

Ethnic Diversity, Ethnic Polarization, and Incarceration Rates: A Cross-national Study

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Recent political rhetoric both in the U.S. and abroad has drawn renewed attention to racial and ethnic conflict, state power, and punishment. The salience of minority group conflict on incarceration is well established in theory and research in the U.S. This study explores whether racial/ethnic composition explains incarceration rates throughout the world, rather than being a peculiarity of the U.S. It also evaluates the functional form of these relationships. Analysis of up to 132 nations indicates that incarceration rates are significantly associated with ethnic diversity and ethnic polarization. The lowest incarceration rates are observed in countries with substantial homogeneity or substantial diversity. Incarceration rates are highest in countries with moderate diversity but high polarization—where a sizable minority population is present, approaching parity with a majority group. Minority group conflict may be a troublesome contributor to punishment throughout the world and is not a uniquely American phenomenon.

Introduction

In recent years, political rhetoric both in the U.S. and abroad has drawn renewed attention to racial and ethnic conflict, state power, and the criminalization of immigrants and minority group members. Rooted in conflict theory, a rich body of research identifies the salience of minority group conflict in the application of punishment. These minority threat theories argue that large or growing minority populations contribute to various forms of social control because they pose a threat to the majority group's hegemonic power and compete for scarce resources. A substantial body of evidence links minority conflict to punitive attitudes, police expenditures, arrests, and sentencing decisions.

While minority threat theory has frequently been used to explain other forms of social control, it has less frequently been applied to incarceration rates—despite that incarceration has become an especially pervasive form of social control in the U.S. and abroad. Most research has

examined the effects of the size of the Black population on US incarceration rates (Bridges et al., 1987; Bridges & Crutchfield, 1988; Greenberg & West, 2001; Heimer et al., 2012; Jacobs & Carmichael, 2001; Kleen & Jacobs, 2009; Stremen & Rengifo, 2011; Ulmer et al., 2002). Only three studies have examined these effects with cross-national data, all of which explored how overall incarceration rates vary with minority threat (Jacobs & Kleban, 2003; Ruddell & Urbina, 2004; Ruddell, 2005). Theorists have also suggested that the relationship between population makeup and social control should be curvilinear (Blalock, 1967; Horowitz, 1985)—as subpopulations grow, their ability to mobilize resources limits the likelihood of domination and subordination—but this claim has never been tested in cross-national research.

If race and ethnicity are significant and substantial predictors of the scale of incarceration throughout the world, even among nations from different continents with dramatically different cultures, histories, and stages of development, then a minority threat theory of punishment may be truly general, not an American peculiarity, with important implications for policy and theory. This would provide evidence that the use of incarceration is, cross-culturally, a visceral response to the presence of out-groups, a troubling phenomenon during a period of growing nationalism and identity politics around the world. Evidence of nonlinear relationships would have substantial theoretical and practical implications for multiculturalism and social control.

Literature Review

There is substantial variation in incarceration rates between nations worldwide (Walmsley, 2018). Over 10 million people are incarcerated in 223 nation-states and territories, either as convicted criminals or as pre-trial detainees. Worldwide, the incarceration rate is 144 prisoners per 100,000 people, although this varies considerably. Most countries (55%) have incarceration rates below 150 prisoners per 100,000 residents. The United States (655), El Salvador (604), and

Turkmenistan (552) have incarceration rates around four times the international average. The Central African Republic (16), Faeroe Islands (12), and Guinea Bissau (10) have the lowest incarceration rates in the world. There is also significant variation among different regions of the same continent. While the median incarceration rate for western African countries is 53, southern African countries have a median incarceration rate of 244; western European countries have a median incarceration rate of 81, while countries spanning Europe and Asia (Russia, Georgia, Turkey, etc.) have a median incarceration rate of 268.

The temporal trends in incarceration rates are rather varied, as well (Walmsley 2018). The 20% increase in the worldwide prison population since 2000 closely resembles the 24% increase in population growth during that time-period. However, this change has not been geographically uniform. Prison populations rose substantially in the Americas between 2000 and 2015 (+41%), but dropped by about one-fifth (-22%) in Europe, driven mostly by drastic reductions to the Russian prison population.

The United States has more prisoners than any other nation in the world at about 2.1 million (Walmsley, 2018). As a population-adjusted incarceration rate, it also ranks highest. Its incarceration rate (655) differs substantially from other apparently similar countries such as Canada (114), England (140), Australia (172), France (100), and Germany (75). America's dubious distinction as the world's "greatest" incarcerator has contributed to a cynical reinterpretation of the term "American Exceptionalism" (Lipset, 1997; Reitz, 2017).

The U.S. has such a uniquely high incarceration rate that researchers have frequently argued that it also requires unique theoretical explanations (Garland, 2012; 2001). Leading theories of the era of mass incarceration in the U.S. emphasize the salience of minority subordination and control (Western, 2006; Alexander, 2012). Whether or not the U.S. is exempt from truly general

social theory remains an open question with interesting implications. If the U.S. is truly distinct, and yet most of what we know is based on the U.S. experience with punishment, then social scientists ultimately know very little about the other 95% of the world's population. On the other hand, evidence of a general theory of punishment may advance social theory and guide public policy.

In short, incarceration rates vary widely around the world. They vary within regions and continents; they vary within Western nations and Eastern nations; they vary within developed nations and non-developed nations alike. Similar nations have dissimilar incarceration rates, and nations with similar incarceration rates seem to have dissimilar sociocultural arrangements. The following section, however, emphasizes a phenomenon that demonstrates remarkable consistency around the world: the systematic lockup of racial and ethnic minorities.

Patterns of Minority Incarceration

In both the U.S. and other nations, a disproportionate share of incarcerated individuals are members of minority groups. According to the most recent data from the U.S. Bureau of Justice Statistics (Carson, 2020), African Americans comprise about 14% of the total U.S. population, but comprise nearly 33% of all inmates in state and federal prisons. The incarceration rate of Black males is *six times* that of White males. Hispanics are also overrepresented in American prisons: though just 15% of the total population is Hispanic, 20% of the incarcerated state and federal population is Hispanic, and this climbs to 32% when only federal prisons are considered.¹

Although disparities were present beforehand, the U.S. incarceration boom was disproportionately driven by increases in minority confinement, and the burden of incarceration in

¹ An important reason for the disproportionate share of Hispanics in US jails and prisons is the fact that the federal system prosecutes immigration offenses, with the majority of defendants in these cases being Hispanic.

the U.S. has fallen predominantly on communities of color. Evaluation of historical prison data from 1926 to 2010 reveals that the portion of prisoners who were White fell steadily, while the portion of prisoners who were Black rose through the 1990s before levelling off (Walker et al., 2016). This has largely been attributed to the War on Drugs, which was responsible for most of the growth in prisons in the 1980s and early 1990s (Zimring, 2010), and disproportionately affected Black drug offenders (Tonry, 1995; Western, 2006; Alexander, 2012). In more recent years, Hispanics have been the fastest-growing group of prisoners in the U.S. (West, 2010).²

The U.S. is not unique in disproportionately imprisoning minority groups. For instance, in England, a quarter of all prisoners are from minority groups, despite making up just 14% of the population—and the disproportionality of Black prisoners in the U.K. is even greater than in the U.S. (Lammy, 2017). In Australia, Aborigines and Torres Strait Islanders constitute just 2% of the population, but more than 25% of all prisoners (Australian Bureau of Statistics, 2018). More than half of all prisoners in New Zealand are Māori, despite that this ethnic group constitutes just 15% of the total population (OHCHR, 2014). In Canada, indigenous peoples account for more than a quarter of all prisoners admitted to provincial, territorial, and federal institutions, but constitute just 4.1% of the total population (Malakieh, 2018).

In addition to the overrepresentation of minority citizens, many nations incarcerate a surprising number of foreign nationals. Wacquant (1999), comparing the carceral systems of the U.S. and Europe, remarked that immigrants and foreign nationals are the “Blacks of Europe,” marginalized socially and overrepresented in prisons. Researchers have documented rapid growth of imprisoned foreign nationals in many prisons systems (Ugelvik, 2017). As this is written,

² The bulk of this increase is due to the rapidly rising number of Hispanics in the general population, and less so due to either rising disproportionate involvement in crime or increasingly more punitive sanctions being applied to Hispanics.

foreign nationals make up over 10% of the prison population in 65 nation-states—about a third of all nations in the world (World Prison Brief, n.d.). In fourteen nations (seven percent), foreign nationals constitute the *majority of all reported prisoners*.

The previous two sections have established two empirical realities. First, the incarceration rate varies considerably around the world, even between apparently similar nations. Second, incarceration in many nations' prisons is characterized by the overrepresentation of racial and ethnic minorities. The following section presents a theoretical framework that helps to explain these patterns, reviews literature testing these theories, and identifies several gaps in the research which provide opportunity for study.

Minority Conflict Theories

Minority conflict theories, distilled to their simplest form, suggest that discrimination (including social control) is a function of racial/ethnic composition because of the various ways in which group size roughly corresponds to group hierarchy, power, and control. Several social scientists contributed to the development of minority threat perspectives of social control, including Blumer (1958), Blalock (1967), Liska (1992), and Horowitz (2001). Blumer, a sociologist, was among the first to shift explanations for discrimination beyond individual-level social-psychological predispositions. Blumer argued that discrimination was a macro-level function of group position, created by dominant-group perceptions which could include “(1) a feeling of superiority, (2) a feeling that the subordinate race is intrinsically different and alien, (3) a feeling of proprietary claim to certain areas of privilege and advantage, and (4) a fear and suspicion that the subordinate race harbors designs on the prerogatives of the dominant race” (1958, p. 4). In short, Blumer argued that group size, power, and competition were largely responsible for discrimination.

Blalock elaborated upon these basic ideas in his seminal book *Toward a Theory of Minority Group Relations* (1967). Although they constituted just a small portion of his many theoretical propositions regarding minority group conflict, Blalock's statements regarding minority group size and discrimination have become nearly synonymous with "racial threat theory" in criminology (Feldmeyer & Cochran, 2018). Blalock suggested that increases in minority group size tend to increase discrimination because such increases threaten the majority's established political and economic power.³ Thus, political threat and economic threat motivate the majority group to discriminate in order to maintain a group-level position of superiority—that is, maintaining the power of governance, and maintaining an advantage in economic opportunities such as employment. He noted that these relationships were most likely nonlinear—the positive association between minority group size and discrimination may increase or decrease in slope as the minority group grows in size and the majority group adjusts to political and economic threats.

Other theorists, including Quinney (1977), Turk (1969), and Blauner (1972) more explicitly linked majority-group discrimination to formal and systematic patterns of discrimination exercised through law and government. Liska and colleagues (Liska 1992; Liska et al., 1981; Liska et al., 1985) extended this further by arguing that minority groups are not only politically and economically threatening, but also present symbolic threats to the majority group. These symbolic threats include (but are not limited to) associations of the minority group to crime, disorder, and moral corruption, leading to an overall expansion of law and law enforcement in a formal,

³ As in Blalock's book, this study considers racial/ethnic factors in the construction of a "minority" group, but this is by no means the only definition. Distinctions of "otherness" can be made on a variety of other dimensions, oftentimes simultaneously with that of race and ethnicity. These can include factors such as language, religion, socio-economic status, political ideology, and a variety of other social, economic, legal, and political distinctions. For a description of an ongoing research project meant to define the variations of minority status throughout the world, see Nardulli et al., 2012. Furthermore, in some cases, such as South Africa, the subordinated group may not even be the numerical minority. While "minority groups" can be conceptualized in various ways, it is operationalized in this study as racial and ethnic groups, consistent with most prior research and theory.

sanctioned exercise of minority group control. Thus, several theorists extended Blalock's original theory beyond general patterns of discrimination to the formal practice of punishment and social control. All of these forms of threat—economic, political, and symbolic—are plausible forms of threat cross-nationally. In fact, Blalock himself acknowledged the applicability of minority threat theories to cross-national patterns of discrimination, but was limited at the time of writing by a paucity of international data (see 1967, pp. 143-144).

Nonetheless, political threat has become central to the understanding of inter-ethnic conflict throughout the world. Donald Horowitz presents one of the most detailed comparative analyses of ethnic conflict in *Ethnic Groups in Conflict*. He primarily focuses on developing countries in Africa and Asia and their unique experiences in the post-colonial world—countries that are not often explicitly considered in formal theory and research on minority group conflict. Horowitz argues that the withdrawal of colonial powers from African, Asian, and Pacific nations left behind a power vacuum, contributing to many ethnic conflicts in those nations. In these nations, political parties and military structures are overwhelmingly defined by ethnic identity. The form of Western democracy left behind is no self-sustaining panacea: “Since a majority can be obtained by setting half the state against the other half, elections commonly spur the very bifurcation that accelerates the slide away from democracy” (1985, p. 682). He quotes John Stuart Mill's argument that democracy is “next to impossible in a country made up of different nationalities” (Mill, 1950, p. 486). He argues that ethnic conflict is more common in pluralistic societies—a function of ethnic composition.

Nonetheless, Horowitz argues that the trend reverses when subgroups reach a certain size:

Some groups are so small in size and so geographically concentrated that it makes little sense for them to devote energy to political activity much beyond their locality. Other groups, however, may be large and influential enough to make plausible claims to power at the center... Several Asian and African states embrace a large number of dispersed ethnic

groups, none of them large or powerful enough to threaten to dominate the center...[T]here are incentives in dispersed systems against carrying ethnic extremism too far. (Horowitz 1985, 37).

Here, Horowitz describes a curvilinear relationship between ethnic composition and the exercise of law in ethnic conflict. Homogenous societies and those with very small ethnic minority groups demonstrate little conflict, and are thus likely to demonstrate comparably little formal social control in the exercise of that conflict. Similarly, pluralistic societies lead to diffusion of power and resources, and the exercise of dominance is less plausible. Between these poles—that is, where a sizable ethnic minority exists that is large enough to compete with a dominant group for social, political, and economic power—conflict and social control will be highest.

To summarize, minority conflict theories argue that racial and ethnic composition are related to the exercise of power and control—including formal social control exercised by the criminal justice system. These theories have been applied to the U.S. as well as other nations. Minority conflict theories predict the overall scale of formal social control (it is a function of minority group size), as well as its disproportionate impact on certain segments of society (minorities “threaten” a majority group). Therefore, minority conflict theories offer unique potential to explain patterns of imprisonment throughout the world. The following section reviews the evidence for these theories.

Evidence for Minority Conflict Theories

There is substantial, though not universal, support for minority conflict theories. Research has explored a variety of outcomes, which may be grouped into two broad categories: attitudes and perceptions, and actual justice system outcomes. Research exploring the effects of ethnic composition on perceptions of racial threat generally produce strong and consistent support. For instance, research consistently finds that Black population size is associated with White prejudice

in the U.S. (Giles & Evans, 1985, 1986; Pettigrew, 1959; Quillian, 1996; Taylor, 1998). Studies also consistently find that larger minority populations contribute specifically to fear of crime and victimization (Chiricos et al., 1997; Covington & Taylor, 1991; Liska et al., 1982; Mears & Stewart 2010; Mears et al., 2009; Mears et al. 2013). There is also consistent evidence that ethnic composition is related to public support for punitive criminal justice policies (King & Wheelock 2007; Ousey & Unnever 2012; Baumer et al., 2003; Phillips, 1986).

Do such punitive attitudes translate to the actual exercise of social control? The evidence is mixed. Research consistently finds evidence that law enforcement size and expenditures are a function of minority group size (Chamlin, 1989; Huff & Stahura, 1980; Jackson & Carroll, 1981; Liska et al., 1981; D'Alessio et al., 2005; Kent & Jacobs, 2005; Stults & Baumer, 2007). On the other hand, research on the use of arrests presents much less support for minority threat theories (Liska et al., 1985; Liska & Chamlin, 1984; Parker et al., 2005; Stolzenberg et al., 2004; Stucky, 2012). Research on sentencing decisions has produced mixed results, with several studies finding that minority group size predicts disadvantageous sentencing (Myers & Talarico, 1987; Weidner et al., 2005; Johnson, 2005; Ulmer & Johnson, 2004; Johnson et al., 2008) while others find null or contradictory results (Britt, 2000; Weidner & Frase, 2003; Kautt, 2002; Davis & Sorensen, 2013; Leiber et al., 2016; Thomas et al., 2013; Zane, 2018; Feldmeyer & Ulmer, 2011).

Several studies have applied minority threat theories to incarceration rates. Both cross-sectional and time-series analyses generally find that incarceration rates in U.S. state prisons are positively associated with Black population size (Jacobs & Carmichael, 2001; Stemen & Rengifo, 2011; Heimer et al., 2012; Greenberg & West, 2001). Research has been mixed about the role of minority threat in disproportionality in U.S. incarceration, and whether the effects are linear or curvilinear (e.g., Bridges et al., 1987; Bridges & Crutchfield, 1988; Kleen & Jacobs 2009; Ulmer

et al., 2020). Thus, there is evidence in the U.S. that racial composition may be associated with increased overall incarceration rates, but its effect on minority disadvantage is less clear.

Three studies to date have explored the relationship between ethnic composition and incarceration rates in cross-national research. Jacobs & Kleban (2003) find a significant, positive relationship between the minority population and the incarceration rate in a pooled time-series of 13 progressive nations between 1970 and 1995. This study, like most research conducted on U.S. samples, measures threat using percent minority. One potential problem with this measure is that, except for the two-group case, it combines various minority groups into a single measure, despite that “minorities” hardly constitutes a monolithic group. More pragmatically, “percent minority” does not adequately capture either the fragmentation of a society into many different groups (as an ethnic diversity index does) or the competitive tension that emerges between similarly sized groups (as a polarization index does). It also becomes meaningless in nations that are majority minority (that is, nations where a single group does not exceed 50% of the population), since 100% of citizens belong to a minority group.⁴

Ruddell and colleagues (Ruddell & Urbina 2004; Ruddell 2005) find that diverse societies sometimes demonstrate significantly higher imprisonment rates, although these findings are not robust across different statistical models and various measures of diversity. These studies use various measures of ethnic and religious diversity, which more fully encompass the size and distribution of multiple minority groups and consider the multitude of ways societies draw

⁴ Conceptually and statistically, dichotomizing diverse populations into, e.g., “White/non-White” categories is highly problematic. Many times, there is inconsistency about who belongs where in the dichotomy (e.g., in the U.S., Hispanics/Latinos are sometimes categorized as White, other times as non-White or Other). Blacks, Asians, and Hispanics/Latinos in U.S. have very different experiences—including both how their presence affects White Americans’ attitudes, as well as how their unique experiences shape criminal justice involvement. In short, it’s not clear that all minority groups are equally threatening, so more nuanced and comprehensive measures are warranted.

distinctions of “otherness”—which may be based on skin color, language, religion, or any number of other group characteristics (Alesina et al., 2003). However, no studies to date that apply minority threat theory to overall incarceration rates—whether single-nation or international—have explored nonlinear relationships separately proposed by Blalock and Horowitz, which may account for the inconsistent findings.⁵ Furthermore, questions have been raised about ethnic diversity as a measure of ethnic composition in studies of conflict, suggesting instead that measures of polarization—ethnic bifurcation—is more salient to conflict than the diffusion of power among many smaller groups (Reynal-Querol, 2002). As the preceding review of Horowitz (1985) illustrates, conflict may be lowest in the presence of many small ethnic groups (since, marginalized, they lack resources to compete for power), but highest when power is concentrated between two relatively large, influential, and competitive social groups. In short, there are very few cross-national studies examining the relationship between the carceral state and ethnic composition, and there are outstanding questions regarding its functional form and measurement.

Few studies to date have examined whether “immigrant threat” contributes to overall incarceration rates, but in general, there is no indication that immigration rates correlate to incarceration rates in the U.S. (Rumbaut, 2008). Other research has examined immigrant threat on outcomes including sentencing and punitive attitudes. Research in the U.S. state of Florida finds that Hispanic immigration was not associated with longer sentences for Hispanic defendants (Feldmeyer et al., 2015). Yet studies consistently report that increases in immigration (or perceived increases) are associated with perceptions of dangerousness and support for more criminal justice control (Chiricos et al., 2014; Wang, 2012; Lucassen, 2005; Chavez, 2013). It is plausible that

⁵ Keen and Jacobs (2009) find evidence of curvilinear relationships between a novel measure of political threat and incarceration rate disparities in the U.S., but no study has yet examined curvilinear relationships between minority population size and overall incarceration rates.

punitive attitudes will extend to incarceration policy via social pressure. However, no studies have examined immigrant threat and incarceration rates cross-nationally.

Current Study

As the foregoing review indicates, several patterns of incarceration throughout the world are striking, including substantial variation among apparently similar nations and the overrepresentation of minorities in prisons throughout the world. Minority threat theory appears to be uniquely suited to explaining these patterns, but has been applied infrequently to incarceration rates, especially in cross-national research. The proxies used to measure minority threat—percent minority and ethnic diversity—may not adequately capture the ethnic bifurcation central to the concept of minority threat. Furthermore, extant studies that apply minority threat theory to incarceration rates cross-nationally have not considered the curvilinear relationships suggested by Blalock and Horowitz. Finally, no cross-national studies to date have systematically examined how immigrant threat contributes to incarceration rates.

The current study examines how various forms of ethnic composition predict incarceration rates in a large cross-national sample of world nations using OLS regression.⁶ In addition to re-evaluating an existing measure of ethnic threat, it introduces a measure from economics that is novel to criminology. Furthermore, this study explores whether relationships are linear or curvilinear. This study addresses the following research questions:

⁶ While we feel comfortable with our choice to use incarceration rates as our measure of relative national punitiveness, we also acknowledge that this is hardly the only means by which nation-states may demonstrate formal social control. For instance, apartheid-era South Africa, which maintained a sizable prison population, relied more heavily on other formal apparatuses of social control outside of incarceration. Similarly, modern day India has maintained very low rates of incarceration, but human rights reports and journalistic accounts document rather heavy-handed policing and street-level “justice” without invoking any formal entry into the criminal justice system. Our measure of incarceration is the overall or total incarceration rate calculated as the number of prisoners (which includes all adult prisoners held pre-trial, held on remand, or serving sentences, as reported by each nation’s central government authority or central prison authority) per every 100,000 people living in that country.

Q1: Does ethnic diversity predict a nation's incarceration rate?

Q2: Does ethnic polarization predict a nation's incarceration rate?

Q3: Does the size of the immigrant population predict a nation's incarceration rate?

Q4: Are the relationships (if present) linear or curvilinear?

The answers to these questions advance minority conflict theory and provide insights into the state's punishment responses to the presence of ethnic minorities—an important topic during the current period of globalization, migration, mass incarceration, and anti-immigrant rhetoric.

Methods

Sample and Data

The sample used in this study consists of a non-random sample drawn from the population of nation-states,⁷ based entirely upon data availability. As described in more detail in the following sections, data for the variables described below are drawn from the following sources: the CIA World Factbook; the Composition of Religious and Ethnic Groups (CREG) Project; Freedom House; the United Nations; and the World Prison Brief. After listwise deletion, the final sample sizes range from 115 to 132 nations.⁸

The sample therefore consists of the population of nations, less those nations with missing data. Missing data analysis indicates that nations not included in the analysis are significantly poorer, less democratic, smaller, and experience higher rates of homicide and infant mortality. Therefore, this study is not generalizable beyond the nations under study. Nonetheless, the 132

⁷ The terms “country,” “nation,” “state”, “nation-state”, and even “society” are used interchangeably, all implying some degree of sovereignty and collective governance.

⁸ The variable range in sample size across analyses (from 115 to 132 nations) is due to missing data on one or more of the variables in the analyses. See also footnote 10.

nations included in this study encompass over 70% of the world's population, with implications for the vast majority of world citizens.

Measures

The following sections describe the dependent variable, independent variables, and control variables included in the analyses.

Dependent Variable

The dependent variable used in this study is the incarceration rate as reported by the World Prison Brief in the *World Prison Population List* (Walmsley, 2018). The most recent data generally come from 2010-2015, trending toward latter years. The overall incarceration rate is calculated as the number of prisoners (which includes all adult prisoners held pre-trial, held on remand, or serving sentences, as reported by each nation's central government authority or central prison authority) per 100,000 people living in that country. This measure is consistent with all prior cross-national studies on minority threat and incarceration rates (Jacobs & Kleban, 2003; Ruddell & Urbina 2004; Ruddell, 2005). While minority-specific incarceration rates might be viewed as the preferred measure for testing Blalock's minority threat hypothesis, cross-national data for such a measure do not exist. In large, this is due to the variable attributions of "minority status" (racial, ethnic, religious, etc.) cross-nationally. Moreover, a case can be made that the majority's demand for increased formal controls in the form of incarceration may be made manifest in such a manner that the increased control efforts are applied generally and thus sweep both majority and minority populations under its net (see for example Liska & Chamlin, 1984). For example, if people errantly believe that crime is primarily committed by minorities, they may demand more severe or more frequent incarceration, believing that it will predominantly impact "others." In practice, however,

crime is not limited to minority groups, so those punitive sentencing policies will affect society broadly.⁹

Measurement error is a legitimate concern with imprisonment rates, since some nations may not systematically collect data, and other nations may deliberately under-report it for fear of embarrassment. The World Prison Brief notes, “For some [nations], data are not available for certain categories of prisoner. For example, there are no data on the numbers detained pre-trial or prior to sentencing in China. The WPB does not hold statistics on Eritrea, North Korea or Somalia, because of the difficulty of accessing prisoner data on these states (although some general information on the prison systems of these countries is provided on the site). The WPB also holds no data on a small number of jurisdictions that are not fully recognized internationally and some territories with very small populations” (World Prison Brief, n.d.). Further details were reviewed on each nation’s individual profile on the World Prison Brief website. To reduce the risk of biased estimates, this study does not include any case with missing, incomplete, or suspect incarceration data¹⁰. Nations removed from study do not have statistically different incarceration rates than those included in this study, further suggesting little risk of systematically biased estimates.

Independent Variables

This study uses several measures of ethnic composition to measure minority threat, consistent with most macrosocial research on minority threat theory (Feldmeyer & Cochran,

⁹ Given any concern that the inclusion of majority group members into the measure of incarceration rates could also diminish the effect size of minority threat, perhaps to the point of non-significance, we note that our use of total incarceration rates that do include incarcerated majority group members into its calculation constitutes a conservative test of the minority group hypotheses. Any statistically significant positive parameter estimate for the minority threat variable may constitute a smaller/diminished estimated effect than may actually be the case.

¹⁰ Omitted nations include Eritrea, North Korea, Somalia, China, and Rwanda. Incarceration data is also missing for a number of very small or politically unrecognized territories such as the Turkish Republic of Northern Cyprus, Crimea, Sebastopol, Abkhazia, South Ossetia, Transdnistria, etc.

2018). Consideration is given to two potential sources of minority threat: *ethnic threat* and *immigrant threat*. This disaggregates minority threats that may be domestic in origin from minority threats that may be perceived from foreign newcomers.

Two measures are considered in this study to measure *ethnic threat* in a cross-national context. The first is the ethnic diversity index (Alesina et al., 2003), sometimes called the ethnic fractionalization index, the heterogeneity index, and multiculturalism, variations of which have been used in prior cross-national studies of incarceration (Ruddell & Urbina, 2004; Ruddell, 2005). The ethnic diversity index is a measure of ethnic composition, and represents the likelihood that two people randomly drawn from the same population will have different ethnic identities. A score near 0 indicates perfect homogeneity; a score near 1 reflects substantial heterogeneity. It is derived from a combination of racial and linguistic characteristics, sensitive to the customs of each world region in establishing perceived ethnic distinctions. For instance, in diverse South American countries such as Bolivia, ethnicity is largely a function of ‘racial’ characteristics (Blancos, Aymara, Quechua, and Mestizos), whereas in diverse European countries like Belgium, it largely reflects linguistic distinctions (such as German, French, and Italian). As the authors note, “these classifications reflect the judgment of ethnologists and anthropologists on the appropriate definition of ethnicity, which to our knowledge remains a rather vague and amorphous concept” (Alesina et al., 2003, p. 160). Thus, this measure captures a core element of social differentiation, despite its different boundaries of distinction worldwide.

The diversity index is calculated using data for the year 2010 from the Composition of Religious and Ethnic Groups (CREG) Project at the University of Illinois, based on underlying data and integration from three sources: the Britannica Book of the Year (BBOY), the CIA World

Factbook (CIA-WF) and the World Almanac Book of Facts (WABF) (Nardulli et al., 2012). The diversity index was calculated using the same formula used by Alesina et al. (2003),

$$DIVERSITY = 1 - \sum_{i=1}^N s_{ij}^2$$

where s_{ij} is the share of group i ($i = 1 \dots N$) in country j .

Despite its intuitive appeal and its established use in cross-national studies of social conflict, the ethnic diversity index may suffer from some limitations. The concept of diversity is not strictly analogous to that of a “threatening” minority group, to which a majority group responds with the threat of social control. This study therefore introduces a second measure of ethnic composition that has received attention in economics, but little notice in sociology and criminology: the polarization index. The RQ polarization index is a measure of distance from the bipolar (.50, .50) distribution of ethnic groups (Reynal-Querol, 2002). Empirically, this measure has performed well predicting conflict such as civil war and genocide (Reynal-Querol, 2002; Montalvo & Reynal-Querol, 2002; 2005; 2008; 2010). Consider two hypothetical nations, each with four ethnic groups. In the first nation, the distribution is (.49, .49, .01, and .01). In the second nation, the distribution is (.25, .25, .25, and .25). While the second nation would score higher on the ethnic diversity index, it is theoretically less likely to demonstrate conflict because power is more broadly distributed and diluted. Instead, conflict is more likely in the first nation, where two ethnic groups are more polarized (and two are marginalized). In short, diversity may not be as relevant to conflict as is ethnic bifurcation, where a homogeneous social group is at odds with a second group that is substantial enough to mobilize social, political, and economic power that threatens the dominant group. Theoretically, polarization is salient to intergroup conflict because two large groups, similar in size, concentrate human, social, and economic capital more effectively than a fractured amalgamation of smaller groups. This measure is also theoretically faithful to the

concept of a particular group that can be readily identified as “threatening,” evoking social control responses.

Like the diversity index, the RQ polarization index has been calculated from year 2010 estimates from the CREG Project. The RQ polarization index formula from Montalvo and Reynal-Querol (2005) is expressed as

$$RQ \text{ POLARIZATION} = 1 - \sum_{i=1}^N \left(\frac{.5 - s_{ij}}{.5} \right)^2 s_{ij}$$

where s_{ij} is the share of group i ($i = 1 \dots N$) in country j .

Immigrant threat is measured using the percentage of a country’s residents who are foreign-born, as estimated for the year 2010 by the United Nations Department of Economic and Social Affairs (UN DESA, 2017). To adjust for skew and limit the influence of outliers, this variable was log-transformed.

In order to evaluate alternative functional forms of minority threat on incarceration rates, squared measures are also incorporated. If the relationships between incarceration rates and minority threat demonstrate curvilinear relationships—for example, if incarceration rates initially rise with the presence of small minority groups, but eventually fall when these groups are large enough to wield power and influence—then we would expect an inverse-U-shaped relationship represented by the following regression formula:

$$Y = a + b(X) - b(X)^2$$

Therefore, squared measures of the *ethnic threat* and *immigrant threat* variables are calculated and incorporated in several regression models to explore such quadratic relationships.

Control Variables

A variety of control variables are included in order to control for many other potential sources of variation in imprisonment, including crime, social structure, modernization, and type of

government. The homicide rate is included to control for the effect of violent crime on incarceration rates (UNODC, n.d.). Homicide data are considered the most valid and reliable cross-national indicators of crime; unfortunately, most other cross-national crime measures are generally less valid, reliable, and comparable (Neapolitan, 1997).¹¹ To reduce the influence of temporal fluctuations (especially for small nations), measurement error, and missing data for certain years, the mean homicide rate is used for up to 10 years for each nation between the years 2006-2015. Several socioeconomic indicators are measured using data from the CIA World Factbook, including real GDP per capita, income inequality (GINI), and the unemployment rate (CIA, 2011), consistent with prior research (Jacobs & Carmichael, 2001; Jacobs & Helms, 1996; Ruddell, 2005).¹² Because formal social control has been associated with both urbanism (Black, 1976; Boggs, 1971) and education (Black, 1976; Kim et al., 2010), this study controls for the percentage of residents living in urban areas and the literacy rate (CIA, 2011). Finally, a measure of democracy, the Gastil index, is included to control for the effect of political structure on incarceration rates (Freedom House, 2018). The aggregate score of the Gastil index (0-100) is based on the evaluation of 25 items measuring various aspects of political rights and civil liberties, including equal rights, free association, free and fair elections, etc. A dummy variable is also included to represent communist nations. Some predictors were heavily skewed; to limit the influence of outliers, these variables were log-transformed, including GDP per capita, the unemployment rate, and the homicide rate.¹³

¹¹ It is true that even homicide is imperfect on these criteria; homicide rates will be a function not only of interpersonal violence, but also of weaponry and quality medical care.

¹² In some nation-states, perhaps most, economic inequality and minority status overlap considerably. Our inclusion of a number of socio-economic control variables allows us to examine the *unique* effects of minority threat.

¹³ In analyses not presented here, regional dummy indicators were also included in the models since incarceration rates may demonstrate similarity among nations within a particular region. The results do not substantively differ from the results reported herein, and the regional indicators rarely demonstrated statistical significance. They were excluded

Results

Table 1 reports descriptive statistics before transformations. Among the nations under study, the average incarceration rate is 171 prisoners per 100,000 citizens. The ethnic diversity index averages .421, indicating that in the “average” nation the likelihood of randomly selecting two people of different ethnicities is about 42.1%. The mean polarization index is .548, indicating that the “average” nation falls near the halfway point between completely polarized and completely homogeneous. On average, each nation in this study is composed of a population that is about 7.12% foreign-born.

[TABLE 1 HERE]

Table 2 presents bivariate correlations (after transformations). Ethnic diversity does not demonstrate any direct linear relationship with incarceration rates ($r = -.009$). However, ethnic polarization is positively associated with overall incarceration ($r = .286$ $p < .001$). The size of the immigrant population is not correlated with the overall incarceration rate ($r = .031$).

[TABLE 2 HERE]

Table 3 reports several regression models predicting overall (log-transformed) incarceration rates. Models vary in two ways: the form of minority threat measured, and the functional form of the relationship. Model 1 reveals that ethnic diversity is not directly associated with overall incarceration rates ($b = .202$, $SE = .223$, $p = .366$). Model 2 incorporates the squared term for ethnic diversity in order to test for curvilinear relationships. The results provide strong support for a curvilinear relationship between ethnic diversity and incarceration rates. The linear and squared terms are both substantive and significant (ethnic diversity: $b = 2.403$, $SE = .834$, $p <$

in the present analyses because of the risk of “overfitting” the models—that is, including too many variables given the sample size (Babyak 2004).

.01; ethnic threat²: $b = -2.618$, $SE = .958$, $p < .01$).¹⁴ The directions of the signs support the hypothesized inverse-U shaped relationship, wherein the most homogenous and most diverse societies demonstrate the lowest incarceration rates, and the highest rates are found in nations with moderate ethnic diversity. Overall, Model 2 explains nearly half (45.9%) of the cross-national variation in overall incarceration rates. Among the control variables, higher homicide rates, greater wealth per capita, more economic inequality, higher literacy rates, and lower democracy scores were all associated with higher incarceration rates.

Models 3 and 4 examine linear and curvilinear relationships between an alternative measure of ethnic threat—the polarization index—and overall incarceration rates. Ethnic polarization demonstrates a significant, linear, positive association with overall incarceration rates ($b = .466$, $SE = .213$, $p < .05$). There is no evidence for a curvilinear relationship (ethnic polarization: $b = .680$, $SE = .871$, $p = .437$; ethnic polarization²: $b = -.215$, $SE = .849$, $p = .801$).

Models 5 and 6 examine linear and curvilinear relationships for immigrant threat and overall incarceration rates. Neither linear nor curvilinear relationships emerge. Percent immigrant demonstrates no direct association with overall incarceration rates in Model 5 ($b = -.013$, $SE = .044$, $p = .768$). In Model 6, neither the linear nor squared terms are significantly associated with incarceration rates (percent immigrant: $b = .033$, $SE = .056$, $p = .559$; percent immigrant²: $b = -.029$, $SE = .022$, $p = .194$).

[TABLE 3 HERE]

¹⁴ Readers will note the large beta coefficients for the ethnic diversity measure and its square, suggesting the two variables are highly collinear. That is inherently the case between square terms and their linear component. In the current case, both slopes are statistically significant indicating that the collinearity is not producing artificially null results. In results that follow, the margins are visually depicted in Figure 2 in order to provide some demonstration of substantively meaningful effects, given the uninterpretable beta coefficients for the diversity measure and its square.

Models 2 and 3 provide evidence that different types of minority threat, with different functional forms, are significant predictors of incarceration rates. Two additional models, appearing in Table 4, consider various forms of minority threat simultaneously.¹⁵ Model 7 reveals that, when considering ethnic diversity and percent immigrant simultaneously, the curvilinear relationship between diversity and incarceration rates persists, and percent immigrant has no influence. Similarly, Model 8 indicates that when considering ethnic polarization and percent immigrant simultaneously, polarization maintains a significant linear relationship on overall incarceration rates ($b = .476$, $SE = .214$, $p < .05$), while percent immigrant does not ($b = -.023$, $SE = .045$, $p = .606$).

[TABLE 4 HERE]

The curvilinear relationship between ethnic diversity and incarceration is illustrated graphically in Figure 1, which plots actual incarceration rates against ethnic diversity; note that the y-axis is logged, like the outcome in the regression models. As hypothesized, the relationship changes direction near the midway point, suggesting that incarceration rates fall when a single ethnic group no longer constitutes a majority of the population. Once the fractionalization index exceeds .50, two randomly drawn residents are more likely to be from different ethnic groups than the same group. The U.S. has been distinctly labelled to permit comparison with other nations. As often noted, the U.S. has the highest incarceration rate in the world; what is striking is that it also falls near the vertex of the parabola with ethnic diversity. (The U.S. also scores in the top quartile on ethnic polarization.) This provides some evidence that the U.S. may not be especially unique,

¹⁵ Variance Inflation Factors indicate that ethnic polarization demonstrates collinearity with curvilinear measures of ethnic diversity, precluding a model that includes both. The curvilinear relationship between ethnic diversity and ethnic polarization is discussed and graphically illustrated in Montalvo and Reynal-Querol, 2002. VIFs are not problematic in any of the 8 reported models, indicating that multicollinearity is not an issue.

but demonstrates one of the highest incarceration rates because of its ethnic composition—a relationship demonstrated throughout the world.

[FIGURE 1 HERE]

Figure 2 uses predicted values, rather than actual incarceration rates, after accounting for confounders; it is based on Model 2 in Table 3, which is the best-performing model. The U.S. is no longer an outlier, but the fitted model still predicts above-average incarceration rates. Figures 1 and 2 visually demonstrate mixed support for the “American Exceptionalism” claim regarding incarceration. While its *actual* incarceration rate is quite high, its unique location on various dimensions of social structure—including its ethnic composition—predict above-average rates of incarceration irrespective of its historical or cultural peculiarities, according to the model. In other words, the U.S. incarceration rate is not unique insofar as above-average incarceration rates are a predictable function of the same factors driving imprisonment throughout the world. Nonetheless, the predicted incarceration rate (about 242 prisoners per 100,000 residents) is 63% lower than its observed incarceration rate (655), indicating that the model produces a substantial degree of error for this particular case.

Figure 2 also depicts the predictive margins with 95% confidence intervals when covariates are at their mean. This graphically demonstrates the substantive significance of the effect of diversity on incarceration rates—something less clear from the reported standardized beta coefficients, given the nature of modeling a squared term with its linear component. It is useful to compare nations with low, medium, and high diversity to interpret the substantive effect of diversity on incarceration. A nation with a diversity index of .10 has a predicted incarceration rate of about 118 prisoners per 100,000 residents. A nation with a diversity index of .50 has a predicted incarceration rate of about 164. And a nation with a diversity index of .90 has a predicted

incarceration rate of about 122. That is, predicted incarceration rates are nearly 40% higher in moderately diverse nations than heterogeneous or homogenous nations. The margins therefore provide additional reassurance that the curvilinear relationship between diversity and incarceration is substantively meaningful.

[FIGURE 2 HERE]

Discussion

In the past several years, politicians across the world—including the U.S., the U.K., Italy, Austria, Hungary, Poland, Slovakia, Czechia, and Australia, among others—have popularized xenophobic rhetoric and policy (Erixon, 2018; Anti-Defamation League, 2018; Revill, 2019). In the U.S., Donald Trump launched his presidential campaign with a speech plainly calling Latin American immigrants rapists and drug dealers (Phillips, 2017). In Europe, nationalist and supremacist movements have flourished enough to influence social policy (Counter Extremism Project, 2018). Minorities and immigrants are disproportionately imprisoned in many countries worldwide (Malakieh, 2018; Australian Bureau of Statistics, 2018; OHCHR, 2014; Lammy, 2017; World Prison Brief, n.d.). Although bias has been more openly expressed in recent years, biased patterns of justice are hardly new; for instance, the U.S. prison boom beginning in the 1980s and 1990s disproportionately affected Blacks due to plainly discriminatory law enforcement and lawmaking, including the drug war and the 100-to-1 sentencing quantity disparity for crack cocaine (Alexander, 2012).

The current rhetoric of ethnicity and exclusion has drawn attention to the ways minority threat evokes social control responses. Minority threat theories suggest that large or growing minority populations contribute to expanded social control because minorities pose real or imagined threats to the majority group's dominant position. These responses may include criminal

justice responses, and substantial research has explored how minority threat contributes to punitive attitudes, police activity, and sentencing. Yet, several issues deserve further study, including generality (beyond the U.S.), application to incarceration rates, differing forms of minority threat (e.g., domestic minorities vs. foreign immigrants), and the appropriate measurement of ethnic threat in cross-national contexts, including its functional form.

Using samples of 115 to 132 nations worldwide (accounting for over 70% of the world's population), this study used a series of regression models in order to examine the relationships between minority threat and incarceration rates. In short, two measures of minority threat bear on incarceration rates. Three findings emerge. First, overall incarceration rates demonstrate a curvilinear relationship with ethnic diversity. Second, overall incarceration rates demonstrate a positive linear relationship with ethnic polarization. Third, the size of the immigrant population demonstrates no effect on incarceration rates. The results illustrate the theoretical and methodological importance of the *distribution* of social groups in relation to each other, and not just their relative size. Of importance theoretically and methodologically, this study introduces measures of polarization and heterogeneity that provide both conceptual and operational improvements to the study of minority threat at the macrosocial level.

At first blush, the different functional forms taken by ethnic diversity and ethnic polarization may appear to describe very different relationships, complicating interpretation. However, these two measures, as it happens, describe similar macrosocial conditions in different ways. There are two types of nations that score low on the polarization index: those that are homogenous, and those that are fractured into a large number of disparate groups. Neither of these nations is bifurcated. For example, Sweden and Liberia both score fairly low on the polarization index (.358 and .381, respectively), but Sweden is almost entirely homogenous (diversity index =

.189) while Liberia is incredibly diverse (diversity index = .889). Brazil, on the other hand, has a highly polarized population (.903 on the polarization index but just .563 on the heterogeneity index) that is mostly split between Whites and Mulattoes (mixed Black/White ancestry). Theoretically, which of these three nations would be expected to have the most social conflict, which may be expressed through the criminal justice system? Ethnic threat scholars would likely hypothesize Brazil, which scores high in ethnic polarization and scores at the midway point of ethnic diversity. Indeed, Brazil's incarceration rate (333) is more than twice the world average; on the other hand, Sweden (59) and Liberia (50) have incarceration rates less than half the worldwide average. The results of this study illustrate this general pattern: incarceration rates are highest where ethnic polarization is high and ethnic diversity is moderate, and lowest in countries that are either extremely homogenous or extremely diverse.

Together, these findings suggest that incarceration is driven at least in part by ethnic composition and potential minority threats. Incarceration rates are lowest in nations that are either very homogenous or very diverse, and highest in nations with a moderate level of diversity but a high level of polarization—bifurcation into two large groups. The curvilinear relationship between ethnic diversity and incarceration rates reveals that, despite the very real and practical differences between diversity and homogeneity, they *both* suppress state coercion. Given just how different these two conditions are, this raises questions about the mechanisms involved. For instance, in pluralistic societies, is less formal social control primarily a consequence of reduced influence or consensus in governance, or do out-group attitudes differ where there is a single “threatening” group versus a diverse plurality?

One of the more surprising findings is that immigration has no association with the incarceration rate. Minority threat theory supposes that a large influx of immigrants would threaten

established citizens, especially if they compete with citizens for jobs and social benefits, and therefore invoke social control responses, which might include incarceration. One possible explanation for the lack of support, which would be masked by the cross-sectional design, is that immigrants are less likely to immigrate to punitive nations with high rates of incarceration. Research indicates that immigration is associated with lower crime rates (Lee & Martinez, 2009; Adelman et al., 2017; Ousey and Kubrin, 2009; Butcher & Piehl, 2007), so the drop in incarceration rates found here could also be a function of a drop in crime, which might outweigh or offset increases in punitiveness. Unfortunately, with the exception of homicide, cross-national crime rates are neither reliable nor comparable (Neapolitan, 1997), so they are not included as controls in this study.

It is possible that the influence of diversity and polarization observed here also help to explain recent incarceration trends in the United States. Incarceration rates in the U.S. recently began falling (Walmsley, 2018). At the same time, the share of non-Hispanic whites in the U.S. population has steadily been falling, while the share of both Blacks and Hispanics has steadily increased (Frey, 2018). These demographic shifts contribute to a rising level of ethnic diversity, as well as a lower level of ethnic polarization. While there are dozens of structural, cultural, and historical factors that could contribute to the fall of incarceration rates in the U.S. (Garland, 2001), this co-incidence is consistent with the underlying relationships established in the present study, warranting time-series research.

The results suggest that minority threat theory is a useful theory of justice applicable throughout the world, not just the U.S., and deserves further cross-national development. Prior studies have found inconsistent support in cross-national research (Jacobs & Kleban, 2003; Ruddell & Urbina, 2004; Ruddell, 2005). These studies, however, have either used percent

minority as a measure of ethnic threat, which is inapplicable in multi-group nations, or used linear (rather than curvilinear) measures of ethnic diversity. As Model 1 indicates, ethnic diversity demonstrates no direct association with overall incarceration rates—but Models 2 and 7 demonstrate that a significant relationship exists in a different functional form. Furthermore, Models 3 and 8 find a significant linear relationship between incarceration and a new (to criminology) measure of ethnic composition known as polarization. Therefore, future cross-national research, whether examining the influence of ethnic threat directly or incorporating it as a control variable, must carefully consider both conceptualization and specification in the construction of accurate models.

Furthermore, minority threat theory has rarely been applied to incarceration rates, but the results here suggest that it provides useful insights for the macrosocial study of the scale of imprisonment—a topic which has sometimes challenged social scientists, especially theoretically (Zimring & Hawkins, 1993; Zimring, 2010). With the exception of some research on political diffusion (Greenberg, 2000; Jacobs & Carmichael, 2001; Jacobs & Kleban, 2003), most of what can currently be called theories of incarceration are highly discursive, avoid generality for historical and cultural contingency, focus on just a single nation or a handful of Western nations, and make little attempt to quantify and systematically predict incarceration rates (Garland, 2012; Foucault, 2012; Rothman, 1971; Alexander, 2012). This study indicates that a truly general, systematic, cross-national explanation for incarceration shows promise. The total explained variance indicates that ethnic conflict is a useful consideration for a macrosocial theory of incarceration.

This study also addresses emerging questions regarding the sources of threat (e.g., domestic or foreign; Feldmeyer, et al. 2015). The results indicate that domestic ethnic threat—as measured

by both ethnic diversity and ethnic polarization—influences the overall incarceration rate, but immigrant threat does not. In fact, immigrant threat demonstrates a negative linear relationship with incarceration in every model, though it never attains statistical significance.

Study Limitations and Future Research

We would be remiss were we not to address some of the more serious limitations to our study. Firstly, as is the case with nearly every quantitative study examining cross-national data, our study is limited by the availability of data. In cross-national research, the problem of missing data is endemic. Data available for some nation-states has not been systematically collected in others. Moreover, these data are not missing at random; missing data problems are most pronounced for countries under authoritarian regimes and for underdeveloped/developing nations. This situation requires cross-national scholars to make challenging methodological decisions. Should important variables be included in the analyses, given that doing so inevitably will lead to the loss of a large portion of the nations sampled and the loss of degrees of freedom, or should scholars move forward with the data available despite obvious limitations of omitted variable biases vs. non-generalizable samples? For these reasons, missing from the present include many indicators of a nation's history of colonization and/or slavery; also missing are indicators of modernization, political and cultural forms of inequality, democratization and other indicators of political economy. However, we do control for a good number of such variables. That is, we were able to examine the effects of ethnic diversity and ethnic polarization on incarceration rates controlling for the effects of immigration levels, homicide rates, economic inequality, GDP per capita, unemployment, urbanization, literacy, democratization, communist regime. Ideally, such omitted data will someday become systematically collected across a much wider sample of nation-states to enable future scholars to examine their influence. At the same time, we also need to be

mindful of the highly plausible chance that the inclusion of such omitted variables might not change the results, would decrease degrees of freedom, and/or could introduce problematic levels of collinearity.

Secondly, there may be limitations to this study based on the data that *were* available. No doubt the subset of nation-states presents challenges to our comfort in generalizing from our findings, especially to those kinds of nations systematically missing, such as those under authoritarian regimes and many underdeveloped/developing countries. That said, our data do include some developing and authoritarian countries. Moreover, in supplementary analyses we include controls for global regions. This inclusion of these dummy variables did not substantively change our findings, but do permit us to feel a bit more comfortable about unsampled nations from within these regions under the presumption of a degree of homogeneity among nations within the same region. Also potentially problematic are the definitions of “minority” and “diversity” employed. While we do not feel that we are in a position to wade into this debate, we are aware the ethnologists, anthropologists, and other social scientists have wrestled with the definitions of “minority” status. For our purposes, we required operational definitions of “minority” and “diversity” that were not ethnocentric but which could be systematically applied across nation-states. Our measures of ethnic diversity and ethnic polarization satisfy both necessities. Finally, we acknowledge that our measure of formal social control is limited to incarceration rates. Had we examined formal social control through other indicators such as arrest rates or variations in sentencing policies are results might be different. Of course, this is something future scholarship in this area should consider.

Conclusion

This study provides several insights into the influence of minority conflict on the size of prisons worldwide. Consistent with minority threat theories, a nation's incarceration rate is associated with its ethnic diversity and ethnic polarization, suggesting that incarceration rates throughout the world are a function of racial/ethnic conflict and control. While ethnic polarization is associated with high rates of incarceration, the most homogenous societies, as well as the most diverse, demonstrate the lowest incarceration rates. These findings suggest that the distribution of minority groups in relation to each other—not just their size—are important theoretical and methodological considerations when it comes to group conflict. In all, this research presents compelling evidence that ethnic composition remains a pernicious influence on incarceration throughout the world.

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Table 1: Descriptive statistics of study variables (before transformations)

Variable	n	Mean	SD	Min	Max
Incarceration rate	132	171.311	119.327	27	655
Ethnic diversity	115	.421	.243	.018	.889
Ethnic polarization	115	.548	.232	.036	.947
% Immigrant	132	7.120	9.611	.070	62.068
Homicide rate	132	7.753	11.523	.343	65.428
Real GDP per capita	132	15,209.09	17,489.54	400	122,100
Gini index	132	39.991	9.773	23	70.7
Unemployment rate	132	14.208%	15.994%	0.9%	95%
Urban population	132	57.772%	22.195%	12%	100%
Literacy rate	132	85.673%	17.421%	21.8%	100%
Democracy index	132	63.826	27.309	4	100
Communist	132	.015		0	1

Table 2: Bivariate correlations of study variables (after transformations)

	1	2	3	4	5	6	7	8	9	10	11
1. Incarceration rate (ln)											
2. Ethnic diversity	-.009										
3. Ethnic polarization	.286	.712									
4. % Immigrant (ln)	.031	-.134	-.013								
5. Homicide rate (ln)	.347	.286	.293	-.403							
6. Real GDP per capita (ln)	.248	-.366	-.069	.530	-.380						
7. Gini index	.324	.276	.238	-.286	.601	-.294					
8. Unemployment rate (ln)	-.228	.293	.039	-.137	.131	-.357	.200				
9. Urban population	.236	-.204	.028	.510	-.199	.695	-.128	-.177			
10. Literacy rate	.395	-.382	-.048	.320	-.190	.672	-.181	-.337	.479		
11. Democracy index	-.052	-.196	-.095	.223	-.278	.595	-.102	.020	.410	.413	
12. Communist	-.024	.082	.098	-.070	.051	-.100	-.051	-.141	-.126	-.067	-.174

Table 3: OLS regression of overall incarceration rates (natural log) on various measures of ethnic composition

	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	b	SE	B	b	SE	B	b	SE	B	b	SE	B	b	SE	B	b	SE	B
Ethnic diversity	.202	.223	.074	2.403**	.834	.874	-	-	-	-	-	-	-	-	-	-	-	-
Ethnic diversity ²	-	-	-	-2.618**	.958	-.864	-	-	-	-	-	-	-	-	-	-	-	-
Ethnic polarization	-	-	-	-	-	-	.466*	.213	0.162	.680	.871	.237	-	-	-	-	-	-
Ethnic polarization ²	-	-	-	-	-	-	-	-	-	-.215	.849	-.077	-	-	-	-	-	-
% Immigrant (ln)	-	-	-	-	-	-	-	-	-	-	-	-	-.013	.044	-.028	.033	.056	.070
% Immigrant (ln) ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-.029	.022	-.151
Homicide rate (ln)	.161**	.053	.288	.138**	.052	.247	.145**	.052	.259	.144**	.053	.258	.193***	.051	.333	.172**	.054	.297
Real GDP per capita (ln)	.194*	.082	.332	.182*	.080	.312	.184*	.081	.315	.185*	.081	.317	.110	.086	.188	.126	.086	.216
Gini index	.019**	.006	.287	.020***	.006	.290	.019**	.006	.277	.019**	.006	.280	.016**	.006	.231	.018**	.006	.256
Unemployment rate (ln)	-.066	.062	-.089	-.045	.061	-.061	-.061	.060	-.082	-.062	.061	-.084	-.014	.062	-.018	-.026	.063	-.033
Urban population	.001	.003	.036	.001	.003	.022	.001	.003	.023	.001	.003	.025	.004	.003	.113	.004	.003	.119
Literacy rate	.014***	.004	.382	.011**	.004	.297	.014***	.004	.369	.014***	.004	.365	.018***	.004	.447	.018***	.004	.444
Democracy index	-.007**	.002	-.03	-.007**	.002	-.283	-.007*	.002	-.292	-.007**	.002	-.293	-.008***	.002	-.306	-.008***	.002	-.319
Communist	-.226	.526	-.032	-.262	.511	-.037	-.300	.517	-.042	-.294	.520	.041	-.098	.406	-.017	.044	.419	.008
Intercept	1.426*	.670		1.476*	.650		1.436*	.646		1.392*	.671		1.841**	.682		1.747*	.684	
n		115			115			115			115			132			132	
Adjusted R2		.426			.459			.447			.442			.406			.409	

*p < .05, **p < .01, ***p < .001

Table 4: OLS regression simultaneously modeling multiple measures of ethnic composition

	Model 7			Model 8		
	b	SE	B	b	SE	B
Ethnic diversity	2.458**	.841	.894	-	-	-
Ethnic diversity ²	-2.659**	.963	-.878	-	-	-
Ethnic polarization	-	-	-	.476*	.214	.166
% Immigrant (ln)	-.029	.045	-.061	-.023	.045	-.048
Homicide rate (ln)	.135*	.052	.241	.142**	.053	.255
Real GDP per capita (ln)	.201*	.086	.345	.199*	.086	.341
Gini index	.019**	.006	.276	.018**	.006	.266
Unemployment rate (ln)	-.034	.063	-.046	-.052	.063	-.070
Urban population	.001	.003	.029	.001	.003	.029
Literacy rate	.011**	.004	.300	.014***	.004	.371
Democracy index	-.007**	.002	-.293	-.007**	.002	-.299
Communist	-.285	.541	-.040	-.317	.520	-.044
Intercept	1.330	.690		1.327	.682	
n		115			115	
Adjusted R2		0.456			.443	

*p < .05, **p < .01, ***p < .001

Figure 1: Curvilinear relationship between actual incarceration rates and ethnic diversity

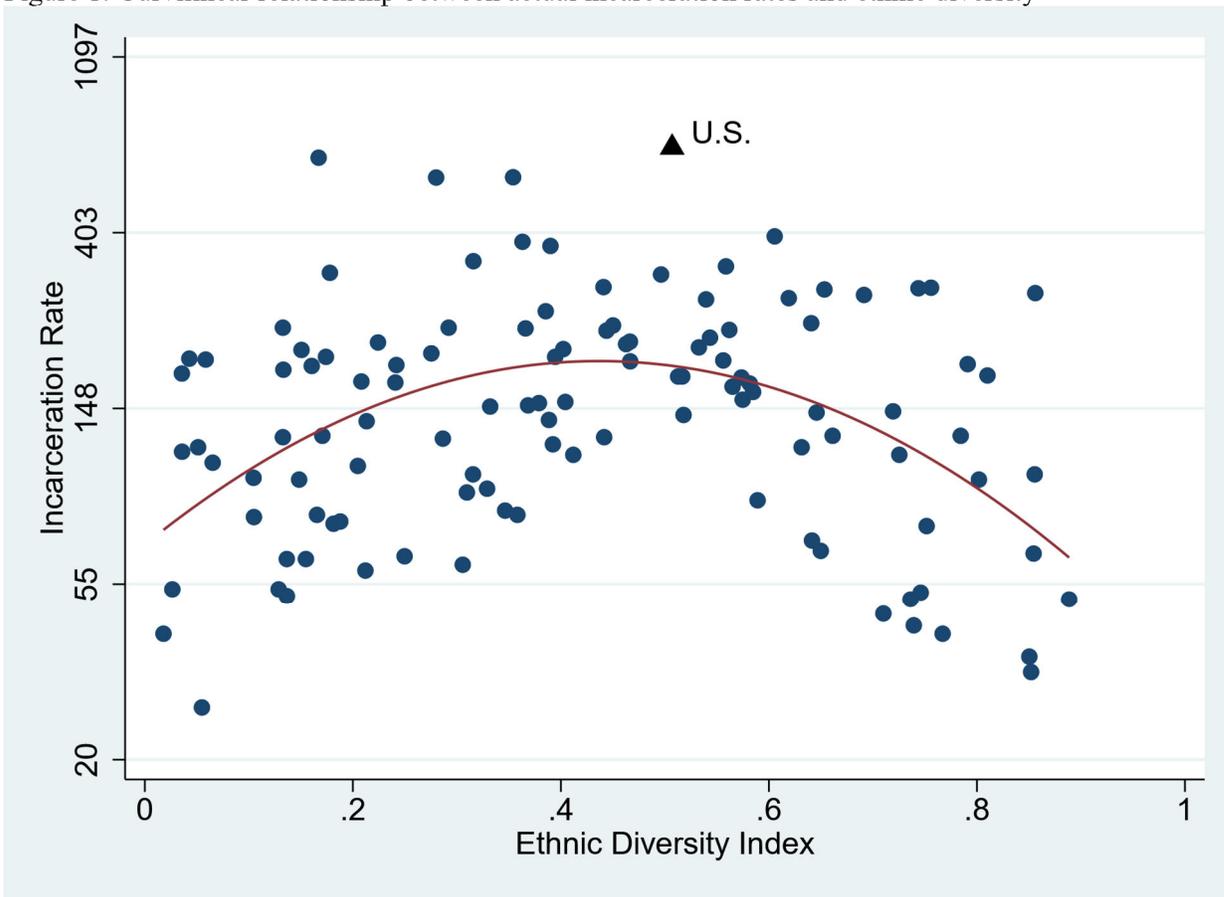


Figure 2: Scatterplot of predicted incarceration rates by ethnic diversity and predictive margins with 95% confidence intervals

