within-MSA differences using a random-effects model, which incorporates aspects of both fixed- and random-effects approaches by retaining the ability to remove unmeasured time-invariant confounders (by fixing the MSA means) while allowing for variation across MSAs to investigate the between-city differences (Firebaugh, Warner, and Massoglia 2013). In addition, with the inclusion of random error terms we are able to measure the explained variance of our model at both the MSA and time period levels. In all models we report robust standard errors to account for clustered observations within MSAs over time.

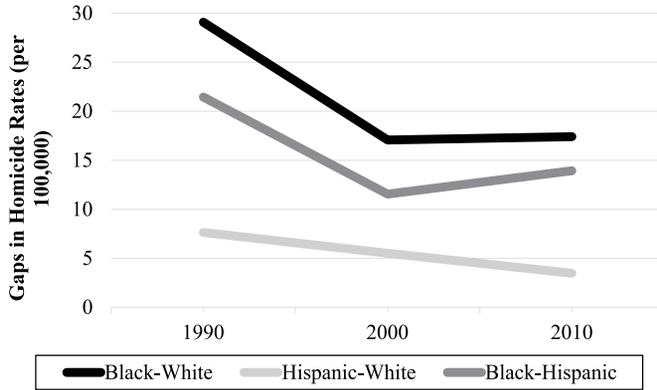
## RESULTS

Figure 1 displays the *gaps* in homicide mortality rates between whites, blacks, and Hispanics over our study period. Two notable patterns are evident. First, across every time period, we observe the largest gaps for whites compared to blacks, followed by the black-Hispanic gap. We find the smallest differences for Hispanic-white homicide rates. Second, for every comparison there has been a decrease in homicide disparities over the past two decades. For the black-white and black-Hispanic comparisons, there was a marked decrease in homicide mortality between 1990 and 2000, which then either leveled off or slightly increased between 2000 and 2010. The Hispanic-white homicide gap, on the other hand, shows a monotonic decrease across both decades. It is important to note that the homicide rate declined for each racial/ethnic group, which means the closing gaps represent the different rates at which homicide became less prevalent across groups.

The descriptive statistics shown in Table 1 help place the patterns observed in Figure 1 in context. The first section of Table 1 (panel a) compares the homicide rates and explanatory variables for whites and blacks. Not only do we see a substantial black-white gap in homicide mortality (mean = 21.2), but considerable

**Table 1.** Descriptive Statistics for Dependent and Explanatory Variables, 1990 to 2010

Measures	Overall		1990		2000		2010	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
<i>(a) Black-White</i>								
B-W Homicide Rate	21.2	(12.8)	29.1	(14.0)	17.1	(9.9)	17.4	(10.3)
B-W Foreign-Born Pop.	2.0	(6.0)	.1	(3.3)	1.6	(5.5)	4.3	(7.8)
W-B High Income	19.3	(5.7)	17.9	(5.4)	20.0	(5.4)	20.1	(6.2)
W-B Graduate Degrees	5.4	(3.1)	4.4	(2.6)	5.6	(2.8)	6.1	(3.5)
B-W Incarceration Rate	2316.6	(760.1)	1942.1	(517.8)	2761.1	(859.5)	2246.5	(624.4)
B-W Poverty	18.6	(7.0)	21.3	(7.7)	17.1	(5.6)	17.3	(6.8)
B-W Unemployment	7.5	(3.4)	7.8	(3.9)	6.9	(2.6)	7.8	(3.6)
B-W Single-Parent Families	38.6	(10.5)	39.1	(10.3)	37.6	(10.6)	39.1	(10.6)
B-W Manufacturing	-0.3	(3.1)	-2	(3.6)	.2	(3.0)	-9	(2.6)
Segregation	56.8	(12.5)	59.7	(13.1)	57.2	(12.4)	53.7	(11.2)
B-W Residential Mobility	8.0	(5.5)	7.7	(6.3)	8.2	(5.2)	8.2	(4.8)
B-W Drug Activity	-1.3	(8.5)	2.1	(5.9)	0.2	(6.9)	-6.1	(9.9)
B-W Gun Availability	-10.1	(32.2)	-12.5	(33.0)	-11.4	(34.0)	-6.4	(29.4)
B-W Young Men	1.9	(2.1)	1.9	(2.6)	1.5	(1.9)	2.1	(1.7)
B/W Population	18.5	(15.9)	16.2	(13.8)	18.5	(16.0)	20.7	(17.5)
<i>(b) Hispanic-White</i>								
H-W Homicide Rate	5.5	(5.9)	7.6	(7.7)	5.5	(5.1)	3.5	(3.3)
H-W Foreign-Born Pop.	25.6	(13.2)	20.5	(11.7)	28.3	(14.4)	27.9	(11.8)
W-H High Income	20.3	(7.8)	17.1	(7.4)	21.6	(7.5)	22.1	(7.7)
W-H Graduate Degrees	5.1	(4.5)	2.9	(4.6)	5.3	(3.9)	7.2	(4.1)
H-W Incarceration Rate	238.8	(449.5)	226.5	(384.0)	326.7	(495.2)	163.3	(450.4)
H-W Poverty	15.2	(7.1)	15.4	(8.6)	14.6	(6.2)	15.5	(6.1)
H-W Unemployment	4.6	(3.2)	4.8	(3.7)	4.6	(2.9)	4.4	(3.0)
H-W Single-Parent Families	14.4	(11.3)	14.0	(12.3)	13.3	(11.4)	16.0	(9.9)
H-W Manufacturing	3.2	(5.1)	2.9	(6.3)	4.4	(4.8)	2.2	(3.5)
Segregation	42.4	(11.2)	40.5	(12.3)	44.0	(10.9)	42.7	(9.9)
H-W Residential Mobility	12.7	(7.8)	13.9	(9.2)	14.7	(7.4)	9.4	(5.1)
H-W Drug Activity	-5.7	(7.8)	.9	(4.1)	3.7	(5.4)	12.3	(8.2)
H-W Gun Availability	-20.3	(33.3)	23.2	(38.4)	19.8	(33.6)	17.8	(26.9)
H-W Young Men	3.7	(2.2)	3.3	(2.3)	4.7	(2.4)	3.0	(1.4)
H/W Population	26.1	(50.4)	15.7	(30.1)	25.3	(47.8)	37.3	(65.1)
<i>(c) Black-Hispanic</i>								
B-H Homicide Rate	15.6	(12.2)	21.5	(14.3)	11.5	(9.9)	13.9	(9.6)
H-B Foreign-Born Pop.	23.5	(13.5)	20.4	(11.9)	26.7	(14.6)	23.5	(13.4)
B-H High Income	1.0	(5.9)	-8	(6.3)	1.6	(5.4)	2.0	(5.6)
B-H Graduate Degrees	-3	(4.1)	-1.5	(4.8)	-3	(3.4)	1.1	(3.4)
B-H Incarceration Rate	2077.7	(744.8)	1715.6	(568.8)	2434.4	(845.3)	2083.2	(611.9)
B-H Poverty	3.4	(9.0)	5.9	(11.2)	2.5	(7.1)	1.8	(7.6)
B-H Unemployment	2.9	(4.1)	3.0	(5.1)	2.3	(3.0)	3.4	(4.0)
B-H Single-Parent Families	24.2	(12.5)	25.1	(13.1)	24.4	(12.1)	23.1	(12.5)
H-B Manufacturing	3.5	(5.4)	3.1	(6.9)	4.2	(5.0)	3.1	(3.8)
Segregation	43.4	(13.6)	48.3	(13.6)	43.2	(13.3)	38.6	(12.4)
H-B Residential Mobility	4.7	(9.0)	6.2	(10.7)	6.5	(8.0)	1.3	(6.8)
B-H Drug Activity	4.4	(7.6)	3.1	(6.8)	3.9	(7.4)	6.3	(8.3)
B-H Gun Availability	10.2	(44.2)	10.7	(47.0)	8.4	(47.0)	11.4	(38.1)
H-B Young Men	1.8	(2.8)	1.4	(3.0)	3.2	(2.9)	.9	(1.8)
B/H Population	328.2	(537.7)	512.8	(774.6)	295.5	(408.0)	176.4	(216.1)
Police per Capita	209.6	(77.7)	192.6	(73.0)	216.5	(77.7)	219.7	(79.9)
N	393		131		131		131	



**Figure 1.** Mean Differences in Homicide Rates between Whites, Blacks, and Hispanics in 131 MSAs from 1990 to 2010

variability in this gap across metro-areas, ranging from near equality in Santa Barbara, California, to a gap over 65 in New Orleans, Louisiana. Panel (a) also illustrates marked disparities (and significant variation) in measures of incarceration, disadvantage, and affluence, where blacks have substantially higher rates of imprisonment, poverty, unemployment, and single-parent families, but considerably lower rates of high income and graduate educations. Over the past two decades, several of these gaps changed appreciably. For instance, the segregation and poverty gaps between whites and blacks lessened over this period, but the gaps in measures of affluence and incarceration widened.

We see a similar, albeit less pronounced, pattern of Hispanic disadvantage in panel (b). It is perhaps for this reason that we see greater parity in homicide rates between whites and Hispanics than between whites and blacks. While whites, on average, tend to have lower rates of homicide, between 1990 and 2010 there were 37 MSAs where Hispanic homicide rates were lower than white rates. Compared to whites, Hispanics exhibit higher rates of poverty, unemployment, and single-parent families, and these gaps changed little in the past 20 years. In contrast, disparities in wealth and education expanded over time. One of the most glaring differences in the Hispanic-white comparison is the relative

size of the foreign-born population between groups, which widened since 1990.

In reference to blacks, in panel (c) we see a pattern of moderate Hispanic advantage. Hispanics, on average, have slightly lower rates of poverty and unemployment, but by 2010 the poverty gap was nearly zero. Blacks, on the other hand, have substantially higher rates of incarceration and single-parent families. There are few black-Hispanic differences in either measure of affluence. However, with increasing Latino immigration, we do see pronounced and growing differences in foreign-born populations.

Given the multiple, and sometimes competing theoretical predictions on how these patterns in explanatory measures influence racial/ethnic disparities in homicide, we turn to our multivariate analysis to parse out what best explains the levels and changes in white-black-Hispanic violence since 1990.

### *Black-White Homicide*

Model 1 of Table 2 presents results from the mixed model regressions comparing blacks and whites. The top panel (panel a) reports the time-constant estimates for each independent variable. Before proceeding to the focal measures, we first examine the parameter estimates for the other explanatory measures. In line with theoretical expectations, racial gaps

**Table 2.** Mixed-Effects Models of Black-White, Hispanic-White, and Black-Hispanic Homicide Rate Gaps Regressed on Racial/Ethnic Gaps in Structural Characteristics (N = 131 MSAs)

Explanatory Measures	(1) Black-White			(2) Hispanic-White			(3) Black-Hispanic		
	<i>b</i>	SE	Beta	<i>b</i>	SE	Beta	<i>b</i>	SE	Beta
Intercept	6.128	(6.205)		6.298***	(1.940)		11.960***	(3.570)	
<i>(a) Between-MSA</i>									
Δ Foreign-Born Pop.	-.217 <sup>^</sup>	(.110)	-.089	.116**	(.040)	.235	-.088	(.083)	-.090
Δ Affluence	-1.008	(.807)	-.071	.581	(.457)	.087	1.183	(1.119)	.085
Δ Incarceration Rate	.000	(.001)	.021	-.002 <sup>^</sup>	(.001)	-.145	-.002*	(.001)	-.110
Δ Disadvantage	2.952**	(.970)	.209	3.140***	(.610)	.487	6.016***	(1.030)	.442
Δ Manufacturing	-.389	(.334)	-.076	.042	(.071)	.030	-.021	(.156)	-.007
Segregation	.298***	(.080)	.278	-.007	(.038)	-.013	.279***	(.050)	.291
Δ Residential Mobility	-.239	(.167)	-.085	-.161*	(.070)	-.165	-.096	(.136)	-.054
Δ Drug Activity	.090	(.114)	.040	.227*	(.090)	.173	.092	(.145)	.038
Δ Gun Availability	.072*	(.030)	.121	.015	(.014)	.056	.064**	(.020)	.134
Δ Young Men	.645 <sup>^</sup>	(.370)	.088	.348 <sup>^</sup>	(.190)	.093	-.646	(.460)	-.108
Δ Population	.035	(.066)	.044	-.026	(.024)	-.207	.001	(.002)	.041
Police per Capita	-.008 <sup>^</sup>	(.005)	-.046	-.001	(.002)	-.007	-.007	(.006)	-.040
<i>(b) Within-MSA</i>									
Δ Foreign-Born Pop.	-.404*	(.170)	-.093	.006	(.083)	.006	-.036	(.116)	-.016
Δ Affluence	-1.387	(1.437)	-.045	-2.331*	(.970)	-.186	.364	(1.460)	.014
Δ Incarceration Rate	-.005***	(.001)	-.170	.001	(.002)	.024	-.004***	(.001)	-.162
Δ Disadvantage	2.173 <sup>^</sup>	(1.190)	.071	.621	(.903)	.043	.459	(1.113)	.016
Δ Manufacturing	-.155	(.310)	-.022	.205 <sup>^</sup>	(.110)	.098	.131	(.170)	.034
Segregation	.409*	(.190)	.108	.171	(.125)	.101	.295*	(.130)	.114
Δ Residential Mobility	-.293*	(.140)	-.069	.017	(.069)	.015	.107	(.116)	.049
Δ Drug Activity	.053	(.085)	.026	.043	(.040)	.046	-.086	(.073)	-.040
Δ Gun Availability	.018	(.018)	.034	.009	(.013)	.041	-.008	(.012)	-.023
Δ Young Men	.041	(.342)	.004	.314	(.213)	.083	-.540 <sup>^</sup>	(.300)	-.082
Δ Population	-.696***	(.190)	-.156	-.013	(.024)	-.112	.002	(.002)	.036
Police per Capita	-.018	(.021)	-.033	-.020	(.021)	-.080	-.021	(.035)	-.040
R <sup>2</sup> Within MSA	.43			.15			.23		
R <sup>2</sup> Between MSA	.50			.45			.49		
R <sup>2</sup> Overall	.47			.29			.39		
Wald Chi <sup>2</sup>	350.0			168.5			196.9		

<sup>^</sup>*p* < .10; \**p* < .05; \*\**p* < .01; \*\*\**p* < .001 (two-tailed tests).

in structural disadvantage and residential segregation are both positively associated with the homicide gap. We also find that homicide disparities increase along with racial differences in gun availability and the size of the crime-prone population (men age 15 to 24), though this latter effect is measured imprecisely ( $p < .10$ ). In contrast, larger police forces are associated with smaller black-white homicide gaps across metropolitan areas between 1990 and 2010, while drug activity, residential mobility, and manufacturing jobs are unrelated to differences in black-white homicide across MSAs.

Turning to the three contemporary social changes, we see that only immigration is significantly associated with between-MSA differences in the black-white homicide gap. Larger differences in foreign-born populations are associated with smaller homicide gaps between blacks and whites. We speculate that this immigrant gap reflects larger foreign-born populations in general (the black-white foreign-born measure is positively correlated with the percent foreign-born for both whites [ $r = .22$ ] and blacks [ $r = .93$ ]), combined with research suggesting that immigration is associated with reductions in violent crime (the black-white immigrant gap is negatively correlated with both the white [ $r = -.27$ ] and black [ $r = -.17$ ] homicide rates). Contrary to traditional strain arguments, we find little connection between racial disparities in affluence and violence.<sup>9</sup> If anything, our findings suggest that the black-white homicide gap is smaller in areas where affluence inequality is greatest. One plausible reason for this pattern is that both blacks and whites are better off in high wealth inequality areas. For example, the percentage of affluent black households in metro-areas above the mean of the white-black affluence gap is 12.9. In areas at or below the mean, the percentage is 10.8. For whites, 36.8 percent of earners are affluent in high wealth inequality areas, compared to 26.4 percent in low wealth inequality areas. The mean differences in incarceration rates appear to be unrelated to black-white homicide gaps across metro-areas.

We now turn to the bottom panel of Table 2, which includes 12 time-varying predictors, to investigate the sources of changes in black-white homicide rates between 1990 and 2010. We find that the homicide gap widened in cities that became more racially segregated, and where black disadvantage increased relative to whites. The homicide gap converged, however, as black and white populations neared parity. We also find that, net of other predictors, increasing racial disparity in residential mobility is associated with decreasing violence gaps. This could reflect that, after accounting for indicators of economic stress, residential mobility may be an indicator of moves linked to economic opportunities. Changes in the proportion of young men, gun availability, drug activity, policing, and manufacturing jobs between groups are not significantly related to changes in black-white gaps in homicide victimization.

Turning to our focal measures, changes in black-white foreign-born populations are negatively associated with the race gap in violence. This finding is consistent with research linking recent immigration to reductions in criminal violence. For both whites and blacks, changes in the black-white foreign-born populations are related to declines in criminal violence ( $r = -.33$  for whites;  $r = -.37$  for blacks). We also find that growing racial disparity in incarceration is associated with significant reductions in the black-white homicide gap. Focusing on the standardized Betas in Model 1, the results suggest that the incarceration boom played an important role in reducing black-white disparities in homicide over the past two decades ( $Beta = -.17$ ,  $p < .001$ ). This finding aligns with an incapacitation/deterrence model of crime, which predicted a waning black-white homicide gap due to racial disparities in incarceration combined with the crime reductions associated with imprisonment. Our findings regarding racial disparities in wealth, once again, run counter to strain arguments. Increases in affluence inequality are not significantly related to race differences in homicide, and the relationship is in the opposite direction of theoretical expectations

(e.g., decreasing homicide gaps as inequality in wealth increases).

### *Hispanic-White Homicide*

We next consider how the levels and changes in these same explanatory measures explicate the homicide gaps between Hispanics and whites. Model 2 is set up identically to Model 1. Beginning with the mean-level differences in the top panel, we see similar patterns as the black-white comparisons. The Hispanic-white homicide gap is larger in metro-areas with greater Hispanic-white disadvantage and larger differences in the crime-prone population. However, we also observe notable differences. Unlike the black-white models, residential segregation and gun availability are unrelated to the gaps in criminal violence between Hispanics and whites. There are also important differences in the effects of our focal measures. Whereas greater differences in the foreign-born population between blacks and whites are associated with smaller homicide gaps, we find the opposite relationship between Hispanics and whites. These mixed findings are consistent with recent research suggesting that the immigration-crime relationship is dependent on the racial/ethnic group under focus (Harris and Feldmeyer 2013). Again, differences in affluence appear unrelated to the Hispanic-white homicide gap. In line with an incapacitation/deterrence model of crime, we see smaller differences in Hispanic-white homicide in areas where incarceration disparities are larger.

Turning to the bottom panel of Table 2, with the exception of differences in manufacturing, relatively few of the time-varying predictors are significantly associated with changes in Hispanic-white homicide disparities. Perhaps for this reason, Model 2 explains significantly less of the within-MSA variance ( $R^2 = .15$ ) than does our black-white model ( $R^2 = .43$ ). Among the contemporary social changes, only shifts in wealth inequality significantly predict changes in Hispanic-white homicide. Contrary to strain theory, rising affluence inequality is associated with substantial decreases in homicide mortality between Hispanics and whites.

Supplementary results suggest this may be related to immigration. That is, white-Hispanic wealth inequality increased most in places that experienced the largest influx of Hispanic immigrants ( $r = .63$ ). When we include measures for the levels (time-invariant) and changes (time-varying) in Hispanic and white foreign-born residents separately, the effect of wealth inequality is no longer statistically significant.

### *Black-Hispanic Homicide*

Our final model examines the determinants of black-Hispanic homicide disparities. The top panel in Model 3, Table 2, shows that black-Hispanic violence disparities are larger in metro-areas where black disadvantage is greater, blacks are more residentially segregated, and differences in gun availability are greater. We again find evidence of the importance of considering incarceration in racial/ethnic homicide differences—the homicide gap is smaller in metro-areas with greater black-Hispanic disparities in imprisonment. However, we find little evidence that differences in immigration, wealth, manufacturing, mobility, drug markets, or policing are significantly associated with the black-Hispanic gap in homicide mortality.

Turning to panel (b) of Model 3, Table 2, three measures significantly predict changes in black-Hispanic homicide gaps. Black-Hispanic homicide disparities increased in areas where blacks became more residentially segregated, but decreased as the relative population of Hispanic young men grew. Additional analyses suggest this effect is linked to Latino immigrants. When we re-estimate Model 3 with the inclusion of the levels and changes in the Hispanic foreign-born population, the Hispanic-black difference in the proportion of young men in the population is no longer statistically significant.

Model 3 also shows that the black-Hispanic homicide gap decreased significantly as a result of mass imprisonment, and the Beta coefficients suggest that incarceration was one of the most substantively important factors in explaining this decline. We observe

**Table 3.** Testing the Incarceration-Homicide Relationship ( $N = 131$  MSAs)

<i>Explanatory Measures</i>	<i>Black-White</i>			
	Model 1: Homicide 2010		Model 2: Incarceration 2010	
	<i>b</i>	(SE)	<i>b</i>	(SE)
$\Delta$ B-W Incarceration 1990 to 2000	-.002*	(.001)	.553***	(.057)
$\Delta$ B-W Homicide 1990 to 2000	.069	(.082)	-.076	(2.894)
	<i>Hispanic-White</i>			
	Model 3: Homicide 2010		Model 4: Incarceration 2010	
	<i>b</i>	(SE)	<i>b</i>	(SE)
$\Delta$ H-W Incarceration 1990 to 2000	.001	(.002)	.794***	(.225)
$\Delta$ H-W Homicide 1990 to 2000	.048	(.036)	4.831	(4.518)
	<i>Black-Hispanic</i>			
	Model 5: Homicide 2010		Model 6: Incarceration 2010	
	<i>b</i>	(SE)	<i>b</i>	(SE)
$\Delta$ B-H Incarceration 1990 to 2000	-.002*	(.001)	.306***	(.065)
$\Delta$ B-H Homicide 1990 to 2000	.011	(.076)	-5.764	(3.834)

$^{\wedge}p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  (two-tailed tests).

little direct association between changes in black-Hispanic homicide and changes in either wealth inequality or immigration.

### *Robustness Checks*

Previous research highlights the potential bias in estimating the crime-incarceration relationship, where changes in behavior that increase criminal activity will simultaneously increase incarceration rates (Levitt 1996). We address this concern in several ways. First, if this were the case, estimates of the crime-prison effects would be biased toward zero (Johnson and Raphael 2012). This suggests that, if anything, our models provide conservative estimates of the role mass incarceration plays in reducing racial/ethnic homicide disparities. Second, the inclusion of multiple time-stable and time-varying controls helps reduce bias in our estimates. It is likely for this reason that our estimates of the homicide-incarceration relationship are consistent with the most recent

econometric analyses of the effect of incarceration on murder rates (compare to Johnson and Raphael 2012; Raphael and Stoll 2013). Finally, we ran several alternative analyses to demonstrate the time-ordering of the homicide-incarceration relationship in our models. Table 3 presents six models in which we separately predict racial/ethnic disparities in homicide and incarceration in 2010 using the changes in racial/ethnic disparities in homicide and incarceration between 1990 and 2000. If increasing racial/ethnic homicide disparities are driving larger racial incarceration disparities (and not the other way around, as our models suggest), the changes in homicide should significantly predict racial/ethnic incarceration disparities in 2010.

The results in Table 3 provide no evidence for this interpretation. In Model 1, we see that changes in black-white incarceration disparities between 1990 and 2000 significantly predict the black-white homicide gap in 2010, net of the changes in racial/ethnic homicide

disparities. In Model 2, however, changes in black-white homicide between 1990 and 2000 are not significantly associated with black-white incarceration disparities in 2010. Turning to Model 3, we find that changes in Hispanic-white incarceration disparities are unrelated to the Hispanic-white homicide gap in 2010, consistent with the main results reported in Table 3. Finally, in Models 5 and 6 we find that changes in black-Hispanic incarceration differences are significantly associated with the black-Hispanic homicide gap in 2010, but the changes in homicide between 1990 and 2000 are unrelated to the black-Hispanic incarceration gap in 2010. Combined, these results suggest that our incarceration results are substantively meaningful and not solely a reflection of unobserved heterogeneity in the prison-homicide relationship.

We also ran a series of alternative analyses to evaluate the robustness of our full set of findings, and we direct interested readers to the Appendix where we demonstrate that our substantive conclusions hold across multiple alternative specifications and estimation procedures.

## DISCUSSION

Despite substantial research attention to race, ethnicity, and violent crime, our knowledge about the trends in criminal violence for whites, blacks, and Hispanics in recent decades is limited. Our goal in this study was to investigate the determinants of racial and ethnic differences in homicide in relation to both long-established explanations as well as major contemporary societal changes since 1990. Leveraging a unique combination of data sources to provide the first longitudinal picture of the homicide gaps between whites, blacks, and Hispanics, we find considerable convergence in homicide rates over the past two decades—the black-white gap decreased by 40 percent, the Hispanic-white gap by 55 percent, and the black-Hispanic gap by 35 percent.

Consistent with prior research, we found that disadvantage and segregation are strong predictors of the levels and changes in

homicide rates between racial/ethnic groups, particularly black-white and black-Hispanic differences (segregation mattered little for Hispanic-white differences). These findings, especially those implicating homicide differences between blacks and whites, align with the racial invariance proposition that racial/ethnic differences in crime stem from differential exposure to structural disadvantage. Along similar lines, we found that group-level differences in gun and drug activity are also related to racial/ethnic gaps in violent crime (although less consistently).

Going beyond previous research, we provided a novel investigation into the consequences of three of the most significant social trends over the past two decades—rapid immigration, growing wealth inequality, and mass incarceration—for racial/ethnic homicide gaps. Beginning with immigration, we found no evidence that increases in immigrant populations are associated with growing disparities in racial/ethnic violence, despite the widespread and long-standing perception that immigration is associated with increased criminal activity. To the contrary, we found that larger and increasing immigrant population differences are associated with declining black-white homicide gaps. One possible explanation for this finding could be that black foreign-born residents increase informal social control and strengthen community institutions, such as churches and schools, or invigorate social capital networks, as has been proposed occurs among Hispanic immigrants (Lyons et al. 2013), thus decreasing the black homicide rate toward the white rate. Taken together, our results are more in line with recent research suggesting that immigration may have been a key factor in explaining the violent crime drop since 1990 (Sampson 2008).

However, our results also suggest that the influx of immigrants may have differentially affected certain racial/ethnic groups. For example, while differences in black-white violence decreased as the foreign-born population gap increased, increasing differences in foreign-born populations are not associated

with changes in the Hispanic-white and black-Hispanic homicide gaps. These findings are consistent with research suggesting that race and ethnicity may condition the immigration-crime relationship (Harris and Feldmeyer 2013), and they present a fruitful avenue for future research to more thoroughly disentangle the nuanced relationships between community context, immigration, and crime for different racial/ethnic groups.

Second, we examined the effects of growing wealth inequality on gaps in homicide. While it is clear that racial/ethnic gaps in affluence expanded dramatically in recent decades, we find little evidence that affluence inequality, in contrast to gaps in disadvantage, is related to racial/ethnic differences in homicide. In this regard, our results run counter to the relative deprivation dimension of strain theory, especially as described by Blau and Blau (1982). We estimated additional models to see if this relationship was confounded by other measures in our analysis. Specifically, we ran models where we only included the mean and time-varying measures of affluence inequality. In all three analyses, growing wealth inequality is significantly associated with *decreasing* racial/ethnic homicide gaps.

Given the scale and speed at which wealth inequality increased during this period, as well as the increasing political attention and public awareness to growing inequality, this is a rather strong test of the strain/relative deprivation hypothesis. That is, if relative racial/ethnic inequality produces racial/ethnic differences in crime, we should observe this relationship between 1990 and 2010. However, our results cast doubt on traditional strain theory's proposed process in which violence is born of frustration and aggression in the face of relative deprivation. Rather, our results point to the corrosive effects of *concentrated disadvantage* and its attendant consequences for social disorganization and community violence, as described by Sampson and Wilson (1995). Overall, the weight of the evidence suggests that high crime is not the price of racial/ethnic inequality in affluence, but rather the price of racial/ethnic disparities in disadvantage.

Finally, we examined the consequences of the prison boom for racial/ethnic disparities in homicide, pitting two competing theoretical predictions. The social disorganization perspective suggests that the mass incarceration of minorities should increase disparities in violent crime by weakening social bonds, diminishing job market attachments, and reducing community social capital. The incapacitation/deterrence model, on the other hand, suggests reductions in racial/ethnic homicide disparities due to decreasing violence among minorities ensnared by the prison boom. Our results lend support to the incapacitation/deterrence model—increasing racial disparities in incarceration are associated with significant reductions in black-white and black-Hispanic violence. In this regard, our findings bridge two bodies of research that had heretofore remained separate: the crime reductions gained by imprisonment and the consequences of mass incarceration for racial/ethnic inequality.

Our analysis used state-level imprisonment data because imprisonment rates are heavily driven by state-level policy and correctional capacity, and state prisons are typically located in rural areas, thus complicating attempts to assess city-specific incarceration rates. However, an important direction for future research is to examine variation in incarceration rates—and racial/ethnic disparities in these rates—across cities within the same state to determine how imprisonment affects local racial/ethnic gaps in homicide and other crime. Given the lack of specific geographic information in most correctional population datasets, an in-depth look at exactly where prisoners come from and return to would shed light on this underdeveloped area of research and further add to our knowledge of the consequences of the prison boom for local communities.

While our results suggest that incarceration has reduced the race gap in homicide over the past two decades, it is highly unlikely that these gains have outweighed the devastating impact of mass incarceration on minority communities given the mounting evidence of the collateral consequences of the prison boom for exacerbating broader patterns of

racial/ethnic inequality. This is especially the case given that many of the inmates incarcerated since 1990, relative to previous periods, posed less of a threat (Johnson and Raphael 2012). Thus, even though the prison boom appears to have reduced racial/ethnic disparities in violence, the benefit-cost ratio of mass incarceration is likely to be significantly below one after the adverse and often invisible effects on minority families, children, health, employment, and political engagement are considered. Thus, given the accumulating body of research documenting the role of incarceration in aggravating racial inequality in myriad other ways, incarceration is likely a poor long-term strategy for reducing racial/ethnic differences in criminal violence.

However, our findings do provide useful policy prescriptions for ameliorating racial/ethnic disparities in violence. Though considerable evidence shows that increases in police force size are associated with lower rates of homicide and violence (Durlauf and Nagin 2011), our research suggests increased police presence has not substantively reduced racial/ethnic differences in criminal violence over the past two decades. Combined with the incarceration findings, our research suggests that rather than policies focused solely on criminal elements within communities (e.g., incarceration and more police), policies aimed at improving overall community conditions in minority areas through economic investment, housing equality, and spending on education, drug treatment, and work training programs, would go a long way toward reducing racial/ethnic differences in violence without worsening racial inequality in other social domains.

Taken together, our results have important implications for understanding the future of racial/ethnic disparities in violent crime. On the one hand, disparities in homicide between whites, blacks, and Hispanics decreased over the past two decades, to the point where there is now near parity between whites and Hispanics. On the other hand, persistent gaps in criminal violence between blacks and other groups remain, and there has been little convergence between blacks and whites or Hispanics since

2000. This finding likely reflects the broader spectrum of entrenched and contemporary racial disadvantage in U.S. society, which cautions against the overly sanguine conclusion that racial differences in homicide are likely to be eliminated in the near future.

## APPENDIX

In Table A1 we re-estimated the full models for each racial/ethnic comparison using three different analytic procedures. Model 1 estimates between- and within-MSA differences in violence without city or time-period random effects using ordinary least squares. Because the comparisons in our analyses are taken from the same units (i.e., metro-areas), in Model 2 we employ a seemingly-unrelated regression estimator to account for this non-independence. Finally, Model 3 adds an autoregressive term (lag 1) within MSAs to our mixed models to account for the correlated residuals in repeating measures over time. The substantive findings across these different specifications are entirely consistent with the main results reported in Table 2.

Given the spike in violent crime related to the crack epidemic in the early 1990s (Fryer et al. 2013), we also undertook additional analyses to test whether the effects of the time-varying predictors were different in 1990 than in subsequent decades. To evaluate this possibility, we created interaction terms for each of our time-varying covariates by a dichotomous indicator for 1990 and re-estimated our full white-black-Hispanic models. Comparing these interaction models to each of the models in Table 2, we observe no obvious pattern of shifts in the effects of the time-varying covariates. Moreover, using the Bayesian Information Criterion (BIC), which incorporates both the number of parameters and the number of cases, we find that for each comparison, the model specifying no temporal break in the effects fits the data better (results available on request). Along similar lines, supplementary models including a binary predictor distinguishing southern from non-southern MSAs

show little evidence that our results are confounded by regional differences. In none of our comparisons did the inclusion of this additional predictor significantly improve the model fit (as measured by the BIC) or substantively alter our findings (results available from the first author).

A final set of alternative analyses examines whether the observed immigration findings are dependent on the type of immigrant destination (traditional versus non-traditional). Similar to well-established methods in both demography and criminology (Harris and Feldmeyer 2013), we define traditional

destinations as MSAs where the relative size of the Latino foreign-born population was greater than the national average in 1990, and other metro-areas as non-traditional. We then interacted this non-traditional designation with each of our immigration measures and re-estimated our full models. Across each comparison, the BIC suggests the models without these interaction terms fit the data better, and in no instance did the inclusion of these interactions change the conclusions (results available on request). Taken together, these supplemental analyses bolster confidence that our findings are substantively meaningful and robust.

**Table A1.** Comparison of OLS, Seemingly Unrelated Regression, and Autoregressive Models

Explanatory Measures	Model 1: OLS		Model 2: SUR		Model 3: AR(1)	
	<i>b</i>	SE	<i>b</i>	(SE)	<i>b</i>	(SE)
<i>A. Black-White</i>						
Intercept	6.128	(4.791)	17.721***	(3.315)	5.814	(6.544)
Between-MSA						
B-W Foreign-Born Pop.	-.217*	(.099)	-.000	(.059)	-.212	(.135)
W-B Affluence	-1.008	(.629)	-.262	(.395)	-1.006	(.863)
B-W Incarceration Rate	.000	(.001)	-.001	(.001)	.000	(.001)
B-W Disadvantage	2.952***	(.748)	3.541***	(.531)	2.947**	(1.036)
B-W Manufacturing	-.389	(.245)	-.124	(.116)	-.392	(.278)
Segregation	.298***	(.064)	.136***	(.036)	.304***	(.080)
B-W Residential Mobility	-.239^	(.133)	-.248**	(.088)	-.248	(.186)
B-W Drug Activity	.090	(.099)	.102	(.074)	.078	(.125)
B-W Gun Availability	.072**	(.026)	.053***	(.016)	.070*	(.033)
B-W Young Men	.645*	(.309)	.600**	(.230)	.671	(.451)
B/W Population	.035	(.046)	.014	(.028)	.036	(.058)
Police per Capita	-.008^	(.005)	-.005	(.007)	-.008	(.010)
Within-MSA						
B-W Foreign-Born Pop.	-.404*	(.200)	-.160	(.115)	-.403*	(.189)
W-B Affluence	-1.387	(1.490)	-1.659*	(.800)	-1.412	(1.167)
B-W Incarceration Rate	-.005***	(.001)	-.004***	(.001)	-.005***	(.001)
B-W Disadvantage	2.173^	(1.276)	1.092	(.817)	2.282*	(1.072)
B-W Manufacturing	-.155	(.313)	.049	(.159)	-.131	(.237)
Segregation	.409*	(.204)	.214*	(.102)	.407*	(.164)
B-W Residential Mobility	-.293^	(.164)	-.109	(.095)	-.274^	(.142)
B-W Drug Activity	.053	(.096)	.098	(.061)	.034	(.080)
B-W Gun Availability	.018	(.020)	.004	(.014)	.016	(.017)
B-W Young Men	.041	(.420)	.211	(.265)	.049	(.374)
B/W Population	-.696***	(.217)	-.261*	(.113)	-.701***	(.191)
Police per Capita	-.018	(.027)	-.057**	(.022)	-.022	(.021)
Autocorrelation Coefficient					.137	

(continued)

**Table A1.** (continued)

Explanatory Measures	Model 1: OLS		Model 2: SUR		Model 3: AR(1)	
	<i>b</i>	SE	<i>b</i>	(SE)	<i>b</i>	(SE)
<i>B. Hispanic-White</i>						
Intercept	6.310**	(2.060)	5.061**	(1.828)	6.467**	(2.419)
Between-MSA						
H-W Foreign-Born Pop.	.116***	(.036)	.097**	(.031)	.114**	(.039)
W-H Affluence	.581	(.410)	.256	(.415)	.614	(.506)
H-W Incarceration Rate	-.002*	(.001)	-.001	(.001)	-.002^	(.001)
H-W Disadvantage	3.143***	(.643)	3.264***	(.496)	3.178***	(.654)
H-W Manufacturing	.042	(.070)	-.009	(.065)	.044	(.078)
Segregation	-.007	(.041)	.010	(.033)	-.010	(.047)
H-W Residential Mobility	-.162*	(.076)	-.150*	(.065)	-.163*	(.083)
H-W Drug Activity	.227**	(.082)	.175*	(.073)	.223*	(.094)
H-W Gun Availability	.015	(.014)	.028*	(.012)	.015	(.015)
H-W Young Men	.348	(.215)	.493**	(.193)	.367	(.237)
H/W Population	-.024	(.022)	-.012	(.020)	-.028	(.023)
Police per Capita	-.001	(.003)	-.001	(.004)	-.001	(.004)
Within-MSA						
H-W Foreign-Born Pop.	.006	(.073)	-.001	(.058)	.013	(.063)
W-H Affluence	-2.334*	(.947)	-2.171**	(.775)	-2.338**	(.828)
H-W Incarceration Rate	.001	(.002)	-.001	(.001)	.001	(.001)
H-W Disadvantage	.621	(.903)	.924	(.600)	.566	(.649)
H-W Manufacturing	.205^	(.110)	.178*	(.090)	.206*	(.095)
Segregation	.172	(.122)	.127^	(.074)	.164^	(.096)
H-W Residential Mobility	.018	(.072)	-.009	(.056)	.013	(.059)
H-W Drug Activity	.043	(.041)	.063	(.047)	.045	(.051)
H-W Gun Availability	.010	(.014)	.007	(.010)	.010	(.010)
H-W Young Men	.314	(.221)	.379*	(.179)	.288	(.188)
H/W Population	-.012	(.022)	-.002	(.019)	-.015	(.022)
Police per Capita	-.020	(.016)	-.019	(.012)	-.020	(.013)
Autocorrelation Coefficient					.138	
<i>C. Black-Hispanic</i>						
Intercept	11.960***	(3.306)	15.013***	(2.610)	12.172**	(4.195)
Between-MSA						
H-B Foreign-Born Pop.	-.088	(.063)	-.098**	(.036)	-.088	(.066)
B-H Affluence	1.183	(.905)	.165	(.542)	1.218	(1.174)
B-H Incarceration Rate	-.002*	(.001)	-.001	(.001)	-.002	(.001)
B-H Disadvantage	6.016***	(.848)	4.635***	(.609)	6.099***	(1.130)
H-B Manufacturing	-.021	(.131)	.060	(.085)	-.024	(.173)
Segregation	.279***	(.040)	.135***	(.029)	.281***	(.057)
H-B Residential Mobility	-.096	(.114)	.152*	(.071)	-.094	(.130)
B-H Drug Activity	.092	(.120)	.057	(.080)	.081	(.136)
B-H Gun Availability	.064**	(.023)	.040**	(.015)	.062*	(.027)
H-B Young Men	-.646^	(.364)	-.623**	(.232)	-.674	(.430)
B/H Population	.001	(.002)	.001	(.001)	.001	(.002)
Police per Capita	-.007	(.006)	-.003	(.007)	-.007	(.009)
Within-MSA						
H-B Foreign-Born Pop.	-.036	(.132)	-.033	(.076)	-.049	(.112)
B-H Affluence	.364	(1.538)	1.199	(.840)	.549	(1.236)

(continued)

Table A1. (continued)

Explanatory Measures	Model 1: OLS		Model 2: SUR		Model 3: AR(1)	
	<i>b</i>	SE	<i>b</i>	(SE)	<i>b</i>	(SE)
B-H Incarceration Rate	-.004***	(.001)	-.004***	(.001)	-.004***	(.001)
B-H Disadvantage	.459	(1.252)	1.390	(.849)	.471	(1.072)
H-B Manufacturing	.131	(.181)	-.116	(.107)	.111	(.142)
Segregation	.295*	(.143)	.205*	(.088)	.300*	(.127)
H-B Residential Mobility	.107	(.105)	.074	(.066)	.105	(.088)
B-H Drug Activity	-.086	(.082)	.029	(.058)	-.085	(.076)
B-H Gun Availability	-.008	(.013)	.004	(.010)	-.008	(.012)
H-B Young Men	-.540	(.333)	-.435*	(.209)	-.546*	(.268)
B/H Population	.002	(.002)	.001	(.001)	.001	(.002)
Police per Capita	-.021	(.038)	-.037	(.024)	-.026	(.024)
Autocorrelation Coefficient					.128	
Random Effects for MSA and Time Period?	No		No		Yes	

<sup>^</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  (two-tailed tests).

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## Notes

1. Following contemporary usage, throughout this article we use the term “white” to refer to non-Hispanic whites, and “black” to refer to non-Hispanic blacks.
2. It is difficult to distinguish deterrence from incapacitation when imprisonment is the primary means of punishment. This is because increases in expected punishment lead to both greater deterrence and greater incapacitation. Regardless of the mechanism, what matters for our purposes is that both perspectives converge on the same prediction—greater incarceration disparities between groups should reduce between-group crime rate differences.
3. We use the location of occurrence rather than the location of residence so that the metropolitan characteristics accurately reflect the risk of homicide victimization. The homicide data were provided to the first author under special contract by the National Center for Health Statistics.
4. The results are substantively unchanged when we use population cutoffs of 7,500 and 10,000 (available on request).

5. Between 1989 and 2010, fully 90 percent of all homicides occurred within metropolitan areas.
6. This specification is comparable to those used in prior macro-level research. For example, Sampson and colleagues (1999) and Vélez and colleagues (2003) both measure the top of the income and education distributions to examine the independent effects of concentrated affluence. Treating affluence and disadvantage as conceptually distinct offers two key advantages over alternative measures, such as the index of concentration at the extremes (ICE), which treats socioeconomic status as a continuum. First, our approach is in line with theoretical arguments that disadvantage and affluence do not reflect the same underlying construct, and thus should be examined separately (Sampson et al. 2002; Vélez et al. 2003). Second, inclusion of both the ICE and disadvantage measures in supplemental analyses (available on request) introduces serious multicollinearity concerns into the models, with variance inflation factors for the ICE measures well above recommended cutoffs (average VIF = 41). Indeed, it is for this reason that criminological research that has used disadvantage and ICE does not include both in the same models (see Kubrin and Stewart 2006; Morenoff, Sampson, and Raudenbush 2001).
7. Prior to 2010, the Census asked whether people moved “this year or last year.” Starting with the ACS, these options were split between “12 months or less” and “13–23 months ago.” To increase comparability with the 1990 and 2000 measures, we combine respondents who moved in the past 23 months in the ACS.

8. In addition to being the only measure of gun availability at the metropolitan level that is race/ethnicity specific, prior research also suggests that this proxy is statistically stronger than other commonly used measures of firearm availability, such as subscriptions to *Guns and Ammo* magazine and National Rifle Association membership (Azrael, Cook, and Miller 2004).
9. This is not simply a reflection of collinearity with the disadvantage index. Across all three models, the variance inflation factors (VIF) for both indices are below the recommended cutoff of 4. This suggests that collinearity is not likely biasing the disadvantage and affluence effects. To further bolster this point, when we re-estimate the models excluding the affluence variables, the substantive results for disadvantage are entirely unchanged. The same pattern holds for affluence when we exclude the disadvantage measures (results available on request).

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