

Hispanic Suicide in U.S. Metropolitan Areas: Examining the Effects of Immigration, Assimilation, Affluence, and Disadvantage¹

Tim Wadsworth
University of New Mexico

Charis E. Kubrin
George Washington University

This study examines the structural correlates of Hispanic suicide at the metropolitan level using Mortality Multiple Cause-of-Death Records and 2000 census data. The authors test competing hypotheses regarding the effects of immigration, assimilation, affluence, economic disadvantage, and ethnic inequality on suicide levels for Hispanics as a whole and disaggregated by immigrant status. The findings point to multiple forces and complex relationships among social structure, culture, and Hispanic suicide. The findings also suggest that these factors have unique effects on native-born versus immigrant populations. This is the first study to determine the structural correlates of suicide among Hispanics and to assess the macrolevel influence of immigration and cultural assimilation on ethnic-specific suicide.

The study of race, ethnicity, and suicide dates back to the work of Durkheim ([1897] 1951), who convincingly demonstrated that neither heredity nor “organic disposition” accounts for the fact that suicide rates vary by nationality, race, and ethnicity. Over 30 years later in her comparison of suicide levels in Europe and the United States, Cavan (1928, p. 37) arrived at a similar conclusion when she noted, “The data presented seem to frustrate conclusively the assertion that suicide is the result of innate

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temperamental traits which characterize races.” These findings and the larger argument that suicide “must necessarily depend upon social causes and be in itself a collective phenomenon” (Durkheim 1951, p. 145) has had a great impact on sociology. Researchers continue to document variation in suicide rates for members of different racial/ethnic groups and investigate whether such variation may be linked to elements of social structure. Following Durkheim’s lead, the emphasis often has been on the structural and cultural processes that engender social integration. While progress has been made, there are important uncharted areas that still warrant inquiry.

In particular, studies of the link between race/ethnicity and suicide over the last several decades have focused almost exclusively on the correlates of suicidal behavior for whites and blacks (Almgren et al. 1998; Burr, Hartman, and Matteson 1999; Gibbs 1997; Kubrin, Wadsworth, and DiPietro 2006; South 1984; Stack 1996; Stockard and O’Brien 2002; Watt and Sharp 2002), while much less attention has been directed toward determining the factors associated with suicide among Hispanics and other immigrant groups.² In addition to the importance of studying suicide among the largest and most rapidly growing minority group in the United States, three key issues make the examination of Hispanic suicide critical for developing a sociological perspective of race/ethnicity and suicide.

First, at least 50% of U.S. Hispanics are immigrants (Porter 2003). As such, studying this population allows researchers to consider the effects of immigration and cultural assimilation on suicide. These processes have significant implications for social integration—a key factor noted by Durkheim (1951) and others in the suicide literature (Cavan 1928, p. 37; see especially Baller and Richardson 2002). Second, aspects of Hispanic economic mobility have been similar to that of blacks and other minority groups (Almgren et al. 1998, p. 1474), yet Hispanics experience different patterns of immigration, assimilation, and labor market participation. This raises the question of whether economic disadvantage and ethnic inequality will impact suicide rates for Hispanics as it does for other groups (Almgren et al. 1998; Burr et al. 1999; Kubrin et al. 2006). Of related interest is whether patterns of immigration and assimilation exacerbate or mitigate the anomic conditions of poverty and inequality. Finally, Hispanics have low suicide rates, often less than half those of

² There is a debate in the Spanish-speaking community over the use of the terms Hispanic and Latino/a (*Washington Post*, August 25, 2003, p. A1, 5). We have chosen to use “Hispanic” based on a 2002 survey conducted by the Pew Hispanic Center, which found that 53% of Spanish speakers find either term acceptable, 34% favor “Hispanic,” and 13% prefer “Latino/a.” We do recognize, however, that there is not consensus on which term is most appropriate. See Martínez (2002, pp. 36–41) for an in-depth discussion of these issues.

whites (Sorenson and Golding 1988). As with researching suicide among blacks—another group with low rates—studying Hispanics is critical for understanding the culturally or ethnically based protective factors that deter suicide.

This study investigates these issues by examining four critical questions: (1) How do patterns of immigration and assimilation influence Hispanic suicide rates? (2) What is the relationship between economic disadvantage, affluence, and ethnic inequality and suicide levels for Hispanics? (3) To what degree do other factors such as residential mobility, family disruption, urbanization, and the size of the immigrant population from major sending countries contribute to suicide among this population? and (4) Do these patterns differ for foreign-born and native Hispanics? We address these questions using data from Mortality Multiple Cause-of-Death Records and the census to determine the socioeconomic, cultural, and demographic correlates of Hispanic suicide in U.S. metropolitan areas. To our knowledge, this is the first study to examine the structural correlates of suicide among Hispanics and, more broadly, to explore the macrolevel effects of immigration and cultural assimilation.

THEORETICAL BACKGROUND

Immigration, Assimilation, and Suicide

Explanations for suicide rates typically point to varying aspects of social structure and social organization, and attempt to identify those factors closely linked to social integration—a key predictor of the geographic patterning of suicide (Baller and Richardson 2002, pp. 885–86).³ Of unique importance for Hispanics are processes of immigration and cultural assimilation, as many are immigrants. This has significant implications for language skills, citizenship, and other aspects of cultural assimilation, factors we argue are quite relevant but that have been given little attention in the suicide literature.

Immigration refers to the relocation of an individual or population from their country of birth to a new country. Its measurement has been straightforward—whether an individual was born outside of the United States or the percentage of individuals in a geographic area who are foreign born. Assimilation refers to “the decline, and only at some ultimate endpoint the disappearance, of an ethnic distinction and its allied differences” (Alba and Nee 1997, p. 7). The process by which ethnic differences are

³ It is important to recognize the comprehensive literature on suicide at the individual level. Individual-level studies reference a range of theories on suicide; however, many of these studies are not reviewed in this article, given its aggregate focus.

attenuated as individuals and groups become more involved in mainstream culture can be identified in both immigrant and subsequent native-born generations.⁴ Measures of assimilation have included indicators of language usage and proficiency, citizenship, spatial concentration of ethnic groups, and interethnic social relations (Oh, Koeske, and Sales 2002; Portes and Hao 2002; Young 2003). While empirically distinct, they measure a common latent construct—the degree to which individuals or groups have developed human, social, and/or cultural capital that can be used to further embed themselves in mainstream culture. The varying consequences of this embeddedness provide the foundation for arguments that relate immigration and assimilation to ethnic-specific suicide. These arguments have focused almost exclusively on processes at the individual level, but here we explore their utility for explaining Hispanic suicide rates across metropolitan areas.

How might immigration and assimilation influence suicide? Regarding the former, Kushner (1989) argues that immigrants are at higher risk because of the economic and emotional stress that accompanies uprooting and relocating (see also Sorenson and Shen 1996). When immigrants arrive in a new city without emotional support systems, economic resources, or the ability to effectively connect with friend or kinship networks, they are more likely to experience alienation and loneliness, which in extreme cases may result in suicide. At the individual level, this suggests that foreign-born residents will be more likely to commit suicide than their native-born counterparts. By aggregating individuals, we would expect areas with more foreign-born residents to experience more suicide. However, the influence of immigration may have a contextual component; the experiences of individual immigrants may be conditioned by the size of the immigrant population in the area to which they move. Immigrants may be at a lower risk of suicide if they live in areas with large immigrant populations, as the presence of others from similar backgrounds can ease alienation and facilitate social networks. If this is the case, we would expect suicide rates to be higher for foreign-born residents, but that this difference would be attenuated in areas with high immigrant concentration.

In contrast to Kushner's claims, others have suggested that immigrants have a lower risk of suicide than native-born Hispanics (Sorenson and Shen 1996). This is in line with the "healthy immigrant" thesis, which

⁴ Our use of the term "mainstream" does not suggest that there is one monolithic U.S. culture. We recognize the cultural diversity that exists both across and within racial and ethnic groups, but we use the term "mainstream" to capture the ideological, linguistic, and educational norms and beliefs that dominate U.S. culture. The adoption of these norms and beliefs contributes to the development of social and cultural capital, critical for upward mobility.

states that individuals choose or are selected by their families and communities to emigrate based on their likelihood of success in the new country (Hayes-Batista, Schink, and Chapa 1988; Stephen et al. 1994). Given this perspective, immigrants should commit suicide less often because of their above-average mental and physical health. Thus, we would anticipate lower rates of foreign-born suicide and lower rates of Hispanic suicide in those metropolitan areas where immigrants comprise a large percentage of the Hispanic population.

Similar arguments have been made regarding assimilation; however, most of this work has focused on mental health more broadly (Rogler, Cortes, and Malgady 1991, p. 585). A meta-analysis of 30 empirical studies found evidence for a positive relationship between assimilation and poor mental health, indicating that immigrants have mental health advantages over U.S.-born Hispanics (Rogler et al. 1991, p. 588). In addition to its effects on mental health, assimilation may influence suicide in less direct ways. For instance, individuals that are less assimilated in terms of language skills, employment networks, and other manifestations of social and cultural capital are at a higher risk of economic disadvantage. With some exceptions, Hispanics are less likely to be educated, more likely to be poor, and more likely to be on the periphery of the labor market than are whites (U.S. Bureau of the Census 1993). Without becoming more assimilated through the development of human, social, and cultural capital, upward mobility is difficult. As discussed in the subsequent section, economic disadvantage may increase a sense of despair or hopelessness, potentially resulting in increased suicide risk. In other words, assimilation may reduce strain for Hispanics by improving their economic position. Assimilation may also increase Hispanics' abilities to avail themselves of both formal (e.g., teachers and counselors) and informal (e.g., coworkers and ministers) support and information when needed (Zayas et al. 2000). Obtaining such support may be especially difficult for temporary and undocumented migrants who tend to be less assimilated.

Assimilation may not, however, be an entirely beneficial process. Some scholars suggest that a host of potentially protective factors are more likely to be present in less assimilated, more culturally isolated Hispanic communities. These protective factors stem from heritage-specific institutions that act as a deterrent to suicide (e.g., Catholicism,⁵ a communitarian

⁵ The focus on denominational affiliation dates back to the work of Durkheim (1951), who argued that areas with large Catholic populations had lower suicide rates because of the integrating forces of the Catholic Church. Both belief and involvement in Catholicism may be an important source of variation in Hispanic suicide levels in contemporary U.S. metropolitan areas. Unfortunately, there are no data available on Hispanic religious identity, belief, or church attendance at the aggregate level, and overall (non-ethnic-specific) adherence is not a good proxy for Hispanic adherence, as

cultural identity, etc.) as well as cultural bonding, family networks, and neighborhood integration that results from immigrants moving into the same area. Horowitz (1983), for example, suggested that two values heavily stressed in the Mexican culture—family honor and the importance of family ties—may help explain their low rate of suicide. Consistent with this, in his examination of Latino homicide, Martinez (2002, p. 6) notes “the most plausible explanation for Latino homicide patterns being lower than expected is the strength of Latino immigrants and immigrant communities, which buffer Latinos from criminal activity.” These protective factors also likely buffer residents from suicide. At the same time, Horowitz (1983) noted that the power of these traditions diminished as native-born Mexican Americans have assimilated into U.S. culture.

In addition to attenuating protective cultural factors, aspects of U.S. culture may serve as aggravating forces for suicidal thoughts and behaviors. Scholars have long noted individualism, competition, and mobility as essential components of the American ethos (Merton 1938; Messner and Rosenfeld 2001), and the adoption of this philosophy likely accompanies assimilation. These characteristics of mainstream American culture may increase anomie. In discussing the increase in suicide among African-Americans, Jedlicka, Shin, and Lee (1977, p. 454) characterized suicide as “another and less welcome indication of assimilation into the general stream of American society.”

In thinking about immigration and assimilation, it is necessary to recognize that international relocation is not always permanent. Researchers have documented that some Hispanic immigrants, especially Mexicans, move back and forth between the United States and their country of origin. Massey and Zenteno (2000, p. 781), for example, report that roughly 4% of Mexicans over the age of 12 have migrated temporarily to work in the United States and stay an average of 21 months. Research on Mexicans has also documented a shift from a pattern of temporary migration toward a transnational migration system in which migrants settle abroad but sustain significant ties with their places of origin (see, e.g., Roberts, Frank, and Lozano-Asencio 1999). As the growing literature on transnationalism indicates, sustained social contacts over time and across national borders are becoming increasingly salient for immigrants of all types (Portes, Guarnizo, and Landolt 1999), with potentially serious implications for assimilation and ethnic identity formation (see, e.g., Rumbaut 1994 and Wolf 2002). Thus, we would expect immigrants in com-

the size of the Hispanic population in many MSAs is too small to be accurately represented by the general statistic. We attempt to control for the variation in Catholic adherents by including measures of the percentage of immigrants who are from Mexico, Puerto Rico, Cuba, and the Dominican Republic.

munities with high levels of transnationalism to be less assimilated into U.S. culture, given strong ties to their country of origin.

Individual-level findings from the few empirical studies on the relationship between immigration and assimilation and suicide are consistent with Horowitz's and Jedlicka et al.'s speculation. Sorenson and Golding (1988) found that after controlling for age and gender, Mexican Americans born in Mexico displayed significantly lower suicide levels than Mexican Americans born in the United States, with the lowest levels documented among those least assimilated into U.S. culture. Moreover, rates of both groups were significantly lower than those of non-Hispanic whites—arguably the most assimilated group. Examining 32,928 California death certificates from 1970 to 1992, Sorenson and Shen (1996) observed that young Hispanics born outside the United States are at a lower risk of suicide than their U.S.-born counterparts. If assimilation of second and subsequent generations attenuates the protective influence of social and cultural institutions and increases aggravating factors present in the American ethos, we predict that metropolitan areas with low levels of assimilation will experience lower rates of Hispanic suicide.

Assimilation may also condition the effect of economic disadvantage and ethnic inequality, both of which are generally associated with increased suicide rates (see discussion in the following section). For instance, in areas where Hispanics are less assimilated, and thus do not frequently interact with whites, there may be less comparison and frustration over ethnic inequalities. Inequality thus might less likely influence suicide. Likewise, economic disadvantage may be less salient among more isolated populations. Poverty may be more manageable, and less emotionally and physically challenging, in cities with isolated tight-knit Hispanic communities than in those areas where the traditional networks and cultural institutions have begun to give way to more mainstream social and cultural involvement.

As noted, there are arguments that advocate both the aggravating and mitigating role of immigration and assimilation on suicide, with implications for native-born and immigrant populations. For the most part, these arguments are framed at the individual level. In fact, we know of no other study that has empirically examined the relationship between immigration and assimilation and suicide across geographic areas for any racial or ethnic group. This is problematic in that isolation and alienation—key predictors of suicide rates—are likely determined, in part, by community levels of immigration and assimilation. Our focus on how these forces shape integration connects contemporary work on race and ethnicity, economic structures, and cultural influences with earlier sociological work on suicide.

Socioeconomic Structural Conditions and Suicide

Economic Disadvantage and Affluence

A common explanation for variation in suicide rates focuses on the role of economic structural conditions. Economic well-being is often identified as the critical factor, although there is some disagreement as to the nature of its influence. The social status hypothesis, an important feature of Henry and Short's (1954) frustration-aggression thesis, maintains that more affluent individuals have fewer external restraints and less social regulation, and thus are more likely to commit suicide. In contrast, members of more disadvantaged groups are apt to express frustration about their low status through externalized violence. Such claims have been used to explain the relatively high suicide rate among whites compared to blacks, the increase in black rates over time as their SES improved, and the relatively high homicide rate among blacks compared to whites. Some support for this argument exists (Hamermesh 1974; South 1984; Stack and Wasserman 1995).

More recently, however, an alternative hypothesis regarding economic disadvantage and suicide is gaining support. This hypothesis has developed, in part, from research on physical and mental health as well as from recent work in urban sociology. Research in medical sociology demonstrates that SES and psychological distress are inversely related (Morrow and Ross 1989; Umberson 1993), and the negative relationship between SES and mortality is also well established (Williams and Collins 1995). In terms of psychological well-being, Ellison (1993), for example, finds that personal mastery and self-esteem are positively related to both educational level and personal income, while Williams, Takeuchi, and Adair (1992) document a negative association between SES and psychiatric disorder. If one accepts the assumption that some suicides are the result of poor mental health, this literature suggests an alternative argument—with material deprivation, the risk of suicide increases in part because of poorer mental health and psychological well-being (Burr et al. 1999, p. 1053). Williams and Flewelling (1988, p. 423) explain the connection between absolute poverty and psychological well-being: "It is reasonable to assume that when people live under conditions of extreme scarcity, the struggle for survival is intensified. Such conditions are often accompanied by a host of agitating psychological manifestations, ranging from a deep sense of powerlessness and brutalization to anger, anxiety and alienation." Conversely, when individuals are affluent they are much less likely to experience stresses of this nature.

Recent work by urban sociologists further develops this argument. Negative psychological conditions become exacerbated when poverty is linked with other economic and social disadvantages including unemployment

and family disruption. Acute disadvantage creates an environment in which the tendency toward deviant behavior is high (Almgren et al. 1998; Anderson 1999; Sampson and Wilson 1995). Scholars maintain that this disadvantage leads to social isolation (Bruce, Roscigno, and McCall 1998; Krivo and Peterson 1996) or “the lack of contact or of sustained interaction with individuals and institutions that represent mainstream society” (Wilson 1987, p. 60). Social isolation and the experience of living within the confines of extremely impoverished environments can create a sense of hopelessness among residents (Bruce et al. 1998), which may lead to psychological states such as nihilism. It has been proposed that nihilism and a lack of hope for the future likely mediate the relationship between structural disadvantage and suicide (Kubrin et al. 2006).

Along these lines, scholars have focused primarily on deviance among blacks, arguing that the alienation of the black poor from mainstream society has resulted in the emergence of a subculture within urban ghettos often characterized by hostility, aggression, defiant individualism, and a general devaluation of human life (Anderson 1999; Jankowski 1991; Kubrin and Weitzer 2003; Sampson and Wilson 1995). In contrast, although not comparable to middle-class white communities on most dimensions, middle-class minority communities are less segregated and isolated, provide greater opportunities for residents, and are not dominated by a street culture; as a result, they witness less crime and deviance (Alba, Logan, and Stults 2000, p. 556; Anderson 1990, p. 158). The interaction between structural disadvantage and cultural isolation in creating deviant behavior is emphasized by Sampson and Wilson (1995, p. 50), who argue that “structurally disorganized communities are conducive to the emergence of cultural value systems and attitudes that seem to legitimize . . . deviance.”

A smaller but important literature has uncovered similar findings for Hispanics. Ethnographic research in a Chicago Mexican community with high poverty reveals a “code of honor” that influences violence among residents, particularly males (Horowitz 1983). And Bourgois (2003, p. 8) notes that the harsh conditions residents of El Barrio (East Harlem, New York City) face on a regular basis have “spawned ‘inner-city street culture’: a complex and conflictual web of beliefs, symbols, modes of interaction, values, and ideologies that have emerged in opposition to exclusion from mainstream society.” This street culture, in turn, “embroils most of its participants in lifestyles of violence, substance abuse, and internalized rage” (p. 9). This “oppositional subculture” is not a consequence of the racial or ethnic makeup of a given locality but reflects the local opportunity structure; Martinez (2002, p. 89) notes, “The implication is that this process has nothing to do with ethnicity per se but rather mirrors the local milieu” (see also Bruce et al. 1998, p. 32).

Although these scholars examine crime, there is reason to believe that economic disadvantage may affect suicide. As stated earlier, structural disadvantage can lead to alienation and social isolation, factors long associated with suicide (Baller and Richardson 2002; Durkheim 1951). Indeed there is now empirical evidence that this is true, at least for other racial groups. Kubrin et al. (2006) found that cities with more poverty, joblessness, and family disruption had higher young black and white male suicide rates, controlling for other factors. Such a finding raises an interesting paradox—disadvantage within black and white communities increases suicide, yet suicide rates for blacks are lower than for whites despite comparatively higher disadvantage levels. This paradox may also exist for Hispanics.⁶

Still, it is not clear that acute disadvantage will impact Hispanic suicide rates in a manner consistent with these predictions. For one thing, while Hispanic poverty levels are quite high, joblessness is not particularly widespread among this population; scholars note that Hispanics have a relatively strong attachment to the economy through low-paying but fairly stable jobs. Martinez (2002, p. 133) argues that “attachments to the world of work even through subsistence-paying jobs are part of the bond that fortifies Latino communities and helps them absorb the shock of widespread poverty.” Hispanics also experience lower rates of family disruption, a characteristic associated with poverty and other social ills. These statistics, which suggest that poor Hispanics are more socially integrated than might otherwise be the case, indicate that traditional economic explanations may be less applicable for understanding suicide among this population.

There is also reason to believe that the effects of economic disadvantage may vary depending on the immigrant status of Hispanics. In particular, economic disadvantage may particularly affect suicide rates among the foreign born. Immigrants often arrive in the United States with little money, few social networks, and in need of employment. As noted earlier, the process of immigration is inherently stressful and often occurs without a well-developed support system (Sorenson and Shen 1996, p. 143). Exacerbating these stresses, upon arrival, immigrants typically inhabit the most socially disorganized communities characterized by poverty and lim-

⁶ Researchers offer a variety of responses to explain why blacks have lower suicide rates than whites, many of which point to the role of integration. Aside from economic well-being, there are other factors that encourage community integration and create or reinforce norms against suicide such as extended family networks, church participation, and community involvement (Gibbs 1997). Although this argument has been applied primarily to blacks, the same logic may explain lower Hispanic suicide rates compared to whites, despite higher levels of disadvantage. We explore this possibility in the subsequent section.

ited economic opportunities (Martinez 2002, p. 15). Moreover, as immigrants operate within the dominant culture, they may experience discrimination in the form of social inequalities and injustices, blocked opportunities, negative stereotyping, and structural barriers (Samaniego and Gonzales 1999; Vega et al. 1993)—discrimination that is less prevalent for their more assimilated counterparts. In short, the stresses associated with moving to another country coupled with the challenges of economic survival suggest that the effects of economic disadvantage on suicide may be especially pronounced for Hispanic immigrants.

On the other hand, it may be that economic disadvantage is less problematic for foreign-born Hispanics, in part because they typically emigrate from relatively poorer communities in their country of origin. Most immigrants fare better economically when relocating to the United States, and even though they move to areas characterized by poverty and limited economic opportunities, these areas are still better off than their communities back home. The impact of disadvantage, therefore, may not be as salient for foreign-born Hispanics who perceive their current situation as better than it was previously. In other words, there may be no significant difference across immigrant and foreign-born populations.

In sum, in contrast to Henry and Short's argument that the high degree of regulation associated with poverty should decrease suicide, economic disadvantage is hypothesized to increase suicide by augmenting residents' strain and social isolation from mainstream society. Of course it is also possible that both propositions could be supported if high levels of both affluence and poverty lead to greater suicide. Recent support for a disadvantage-suicide relationship has emerged for blacks (Almgren et al. 1998; Burr et al. 1999; Kubrin et al. 2006), but it has yet to be determined whether similar findings will result for Hispanics. On the one hand, they resemble blacks in terms of poverty levels and other measures of economic well-being; on the other hand, there are notable differences between the groups with respect to the correlates of poverty (i.e., unemployment and family disruption). Finally, differences between foreign- and native-born Hispanics raise further questions about the possible amplifying effects of disadvantage for immigrants.

Racial/Ethnic Inequality

A second argument for how economic structural conditions may affect suicide posits the crucial factor to be comparative deprivation, or inequality. Again, research in criminology forms the basis for theorizing an inequality-suicide relationship. Here it is argued that economic inequality entails conflict of interest over the distribution of resources, which spells a potential for violence—external or internal (Blau and Blau 1982). Of

particular importance is the extent to which economic distinctions correspond to racial and ethnic distinctions; if the relatively advantaged members of a community are largely of one racial or ethnic group, while the relatively disadvantaged are disproportionately of another, the effects of economic conditions may be especially pronounced (Balkwell 1990). Blau and Blau (1982) note that racial and ethnic inequality creates strong pressures to commit violence, a process that stems from the inherent contradiction between ascriptive inequality and democratic values. Key to this argument is the notion that, in a democratic society, rewards should be distributed in accordance with merit and effort. Thus, persons who receive fewer rewards because of their race or ethnicity are likely to feel resentment, frustration, and hostility. The association between racial or ethnic inequality and externalized violence is well established (Jacobs and Wood 1999; Parker and McCall 1999).

The question remains, however, as to whether such emotional experiences will lead to internalized violence. On one hand, these negative consequences can be linked to Durkheim's concept of anomie, reasoning that inequality leads to a contradiction between norms of fair play and equal opportunity and what is perceived as the unfair reality of everyday life (Burr et al. 1999, p. 1054). As such, inequality may increase suicide by increasing the prevalence of strain, resentment, and alienation within the community. Alternatively, race- or ethnic-based disparity in resource allocation may act to unify an ill-treated group in the face of a common enemy and thus serve as an integrating, rather than alienating, force. If this is the case, inequality may have an inhibitive, not aggravating, effect on Hispanic suicide, similar to the explanation Durkheim offered for the low suicide rate among European Jews at the end of the 19th century.

Currently, research on the association between inequality and suicide has focused only on African-Americans, and the results are mixed. Some scholars find a positive relationship between inequality and suicide (Burr et al. 1999), others document a negative relationship (South 1984), and still others report that once additional key correlates are considered, especially measures of absolute deprivation, no relationship exists (Kubrin et al. 2006). Extending this research to Hispanics may help more clearly establish the nature of the inequality-suicide link. After all, like blacks, a larger proportion of Hispanics compared to whites "are poor, are singled out for discrimination, compete for low-paying jobs with other ethnic minorities, and reside in impoverished areas often shaped by drugs and gangs" (Martinez 2002, p. 5). It is also possible that given their shared experiences and patterns of segregation, which often result in Hispanic-black mixed neighborhoods, that Hispanics compare themselves with blacks as well as whites. In other words, black-Hispanic inequality may have similar effects to white-Hispanic inequality for similar reasons.

As with poverty, the effects of inequality may vary across immigrant and native-born Hispanic populations. It is reasonable to believe that these groups interpret and experience relative deprivation differently, and that this difference is based in large part upon whom they compare themselves with. For instance, native-born Hispanics may more often compare themselves to whites given they will have spent the majority of their lives in the United States, will be acculturated to a greater degree, and are more likely to communicate with whites given a greater command of English. As a result, this may increase their sense of inequity given fairly substantial white-Hispanic inequality. On the other hand, immigrants may be more likely to treat Hispanics in their country of origin as their reference group. Many immigrants are not permanent residents but move between the United States and their country of origin. Given more extensive contact with family members and friends back home, whites are much less likely to serve as the reference group for foreign-born Hispanics. As such, we might expect any effect of white-Hispanic inequality on suicide—positive or negative—to be stronger among the native-born population. And, as mentioned above, blacks may serve as an important reference group for all Hispanics, or for those living in black-Hispanic mixed neighborhoods. Given patterns of racial and economic segregation, this comparison may be more common among immigrants, who would thus be more affected by black-Hispanic inequality.

In short, Hispanics are more likely to live in absolute and relative poverty as well as to experience discrimination, factors that may encourage (or discourage) suicide. However, next to nothing is known about whether economic structural conditions affect Hispanic suicide, and equally important, whether these effects matter more for immigrant or native-born residents. The current research explores these questions.

Summary of Theoretical Arguments

Arguments concerning the influence of immigration, assimilation, and economic factors on Hispanic suicide rates provide several competing hypotheses. These hypotheses are summarized in table 1.

While a sizeable literature reports the effects of economic factors for other racial and ethnic groups, no studies have established whether economic disadvantage, affluence, or racial and ethnic inequality affect suicide rates among Hispanics or other immigrant groups. Moreover, despite the potential significance of immigration and assimilation for this population, no study has examined the nature and extent of the relationship between these processes and Hispanic suicide. Finally, for both sets of structural factors, there is also the question of whether the effects will

TABLE 1
SUMMARY OF HYPOTHESIZED RELATIONSHIPS BETWEEN STRUCTURAL CHARACTERISTICS
AND HISPANIC SUICIDE

Hypothesized Relationship	Predicted Effect	Explanation
Immigration on suicide	+	Economic and emotional stress due to re-location and lack of social networks
	-	Healthy immigrant thesis
Interaction of immigration and % immigrant population on suicide	-	Immigrants at a lower risk of suicide if they live in areas with other immigrants, as presence of others can ease alienation and facilitate social networks
Assimilation on suicide	+	Internalization of racist cultural norms and stereotypes in host society Attenuation of protective cultural factors Adoption of American ethos of individualism and competition
	-	Less stress from inadequate social networks and unfamiliar cultural dynamics Improved economic position
Economic disadvantage on: Total suicide	+	Poorer mental health and psychological well-being Social isolation, alienation, and nihilism Culture that legitimizes deviance
	0	Participation in informal labor market and relative family stability mitigate effect of disadvantage
Foreign-born suicide	+	Stresses associated with moving combined with challenges of economic survival
	-	Disadvantage not salient for foreign born; current situation better than in country of origin
Economic affluence on suicide	+	Higher SES persons have fewer external restraints and less social regulation
	-	Access to resources and services
Hispanic-white inequality on: Total suicide	+	Inequality creates strain, resentment, frustration for relatively disadvantaged
	-	Disparity unifies a disadvantaged group in face of common enemy
Native-born suicide	+	Native born more likely to compare themselves to whites, are more acculturated, and are more likely to interact with whites
Hispanic-black inequality on suicide	+	Inequality creates strain, resentment, frustration among the relatively disadvantaged

differ across foreign and native-born populations. This study addresses each of these issues.

DATA, METHODS, AND ANALYSES

Dependent Variables

To measure suicide, we use data from the Mortality Multiple Cause-of-Death Records, provided by the Centers for Disease Control and Prevention, National Center for Health Statistics. These records cover all deaths in the United States and include underlying cause and demographic information for each case. We combined the suicides where the deceased was identified as Hispanic (described by the CDC as persons of Mexican, Puerto Rican, Cuban, Central and South American, and other/unknown Hispanic origins). While there is precedent for doing so, grouping individuals from diverse countries under the umbrella of “Hispanic” is not ideal in that this conceptualization ignores the important historical and cultural diversity among individuals from various countries (Martinez 2002, pp. 36–37). Portes and Truelove (1987, p. 359) suggest that “this rubric [Hispanic] did not exist as a self-designation for most of the groups so labeled” but “was essentially a term of convenience of administrative agencies and scholarly researchers.” We agree with this concern. However, because much of the census and suicide data are not disaggregated by ancestral nationality and because Hispanics share many characteristics because of their socioeconomic structural locations in the United States (Torres and Bonilla 1995), we assert that a study of Hispanics overall will inform our understanding of suicide among these groups. Still, we have attempted, wherever possible, to utilize data that begin to explore and account for the heterogeneity within the Hispanic population.

The individual-level data identify the metropolitan statistical area (MSA/PMSA), city, and county where the deceased lived, with one important exception—because of confidentiality concerns, the geographic area of the deceased is not identified if the population of that area is less than 100,000. As a result, we have no city information for 55%, county information for 16%, or MSA information for 12% of the Hispanic suicide victims each year. We chose to aggregate the data to the MSA level to create three counts—total Hispanic suicide, foreign-born Hispanic suicide, and native-born Hispanic suicide. In addition to minimizing missing data, there are compelling reasons for selecting the MSA as the unit of analysis. First, Hispanic populations are not as concentrated in inner-city areas as are other ethnic and racial populations, most notably blacks (U.S. Bureau of the Census 1993). While it is important to consider the urban versus rural character of different metropolitan areas, we believe it would be a

mistake to aggregate Hispanic suicides in a manner that excluded those living outside of central cities. To control for the wide variation in urban and rural territory that exists in some MSAs, we include a variable in the analyses that represents the percentage of the population that lives in urban areas within the MSA (see Burr et al. 1999, p. 1058).⁷ Second, the structural and cultural variables we consider (immigration and cultural assimilation, economic disadvantage and affluence, racial inequality, labor market involvement, among others) operate at the MSA level (Burr et al. 1999). By definition, MSAs include core areas with substantial population centers that are linked with adjacent communities. The adjacent communities are chosen based on their high degree of social and economic integration with the core. Thus, the expectation is that the economic, migratory, and cultural patterns are influential throughout the MSA. Last, Kowalski, Faupel, and Starr (1987, p. 85) found that variables in urban counties tend to have much stronger explanatory power than in rural counties, and conclude that most sociological explanations for suicide apply primarily to metropolitan environments. Despite these advantages, it is important to remember the heterogeneity of metropolitan areas when considering the findings, as concentrations of both structural characteristics and suicides may be unique to subareas within the larger aggregation. As a result of data limitations and to ensure unbiased estimates, we include MSA/PMSAs with populations of 100,000 or more of which at least 1,000 are Hispanic and for which suicide data are available ($N = 269$).⁸

⁷ The census defines “urban areas” as densely settled territories which consist of core census block groups or blocks that have a population density of at least 1,000 people per square mile and surrounding census blocks with an overall density of at least 500 people per square mile. This is not equivalent to “inner-city” areas that have been used in much of the criminological literature. Urban areas within MSA/PMSAs are likely to be more heterogeneous with regard to economic and demographic characteristics than are inner cities.

⁸ We excluded 35 MSA/PMSAs from the analyses. Nine were excluded because they had Hispanic populations of less than 1,000—a criterion we established to ensure that an MSA had sufficient Hispanic representation. The other 26 were excluded because there were no reported suicide data available. Twelve MSAs had populations near but below the 100,000 cut-off point, and the other fourteen simply did not report suicide statistics despite having populations over 100,000. These MSAs ranged in size and racial/ethnic composition, so we do not believe their exclusion affects the pattern of results. Moreover, we compared those MSAs excluded because no suicide data were reported with our sample of 269 MSAs and found they did not differ in terms of Hispanic poverty, joblessness, median family income, linguistic isolation, mobility, immigrant status, etc. We checked for outliers in the regression analyses and deleted three cases with standardized residuals more than three SDs from the mean: Los Angeles–Long Beach, California; Miami, Florida; and Pueblo, Colorado. We reran the analyses without those cases, and the results did not change. We examined other

A potential concern has to do with the validity of official suicide statistics, and in particular, with underreporting as a result of possible misclassification (Warshauer and Monk 1978). An even more relevant concern is the quality of the Hispanic suicide data. Pescosolido and Mendelsohn (1986) analyzed sets of independently collected suicide data for county groups, evaluating the impact of underreporting on standard suicide correlates. They find that the relationships among these variables and official suicide data are not appreciably altered in terms of direction and magnitude of effects as a result of underreporting. Moreover, studies do not find evidence of systematic bias in reporting specific to any race or ethnic group (Nelson, Farberow, and MacKinnon 1978). Smith, Mercy, and Warren (1985, p. 20) investigated the possible effect that misclassification of suicide deaths as deaths due to “undetermined causes” might have had on the differences in the suicide rates for whites and Hispanics and found that the difference could not be explained by a large number of Hispanic deaths being classified as cause undetermined. We therefore argue, along with others, that official suicide data are sufficiently accurate to permit analysis (Burr et al. 1999, p. 1069; Cutchin and Churchill 1999, p. 103; Gibbs and Martin 1964; Kowalski et al. 1987, p. 89; Marshall 1981; Smith et al. 1985).⁹

Following common practice (Burr et al. 1999, p. 1056; Cutchin and Churchill 1999, p. 102), we use counts computed over a four-year period, 1998–2001, to account for the relatively rare nature of suicide and to minimize the impact of annual fluctuations. Even after aggregating the data, suicide is a rare event, and many MSAs have few or no incidents, which results in a heavily skewed distribution that violates the assumptions of ordinary least squares regression. For this reason, we employ negative binomial regression, except in the analysis of foreign-born suicide, where we use Poisson regression given the data are not overdispersed (see Osgood 2000). Negative binomial regression is widely used in suicide (Burr et al. 1999; Kubrin et al. 2006) and homicide research (Wadsworth and Kubrin 2004). As called for, we employ suicide counts instead of rates in the regression models. We include the log of the MSA’s Hispanic pop-

statistics (e.g., Cook’s D and standardized DFBETAs), which also did not indicate problematic outliers. We therefore retain all cases for the analyses.

⁹ A final concern has to do with possible geographic variation in the accuracy of classifying Hispanic suicides over time. In particular, in regions where Hispanics comprise a relatively small percentage of the population (e.g., the Midwest), it may be that there is inconsistency in the classification of Hispanic suicides across years, with some years more accurately reflecting the “true level” of Hispanic suicide compared to others. To test this possibility, we compared yearly Hispanic suicide counts for each region (e.g., Northeast, Midwest, South, and West) from 1998 to 2001. There is remarkable consistency in the number of Hispanic suicides over the four-year period for all regions. The correlation across years in reported Hispanic suicides for the regions was .98.

ulation as the exposure variable (population at risk) and constrain this coefficient to equal 1. Controlling for population size in this way is comparable to analyzing rates (Osgood 2000, p. 33).

Independent Variables

We regress Hispanic suicide counts on the structural characteristics of the MSAs gathered from the 2000 census. The selected characteristics reflect an interest in determining how processes of immigration and assimilation, economic factors, and other indicators of social integration and organization influence Hispanic suicide levels. As some of these concepts are best measured using multiple indicators—both to avoid collinearity and to capture the multidimensionality of the theoretical constructs—we created five indices. The indices were created by summing the equally weighted *Z*-scores of the five significantly correlated sets of indicators (see Nielson, Martinez, and Lee 2005; Sampson, Morenoff, and Earls 1999). The *cultural assimilation* index represents patterns of Hispanic immigration into the MSAs as well as the degree to which foreign- and native-born Hispanics have assimilated into U.S. culture. Specifically, the index includes the size of the native-born Hispanic population (percentage of Hispanics who were born outside of the United States—reverse coded), citizenship status (percentage of Hispanic immigrants who have become U.S. citizens), English language ability (percentage of Hispanics over the age of five who speak English poorly or not at all—reverse coded), household linguistic assimilation (percentage of Hispanic households that are considered to be linguistically isolated—reverse coded),¹⁰ educational integration (percentage of Hispanics ages 25+ that have graduated from high school or have received an equivalency degree), and ethnic residential integration (white-Hispanic index of dissimilarity—reverse coded). Although potentially important, we are unable to measure either the percentage of foreign-born Hispanics who view their move to the United States as temporary or permanent, or the reasons for migrating.

The *Hispanic economic disadvantage* index comprises measures of Hispanic median family income and Hispanic poverty (percentage of Hispanics living below the poverty line). This index represents the economic disadvantage of the Hispanic population in the MSA. The *Hispanic affluence* index represents the degree to which there is a sizeable portion of the Hispanic community that has achieved significant economic and

¹⁰ The census defines linguistically isolated households as households in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English “very well.” In other words, all members 14 years and over have at least some difficulty speaking English.

educational success. The index includes measures of Hispanic high-income households (percentage of Hispanic families with annual incomes over \$75,000) and college-educated Hispanics (percentage of Hispanics over the age of 25 who have graduated from four-year colleges). This index has proven important in previous violence research (Sampson et al. 1999, p. 640).

The remaining two indices represent the relative well-being of the Hispanic population in comparison to the white and black populations. *Hispanic-white inequality* includes indicators of Hispanic-white differences in income (ratio of white to Hispanic median family income), unemployment (ratio of Hispanic to white unemployment rates), joblessness (ratio of Hispanic to white joblessness rates), and poverty (ratio of Hispanic to white poverty rates). The *Hispanic-black* index comprises measures of black-Hispanic differences in income (ratio of black to Hispanic median family income), unemployment (ratio of Hispanic to black unemployment rates), joblessness (ratio of Hispanic to black joblessness rates), poverty (ratio of Hispanic to black poverty rates), and education (black to Hispanic high school graduation rates). Including various measures of inequality is an improvement over previous research that uses more limited measures and only focuses on black-white inequality (Burr et al. 1999; South 1984).

In addition to the five indices, in our models we include measures of Hispanic joblessness (percentage of Hispanics ages 16+ not working),¹¹ the size of the Hispanic population, the size of the black population, Hispanic mobility (percentage of Hispanics ages 5+ who have moved in the last five years), Hispanic divorce (percentage of Hispanic males ages 25+ whose current marital status is “divorced”), and Hispanic single female households (percentage of Hispanic households with children under 18 years headed by single females).

Finally, to begin to control for cultural and historical diversity within the Hispanic population, we included measures of the relative numbers of immigrants from the dominant sending countries—Mexico, Puerto Rico,¹² Cuba, and the Dominican Republic. The literature indicates that

¹¹ While measures of joblessness have often been included in multiple measure constructs representing economic disadvantage, Martinez (2002) and others have argued that joblessness is not as pervasive among poor Hispanic communities and may actually buffer these communities from problems associated with poverty. For this reason, we measure joblessness separately from economic disadvantage.

¹² Puerto Ricans are U.S. citizens by birth, can move back and forth between Puerto Rico and the United States with much greater ease than Hispanics from other countries, and thus are often not considered immigrants in the usual sense. However, given linguistic and cultural differences, their experiences upon moving to the United States are apt to more closely resemble that of immigrants than natives. For this reason, we follow Shai and Rosenwaike (1988) and include Puerto Ricans with immigrant rather than native Hispanic populations.

these subgroups are important, at least at the individual level (Becker et al. 1990; Shai and Rosenwaike 1988; Smith et al. 1985; Sorenson and Golding 1988; Zayas et al. 2000). While these percentages only capture the relative sizes of the immigrant, not native-born, populations, it is likely that the two are correlated. For example, MSAs in which Cubans make up the largest proportion of the Hispanic immigrant population probably also have a larger percentage of native-born Hispanics with Cuban ancestry. Finally, some non-ethnic-specific measures are included in the analyses to control for the effects of MSA size (total population) and region (Northeast, North Central, South, and West, with West as the omitted variable).

After running collinearity diagnostics, we determined that including both region and the percentage of immigrants from dominant sending countries would potentially bias the models. This is because of the geographic concentration of the disaggregated Hispanic immigrant groups. For instance, immigrants in southern California are primarily Mexican, while those in southern Florida are primarily Cuban. Because we believe that cultural distinctions unique to the subgroups are more important in shaping suicide patterns than are regional differences, we dropped the region variables from the models and included variables of the relative sizes of the four largest immigrant groups as well as a fifth group of all “other Hispanic” immigrants. Percentage Mexican immigrants is the omitted category.¹³ In sum, we use measures representing cultural assimilation, economic disadvantage, affluence, ethnic inequality, the size of the Hispanic and black populations, residential mobility, joblessness, divorce, rate of female-headed households, and the country-specific immigrant composition of the Hispanic population, as well as total MSA population and level of urbanization to predict Hispanic suicide counts.

Analyses

The analyses were carried out in three stages. First, we examined the means and standard deviations of all variables, focusing specifically on the dependent variables to discern the difference between immigrant and native-born suicide rates. Second, we regressed the predictors on suicide counts to provide an overarching picture of the correlates of Hispanic suicide and to test the competing theoretical assumptions discussed earlier.

¹³ A remaining issue has to do with potential collinearity between the racial inequality, affluence, and disadvantage factors as well as between the percentage divorced and female-headed household variables. We ran regressions and obtained collinearity diagnostics. Based on the diagnostics, there is no evidence of collinearity (no VIF score was above 2.8).

And third, we examined the effects of these factors on suicide levels of foreign- and native-born Hispanics.

FINDINGS

Descriptive Statistics

Structural and Cultural Characteristics

Means and standard deviations for all variables are presented in table 2. The mean MSA population was 782,341, and the average Hispanic population was 115,720. About 21% of the MSAs were located in the western, 25% in the central, 42% in the southern, and 12% in the northeastern states. On average, 80% of the population lived in urban areas. Considering the structural and cultural measures that may influence suicide, 64% of the Hispanic population had moved in the last five years, 40% were jobless, 11% of the males were divorced, and 22% of families with children were headed by single females.

Focusing on the composite measure of cultural assimilation, on average 24% of Spanish speakers over the age of five spoke English poorly or not at all, 17% of the households were linguistically isolated, 39% of Hispanics had been born outside of the United States, 28% of those who were foreign born had become U.S. citizens, and 60% of the Hispanic population had graduated from high school. The average white-Hispanic index of dissimilarity score was 39.3. Concerning Hispanic economic disadvantage, the mean poverty rate was 22%, and the median family income was \$35,039. In contrast, measures of affluence showed that an average of 13% of Hispanic households earned over \$75,000 a year, and 14% of Hispanic adults had graduated from college. Not surprisingly, measures of white-Hispanic inequality demonstrate a significant degree of inequality. On average, Hispanics were 1.1 and 1.8 times as likely to be jobless and unemployed, respectively, when compared to whites. Their poverty rates were 2.8 times as high as those of whites, and the median family income of whites was, on average, 159% that of Hispanics. Inequality between blacks and Hispanics was not as pronounced. Hispanic median family income was 104% that of blacks, and their rates of joblessness and unemployment were only 75% and 76% that of blacks. Finally, Hispanic poverty rates were 88% those of blacks, but blacks graduated from high school 1.29 times as often as did Hispanics.

Turning to the country-of-origin immigrant subgroups, on average 56% of Hispanic immigrants were from Mexico, 13% from Puerto Rico, 3% from Cuba, and 2% from the Dominican Republic. The mean proportion of Hispanic immigrants who came from other countries was 25%.

Differences in Suicide by Immigrant Status

To begin to understand how immigration and assimilation affect suicide, we examined total, immigrant, and native-born Hispanic suicide counts. Average four-year counts (annual rates per 100,000 population follow in parentheses) were 22.3 (4.9) for all Hispanics, 9.9 (5.4) for foreign-born Hispanics, and 12.4 (5.0) for native-born Hispanics. (As a comparison, for the same time period, the average suicide rate for whites was 13.53 while the average rate for blacks was 7.12.) Across U.S. metropolitan areas, Hispanic immigrants commit suicide at a higher rate than their native-born counterparts. The outcome of a Wilcoxon Signed Ranks Test for nonparametric samples indicates that the difference between the foreign- and native-born rates is statistically significant ($Z = 2.60$; $P < .01$). While inconsistent with some individual-level research (Sorenson and Golding 1988; Sorenson and Shen 1996), this finding supports Kushner's argument that the stress of immigration may create higher suicide rates for foreign-born populations. This finding also questions the claim that important protective factors stemming from country of birth will provide a strong deterrent to suicide for immigrants.

To begin to explore how immigration patterns condition foreign- and native-born suicide rates, we divided the sample of MSAs in half based on the percentage of the Hispanic population that was foreign born (the cutoff point was 39%). Areas with less than 39% of foreign-born Hispanics were considered to have low immigrant concentration, and MSAs in which 39% or more of the Hispanic population was foreign born were considered to have high immigrant concentration. We then compared average suicide rates for immigrant and native-born Hispanics in the high and low immigrant areas. The results were consistent with the argument that the presence of other foreign-born Hispanics can mitigate the stress associated with immigration. Immigrants had a higher suicide rate than natives only in areas with lower immigrant concentration (7.1 vs. 5.4). In MSAs with greater immigrant concentration, which could facilitate the development of support networks, foreign-born Hispanics had lower suicide rates than their native-born counterparts (3.7 vs. 4.6). A *t*-test for equality of means indicates the differences are statistically significant ($t = 1.68$; $P < .05$). These findings confirm differences in suicide rates for foreign- and native-born Hispanics and suggest that MSA context shapes these differences. To fully address these issues, we turn to the regression results.

The Cultural and Structural Predictors of Hispanic Suicide

Table 3 displays the negative binomial regression results of the structural and cultural factors associated with Hispanic suicide. Cultural assimila-

TABLE 2
VARIABLE NAMES, DESCRIPTIONS, AND DESCRIPTIVE STATISTICS, $N = 269$

Hispanic Suicide Counts	Variable Description	Mean	SD
Total Hispanic suicide	Suicide counts all Hispanics	22.3 (4.91)	62.7 (4.41)
Native-born Hispanic suicide	Suicide counts Hispanics born in U.S.	12.4 (4.99)	31.5 (5.42)
Foreign-born Hispanic suicide	Suicide counts Hispanics immigrated to U.S.	9.9 (5.42)	36.9 (11.19)
Demographic and structural variables:			
Population	Population MSA/PMSA	782,341	1,229,561
Hispanic population	No. Hispanics in MSA/PMSA	115,720	352,719
Black population	No. blacks in MSA/PMSA	104,494	231,628
Native-born Hispanic population	No. native-born Hispanics in MSA/PMSA	63,508	180,590
Foreign-born Hispanic population	No. foreign-born Hispanics in MSA/PMSA	52,211	178,807
Hispanic mobility	% Hispanics ages 5+ that have moved in last five years	64%	9%
Hispanic joblessness	% Hispanics ages 16+ unemployed or out of labor market	40%	7%
Hispanic divorce	% Hispanic males ages 25+ whose current marital status is "divorced"	11%	3%
Hispanic female-headed households	% Hispanic households with children under 18 that are headed by single females	22%	8%
Urbanization	% MSA/PMSA population that lives in urban areas	80%	12%
% foreign born from Mexico	% Hispanic immigrants born in Mexico	56%	29%
% foreign born from Puerto Rico	% Hispanic immigrants born in Puerto Rico	13%	17%
% foreign born from Cuba	% Hispanic immigrants born in Cuba	3%	5%
% foreign born from Dominican Republic	% Hispanic immigrants born in Dominican Republic	2%	4%
% foreign born from other Hispanic countries	% Hispanic immigrants born in other Hispanic countries	25%	16%
Northeast	0 = non-northeast location; 1 = northeast location	12%	32%
Central	0 = non-central location; 1 = central location	25%	43%
West	0 = non-western location; 1 = western location	21%	41%
South	0 = non-southern location; 1 = southern location	42%	50%

Cultural assimilation:			
English language ability	% Spanish speakers who speak English poorly or not at all	24%	8%
Household linguistic isolation	% households in which no members ages 14+ speak English well	17%	7%
% Hispanics that are foreign born	% Hispanics born outside U.S.	39%	14%
Immigrant citizenship	% Hispanic immigrants who have become U.S. citizens	28%	10%
Hispanic educational achievement	% Hispanics ages 25+ who have graduated from high school	60%	13%
White/Hispanic index of dissimilarity	Ethnic residential segregation	39.3	10.8
White/Hispanic inequality:			
White/Hispanic median family income	Ratio white/Hispanic median family income	1.59	.27
Hispanic/white poverty rate	Ratio Hispanic/white poverty rates	2.77	.86
Hispanic/white unemployment rate	Ratio Hispanic/white unemployment rates	1.84	.69
Hispanic/white joblessness rate	Ratio Hispanic/white joblessness rates	1.10	.26
Black/Hispanic inequality:			
Black/Hispanic median family income	Ratio black/Hispanic median family income	.96	.22
Hispanic/black poverty rate	Ratio Hispanic/black poverty rates	.88	.28
Hispanic/black unemployment rate	Ratio Hispanic/black unemployment rates	.76	.58
Hispanic/black joblessness rate	Ratio Hispanic/black joblessness rates	.75	.18
Black/Hispanic high school graduation rate	Ratio black/Hispanic high school graduation	1.29	.32
Hispanic disadvantage:			
Hispanic median family income	Hispanic median family income	\$35,039	\$6,596
Hispanic poverty	% Hispanics living below the poverty line	22%	6%
Hispanic affluence:			
% Hispanic households earning above \$75,000	% Hispanic households earning above \$75,000	13%	5%
% Hispanics with college degree	% Hispanics with college degree	14%	8%

NOTE.—Rates in parentheses.

TABLE 3
NEGATIVE BINOMIAL MODEL PREDICTING HISPANIC SUICIDE COUNTS

Variables	Regression Results
Hispanic economic disadvantage .....	.014 (.026)
White/Hispanic inequality .....	.033* (.043)
Black/Hispanic inequality .....	.006 (.012)
Hispanic affluence	-.063* (.031)
Hispanic cultural assimilation .....	.037** (.011)
Hispanic joblessness .....	.525 (.776)
Hispanic mobility .....	.997* (.425)
Hispanic divorce .....	.966*** (.192)
Hispanic female-headed household .....	.017 (.178)
Population (LN) .....	.036 (.037)
Black population (LN)	-.009 (.035)
Urbanization .....	.512 (.418)
% foreign born from Puerto Rico	-.596** (.230)
% foreign born from Cuba	1.217** (.415)
% foreign born from the Dominican Republic	-1.721* (.807)
% foreign born from other Hispanic countries	-.341 (.241)
Constant	-7.923*** (.860)
No. Hispanics	Exposure
χ^2	42.44
P .....	.000
-2 LL	-605.41
R^2 .....	.75

NOTE.— Entries are unstandardized coefficients; SEs in parentheses.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

tion, inequality, affluence, mobility, marital dissolution, and the relative sizes of the country-of-origin immigrant groups are all significant factors. Controlling for the size of the Hispanic population and other factors, suicide counts were higher when Hispanics were more culturally assimilated. Conversely, MSAs with lower levels of linguistic, educational, residential, and other types of assimilation into mainstream culture experienced less Hispanic suicide. While economic disadvantage was not a significant correlate, affluence was. MSAs with larger concentrations of well-educated, high-income Hispanics had lower suicide rates. Inequality also played a significant role—MSAs where the economic and labor market positions of Hispanics were weaker relative to whites experienced more suicide.

Consistent with the literature, areas with more divorce and instability had higher Hispanic suicide levels. Sizes of the country-of-origin immigrant groups also mattered—MSAs with larger Puerto Rican and Dominican (relative to Mexican) immigrant populations experienced lower levels, while those with larger Cuban immigrant populations (relative to Mexican) demonstrated higher levels. Finally, holding all else constant, joblessness, economic disadvantage, black-Hispanic inequality, the percentage of households headed by females, urbanization, and the size of the overall and black populations did not influence Hispanic suicide.¹⁴

The findings point to the important role that cultural and economic factors play in shaping Hispanic suicide. As argued earlier, these factors capture the relationship between Hispanic and mainstream cultures and communities. When Hispanics are culturally isolated or economically assimilated they demonstrate less suicide than when they are culturally assimilated or economically unequal. This led us to consider the importance of potential interactions between these macrocharacteristics. Is cultural isolation more important as a protective factor when accompanied by ethnic inequality? Or, inversely, is inequality more problematic when the Hispanic population is culturally assimilated? We explored numerous approaches to identifying interaction effects, including the use of multiplicative terms and disaggregating the sample into subsamples based on

¹⁴ In additional analyses (not reported here) we included proxies for decade of entry (e.g., 1970, 1980, 1990) to control for differences in arrival times to the United States among foreign-born Hispanics. We included these measures because year of entry is associated with assimilation patterns among the foreign born. As expected, these variables were highly correlated with our main variable of interest—Hispanic assimilation. Moreover, when we included all variables in the model there was multicollinearity; the VIFs for the decade-of-entry variables and our assimilation index were above the conventional threshold of 4 (Messner and South 1992). For this reason, we retain our cultural assimilation index and do not include year-of-entry variables in the analyses. We chose to retain the index because we believe it more closely approximates the underlying forces that affect suicide for this population.

these characteristics, yet we found no interactions. All of the analyses suggest that these characteristics act independently to shape Hispanic suicide patterns.

Also of interest is whether native- and foreign-born Hispanics are similarly influenced by cultural and economic factors. While their suicide rates are significantly different, are cultural assimilation, ethnic inequality, affluence, mobility, and family dissolution more or less useful for explaining variation in suicide among individuals who have always resided in the United States compared to those who emigrated from another country? To examine this possibility, we regressed the independent variables separately on native- and foreign-born suicide counts. The results, displayed in table 4, suggest both similarities and differences in the factors that affect suicide. As in the analysis of total counts, cultural assimilation, white-Hispanic inequality, mobility, and divorce all increase suicide among native-born Hispanics. On the other hand, while affluence and the percentage of foreign born from Puerto Rico, Cuba, and the Dominican Republic are significantly related to total suicides, they are not influential in shaping native-born suicides.

Similar to the native-born analysis, cultural assimilation, mobility, and divorce increase suicide among foreign-born Hispanics. However, in contrast, black-Hispanic inequality, affluence, and the size of the populations from Puerto Rico, Cuba, and the Dominican Republic also influence immigrant suicide. MSAs in which blacks were more economically, occupationally, and educationally successful compared to Hispanics experienced *lower* levels of immigrant suicide, as did MSAs with more affluent Hispanics. MSAs with more Puerto Rican and Dominican immigrants experienced lower levels, and those with larger Cuban populations experienced higher levels of immigrant suicide. Again, we explored the potential importance of interactions among measures of cultural assimilation, affluence, and inequality, and found no evidence that these factors were more influential in combination than alone.

The analyses suggest that the effects of some, but not all, predictors are unique to native-born and immigrant Hispanics. The role of assimilation, mobility, and divorce are constant across the two populations; they increase the prevalence of suicide for both populations. However, ethnic inequality and the relevant reference groups appear to be distinct across immigrant and native-born populations. Higher levels of white-Hispanic inequality lead to *more* suicide among natives, while greater black-Hispanic inequality leads to *less* suicide among immigrants. Additionally, sizes of the country-specific immigrant subgroups influenced immigrant but not native suicide. Relative to the size of the Mexican immigrant population, MSAs with more Puerto Rican and Dominican immigrants experienced lower levels of foreign-born suicide. Conversely,

TABLE 4
 POISSON AND NEGATIVE BINOMIAL MODELS PREDICTING FOREIGN AND NATIVE-BORN
 HISPANIC SUICIDE COUNTS

Variables	REGRESSION RESULTS		Significant Difference between Natives and Immigrants
	Foreign Born ^a	Native Born	
Hispanic economic disadvantage	-.031 (.027)	.051 (.031)	
White/Hispanic inequality	-.004 (.015)	.047* (.019)	<i>P</i> <.05
Black/Hispanic inequality	-.032* (.013)	.006 (.014)	<i>P</i> <.1
Hispanic affluence	-.087* (.037)	-.067 (.039)	
Hispanic cultural assimilation .....	.046** (.014)	.040** (.014)	
Hispanic joblessness	1.691 (.948)	.324 (.963)	
Hispanic mobility	1.402** (.489)	1.228* (.520)	
Hispanic divorce .....	.699** (.241)	1.107*** (.241)	
Hispanic female-headed household	-.234 (.201)	.018 (.218)	
Population (LN) .....	.064 (.040)	.020 (.045)	
Black population (LN)	-.050 (.041)	-.017 (.044)	
Urbanization .....	.430 (.556)	.743 (.520)	
% foreign born from Puerto Rico	-1.959*** (.309)	.0553 (.270)	<i>P</i> <.001
% foreign born from Cuba ...	1.274** (.295)	-.179 (.557)	<i>P</i> <.05
% foreign born from the Do- minican Republic	-.382* (.649)	-.779 (.975)	
% foreign born from other Hispanic countries	-.112 (.215)	-.519 (.307)	
Constant	-9.993*** (1.048)	-7.681*** (1.053)	
No. foreign and native-born Hispanics	Exposure		

TABLE 4 (Continued)

Variables	REGRESSION RESULTS		Significant Difference between Natives and Immigrants
	Foreign Born ^a	Native Born	
χ^2		37.68	
<i>P</i> .....		.000	
-2 LL	-426.795	-526.802	
<i>R</i> ² .....		.74	

NOTE.— Entries are unstandardized coefficients; SEs in parentheses.
^a Poisson regression was used in the foreign-born model as the suicide counts were not overdispersed.
 For this model only -2 LL statistics are available.
 * *P*<.05.
 ** *P*<.01.
 *** *P*<.001.

as the relative size of the Cuban immigrant population rose, so did immigrant suicide. None of the country-of-origin variables were significantly related to native-born suicide.

To confirm the divergent effects of these measures on native and foreign-born suicide counts, we used the equation $t = b_1 - b_2 / \sqrt{SEb_1^2 + SEb_2^2}$ (Paternoster et al. 1998). The results indicate that the observed differences between the effects of white-Hispanic inequality ($t = 1.77$; $P < .04$), black-Hispanic inequality ($t = 1.38$; $P < .09$), and the relative sizes of the Puerto Rican ($t = 4.90$; $P < .001$) and Cuban ($t = 2.30$; $P < .01$) immigrant populations are statistically significant across the equations using one-tailed tests. In contrast, the effects of Hispanic affluence and the size of the Dominican immigrant population are not significantly different.

DISCUSSION AND CONCLUSION

Collectively, our findings show that Hispanic suicide is influenced by cultural, economic, and demographic characteristics of metropolitan areas and that the effects of these characteristics vary across native and immigrant populations. We first compared suicide rates of native-born and immigrant Hispanics and found that while immigrants have higher rates overall, this difference was conditioned by the relative size of the Hispanic immigrant community; in areas with smaller immigrant populations, immigrants were at a higher risk of suicide than their native-born counterparts, while in areas with larger immigrant populations, the opposite was true—natives were at a higher risk. This finding underscores the critical (yet often ignored) role of ecological context in determining suicide risk at the individual level and suicide rates in the aggregate. More specifically, we argue that it highlights the consequences of the process by which

ethnic and cultural integration and identity help attenuate the alienation, isolation, and community disorganization that preclude high suicide rates. Finally, this finding also suggests that rising suicide rates may accompany assimilation into mainstream culture, concurrent with the disintegration of more traditional culturally and ethnically based belief systems and social networks.

To further explore these issues, we ran multivariate models. The results for cultural assimilation were consistent with our interpretation of the role of context in shaping immigrant and native rates. Hispanics have lower suicide rates when they are less, rather than more, culturally similar to whites. Disaggregating suicide by immigrant status demonstrated that the influence of cultural assimilation is consistent across both immigrant and native-born populations. Cultural assimilation may contribute to suicide by attenuating ethnicity-specific protective factors. As individuals and communities become more “Americanized,” they may let go of shared belief systems, rituals, and social networks that promote integration into ethnic communities and strengthen group solidarity. The dissipation of these protective factors may increase isolation and alienation.

Cultural assimilation also may encourage the adoption of a U.S.-based ethos where individualism and competition are highly valued. As Jedlicka et al. (1977) and others have noted with respect to rising black suicide rates, the consequences of assimilation may be an unfortunate by-product of more actively participating in mainstream America. Whether the influence of cultural assimilation on suicide among native Hispanics is the result of attenuated protective ethnic and cultural factors, is the result of integration into a more individualistic culture, or reflects a combination of both processes is a vital question. Unfortunately, the data do not allow us to discern between these competing, but not mutually exclusive, explanations.

In regard to economic factors, Hispanic communities have lower suicide rates when they are economically better off, both absolutely and in comparison to white communities. Measures of Hispanic affluence and white-Hispanic inequality played important roles in shaping suicide levels. MSAs with more high-income and well-educated Hispanics demonstrated lower suicide levels, while those characterized by greater economic and labor market disparities between whites and Hispanics experienced higher levels. After controlling for these factors, disadvantage was not a significant predictor.

Regarding affluence, our findings question Henry and Short's hypothesis that material prosperity will lead to less social regulation and thus more suicide (Henry and Short 1954). Instead, we find that a greater presence of economically and educationally successful Hispanics decreases suicide. This may stem from two processes. First, the presence of affluent

Hispanics may provide role models of upward mobility. The frustrations of poverty and other disadvantages associated with minority group status may be mitigated by the hope for, and belief in, a better future. Such hopes and beliefs are likely more prevalent in communities with a critical mass of middle- and upper-class Hispanics. In contrast, where success stories are rare, the difficulties stemming from disadvantage may prove more difficult to overcome, resulting in depression, anxiety, substance abuse, and other precursors of suicide.

Second, affluent Hispanics may help provide the foundation for community organization. Wilson (1987) and Anderson (1999) have noted the importance of middle- and upper-class households in the organization and maintenance of neighborhood institutions. Without their presence, communities experience greater difficulty supporting churches, schools, neighborhood associations, and other community institutions. These institutions are vital in providing the economic, emotional, and spiritual support that buffers against suicide.

Our findings suggest that relative deprivation also plays a critical role. Despite the problems accompanying cultural integration, when Hispanics are more economically integrated they may experience less frustration and alienation, resulting in less suicide. They may also be better able to access broader support networks that address emotional and psychological problems, which, if unchecked, could lead to suicide.

The findings regarding both inequality and affluence underscore the importance of considering opportunities for upward mobility and reference groups in understanding suicide. When Hispanics have evidence that material success is possible and that they are on a level playing field with whites, the social organization and institutional attachments that can mitigate financial and emotional challenges are strengthened. This leads to healthier individuals and communities. When such evidence does not exist, and opportunities seem both limited and based on ascribed characteristics, frustration, fatalism, and alienation are more likely to result.

The relationship between socioeconomic conditions and suicide becomes more complex when we examine suicide patterns separately for natives and immigrants. White-Hispanic inequality remains an aggravating factor for native-born but not immigrant Hispanics. These divergent effects are consistent with our proposition that the economic reference, or comparison, groups for natives and immigrants are distinct. The alienation, frustration, and anomie resulting from observed inequalities between Hispanics and whites may be unique to the native born. Immigrants, on the other hand, are more likely to contrast their situation with that of individuals and communities from their country of origin. Such a comparison can result in feelings of privilege rather than deprivation.

Our hypotheses suggested that blacks may also constitute an important reference group for Hispanics, especially those living in integrated neighborhoods. While this is not supported in the total or native-born analyses, black-Hispanic inequality is significantly related to foreign-born suicide—but in the unexpected direction. MSAs with greater black-Hispanic inequality experienced *less* foreign-born suicide. Although seemingly counterintuitive, we believe there is a logical explanation. Inequality between blacks and Hispanics may decrease suicide by shaping residential patterns. Inequality gives rise to ethnically homogenous neighborhoods, a process which has been fundamental in explaining observed negative relationships between racial inequality and interracial violence (Blau 1977; Messner and South 1992). In communities with high rates of inequality, the two groups are less likely to live, work, and socialize in the same places. Such isolation both minimizes assimilative influences and decreases the probability that Hispanics will treat blacks as a reference group. If blacks are not viewed as a comparison group, we would not expect their relative economic standing to influence Hispanic suicide. As segregation decreases, however, comparisons may be more likely, and even relatively low levels of inequality may prove detrimental.

By assessing the collective influence of cultural and economic processes on Hispanic suicide, we begin to unravel the paradox noted earlier. Given relationships between affluence, ethnic inequality, and Hispanic suicide, and given less affluence and persistent relative disadvantage, why do Hispanics consistently exhibit lower suicide rates than whites? (This paradox also has been documented in studies of heart disease, cancer, and infant mortality [Sorlie et al. 1993; Cervantes 1996].) We argue that beyond economics, culture plays an essential role in shaping community suicide rates. Culturally based protective factors, which stem from religious, social, and community-of-origin identities and networks, serve as powerful integrating forces that maintain and strengthen the social fabric in Hispanic communities. As such, while economic risk factors are indeed influential, their influence may be secondary to the more powerful role of culture.

At the same time, our assessment raises a problematic contradiction. Cultural assimilation increases suicide, while economic equity for natives and affluence for all Hispanics decreases suicide. From a policy perspective, this suggests that programs geared toward economic development and equal opportunity, as well as ones that promote cultural and ethnic awareness, appreciation, and identity constitute fruitful attempts toward addressing suicide (and possibly other issues) in Hispanic communities. The difficulty is that economic equity and affluence are positively associated with assimilation. In other words, suicide levels decrease as Hispanics become more economically successful, yet this success often leads

to assimilation, which engenders suicide. The challenge emerges as to how Hispanic communities can become more economically integrated without sacrificing the culturally based protective factors that inhibit suicide. This issue emerges from similar findings in the criminological literature (Hagan and Palloni 1999; Martinez and Lee 2000).

This research represents an important first step toward better understanding suicide among the largest and most rapidly growing minority population in the United States. We identified key correlates of metropolitan suicide rates and examined how they differentially influence suicide patterns of native and foreign-born Hispanics. While this study is the first macrolevel analysis of Hispanic suicide and the first that has focused on issues of immigration and assimilation that we are aware of, our findings concerning economic factors can be placed within the context of the larger suicide literature on other races and ethnicities. Some scholars suggest that racial inequality can increase suicide among minorities (Burr et al. 1999). This appears also to be true for some Hispanics. Moreover, economic disadvantage, which is significantly associated with suicide for young whites and blacks (Kubrin et al. 2006), does not appear to be influential for Hispanics, once other factors are held constant. While these comparisons are tentative, findings from this study broaden our understanding of race, ethnicity, and suicide, and underscore the importance of studying other culturally diverse populations.

There are some limitations of this study. First, the data do not allow us to further disaggregate suicide by country of ancestral origin, nor do they permit us to create country-of-origin-specific independent variables. Thus, although Hispanics as a whole share important characteristics with respect to economic and labor market positions, as well as have cultural commonalities (e.g., language, religion, etc.), we have been unable to assess the degree to which these shared characteristics and experiences contribute to suicide levels of the various Hispanic subgroups. The importance of exploring these issues in future research is highlighted by our findings that hint at important diversity and potential differences. The results show that MSAs with larger Puerto Rican and Dominican populations (relative to the Mexican population) have lower suicide rates, while those with larger Cuban populations have higher rates. It is essential to point out that as the suicide counts are not disaggregated by country, these analyses do not tell us whether Puerto Ricans and Dominicans have lower, or Cubans have higher, suicide levels, only that cities with these population characteristics have lower or higher rates. The findings do raise the possibility, however, that both the patterns and correlates of suicide are unique across subpopulations.

A second limitation is that the data do not allow us to determine, among the foreign-born population, whether suicide was more common for tem-

porary or permanent immigrants, or to examine the role of transnationalism in the assimilation-suicide equation. The collective literature, however, is in agreement that “transnational practices and processes implemented by . . . migrants have become an important feature of local societies and communities” (Portes et al. 1999, p. 231). Studies of Hispanics comprise a large portion of this literature (see Guarnizo, Portes, and Haller [2003, p. 1213] for a list of studies of various transnational activities). Considering the role of transnational contacts, we believe, has implications for understanding ethnic identity formation, the nature of social support networks, and the choice of reference groups, all of which affect patterns of suicide.

In addition to being the first macrolevel analysis of Hispanic suicide, to our knowledge, ours is the first aggregate study of the effects of cultural assimilation on ethnic suicide. While it is premature to propose that patterns among other ethnic and racial groups would mirror those of Hispanics, we do believe that the findings call for more scholarly attention to how patterns of immigration and the development of mainstream cultural capital influence self-destructive behavior. While we have examined one of the most extreme outcomes of alienation and frustration, the process of cultural assimilation also likely affects precursors of suicide, such as depression, substance abuse, and other pathologies. Extending this research both beyond suicide to other behaviors and beyond Hispanics to other races and ethnicities is a fruitful avenue for future theoretical and empirical endeavors.

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