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Authors

Kubrin, Charis E

Luo, Xiaoshuang Iris

Hipp, John R

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Immigration and Crime: Is the Relationship Nonlinear?

Charis E. Kubrin

Xiaoshuang “Iris” Luo

John R. Hipp

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Immigration and Crime: Is the Relationship Nonlinear?

Abstract

Research finds that immigration and crime are not related across neighbourhoods, contrary to social disorganization theory and consistent with the immigration revitalization thesis. This research, however, is largely silent as to any possible nonlinear effects. Yet social theory offers sound reasons for why the immigration–crime association may be nonlinear; explanations, including immigrant/ethnic enclave theory and immigrant victimization theory, underscore potential concentration effects—albeit in different ways. Using a novel dataset with information on crime in over 15,000 neighbourhoods across a diverse range of US cities, we examine whether or not the immigration–crime association is nonlinear. We find that for both violent and property crime, a nonlinear relationship best captures the relationship. In additional analyses, we determine the theoretical perspective with which the findings are most consistent.

Immigration and Crime: Is the Relationship Nonlinear?

The United States has long been called an “immigration nation” (Golash-Boza 2012). Today, there are more than 44 million immigrants in America, comprising over 13 percent of the population, a figure not far below the record high of 14.8 percent in 1890 (Esterline and Batalova 2022). And, there are nearly 18 million children under age 18 who live with at least one immigrant parent, accounting for 26 percent of the nearly 69 million children under age 18 in the U.S. (Esterline and Batalova 2022).

These statistics belie the fact that while the U.S. is a nation comprised largely of immigrants and their descendants, immigration is a contested issue (Kubrin and Ousey 2023). Critics maintain the country has more immigrants than it can absorb, that immigrants steal jobs that would otherwise go to native-born Americans, that wages of native-born workers are depressed by immigrant workers, and that the foreign-born threaten American values, culture, and institutions (Hirschman 2014; see also Bouvier 1992; Brimelow 1995). The greatest concern is that immigrants bring crime onto American shores (Gostjev and Nielsen 2017; Martinez and Lee 2000).

Such a concern finds support in social disorganization theory, a framework for understanding the relationship between community characteristics and crime in urban areas. According to the theory, neighborhood characteristics such as poverty, residential instability, and racial and ethnic heterogeneity can lead to social disorganization, defined as the inability of a community to realize the common values of its members and maintain effective social control (Kornhauser 1978). Social disorganization, in turn, can cause crime. As a driver of population change, residential turnover, and racial and ethnic heterogeneity, immigration has long been regarded by disorganization theory as a critical factor leading to a breakdown of informal social control and associated increases in crime (Bankston 1998; Browning et al. 2016:780; Gostjev and Nielsen 2017:113; Lee and Martinez 2002:366; Lee et al. 2001:562; Mears 2002:284; Ousey and Kubrin 2009:449; Reid et al. 2005:760).

Yet, research findings challenge these claims. An extensive body of work shows that immigration and crime are either unrelated or negatively related across communities (Ousey and Kubrin 2018), consistent with the counterargument that immigration revitalizes neighborhoods and strengthens social control. Referred to as the “immigration revitalization thesis” (Lee and Martinez 2002), this argument suggests that far from being a criminogenic force, immigration constitutes an essential ingredient in the continued viability of urban areas, especially those experiencing population decline and deindustrialization (Lee et al. 2001:564).

Even as evidence mounts in favor of one theoretical explanation over another, omissions in the scholarship raise important—yet unanswered—questions. One is whether or not the immigration-crime relationship is nonlinear—something that, as far as we are aware, is rarely assessed in scholarship (see, for exception, Xie and Baumer 2018, 2019). As we show, some theories contain implicit nonlinear arguments, although most research has not accounted for this. It is also possible that more than one theory is applicable, and their combination has nonlinear implications for the immigration-crime relationship (Xie and Baumer 2019). More generally, failing to account for nonlinearity can lead to faulty inferences and a conclusion of a null linear relationship when in fact a nonlinear one exists.

In the current study we address this omission. Using a novel dataset that includes information on crime in over 15,000 neighborhoods across a diverse range of hundreds of U.S. cities, we examine whether or not the immigration-crime association is non-linear, consistent with theoretical arguments discussed below. Beyond including a measure of percent immigrants, we compute the quadratic, cubic, and quartic form of percent immigrants. We estimate models separately for violent and property crime and sequentially include each polynomial for the percent immigrant measure to determine which is most appropriate. Foreshadowing the results, we show that for both crime types, a nonlinear relationship best captures the immigration-crime association. In additional analyses, we attempt to determine the theoretical perspective with which the findings are most consistent.

Theory and Research on Immigration and Crime

A sizable share of the U.S. population believes that immigration increases crime (Ousey and Kubrin 2009). This belief emerges from stereotypes and prejudices depicting the foreign-born, especially those who are undocumented, as criminals or terrorists who threaten the rule of law (Rumbaut and Ewing 2007). Yet, the belief also finds support in social theory. Social disorganization theory posits a positive relationship between immigration and crime for several reasons. First, immigration to an area leads to residential turnover, or the frequent movement of populations in and out of a community. Residential turnover weakens social ties and networks, as residents face challenges to create strong networks. Weakened ties and networks incapacitate informal social control, or the capacity of a group to regulate its members according to mutually desired goals, such as the desire to live in a crime-free environment. Weak ties and decreased informal social control, in turn, heighten crime rates.

Immigration is also associated with crime, according to this theory, because it spurs racial and ethnic heterogeneity, which, similar to mobility, can undermine informal social control. In areas with different groups living in close proximity, interaction between residents is lower than in racially and ethnically homogeneous communities due to language incompatibility, cultural differences between groups, and because residents prefer individuals of their own race or ethnicity to those of other races or ethnicities. As a result, neighbors are less likely to look out for one another, resulting in less informal social control and more crime (see Browning et al. (2016:781-782) and Gostjev and Nielsen (2017:113-14) for discussions of immigration's impact in the social disorganization tradition).

Is there empirical support for social disorganization theory's claim that immigration leads to heightened crime rates in communities? The answer is "very little." A robust finding is that immigration and crime are either negatively associated or not associated at all (see Kubrin and Ousey 2023 for a review of this literature). In essence, "Contrary to the predictions of classic criminological theories and

popular stereotypes, immigration generally does not increase crime and often suppresses it” (Lee and Martinez 2009:3).

As a result of this body of work, scholars now propose alternative arguments that emphasize immigration’s positive impact on communities (Browning et al. 2016:780). The immigration revitalization thesis is one such argument (Lee and Martinez 2002). Broadly speaking, it “emphasizes the network and institutional benefits of immigrant concentration for informal social control capacity at the neighborhood level” (Browning et al. 2016:782). According to Velez (2009:327-328), immigrants revitalize disadvantaged neighborhoods in several ways. First, they develop strong ties to family members and neighbors including longer settled immigrants, as well as to non-familial residents like clergy, social service providers, and school officials. These relationships create social support and secure financial resources for immigrants as well as generate social control (see also Browning et al. 2016:782). Second, immigrants can reinvigorate an ethnic enclave economy, creating new opportunities for economic growth and an ethnic division of labor. Enclaves can provide social capital for residents by fostering job opportunities and higher wages for immigrants (and nonimmigrants) that are typically not available outside the enclave. And third, immigrants strengthen community institutions such as churches, schools, and immigrant-focused agencies like legal counseling and job placement, enabling them to more effectively serve as brokers on the community’s behalf. Neighborhood institutions are integral in curbing crime because they organize activities that generate networks among residents, provide programming for youth, connect communities to mainstream individuals and institutions, and facilitate the recruitment of external resources for the community. Beyond this, immigrants fortify the presence of traditional two-parent family structures, reinforce parental authority norms and emphasize pro-family cultural orientations (Ousey and Kubrin 2009), all of which lower crime by strengthening social capital and informal social control (Land, McCall and Cohen 1990; Kubrin 2013; Ousey 2000).

In short, the immigration revitalization thesis challenges what many consider outdated arguments about how immigration impacts neighborhood institutions and social organization, arguing instead that “...larger immigrant populations in metropolitan areas may invigorate local economies leading to redevelopment of the stagnating economies of the urban core of metropolitan areas. The causal process by which the size of the immigrant population could lessen crime is via job growth, both for immigrants and the native-born; business development in previously economically depressed areas; and the repopulation of the urban core” (Reid et al. (2005:762); see also Browning et al. (2016:782-783) for a discussion of the immigration revitalization approach).

The Case for Considering Nonlinearity: Theory and Research

The growing body of research on the immigration-crime nexus across communities is largely silent as to possible non-linear effects. This is an important omission, as modeling a relationship as linear when it is nonlinear can result in biased estimates. It can also lead to a faulty conclusion of no relationship. Theory and research also offer sound reasons for why the immigration-crime association may be non-linear. Concerning theory, beyond arguments advanced in the immigration revitalization thesis, related explanations underscore potential *concentration* effects. In particular, immigrant/ethnic enclave theory and immigrant victimization theory both identify concentration effects that are likely to matter—albeit in different ways.¹

Enclave Theory

Enclave theory posits that beyond the general benefits of immigrant communities as outlined in the immigration revitalization thesis, immigrant/ethnic enclaves—with strong organizational bases and

¹ We acknowledge other theories, such as legal cynicism, potentially speak to non-linearity but focus on enclave and victimization perspectives because they are the most widely discussed in the literature.

high concentrations of co-ethnics living and working together—offer additional benefits for residents. These benefits can reduce crime rates.

Immigrant/ethnic enclaves are communities where businesses are owned and operated by immigrant families largely from the same country of origin (Bohon 2001). Intergenerational social networks in enclaves minimize experiences of cultural disorientation among new arrivals while also supplying resources for labor recruitment and training (Bailey and Waldinger 1991). Along these lines, the enclave reflects a unique mode of incorporation or adaptation that creates an alternative path towards success within a bifurcated labor market. The “co-ethnic nature of workplace relationships among employers, employees, and the self-employed” (Hum 2002:279) in enclaves not only encourages successful adaptation but facilitates informal training and employment recruitment (Bailey and Waldinger 1991) as well as fosters beneficial relationships that encourage entrepreneurship. Among the benefits of immigrant/ethnic enclaves are that: 1) native language skills enhance employment chances, as English fluency is unnecessary for employment; 2) “bounded solidarity” and “enforceable trust” create camaraderie between employees and employers; 3) there is an attenuation of cultural differences that impede workforce integration into the mainstream economy; and, 4) immigrants’ skills are in high demand because enclaves trade in ethnically-defined goods (Bohon 2001). In enclaves, then, immigrants secure employment that yields better returns to their human capital than would be found in secondary labor markets outside the neighborhood (Waters and Eschbach 1995:438). These collective benefits can translate into lower crime rates.

Enclaves, of course, vary in their ability to provide benefits to residents. One determinant is the level of institutional completeness (Breton 1964), which is “at its extreme whenever the ethnic community could perform all the services required by its members” (Breton 1964:194). These services are provided by organizations, or institutions with a formal structure that comprise the civic life of a neighborhood and keep immigrant social relations within its boundaries (Breton 1964:196). Examples

are religious, educational, political, recreational, professional, welfare, mutual aid societies, and media organizations (Kubrin and Mioduszewski 2018; Kubrin, Kim and Hipp 2019).

This discussion suggests a potential non-linear immigration-crime relationship, whereby when neighborhoods reach very high concentrations of immigrants, perhaps reflecting their status as enclaves, the benefits described kick in and generate significant reductions in crime. We display this theorized relationship in Figure 1a. As immigrants move into a neighborhood increasing their percentage of the population to a lower percentage—say 20 percent—the concentration effects of the neighborhood would not be expected to kick in, and hence there would be a relatively flat relationship between the percentage of immigrants and crime (left side of the figure). However, as the concentration effects kick in, we would expect crime to begin to fall more sharply (the middle part of the figure). Where exactly this decline would start is not clear from the literature. Nonetheless, at some point we would expect the neighborhood to reach a concentration level in which these beneficial effects are fully realized—say around 50 or 70 percent immigrants—and therefore the relationship with crime would relatively flatten (right side of the figure). This discussion suggests that any null or negative neighborhood immigration-crime association is theorized to shift and become more strongly negative once a significant concentration of immigrants is reached.

<<<Figure 1 here>>>

Immigrant Victimization Theory

A competing argument for non-linearity emphasizes the potential for immigrants to become targets of victimization in neighborhoods with high concentrations of immigrants. Most neighborhood-based theories, including social disorganization, focus on the potential for residents to engage in social control to reduce crime or suggest structural characteristics, such as concentrated disadvantage or residential mobility, may bring about more offenders.

An alternative possibility is that some neighborhoods provide more *targets for crime victimization*. Applying this perspective, certain types of crime, such as instrumental crimes, may be greater in neighborhoods with high levels of immigrant concentration because immigrants may be perceived by offenders as easy targets or victims. What is the source of this perception? Research finds that immigrants often rely on a cash-only economy, making them especially attractive targets for acquisitive crimes such as robbery—what is often referred to as “the Walking ATM phenomenon” (Barranco and Shihadeh 2015:441). Indeed, in their county-level study, Barranco and Shihadeh (2015) find that Latino robbery victimization is nearly 50 percent greater in medium immigration areas than low immigration areas; roughly 100 percent greater in high immigration than medium areas; and nearly 300 percent greater in high Immigration than low Immigration areas, revealing “a very high correlation between levels of Immigration and Latino robbery victimization” (pg. 445).

Compounding this is immigrants’ lower likelihood of reporting victimization, including in cases of robbery (Ballard and Kubrin 2023; Davis and Erez 1998). Research finds that immigrants underreport their victimization experiences for many reasons including fear of being deported, embarrassment to family, shame, language barriers, lack of knowledge of the criminal justice system, distrust of the system, fear of retaliation, lost wages, unresponsiveness of officials to immigrants’ concerns, and lack of transportation (Davis and Erez 1998). Given low reporting levels, would-be offenders may be less deterred from committing crimes, especially instrumental crimes, against immigrants, particularly in communities where they comprise a large percentage of the population. Consistent with these arguments, prior research on intergroup crime in south Los Angeles finds that Latinos are more likely to be targeted for robberies—but not aggravated assaults—by both Latinos and African Americans (Hipp, Tita and Boggess 2009).

From this discussion we might expect a nonlinear immigration-crime effect, as potential offenders must first recognize a neighborhood as “target-rich,” which is most likely to occur when there

is a large-enough concentration of immigrants. We display this theorized relationship in Figure 1b. On the left side of the figure, we plot a downward sloping relationship given that we expect the beneficial effects of an increasing immigrant population to be associated with reduced crime, specifically robbery, rates. However, at some point—which is uncertain, but might be somewhere in the 25 to 40 percent range—there will be an increasing perception that the neighborhood is “target rich,” leading to a rise in crime. This argument is applicable to acquisitive crimes like robbery, as immigrants would be attractive targets for this crime type, while the relationship for aggravated assaults or homicides should be closer to Figure 1a.

In sum, there are at least two theories positing a nonlinear relationship between immigrant concentration and crime in neighborhoods. It is also possible that more than one theory may be operable, and the combination of the hypothesized effects could produce even more nonlinear relationships than those described.

Prior Research on Non-linearity

Beyond theoretical considerations, a handful of studies that consider non-linear effects of immigration provide motivation for the current study. Although Browning et al. (2016) specifically examine Latino immigrant neighborhoods and focus on collective efficacy, not crime, their work is informative. Browning et al. (2016) explore the association between Latino immigrant concentration and levels of—and agreement about—collective efficacy in neighborhoods in Los Angeles and Chicago. Integrating social disorganization and immigrant revitalization perspectives, Browning and colleagues (2016) examine whether the association is nonlinear. Specifically, they test whether the association between Latino immigrant concentration and collective efficacy is negative at low levels, capturing the fragmentation expected by social disorganization theory’s hypothesis regarding ethnic heterogeneity, and positive at higher levels, when the benefits of immigrant concentration begin to emerge (Browning et al. 2016:785-86). They document a nonlinear association in both Los Angeles and Chicago

neighborhoods. Among future directions discussed, Browning et al. (2016:801) encourage researchers to use “larger samples of neighborhoods” including “‘New Destination’ contexts where Latino immigrant populations may be emerging” in order to “offer corroborative tests of the perspective advanced here.” Although we focus on immigrants and the outcome of crime, we take up this call in the current study.

Two studies by Xie and Baumer (2018, 2019) use National Crime Victimization Survey (NCVS) data to examine the effects of neighborhood immigrant concentration on violent victimization. Interested in how immigrant concentration plays a role in nonlethal violent victimization risk, Xie and Baumer (2018) assess both linear and nonlinear associations for different racial groups. They find support for a nonlinear relationship, revealing a stronger protective role of immigrant concentration on violence at higher levels of immigrant concentration for all racial groups. In a follow-up study, Xie and Baumer (2019) draw on competing theoretical arguments to assess the nonlinear relationship between immigrant concentration and crime reporting, including place stratification and legal cynicism, immigrant revitalization, and perceived immigrant threat theory. They find support for predictions drawing from place stratification and legal cynicism arguments, in which there is lower levels of crime reporting among victims from neighborhoods with very high concentrations of immigrants.

A final relevant study considers language use and whether or not it has a nonlinear relationship with violence in U.S. neighborhoods. Reviewing social disorganization and segmented assimilation theories, Gostjev and Nielsen (2017) advance hypotheses about a potential non-linear association between English language fluency and neighborhood violence. They argue

“...a substantial concentration of residents not proficient in English may not necessarily impede communication in a community. If the people who lack English proficiency speak the same language, this could serve as a local means of communication. Coethnic concentration often leads to emergence of ethnic institutions and organizations as well as ethnic economies that allow people to use their native tongues for communication in interpersonal and institutional

spheres...If these assumptions are correct, the relationship between English nonproficiency and neighborhood violence rates will be nonlinear. At lower levels, the concentration of residents not fluent in English should increase crime but as this concentration increases, the association should be attenuated and possibly reversed” (pg. 117).

Gostjev and Nielsen (2017) find support for this hypothesis in their study of neighborhoods across 91 cities: lack of English fluency has a nonlinear relationship with homicide and robbery, such that when lack of fluency is low, crime rates increase but the positive effect diminishes as English non-fluent individuals come to represent a greater proportion of the population. They argue this finding “...attests to the necessity of attempting to better specify the mechanisms and processes underlying how and why immigration is associated with crime rates” (2017:133), a goal of the current study.

Current Study

While research on the immigration-crime link has grown substantially, few studies consider whether or not this relationship may be non-linear, despite theoretical arguments that offer competing expectations regarding possible non-linear effects along with concerns that not accounting for nonlinearity can lead to faulty inferences. The current study leverages a novel dataset that includes information on crime in over 15,000 neighborhoods across a diverse range of hundreds of U.S. cities to examine whether or not the immigration-crime association is non-linear. Documenting a non-linear relationship, in additional analyses we determine the theoretical perspective with which the findings are most consistent.

Data and Methods

Data

The study examines neighborhoods from a wide range of U.S. cities, including small, medium-sized, and large cities with at least 10,000 population. The crime data are from the National Incident Crime Study (NICS), a newly created data source of crime data collected either directly from law

enforcement agencies or that are publicly available online. After obtaining all crime data, we cleaned and geocoded the data to the neighborhood level. To ensure validity, we compared city-total estimates to the totals reported to the Uniform Crime Reports (UCR) by the police agency. NICS totals generally were extremely close to UCR-reported totals. Crime incidents were geocoded to latitude–longitude point locations using ArcGIS 10.6 and assigned the appropriate census tract, our unit of analysis, for years 2009 to 2011. To minimize annual fluctuations, we averaged crime events over the three years. The geocoding match rate was over 90 percent in each city. Our analytic sample contains 15,097 tracts (with at least 500 population) covering 346 cities (with at least 10,000 population). On average, our sample census tracts have 4,114 persons and range from 500 to almost 29,000 persons, with a standard deviation of almost 2,000. They are a common measure of “neighborhood” in the U.S. context.

As far as we are aware, no other data source offers information on neighborhood crime in such a diverse range of contexts throughout the U.S. At the same time, the NICS is not a random sample of cities but rather (largely) a convenience sample, which raises a question about the extent to which it is representative of U.S. cities. To determine this, we compared the NICS sample with all tracts in U.S. cities with at least 10,000 population based on U.S. Census socio-demographic data. The NICS tracts are quite similar to all tracts in such cities. In terms of racial and ethnic composition, NICS tracts have somewhat more nonwhite and immigrant residents, with 23 percent immigrants, 26 percent Latino/a and 23 percent African American, compared to all cities which, on average, are 18 percent immigrant, 20 percent Latino/a, and 17 percent African American. NICS tracts have a slightly lower homeownership rate, but older housing and greater population density. The NICS sample tends to include somewhat larger cities and fewer smaller cities, unsurprising given increased data availability in larger cities. Finally, crime rates for NICS cities are relatively similar to crime rates for all cities. The NICS cities match almost perfectly on property crime, although they do have about 20 percent more violent crime. Nonetheless, the general pattern is that the NICS is quite representative of all tracts and cities in the U.S. For a

detailed discussion of these comparisons along with information on how the NICS data set was constructed, see the Appendix.

To capture neighborhood characteristics that reflect the theoretical perspectives discussed earlier, we incorporate additional datasets. First, we use 2010 U.S. Census data and the American Community Survey (ACS) 5-year estimates for 2008-2012 to capture demographic and socio-economic information about the neighborhoods in our sample. And second, we capture business information with Reference USA Historical business data from Infogroup (Infogroup 2015). Reference USA is an annual dataset that contains geographic information enabling us to locate businesses at the address level for 2010 and aggregate this information to tracts.

Dependent Variables

Our dependent variables are violent (homicide, robbery, aggravated assault) and property (burglary, motor vehicle theft, larceny) crime counts in the tract. We calculated the number of crime incidents in each tract for each year in 2009, 2010, and 2011, and then computed the three-year average for both crime types.

Independent Variables

Our focal independent variable captures the presence of immigrants in neighborhoods, or the percentage of the tract population that is foreign born, consistent with most studies. To examine non-linearity, we also compute the quadratic, cubic, and quartic form of percent immigrants.

To account for potentially confounding factors, we incorporate measures commonly included in ecological studies of crime. We constructed a measure of concentrated disadvantage, which combines the following measures in a principal component analysis: average household income; average home value; percent with at least a bachelor's degree; median income; percent at or below 125 percent of the poverty level; percent single parent households; and, percent unemployed. The factor loadings range

from 0.71 to 0.91 with an eigenvalue of 4.61. Residential stability is measured with a standardized factor score from a principal component analysis based on three variables: average length of residence, percent of households that moved into their residence within the last five years (loads negatively), and percent homeowners. The factor loadings range from 0.8 to 0.84 with an eigenvalue of 1.96.

We account for possible racial/ethnic effects by constructing measures of racial/ethnic composition, including percent Asian, percent Black, percent Latino, percent other race (with percent White as the reference category). We account for racial/ethnic mixing with a measure of heterogeneity computed as a Herfindahl Index of five racial/ethnic groups (Asian, Black, Latino/a, White, and other race). The Index is computed as 1 minus a sum of squares of the proportion of each group; the larger the value, the more heterogeneous the area. We account for the possible criminogenic effect of vacant housing units with a measure of percent vacant units. To capture those in prime offending ages, we include a measure of the percent young people (individuals aged 16–29) in the tract. We also compute the population (logged) along with population density of the tract.

A final set of measures, created using Reference USA data, are business related. Given that businesses attract customers to an area which may provide opportunities for crime, we computed the number of employees of consumer-facing businesses based on the number of retail and restaurant employees (from the North American Industry Classification System codes 44-45 and 72). Based on opportunity theories, we expect this measure to be associated with higher crime rates. Other businesses capture the general presence of workers in the retail environment. We constructed a measure of the number of employees of non-consumer businesses (businesses that are not consumer-facing). These businesses may increase crime by providing opportunities but they may also reduce crime as they provide jobs for local residents (Hipp and Luo 2022; Sampson and Wilson 1995). The counts of both consumer-facing and non-consumer employees are log transformed.

Modeling Strategy

Given we examine crime counts, we estimated fixed effects negative binomial regression models for tracts in our sample with at least 500 residents. The models are estimated using the following form:

$$(1) \quad E(y) = \exp(\alpha + X_i B_1 + X_c B_2 + C B_3 + \mu)$$

where y is the count of crime events in the tract, X_i is the percent immigrants (and the polynomial versions), X_c is a vector of control variables, B_1 and B_2 are vectors of parameters capturing the relationships between these measures and the crime count, C is a vector containing indicator variables for each city in the sample and the B_3 coefficients capture these city fixed effects, and μ is a parameter capturing the overdispersion based on a gamma distribution. We estimated models for violent and property crime that sequentially included each polynomial for the percent immigrant variable. We determined model fit based on likelihood ratio tests between competing models using various polynomials. We correct the standard errors by using Huber-White robust standard errors.

As another way to assess whether the results reveal support for victimization theory, in ancillary models we disaggregated the neighborhood foreign-born population into white and nonwhite immigrants, and conducted a series of fixed effects negative binomial regression models. In particular, we created two separate measures: 1) percent white immigrants, 2) percent nonwhite immigrants. For each measure, the denominator is the total population of the tract. We also computed polynomial versions of these measures. In analyses, we determine how the combination of immigrant racial/ethnic composition and neighborhood immigrant concentration affect aggravated assault and robbery rates. When we test for differences between white and nonwhite immigrants, we estimate:

$$(2) \quad E(y) = \exp(\alpha + X_i B_1 + NWI B_{1a} + X_c B_2 + C B_3 + \mu)$$

where all variables are as described earlier, NWI is the percent neighborhood residents who are nonwhite immigrants with coefficients in the B_{1a} vector (these coefficients capture the difference in the relationship with crime of white immigrants versus nonwhite immigrants).^{2,3}

Results

Descriptive Results

Table 1 presents summary statistics of the variables used in the analyses. The average count of violent crimes across census tracts in our sample is 23.7 with a standard deviation of 26, whereas the average count for property crimes is 138 with a standard deviation of 125.6. For the key independent variable, the average percent immigrant population across our sample of tracts is 23.1, and ranges from 0 to 87 percent, reflecting a wide range of immigrant and non-immigrant neighborhoods alike. For percent nonwhite immigrants, the average is just under 20 with a standard deviation of 16.6.

<< Table 1 is here >>

Regression Results: Linear Immigration-Crime Relationship

We turn to the negative binominal regression results in which we first model a linear immigration and crime relationship, consistent with existing literature. In Model 1 of Table 2, we see there is a negative, but not significant, relationship between percent immigrants and violent crime. The coefficient is -0.099. However, in Model 2 we see a significant negative relationship between percent immigrants and property crime. The coefficient of -0.408 indicates that a 17.4 percent increase in

² When interpreting these results, the coefficients in B_1 show the relationship between the percentage of residents who are white immigrants and crime levels, whereas the sum of the B_1 and B_{1a} coefficients captures the relationship between the percentage of residents who are nonwhite immigrants and crime levels (these B vectors also contain the coefficients for the various polynomials that are estimated).

³ As a robustness check, we further disaggregated nonwhite immigrants into Latino/a, Asian, and Black immigrants to estimate the relationship between specific racial and ethnic compositions of immigrants and crime. The results are quite similar to those reported for the white-nonwhite split. Results available upon request.

immigrants in the tract (one standard deviation) is associated with 7 percent less property crime at the neighborhood level, holding other variables constant ($\exp(-0.408*0.174) = 0.931$). Thus, consistent with prior research, we find that immigrant concentration is not associated with violent crime and is associated with lower, not higher, property crime levels in U.S. neighborhoods.

<< Table 2 is here >>

Before turning to the nonlinear models, we highlight that the control variables generally have the expected relationships with neighborhood crime. Higher levels of concentrated disadvantage are associated with more violent and property crime. Neighborhoods with greater levels of residential stability have lower crime levels. Neighborhoods with higher percentages of Black residents, Latino residents, or levels of racial/ethnic heterogeneity have higher incidents of violent and property crime. Finally, the business environment matters as neighborhoods with more consumer-facing businesses have higher crime levels. There is also a positive relationship between non-consumer businesses and crime, but it is weaker than the relationship for consumer-facing businesses, consistent with the possibility that these businesses may have a beneficial impact for neighborhoods by providing jobs (even if it is overwhelmed by the opportunity effect).

Regression Results: Nonlinear Immigration-Crime Relationship

We next relax the assumption of a linear relationship between immigrant concentration and neighborhood crime by including various polynomial versions of percent immigrants. Table 3 presents results of the optimal model for both crime types. Both of these models exhibit superior model fit to the linear models in Table 2; for the violent crime model, the chi square value of 22.9 on 1 degree of freedom is highly statistically significant ($p < .0001$), as is the chi square value of 26.4 on 3 degrees of freedom ($p < .0001$) in the property crime model. To visualize the nonlinear relationships, in Figure 2 we plot them for the range of percent immigrants from the 1st to 99th percentile of the observed

distribution (from 0-68 percent) in the neighborhood. In these plots, we show the expected crime count for a given percentage of immigrants when all other variables are set to average levels in the sample.

In terms of violent crime, simply adding the quadratic term best captures the relationship. The relationship between percent immigrants and violent crime is shown in Figure 2a. We see a negative relationship that slows and reaches an inflection point at just under 40 percent immigrant. Beyond that point, an increasing concentration of immigrants is associated with increasing violent crime levels. Thus, the violent crime rate is about 11 percent lower in a tract with 40 percent immigrants compared to one with no immigrants, but is 8 percent higher in a tract with 68 percent immigrants compared to one with 40 percent immigrants. These findings are not consistent with the immigrant/ethnic enclave argument. However, this figure displays a U-shaped curve, which raises the possibility of support for the victimization argument, a point we return to when we disaggregate violent crime into subtypes.

<< Table 3 is here >>

<< Figure 2 is here >>

In terms of property crime, in Model 2 of Table 3, we also find evidence of a strong nonlinear immigration-crime relationship, although that relationship is best captured by a quartic polynomial, which we plot in Figure 2b. On the left side of this graph we see that as a neighborhood begins to experience an influx of immigrants, property crime tends to decrease. This sharp decrease slows to a gentler decrease when neighborhoods are at between 10 percent and 30 percent immigrants. However, beyond these percentages property crime again falls sharply as immigrant concentration increases until at the very highest percentages of immigrants we see the relationship flatten. This pattern for property crime is consistent with enclave theory in combination with immigration revitalization theory.

Collectively, the findings show support for a non-linear immigration-crime relationship, compared to a linear one, but are decidedly mixed in terms of support for the theoretical perspectives

discussed earlier, which offer competing arguments. Concerning property crime, results reveal greater support for the immigrant/ethnic enclave perspective while for violent crime, the U-shaped curve suggests some support for the victimization argument. In light of this, we conduct additional analysis that further determines whether immigrant victimization theory is relevant.

Further Testing: Immigrants as Victims?

The immigrant victimization argument suggests that certain types of crime, specifically instrumental crimes, may be higher in neighborhoods with high levels of immigrant concentration because immigrants may be perceived by offenders as easy targets or victims. Indeed, the initial violent crime findings suggest this may be the case in our data. To further examine this possibility, we disaggregated violent crime into two distinct types, one instrumental (robbery) and the other expressive (aggravated assault), and re-ran the analyses. If this argument is correct, we expect to see distinct relationships: an increase in robberies in neighborhoods with a high concentration of immigrants (implying they are more attractive targets) but no such increase in aggravated assaults.

As Figure 3 reveals, this is, in fact, the case. When we examine specific violent crimes, we observe distinct relationships for robbery versus aggravated assault, consistent with this alternative explanation. As the percent immigrants increase from 0 to 25 percent in neighborhoods, there is a falling level of robberies (Figure 3a). However, beyond this percentage, greater concentrations of immigrants are associated with increasing robberies. In contrast, we see a slowing negative relationship between percent immigrants and aggravated assault that shows no evidence of increases in high immigrant concentration neighborhoods (Figure 3b). These findings are consistent with the hypothesis that immigrants serve as attractive targets of acquisitive crime in these neighborhoods.

<< Figure 3 is here >>

As an even stronger test of the immigrants-as-targets argument, we estimated models in which we assessed the racial/ethnic composition of immigrants in neighborhoods when disaggregating violent crime into robbery and aggravated assault. In particular, we differentiated neighborhoods based upon the percentage of immigrants that are white vs. non-white, expecting immigrants to be perceived as more attractive targets in neighborhoods with high percentages of non-white immigrants compared to neighborhoods with high percentages of white immigrants. Our expectation that immigrants of color are especially attractive targets for crime is because “target suitability is increased by their physical visibility (e.g., race/ethnicity, language accent), potential yield (e.g., their tendency to rely on cash exchanges), greater exposure to motivated offenders (e.g., presence in impoverished and urban neighborhoods), and a lack of guardianship given their strained relationship with law enforcement” (Xie and Baumer 2021:618; see also Ballard and Kubrin 2023).

For ease of interpretation regarding the results, we plot three hypothetical neighborhoods based on the racial/ethnic composition of neighborhood immigrants and our estimated coefficients, as shown in Figure 4. The x-axes show the percent immigrants in the neighborhood, and the three lines plot the relationship for crime in neighborhoods where: 1) 100 percent of the immigrants are nonwhite and none are white; 2) 60 percent of the immigrants are nonwhite and 40 percent are white; and 3) 16 percent of the immigrants are nonwhite and 84 percent are white (there are few neighborhoods in which less than 16 percent of the immigrants are nonwhite). These lines are plotted over a range of data that exists in our study. If victimization theory is operative, the line capturing neighborhoods in which 100 percent of immigrants are nonwhite will exhibit a positive relationship, or a u-shaped relationship, with robbery but not aggravated assault. In Figure 4a for robbery, we see evidence in support of this argument. In neighborhoods primarily composed of white immigrants (84 percent white, 16 percent nonwhite immigrants), there is generally a slowing negative relationship between immigrant concentration and robberies. In contrast, in a neighborhood with all nonwhite immigrants the negative

relationship is instead a positive relationship above about 10 percent immigrants. This increasingly positive relationship for a neighborhood with entirely nonwhite immigrants is consistent with the racialized nature of perceiving immigrants in the U.S. Finally, there is a consistent negative relationship between immigrant concentration and aggravated assault as seen in Figure 4b—regardless of the racial composition of immigrants—consistent with immigrant revitalization theory. This set of results for robberies versus aggravated assaults is most consistent with the argument that nonwhite immigrants are attractive targets for instrumental crimes.⁴

<< Figure 4 is here >>

Ancillary Tests

We assessed if the patterns we observed are moderated by the level of disadvantage in neighborhoods. We accomplished this by creating interaction variables between the concentrated disadvantage scale and the percent immigrant variables (including polynomials). Our tests showed that none of these interactions were statistically significant, indicating that the nonlinear patterns are observed regardless of the level of neighborhood disadvantage. We further tested whether the degree of unemployment or employment in low-skilled industries, specifically, moderate the nonlinear relationship between immigrant concentration and crime. Again, there was no evidence of this.⁵

⁴ We also examined the relationship between the specific racial/ethnic composition of immigrants (Latino/a, Asian, and Black immigrants) in neighborhoods and robbery and aggravated assault, and the pattern for aggravated assault was similar to the white/nonwhite results. For robbery, the results were similar to the white/nonwhite results in Asian and Latino/a dominated neighborhoods, but less so for Black immigrant neighborhoods.

⁵ We created interactions between the unemployment rate and the immigrant concentration variables, and though statistically significant, they did not notably alter the pattern of results already presented when plotted. We also created a measure of the percent of workers classified in “elementary” occupations based on the International Standard Classification of Occupations (ISCO), and interactions of this measure with our immigrant concentration measures. These interactions again were statistically significant, but plotting them revealed they did not notably alter the pattern of results.

Discussion and Conclusion

Employing a novel dataset with information on crime in over 15,000 neighborhoods across a diverse range of hundreds of U.S. cities, this study sought to build on the growing body of research that examines the immigration-crime nexus. Motivated by (competing) arguments related to immigrant/ethnic enclave and immigration victimization theories, both of which underscore the importance of immigrant concentration effects, we examined whether or not the immigration-crime association is non-linear. The findings are informative. In baseline models that first tested a linear relationship as the vast majority of studies do, we find that, consistent with this literature, immigration is not related to violent crime and is significantly negatively associated with property crime. However, in subsequent models that included polynomial versions of percent immigrants, we find that for both crime types, a nonlinear relationship best captures the association.

While we see a nonlinear relationship between immigration and both crime types, this relationship exhibits differently. For violent crime, the negative relationship slows and reaches an inflection point at just under 40 percent immigrants in the neighborhoods. Beyond that point, violent crime starts to rise with increasing concentrations of immigrants, forming a U-shaped curve. For property crime, the relationship is best captured by a quartic polynomial. As neighborhoods begin to experience an influx of immigrants, property crime tends to decrease sharply, continuing to a stage of a gentler decrease when immigrants account for 10-30 percent of the neighborhood population. However, beyond these percentages, property crime again falls sharply as immigrant concentration increases until at the very highest percentages of immigrants we see the relationship flatten. Do these findings lend support to immigrant/ethnic enclave or victimization arguments?

The answer is that the findings support both. For property crime, results reveal greater support for the enclave perspective while for violent crime, the findings seem to support each perspective, depending on whether we consider instrumental (e.g., robbery) or expressive (aggravated assault)

violent crime. In additional analyses that examine the racial/ethnic composition of immigrants in neighborhoods, we find that it is neighborhoods with primarily nonwhite immigrants that exhibit this same set of results between robbery and aggravated assault, further supporting the immigrants-as-targets theory. Overall, these findings are consistent with the argument that immigrants serve as attractive targets of acquisitive crime in these neighborhoods.

While findings show some support for the enclave thesis, at least for property crime, we must be careful not to overstate support for that perspective, as we do not have direct measures that allow us to fully test arguments associated with an enclave thesis. While high concentrations of immigrants are a necessary condition for enclaves, they are not a sufficient condition, making it problematic to assume that *all* high-concentration immigrant neighborhoods are enclaves (Kubrin et al. 2019). A factor that differentiates the two is the level of social organization, reflected in the community's formal organizational structure. The benefits of enclaves described earlier, such as social networks, jobs, information, and support for entrepreneurial activities that help accelerate upward mobility for immigrants, are theorized to flow from this organizational structure, and thus may not be present in neighborhoods with high concentrations of immigrants but that are not enclaves.

At the same time, not all immigrant/ethnic enclaves offer these advantages (Desmond and Kubrin 2009). Many areas of high immigrant concentration, and even some enclaves, are segregated from mainstream society and have high rates of poverty and joblessness. Research also documents weak ties among residents in some immigrant communities (Wierzbicki 2004). One must therefore distinguish between "communities of choice or refuge" and "ghettos of last resort" (Glaser, Parker and Li 2003:526). The implications of this discussion for the current study is that lacking direct measures of enclave status, including community formal organizational structure, we are limited in our ability to draw firm conclusions regarding whether or not the findings support this perspective. Still, the findings point toward the benefits of enclaves, including reduced crime rates, for community members, and go

hand-in-hand with findings from recent scholarship which suggests that immigration may help revitalize communities by reducing housing vacancy rates (Sampson 2017). Because vacant housing is one sign of the disorder and decay process that is considered a crime-generating mechanism (Skogan 1992), immigration may also contribute to lower crime rates in communities through its impact on the prevalence of vacant housing.

One additional concern is that victim reporting to police may be lower in immigrant enclaves. While some studies do not identify under-reporting as a major concern (Chalfin 2015; Light and Miller 2018), Xie and Baumer (2019) find that victimization reporting to the police drops dramatically beyond about 45 percent immigrants for neighborhoods in nontraditional immigrant destination counties (defined as counties with less than 7.9 percent immigrants in 1990). In our study, less than 1 percent of tracts in nontraditional immigrant destination counties exceed this value, suggesting our sample is not in this range of the data. Moreover, when we estimated the models after splitting the sample based on traditional/nontraditional immigrant destination counties, the results were very similar, increasing confidence in our findings.

A final study limitation is the cross-sectional nature of the data, which precludes the ability to directly address questions of causality or selection. Even with the inclusion of theoretically-informed measures and city fixed effects, challenges to causal inference remain due to the potentially selective nature of immigration. The observed (negative) findings could be biased by immigrants relocating to areas to avoid crime. While theoretically a concern, there is little evidence of this (Light and Miller 2018; MacDonald et al. 2013). At the same time, we want to underscore the strengths of these novel data, as there is no other national neighborhood-level crime data set that includes such a diverse range of cities (from small to large, and with vastly different immigration histories and contexts), making the NICS, in many ways, ideal for addressing the research questions of interest.

Limitations aside, this study advances the literature in several ways. First, using a unique and relatively nationally representative sample, we once again confirm that immigration is not positively associated with crime. In short, more immigrants in the neighborhood do not mean more crime. Second, beyond the monotonic relationship of more immigrants while less crime, we determine that the immigration-crime relationship is better captured as non-linear, which means that different levels of immigrant concentration in the neighborhood matter. One implication of our results is that at least some of the mixed findings in the literature may occur due to lack of testing for nonlinearity. Third, our study appears to support immigrant revitalization and enclave theories in terms of property crime when there are higher immigrant concentrations in neighborhoods. And, our findings suggest immigrants may be more attractive targets in neighborhoods for instrumental crimes such as robbery.

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Tables and Figures

Table 1. Summary Statistics				
Variables	Mean	SD	Min	Max
Violent crime-3yr average	23.7	26.0	0.0	581.7
Property crime-3yr average	138.1	125.6	0.0	2114.3
Percent immigrant	23.1	17.4	0.0	87.1
Percent nonwhite immigrant	19.7	16.6	0.0	81.3
Concentrated disadvantage	0.0	0.8	-4.3	4.3
Residential stability	0.0	0.8	-6.2	2.6
Percent Asian	7.8	11.5	0.0	92.1
Percent Black	22.8	29.9	0.0	100.0
Percent Latino	26.0	26.5	0.0	100.0
Percent other race	2.8	3.0	0.0	43.3
Racial/ethnic heterogeneity	44.3	18.9	0.0	78.6
Percent vacancy	11.1	8.9	0.0	100.0
Percent aged 16-29	23.8	9.6	0.0	100.0
Population density	13825.0	20967.6	0	485,004
Population	4114.5	1989.8	500	28,761
Population (logged)	8.2	0.5	6.2	10.3
Consumer-facing employees (logged)	6.1	1.2	0.0	11.0
Non-consumer employees (logged)	5.8	1.4	0.0	12.3
<i>Note: 15,097 census tracts</i>				

Table 2: Negative binomial regression models-Linear city fixed effects with robust standard errors

	Model 1	Model 2
	Violent crime	Property crime
Percent immigrant	-0.099 (0.077)	-0.408*** (0.068)
Concentrated disadvantage	40.305*** (1.601)	8.959*** (1.294)
Residential stability	-8.472*** (1.071)	-6.708*** (0.899)
Percent Asian	-0.119 (0.084)	-0.153+ (0.083)
Percent Black	1.237*** (0.037)	0.377*** (0.031)
Percent Latino	1.075*** (0.057)	0.314*** (0.050)
Percent other race	1.471*** (0.186)	0.443** (0.167)
Racial/ethnic heterogeneity	0.328*** (0.035)	0.303*** (0.032)
Percent vacancy	2.196*** (0.103)	1.272*** (0.079)
Percent 16-29	0.019 (0.094)	0.087 (0.077)
Population density	0.034*** (0.005)	-0.011* (0.004)
Logged population	0.428*** (0.014)	0.432*** (0.013)
Consumer-facing employees	0.238*** (0.007)	0.253*** (0.006)
Non-consumer employees	0.043*** (0.005)	0.078*** (0.005)
Intercept	-3.546*** (0.255)	-1.225*** (0.276)
Ln alpha	-1.507*** (0.023)	-1.552*** (0.022)
N	15,097	15,097
Pseudo R square	0.165	0.096

Standard errors in parentheses + p<.10, * p<.05, ** p<.01, *** p<.001

Table 3: Negative binomial regression models-Nonlinear city fixed effects with robust standard errors

	Model 1	Model 2
	Violent crime	Property crime
Percent immigrant	-0.691*** (0.154)	-1.547*** (0.384)
Percent immigrant ²	0.924*** (0.203)	8.623*** (2.109)
Percent immigrant ³		-19.995*** (4.438)
Percent immigrant ⁴		14.159*** (3.115)
Concentrated disadvantage	39.626*** (1.591)	9.008*** (1.302)
Residential stability	-8.429*** (1.070)	-6.805*** (0.899)
Percent Asian	-0.205* (0.087)	-0.161* (0.081)
Percent Black	1.233*** (0.037)	0.364*** (0.031)
Percent Latino	1.103*** (0.057)	0.288*** (0.051)
Percent other race	1.328*** (0.188)	0.473** (0.169)
Racial/ethnic heterogeneity	0.412*** (0.040)	0.290*** (0.037)
Percent vacancy	2.207*** (0.103)	1.252*** (0.079)
Percent 16-29	0.040 (0.095)	0.084 (0.077)
Population density	0.031*** (0.005)	-0.010* (0.004)
Logged population	0.432*** (0.014)	0.430*** (0.013)
Consumer-facing employees	0.238*** (0.007)	0.252*** (0.006)
Non-consumer employees	0.044*** (0.005)	0.078*** (0.005)
Intercept	-3.605*** (0.255)	-1.165*** (0.281)
Ln alpha	-1.509*** (0.023)	-1.554*** (0.022)
N	15,097	15,097
Pseudo R square	0.165	0.096
LR test vs. Table 2 model	$\chi^2=22.9$ 1 df	$\chi^2=26.4$ 3 df

$p < .0001$ $p < .0001$
Standard errors in parentheses + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 1. Competing Theoretical Predictions

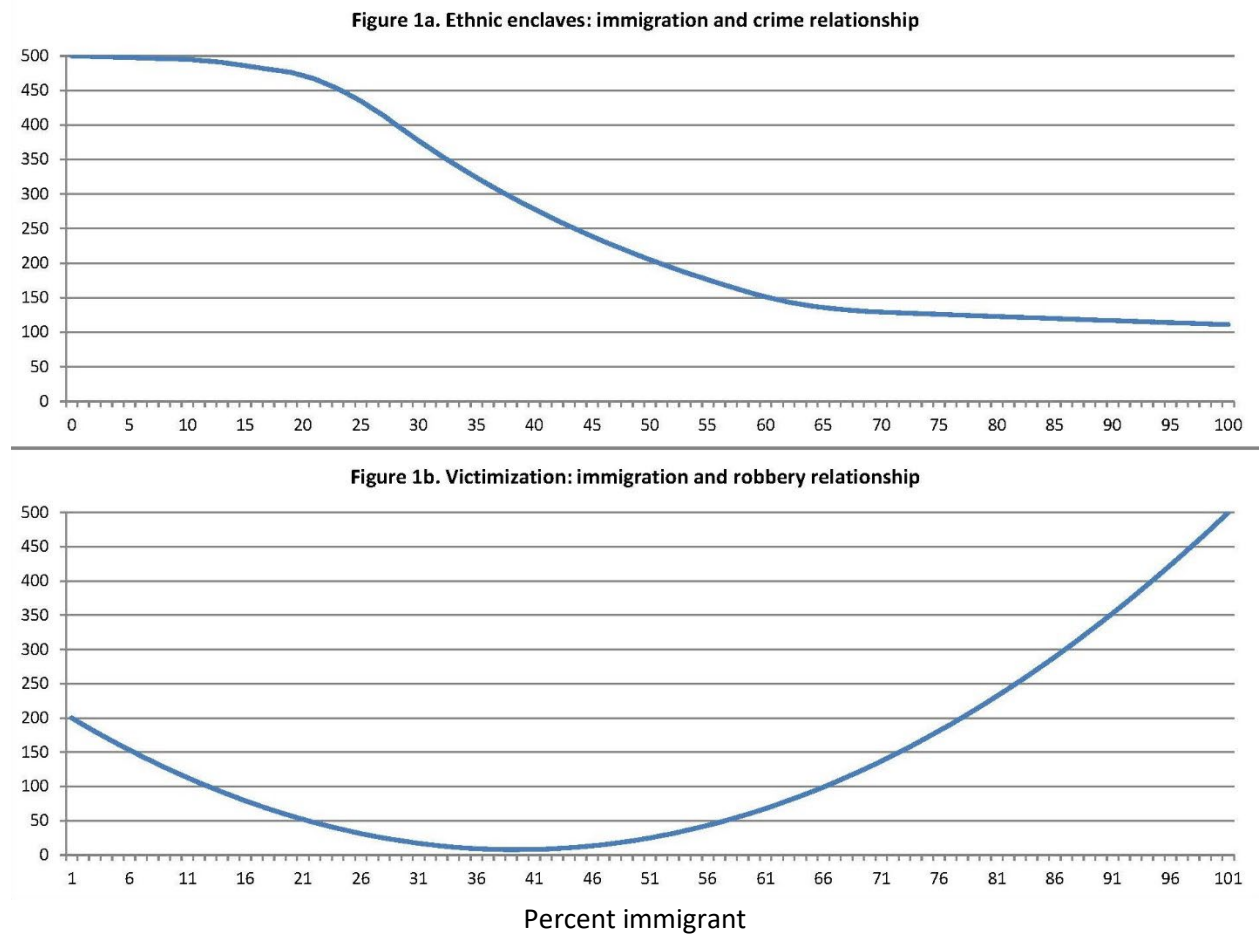


Figure 2. Nonlinear Relationship between Percent Immigrant and Violent and Property Crime

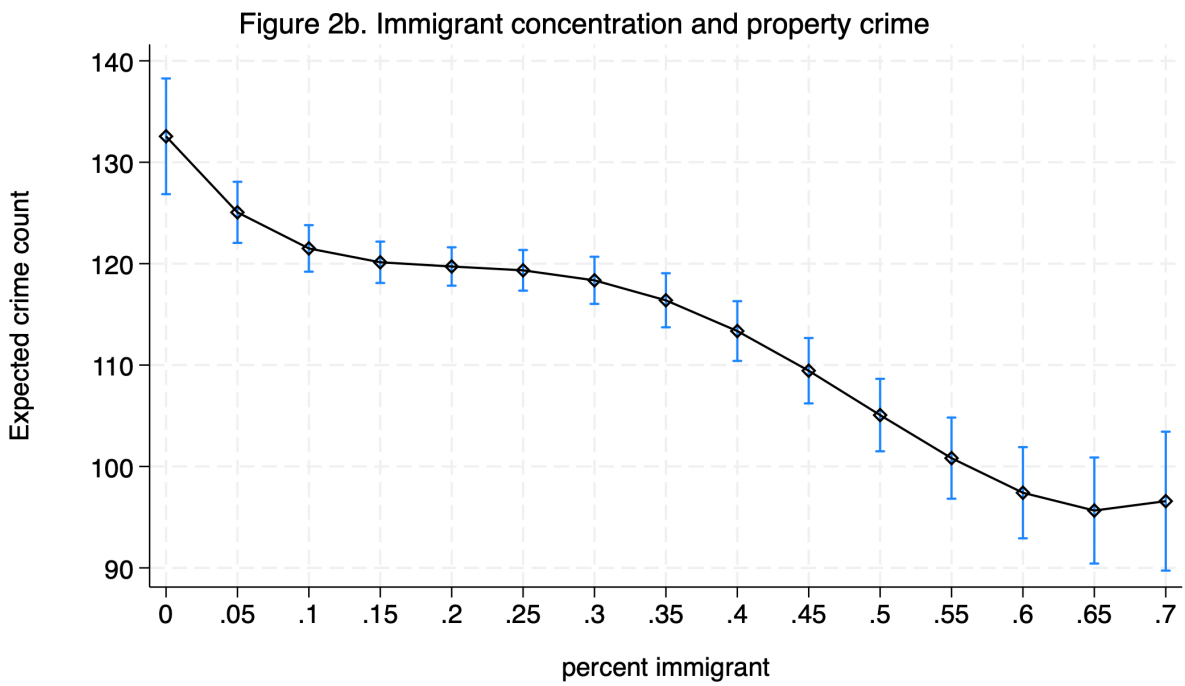
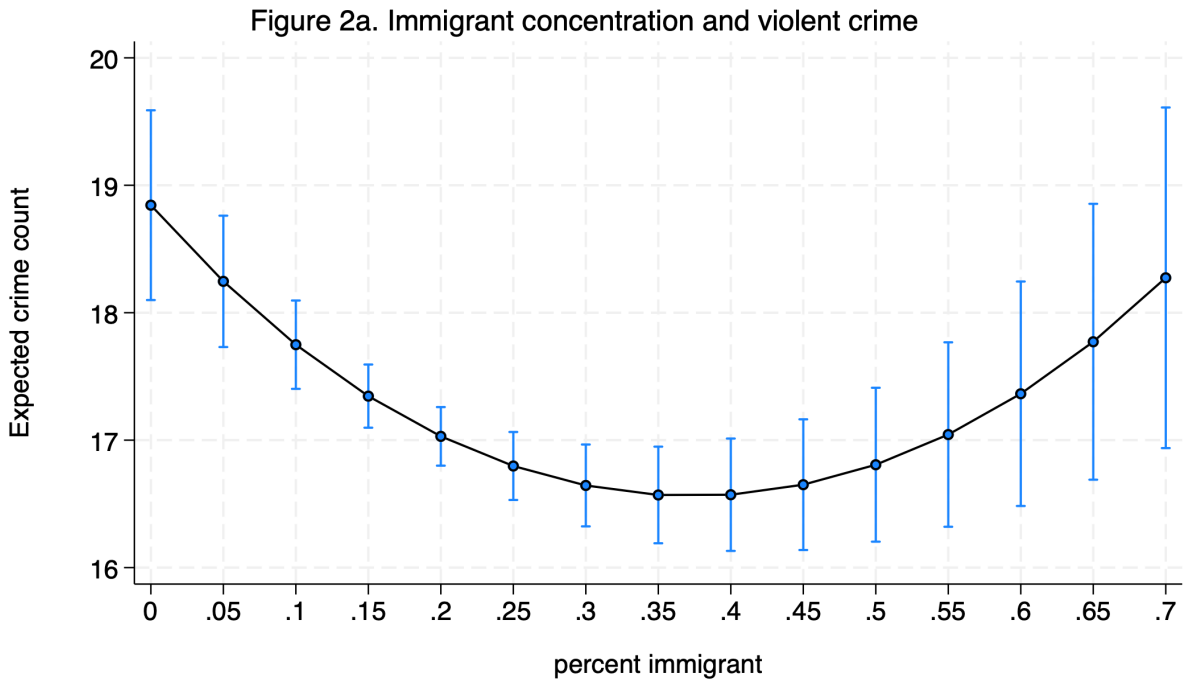


Figure 3. Nonlinear Relationship between Percent Immigrant and Robbery and Aggravated Assault

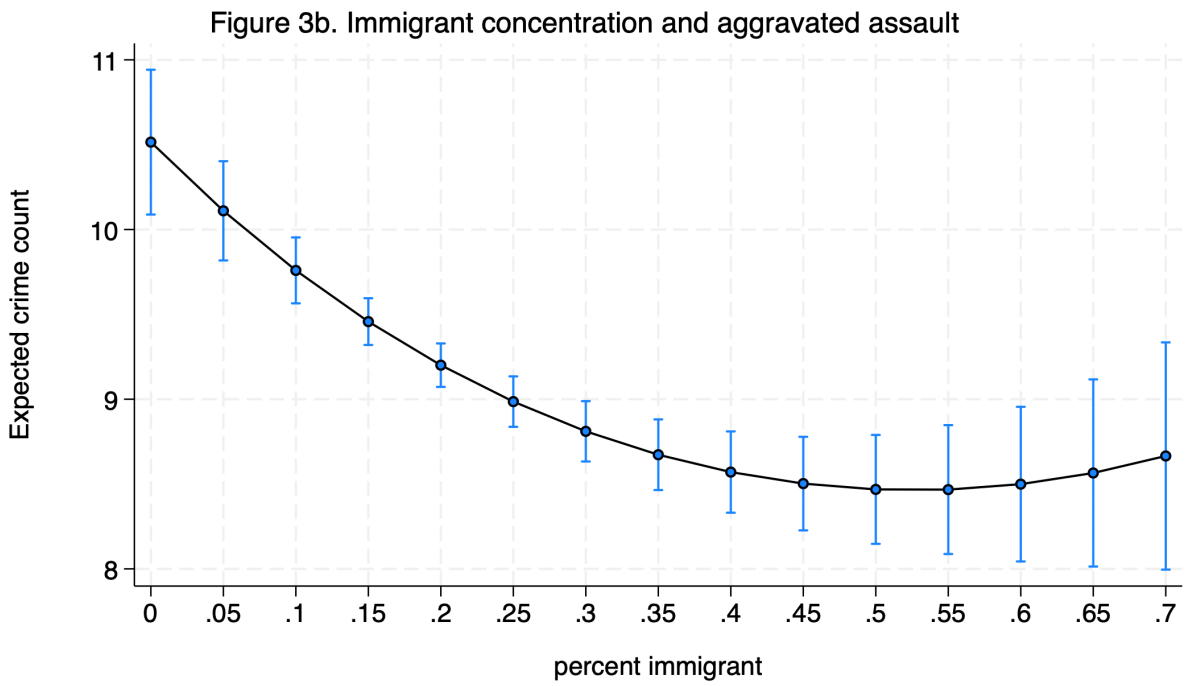
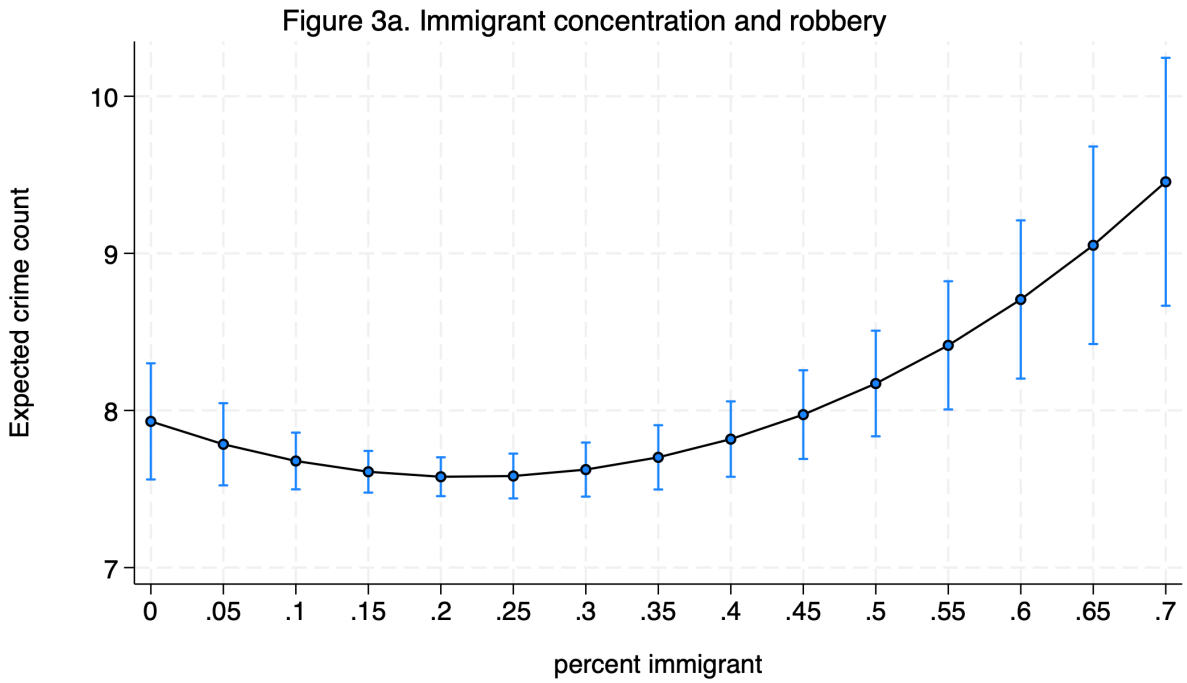


Figure 4. Immigrant Racial/Ethnic Composition, Immigrant Concentration and Robbery and Aggravated Assault

