Exploring the Association between Immigration and Crime in Columbus, OH, a New Immigrant Destination

Abstract:

The general perception that immigration is associated with higher rates of crime continues to be prevalent across the United States. In fact, the 2015 Pew Research Report shows that half of the US population believes that immigrants increase crime and harm the economy. In spite of the negative prevailing perceptions of immigrants, a growing body of research continues to find that increases in immigrant concentration are actually associated with lower levels of crime. Previous studies primarily offer information about historical immigrant destinations like Chicago, Los Angeles and New York City that have sustained large immigrant populations over the past century. However, much less is known about the impact of immigration development in new immigrant destinations, such as Columbus, OH where immigrant populations are only recently settling. Specifically, more research is needed to determine whether the observed lower crime rates associated with immigrant concentration observed in historical destinations is also observed in new destination cities such as Columbus, OH.

Using arrest data from the Columbus Police Department covering the years 2005-2014 and a variety of other data sources to measure immigration and immigrant community characteristics, the current study has four objectives: 1) to identify community characteristics that make certain neighborhoods more desirable for immigrants to settle in Columbus, OH ; 2) to determine whether immigrant concentration in a relatively recent immigrant destination (Columbus, OH) remains negatively associated with crime rates as it is in more historical immigrant destinations; 3) to determine whether community characteristics can account for any associations found between immigrant concentration and crime rates; and 4) to explore the role

of neighborhood characteristics in shaping the immigration-crime association with a specific examination of the presence of immigrant friendly resources that may promote immigrant revitalization in a new destination city.

Descriptive findings indicate that immigrants are more likely to concentrate in Columbus neighborhoods characterized by low crime rate, low disadvantage and high availability of renter allocated housing. This suggests that affordable housing and low crime rates make particular neighborhoods more attractive to immigrants in a new destination city like Columbus OH. Multivariate results using negative binomial mixed effect models show that increases in immigration are associated with decreases in violent and property crime rates in Columbus OH. Furthermore, I find evidence that the presence of minority/immigrant owned business marginally enhances the negative relationship between immigration and crime in Columbus OH.

Introduction:

The general perception that immigration is associated with higher rates of crime continues to be prevalent across the United States. In fact, the 2015 Pew Research Report shows that half of the US population believes that immigrants increase crime and harm the economy[1]. Furthermore, public perception concerning immigrants varies depending on the country of origin from which individuals migrate from. For instance, about 40% of the US population expressed positive views about European and Asian immigrants, compared to about 20% of the US population holding similar positive views of immigrants from Africa and Mexico (Pew Research Report, 2015). Not only are many of these perceptions based on inaccurate information but they also have profound implications in regards to the availability of social support and programs directed towards immigrants as well as shaping the judicial response to immigrants. In fact,

[1] The respondents of the survey administered by the Pew Research Center consist of a nationally representative sample.

Burns and Gimpel (2000) found that attitudes about immigration policy relied on stereotypical and biased beliefs about particular racial groups. For instance, a desire for reductions in immigration in 1992 was associated with increasing prevalence of negative stereotypes of blacks and Hispanics (Burns & Gimpel, 2000). Similarly, Lacayo (2016) conducted in-depth interviews with 40 self-identified white residents in Orange County, California regarding their view on local issues and found respondents in general believed that the predominantly Latino community had more crime and disorder than other neighborhoods in the county.

Neighborhood crime has various implications for the overall well-being of a community. Taylor (1995) indicates that there are psychological, social psychological and economic consequences associated with neighborhood crime. For instance, crime can make people feel less connected to the neighborhood and less willing to invest in any efforts towards the improvement of the community (Taylor, 1995). Residents may also report lower levels of satisfaction and inadequate living conditions (Taylor, 1995). In regards to house value and property tax revenue, Taylor (1995) found that as burglary rates increase, vacancy rates also increase, indicating that increasing property crime has an impact on home values and abandonment. Neighborhood crime is also associated with instability and reduced levels of collective efficacy. Collective efficacy is composed of the willingness of residents to intervene for the well-being of the neighborhood, mutual trust among residents, and presence of social cohesion (Sampson et al., 1997). Therefore, the perception that immigrants are associated with higher neighborhood crime may result in immigrant neighborhoods being perceived as having similar deleterious characteristics associated with neighborhood crime, regardless of whether there is a positive or negative association between immigrant concentration and crime.

In spite of the negative prevailing perceptions of immigrants, a growing body of research continues to find that increases in immigrant concentration are actually associated with lower levels of crime. Previous studies primarily offer information about historical immigrant destinations like Chicago, Los Angeles and New York City. For instance, Kubrin et al. (2012) found that immigrant concentration was negatively associated with violent crime rates in Los Angeles and Chicago. In their study, Kubrin et al. (2012) noted that on average 17.72% of the population in Chicago and 40.90% of the population in Los Angeles are foreign-born. These cities are classified as historical immigrant destinations because they have sustained large immigrant populations over the past century (Hall et al., 2011). However, other states, such as Ohio, Indiana and Wisconsin have only become popular immigrant destinations in recent years (Ferraro, 2016). Thus, researchers are questioning the effect that immigration has on neighborhoods that are considered new immigrant destinations, such as Columbus, OH where immigrant populations are only recently settling. Specifically, there is growing interest in determining whether the negative association between immigration and crime observed in historical destinations is also particular of new destinations like Columbus, OH (Ferraro, 2016, Ramey, 2013).

The symbolic threat associated with immigration and the public perception that links immigration to crime or disorder continue to prevail in the US. Not surprisingly, very few studies have attempted to identify the mechanisms that may underlie the immigration-crime link. This lack of research may contribute to negative views held by the US public about immigrants and reduce opportunities for facilitating the adoption of pro-immigrant legislation. This is unfortunate as some studies have shown that cities that attract immigrants by creating more supportive environments for immigrant populations actually prosper both economically and in

terms of lower crime rates. Moreover, these positive associations appear to be enhanced when the political context is pro-immigrant. In fact, Lyons et al. (2013) found that bureaucratic incorporation of minorities into the police force, community responsiveness to immigrant issues, pro-immigrant legislation, and minority representation in political offices enhance the negative correlation between immigration and violence.

The positive association between larger immigrant populations and more positive outcomes is viewed as a hallmark of immigrant revitalization (Lyons et al., 2013; Martinez, 2010). Even though these positive outcomes associated with immigration are well documented in research, much remains to be known about the role of community characteristics in the immigration-crime association. For instance, what types of communities and characteristics are attractive destinations for immigrants? Do immigrants locate in similar types of communities in new destination cities to those that attract immigrants in more historical immigrant destination cities? Do these community characteristics explain the association between immigrant concentration in crime? Answers to these questions may help shift public perception regarding immigration as well as identify ways that policy and legislation may enhance community wellbeing for immigrant settlers as well as the native-born population.

Using arrest data from the Columbus Police Department covering the years 2005-2014 and a variety of other data sources to measure immigration and immigrant community characteristics, the current study has four objectives: 1) to identify community characteristics that make certain neighborhoods more desirable for immigrants to settle in Columbus, OH ; 2) to determine whether immigrant concentration in a relatively recent immigrant destination (Columbus, OH) remains negatively associated with crime rates as it is in more historical immigrant destinations; 3) to determine whether community characteristics can account for any

associations found between immigrant concentration and crime rates; and 4) to explore the role of neighborhood characteristics in shaping the immigration-crime association with a specific examination of the presence of immigrant friendly resources that may promote immigrant revitalization in a new destination city.

I selected Columbus, OH for this study because it has a small but a fast growing immigrant population, that is particular of new immigrant destinations in the US. Since prior research tends to focus on traditional immigrant destination cities, much less is known about immigrant experiences in emerging immigrant destinations and whether we observe similar relationships between immigration and crime in these regions. I begin my research by exploring the social context of the neighborhoods in Columbus, OH in order to identify whether immigrants are clustering in particular types of communities. The descriptive analyses will shed light on the social and economic conditions of communities that are attractive to immigrants in the context of a city emerging as a new destination for immigration research. This will allow for identification of community conditions that may be especially important for attracting immigrants.

The first section of this paper provides a description of the demographic composition of Columbus, OH, the policy implications of immigration, and a summary of research examining community characteristics that result in or enhance positive outcomes associated with immigration. To do so I discuss the immigrant revitalization thesis and immigrant political opportunities theoretical framework. My data analysis consists of the harmonization of various datasets necessary to address my research questions. I conclude with a summary of the results and discuss the implications of these findings for the development of policies and programs that

facilitate the integration of immigrants in such a way to enhance the local economy, social, political, and cultural components of local communities.

Literature Review:

Immigrant Destinations in the United States: Throughout the 20th century, the US has been a highly popular immigrant destination compared to other nations. In fact, the Pew Research Center (2017) reports that today more than 40 million people living in the US are foreign born. "Foreign born" refers to individuals that are born outside the US, Puerto Rico or other US territories (Pew Research Center, 2017). Unless otherwise noted, the term foreign born and immigrant are used interchangeably in this study. Most immigrants living in the US come from Mexico, followed by China, India, the Philippines and El Salvador (Pew Research Center, 2017). Since 2010, more immigrants from Asia relative to Latin America have arrived to the US. The Pew Research Center (2017) estimates that Asians will become the largest immigrant group by 2055. Today 46% of immigrants live in California, Texas and New York, but other nontraditional destinations are experiencing a rapid growth in the percent of foreign born (Pew Research Center, 2017). In fact, Ferraro (2015) posits that the immigrant population has doubled in states like Indiana and Wisconsin since 1980. Compared to traditional destinations, cities in Ohio, Indiana or Wisconsin may not be adequately equipped to ensure the successful transition of immigrants into the labor and housing markets (Ferraro, 2016).

Cities and counties inside historical immigrant destinations have developed policies and programs to serve immigrant populations with limited English speaking and writing capabilities. Hall et al. (2011) explain that successful programs have mandated employees to attend language-sensitivity training. Other programs require employees to offer interpreter and translation services and the implementation of multilingual information resources and program applications

(Hall et al., 2011). New destination cities are less likely to have these types of programs although many are learning that immigrant settlement has economic benefits for cities and are trying to develop polices/laws that make their cities more desirable for immigrants. For instance, Columbus, OH recently passed a law that prevents the arrest of individuals and denial of service based on immigrant status (Rouan, 2017). In October of 2017, Columbus City Councils voted to form the Columbus Families Together Fund, which helps immigrants get legal representation (Taylor, 2018). Although Columbus, OH has not declared itself a "sanctuary city," it has taken steps towards implementing greater protection of immigrant populations. As with other new and historical immigrant destinations, the city of Columbus has also experienced backlash due to its decisions to use city funds to help immigrant communities. Matt Mayer, a public policy expert with Opportunity Ohio stated that taxpayer dollars should not be used in services that support immigration when roads, bridges and schools need that money (Taylor, 2018).

Immigrants have played historically important roles in contributing to the growth and economic development of cities like New York, Chicago, and Los Angeles. Once immigrants settle and integrate economically, the traditions and customs of these groups become part of the local culture. St. Patrick's Day parades, Mardi Grass carnivals, and Mexican fiestas are examples of this process. In Columbus, OH, the impact of immigration on the local culture is visible as many festivities over the year contain themes that encompass the culture of the immigrant populations, such as the Columbus Hispanic Festival and the Columbus Asian Festival. Some festivities in Columbus have themes representing the culture and traditions of its first immigrant populations: Italian Festival, Columbus Oktoberfest, and Columbus Greek Festival. Clearly, immigration plays an important role on the overall well-being as well as the local culture of these

immigrant destinations, but there is much to learn about the impact that immigration has on emerging destinations like Columbus, OH.

Immigration in Columbus, Ohio: In general, most research on immigration in the US focuses on metropolitan statistical areas and historical immigrant destinations or gateways like Los Angeles, CA and Chicago, IL (Reid et al., 2005, Kubrin & Ishizawa, 2012). Although extremely informative, this body of research does not address the effect of recent immigrant influx on crime in areas that have much more recent experience with immigration growth, such as Columbus, OH. Columbus is considered a pre-emergent immigrant destination or gateway because this region has experienced rapid immigration growth in the recent decades (Hall et al., 2011). According to the 1980 Census, 2.76% of the population in Franklin county, OH[2] was foreign born, and it increased to 6% 20 years later (US Census Bureau, 1980; US Census Bureau, 2000).

Columbus Partnership Benchmarking Central Ohio 2009 report shows that Columbus, OH ranked second among 16 metro areas (i.e., Austin, Charlotte, Chicago, Cincinnati, Cleveland, Columbus, Indianapolis, Jacksonville, Kansas City, Louisville, Milwaukee, Minneapolis, Nashville, Portland, Raleigh, and San Diego) in percent of new foreign-born residents in 2009. Additionally, the Somali Community Access Network estimates that in 2009, 45,000 Somali Americans lived in Columbus, OH, and Somalis own more than 400 small businesses in Columbus, OH (American Immigration Council, 2015). In 2016, the Development Services of Ohio reported that the number of Hispanic Ohioans has increased by 89% since 2000. The growth of immigrant populations in Columbus, OH is likely to shape the demographic, economic and social characteristics of neighborhoods in this city.

[2] The city of Columbus is located inside Franklin county.

In addition, Franklin County has had the largest number of refugee arrivals in Ohio between 2002 and 2014 (The Impact of Refugees in Central Ohio (IRCO) Report, 2015). Refugees are individuals who have been forced to leave their home country due to war, violent conflicts and persecution (The United Nations Refugee Agency (UNHCR), 2017). Once individuals flee their country and seek sanctuary in another country, they apply for asylum, which refers to the right to be recognized as a refugee and receive legal protection and material assistance in the host country (UNHCR, 2017). The United States has the largest resettlement program in the world, and since 1983, 16,596 refugees from around the world have resettled in the Columbus metro area (IRCO, 2015). The largest group of refugees in Columbus, OH is from Somalia, with other major groups of refugees coming from Bhutan and Iraq (IRCO, 2015). The 2015 IRCO report shows that refugees in Columbus are highly motivated and beneficial for Columbus economic growth as they often start businesses, are self-sufficient, form strong networks with other members of the community, and bring additional skills to the local workforce.

Immigrant Community Revitalization: The revitalization approach explains that immigration revitalizes the social conditions of communities. Parker and Stansfiled (2015) commented that the recent wave of immigrants is composed of people who are highly motivated to join the labor force. That being the case, immigrants are more likely to bring financial resources to the communities (e.g., opening new businesses) (Parker & Stansfield, 2015). In fact, Grieco et al. (2012) reported that 68% of the total foreign-born population participated in the labor force, compared to 63.8% of the native born population according to the data from the 2010 American Community Survey (ACS). In regards to the immigrant population in the state of

Ohio, the American Immigrant Council (2013) reported that immigrants comprised 4.8% of the state's workforce in 2013 according to the U.S. Census Bureau.

Hall et al. (2011) categorized Columbus, OH as a pre-emerging immigrant destination because it has a small historical record of receiving immigrants and has experienced a recent and rapid influx of foreign-born populations. In pre-emerging metro areas like Columbus, OH, low-skilled immigrant workers or those that have less than a college education are one-third more likely than the native born to be employed (Hall et al., 2011). High-skilled immigrants or those that graduated from college in pre-emerging gateways are more likely than the native born to work in positions for which they are overqualified and/or over- credentialed (Hall et al., 2011). Cohen and Chavez (2013) argue that immigrants are coming to Columbus, OH because of reasonable wages, a lower cost of living, economic stability, and the need to find a safe place to raise a family. In addition, central Ohio has resettled 16,956 refugees since 1983 (Pyle, 2015).

In terms of the changes of social conditions as a result of immigration growth, recent research shows that immigration is associated with lower levels of crime. Parker and Stansfield (2015) found that the presence of Hispanics to be negatively correlated with levels of violent crime rates, especially in black communities. The influx of Hispanics in these traditional black communities may help with the revitalization of the neighborhoods through the creation of jobs or increase in informal social control (Parker & Stansfield, 2015). Crowley and Lichter (2009) found that the influx of Latino groups is not associated with an increase in crime rates in new Latino destinations compared to nonmetropolitan counties.

The demographic changes observed in Columbus, OH over the past 20 years makes this region an ideal case for examining how immigrants influence community well-being and often improve community safety by reducing crime. I argue that it is important to determine whether

immigrant concentration is associated with lower neighborhood crime rates in a context such as Columbus with a more recent influx of immigrants and to identify community characteristics that may explain the beneficial impact of immigrants on crime in a city considered to be a nontraditional destination for immigrant settlements. Thus, my first objective is to identify community characteristics associated with higher concentrations of immigrants in Columbus. In other words, what types of neighborhoods appear to draw more immigrants? Are immigrants settling in more disadvantaged areas of Columbus where we also see higher concentrations of African-Americans? Or do they avoid higher crime areas and instead settle in other types of communities? Previous research on historical destination cities suggests that immigrants are more likely to settle in disadvantaged communities, where housing is much more affordable (Ferraro, 2015).

Second, I examine whether immigration and crime remain negatively associated in Columbus OH. Even though Columbus is a new immigrant destination, previous research found that increases in immigration are associated with reduced crime rates (Ramey, 2013; Ferraro, 2015). However, if new destination cities are not able to create policy and legislation favorable to immigrants that enables them to prosper, we may not find the negative association between immigrant concentration and crime that is observed elsewhere.

Immigrant Political Opportunities: Lyons et al. (2013) define the concept of immigrant political opportunities as the "political receptivity or vulnerability of cities to meeting the needs and demands of immigrant communities" (p. 605). Specifically, Lyons et al. (2013) developed five dimensions of immigrant political opportunities: (1) Latino and Asian American political incorporation, (2) minority bureaucratic incorporation in public service positions (e.g., police), (3) pro-immigrant legislation, (4) audience receptivity to immigrant issues, and (5) governmental

structure. Portes and Rumbaut (2014) documented that immigrant groups in the United States today continue to be highly involved with the political affairs of their home country while also working in favor of immigrant communities in the US. Although foreign born residents have limited opportunities to become involved in American political affairs, the engagement of immigrants and the count of immigrants for the purposes of electoral redistricting influence the likelihood that co-ethnic candidates will be elected. The 14th Amendment to the U.S. Constitution states that representatives for each state should be chosen according to the state's population.

Currently, noncitizens cannot vote, but there has been a growing political dominance in the U.S. House of representatives of the six immigrant-receiving states: California, Florida, Illinois, New Jersey, New York, and Texas (Tienda, 2002, p. 595). Therefore, anti-immigrant efforts are often, but not always, met with defeat. For example, George W. Bush initiated a massive deportation campaign that concluded with the loss of the Hispanic vote and this led to the defeat of the Republican presidential nominee in November 2012 (Portes & Rambaut, 2014). Furthermore, Portes and Rambaut (2014) explained that the defeated politicians are usually replaced by members of the ethnic group they originally targeted. Other studies found that the level of political involvement of foreign born depends on the immigrant generation. In fact, Logan, Darrah and Oh (2012) found that 3rd and later generations of immigrants are more likely to become politically involved than 1st generation immigrants. Over time, immigration growth has a great impact on voting registration, voting behavior and elected representatives.

As a new destination, Columbus, OH is still in the process of seeing changes in the political context as a result of the rapid immigration growth. Nevertheless, this is an area that demands further exploration. Theobald and Haider-Markel (2013) explicate that government

officials do not only have active representation, but they also have symbolic value. In other words, the programs and policies implemented by minorities in elected offices and designed to benefit members of their groups are likely to change the attitudes and actions of said individuals. However, the actions and attitudes of these groups may change by the sole presence of minorities in governmental offices. This is defined as symbolic representation (Theobald & Haider-Markel, 2013).

Essentially, the actions of government actors are perceived as more legitimate because people see others like themselves in positions of power (Theobald & Haider-Markel, 2013). Beyond the actions done by minority representatives, minorities and immigrants may be more likely to have higher civic involvement, such as voting or attending city meetings, when they see people like themselves in positions of authority. In fact, Theobald & Haider-Markel (2013) conducted a study using *The Police-Public Contact Survey* to determine whether the race of the police officer played a role on the perceived legitimacy of his/her actions. The findings show that black respondents were more likely to report the actions of the police officer as legitimate when the officer was black. The following subsection highlights the research on the representation of minorities in elected offices.

Minority representation in elected offices: Lyons et al. (2013) found that as immigration increases, homicide decreases in cities with minority incorporation into elected offices and the police force. Moreover, cities that incorporated any policies to limit local enforcement of immigrant laws had low levels of homicide (Lyons, 2013). Minority/immigrant representation in politics is key for pro-immigrant reform. Brown (2013) explained that Latino political leaders promoted ads that criticized politicians that sought to make stricter welfare reforms and demonized undocumented immigrants. Elected positions heavily rely on votes from members of

the community, thus areas with large percentages of minorities will be more likely to elect representatives that have similar ethnic or racial background, or support interests that benefit the community and members of their respective groups. School Board members are the largest group of elected officials in Ohio, are in charge of policymaking, and serve as chief advisors to the superintendent on community attitudes (Ohio School Boards Association, 2017). The School Boards in Ohio often hold public meetings on a monthly basis, and the term of office is four years, but two-year terms occur to complete an unexpired term (Ohio School Boards Association, 2017).

There are 21 school districts in Franklin County and due to the size of the district, some School Boards are composed of seven members (Franklin County Board of Elections, 2017). In addition, there are approximately 13 school districts that fall within the boundaries of Columbus, OH. Previous studies have documented the insights associated with minority school representatives. For instance, Scott (1990) found that the mobilization of black social, economic, and political forces is often considered the motivation to raise black Americans above the constraints imposed by white Americans. Scott also reported (1990) that some respondents believe that black superintendents respond to the demands of residents from Black communities, and more than two-thirds of the respondents concur that White Americans operate a monopoly over the nature and content of public education for Blacks. (p. 168).

In Trevino's study (2016), one of the superintendents interviewed stated that "[I]t is important for students in communities to see a representation of themselves in positions of authorities. I think it is important to have a Latino leader, provided that they are qualified and they do a good job, and they need to be a positive role model for that community" (p. 101). School representatives provide guidance and mentorship to the students in communities and

galvanize others to apply or run for positions of authority. In fact, Trevino (2016) indicated that some superintendents conduct mentorship programs to get others into cabinet-level positions, and then to move into superintendence (p. 102). Thus, the role of minorities in positions of power, like superintendent or the District School Board does not only have a symbolic effect on the residents of a community, but it also creates a support network for those who also wish to move into these types of positions. This mobilization of minorities further contributes to the social, political and economic growth of immigrant communities. It is outside the scope of this study to determine whether the ideologies that are held by the foreign born and minorities in Columbus, OH highlight any perceptions about minorities in positions of power since this process will involve obtaining information about the residents' views, experiences, and notions of minority embeddednes in bureaucratic and political positions. Nevertheless, the present study explores whether minority representation has any effect on crime and if this mediates the association between immigration and crime.

Drawing from the symbolic representation paradigm, immigrants and minorities should have higher civic involvement in Columbus if there are more minority candidates on Boards of Education. However, Columbus is not a historical settlement so immigrants are still in the process of developing strong networks with public officials and becoming civically engaged. Ramey (2013) explained that local conditions may not benefit small and newer immigrant destinations because they do not have the resources to address the needs of the immigrant populations. Drawing on the immigrant political opportunities theoretical framework (Lyons et al., 2013), I consider minority representation on Boards of Education, which is the largest group of elected officials in Ohio (Ohio School Boards Association, 2017) as an important factor that may make certain areas more attractive to immigrants and may also strengthen the immigrant-

crime association. Based on the findings by Lyons et al. (2013) and research on the impact that incorporation of minorities in public positions have on pro-immigrant legislation and perceptions about legitimacy (Mindiola & Gutierrez, 1988; Theobald & Haider-Markel, 2008), having more minorities in positions of power may indicate neighborhoods that are more willing to embrace all types of diversity and to make sure economic and political opportunity benefit all residents including immigrants. Nevertheless, as suggested earlier, Columbus, OH may lack adequate resources to help newcomers because it is a new destination that may not have had sufficient time to develop strong networks between public officials and immigrant populations that could contribute to the immigrant revitalization. The exploration of this mechanism will shed light on the political context of communities during early stages of immigration growth.

Entrepreneurial Characteristics of Immigrants: In addition to Columbus, OH being a unique site to study the protective effect of immigrant concentration on crime, the diverse composition of immigrant groups living in this region as well as the entrepreneurial characteristics of these allow for the examination of the role that the implementation of businesses may have on the immigrant revitalization processes. Entrepreneurship refers to the "creation of an organization" (Robertson & Grant, 2016). In administrative data, entrepreneurs are defined as self-employed business owners. Robertson and Grant (2016) administered a survey to 122 immigrant entrepreneurs in Canada and asked them about their motivations for self-employment. The results show that participants were mainly motivated to start a business because of "pull" factors, which entail flexibility of self-employment. "Push" factors had little to moderate impact on the motivation of immigrants to start a businesses (Robertson & Grant, 2016). "Push" factors refer to feelings of disadvantage in the labor market. Clearly, immigrants and refugees are highly motivated to start a businesses, thus it is imperative that research starts

looking at the impact that the entrepreneurship characteristics of these groups have on the local economy, social capital as well as culture of the host community.

Recent work by Lara (2012) shows that Latinos have an impact on the economic structure of neighborhoods through the development of businesses. Carnegie Endowment for International Peace (1997) found that ethnic minorities drive neighborhood revitalizations because immigrants are more likely to create social bonds and stronger economic structures in their communities. Lara (2012) posited that entire neighborhoods and city districts have been revitalized due to the entrepreneurial characteristics of immigrants. The revitalization of these communities may in part support the reintegration of other local institutions such as schools, churches, and other culturally-oriented organizations. Additionally, the presence of commercial businesses and other organizations may promote widespread use of public space; thus, increasing street activity will lead to more "eyes on the street" or street monitoring (Browning et al., 2015; Jacobs, 1961).

In Columbus, refugees contribute to the local economy by creating jobs, hiring workers and producing goods and services (IRCO, 2015). Results from the refugee household survey conducted by IRCO in 2015 indicated that refugees in Franklin County are twice as likely to start a business compared to the county Population. The 2015 IRCO report also estimates that 7,851 jobs are supported by local refugee-owned businesses, and these businesses generate approximately $605.7 million a year. Overall, immigrants and refugees are highly motivated to contribute to the local economy in Columbus. In addition to the composition of school boards, I also consider whether the presence of minority/immigrant owned businesses in a neighborhood enhances the association between immigration and crime. Previous research on historical

immigrant destinations found that first-generation immigrants[3] contribute immensely to the local economy by starting new businesses and creating jobs (Starr, 2012). For instance, half of small business owners in New York are first generation immigrants and about a quarter of the fast-growing companies in Los Angeles in 2005 were created by first-generation immigrants (Starr, 2012). Cities started developing ways to contribute to immigrant entrepreneurship by starting programs that facilitate access to regulatory guidelines and bolster immigrant focused social service organizations (Starr, 2012). New immigrant destinations have also started implementing programs and using funds to promote immigrant entrepreneurship, particularly in Pittsburgh, Detroit, Dayton, and Cleveland (Starr, 2012). Thus, it is imperative to observe the impact of immigrant entrepreneurship on the immigration-crime link in new and recent immigrant destinations. I also focus on the presence of minority owned businesses because these establishments may have symbolic value for new immigrant populations. By seeing members of the same ethnic/racial group, individuals may feel more welcomed in the community and encouraged to achieve self-employment.

Data:

Units of Analysis: I use census tracts as the units of analysis in this study because the U.S. Census has community level data aggregated at the census tract level. The boundaries designed by the Census are artificial and are not necessarily reflective of experiences of being part of a community. Nevertheless, census tracts are easily identifiable and are connected to a wide range of data collected. I do not use block groups as my units of analysis in this study because the American Community Survey (ACS) does not aggregate specific variables like percent foreign-born at the block group level. Aggregating percent foreign born at levels smaller than a census tract often results in loss of precision and reliability (United States Census Bureau,

[3] Immigrants that arrived to the US after they turned 15 years old.

2000). My key variable, percent foreign-born and all demographic variables derive from the 2000 Decennial Census (Summary File 3), and the 2006-2010 and 2011-2015 ACS 5-year estimates. The estimates of the 2000 Decennial Census are interpreted as a snapshot of April 1 of the census year, and are categorized as a 100-percent data, meaning that the data derive from questions asked of all the population. The Summary File 3 of the 2000 Decennial Census consists of social, economic, and housing characteristics collected from a sample of 19 million housing units that received the Census 2000 long-form questionnaire. Therefore, the data from the decennial census is representative of the whole population.

The 5-year estimates are based on data collected over a period of 60 months. These estimates are designed to describe the average characteristics of an area over a specific time period. In order to have higher levels of reliability, the US Census samples areas with smaller populations at higher rates compared to those areas with larger populations (United States Census Bureau, 2000). In 2010, all legal boundaries defined by the Census Bureau changed. Consequently, geographic entities like census tracts were consolidated with other census tracts or divided into 2 or more entities. Since I am looking at changes across time, I will use data that have been normalized or paired of 2000 Boundaries in 2010 Boundaries. The Neighborhood Change Database (NCBD) Tract Data from the Urban Institute Geolytics, Inc is a product independent of the US Census. NCBD provides census demographics for all geographies that were released before 2010 and normalized to 2010 Boundaries. The pairing of 2000 Long Form in 2010 Boundaries allows for longitudinal analysis from 2000 to 2010. Additionally, these data allow me to measure growth in immigrant composition over time while avoiding issues with official boundary changes from 2000 to 2010.

Since the crime data span from 2005 to 2014, I conduct cubic spline interpolation for the census data. I opted for this technique because a spline is a curve $f(x)$ that interpolates all n knots or points and includes cubic polynomials between each consecutive pair of points (Smith et al., 2004). McNeil et al. (1977) explain that the cubic polynomials are constrained allowing $f(x)$ to be smooth. Essentially, I have 3 knots or points, thus I use the 2000 Decennial Census data as the first point, the 2006-2010 5-year estimates data as the second point, and the 2011-2015 5-year estimates as the third point. I use the first knot for the year 2005, the second knot for the year 2010 and the third knot for the year 2014. I interpolated all demographic variables including percent foreign born at 2005, 2009 and 2014. This approach helps track changes in immigration growth and other demographic variables at the census tract level.

The total number of tracts in Franklin County is 285, but the total number of tracts I examine in this study for all periods is 204 (Figure 1). Figure 1 shows the map of Franklin County with information about the population size for the census tracts I include in the analysis. Since several neighborhoods in Franklin County have their own police department, I do not have any arrest data for the following communities: Worthington, Upper Arlington, Gahanna, Whitehall, Bexley, Grandview Heights, Reynolsdburg, Brice, Zimmer, Blacklick States, Obetz, Hilliard, and Dublin. I conducted an overlay analysis to combine the characteristics of the census tracts with the Columbus Police precincts, which are sections that the Columbus Police Department has jurisdiction of. Since the boundaries of the police precincts do not exactly outline the boundaries of the census tracts, I decided to include only those census tracts with 20% or more of the total area that is overlapped by the police precincts. The reasoning behind this decision is that the Columbus police department is likely to respond to calls that fall outside the boundaries of the Columbus Police precincts, thus arrests are not concentrated strictly within

the portion of the census tract that overlaps the police precincts. Indeed, the arrest data from the Columbus Police Department from 2005 to 2014 shows that several arrests occurred outside the boundaries of the Columbus Police jurisdiction. The total number with 20% or more of the total area that is overlapped by the Columbus Police precinct is 204[4]. This approach also allows me to retain as many observations as possible. It is worth mentioning that I do not include the census tract where the Columbus International Airport is located as there are not demographic data for this neighborhood (Figure 1).

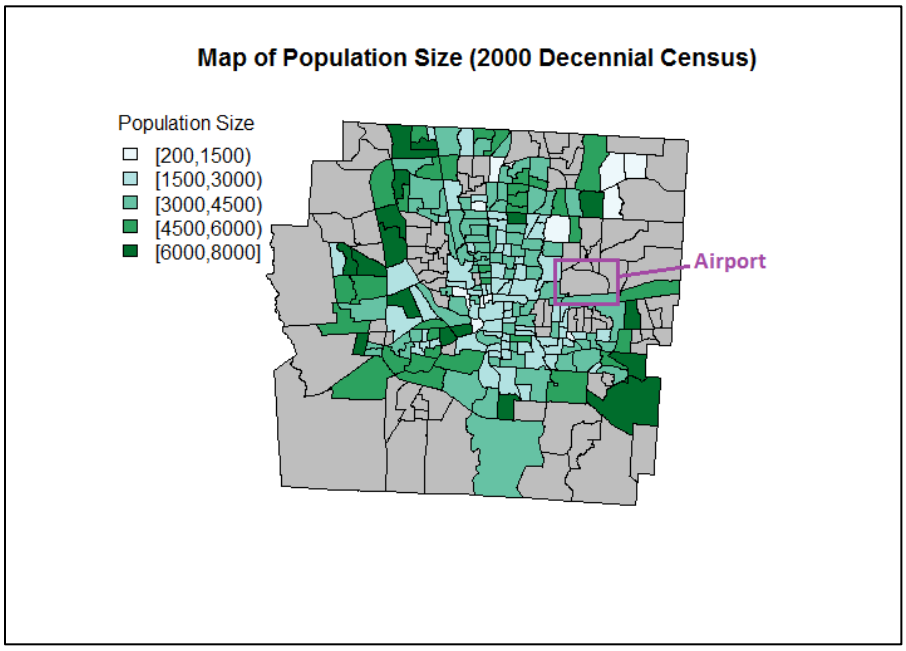

Figure 1: Map of population size (2000 Decennial Census). Census tracts (204) are overlapped on Franklin County. Areas with no data are colored gray.

[4] I created additional maps where I only include census tracts with 30% or more and 50% or more of the total area that is overlapped by the Columbus Police precinct with the objective to see if there will be any major differences regarding the overall findings. The total number of census tracts with 30% or more and 50% or more of the total area that is overlapped by the Columbus Police precinct are 196 and 183 respectively.

I measure the neighborhood immigrant composition as the percentage of tract population that was born outside the US. The Census uses the term "foreign born" to describe this population. Table 2 shows that the overall mean percent foreign born is 8.669 from 2005 to 2014. Some census tracts have a maximum of 52.53% foreign born between the years 2005 and 2014. Using the 2000 Decennial Census, 2005-2010 5-year estimates, and 2011-2015 5-year estimates, I also mapped the distribution of percent foreign born in Columbus for each time period in order to demonstrate how immigrant concentration has changed. Figures 2, 3 and 4 show that immigration growth is not solely concentrated in one section of Columbus, OH. In fact, the highest concentration of immigrants during the initial part of the observation period is the area close to The Ohio State University. Few census tracts in the north-east part of Columbus have between 22% and 33% of the population that is foreign born and other areas in the north-west part of Columbus have less than 22% foreign born.

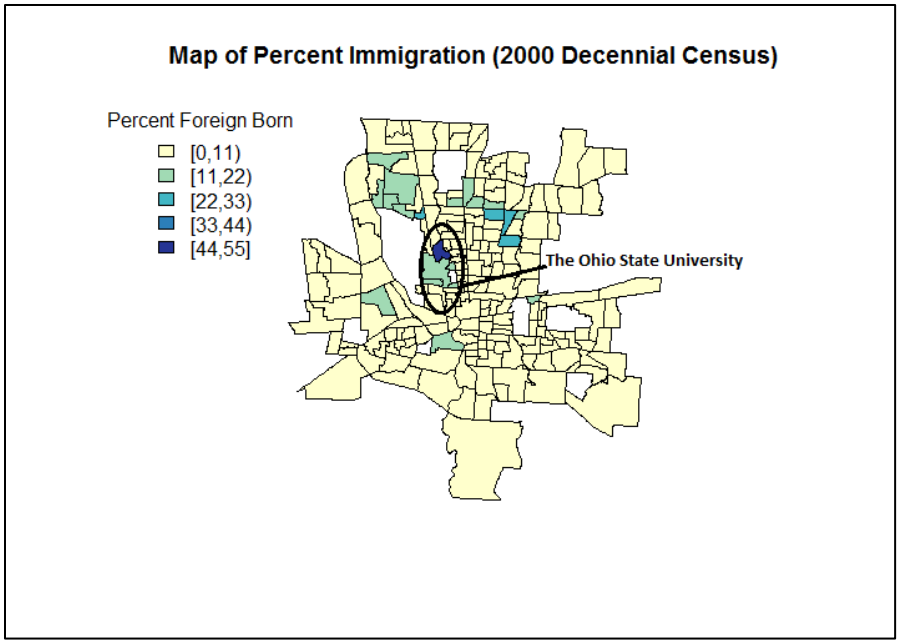

Figure 2: Map of percent immigration (2000 Decennial Census)

Between the years 2006 and 2010, Columbus experienced dramatic immigration growth (Figure 3). Figure 3 shows that more census tracts have foreign born population compared to the time period illustrated in Figure 2. Several census tracts in the south section of Columbus have between 22% and 44% foreign born population between the years 2006 and 2010. Figure 4 shows the distribution of immigration in Columbus between the years 2011 and 2015. Interestingly, some census tracts that had a large immigrant population in the years 2006-2010 also experience reductions in immigrant population during the 2011-2015 period, while other census tracts show an increase of approximately 10 percent points in the immigrant population.

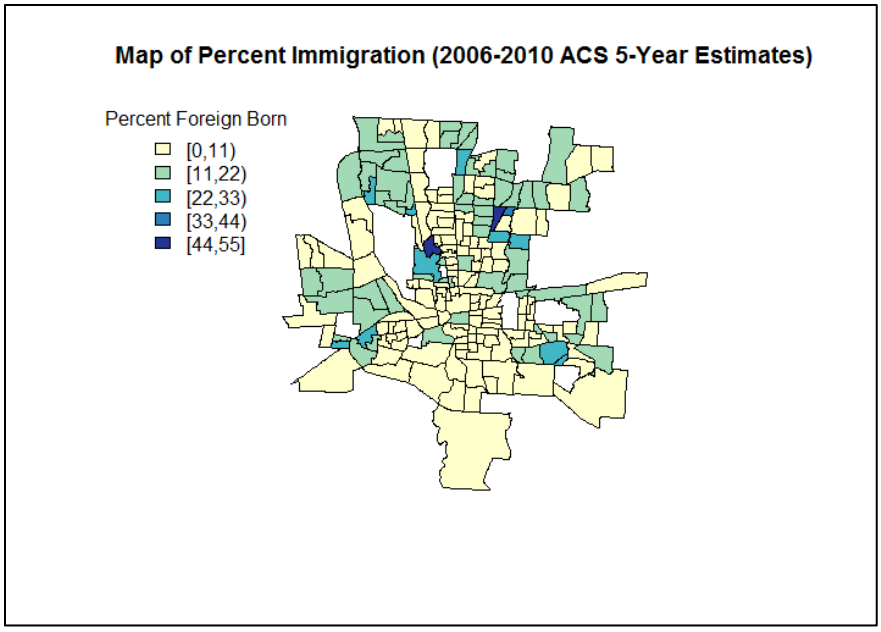

Figure 3: Map of percent immigration (2006-2010 ACS 5-year estimates)

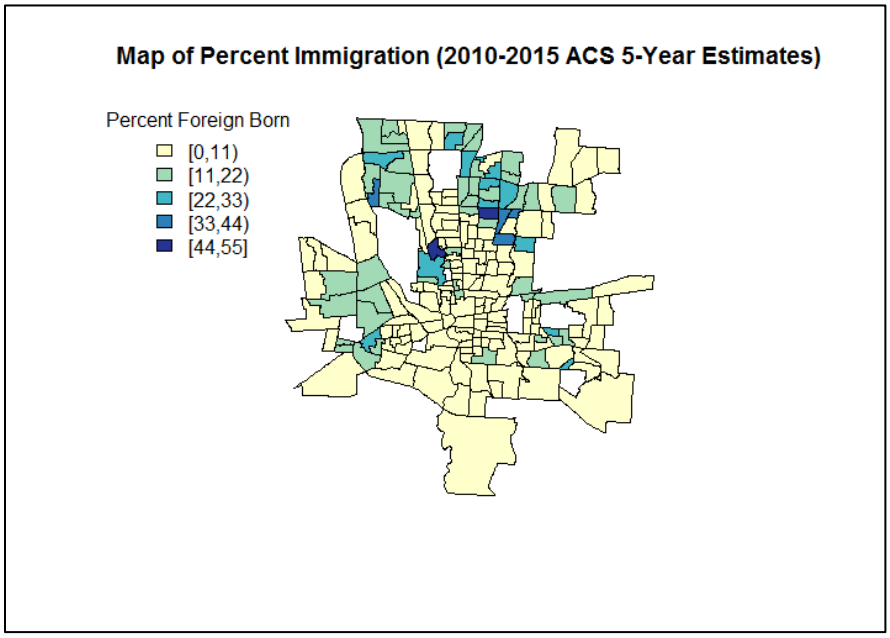

Figure 4: Map of percent immigration (2011-2015 ACS 5-year estimates)

I also produced three LISA (Local Indicators of Spatial Association) maps of percent foreign born for the years: 2005, 2010, and 2014, in order to identify the sections of Columbus where there is a higher immigrant concentration. A LISA map provides a corollary to the local Moran's I values. Moran's I is used to determine the degree of spatial autocorrelation (Anselin, 1992). The neighborhoods are defined using first-order queen convention, meaning that neighbors for any given census tract are other sublocations that share a common boundary or a single point contact (Voss et al, 2006). In Figures 5, 6, and 7, hotspot clusters of high percent foreign-born are census tracts with high percent foreign born surrounded by neighbors with high percent foreign born. These areas are classified as high-high. Census tracts with low percent foreign born that are surrounded by neighbors with low percent foreign are classified as coldspots or low-low. Hotspots in 2005 are mainly in the south-west section of Columbus. In 2010, additional hotspots emerge in Columbus. The north and north-west areas of Columbus have pockets of high immigrant concentration. In 2014, the north region of Columbus continues to have high levels of immigrant concentration while coldspots remain in the south section of Columbus.

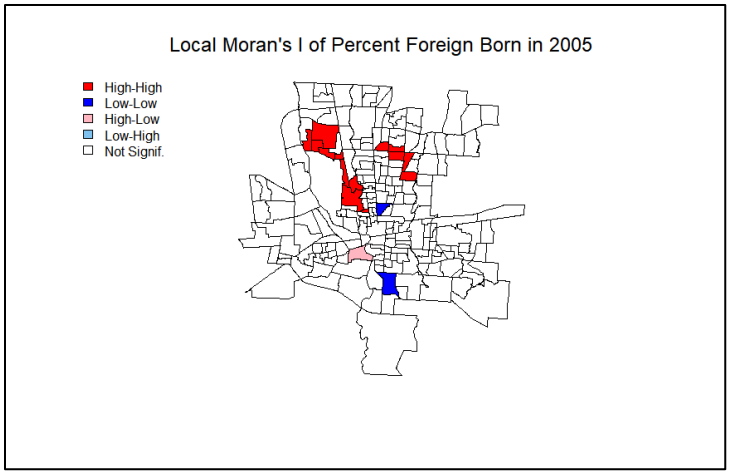

Figure 5: Local Moran's I of percent foreign born in 2005

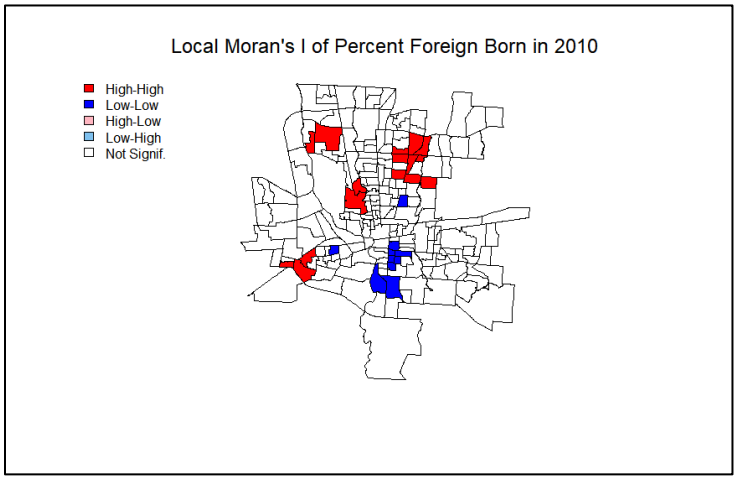

Figure 6: Local Moran's I of percent foreign born in 2010

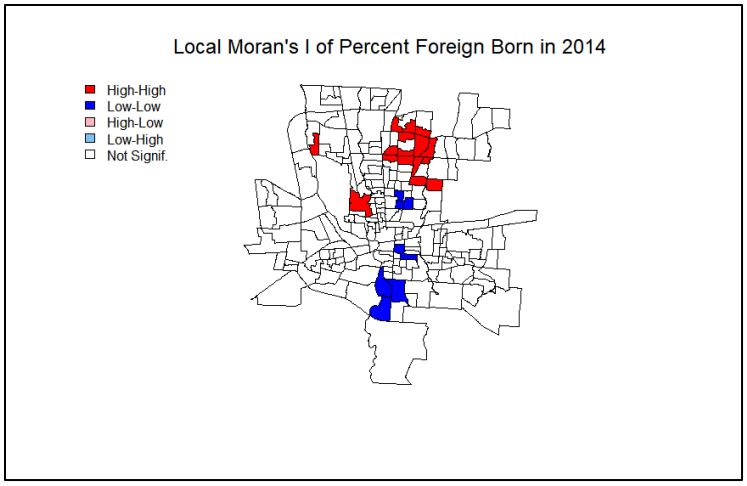

Figure 7: Local Moran's I of percent foreign born in 2014

In Table A 1 (see Appendix), I present descriptive statistics for the demographic and other key variables used in this analysis, aggregated over the 10 year period. The average Columbus census tracts has 3,836.83 residents. The tracts range in size from a population size of 218 residents to more than 17,000 people living in them. Columbus also has a large population of Black residents, with the average tract containing 298 Black residents, although there is much variation. Several of the census tracts in Columbus that have large Black populations also have large immigrant populations. Nevertheless, there is a stark discrepancy in the residential distribution of the population that is foreign born compared to the residential distribution of the Black population. More specifically, the Black population of Columbus is mostly clustered in the east section of the city across all periods (figures not shown) compared to the immigrant population which tends to be concentrated in the south, north and north west sections.

It is important to compare the distribution of immigrants relative to the distribution of Blacks because the presence of a large minority population could be beneficial for immigrant settlers. This is because a larger minority population may be associated with a greater

representation of minority interests in the political process (Cameron et al, 1996) and an increasing likelihood of having more minorities in political offices. In return, minorities and immigrants could mutually benefit from policies designed to help with the economic, political, cultural, and social growth of their communities. In fact, Browning, Marshall and Tabb (1986) found that the presence of minorities in political positions was associated with an increasing adoption of programs that benefit the minority population, greater responsiveness to minority demands, and more minorities running for office.

The average census tract in Columbus has about 50% renter occupied housing and 13% vacant housing. This includes some census tracts with 100% renter occupied housing. The average census tract in Columbus has about 21% of population living below the poverty line with some areas having over 80% of the population living below the poverty line. The average tract is 17% female headed households with a mean unemployment rate of 9%. There is also great economic inequality in Columbus with particular tracts extremely economically disadvantaged and others extremely affluent.

Dependent Variables: My dependent variables, property and violent crime arrests, are based on data from Columbus police records. The *violent crime arrests* includes all arrests for murder, robbery and aggravated assault, and *property crime arrests* for all arrests of arson, burglary, larceny and motor vehicle theft [5]. The crime data cover the years 2005 to 2014. Using ArcGIS, a program for geospatial analysis, the data incidents were geocoded to the census tracts in which they occurred. While I geocode events as precisely as possible, in some instances where locations were not pinpointed, the events were allocated to the centroid of the census tract in which they occurred. I aggregate all incidents to the census tract level, and provide a sum of all incidents over each year and within each census tract.

[5] I do not analyze rape due to the reporting issues associated with this crime (see Jensen & Karpos, 1993).

Table 2 shows that the average property crime arrests per 100,000 individuals is 7517.16 over the 10 year observation period. Property crime arrests ranged from a rate of 93 to a rate of 202,000 per 100,000 individuals. On the other hand, violent crime rates ranged from 0 to 9,892 with an average of 953 violent crime arrests over the 10 year observation period. Turning to the bivariate associations illustrated in the correlation matrix shows that property and violent rates become more correlated over time. Moreover, the correlation between violent crime arrests and time, labeled as years in Table 2 is stronger (r=0.217) than the association between property crime arrests and time (r=0.116). Of most interest, the correlation between immigration and violent crime arrests is negative (r=-0.144) over the 10 year observation period for census tracts in Columbus, OH. Likewise, the association between immigration and property crime arrest is negative (r=-0.111) over the observation period. These bivariate associations offer initial evidence that as the percentage of foreign born increases in a census tract in Columbus, OH, the rates of property crime arrest and violent crime arrests decrease.

Independent Variables:

Political representation of minorities: I measure the political representation of minorities on the school board by looking at the percentage of minorities (i.e., Hispanic, Black, and/or Asian) among all candidates that ran for the Board of Education for the school districts that fall within the boundaries of Columbus from 2005 to 2014 using the Franklin County Board of Elections website, ourcampaigns.com[6], LinkedIn, Ballotpedia.com, thisweeknews.com, dispatch.com[7], and the Internet Archive[8]. The total number of school districts included in my analysis is 11 and these include (1) Columbus City School District, (2) South-Western City School District, (3) Westerville City School District, (4) Worthington City School District, (5)

[6] https://www.ourcampaigns.com/ContainerDetail.html?ContainerID=54632
[7] http://www.dispatch.com/ - The Columbus Dispatch website
[8] https://archive.org/about/

Hamilton Local School District, (6) Gahanna-Jefferson City School District, (7) Groveport Madison Local School District, (8) Hilliard City School District, (9) Dublin City School District and (10) Grandview Heights City School District, and (11) Whitehall City School (see Table A 2 in Appendix). The Columbus City School District is the largest school district in the city of Columbus. Since the boundaries of the school districts do not exactly outline the boundaries of the census tracts in Franklin County, I conducted an overlay analysis (describe below).

I assigned census tracts to a school district if 35% or more of the total area of the census tract is overlapped by this school district. I also conducted an additional overlay analysis where I assigned a census tract to a school district if 50% or more of the total area of the census tract is overlapped by the school district. This latter technique reduced the size of my original sample from 204 to 202 because more than 3 school districts fell inside the area of these census tracts and not one single school district covered more than 50% of the total area of the census tract. I proceeded to use the census tracts with 35% of the total area overlapped by the school district with the sole objective of maintaining as many observations as possible. Table A 2 (see Appendix) shows that Columbus City School District has 115 census tracts, making it the largest school district and three school districts have 1census tract only.

I use *ethniclr 0.1.5*, a python package that uses data from the US census, the Florida registration, and Wikipedia to identify the race and gender of the candidate based on the first and last name only for those cases where I cannot find an image in any of the websites mentioned above. Since elections for School Board members are conducted every 2 years, I do not have data for 5 years (i.e., 2006, 2008, 2010, 2012, 2014). In order to address this issue, I use data from the previous year. A limitation of this technique is that I decrease the variability of this measure because I repeat the data for every two consecutive years. On average, percent of

minority candidates running for the Board of Education is 40.38. Overall, percent of minority candidates is strongly and positively correlated with violent crime arrests and property crime arrests; most likely due to the fact that non-whites are more likely to live in high crime areas than whites (see Table 2). Percent foreign born is negatively and weakly correlated with percent minority candidates. Interestingly, as population in a census tract increases, the percent of minority candidates decreases.

Minority owned businesses: I obtained information on the presence of commercial businesses using the *Franklin county auditor, Mergent Intellect by FTSE Russell websites*, and the data provided by *Infogroup* to measure the percentage of businesses (e.g., ethnic food, market, beauty shop, barber shop, special occasion shop, and/or auto related businesses) that are minority or immigrant owned. Since *Mergent Intellect* and the *Franklin County auditor* website do not have historical information about the type of ownership of each establishment, I use the information of all businesses given by *Mergent Intellect* and the *Franklin County editor* website to locate all minority and immigrant businesses in the historical dataset from Infogroup. The advantage of using this approach is that I am able to mainly focus on immigrant/minority businesses that have remained open for several years, indicating that they are well-established institutions in the community. The disadvantage of this approach is that I am not able to capture the impact that closed establishment had on crime rates. Nevertheless, it is more likely that businesses that have remained open for the past 15 years are well-known in the community and stable sources of products as well as labor[9]. A business that is not successful cannot be a stable source of economic growth for the community, but this is not to say that its impact should be

[9] All full service restaurants (i.e., restaurants where the consumptions of any meals is mainly on premise), places that sell alcohol (i.e., wineries, wine distilled alcoholic beverage merchant wholesalers, drinking places alcoholic beverages, breweries, beer and wine liquor stores), gas stations and convenience stores are not include in the measurement of minority/immigrant owned businesses because these are associated with higher crime rates.

overlooked. Therefore, the results presented in this study are more conservative, meaning that I may underestimate the impact that minority/immigrant owned businesses have on crime.

In *Mergent Intellect*, a business is only categorized as minority owned if it has become a Certified Minority Business Enterprise (MBE)[10], which is only given to U.S. citizens. Therefore, I am also incorporating information of immigrant owned businesses that I acquired from the Community Refugee and Immigration Services (CRIS). Table 2 shows that on average 42% of census tracts have a minority/immigrant owned business. The correlation matrix in Table 2 shows that the presence of minority/immigrant owned businesses is positively but weakly correlated with violent crime arrests and property crime arrests.

Controls: I control for measures of structural disadvantage. These variables are composites and include information on the properties of the population in the tract that are unemployed, have less than high school education, live below the poverty line, receive public assistance, of African-American identity, or are female headed households. The percent of vacant housing and percent unmarried population in the tract are also included. Table A 1 reveals that these measures of disadvantage are highly correlated. To address this, I conduct principal component analysis (PCA) using the indicators of structural disadvantage. I utilize PCA to explain the most variability in the data through the reduction in the number of variables; however, Wold et al. (1987) explain that PCA fulfills various objectives, including outlier detection, classification, prediction, and unmixing. The assumption in the use of PCA is that the largest eigenvalues contain the most useful information (Wold et al., 1987). Therefore, I examine the loading vectors in order to identify what the first principal component is capturing compared to the second principal component and the rest of the principal components. Since I use 8

[10] http://ohiomsdc.org/aws/SCOMSDC/pt/sp/mbe_certification

variables, with the exception of percent renter occupied housing, to obtain the principal components, I obtain 8 principal components.

$$Z_1 = \phi_{11}X_1 + \phi_{21}X_2 + \phi_{31}X_3 + \phi_{41}X_4 + \phi_{51}X_5 + \phi_{61}X_6 + \phi_{71}X_7 + \phi_{81}X_8$$

$$Z_2 = \phi_{12}X_1 + \phi_{22}X_2 + \phi_{32}X_3 + \phi_{42}X_4 + \phi_{52}X_5 + \phi_{62}X_6 + \phi_{72}X_7 + \phi_{82}X_8$$

...

$$Z_8 = \phi_{18}X_1 + \phi_{28}X_2 + \phi_{38}X_3 + \phi_{48}X_4 + \phi_{58}X_5 + \phi_{68}X_6 + \phi_{78}X_7 + \phi_{88}X_8$$

Where $Z_1$is the first principal component and ϕ_{11} is the first loading vector for the first component. After the first component is determined, the second component is calculated through the linear combination of all 8 variables that are not correlated with Z_1. Because the eigenvectors are orthogonal to other eigenvectors, the loadings are uncorrelated with one another. As a result, the components are also uncorrelated with one another. In order to choose the number of components to include in the model, I look at the proportion of variation explained by each eigenvalue and produce a scree plot to identify the "elbow point", where the variance significantly drops off (Figure 8). A scree plot is the plot of the eigenvalue vs. each component. Figure 8 shows that most of the variance is being explained by component 1. Indeed, the proportion of variation explained by the first component is 0.638. I label component 1 structural disadvantage. I did not include percent renter occupied housing in the disadvantage indicator because Table A 1 shows that immigration and percent renter occupied housing are strongly and positively associated relative to other measures of structural disadvantage. In fact, Table 2 shows that percent foreign born is strongly and positively correlated with percent renter occupied housing but it is negatively associated with structural disadvantage.

In Figure 9, the four categories of percent of foreign born represent the 4 quantiles of value on this variable. Census tract years in the 1st quantile (0-3.57) of percent foreign born tend

to also have low percentages of renter occupied housing. On the other hand, census tract years in the 4th quantile (11.64-52.53) of percent foreign born tend to be located in tracts with high levels of renter occupied housing. Census tract years in quantiles 2 (3.58-6.78) and 3 (6.79-11.63) have levels of percent renter occupied housing that are lower than 50%. This suggests that immigrants in Columbus, OH may be targeting particular neighborhoods that have both affordable (yet transitory) housing as well as low levels of crime. I discuss this further in additional results below.

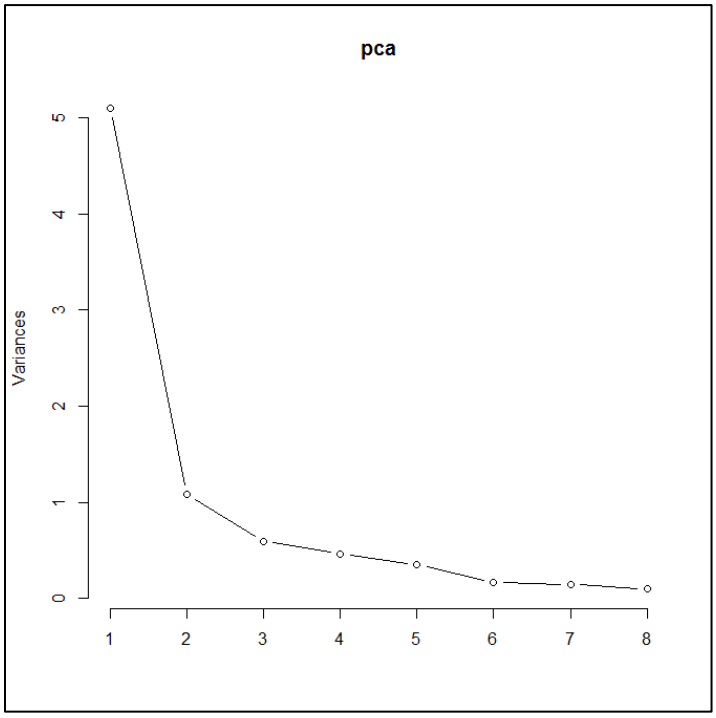

Figure 8: Scree plot

Table 1: Principal Component Loadings and Proportional		
	Principal Component 1	
	Loadings	Proportional Contribution
Percent Less than High School Education	0.326	0.116
Percent of Vacant Housing	0.353	0.125
Percent of Female Headed Households	0.362	0.129
Percent Unemployment	0.387	0.137
Percent Unmarried	0.283	0.101
Percent Non-Hispanic Black	0.336	0.119
Percent Living under the Poverty Line	0.373	0.133
Percent Receiving Public Assistance	0.396	0.141
Propotion of Variance	0.638	

Table 1: Principal component loadings and proportional contribution

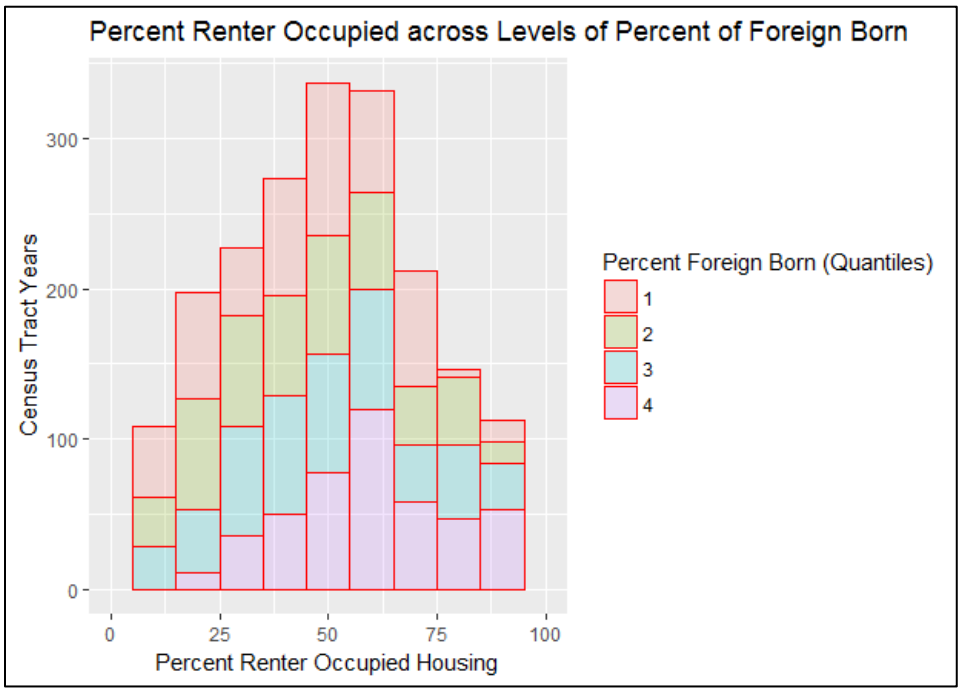

Figure 9: Percent renter occupied housing across levels of percent foreign born

Table 2 shows that the indicator of structural disadvantage is negatively and weakly correlated with foreign born population (r=-0.071). Consistent with prior research, structural disadvantage has a strong and positive association with violent crime arrests (r=0.672) and property crime arrests (r=0.355). I also control for the presence of business that sell alcohol[11], as well as the presence of restaurants and convenience stores/gas stations in a tract since previous research shows that the presence of these establishments is associated with higher levels of crime (Peterson et al., 2000; Willits et al., 2011; Wesiburd et al., 2012). Similarly, I control for the presence of religious organizations because previous research has found that the presence of these establishments is positively associated with crime rates (Desmond et al., 2010).

Table 2: Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Violent Crime Arrests[a]	1.000												
(2) Property Crime Arrests[a]	0.611	1.000											
(3) Percent Foreign Born	-0.144	-0.111	1.000										
(4) Minority/Immigrant Owned Business	0.061	0.058	-0.031	1.000									
(5) Percent of Minority Candidates	0.434	0.302	-0.073	-0.080	1.000								
(6) Total Population	-0.342	-0.292	0.129	0.122	-0.486	1.000							
(7) Structural Disadvantage (PC1)	0.672	0.355	-0.071	0.032	0.427	-0.355	1.000						
(8) Percent Renter Occupied Housing	0.379	0.302	0.357	-0.029	0.269	-0.212	0.464	1.000					
(9) Number of Places that Sell Alcohol[a]	0.168	0.331	0.025	0.067	0.150	-0.249	0.008	0.306	1.000				
(10) Number of Restaurants[a]	0.173	0.573	0.034	0.129	0.084	-0.166	-0.049	0.227	0.596	1.000			
(11) Number of Convenience Stores[a]	0.277	0.255	-0.067	0.020	0.174	-0.235	0.230	0.154	0.246	0.202	1.000		
(12) Number of Religious Organizations[a]	0.428	0.429	-0.269	0.184	0.260	-0.382	0.428	0.079	0.245	0.330	0.180	1.000	
(13) Years	0.217	0.116	0.168	0.078	0.184	0.072	0.205	0.081	-0.06	-0.001	0.041	-0.063	1.000
Mean	952.954	7517.161	8.669	0.417	40.382	3836.825	0.000	50.988	55.909	227.753	49.554	187.466	5.500
SD	1186.397	8734.602	7.430		24.262	1911.206	2.259	23.253	94.342	447.858	60.404	211.347	2.873
Minimum	0.000	93.002	0.000		0.000	217.580	-3.599	1.370	0.000	0.000	0.000	0.000	1.000
Maximum	9892.086	202216.330	52.530		66.667	17335.000	7.890	100.000	1052.408	7053.942	546.697	1659.751	10.000
N	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040

[a]All rates are specified as per 100,000 individuals

Table 2: Descriptive statistics and correlation matrix (N=2040)

[11] Beer and Ale merchant wholesalers, beer and wine liquor stores, breweries, drinking places alcoholic beverages, wine and distilled alcoholic beverages places, wineries.

Once all of my measures are created, I merge all the demographic, crime, minority representation in the District School Board, rate of places that sell alcohol, rate of restaurants and rate of convenience stores/gas stations using the census tract id number. Because there are many census tracts with no minority/immigrant owned business, I create a dummy variable capturing the presence of any (1 if there is a minority/immigrant owned business within that census tract, 0 otherwise). All other measures are treated as continuous variables in the analyses.

Methods:

Since the conditional variance of each dependent variable exceeds the conditional mean, I employ a standard generalized linear model for count data, which consists of a negative binomial model. The Poisson regression is nested in the negative binomial regression but the main difference is that the negative binomial model has an extra parameter to model the over-dispersion (Raudenbush & Bryk, 2002). In the negative binomial model, an explicit error term is added, as follows:

$$\lambda_{ij} = \exp(\eta_{ij} + \varepsilon_{ij}) = \exp\big(\eta_{ij}\big)\exp(\varepsilon_{ij})$$

Where ε_{ij} is the error term and this increases the variance produced by the Poisson model. η_{ij} is the outcome predicted by the linear regression model and the log of the event rate (λ_{ij}). Thus, the level one is a count model and the level two is the same level of the data (i.e., census tracts), but it adjusts the count for "exposure," which is the total population. While a Generalized Linear Model (GLM) estimates a fixed effect for all samples, a multilevel model estimates different parameters by the upper level groups. The advantage of using a multilevel model is that it consists of several level hierarchies, allowing for the estimation of effects between census tracts while holding years constant. In the level-1 model, the outcome Y_j is the number of arrests occurring in 2040 census tract-years (CTY_j), and the exposure, m_j, is the

population of CTY_j. The number of arrests in CTY_j is $E(Y_j|\lambda_j) = m_j\lambda_j$. Using the log link model, the level-1 model is:

$$\log[Violent(orProperty)] = \beta_{0j} + \log(population) + \sum_{q=1}^{Q} \beta_{qj}X_{qij}$$

Where $\log(population)$is the exposure variable. It is specified as a log transformation so that it is on the same scale as the outcome variable. This term is called the offset in the linear model (Raudenbush & Bryk, 2002). I specify the 10 time periods as fixed effects. I include an interaction between percent foreign born and minority/immigrant owned business in the last model. In the level-2 model, I model the variation between census tracts in the log arrest counts as a function of explanatory variables and a random intercept for census tracts, plus a normally distributed random error:

$$\beta_{0j} = \gamma_{00} + \gamma_{qj}X_j + \mu_{0j}$$

$$u_{0j} \sim N(0, \tau_{00})$$

I estimate the log count of violent crime arrests and property crime arrests in separate tables. Figure 10 shows the histograms of property crime arrest rates per 100,000 and violent crime arrest rates per 100,000. The rates are positively skewed, thus a nonlinear model that accounts for over dispersion like the negative binomial sampling model can address problems of heteroskedasticity. In order to determine if immigration and crime are negatively associated across time, I group-mean center percent foreign born. This technique is also described as centering within cluster (CWC) (Enders and Togighi, 2007). Under CWC, the percent foreign born is deviated around the mean within each census tract (i.e., $\%foreign_{ij} - \bar{x}_{\%foreign_j}$). I grand-mean center percent foreign born to determine if the effect of immigration on crime is negative across census tracts. I grand-mean center percent renter occupied housing, structural

disadvantage, percent of minority candidates, rates of places that sell alcohol, rates of restaurants, rates of convenience stores/gas stations, and rates of religious organizations and include a random effect for census tracts. Since there are repeated measures of all variables for each census tract, I am specifically looking at differences across census tracts nested in time.

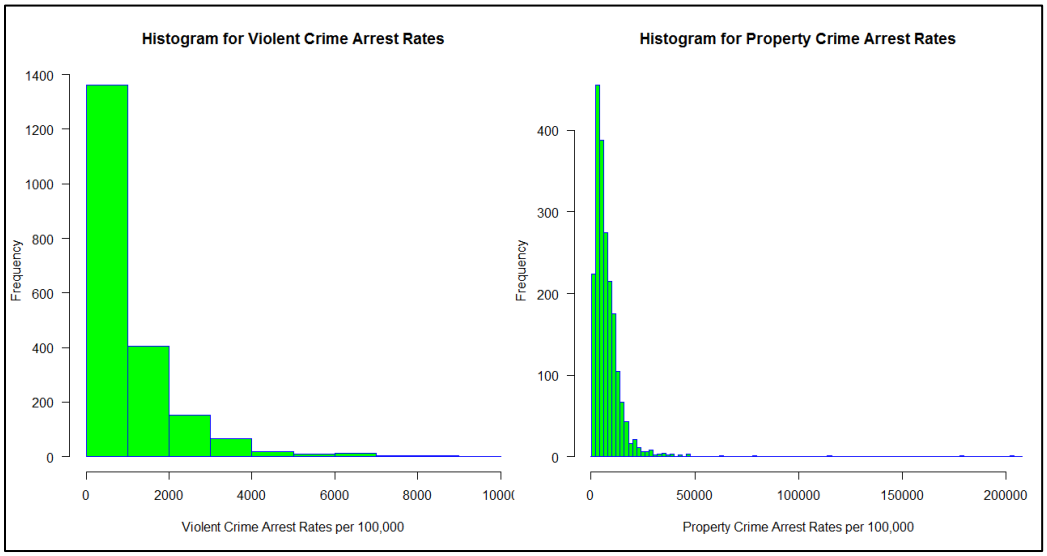

Figure 10: Distribution of violent crime arrest rates and property crime arrest rates

Results:

In Table 3[12], I present the mean of all variables for five categories of percent foreign born in order to answer my first research question. Previous studies have given a great deal of information regarding the community characteristics that are particular of historical immigrant destinations like New York and Los Angeles. In this study, I seek to provide a careful description

[12] There are 5 categories of percent foreign born for the years 2005, 2010, and 2014. The cutoff points of each category for each year is different because these categories were built using the quantile values of percent foreign born for each year.

of community characteristics in Columbus, OH across different levels of percent foreign born over a 10 year period. The first three rows in Table 3 show community properties in census tracts with 0% of individuals that are foreign born in the years 2005, 2010 and 2014 respectively. In 2005, there were one census tract with no immigrants, 57 census tracts with less than 3% foreign born, 84 census tracts that had between 3.1% and 8% of immigrants, and 57 census tracts with greater than 8.1% foreign born. Overall, crime arrest rates were higher in census tracts with less than 3% foreign born in all periods. In 2005, census tracts that had 0 minority/immigrant owned businesses also had 0 individuals that were foreign born.

Table 3: Characteristcs of Census Tracts Across Different Levels of Percent Foreign Born

	No Percent Foreign Born			Low Percent Foreign Born			Average Percent Foreign Born			High Percent Foreign Born			Highest Percent Foreign Born		
	0%	0%	0%	Less than 3% (not including 0)	Less than 4% (not including 0)	Less than 5% (not including 0)	Between 3.1% and 8%	Between 4.1% and 9%	Between 5.1% and 13%	Greater than 8.1%	Greater than 9.1%	Greater than 13.1%	52.53%	49.06%	46.78%
Mean	2005	2010	2014	2005	2010	2014	2005	2010	2014	2005	2010	2014	2005	2010	2014
Number of Census Tracts	1	4	2	57	50	57	89	64	91	57	87	54	1	1	1
Violent Crime Arrest Rates[a]	1947.691	2005.541	6457.434	1131.953	1236.814	2269.747	696.294	607.886	1518.735	645.159	506.759	1073.489	189.125	29.044	978.747
Property Crime Arrest Rates[a]	13800.779	9178.476	18890.223	8846.255	8732.721	13776.822	6771.516	6341.781	10947.932	6673.191	5142.449	7313.232	3711.584	4124.310	6487.696
Percent of Census Tracts with at Least 1 Minority/Immigrant Owned Businesses	0.000	50.000	50.000	36.842	46.000	49.123	39.326	32.813	46.154	36.842	41.379	57.407	0.000	0.000	0.000
Percent of Minority Candidates	57.143	55.556	66.667	51.128	53.333	58.918	41.233	40.148	50.000	41.604	38.410	44.444	57.143	55.556	66.667
Total Population	1797.000	1720.750	1595.000	3282.598	2808.100	3337.895	3933.570	4234.083	4306.516	3569.342	4201.115	4546.537	4230.000	3443.000	3576.000
Structural Disadvantage (PC1)	2.248	4.336	4.465	-0.061	1.541	1.224	-1.491	-0.484	-0.030	-1.370	-0.010	0.012	-1.661	-0.343	-0.694
Percent Renter Occupied Housing	54.040	52.768	70.960	39.778	47.013	48.632	45.114	43.534	53.293	62.672	57.687	62.515	96.990	96.980	94.800
Number of Places that Sell Alcohol[a]	55.648	36.262	0.000	45.626	59.817	26.062	75.687	59.514	52.231	65.627	58.602	46.524	70.922	87.133	27.964
Number of Restaurants[a]	111.297	136.868	155.378	102.324	218.195	158.208	278.125	263.872	306.302	333.871	216.234	230.243	212.766	348.533	391.499
Number of Convenience Stores/Gas Stations[a]	0.000	104.699	147.406	47.646	66.550	53.683	53.034	45.290	51.973	45.897	43.374	52.079	23.641	58.089	27.964
Number of Religious Organizations[a]	834.725	583.324	373.704	312.541	289.435	231.348	187.049	168.470	155.528	127.903	125.107	88.667	47.281	58.089	27.964

[a]All rates are specified per 100,000

Table 3: Characteristics of census tracts across different levels of percent foreign born

Structural disadvantage has negative values because the variable has been standardized. Results indicate that structural disadvantage is much higher in census tracts that have less than 3% foreign born in 2005. Percent renter occupied housing is larger in census tracts with greater than 8.1% foreign born in 2005. The number of restaurant and number of establishments that sell alcohol are higher in census tracts that have between 3.1% and 8% foreign born. Interestingly, the number of religious organizations per 100,000 individuals are lower in census tracts that have average and high levels of immigrant concentration in all three periods.

Similarly, structural disadvantage is higher in census tracts with low and 0% foreign born in 2010 and 2014. Percent renter occupied housing is larger in census tracts that have average and high levels of percent foreign born across all periods. Number of restaurants and number of places that sell alcohol are larger in census tracts with average levels of percent foreign born. The number of these establishments in census tracts with high levels of percent foreign born is slightly lower. The number of convenience stores/gas stations is greater in census tracts that have no percent foreign born and low percent foreign born. Percent of census tracts that have at least 1 minority/immigrant owned business and average or high levels of percent foreign born are greater in 2014 compared to 2005 and 2010. There is one single census tract in each year that has the highest level of percent foreign born. These census tracts have no minority/immigrant owned businesses and the level of structural disadvantage is lower than census tracts with less than 3% foreign born in all three years. Overall, these results indicate that in Columbus, OH, higher concentrations of immigrants are located in census tracts that have relatively low structural disadvantage and crime but have high proportion of renter owned housing. There is little evidence that immigrants are located in tracts that include greater minority representation on

school boards. Moreover, immigrant/minority owned businesses are not primarily located in census tracts with average and high levels of percent foreign born.

While descriptive evidence presented above suggests that immigrants are located in tracts with lower crime rates, I turn to multivariate analyses to provide a more robust evaluation and answer my 2nd research question: is immigrant concentration associated with lower crime rates net of controls? Model 1 of Table 4[13] presents the estimates of the unconditional model predicting violent crime arrest rates:

$$\log(Violent) = \beta_0$$

In this model, the estimate of the variance component is 1.347. This value is significant, indicating that there is variation in violent crime arrest rates across census tracts. The plausible values indicate that on average violent crime arrest rates ranges from [(-5.200-1.96*1.169)=-7.476=exp(-7.161)]= 0.001 to [(-5.200+1.96*1.161)=-2.925=exp(-2.925)]= 0.054. The estimate of γ_{00} is -5.200, which is the average log count of violent crime arrests across census tracts. In Model 2 of Table 3, I include group-mean centered percent foreign born and all time dummies. The variance component increases. When the time dummies are not included in the model, percent foreign born is significant ($p<0.005$) but positively associated with violent crime arrest rates (results not shown). However, once I control for time fixed effects in Model 2, the coefficient for foreign born population operates as anticipated and is negatively associated with violent crime ($p<.001$). As percent foreign born increases by 1, the expected rate of violent crime decreases by [(1-0.987)*100]=1.3% ($p<.001$), holding other covariates constant.

[13] The Incidence-rate ratios (IRR) are included in the second column of each model.

Year 2005 serves as the reference category for the time dummies. All years with the exception of 2006, 2013, and 2014 reported less violent crime rates compared to period 1, but the coefficients for 2006, 2007, and 2008 are not significant. It is not surprising to see that violent crime arrest rates were higher in 2013 and 2014 relative to 2005 as preliminary analyses of the distribution of crime across all census tracts in Columbus showed that property and violent crime arrest rates increased during these 2 periods (view Figures 9, 10 and 11).

In Model 3, I add structural disadvantage, which has a strong and positive association with violent crime arrest rates ($p<.001$). I also include percent of renter occupied housing. Upon these additions, percent foreign born decreases somewhat in magnitude but remains negatively associated with violent crime ($p<.001$). The estimate of the variance component in Model 3 also decreased and is no longer significant, suggesting that including structural disadvantage and percent renter occupied housing explains approximately [(1.777-0.895/1.777)*100]=49.63% of the variance relative to Model 2. The coefficient for year 2006 is now significant, indicating that compared to year 2005, the expected count of violent crime arrest rates decreases by [(1-0.924)*100]=7.6% ($p<.05$) in 2006. Years 2007 and 2008 also have negative and significant coefficients. In Model 4, I include minority/immigrant owned businesses but this variable is not a significant predictor of violent crime arrest rates. The time dummies continue to show a similar pattern.

Table 4: Negative Binomial Mixed Effects Model - Regression of Violent Crime Arrests (Percent Froeign Born Is Group-Mean Centered)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR
Intercept	-5.200 ***	0.006	-5.496 ***	0.004	-5.635 ***	0.004	-5.639 ***	0.004	-5.234 ***	0.005
	(0.083)		(0.097)		(0.118)		(0.119)		(0.069)	
Percent foreign born (Group-mean centered)			-0.013 ***	0.987	-0.012 ***	0.988	-0.012 ***	0.988	-0.012 ***	0.988
			(0.002)		(0.002)		(0.002)		(0.002)	
Structural disadvantage (PC1)					0.186 ***	1.204	0.186 ***	1.204	0.188 ***	1.207
					(0.015)		(0.015)		(0.015)	
Percent of renter occupied housing					0.008 ***	1.008	0.008 ***	1.008	0.198 ***	1.220
					(0.002)		(0.002)		(0.039)	
Minority/immigrant owned businesses							0.011	1.011	0.017	1.018
							(0.029)		(0.029)	
Percent minority candidates									0.193 ***	1.213
									(0.034)	
Number of places that sell alcohol[a]										
Number of restaurants[a]										
Number of gas stations/ convenience stores[a]										
Number of religious organizations[a]										
Percent foreign born * Minority/immigrant owned businesses										
Years										
2006			0.010	1.010	-0.071 *	0.932	-0.070 *	0.932	-0.071 *	0.931
			(0.034)		(0.034)		(0.034)		(0.034)	
2007			-0.009	0.991	-0.180 ***	0.835	-0.180 ***	0.835	0.015	1.015
			(0.034)		(0.036)		(0.036)		(0.050)	
2008			-0.048	0.953	-0.305 ***	0.737	-0.304 ***	0.738	-0.110 *	0.896
			(0.035)		(0.039)		(0.039)		(0.052)	
2009			-0.116 **	0.890	-0.448 ***	0.639	-0.447 ***	0.640	-0.440 ***	0.644
			(0.036)		(0.043)		(0.043)		(0.043)	
2010			-0.089 *	0.915	-0.471 ***	0.625	-0.470 ***	0.625	-0.465 ***	0.628
			(0.036)		(0.045)		(0.045)		(0.045)	
2011			-0.146 ***	0.864	-0.551 ***	0.577	-0.550 ***	0.577	-0.534 ***	0.586
			(0.037)		(0.046)		(0.046)		(0.046)	
2012			-0.237 ***	0.789	-0.648 ***	0.523	-0.647 ***	0.523	-0.632 ***	0.532
			(0.038)		(0.046)		(0.046)		(0.046)	
2013			0.922 ***	2.515	0.516 ***	1.675	0.516 ***	1.675	0.443 ***	1.557
			(0.030)		(0.040)		(0.040)		(0.042)	
2014			0.751 ***	2.120	0.343 ***	1.409	0.343 ***	1.409	0.270 ***	1.310
			(0.031)		(0.041)		(0.041)		(0.043)	
AIC	15922.500		14296.100		14072.500		14074.300		14046.000	
BIC	15939.400		14369.100		14156.800		14164.200		14141.600	
Log-likelihood	-7958.200		-7135.000		-7021.200		-7021.200		-7006.000	
$\sigma^2_{\square.u}$	1.347 ᵍ		1.777 ᵍ		0.895		0.896		0.695 ᵍ	
Standard Deviation	1.161		1.333		0.946		0.946		0.834	
Plausible Values										
Lower Bound	-7.476	0.001	-8.109	0.000	-7.490	0.001	-7.494	0.001	-6.868	0.001
Upper Bound	-2.925	0.054	-2.884	0.056	-3.781	0.023	-3.784	0.023	-3.599	0.027
N	2040		2040		2040		2040		2040	

***p<.001 **p<.01 *p<.05 †p<.1 [a]All rates are specified per 100,000 ᵍSignificant based on the confidence interval

Continued

Table 4: Negative binomial mixed effects model - regression of violent crime arrest rates (Percent foreign born is group-mean centered)

Table 4 continued

Table 4: Negative Binomial Mixed Effects Model - Regression of Violent Crime Arrests (Percent Foreign Born Is Group-Mean Centered)

	Model 6		Model 7		Model 8		Model 9		Model 10	
	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR
Intercept	-5.239 ***	0.005	-5.245 ***	0.005	-5.233 ***	0.005	-5.241 ***	0.005	-5.241 ***	0.005
	(0.068)		(0.068)		(0.067)		(0.065)		(0.066)	
Percent foreign born (Group-mean centered)	-0.011 ***	0.989	-0.011 ***	0.989	-0.011 ***	0.990	-0.011 ***	0.989	-0.007 †	0.994
	(0.002)		(0.002)		(0.002)		(0.002)		(0.004)	
Structural disadvantage (PC1)	0.188 ***	1.207	0.185 ***	1.203	0.186 ***	1.204	0.180 ***	1.197	0.179 ***	1.196
	(0.015)		(0.015)		(0.015)		(0.015)		(0.015)	
Percent of renter occupied housing	0.188 ***	1.207	0.188 ***	1.207	0.185 ***	1.203	0.201 ***	1.222	0.202 ***	1.223
	(0.039)		(0.039)		(0.039)		(0.039)		(0.039)	
Minority/immigrant owned businesses	0.019	1.020	0.021	1.021	0.011	1.011	0.006	1.007	0.009	1.009
	(0.029)		(0.029)		(0.030)		(0.030)		(0.030)	
Percent minority candidates	0.197 ***	1.217	0.197 ***	1.218	0.198 ***	1.219	0.203 ***	1.225	0.200 ***	1.222
	(0.034)		(0.034)		(0.034)		(0.034)		(0.034)	
Number of places that sell alcohol[a]	0.042 *	1.043	0.036 †	1.037	0.038 †	1.039	0.038 †	1.038	0.036 †	1.036
	(0.020)		(0.020)		(0.020)		(0.020)		(0.020)	
Number of restaurants[a]			0.043 †	1.044	0.042	1.043	0.020	1.021	0.022	1.022
			(0.026)		(0.026)		(0.026)		(0.026)	
Number of gas stations/ convenience stores[a]					0.052 **	1.054	0.052 **	1.053	0.053 **	1.054
					(0.017)		(0.017)		(0.017)	
Number of religious organizations[a]							0.078 **	1.081	0.075 **	1.078
							(0.024)		(0.024)	
Percent foreign born * Minority/immigrant owned businesses									-0.008 †	0.992
									(0.005)	
Years										
2006	-0.068 *	0.934	-0.066 *	0.936	-0.059 †	0.942	-0.055	0.946	-0.054	0.947
	(0.034)		(0.034)		(0.034)		(0.034)		(0.034)	
2007	0.022	1.023	0.026	1.027	0.027	1.027	0.035	1.036	0.033	1.034
	(0.050)		(0.050)		(0.050)		(0.050)		(0.050)	
2008	-0.105 *	0.900	-0.099 †	0.906	-0.108 *	0.898	-0.098 †	0.907	-0.100 †	0.904
	(0.052)		(0.052)		(0.052)		(0.052)		(0.052)	
2009	-0.438 ***	0.646	-0.429 ***	0.651	-0.440 ***	0.644	-0.434 ***	0.648	-0.434 ***	0.648
	(0.043)		(0.043)		(0.043)		(0.043)		(0.043)	
2010	-0.461 ***	0.630	-0.452 ***	0.637	-0.462 ***	0.630	-0.448 ***	0.639	-0.449 ***	0.638
	(0.045)		(0.045)		(0.046)		(0.045)		(0.045)	
2011	-0.530 ***	0.589	-0.520 ***	0.595	-0.530 ***	0.589	-0.513 ***	0.599	-0.515 ***	0.598
	(0.046)		(0.047)		(0.047)		(0.047)		(0.047)	
2012	-0.625 ***	0.535	-0.617 ***	0.540	-0.628 ***	0.534	-0.611 ***	0.543	-0.613 ***	0.542
	(0.047)		(0.047)		(0.047)		(0.047)		(0.047)	
2013	0.452 ***	1.571	0.457 ***	1.579	0.445 ***	1.560	0.460 ***	1.583	0.459 ***	1.583
	(0.042)		(0.042)		(0.043)		(0.043)		(0.043)	
2014	0.281 ***	1.324	0.287 ***	1.332	0.275 ***	1.316	0.296 ***	1.344	0.295 ***	1.344
	(0.043)		(0.043)		(0.043)		(0.043)		(0.043)	
AIC	14043.600		14042.900		14035.000		14026.900		14025.700	
BIC	14144.800		14149.700		14147.400		14144.900		14149.400	
Log-likelihood	-7003.800		-7002.500		-6997.500		-6992.400		-6990.900	
$\sigma^2_{\square \cdot u}$	0.675 [g]		0.672 [g]		0.639 [g]		0.599 [g]		0.604 [g]	
Standard Deviation	0.821		0.820		0.800		0.774		0.777	
Plausible Values										
Lower Bound	-6.849	0.001	-6.852	0.001	-6.800	0.001	-6.758	0.001	-6.764	0.001
Upper Bound	-3.629	0.027	-3.639	0.026	-3.666	0.026	-3.723	0.024	-3.717	0.024
N	2040		2040		2040		2040		2040	

***p<.001 **p<.01 *p<.05 †p<.1 [a]All rates are specified per 100,000 [g]Significant based on the confidence interval

Once I include percent minority candidates for the Board of Education in Model 5, the variance component decreases by 0.3 points compared to Model 4. This suggests that percent foreign born, time fixed effects, structural disadvantage, percent renter occupied housing, percent minority candidates and to a lesser extent presence of minority/immigrant owned businesses explain [(1.347-0.675/1.347)*100]=49.89% of the variance in the dependent variable compared to the unconditional model. There is no evidence that the presence of minority political candidates mediates the association between percent foreign born and crime; however, percent minority candidates is positively associated with violent crime arrest rates ($p<.001$).

In Model 6, I add a control for number of places that sell alcohol. The intercept changes slightly but the variance component decreases by approximately 0.2 units. Percent foreign born remains significantly associated with reduced violent crime, although the size of the coefficient diminishes somewhat. Controlling for other variables, as number of places that sell alcohol increases by 1 per 100,000 individuals, the expected count of violent crime arrests increases by [(1-1.043)*100]=4.3% ($p<.05$) across census tracts. All variables are included in Model 9. Foreign born remains significantly associated with lower violent crime arrest rates. Overall, controlling for criminogenic institutions explain [0.695-0.599/0.695)*100]=9% of the variability in violent crime arrest rates across census tracts.

Finally, I include an interaction term between percent foreign born and minority/immigrant owned businesses in Model 10 to determine whether the presence of these types of businesses enhances the crime reducing effect of immigration. This interaction is marginally significant. The effect of percent foreign born on violent crime in census tracts with no minority/immigrant owned businesses is -0.007 ($p<.1$). The effect of percent foreign born in

census tracts that have a minority/immigrant owned business is [-0.007+(-0.008)*(1)]=-0.015 (p<.1). In summary, the results for violent crime reveal that percent foreign born and crime are negatively associated with one another over time. Moreover, the negative association between percent foreign born and violent crime arrest rates is slightly enhanced when a minority/immigrant owned business is present.

[Table 5: Negative Binomial Mixed Effects Model - Regression of Violent Crime Arrests (Percent Foreign Born Is Group-Mean Centered)]

Model 1 of Table 5[14] shows the estimates of the unconditional model predicting property crime arrest rates:

$$\log(Property) = \beta_0$$

In this model, the estimate of the variance component is 0.550. This value is significant indicating that there is variation across census tracts. The plausible values indicate that on average property crime arrest rates ranges from [((-2.864)-1.96*0.742)= -4.318 =exp(-4.318)]= 0.013 to [((-2.864)+1.96*0.742)=-1.410=exp(-1.410)]= 0.244. The estimate of γ_{00} is -2.864, which is the average log count of property crime arrests across census tracts. In Model 2 of Table 4, I include group-mean centered percent foreign born and the time fixed effects. The variance component increases slightly. When the time dummies are not included in the model, percent foreign born is not significantly correlated with property crime arrests (results not shown). In Model 2, the coefficient for foreign born population operates as anticipated and is negatively associated with property crime arrest rates. As percent foreign born increases by 1, the expected rate of violent crime decreases by [(1-0.994)*100]=0.6% (p<.001), holding other covariates

[14] The Incidence-rate ratios (IRR) are included in the second column of each model.

constant. Year 2005 is the reference category. All dummies are highly significant with the exception of year 2006.

In Model 3, I add structural disadvantage and percent renter occupied housing. Structural disadvantage has a strong and a positive association with property crime arrest rates. As structural disadvantage increases by 1 unit, the expected count of property crime arrest rates increase by [(1-1.092)*100]=9.2% ($p<.001$). Interestingly, the association between percent renter occupied housing and property crime arrest rates is marginally significant ($p<.1$). In Model 4, I control for minority/immigrant owned businesses. On average and while holding other covariates constant, the expected count of property crime arrest rates decreases by [(1-0.948)*100]=5.2% ($p<.01$) in census tracts with at least one minority/immigrant owned business compared to census tracts with no minority/immigrant owned business. Overall, [0.550-0.423/0.550)*100]=23.1% of the variability in property crime arrest rates across census tracts is explained when percent foreign born, year fixed effects, structural disadvantage, percent renter occupied housing and minority/immigrant owned businesses are included in the model.

Table 5: Negative Binomial Mixed Effects Model - Regression of Property Crime Arrests (Percent Froeign Born Is Group-Mean Centered)										
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR
Intercept	-2.864 ***	0.057	-2.902 ***	0.055	-2.798 ***	0.061	-2.775 ***	0.062	-2.783 ***	0.062
	(0.053)		(0.056)		(0.049)		(0.050)		(0.049)	
Percent foreign born (Group-mean centered)			-0.006 ***	0.994	-0.006 ***	0.994	-0.006 ***	0.994	-0.006 ***	0.994
			(0.002)		(0.002)		(0.002)		(0.002)	
Structural disadvantage (PC1)					0.083 ***	1.087	0.084 ***	1.087	0.082 ***	1.086
					(0.009)		(0.009)		(0.009)	
Percent of renter occupied housing					0.042	1.043	0.046 †	1.047	0.049 †	1.050
					(0.027)		(0.027)		(0.027)	
Minority/immigrant owned businesses							-0.054 **	0.948	-0.051 **	0.950
							(0.018)		(0.018)	
Percent minority candidates									0.040 *	1.041
									(0.017)	
Number of places that sell alcohol[a]										
Number of restaurants[a]										
Number of gas stations/ convenience stores[a]										
Number of religious organizations[a]										
Percent foreign born * Minority/immigrant owned businesses										
Years										
2006			0.018	1.018	-0.014	0.986	-0.016	0.985	-0.015	0.985
			(0.020)		(0.020)		(0.020)		(0.020)	
2007			-0.071 ***	0.931	-0.135 ***	0.874	-0.136 ***	0.873	-0.097 ***	0.907
			(0.021)		(0.022)		(0.022)		(0.027)	
2008			-0.140 ***	0.870	-0.234 ***	0.791	-0.236 ***	0.790	-0.197 ***	0.821
			(0.021)		(0.023)		(0.023)		(0.029)	
2009			-0.123 ***	0.884	-0.244 ***	0.784	-0.247 ***	0.781	-0.243 ***	0.785
			(0.021)		(0.025)		(0.025)		(0.025)	
2010			-0.111 ***	0.895	-0.248 ***	0.780	-0.250 ***	0.778	-0.246 ***	0.782
			(0.022)		(0.026)		(0.026)		(0.026)	
2011			-0.125 ***	0.883	-0.270 ***	0.763	-0.272 ***	0.762	-0.266 ***	0.767
			(0.022)		(0.026)		(0.026)		(0.026)	
2012			-0.114 ***	0.892	-0.261 ***	0.770	-0.262 ***	0.770	-0.255 ***	0.775
			(0.022)		(0.026)		(0.026)		(0.026)	
2013			0.375 ***	1.455	0.230 ***	1.259	0.232 ***	1.261	0.222 ***	1.248
			(0.020)		(0.024)		(0.024)		(0.025)	
2014			0.328 ***	1.389	0.183 ***	1.200	0.185 ***	1.203	0.175 ***	1.191
			(0.020)		(0.025)		(0.024)		(0.025)	
AIC	23301.500		22130.100		22037.900		22031.300		22027.700	
BIC	23318.300		22203.200		22122.200		22121.200		22123.200	
Log-likelihood	-11647.700		-11052.100		-11004.000		-10999.600		-10996.800	
$\sigma^2_{\cdot u}$	0.550 [g]		0.599 [g]		0.424 [g]		0.423 [g]		0.401 [g]	
Standard Deviation	0.742		0.774		0.651		0.650		0.634	
Plausible Values										
Lower Bound	-4.318	0.013	-4.419	0.012	-4.074	0.017	-4.049	0.017	-4.025	0.018
Upper Bound	-1.410	0.244	-1.385	0.250	-1.522	0.218	-1.500	0.223	-1.542	0.214
N	2040		2040		2040		2040		2040	

***p<.001 **p<.01 *p<.05 †p<.1 [a]All rates are specified per 100,000 [g]Significant based on the confidence interval

Continued

Table 5: Negative binomial mixed effects model - regression of property crime arrest rates (percent foreign born is group-mean centered)

Table 5 continued

Table 5: Negative Binomial Mixed Effects Model - Regression of Property Crime Arrests (Percent Foreign Born Is Group-Mean Centered)

	Model 6		Model 7		Model 8		Model 9		Model 10	
	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR	Coef. (Std. Err.)	IRR
Intercept	-2.798 ***	0.061	-2.822 ***	0.059	-2.818 ***	0.060	-2.825 ***	0.059	-2.825 ***	0.059
	(0.048)		(0.047)		(0.047)		(0.046)		(0.046)	
Percent foreign born (Group-mean centered)	-0.005 **	0.995	-0.005 **	0.995	-0.005 **	0.995	-0.005 **	0.995	-0.001	0.999
	(0.002)		(0.002)		(0.002)		(0.002)		(0.002)	
Structural disadvantage (PC1)	0.079 ***	1.083	0.064 ***	1.066	0.065 ***	1.067	0.060 ***	1.062	0.059 ***	1.061
	(0.009)		(0.010)		(0.010)		(0.010)		(0.010)	
Percent of renter occupied housing	0.035	1.036	0.045 †	1.046	0.045 †	1.046	0.057 *	1.059	0.060 *	1.062
	(0.026)		(0.026)		(0.026)		(0.026)		(0.026)	
Minority/immigrant owned businesses	-0.049 **	0.953	-0.047 **	0.954	-0.052 **	0.950	-0.054 **	0.947	-0.053 **	0.948
	(0.018)		(0.018)		(0.018)		(0.018)		(0.018)	
Percent minority candidates	0.046 **	1.047	0.048 **	1.049	0.048 **	1.049	0.051 **	1.052	0.048 **	1.049
	(0.017)		(0.017)		(0.017)		(0.017)		(0.017)	
Number of places that sell alcohol[a]	0.070 ***	1.072	0.060 ***	1.062	0.059 ***	1.061	0.061 ***	1.063	0.059 ***	1.061
	(0.012)		(0.012)		(0.012)		(0.012)		(0.012)	
Number of restaurants[a]			0.067 ***	1.069	0.066 ***	1.069	0.049 ***	1.050	0.050 ***	1.051
			(0.012)		(0.012)		(0.014)		(0.014)	
Number of gas stations/ convenience stores[a]					0.034 **	1.035	0.033 **	1.033	0.034 **	1.034
					(0.011)		(0.011)		(0.011)	
Number of religious organizations[a]							0.051 **	1.052	0.050 **	1.051
							(0.017)		(0.017)	
Percent foreign born * Minority/immigrant owned businesses									-0.008 *	0.992
									(0.003)	
Years										
2006	-0.007	0.993	0.000	1.000	0.005	1.005	0.008	1.008	0.009	1.009
	(0.020)		(0.020)		(0.020)		(0.020)		(0.020)	
2007	-0.083 **	0.921	-0.065 *	0.937	-0.064 *	0.938	-0.057 *	0.945	-0.059 *	0.943
	(0.027)		(0.027)		(0.027)		(0.027)		(0.027)	
2008	-0.186 ***	0.830	-0.161 ***	0.851	-0.165 ***	0.848	-0.156 ***	0.856	-0.158 ***	0.854
	(0.028)		(0.029)		(0.029)		(0.029)		(0.029)	
2009	-0.234 ***	0.792	-0.203 ***	0.816	-0.207 ***	0.813	-0.199 ***	0.819	-0.200 ***	0.819
	(0.025)		(0.025)		(0.025)		(0.025)		(0.025)	
2010	-0.234 ***	0.791	-0.198 ***	0.820	-0.202 ***	0.817	-0.191 ***	0.826	-0.191 ***	0.826
	(0.026)		(0.026)		(0.026)		(0.027)		(0.027)	
2011	-0.252 ***	0.777	-0.214 ***	0.808	-0.217 ***	0.805	-0.204 ***	0.815	-0.205 ***	0.815
	(0.026)		(0.027)		(0.027)		(0.027)		(0.027)	
2012	-0.239 ***	0.787	-0.204 ***	0.815	-0.208 ***	0.812	-0.194 ***	0.823	-0.195 ***	0.823
	(0.026)		(0.027)		(0.027)		(0.027)		(0.027)	
2013	0.243 ***	1.275	0.268 ***	1.307	0.262 ***	1.300	0.276 ***	1.317	0.277 ***	1.319
	(0.025)		(0.025)		(0.025)		(0.025)		(0.025)	
2014	0.200 ***	1.221	0.226 ***	1.254	0.220 ***	1.246	0.236 ***	1.267	0.238 ***	1.268
	(0.025)		(0.025)		(0.025)		(0.026)		(0.026)	
AIC	21998.800		21972.700		21964.700		21958.100		21954.100	
BIC	22100.000		22079.500		22077.100		22076.100		22077.700	
Log-likelihood	-10981.400		-10967.300		-10962.300		-10958.000		-10955.000	
$\sigma^2_{\square \cdot u}$	0.376 [g]		0.368 [g]		0.353 [g]		0.335 [g]		0.336 [g]	
Standard Deviation	0.613		0.607		0.594		0.578		0.580	
Plausible Values										
Lower Bound	-4.000	0.018	-4.011	0.018	-3.982	0.019	-3.959	0.019	-3.961	0.019
Upper Bound	-1.596	0.203	-1.633	0.195	-1.653	0.191	-1.692	0.184	-1.688	0.185
N	2040		2040		2040		2040		2040	

***p<.001 **p<.01 *p<.05 †p<.1 [a]All rates are specified per 100,000 [g]Significant based on the confidence interval

In Model 5, I control for percent minority candidates. As percent of minority candidates increases by 1, the expected count of property crime arrest rates increase by [(1-1.041)*100]=4.1% ($p<.05$). The significance and magnitude of the coefficient for percent foreign born does not change even after I control for all criminogenic establishments. Percent renter occupied housing is marginally significant across all models, however, once I control for number of religious organizations, the level of significance and size of this coefficient increases. In Model 10, I include the interaction between percent foreign born and minority/immigrant owned businesses and find that the association between percent foreign born and minority/immigrant owned business is enhanced in census tracts that have at least one minority/immigrant owned business. Specifically, the effect of percent foreign born in census tracts with no minority/immigrant owned businesses is -0.001 and the effect of having a minority/immigrant owned business in census tracts with an average level of percent foreign born is -0.048 ($0<.01$). The effect of percent foreign born in census tracts that have a minority/immigrant owned business is [-0.001+(-0.008)*(1)]=-0.009 ($p<.05$).

In summary, I find evidence that immigrant concentration and crime (both violent and property arrests) are negatively associated over time in Columbus, OH. Results also provide evidence that the presence of minority/immigrant businesses enhances the negative relationship between percent foreign born and violent/property crime. However, I find no evidence that percent of minority candidates mediates the association between percent foreign born and crime. When I grand-mean center percent foreign born, the findings are similar to those shown in Tables 4 and 5, but the interaction between percent foreign born and minority/immigrant owned businesses is not significant (results not shown).

Conclusion and Discussion:

Columbus, OH is not a historical immigrant destination, thus the dynamics of immigration in this pre-emerging gateway are important to consider in order to understand the impact of immigration in the social, economic, cultural, and political growth of a new immigrant destination. Very few previous studies have examined the association between immigrant concentration and crime in new immigrant destinations across the US. One notable exception is research by Ramey (2013) that found that immigrant concentration in neighborhoods in new destination areas experienced lower crime rates, but only in certain situations. Specifically, he found that in Latino neighborhoods there was a significant and negative relationship between immigrant concentration and violent crime rates. However, in Black neighborhoods and communities where no specific racial/ethnic group comprised at least half of the population, immigrant concentration was not associated with violent crime (Ramey, 2013). Ramey (2013) explained that communities where immigration is not significantly associated with crime may lack the social and economic resources in order to initiate any efforts to reduce crime and/or increase the overall well-being.

There is not much information regarding the community characteristics that are unique of new immigrant destinations and the impact that recent immigration growth has on these places. Therefore, the present study explores this by describing characteristics of communities in Columbus OH, with higher and lower immigrant concentrations. Second, it examined whether immigrant concentration in a new destination city is negatively associated with crime, and attempted to identify community characteristics that mediate or enhance this relationship. Interestingly, the changes in the distribution of immigrant concentration across the 10 year

period show little evidence of ethnic enclaves forming in Columbus. Ethnic enclaves are geographical areas, characterized by having a major ethnic group residing in it (Portes & Rumbaut, 2014; Kumar et al., 2015; Lim et al., 2017). Such major ethnic groups tend to be spatially clustered and socially and economically different from the majority group (Portes & Rumbaut, 2014; Kumar et al., 2015; Lim et al., 2017).

Previous research found that enclave residence is associated with positive health outcomes as well as a greater social connectedness and establishment of bonds with fellow immigrants (Kumar et al., 2015; Lim et al., 2017). Since Columbus has only recently experienced a rapid increase in immigration growth, it is not altogether surprising to observe little evidence of ethnic enclaves operating. Overall, the only areas that consistently maintained a sizable immigrant population are the north-east, north-west and the census tracts close to the Ohio State University. Although exploratory, these findings regarding immigrant settlement in Columbus may only be reflective of Columbus' status as a new destination area.

A unique finding emerging out of this study is that in Columbus neighborhoods, immigrants appear to be settling in areas with low levels of disadvantage, more affordable and renter-oriented housing and lower crime. Contrary to previous studies on immigrant concentration in historical destinations, immigrants in Columbus are not living in highly disadvantaged communities. Instead, they are primarily locating in the suburbs of the city. This finding is consistent with recent reports on immigration in new destinations that suggest that immigrants are moving further from the urban centers of cities (Boschma, 2014).

This study finds that immigration is negatively associated with violent and property crime over time and across census tracts in Columbus OH, meaning that the relationship between

increases in immigrant concentration and decreases in crime arrest rates are not only specific of a given time period, but evident across the years beginning in 2005 and spanning to 2014. In the early stages of immigration growth throughout this 10 year period, there were census tracts that had less than 11% foreign born. In accordance with city reports (Benchmarking 2009), I observe that immigrant concentration increased rapidly in Columbus, OH around 2009. In fact, Figure 5 shows that more census tracts across Columbus had over 25% foreign born during the 2006 to 2010 period. These dramatic changes in immigrant concentration observed in some regions of the US and the increased interest in examining the immigration-crime link is currently driving more researchers to determine if the negative relationship between immigration and crime is a unique characteristic of historical settlements or is evident in other regions under different conditions. My study suggests that the negative association between immigrant concentration and crime is also evident in new immigrant destinations.

There is also an increased interest in identifying whether particular community characteristics may enhance or help explain the immigration-crime link. Drawing from the immigrant revitalization thesis, I find that the effect of percent foreign born on crime is enhanced in tracts where minority/immigrant owned businesses are located. Specifically, I find that the effect of percent foreign born on crime is greater in census tracts with at least one minority owned business. These establishments may also have a symbolic value for members of the immigrant community who see people like themselves achieving financial success. The 2015 IRCO report and Robertson and Grant (2016) explain that immigrants are highly motivated to start a business. Thus, it is not surprising to see that census tracts with signs of minority/immigrant entrepreneurship have lower property crime arrest rates and strengthen the

immigrant revitalization process in place. It is also important to keep in mind that my indicator of minority/immigrant owned businesses is constrained to only include those businesses that have not closed down.

I find very little evidence to suggest that minority political candidates for the Boards of Education play a role in the immigration-crime link. This could be the result of Columbus, OH being a new destination where new residents have not had enough time to develop strong networks with public officials and/or become more civically engaged. Interestingly, the association between minority candidates and violent/property crime arrest rates is positive. This is probably the result of Columbus School District being the largest school district in Franklin County. In comparison with other school districts, Columbus School District encompasses census tracts with the highest levels of violent/property crime. I also tested for moderating effects but did not find evidence that the presence of minorities on candidates for the Boards of Education enhanced the negative relationship between immigration and crime (results not shown).

This study shows that minority and immigrant owned businesses are associated with reductions in property crime, indicating that looking at immigration concentration alone may not be sufficient to account for the variety of ways that the presence of immigrants may increase community wellbeing. Instead, research must also explore how community characteristics related to immigration growth may in fact influence crime rates. I specifically looked at the impact of percent renter occupied housing as a separate measure of disadvantage since it is conspicuous that immigrants are moving to places with more affordable housing and lower crime rates as well as lower levels of structural disadvantage in Columbus. Future research should

continue to explore and identify community factors that contribute to areas becoming more desirable to immigrant populations

I conclude by emphasizing the importance of continued examination of the positive outcomes associated with immigration growth in order to enhance the strengths that immigrants bring to the US. This study primarily focused on looking at immigrant and minority entrepreneurship, demonstrating that these establishments do contribute to the improvement of the well-being of a community. Policy makers must work alongside organizations that provide social services to immigrants in order to further increase entrepreneurial possibilities for immigrants that in turn have the potential to grow the local economy and thus decrease crime.

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Appendix A: Tables and Figures

Table A 1:Descriptive statistics and correlation matrix of all variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) Violent Crime Arrests[a]	1.000																			
(2) Property Crime Arrests[a]	0.611	1.000																		
(3) Percent Foreign Born	-0.144	-0.111	1.000																	
(4) Minority/Immigrant Owned Business	0.061	0.058	-0.031	1.000																
(5) Percent of Minority Candidates	0.434	0.302	-0.073	-0.080	1.000															
(6) Total Population	-0.342	-0.292	0.129	0.122	-0.486	1.000														
(7) Percent Less than High School Education	0.496	0.291	-0.178	-0.047	0.272	-0.263	1.000													
(8) Percent of Renter Occupied Housing	0.379	0.302	0.357	-0.029	0.269	-0.212	0.183	1.000												
(9) Percent of Vacant Housing	0.620	0.372	-0.048	0.042	0.367	-0.368	0.474	0.491	1.000											
(10) Percent of Female Headed Households	0.465	0.152	-0.121	0.052	0.240	-0.180	0.687	0.135	0.491	1.000										
(11) Percent Unemployment	0.553	0.283	-0.118	0.066	0.288	-0.276	0.566	0.296	0.661	0.655	1.000									
(12) Percent Unmarried	0.493	0.341	0.037	-0.026	0.469	-0.381	0.299	0.784	0.582	0.282	0.462	1.000								
(13) Percent Non-Hispanic Black	0.451	0.208	-0.055	0.142	0.354	-0.285	0.462	0.223	0.525	0.813	0.599	0.385	1.000							
(14) Percent Living under the Poverty Line	0.584	0.340	0.063	-0.060	0.419	-0.305	0.561	0.621	0.699	0.502	0.718	0.744	0.449	1.000						
(15) Percent Receiving Public Assistance	0.624	0.298	-0.028	0.030	0.353	-0.245	0.636	0.314	0.652	0.744	0.840	0.436	0.607	0.709	1.000					
(16) Number of Places that Sell Alcohol[a]	0.168	0.331	0.025	0.067	0.150	-0.249	0.005	0.306	0.115	-0.186	-0.057	0.267	-0.083	0.101	-0.050	1.000				
(17) Number of Restaurants[a]	0.173	0.573	0.034	0.129	0.084	-0.166	-0.093	0.227	0.048	-0.202	-0.054	0.147	-0.041	0.032	-0.106	0.596	1.000			
(18) Number of Convenience Stores[a]	0.277	0.255	-0.067	0.020	0.174	-0.235	0.208	0.154	0.254	0.107	0.188	0.214	0.077	0.204	0.224	0.246	0.202	1.000		
(19) Number of Religious Organizations[a]	0.428	0.429	-0.269	0.184	0.260	-0.382	0.357	0.079	0.386	0.291	0.409	0.274	0.427	0.293	0.303	0.245	0.330	0.180	1.000	
(20) Years	0.217	0.116	0.168	0.078	0.184	0.072	-0.134	0.081	0.217	0.046	0.276	0.162	0.046	0.232	0.402	-0.060	-0.001	0.041	-0.063	1.000
Mean	952.954	7517.161	8.669	0.417	40.382	3836.825	15.283	50.988	12.897	16.564	8.758	59.908	29.422	20.672	14.604	55.909	227.753	49.554	187.466	5.500
SD	1186.397	8734.602	7.430		24.262	1911.206	11.370	23.253	8.537	10.320	7.160	14.050	27.782	16.266	14.013	94.342	447.858	60.404	211.347	2.873
Minimum	0.000	93.002	0.000		0.000	217.580	0.000	1.370	0.000	0.000	0.160	22.286	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Maximum	9892.086	202216.330	52.530		66.667	17335.000	58.280	100.000	52.100	51.690	49.200	97.862	97.688	81.643	77.000	1052.408	7053.942	546.697	1659.751	10.000
N	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040

[a]All rates are specified as per 100,000 individuals

Table A 1: Descriptive statistics and correlation matrix of all variables

Table 2.A: School Districts			
Columbus City School District			
Number of Census Tracts	152		
	Number of Minorities	Total Number of Candidates	Percent
2005	4	7	57.142857
2007	3	10	30
2009	5	9	55.555556
2011	6	11	54.545455
2013	4	6	66.666667
Dublin City School District			
Number of Census Tracts	7		
	Number of Minorities	Total Number of Candidates	Percent
2005	2	6	33.333333
2007	0	3	0
2009	0	4	0
2011	0	2	0
2013	0	3	0
Gahanna-Jefferson City School District			
Number of Census Tracts	2		
	Number of Minorities	Total Number of Candidates	Percent
2005	1	5	20
2007	2	4	50
2009	1	2	50
2011	0	5	0
2013	0	6	0
Grandview Heights City School District			
Number of Census Tracts	1		
	Number of Minorities	Total Number of Candidates	Percent
2005	1	4	25
2007	0	4	0
2009	0	5	0
2011	0	3	0
2013	0	2	0

Continued

Table A 2: School Districts

Table A 2 Continued

Groveport Madison Local School District			
Number of Census Tracts	2		
	Number of Minorities	Total Number of Candidates	Percent
2005	1	7	14.285714
2007	0	5	0
2009	0	6	0
2011	1	5	20
2013	0	5	0
Hamilton Local School District			
Number of Census Tracts	1		
	Number of Minorities	Total Number of Candidates	Percent
2005	0	7	0
2007	0	4	0
2009	0	5	0
2011	0	2	0
2013	0	4	0
Hilliard City School District			
Number of Census Tracts	8		
	Number of Minorities	Total Number of Candidates	Percent
2005	0	7	0
2007	0	4	0
2009	0	7	0
2011	0	5	0
2013	0	5	0
South-Western City School District			
Number of Census Tracts	12		
	Number of Minorities	Total Number of Candidates	Percent
2005	0	7	0
2007	0	3	0
2009	0	8	0
2011	0	2	0
2013	0	3	0

Continued

Table A 2 Continued

Westerville City School District			
Number of Census Tracts	7		
	Number of Minorities	Total Number of Candidates	Percent
2005	0	4	0
2007	0	3	0
2009	1	4	25
2011	0	4	0
2013	0	8	0

Table 2.A: School Districts

Whitehall City School District			
Number of Census Tracts	1		
	Number of Minorities	Total Number of Candidates	Percent
2005	0	4	0
2007	0	3	0
2009	1	4	25
2011	0	6	0
2013	2	6	33.333333
Worthington City School District			
Number of Census Tracts	11		
	Number of Minorities	Total Number of Candidates	Percent
2005	0	3	0
2007	0	3	0
2009	0	4	0
2011	0	4	0
2013	1	4	25
Total	88	266	