Immigration and Local Government Finances*

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Abstract

Immigration stimulates economic growth, but also increases demand for local public resources. This paper examines the net impact of immigration on local governments' fiscal health. We estimate the effects of legal and unauthorized immigration using a Bartik shift-share design constructed from individual-level U.S. Census data dating back to 1880 and court order data measuring unauthorized immigrant inflows. We find that immigrant inflows improve local government access to finance, as evidenced by a decline in municipal bond yields and improvements in local governments' fiscal positions. These effects are stronger for counties with i) tighter labor markets consisting of higher labor force participation rates, lower unemployment rates, and more labor-intensive employment, and ii) more financial slack proxied by lower levels of poverty. We find both unauthorized immigrants and legal immigrants reduce borrowing costs with stronger effects for immigrants of higher education levels. The benefits of immigration are driven by increasing employment and stronger operating margins as revenue growth driven by increased sales tax and state intergovernmental transfers outpaces expense growth. Overall, our results provide novel evidence on the economic consequences of immigration, both legal and unauthorized.

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"The arrival of as many as 15,000 immigrants from Haiti has reshaped this city of 58,000, offering some promise of economic revival along with growing pains."

– Reuters, September 11, 2024

There is a longstanding debate on whether immigrants benefit the communities they settle in. Immigration can promote economic growth by increasing the local labor supply and fostering new business creation (Bernstein et al., 2022; Peri, 2012; Terry et al., 2026). Immigration can also place a greater strain on local public resources such as healthcare, education, infrastructure, and social services as immigrants assimilate into their new communities (Borjas, 1999; Mackie & Blau, 2017). The debate has become increasingly relevant as the United States faces the largest inflow of immigrants in its history and the U.S. welfare system continues to expand. These competing effects are particularly relevant for local governments because eligibility for federal assistance is limited for newly arriving immigrants, while local governments finance the public services they use. At the same time, the economic benefits generated by immigration may take time to materialize and can extend beyond the communities in which immigrants initially settle. Whether immigration ultimately strengthens or weakens the fiscal outlook of local communities remains an open question.

In this paper, we causally examine the impact of immigration on local government borrowing costs to evaluate these competing forces. We use the municipal bond market as a laboratory because municipal bond yields reflect investors' forward-looking assessments of local fiscal conditions. Changes in borrowing costs reveal whether investors view immigrant inflows as strengthening or weakening the future fiscal health of local communities. We combine municipal bond data with detailed county-level labor market, income statement, and balance sheet information to examine the economic and fiscal channels through which immigration affects local communities.

Immigrants do not randomly choose where to settle and might be drawn to areas experiencing stronger economic growth, labor shortages, or higher provisions of public goods. Our approach extends the framework of Burchardi, Chaney, and Hassan (2019) and Terry et al. (2026) which relies

on two facts. First, immigrants tend to settle where earlier immigrants from the same origin country previously settled. Second, these historical settlement patterns were shaped by the attractiveness of different U.S. destinations when earlier immigration waves arrived. For example, large waves of Chinese immigration occurred around 1880, a period when San Francisco was a particularly desirable area to settle in. These historic migration waves helped create persistent ancestry networks that continue to influence where new immigrants choose to settle today. Using historical Census migration and settlement records dating back to 1880, we predict contemporary ancestry compositions across counties and use these predicted ancestry shares to construct differential exposure to modern immigration waves. This Bartik-instrumental variables approach satisfies the relevance condition with a first-stage F-statistic exceeding 200. To support the exclusion restriction, we build the predicted immigrant inflows using a leave-out information approach (Goldsmith-Pinkham, Sorkin, & Swift, 2020).

The instrumental variables (IV) approach provides strong evidence that increasing immigration improves a county's access to finance by lowering its municipal bond yields. Consistent with the downward bias in OLS due to immigrants settling in areas with rising social welfare spending, we find larger effects in the IV setting. A one-standard deviation increase in predicted immigration inflows (about a 1.6% increase in population) explains a reduction in a county's offering yield by about 7.5 basis points. These findings suggest that municipal bond investors view the economic benefits generated by immigration as outweighing the associated fiscal pressures on local governments on average. The results are robust to the inclusion of county and time fixed effects along with lagged county controls which capture broader population changes, labor market conditions, and demographic characteristics.

While, on average, immigration improves a county's access to finance, it is likely that immigration is particularly valuable to counties in need of additional labor supply or counties that are better able to help immigrants assimilate into their communities. We find that counties that are experiencing labor shortages proxied by high labor force participation rates and lower unemployment experience

stronger benefits to immigration. In regards to the skill-complementary mix, we hypothesize that many blue collar jobs are harder to fill due to a skills gap from retiring baby boomers, a stigma attached to manual labor that deters younger generations, and the physical demands required. We expect these factors result in fewer qualified applicants compared to white collar jobs. We therefore predict that areas with a higher composition of labor-intensive employment will benefit most from immigration inflows. We also find stronger reductions in offering yields due to predicted immigration inflows in counties with a smaller proportion of residents below the poverty line. This result suggests that counties with greater financial capacity are better able to absorb the short-run costs of immigration. However, we find no differential effects for counties closer to the U.S. border that are more exposed to immigration.

We predict that fiscal consequences of immigration differ across immigrant groups because labor market outcomes, tax contributions, and eligibility for government programs vary by legal status and educational attainment.[1] We augment our analysis with data on the flows of unauthorized immigrants from court-order notice to appear counts from Syracuse's Transactional Records Access Clearinghouse (TRAC) to isolate the impact of unauthorized immigrants. We find that increasing exposure to unauthorized immigrants reduces the costs of borrowing for local communities, directionally consistent with our findings for total immigration and legal immigration. Overall, in our Census data, we find the largest reductions in borrowing costs are for counties exposed to the highest-skilled immigrants proxied through by their level of education.

We also use an event-study design based on a policy which targeted unauthorized immigrants for deportation. The Secure Communities Act was rolled out in a staggered manner from 2008 to 2014 and increased local law enforcement collaboration with the Department of Homeland Security which led to the detainment of over 450,000 undocumented immigrants, primarily from Mexico

[1]Legal immigrants typically pay more taxes due to higher tax compliance and higher average incomes than unauthorized immigrants whose estimated compliance with federal and/or payroll taxes is between 50-75% (Congressional Budget Office, 2007). On the cost side, legal immigrants are exempt from federal means-tested benefits (e.g., SNAP, Medicaid, TANF, SSI) for only a five-year waiting period while unauthorized immigrants are generally ineligible for federal means-tested benefits (Bier, Howard, & Salazar, 2026).

(East et al., 2023). We find that the reduction in the undocumented immigrant population led to higher borrowing costs for counties, particularly those with a higher likelihood of labor shortages. The removal of low-skilled, undocumented immigrants increased borrowing costs by approximately 8 basis points, an effect similar in magnitude to our main design. These results are consistent with East et al. (2023) who find the passage of the Secure Communities Act resulted in increased labor costs that reduced employment and wages for both undocumented and native residents and a reduction in local consumption.

Finally, we examine the economic and fiscal mechanisms underlying these reductions in borrowing costs. Overall, we find that immigration improves local labor markets as total employment increases and unemployment rates decline suggesting immigrants largely complement the existing native workforce. On the fiscal side, immigration increases both revenues and expenses, but revenue growth outpaces expenses growth over longer time horizons of 5 to 10 years improving the county's operating margin. Decomposing the growth in revenue, we find about one-fourth of the magnitude is driven by increasing sales tax collection and three-fourths by increased state intergovernmental transfers. These increasing state transfers are split across educational expenses and general support and not fully explained by population growth suggesting that state governments reallocate resources toward immigrant-receiving counties through channels beyond simple population-based formulas. Short-term increases in expenses are primarily driven by increased public services such as education, police, and judicial expenses rather than public infrastructure spending.

Our work joins a growing literature on determinants of municipal access to finance including aging (Butler & Yi, 2022), sea-level rise (Goldsmith-Pinkham et al., 2023; Painter, 2020), opioid abuse (Cornaggia et al., 2022) and newspaper closures (Gao, Lee, & Murphy, 2020). Gustafson et al. (2025) find that Covid-induced, primarily white-collar internal migration increases county bond yields and reduces access to finance for counties losing these residents. In contrast, our paper provides evidence that increases in population due to international migration, which have much different benefit and cost implications due to greater variation in skill and government program

eligibility, enhance a community's access to finance as more immigrants settle in a given area. Li et al. (2024) study the impact of state-level employment verification systems on municipal borrowing costs, focusing on the direct impact of government digitalization rather than its implications on immigration.

Our paper also contributes to understanding the effects of immigration and local government finance. Prior research has explored immigration's impact on local labor markets and productivity (Card, 2001; Doran, Gelber, & Isen, 2022; Peri, 2012; Piyapromdee, 2021; Tabellini, 2020; Terry et al., 2026), foreign direct investment and international trade (Burchardi, Chaney, & Hassan, 2019; Cohen, Gurun, & Malloy, 2017; Eghbali, Wallskog, & Yi, 2024), innovation (Bernstein et al., 2022; Terry et al., 2026), labor and housing prices (Cortes, 2008; Saiz, 2003), long-term community impacts (Sequeira, Nunn, & Qian, 2020), and the consumption of public goods by immigrants (Borjas, 1999; Chalfin, 2015; Mackie & Blau, 2017). Lie et al. (2025) examine the impact of US Immigrations and Customs Enforcement (ICE) on stock returns and municipal bond yields in affected counties from 2009 to 2024. By studying the impact of immigration over 30 years across legal and unauthorized immigration, we provide a more holistic picture of the effects of immigration. In a related work, Terry et al. (2026) show that immigration leads to an increase in the production of innovation and wage growth in counties receiving immigrant flows. However, they do not test whether and how the consumption of public goods and social services by immigrants offsets their economic benefits. By analyzing how immigration affects county revenues, expenses, and balance sheets, our paper enhances our understanding of its implications for public finance.

1 Data & Measurement

1.1 Bond Issuance Data

We download all municipal bond issuances from LSEG's SDC Platinum from 1986 to 2021 which returns 527,660 bond issuances. We are able to geocode more than 90 percent of these issuances at the county level, resulting in 483,757 matched issuances. Following Terry et al. (2026), we measure immigrant inflows over five-year intervals (e.g., 1981-1985) and relate them to municipal bonds issued at the end of each interval (e.g., 1986). This restriction yields 105,420 bond issuances. Conditioning down to bond issuances that have non-missing information related to the bond's yield, lagged characteristics, and are issued by a non-state authority returns 73,322 bond issuances.[2] Our primary measure of borrowing cost for a given bond issuance is the tax-adjusted bond offering yield minus the maturity-matched Treasury bond yield, which, following Garrett et al. (2023), is calculated as:

$$\text{Yield Spread}_{i,d,t} = \frac{Yield_{i,d,t}}{(1-\tau_{d,t})} - r^{f}_{m,t} \tag{1}$$

where i references bond, d references county, and t references time. $\text{Yield}_{i,d,t}$ is the bond's issuance yield, $\text{r}^{f}_{m,t}$ is the yield of treasury bill of maturity m issued at time t, $\tau_{d,t}$ is the marginal tax rate on personal income calculated as $\tau_{d,t} = \tau_t^{Federal} + \tau_{d,t}^{State} \times \mathbf{1}[Exemption^{State}]_{d,t}$ where $\tau_t^{Federal}$ is the federal tax rate for top earners after adjusting for the deductability of state income taxes at the federal level and $\tau_{d,t}^{State}$ is the state income tax rate for top earners with both measures provided by NBER Taxsim (Feenberg & Coutts, 1993). $\mathbf{1}[Exemption^{State}]_{d,t}$ is an indicator variable that takes a value of one for bonds issued in states that exempt income taxes on municipal bonds.

[2]We use only the longest-maturity bond within a given issuance because the information required to compute yield spreads for shorter-dated bonds is often unavailable prior to 2003. Overall, yield spreads are strongly correlated across bonds within the same issuance, with an average correlation of 0.73. This relationship is similar before and after 2003 (0.71 and 0.73, respectively), suggesting that restricting attention to the longest-maturity bond is unlikely to materially affect our inferences.

Table 1 Panel A presents summary statistics on key variables at the bond issuance level. The average bond has a yield spread of 2.32 percent in excess of the maturity-matched, treasury bond yield implying that investors demand a sizable risk and illiquidity premium for holding municipal bonds. Cross-sectionally, there is significant variation across municipalities despite the low, observed default rates as the inter-quartile range between the 25th and 75th percentile of offering yields is about 1.75 percent. The average bond issuance has a maturity of 15 years and an issue amount of almost $20 million consistent with the large scope and duration of municipal-backed projects. About 30 percent of bonds are revenue bonds backed only by the cash flows of the underlying project itself and 91 percent of bonds are tax-exempt.

1.2 Immigration Data

We link this bond issuance level data with immigrant inflow data from the U.S. Census and court-order Notice to Appear Data. Our main measure of immigration comes from the U.S. Census Bureau as its coverage of immigrant inflows dating back to the 19th century is crucial for our identification approach. No questions explicitly ask about an individual's legal status and no legal ramifications exist for completing it although undocumented immigrants are somewhat less likely to be captured in the Census data.[3] To isolate unauthorized flows of immigrants, we collect data from Syracuse's Transactional Records Access Clearinghouse (TRAC) from each notice to appear (NTA) document issued by the Department of Homeland Security (DHS) to a noncitizen who the DHS believes to have violated an immigration law. The filing of an NTA begins removal proceedings which can be appealed. These NTA records provide the nationality, location, and arrival date of unauthorized immigrants which we then augment with data on parolees and scale up at the state

[3]Pew Research Center estimates the gap of undocumented immigrants to be between 5 to 15 percent of Census respondents from countries with more undocumented individuals. The U.S. Census Bureau found in a simulated headcount across administrative records that about 20 percent of non-citizens had addresses that couldn't be matched in the 2020 Census versus 5.4 percent for citizens (Stephen & Lo Wang, 2024).

and national-level to proxy for the aggregate distribution of unauthorized immigrants.[4]

Table 1 Panel B displays summary statistics of immigrant inflows over 5-year intervals at the county level. Based on U.S. Census data, the average county receives about 2,400 immigrants per 5-year interval which scaled by the county's lagged population implies an increase in population of about 0.8% on average. Unauthorized inflows as proxied by NTAs make up about 27 percent of arrivals on average at the county × year level. As the average county experiences a population increase of about 3.6% every 5 years, these immigrant inflows represent economically important contributors of population.

Figure 1 shows the stock and flow of immigrants in the United States over time. Panel A documents that the United States had an increase in the stock of immigrants from 15 million immigrants in 1980 to nearly 50 million in 2020. Immigrants also make up a much larger relative proportion of the U.S. population increasing from about 5 percent in 1980 to nearly 15 percent in 2020.[5] Panel B of Figure 1 shows the flow of immigrants to the United States over our sample period across both Census reported measures and our estimates of unauthorized immigration based on NTA and parolee data. The series follow a similar trend overall although unauthorized immigration continues to increase around 2020 while Census-based measures experienced a slight decline.[6] Relative to Census immigrant flows, unauthorized inflows are much more likely to occur near the U.S. border and in more highly populated areas and these immigrants are more likely to come from other North American countries.[7]

[4]We provide more details in Internet Appendix C regarding our measurement of unauthorized immigrants.

[5]The Appendix provides a historical overview of U.S. immigration policy contributing to these trends.

[6]Figure IA.1 plots the flow of immigrants by continent from 1880 onward in absolute and relative magnitudes showing the growth of non-European immigration from less than 5 percent of immigrant inflows in 1900 to nearly 90 percent in 2020.

[7]Figure IA.2 documents the distribution of the settlement location based on reporting sources scaling unauthorized immigrant counts by total immigration. Figure IA.3 shows the high composition of unauthorized immigrants from North American countries which has increasingly shifted away from Mexican immigration towards Central America.

1.3 County Data

We augment our panel with county-level demographic and labor market characteristics. County level characteristics are primarily from the U.S. Census and labor market characteristics are collected from the Bureau of Labor Statistics and Census County Business Patterns (CBP) database (Eckert et al., 2020). Panel C of Table 1 displays the summary statistics of county-level characteristics. The average county has an unemployment rate of about 5.8%, has about 13% of residents below the poverty line, and about 72% of workers work in labor-intensive sectors.[8]

We also include financial data from the Government Finance Database which aggregates data primarily from the US Census Bureau's Census of Governments and Annual Survey of State and Local Government Finances (Pierson, Hand, & Thompson, 2015). We focus on the aggregate county entities (e.g. school districts, townships, municipalities, and county governments) in our main analysis to understand the economic trade-off of immigration.[9] These data provide comprehensive information on the income statements and balance sheets of local county governments. Table 1 Panel D shows that the median county has revenues of about $470 million consisting of total taxes, intergovernmental revenue, and other miscellaneous revenue. The average county has comparable expenses which are dispersed broadly across public services for local citizens such as education, infrastructure and roads, police, judicial, and public welfare spending.[10] The average county government has about $410 million in debt outstanding while financial assets represent about $400 million spread across a mix of cash, trust cash securities, and other securities. The average

[8]We classify industries as labor-intensive (blue-collar) or non-labor-intensive (white-collar) based on two-digit NAICS codes. Labor-intensive industries include agriculture (11), mining (21), utilities (22), construction (23), manufacturing (31-33), wholesale trade (42), retail trade (44-45), transportation and warehousing (48-49), administrative and waste services (56), arts, entertainment, and recreation (71), accommodation and food services (72), other services (81), and public administration (92). White-collar industries include information (51), finance and insurance (52), real estate (53), professional and technical services (54), management of companies (55), educational services (61), and health care and social assistance (62).

[9]We use the most recent observation from the Government Finance Database as these data are provided comprehensively in years ending in the digit 2 or 7 for all counties while larger counties are surveyed annually. We provide supplementary analysis in the Internet Appendix which studies the impact of immigration on the county government to understand the trade-offs at the local governmental level directly.

[10]Figure A.1 shows the decomposition of a county's revenue and expense sources.

municipality has a leverage ratio of about 1.55 when scaling total debt by financial assets while some distressed counties have leverage ratios exceeding 2.

2 Empirical Approach

Our goal is to estimate the causal impact of immigration on municipal borrowing costs, labor market outcomes, and county finances. To motivate our analysis, we first present estimates of the relationship between immigration and municipal bond yields. We estimate the following regression specification:

$$\begin{aligned}\text{Yield Spread}_{i,d,t+1} = \beta_0 + \beta_1 \%Imm_{d,t} + \tau' \times \text{Bond Controls}_{i,t+1} \\ + \rho' \times \text{County Controls}_{d,t-5} + \gamma_d + \delta_{t+1} + \epsilon_{i,d,t+1}\end{aligned} \tag{2}$$

where Yield Spread$_{i,d,t+1}$ is as defined in Equation 1. Throughout the paper, t denotes the end of a five-year immigration interval (e.g., *t = 1990 corresponds to immigrant inflows from 1986-1990*). Accordingly, % Imm$_{d,t}$ is the inflow of immigrants settling in county d over [t-4,t], scaled by the county's population at time *t-5*. Bond outcomes are observed in year t+1, ensuring that immigration exposure is measured prior to bond issuance. Bond Controls$_{i,t+1}$ includes the total issue amount of the bond, the time to maturity, whether the bond is callable, insured, a negotiated bid, taxable, the rating of the bond, whether the bond has a sinking fund, and whether the bond is used to refinance existing issuances. County Controls$_{d,t-5}$ is a vector of lag county controls from five years prior which includes the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, the county's net revenue margin, social capital index, percent of population that is between the ages of 18 to 65, percent below the

poverty line, and the median age.[11] γ_d is a county fixed effect to capture time-invariant differences across issuing counties and δ_{t+1} is a time fixed effect to account for differences between observed time units.

The results in Table 2 examine how changes in immigration flows relate to municipal bond yield spreads. Across columns 1 to 8, the relationship between immigrant inflows and a municipality's cost of borrowing is typically negative but statistically insignificant. There are two key threats to identification: *endogenous immigrant sorting* and *country* $\times$ *county specific omitted variables*. First, immigrants do not choose settlement destinations at random. They might settle in counties experiencing positive productivity shocks or in locations offering generous public benefits, creating a link between immigration and other potential determinants of municipal borrowing costs. Second, immigrant groups from specific countries might disproportionately settle in counties specialized in particular sectors creating a spurious correlation. For example, Silicon Valley in Santa Clara County has both a high concentration of residents of Indian ancestry and is dominated by the tech sector. Fluctuations in the tech sector will lead to large changes in the county's financial position *and* shifts in Indian immigration which we might spuriously attribute to the latter.

2.1 Instrumental Variables and Bartik-Instrument Approach

To causally estimate the impact of immigration on local municipal borrowing costs and finances, we follow a similar framework to Terry et al. (2026). This approach builds and extends on the intuition of Card (2001) that immigrants are more likely to settle into communities where others of the same sending country have previously settled. However, rather than relying on observed historical immigrant settlement patterns as the share component of a shift-share instrument, Terry et al. (2026) first constructs plausibly exogenous variation in *ancestry* based on historical migration

[11] Internet Appendix B provides detailed variable definitions.

and settlement patterns for identification.[12] The intuition of the identification approach is best illustrated through an example which we provide below before walking through the estimating equations.

The approach of Terry et al. (2026) predicts a large inflow of immigrants from *ancestry*, o, (e.g., Mexico) to *county*, d (e.g., Los Angeles county), at a point in history τ (e.g., 1910) if in 1910, many Mexicans migrate to the broader United States excluding the West Coast region *and* Los Angeles county is desirable to migrants from outside North America. The coincidence of elevated Mexican migration and Los Angeles's desirability to immigrants during the early twentieth century helps explain the large community of Mexican ancestry observed in Los Angeles county by 1980. We generalize this approach across all origin countries, o, and destination counties, d, in the design incorporating harmonized U.S. Census data back to 1880. The key insight is that the approach predicts ancestry using only the interaction of historical *push* factors that determine when migrants leave their home countries and *pull* factors that determine which U.S. counties are attractive to immigrants generally. Importantly, the construction excludes county $\times$ country specific settlement information from the ancestry prediction and instead relies on leave-out push and pull factors. This plausibly exogenous variation is then used as the share component in a Card-style shift-share instrument. This empirical design implies anytime post-1980 there is a large inflow of Mexican immigrants to the broader United States, we will predict Los Angeles county experiences a positive immigration shock, because some Mexican immigrants will be drawn to settle in Los Angeles given its high, plausibly exogenous base of Mexican ancestry.

The framework of Terry et al. (2026) proceeds in two steps to: (1) predict ancestry shares and (2) predict immigration exposure which are described below.

[12] Goldsmith-Pinkham, Sorkin, and Swift (2020) show that identification in shift-share designs depends on the exogeneity of the variation contained in the share and shift components of the instrument. Card (2001) relies on using historical immigrant settlement patterns as the share component of a shift-share instrument. However, he notes that these historical settlement patterns may themselves be endogenous if immigrants systematically sort into locations experiencing persistent economic growth.

2.2 Step 1: Predicting Ancestry

In the first step, we predict the number of residents with ancestry from o who reside in county d at time t, $Ancestry_{o,d,t}$ based on the method developed in Burchardi, Chaney, and Hassan (2019) and Terry et al. (2026). This approach identifies variations in $Ancestry_{o,d,t}$ driven by previous *push* and *pull* shocks which are plausibly exogenous to threats to identification which include county d specific shocks and country $\times$ county specific factors. We estimate

$$Ancestry_{o,d,t} = \sum_{\tau=1880}^{t} a_{r(d),\tau} Imm_{o,-r(d),\tau} \frac{Imm_{-c(o),d,\tau}}{Imm_{-c(o),\tau}} + v_{o,d,t,} + \delta_{o,r(d)} + \delta_{c(o),d} + X'_{o,d}\varsigma \qquad (3)$$

where, $\text{Ancestry}_{o,d,t}$ is the number of people of Mexican origin (o), in Los Angeles county (c), in 1980 (t). The instruments are constructed using the interaction of two sources of variation based on: (1) a *push* factor consisting of variation in the magnitude of a country's out-migration across time and (2) a *pull* factor consisting of how desirable these areas are to immigrants settling in the same time period. For example, $Imm_{o,-r(d),\tau}$ is the total number of immigrants Imm from Mexico that settle in U.S. Census regions (r(d)) outside the West Coast in 1910 ($-r(d),\tau$) capturing the *push* of immigrants from Mexico. $\frac{Imm_{-c(o),d,\tau}}{Imm_{-c(o),\tau}}$ is the proportion of immigrants from all other continents excluding the focal country's home continent settling in Los Angeles county in 1910 scaled by this subset of continent's total immigration nationally reflecting the *pull* of this area to attract immigrants in this period. $\delta_{o,r(d)} + \delta_{c(o),d}$ are a series of origin country $\times$ a destination county's U.S. Census region and continent of origin $\times$ destination county interacted fixed effects, and $X'_{o,d}$ contains a series of time-invariant controls for country $\times$ county characteristics such as geographic distance and degrees of latitude reflecting shared climates.

To illustrate the sources of identifying variation we plot the underlying variation in the *push* and *pull* factors. Figure 2 shows the variation in flows over time for the 9 largest sender countries

during our analysis. There is substantial variations *within* and *across* countries with spikes typically experienced in times of distress as shown for Vietnam in 1975 and the USSR in the early 1900s, 1950s, and 1990s. Figure 3 shows variation in the short-term desirability (pull) of U.S. counties over time based on settlement data. Over time, migrant settlement has shifted towards the western and southern U.S. but there is significant idiosyncratic variation over time.

We estimate Equation 3 separately for each time period t = *1985,1990,1995,2000,2005,2010, 2015, and 2020* using all countries in the sample. From this estimation, we derive predicted ancestry

$$\widehat{Ancestry}_{o,d,t} = \sum_{\tau=1880}^{t} \hat{a}_{r(d),\tau}(Imm_{o,-r(d),\tau}\frac{Imm_{-c(o),d,\tau}}{Imm_{-c(o),.,\tau}})^{\perp} \tag{4}$$

where $a_{\hat{r(d)},\tau}$ are the coefficients estimated from Equation 3 and $\perp$ denotes that the interaction of the push and pull factors has been residualized on the controls ($X'_{o,d}\varsigma$) and fixed effects ($\delta_{o,r(d)} + \delta_{c(o),d}$) from Equation 3, isolating the variation in predicted ancestry driven by these instruments.

Figure 4 provides evidence to support the relevance of using historical migration patterns to predict subsequent immigration waves. Immigration flows are highly persistent over time, reflecting the tendency of new immigrants to settle in locations where earlier immigrants from the same origin have already established communities. Consistent with this persistence, the composition of immigrant inflows by country into a given county in 1880 exhibits a nearly 20 percent correlation with the composition of immigrant inflows into the same county in 2020 which increases as the time comparison narrows.[13]

[13]We extend the framework of Terry et al. (2026) to include data from the 2020 American Community Survey and include immigrants from non-European countries. Figure IA.4 shows that our extended data series has very high correlations with prior Census waves capturing ancestry and flows. For example, ancestry × location correlations from 2020 are nearly 99% with more recent Census waves while slightly weaker correlations on immigrant county × country flows are due to systemic shifts in where immigrants come from in recent years compared to prior Census waves. We provide more details in Internet Appendix D.

2.3 Step 2: Predicting Immigration

Second, we use these predicted ancestry compositions interacted with the subsequent flow of immigrants to ultimately predict how many immigrants from a given origin country recently settled in a given county c at time t. We use information on the broader flow of immigrants which leaves out the focal county's Census region to exclude the impact of within region $\times$ country migration.

$$Imm_{o,d,t} = b_t \times [\widehat{Ancestry}_{o,d,t-5} \times \widetilde{Imm}_{o,-r(d),t}] + \delta_{o,r(d)} + \delta_{c(o),d} + \delta_t + X'_{o,d}\theta + u_{o,d,t} \quad (5)$$

where $\text{Imm}_{o,d,t}$ is the number of immigrants from a given origin o, arriving in county d, over time t spanning the last five years, $\widehat{Ancestry}_{o,d,t-5}$ is the predicted number of residents from origin o in county d at time *t-5*, $\widetilde{Imm}_{o,-r(d),t}$ is the scaled number of immigrants from origin o, arriving to Census region's excluding county d's over the last five years. Similar to before, the δ's are time, country $\times$ Census region, and continent $\times$ county fixed effects, and $X'_{o,d}$ includes observable origin country $\times$ county controls.[14]

For example, we would predict that Los Angeles county received a large flow of Mexican immigrants in 1985 *($Imm_{o,d,t}$)* if Los Angeles county had a high *predicted* level of Mexican ancestry in 1980 ($\widehat{Ancestry}_{o,d,t-5}$), and many Mexicans were migrating to regions in the United States outside the West Coast between 1981 and 1985 ($\widetilde{Imm}_{o,-r(d),t}$). Table A.1 shows the results from estimating Equation 5 to explain the flow of immigrants across countries to different counties over time within the sample of bond issuing counties using the Census data. The regression R^2 is above 0.65 when including the interaction of predicted ancestry ($\widehat{Ancestry}_{o,d,t-5}$) with broader, national immigration waves ($\widetilde{Imm}_{o,-r(d),t}$) providing evidence for a strong first-stage. As additional controls are added

[14] $\widetilde{Imm}_{o,-r(d),t} = \text{I}_{o,-r(d),t} \times [\text{I}_{-c(o),r(d),t}/\text{I}_{-c(o),-r(d),t}]$ the scaled push factor from o. Because Terry et al. (2026) leave out from $\text{I}_{o,-r(d),t}$ all migrants from o who settle in d's region, scaling by $\text{I}_{-c(o),r(d),t}/\text{I}_{-c(o),-r(d),t}$ corrects for differences in region sizes.

for country × county controls, location interactive fixed effects, and contemporaneous immigration flows, the coefficient estimates of instruments remains stable.[15]

To predict the total flow of immigrants to Los Angeles county from 1981 to 1985 ($t = 1985$), we aggregate across origin countries the interaction of predicted ancestry in 1980 and the corresponding immigrant inflows between 1981 and 1985:

$$\widehat{Imm}_{d,t} = \sum_{o} \hat{b}_t \left(\widehat{Ancestry}_{o,d,t-5} \times \widetilde{Imm}_{o,-r(d),t} \right) \tag{6}$$

Adding up across foreign origins, we derive the total predicted immigration exposure for a given county as shown in Equation 6.

$$\widehat{\%Imm}_{d,t} = \frac{\widehat{Imm}_{d,t}}{Population_{d,t-5}} \tag{7}$$

Lastly, in Equation 7 we scale this measure by a county's lagged population to construct our main instrument for the % flow of migrants settling in county c in the last five years at time t, % $\text{Imm}_{d,t}$.[16]

This Bartik-instrument design is powerful because it uses variation both across counties and within counties over time. *Across* counties it allows us to estimate the effects of immigration on two areas with similar proportions of foreign ancestry but different compositions of foreign ancestry as additional immigrants are drawn to settle where others from their home country have previously settled. *Within* counties, immigrant inflow exposure fluctuate over time, creating substantial within-county variation that complements the cross-sectional variation used for identification. In

[15] Table A.2 provides the first-stage result using unauthorized immigrant inflows as the shift measure for flows across the broader U.S. and dependent variable at the county × country × year level. We find strong evidence unauthorized immigrants settle in places their ancestors have previously settled though the estimated regression R^2 is slightly weaker in magnitude. We use the same ancestry base in both regressions as we only have data on unauthorized immigrant inflows after 1990.

[16] Scaling by a county's lagged population allows us to estimate standardized effect sizes. Our results are robust to using unscaled measures of immigrant inflows.

heterogeneity tests of immigrant characteristics on local communities' access to finance, we also use these individual country instrumented flows to understand the varying effects of immigrants by their level of education.

2.4 Identifying Assumption

A sufficient condition for the validity of this instrument is that predicted ancestry $\widehat{Ancestry}_{o,d,t-5}$ is exogenous in Equation 4 which in combination with the baseline regional and continental leave-outs implies the condition can be written as:

$$Imm_{o,-r(d),\tau}\frac{Imm_{-c(o),d,\tau}}{Imm_{-c(o),\tau}} \perp \epsilon_{d,t} \forall o, \tau \leq t. \tag{8}$$

This requires that any confounding factors that drive temporary increases in a given county's financial situation post-1980 ($\epsilon_{d,t}$) do not systematically correlate with pre-1980 immigration from a given origin to other regions with the United States ($\mathrm{I}_{o,-r(d)}$) interacted with the simultaneous settlement of non-focal continent migrants in that US destination ($\frac{I_{-c(o),d,\tau}}{I_{-c(o),\tau}}$). Satisfying this condition implies the ancestry variable used to predict immigration in Equation 6 is exogenous.

2.5 Instrumental Variables: First and Second Stage

Combining the previous two steps, to correct for the non-random flows of immigration into county c, we instrument for immigration into a given county using an instrumental variables framework with the following first-stage equation:

$$\begin{aligned} \%\ \mathrm{Imm}_{d,t} = \alpha_0 + \alpha_1 \widehat{\%\ \mathrm{Imm}}_{d,t} + \tau' \times \text{Bond Controls}_{i,t+1} \\ + \rho' \times \text{County Controls}_{d,t-5} + \delta_{t+1} + \gamma_d + \epsilon_{i,d,t+1} \end{aligned} \tag{9}$$

where $\widehat{\%\ \text{Imm}}_{d,t}$ is defined in Equation 7, Bond Controls$_{i,t+1}$ are summarized in in Panel A of Table 1, and County Controls$_{d,t-5}$ for county c at time *t-5* are summarized in Panel C of Table 1. δ_{t+1} is a time fixed effect to account for differences between observed time units and γ_d is a county fixed effect to capture time-invariant differences across issuing counties. Estimating Equation 9 yields the fitted value $\widehat{\%\ \text{Imm}}^{FS}_{d,t}$, which represents the component of immigration exposure explained by the Bartik instrument. The second-stage regression below uses this fitted value to identify the causal effect of immigration on municipal bond yields.

$$\begin{aligned}\text{Yield Spread}_{i,d,t+1} = \beta_0 + \beta_1 \widehat{\%\ \text{Imm}}^{FS}_{d,t} + \tau' \times \text{Bond Controls}_{i,t+1} \\ + \rho' \times \text{County Controls}_{d,t-5} + \delta_{t+1} + \gamma_d + \epsilon_{i,d,t+1}\end{aligned} \tag{10}$$

3 Main Results

The results in Table 3 examine the effects of immigration on municipal bond yields using the instrumental variables (IV) approach. The IV approach provides significant evidence that increasing immigration improves a county's access to finance by lowering its municipal bond yields. The first stage F-statistics are nearly 200 indicating the predicted ancestry linked with the flow of country specific immigrants are strong predictors of subsequent immigrant inflows.[17] The baseline specification in column (8) shows that a one percent increase in predicted immigration inflows reduces local governments' borrowing costs by about 5 basis points. In our sample, a one-standard deviation increase in predicted immigration (about a 1.6% increase) reduces yields by about 7.5 basis points. These effect sizes are broadly comparable in magnitude to Gustafson et al. (2025) who find that a one-standard deviation increase in COVID-induced, white-collar migration reduces municipal bond yields by about 4 to 8.5 basis points.

In terms of economic magnitude, the average issuer experiencing a one-standard deviation

[17] Table A.3 formally shows the first-stage at the bond issuance level. Panel A of Table A.3 displays the first-stage regression using flow data from the U.S. Census while Panel B uses flows based on unauthorized immigrants.

increase in the flow of predicted immigration would save over $200,000 in interest expense payments over the life of its average bond issuance. Given that the average county issues ≈ 6 bond issuances per year, a typical year's worth of issuances would generate approximately $1.3 million in lifetime interest savings.[18] These estimated effect sizes of immigration reflect investors pricing in both potential increased economic growth and increased expenses on public and social goods. We predict positive effects from increased labor supply are particularly beneficial for counties facing labor shortages or where the labor skill mix of immigrants better matches local employment opportunities, leading to further reductions in yields. Similarly, the increased costs of immigration stemming from the provision of public goods and social services should be less costly in areas insulated from immigrants seeking to immigrate for welfare assistance and public benefits.

3.1 Heterogeneous County Effects

While, on average, immigration improves a local governments' fiscal health, it is likely that immigration is particularly valuable to counties in need of additional labor supply or counties that are better able to help immigrants assimilate into their communities. Table 4 examines the heterogeneous impact of immigration on a county's yield spread interacting different county characteristics with the instrumented flow of immigrants. The instrumental variables model now includes two exogenous terms to instrument for the main effect of the immigrant inflow and the immigrant flow × county characteristic. The instruments are constructed as the exogenous inflow of immigrants over the last five years as described in Equation 7 and the interaction of this term with the county characteristic for whether it is above or below the median from the prior period at time *t-5*.

The results in columns (1) to (4) examine the heterogeneous consequences of immigration across labor market characteristics. The results in column (1) show that increases in a county's lagged

[18]This saving in interest payments is computed as 7.5 basis points × $19.27 million (mean bond issue amount for county issuers) × 14.67 years = $212,018 per bond.

unemployment rate generally increase yields while counties with larger labor force participation rates often experience higher benefits as immigrants reduce labor market shortages (column (2)).[19] We find that counties with a higher proportion of labor intensive employment experience larger benefits to immigration as shown in column (3). The results in column (4) show that the geographic location of the county has no significant difference in borrowing costs for the underlying county issuers. The financial capacity of the underlying county is another key moderator to the impact of immigration as immigrant inflows require upfront costs (e.g., housing, public welfare, and education) as they assimilate which are offset over future years. The results in column (5) show that counties with a higher proportion of residents below the poverty line experience weaker benefits of immigrants as they struggle to bear the short-term costs without additional levels of government support.[20]

3.2 Heterogeneous Immigrant Effects

The legal status and ability of immigrants are also important factors that influence the magnitude of the effect of immigrants on the communities they settle in. For example, significant debate exists surrounding the impact of unauthorized and low-skilled immigrant labor (Colas & Sachs, 2024), while the impact of high-skilled, legal immigrants is less contentious. Legal immigrants generally have higher labor market earnings and tax contributions than unauthorized immigrants, while also facing different eligibility rules for public assistance programs (Bier, Howard, & Salazar, 2026). To estimate the heterogeneous effects by immigrant type we net our series of unauthorized inflows (collected from NTA and parolee data) from our Census measure of total immigration to create a series of *% Legal Immigration* in addition to directly regressing our measure of unauthorized

[19] Figure IA.5 illustrates the generally weakening relationship of the effects of immigration in reducing a county's borrowing costs as its unemployment rate increases although the county's with the largest unemployment rates often experience the largest benefits.

[20] Table A.4 estimates regressions comparable to Table 4 but instead defines median characteristics based on the full time series. We find economically similar estimates to our baseline but prefer to compare characteristics *within* the same period to reduce the impact of the macro-environment in driving this relationship.

inflows.[21]

Table 5 presents the results from regressing the excess borrowing costs of local governments onto the different immigration inflow types and splitting by a county's lagged unemployment rate. The results in column (1) mirror our main result in the shortened sample while sample splits by the lagged unemployment rate in columns (2) and (3) show significant heterogeneity in the effects of immigration. The benefits to immigration are concentrated in places with lower unemployment rates compared to their peers in the prior period. In columns (4) to (6), we estimate the effects of legal immigration by netting out unauthorized inflows from our measure of total immigration from the U.S. Census and find economically similar effect sizes and heterogeneity. In columns (7) to (9) we estimate the effects of unauthorized immigrant inflows on a county's borrowing costs. Overall, we see consistent declines in yields as unauthorized immigrant exposure increases (column (7)) with effects that are slightly larger in areas with lower unemployment rates (column (8) versus column (9)). These results are consistent with immigration exposure reducing yields regardless of legal status. In the following section, we incorporate an event study approach which allows us to better understand the magnitude and timing of the effects along with understanding whether immigrant outflows have symmetric or asymmetric effects.[22,23]

[21] Our unauthorized immigrant inflow series is quite scarce prior to 1990, so we include only data from 1990 onward in our analysis.

[22] Table A.5 estimates regressions comparable to Table 5 instead defines median characteristics based on the full time series. We find effects are concentrated in county × year observations with lower unemployment and some evidence that immigration has adverse impacts on borrowing costs for counties with higher unemployment rates.

[23] Table IA.1 documents the unconditional impact of unauthorized immigration on municipal bond yields finding consistent declines in yields as exposure to unauthorized immigrants increases. Table IA.2 shows these unconditional effects are similar across county characteristics but significantly attenuated in counties with higher ratios of poverty. Table IA.3 finds similar effects that the benefits of immigration are increasing as immigrant skill increases (proxied by educational level), but overall even immigrants of average or lower educational backgrounds result in reductions in borrowing costs at the county level.

3.3 Secure Communities Event Study

Thus far, we have documented the effects of immigration in reducing local communities' cost of debt capital. In this section, we show that these beneficial impacts of unauthorized immigration extend to their removal which is particularly costly for counties experiencing labor shortages. To support the inference of our main design, we study the staggered roll-out of the Secure Communities Act from 2008 to 2013 to understand the impact of unauthorized immigrants on local communities. The Secure Communities Act increased information sharing between the local county police and the Department of Homeland Security resulting in an additional detainment of over 450,000 unauthorized immigrants (primarily Mexican) during this period. This act decreased the stock and flow of subsequent immigration, and was rolled out nationwide in a staggered manner based primarily on a county's distance to the border and proportion of Mexican residents rather than changing, time-varying economic conditions (East et al., 2023). Figure 5 shows the nationwide adoption timing of the Secure Communities Act implemented by the Department of Homeland Security.

We estimate the following model based on the staggered roll-out of the Secure Communities Act to understand how a reduction in the population of unauthorized immigrants affects the borrowing costs of the local community.

$$\text{Yield Spread}_{i,d,t} = \beta_0 + \beta_1 SC_{d,t} + \tau' \times \text{Bond Controls}_{i,t} + \rho' \times \text{County Controls}_{d,t} + \delta_t + \gamma_d + \epsilon_{i,d,t} \quad (11)$$

where $\text{Yield Spread}_{i,d,t}$ is as defined in Equation 1. $SC_{d,t}$ is an indicator variable equal to one for all bond issuances occurring after Secure Communities is activated in county d, and zero otherwise.[24] In Equation 11, $\text{Bond Controls}_{i,t}$ are as previously defined and $\text{County Controls}_{d,t}$ are controls related

[24]Since the Department of Homeland Security did not mandate U.S. counties' compliance with the Secure Communities Act, our coefficient estimates reflect an intent-to-treat effect rather than an average treatment effect.

to the presence of a county's collaboration with Immigration Customs and Enforcement (ICE) through the 287(g) program or the presence of E-verify employment verification. The regressions include time and county fixed effects with time fixed effects now demeaning at the year × month level.

The regression results are displayed in Table 6. The results in columns (1) and (2) provide evidence that reducing the population of unauthorized immigrants increases local borrowing costs with effect sizes similar in magnitude to those in Table 3. To examine the relationship between county labor markets and unauthorized immigration, we split the sample by lagged unemployment rates and the proportion of the population of working age (18-64) in comparison to the prior period. We expect the removal of unauthorized immigrants to be particularly costly for communities with low unemployment rates and a lower proportion of working age population as labor market shortages are more common. The results in column (3) show that the increases in borrowing costs following a shock to unauthorized immigrants are concentrated in counties with lower lagged unemployment rates while column (5) shows these effects are also driven by counties with a lower labor supply. The magnitude of these effects is comparable to the main results, with the policy adoption increasing municipal bond yield spreads by approximately 8 basis points. Figure A.2 shows the policy led to increases in a county's cost of borrowing beginning about six months after the passage of the policy with fairly stable effects in the longer term.[25] These results are consistent with East et al. (2023) who find the passage of this policy resulted in increased labor costs that reduced employment and wages for both unauthorized and native residents and a reduction in local consumption which all represent a reduction to local county revenues.

[25]This figure also confirms the pre-trends of the policy are relatively stable as shown in East et al. (2023).

3.4 Robustness & Additional Tests

We run several robustness tests to ensure that our results are not sensitive to our sampling choices and variable construction. Table A.6 presents the results. We indicate our baseline result in the top row for easy comparison to the robustness test results. Turning first to sampling choices, we show that our results are robust to using rolling 5-year flows in row 2A based on Census immigrant arrival dates and overlapping regression windows. In row 2B, we include all bonds within a given issuance and find similar effect sizes. In row 2C, we weight the regression by the initial county population to not allow population growth or the propensity of counties to access financial markets to positively bias our estimates, and we find economically similar results. In row 2D, we exclude observations from the final issuance period around COVID and we find economically similar effects.

In row 3, we examine the robustness of our results to alternative controls and fixed effects. In row 3A, we control for the Census flow of internal migration and similarly find that the results remain largely unchanged. In row 3B, we exclude bond ratings and find similar effects. In rows 3C and 3D, we examine how the use of proceeds impacts our results as composition effects could explain the declines in yields. In row 3C, we find our point estimates are largely unchanged when including county $\times$ use of proceeds fixed effects which compares municipal bonds issued within a given county over time as immigration exposure changes. In row 3D, we present even tighter counterfactuals by including county $\times$ use of proceeds $\times$ issuer type fixed effects which compares education bonds issued in a given county by a city rather than county issuer showing that compositional effects are unlikely to explain our results. Lastly, in row 3E, we include state $\times$ year fixed effects and find even stronger effect sizes.

Next, we examine the robustness of the design to instrument choices in row 4. In row 4A, we regress immigration flows in levels onto our dependent variable and find similar results.[26] In row 4B, we provide evidence that counties with the largest immigration inflows do not solely drive our

[26] A one standard deviation inflow of immigrants in our bond issuance panel is $\approx$ 63,000 immigrants implying a slightly smaller effect size: 0.63 $\times$ -0.060 = 3.8 basis points

results by excluding the counties in the top percentile of absolute immigration flows, and row 4C shows that our results are robust to scaling immigration by the county's initial population in 1970. In row 4D, we use the inverse hyperbolic sine transformation to scale yields and immigration and find similar results. We examine the robustness of the construction of the instrumented immigration inflows in rows 4E to 4K. We find similar results in row 4E when allowing for spatial spillovers to nearby counties. Rows 4F and 4G modify the *push* and *pull* factors, respectively, by excluding counties with correlated immigration patterns when constructing the *push* factor and including only non-European immigrant flows to create a consistent leave-out group of European migration when constructing the *pull* factor. Row 4H uses predicted ancestry from 1975 for all periods as the Bartik shares, while row 4I limits the *push* $\times$ *pull* factor interactions to before 1960, providing further evidence that the exclusion restriction is likely to hold. Rows 4J and 4K shows that our results are robust to using realized immigration or ancestry shares from Card (2001).

How does the effect of immigrant inflows vary across bond types, affect the use of proceeds, and do existing residents benefit from immigration? The results in Table A.7 show the heterogeneity in relationship between immigrant inflows and the cost of borrowing across bond characteristics. We find no difference in borrowing costs by a bond's insured status (columns (1) and (2)). When splitting by bonds secured by the cash flows of the underlying project, *Revenue*, or the credit quality of the underlying county *General Obligation*, we find that our results are concentrated in bonds backed by the county's credit quality indicating improvements in its status (columns (3) and (4)). These declines in yield are concentrated in new issuances rather than refinances and negotiated bids that are sold directly to the underwriter suggesting these improvements might be more salient to the underwriter. We find our effect size is driven by negotiated bids (column 7) consistent with increased information asymmetry that underwriters might help to alleviate or certify improved fiscal conditions. In regards to term structure, we find that the beneficial impacts of immigration are concentrated in longer-dated issuances, consistent with immigrants providing benefits over longer

intervals which offset short-term costs (columns (9) and (10)).[27]

The results in Table A.8 show that the explicit use of proceeds raised in bond issuances shifts slightly towards transportation, economic development, general, and housing uses which comes largely out of utilities, education, and healthcare. To rule out that these compositional shifts might drive our results, we include county × bond proceed fixed effects and county × bond proceed × issuer type fixed effects. We find economically similar coefficient estimates as discussed above consistent with these compositional shifts in use of proceeds or issuer type having a negligible impact on our documented declines in yields. While changes in the cost of borrowing for local communities provides only one aggregate financial measure for the impact of immigration on county residents, we find in Table A.9 that there is no change in domestic migration, either from current residents leaving or new residents arriving. We find that increases in population are driven by immigrant inflows with our point estimate estimated precisely around 1 percent.

Table A.10 shows changes in capital raising on the *extensive margin* and bond issuance characteristics on the *intensive margin* in response to increasing immigration exposure.[28] Overall, total bond issuances increase by 3.7% (column 1) while the total amount raised remains nearly unchanged (column 2). Consistent with this pattern, bond-level estimates in column (3) indicate that individual issuances are about 4% smaller on average. Bond ratings appear to decline (column 4), but much of this decline is driven by more issuances being unrated (column 5), and we do not observe any changes in ratings when conditioning on the underlying bond being rated (column 6). At the bond issuance level, bond characteristics are fairly static outside of issuances being slightly less likely to be callable (column 8), but otherwise shifts in bond issuance characteristics are quite muted.

[27] Our comparison by issue length is based on splits *across* different issuances rather than *within* issuances. While data is scarce on within issuance variation in yield prior to 2003, our comparison across the longest dated issuances still results in variation *within* county × time period as municipalities issue bonds of varying maturities.

[28] We aggregate issuance volume and amount at the county × immigration flow period for the county × year issuances in our bond issuance sample. Our results are economically similar if we expand the panel to include both county × year observations with and without bond issuances.

4 County Real Outcomes

Thus far, we have shown that counties exposed to increasing immigration benefit from improved access to finance as evidenced by a reduction in borrowing costs. We find evidence of heterogeneous impact across communities; counties with more likely labor shortages and more financial slack experience stronger effects. Additionally, these effects of immigration increase with immigrants' education levels. Assuming municipal bond yields reflect the markets' expectations of future financial risks to local economies, immigration might improve the credit risk of a given county through several different channels. We expect immigration stimulates the local economy and expands the tax base in the long run sufficiently to offset increased spending on public goods and social services in the short term. Immigrant inflows also improve a county's financial margins if revenue growth outpaces expense growth as local governments benefit from economies of scale as population growth allows existing public infrastructure and administrative capacity to be used more efficiently.

We first investigate the impact on the county's local labor market before examining the fiscal impacts on the local municipality. Table 7 examines the impact of immigration on employment, unemployment rates, and labor force participation rates.[29] Debates surrounding immigration policy often center on the impacts on the labor market with proponents finding some evidence for positive spillovers and increases in wages to native primarily high-skilled residents (Terry et al., 2026), adverse impacts on employment opportunities for natives as deportations increase (East et al., 2023), and another side finding some downward pressure on low-skilled native wages (Cortes, 2008). Table 7 presents the estimated impact on the county's labor market. In response to a 1% increase in immigration, we find the county's population increases by 0.9% (column 1) suggesting domestic migration remains fairly stable. The results in column (2) suggest that immigration has positive spillovers to the labor market as employment increases slightly more than population growth. We

[29]Our measure of labor force participation excludes younger and older residents to better proxy for potential employment participation and limit the influence of county demographic characteristics in our comparison.

find evidence consistent with this increasing capacity of the labor market as the results in column (3) show that the unemployment rate drops by around 0.24%. These benefits accrue to both areas with tight labor markets proxied by lower unemployment rates in the prior period (column 4) and looser labor markets proxied by higher unemployment rates in the prior period experience a decline of around 0.41% (column 5). One possibility is that these declines in unemployment rates overestimate the benefits of increasing immigration to the labor market as labor force participation might decline sufficiently to offset these improvements. Overall, the results in columns (6) to (8) find negligible economic impacts on the labor force participation rate as the estimated decline in magnitude is about 3% of the effect size on unemployment rates.

Table 8 examines the impact of immigration on counties' key income statement and balance sheet items, including total revenues, expenses, net margin, total debt, financial assets, and leverage. The results in column (1) indicate that a one percent increase in immigration flow leads to about a 2.5 percent increase in total revenues which are offset by expense growth of about 2.7 percent as shown in column (2). This leads to a decline in a county's net margin in the short-term, though this effect is statistically insignificant (column (3)). Over longer periods, immigration exposure increases the net margins of the local county government as shown in columns (4) and (5) implying the cash-flow benefits accumulate over time. We find no significant changes in outstanding debt at the county level (column (6)) while financial assets held by the county government entities increase. Given the similar point estimates on debt and financial assets, we find no significant changes in leverage. These results indicate that immigration causes short-term declines in net revenues, partially offset by debt use, but ultimately leads to long-term increases in margins for local county governments.

Table 9 decomposes how these immigrant inflows impact a county's revenues. The composition of a county's government revenue base is made up of about 35 percent taxes from property and sales taxes, 35 percent intergovernmental transfers which are allocated from other governmental levels (primarily the state government) back to the local county based on revenue sharing or need-based formulas, and the rest is composed of general charges to local residents. The results in columns (1)

to (3) examine the impact of immigration on taxes. We find that tax revenue collected remains largely unchanged as only sales tax revenue collected increases (column 3) which comprises a smaller portion of county revenues than property tax (column 2). The results in column (4) show that general charges increase by about 3%; however, these effects are statistically insignificant. The results in column (5) to (8) examine the impact on intergovernmental transfers which help to understand the degree to which other levels of government are reallocating value-add back to the local community or helping them bear some of the costs from additional immigrant inflows. The results in column (5) show that intergovernmental transfers increase by about 7 percent with the largest sensitivity estimated for state transfers (90 percent of all transfers); federal government revenues are unchanged (column 7) and local revenues decline (column 8).

Overall, comparing the expected magnitudes across increases in sales tax revenue and state intergovernmental transfers, we find that increases in sales tax revenue comprise 22.7% of the increases in revenue while state intergovernmental transfers make up the remaining 77.3%.[30] While we unable to disentangle the exact proportion of these transfers stemming from increased value add from these immigration counties being allocated back to the county-level or transfers in a more literal sense, we are able to decompose the breakdown of these transfers to better understand their composition.

The results in Table 10 present these estimates. We find significant increases in educational transfers as shown in column (1) which comprise about 75% of the total state intergovernmental transfers with effect sizes explaining about 55% of the overall magnitude.[31] We find positive but statistically and economically insignificant estimates on public welfare transfers and health from the state (columns 2 & 3) while much of this effect appears to be driven by increases in general and other general support (columns 4 & 5). Combined, these categories make up about 11% of total state intergovernmental transfers while their implied effect sizes based on their coefficient estimates

[30] The average county has \$160 million in state intergovernmental revenues and \$25 million in sales and recreation taxes. Multiplying by their estimated effect sizes $\frac{\$160 \text{ million} \times 0.081}{\$160 \text{ million} \times 0.081 + \$25 \text{ million} \times 0.15} \approx 77.3\%$.

[31] $\frac{0.115}{0.159} \times 0.059 = \approx 0.044$.

explains the remainder of the increase corresponding to about 3.6% of the absolute increases in intergovernmental transfers.[32] The results in column (6) show that these increases in educational intergovernmental transfers are linked back to increases in enrollment which is estimated to increase by about 3%. Lastly, we examine whether these increases in state intergovernmental transfers are driven by broader revenue and population growth. The results in column (7) show that the ratio of state intergovernmental transfers per total revenue are increasing consistent with our main results in Table 9 and we also find evidence that transfer growth are outpacing population growth based on column (8) suggesting population-based formulas for intergovernmental transfers are insufficient to explain these transfers.

Table 11 examines how immigration affects the expense patterns of county governments which are spent on various public services such as education, police, judicial courts, and public welfare along with broader infrastructure targeted towards capital projects and roads. We find evidence of increased spending on education and police expenses in columns (1) and (2) and stronger sensitivity to judicial expenses (column (3)). We find evidence of some offsetting declines in health-related expenses and public welfare in columns (4) and (5) suggesting local communities do not uniformly scale all expenses as immigration exposure increases. Immigration exposure increases the revenues of local communities but our results in columns (7) and (8) suggest that these revenues are not allocated to capital or roads which might place greater strain on an area's physical infrastructure. Overall, we find evidence that these increases in spending at the local government level are concentrated in public service expenses rather than infrastructure as counties might allocate towards more immediate public service expenses and delay infrastructure improvements.

In summary, our results suggest that immigration improves the long-run fiscal health of local communities. Immigration increases employment and lowers unemployment, indicating that local labor markets are largely able to absorb additional workers and significant complementarities exist. These improvements translate into stronger government finances over the long-term as revenue

[32] $\frac{0.0087}{0.159} \times 0.330 + \frac{0.0086}{0.159} \times 0.338 = 0.036$

growth outpaces expense growth and counties hold more financial assets. While some of this revenue growth stems from higher sales tax collections, the largest component comes from increased state intergovernmental transfers suggesting that higher levels of government help offset some of the costs by reallocating resources toward immigrant-receiving counties. In combination, these results provide insight into the channels through which immigration improves fiscal capacity and reduces borrowing costs.[33]

5 Conclusion

In recent years the United States has faced the largest influx of immigrants in its history and many of the effects surrounding immigration remain unclear, especially at the local level. While local officials often argue that immigrants strain public resources, research indicates that they contribute to the economy. These trade-offs have been challenging to evaluate simultaneously due to the complex cash-flow and discount rate assumptions required to estimate them.

In this paper, we causally examine the impact of immigration on the local governments' access to finance to test this trade-off. We find that increases in immigrant inflows lead to improvement in a county's access to finance evidenced by a reduction in borrowing costs. We instrument for current immigrants' settlement decisions using historical migration patterns of immigrants from 1880 onward, interacted with the flow of incoming immigrants. We find that a one-standard deviation increase in immigrant inflows reduces borrowing costs by approximately 7.5 basis points. These beneficial impacts of immigration are larger for areas with exposure to higher-skilled immigrants, but we find beneficial impacts for even low-skilled unauthorized immigrants, especially in places with labor shortages. Consistent with immigration helping to offset labor shortages and having

[33]In Internet Appendix Tables IA.4-IA.6 we find slightly more of the burden falls on local county governments which experience declines in short-term net margins which do not offset over the long-term and increases in debt carried. The county government does experience some increasing sales tax, general, local intergovernmental transfers but these do not offset the increased capital and judicial related expenses the local government bears in response to its immigration exposure.

stronger effects where areas are able to offset short-term adjustment costs, we find stronger effects of immigration for counties with higher labor force participation rates, lower unemployment rates, and lower poverty rates.

While immigration causes short-term declines in net margins due to costs exceeding immediate revenues, it leads to long-term net revenue gains for local county governments as the benefits diffuse. Economic gains spillover into the revenue collection of the local county government through an increase in sales tax collection while much of this revenue growth stems from an increase in intergovernmental transfers from the state government suggesting other areas within the state bear some of the immediate costs to immigration. We find that counties increase their spending on education, judicial, and police related expenses while infrastructure spending declines slightly suggesting counties prioritize responding to more immediate social needs at the cost of increasing strain on physical infrastructure. Understanding other risks that municipalities face, and the broader effects of immigration on the local economy represent interesting future areas of work.

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Figure 1: Immigration to the United States Over Time

This figure shows the stock of immigrants in the United States and the flow of immigrants by reporting source over time. Panel A shows the stock of US immigrants over time as a percent of the total population (left-hand axis) and in absolute magnitude (right-hand axis). Panel B provides the flow of immigrants by reporting source based on Census, *Scaled Unauthorized* consisting of NTAs and parolee data aggregated based on broader geographic counts, and *Raw Unauthorized* based on raw NTA and parolee counts. Immigration data are based on respondents from the US Census Bureau decennial, American Community Survey, court-order NTA data from Syracuse's TRAC data, and parolee counts.

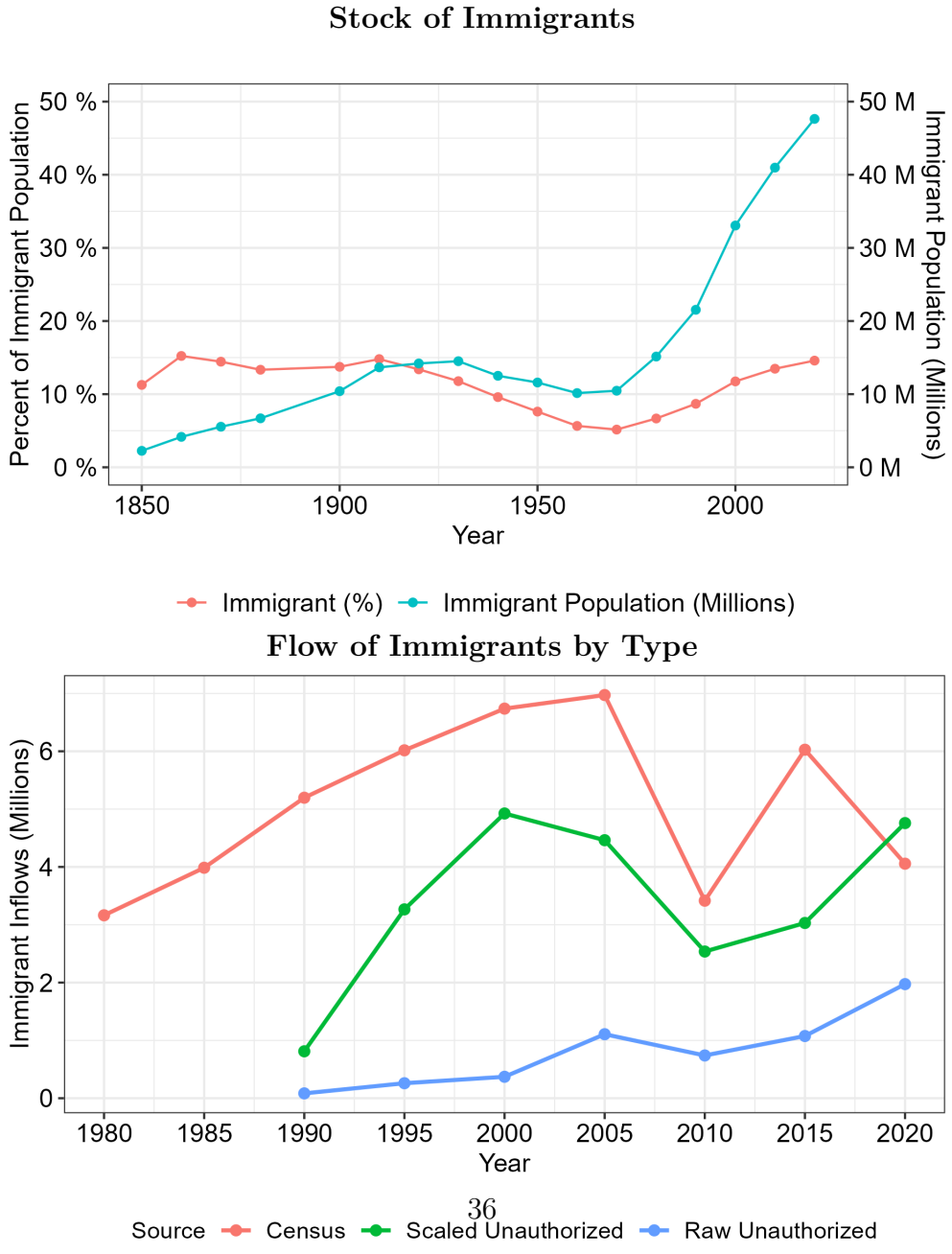


Figure 2: *Push Factor:* Variation in Country-Level Immigration Flows
This figure shows the composition of immigration across the nine largest sender countries during the municipal bond sample period from 1980 to 2020. Immigrants are defined as individuals born outside of the United States. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.

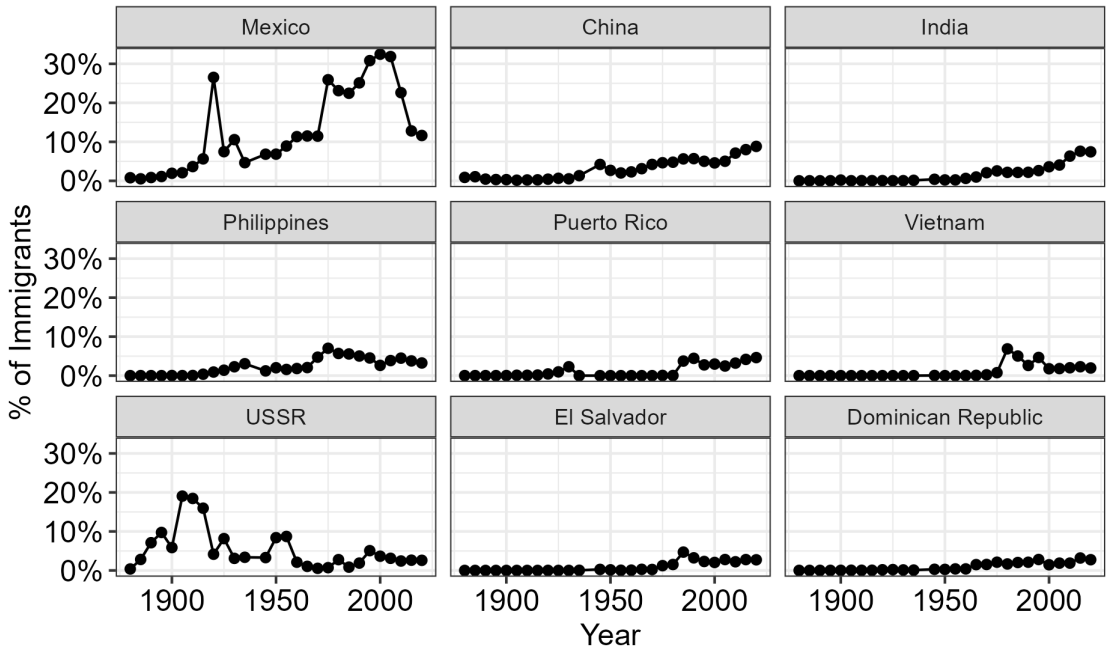


Figure 3: *Pull Factor:* Variation in County-Level Immigration Settlement

This figure shows the desirability of a county to immigrants over time. We regress the number of immigrants into a given county (c) at time (t) onto county and year fixed effects, and calculate the residuals across counties and within Census periods into 20 bins. Darker colors indicate a higher ranking. Immigrants are defined as individuals born outside of the United States. We randomly sample, one county $\times$ country $\times$ year observation to determine what continent immigration flow to exclude. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.

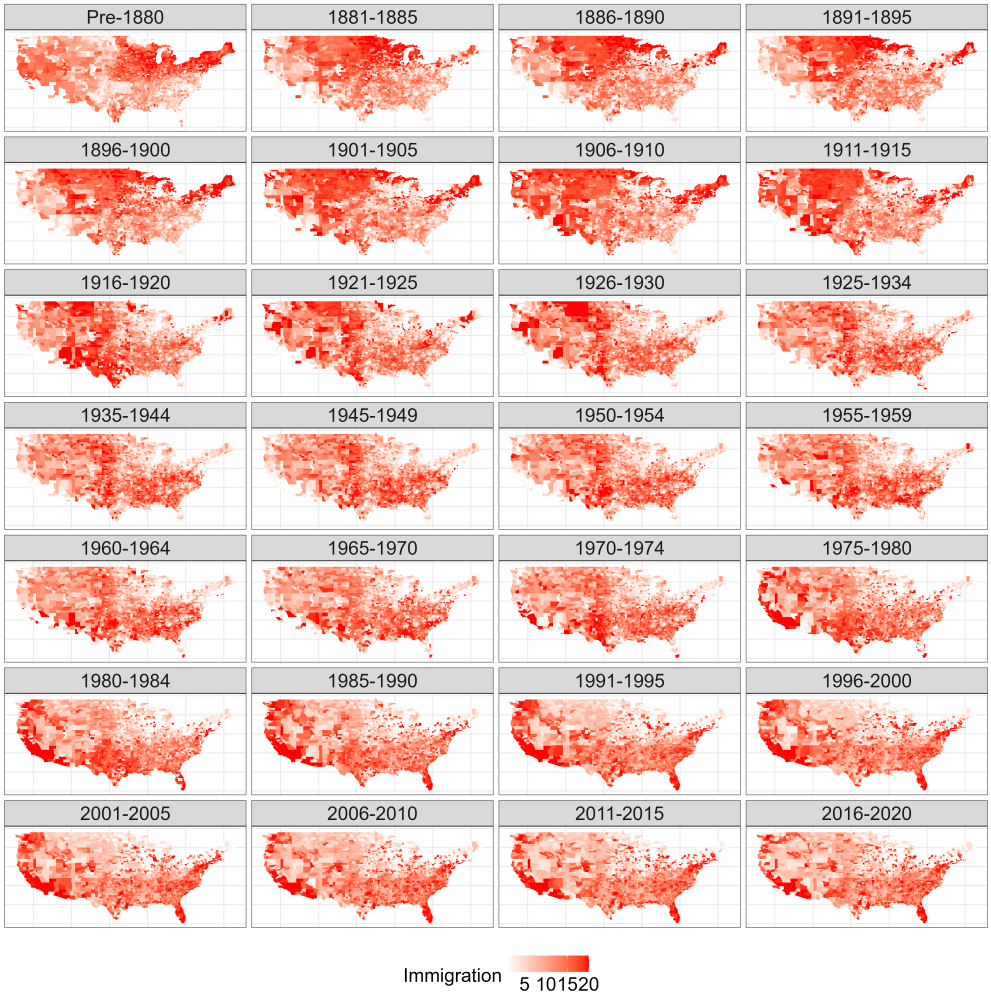


Figure 4: Persistence of Immigration Patterns

This figure shows the persistence of immigration patterns within county and sending country over time. Each bar represents the correlation between the proportion of immigrants from a given origin country o in the listed Census period (e.g. 1880) to a given county and the analogous measure in 2020. Immigrants are defined as individuals born outside of the United States. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey. Correlation values are weighted by the number of immigrants from a given country entering a given county in 1880.

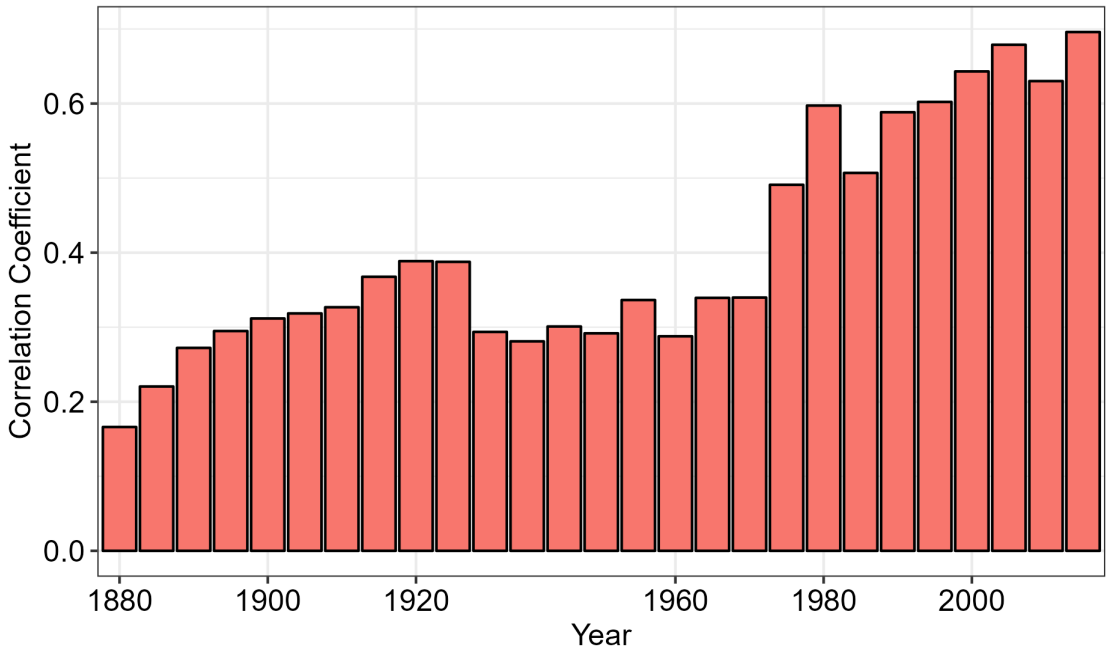


Figure 5: Secure Communities Adoption

This figure shows the timing of adoption of the Secure Communities Act across U.S. counties over time. This act created a partnership between U.S. local law enforcement and the Department of Homeland Security which led to additional detainment of primarily Mexican, undocumented immigrants. The Secure Communities Act was launched as a pilot in 2008 and rolled out nationwide as the Department of Homeland Security was unable to implement it simultaneously nationwide (East et al., 2023). County-level adoption date data are provided by East et al. (2023).

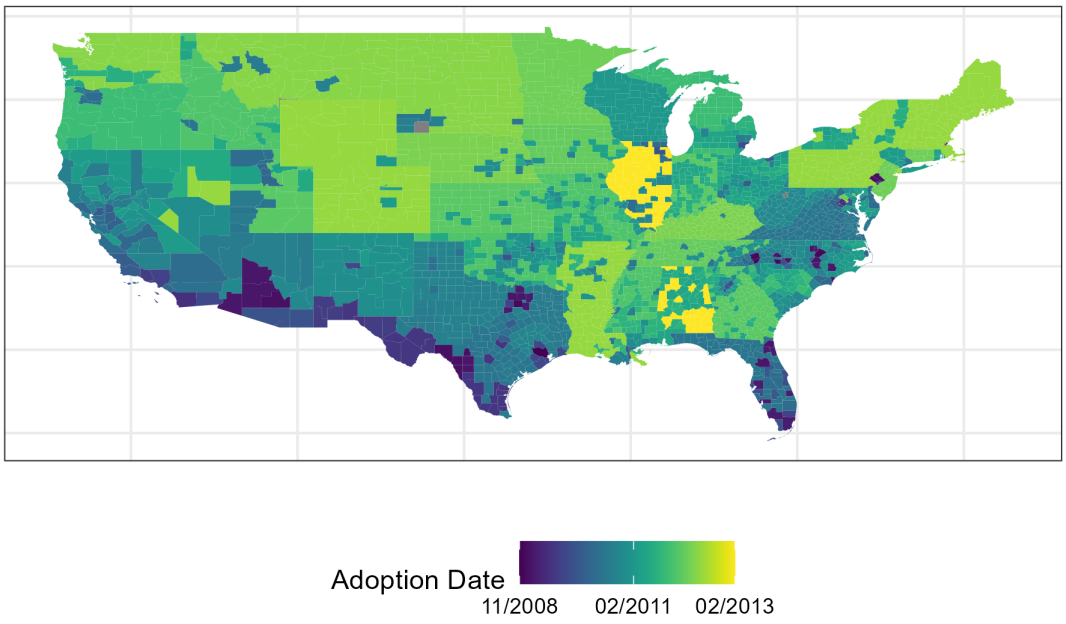


Table 1: Summary Statistics

This table presents the summary statistics for the sample of bond issuances and the underlying county issuer. Panel A describes the characteristics at the bond issuance level including its yield, features, and rating. Panel B describes immigration and population related measurement. Panel C includes characteristics of the county including its demographics and labor-force composition at the county × year level. Panel D contains information on the income statement and balance sheet of county governments at the county × year level.

	Panel A: Bond Characteristics							
	N	Mean	SD	p1	p25	Median	p75	p99
Yield Spread (%)	73322	2.32	1.67	-0.86	1.24	2.09	2.94	8.27
Years to Maturity	73322	14.67	9.04	0.40	8.01	15.00	20.05	33.54
Amount Final Maturity	73322	4.20	21.10	0.00	0.00	0.00	2.11	65.58
Issue Amount	73322	19.86	59.96	0.15	2.17	5.70	14.83	256.33
$\mathbb{I}$(Callable Issue)	73322	0.69	0.46	0.00	0.00	1.00	1.00	1.00
$\mathbb{I}$(Insured)	73322	0.20	0.40	0.00	0.00	0.00	0.00	1.00
$\mathbb{I}$(Negotiated Bid)	73322	0.55	0.50	0.00	0.00	1.00	1.00	1.00
$\mathbb{I}$(Revenue Bond)	73322	0.30	0.46	0.00	0.00	0.00	1.00	1.00
$\mathbb{I}$(Tax-Exempt)	73322	0.91	0.28	0.00	1.00	1.00	1.00	1.00
Ratings Combined	73322	3.46	3.09	0.00	0.00	5.00	6.00	7.00
$\mathbb{I}$(Sinking Fund)	73322	0.26	0.44	0.00	0.00	0.00	1.00	1.00
$\mathbb{I}$(Refinancing)	73322	0.33	0.47	0.00	0.00	0.00	1.00	1.00
	Panel B: County Immigration Characteristics							
Immigration (000's)	11362	2.40	16.32	0.01	0.06	0.17	0.68	39.04
Unauthorized Immigration (000's)	10496	1.55	10.20	0.00	0.01	0.06	0.36	30.54
Total Population (000's)	11362	133.02	381.83	2.97	19.31	41.45	107.98	1395.40
% Immigration	11362	0.82	0.99	0.03	0.24	0.48	0.98	5.25
% Unauthorized Immigration	10496	0.77	5.42	0.00	0.03	0.15	0.48	7.90
$\frac{\text{Unauthorized Immigration}}{\text{Total Immigrants}}$	10492	0.27	0.24	0.00	0.08	0.23	0.42	0.93
% Population Change	11350	3.62	8.72	-10.23	-0.80	1.56	6.26	34.82
	Panel C: County Census Characteristics							
Unemployment Rate	11362	5.79	2.60	2.10	4.00	5.20	7.00	14.20
$\frac{\text{Labor Force}}{\text{Population Ages 18-64}}$	11362	82.10	10.42	54.39	75.98	82.15	88.18	108.00
Distance to US Border	11362	249.86	174.59	10.33	97.05	225.22	517.11	638.36
% Ages 18-64	11362	59.65	3.80	51.02	57.32	59.65	61.84	71.08
% Below Poverty	11362	13.43	5.71	4.11	9.53	12.53	16.17	33.18
% Labor-Intensive	9787	72.13	8.84	48.90	66.67	72.57	78.22	90.58
Employment (000's)	11362	56.65	177.21	0.83	5.86	14.27	40.81	689.87

(Continued on next page)

Table 1 (*continued*)

	Panel D: County Financial Characteristics ($ Millions)							
	N	Mean	SD	p1	p25	Median	p75	p99
Revenue Composition								
Total Revenue	11362	470.76	2021.86	2.90	34.20	92.00	290.53	6294.99
Total Taxes	11362	170.34	643.55	0.60	9.09	26.73	96.62	2439.75
Property Taxes	11362	132.24	500.14	0.42	7.41	21.01	74.69	1974.82
Total Sales & Recreation Tax	11362	25.73	118.10	0.00	0.01	1.45	10.61	446.60
Miscellaneous General Revenue	11362	24.66	103.94	0.06	1.18	3.96	14.49	379.21
Total Intergovernmental Revenue	11362	181.56	831.11	0.65	16.33	41.77	119.71	2288.67
– Federal Intergovernmental	11362	12.49	74.54	0.00	0.12	0.92	5.42	203.83
– State Intergovernmental	11362	159.87	729.08	0.48	14.96	38.32	107.12	1981.37
– Education	11362	115.26	450.01	0.00	12.36	31.89	85.87	1,363.18
– Public Welfare	11362	13.87	137.10	0.00	0.00	0.00	1.26	248.29
– General Support	11362	8.77	48.60	0.00	0.01	0.56	3.55	139.95
– Other General Support	11362	8.69	48.49	0.00	0.01	0.53	3.41	133.18
– Health	11362	6.97	58.04	0.00	0.00	0.00	0.94	111.35
– Local Intergovernmental	11362	9.20	44.30	0.00	0.17	0.96	4.10	155.73
Expense Composition								
Total Expenditures	11362	470.30	1974.80	2.95	34.21	92.45	292.62	6208.88
Education Expenditures	11362	216.48	729.86	0	21.69	53.94	152.97	2,641.02
Capital Outlays	11362	56.71	241.36	0.09	2.61	9.17	32.39	792.35
Police Expenditures	11362	24.17	126.74	0.00	0.43	2.61	11.54	377.32
Highway Expenditures	11362	16.94	57.98	0.00	0.66	3.68	12.09	219.95
Public Welfare Expenditures	11362	17.72	144.02	0.00	0.00	0.14	4.28	292.86
Health Expenditures	11362	13.80	99.60	0.00	0.00	0.63	5.12	238.22
Parks & Recreation Expenditures	11362	9.07	42.34	0.00	0.02	0.58	3.73	153.47
Judicial Expenditures	11362	7.86	41.81	0.00	0.02	0.62	3.59	120.30
Fiscal position								
Net Margin	11362	-0.01	0.12	-0.35	-0.04	0.00	0.05	0.22
Balance Sheet								
Total Debt	11362	407.38	1961.98	0.00	13.67	51.08	203.13	6139.08
Total Long-term Debt	11362	400.04	1936.08	0.00	13.23	50.01	199.86	6102.90
Total Cash Securities	11362	400.91	2509.30	0.53	12.98	43.46	168.00	6342.95
$\frac{\text{Total Debt}}{\text{Total Cash Securities}}$	11352	1.55	8.01	0.00	0.72	1.11	1.64	7.46

Table 2: OLS: Effect of Immigration on Municipal Bond Yield Spreads

This table presents OLS estimates of the relationship between immigration and a municipal bond's yield spread. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (8). *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	-0.018	-0.006	-0.013	-0.026	-0.020	-0.040	0.002	-0.025
	[0.027]	[0.024]	[0.026]	[0.027]	[0.022]	[0.032]	[0.022]	[0.032]
Observations	73322	73322	73322	73322	73322	73322	73322	73322
State F.E.	Yes	Yes	Yes	Yes	No	No	No	No
County F.E.	No	No	No	No	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	No	Yes	No	Yes	No	Yes	No	Yes
County Controls	No	No	Yes	Yes	No	No	Yes	Yes
Y-mean	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32

Table 3: IV: Effect of Immigration on Yield Spreads

This table presents estimates of the relationship between immigration and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of % immigrants over the last five years as described in Equation 7. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (8). *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	-0.068***	-0.060***	-0.083***	-0.105***	0.001	-0.055***	0.013	-0.048***
	[0.009]	[0.008]	[0.015]	[0.017]	[0.015]	[0.014]	[0.015]	[0.015]
F-Statistic	53.26	56.84	155.41	151.77	465.75	415.91	281.14	261.98
Observations	73322	73322	73322	73322	73322	73322	73322	73322
State F.E.	Yes	Yes	Yes	Yes	No	No	No	No
County F.E.	No	No	No	No	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	No	Yes	No	Yes	No	Yes	No	Yes
County Controls	No	No	Yes	Yes	No	No	Yes	Yes
Y-mean	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32

Table 4: IV:

Heterogeneous County Effects of Immigration on Yield Spreads: Median Within Year

This table presents estimates of the heterogeneous relationship between immigration and a municipal bond's yield spread across different county characteristics. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of immigrants, *% Immigration*, and *% Immigration* × *County Characteristic*, which are instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7 and the interaction of the exogenous inflow of immigrants and the county characteristic, respectively. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. County characteristics include whether a county is above the median county characteristic within a given issuance period across measures of unemployment rates, labor force participation, labor-intensive employment, distance to the U.S. border, and poverty. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

Characteristic Type:	Yield Spread				
	Labor				Financial
	(1)	(2)	(3)	(4)	(5)
% Immigration	-0.081***	-0.041***	-0.050***	-0.050***	-0.125***
	[0.027]	[0.015]	[0.014]	[0.015]	[0.022]
% Immigration × 𝕀(Unemployment Rate)	0.035				
	[0.029]				
% Immigration × 𝕀(Labor Force Participation Rate)		-0.051***			
		[0.013]			
% Immigration × 𝕀(% Labor Intensive)			-0.055***		
			[0.016]		
% Immigration × 𝕀(Distance to Border)				-0.071	
				[0.079]	
% Immigration × 𝕀(% Below Poverty)					0.080***
					[0.021]
F-Statistic	21.36	110.05	24.36	23.66	9.50
Observations	73322	73322	73322	73322	73322
County F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes
Y-mean	2.32	2.32	2.32	2.32	2.32

Table 5: IV: Effect of Legal versus Undocumented Immigration on Yield Spreads

This table presents estimates of the relationship between immigration and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the % inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (9). *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. *% Legal Immigration* is created by taking the total immigration over the last 5 years in the decennial census less *% Unauthorized Immigration* the unauthorized immigrants in a given county scaled by the county's population from 5 years prior. Columns (2-3), (5-6), and (8-9) split issuances by whether the county's lagged unemployment rate is below the prior period's median, *low*, or above the prior period's median, *high*. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread								
Sample:	1985-2020								
Split:	All	Lag Unemp %		All	Lag Unemp %		All	Lag Unemp %	
Group:	All	Low	High	All	Low	High	All	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Immigration	-0.032***	-0.185***	-0.007						
	[0.011]	[0.040]	[0.012]						
% Legal Immigration				-0.034**	-0.203***	-0.007			
				[0.013]	[0.045]	[0.012]			
% Unauthorized Immigration							-0.164***	-0.363*	-0.149***
							[0.047]	[0.209]	[0.054]
F-Statistic	264.46	11.58	207.53	1050.56	12.80	755.03	12.29	9.92	6.55
Observations	68677	33851	34558	68677	33851	34558	68677	33851	34558
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y-mean	2.09	2.05	2.14	2.09	2.05	2.14	2.09	2.05	2.14

Table 6: DiD: Effects of the Secure Communities Act on Municipal Bond Yields

This table presents estimates of the relationship between the passage of the Secure Communities Act and a municipal bond's yield spread. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. The Secure Communities Act is an indicator denoting the interaction of policy passage in a given county *Treat* and the given bond being issued following the policy *Post*. Columns (1) and (2) use the full sample of bond issuance data surrounding the passage of the Secure Communities Act. Columns (3) and (4) split the sample into counties with lagged unemployment rates below and above the prior period's median rate, respectively. Columns (5) and (6) split the sample into counties with the lagged proportion of the population of working age (between ages 18-64) below and above the prior period's median rate. The policy created a partnership between U.S. local law enforcement and the Department of Homeland Security which led to additional detainment of primarily Mexican, undocumented immigrants. The Secure Communities Act was launched as a pilot in 2008 and rolled out nationwide as the Department of Homeland Security was unable to implement it simultaneously nationwide (East et al., 2023). County-level adoption date data are provided by East et al. (2023). Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls include controls related to the presence of a county's collaboration with Immigration Customs and Enforcement (ICE) through the 287(g) program or the presence of E-verify employment verification. Fixed effects and controls are denoted in the table while standard errors are clustered at the county level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread					
Sample:	Full Sample		Unemployment Rate		% Ages 18-65	
Split:	All	All	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Secure Communities (SC)	0.095**	0.059*	0.097**	-0.004	0.072*	0.049
	[0.037]	[0.035]	[0.044]	[0.046]	[0.041]	[0.048]
Observations	172710	172710	84937	87162	86378	85872
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Month × Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	No	Yes	No	Yes	Yes	Yes

Table 7: IV: Effects on Immigration on the Local Labor Market

This table presents estimates of the relationship between immigration and the local labor market. The table displays the IV second-stage results from regressing measures of population, employment, and labor market participation onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include *Log(Pop.)* the logarithm of the county's population, *Log(Emp.)* the logarithm of the county's employment, *Unemp. Rate* which is the percent of unemployment from a given county and *LFP Rate* which is the proportion of labor force participation. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Sample splits are based on whether a given county × year observation is above or below the median within the prior period. Sample counts differ as we use the same above or below median indicators from our bond issuance analysis. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

Dep Var:	Log(Pop.)	Log(Emp.)	Unemp. Rate			LFP Rate		
Split:	All	All	All	Low Unemp.	High Unemp.	All	Low LFP	High LFP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	0.009***	0.019***	-0.239***	-0.260***	-0.408***	-0.007***	-0.002	-0.020**
	[0.003]	[0.007]	[0.063]	[0.062]	[0.126]	[0.002]	[0.001]	[0.008]
F-Statistic	164.67	164.67	140.19	9.80	80.07	164.67	33.36	93.45
Observations	11362	11362	10438	4781	4988	11362	5268	5429
State F.E.	No	No	No	No	No	No	No	No
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: IV: Effect of Immigration on Operating Margin and Balance Sheet of Aggregate County

This table presents estimates of the relationship between immigration and the aggregate county's operating margin and balance sheet. The table displays the IV second-stage results from regressing the aggregate county's operating margin and balance sheet items onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include the logarithm of a county's *Total Revenues*, *Total Expenses*, *Net Margin*$_t$, *Net Margin*$_{t+5}$, *Net Margin*$_{t+10}$, *Total Debt*, *Financial Assets*, and *Debt/Financial Assets*. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. All county entities are aggregated together to create these measures. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Log(Total Revenues)	Log(Total Expenses)	Net Margin$_t$	Net Margin$_{t+5}$	Net Margin$_{t+10}$	Log(Total Debt)	Log(Fin. Assets)	Debt/ Fin. Assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	0.025**	0.027**	-0.001	0.005**	0.010**	0.062	0.066***	0.040
	[0.011]	[0.013]	[0.003]	[0.002]	[0.004]	[0.048]	[0.024]	[0.100]
F-Statistic	164.67	164.67	164.67	164.67	134.66	169.32	164.61	164.61
Observations	11362	11362	11362	11362	9690	11204	11352	11352
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9: IV: Effect of Immigration on Aggregate County Revenues

This table presents estimates of the relationship between immigration and the aggregate county's revenue sources. The table displays the IV second-stage results from regressing the aggregate county's revenue sources onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include the logarithm of a county's total revenue from *Total Taxes*, *Property Taxes*, *Sales Tax*, *Total Intergovernmental Transfers*, *Federal Intergovernmental Transfers*, *State Intergovernmental Transfers*, and *Local Intergovernmental Transfers*. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. All county entities are aggregated together to create these measures. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Log(Taxes)			Log(General)	Log(Intergovernmental Transfers)			
	Total	Property	Sales & Rec	General	Total	Fed	State	Local
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	0.013	-0.017	0.154***	0.032	0.064***	0.019	0.081***	-0.089*
	[0.017]	[0.016]	[0.033]	[0.022]	[0.018]	[0.035]	[0.024]	[0.045]
F-Statistic	164.64	164.67	210.12	164.52	164.54	175.53	164.55	175.62
Observations	11356	11348	8436	11353	11351	10249	11347	10646
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 10: IV: Effect of Immigration on State Intergovernmental Transfers

This table presents estimates of the relationship between immigration and the composition of state intergovernmental transfers received at the county level. The dependent variables include the composition of state intergovernmental transfers consisting of the logarithm of *Education*, *Public Welfare*, *Health*, *General Support*, *Other General Support*, and the logarithm of school enrollment, the logarithm of the ratio of state intergovernmental transfers scaled by total revenues and the logarithm of the ratio of state intergovernmental transfers scaled by total population. *% Immigration* is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Log(State Intergovernmental Transfers)					Enrollment & Scaled Transfers		
	Education	Welfare	Health	Gen. Support	Oth. Gen Support	Log(Enrollment)	$\frac{Transfers}{\text{Total Rev.}}$	$\frac{Transfers}{\text{Total Pop.}}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	0.059**	0.013	0.022	0.330***	0.338***	0.031***	0.059***	0.073***
	[0.026]	[0.047]	[0.103]	[0.056]	[0.059]	[0.008]	[0.015]	[0.022]
F-Statistic	169.29	444.79	289.28	361.44	361.31	172.42	164.55	164.55
Observations	10993	4576	4950	8523	8505	10221	11347	11347
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 11: IV: Effect of Immigration on Aggregate County Expenses

This table presents estimates of the relationship between immigration and the aggregate county's expense sources. The table displays the IV second-stage results from regressing the aggregate county's expense sources onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include the logarithm of a county's total spending on *Education*, *Police*, *Judicial*, *Health*, *Public Welfare*, *Parks*, *Capital*, and *Roads*. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. All county entities are aggregated together to create these measures. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Log(Public Services Expenses)						Log(Infrastructure)	
	Education	Police	Judicial	Health	Welfare	Parks	Capital	Roads
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	0.029*	0.036**	0.121***	-0.128***	-0.118	0.041	0.014	-0.038**
	[0.015]	[0.018]	[0.033]	[0.032]	[0.083]	[0.028]	[0.030]	[0.014]
F-Statistic	167.60	211.50	217.56	227.65	560.91	237.68	164.77	212.13
Observations	11037	9171	8529	8254	6975	8642	11323	9259
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix

History of U.S. Immigration Policy

Although the United States has often been described as a "country of immigrants" or a "melting pot" to reflect the significant role immigrants have played in its development, restrictions on immigration extend back to its origins. The 1790 Naturalization Act required individuals seeking citizenship to have at least one year of residence in the country, be of "good moral character", and be a "free white person" excluding Native Americans, indentured servants, enslaved people, free Africans, Pacific Islanders, and non-White Asians from becoming citizens. In 1798, the Federalist Party aiming to limit immigrant influence, passed the Alien and Sedition Acts, which allowed the president to deport any non-citizen deemed dangerous and allowed the deportation of any non-citizen who came from a country at war with the United States. During the mid-1800s, the United States adopted more welcoming immigration policies to address labor shortages. For example, the Immigration Act of 1864 allowed labor contracts with foreign workers and established a commissioner of immigration. These more open immigration policies were largely restricted to European immigrants as the Chinese Exclusion Act of 1882 banned Chinese laborers from immigrating for the following 10 years, which was later extended until 1943, and authorized deportation of unauthorized Chinese immigrants. From 1850 to 1910, pro-immigration policies led to a rise in the foreign-born population from about 10 percent in 1850 to nearly 15 percent in 1910.

Following this period of time, immigration policy became more restrictive as evidenced by the 1921 Emergency Quota Act which capped annual, total immigration at 350,000 (later reduced to 165,000 in the Immigration Act of 1924) and also created country quotas. The percent of the U.S population that is foreign born declined to just 4.7 percent in 1970. Immigration policy took another turn following the Immigration and Nationality Act of 1965 which abolished the quota system, created a preference system prioritizing family reunification, skilled immigrants, and refugees which resulted in significantly higher immigration from Asia, Latin America, and

Africa. This pro-immigration policy in the modern era created pathways to permanent residency for unauthorized immigrant workers and protection from deportation through the Immigration Reform and Control Act of 1986. Additionally, the Immigration Act of 1990 created H-1B visas for highly skilled temporary workers and H-2B for seasonal, non-agricultural workers while seeking to limit illegal immigration through increasing enforcement at the border and fences built along the Southwest border (Pew Research Center, 2015). The H-2A visa program for agricultural workers was established by the Immigration Reform and Control Act (IRCA) of 1986. Figure 1 summarizes these historical immigration patterns since 1850 and shows that the United States had its highest absolute number of immigrants in 2020 at nearly 50 million individuals and is also near the maximum proportion of US immigrants in recent history at nearly 15 percent of total residents.

Figure A.1: Composition of County Revenues and Expenses

This figure shows the average composition of revenues and expenses across counties. Panel A provides a decomposition of revenue sources while Panel B provides a decomposition of expense sources.

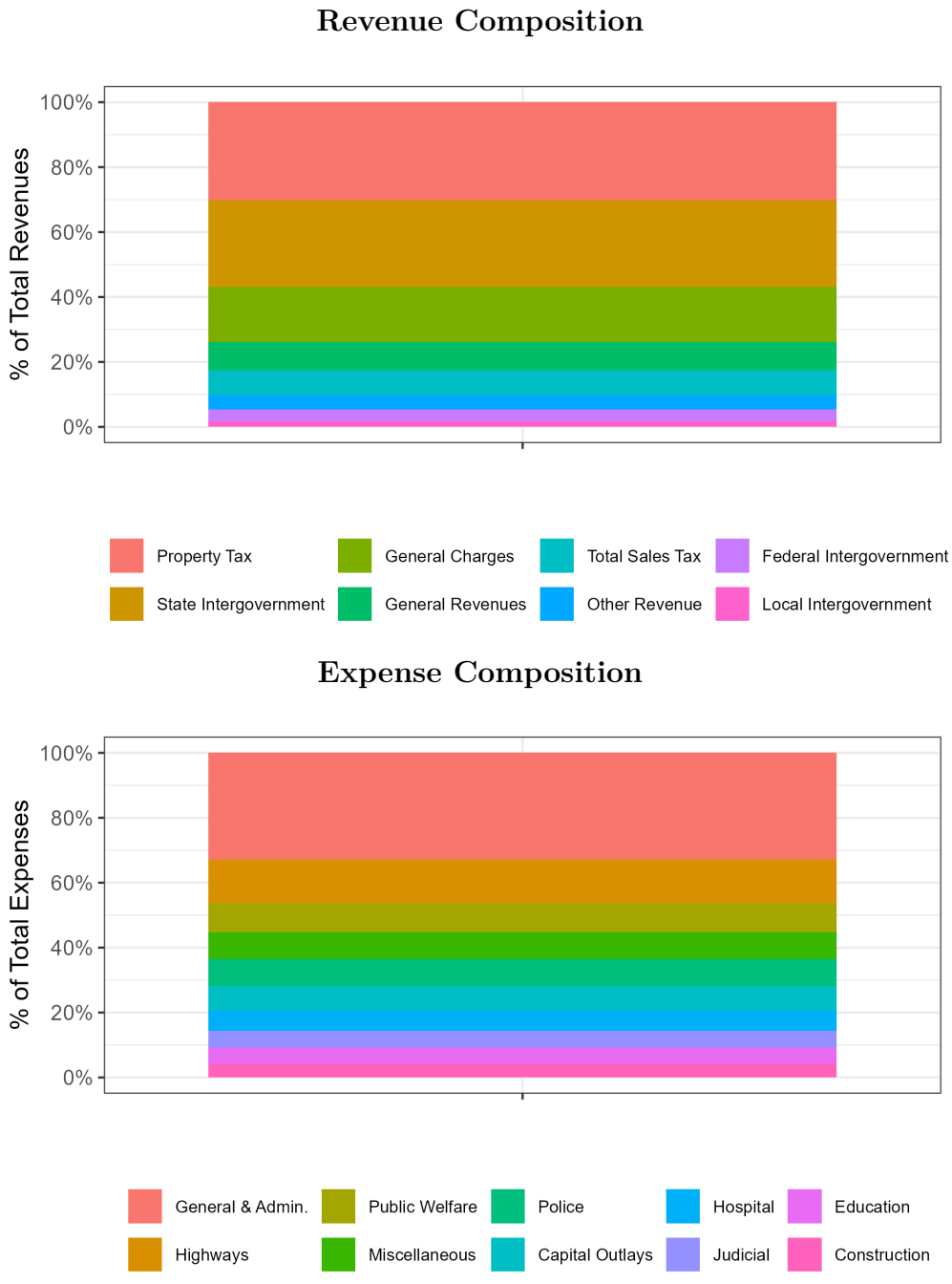


Figure A.2: Secure Communities Time-Varying Effect

This figure shows the effect of the Secure Communities Act on municipal bond yield spreads over time. The coefficient estimates and 95 percent confidence intervals are obtained from regressing a municipal bond's *Yield Spread* onto ranges of time before and after the policy with the omitted group at the time of passage of the Secure Communities Act. The coefficient estimates reflect those from Table 6 column 1. The confidence intervals include primarily individual months while *-12+* groups all coefficient estimates 12 months prior to passage and *12+* groups all coefficient estimates 12 months after its passage. The regressions include county and issue month × issue year fixed effects. Standard errors are clustered at the county level. County-level adoption dates of the Secure Communities Act are provided by East et al. (2023).

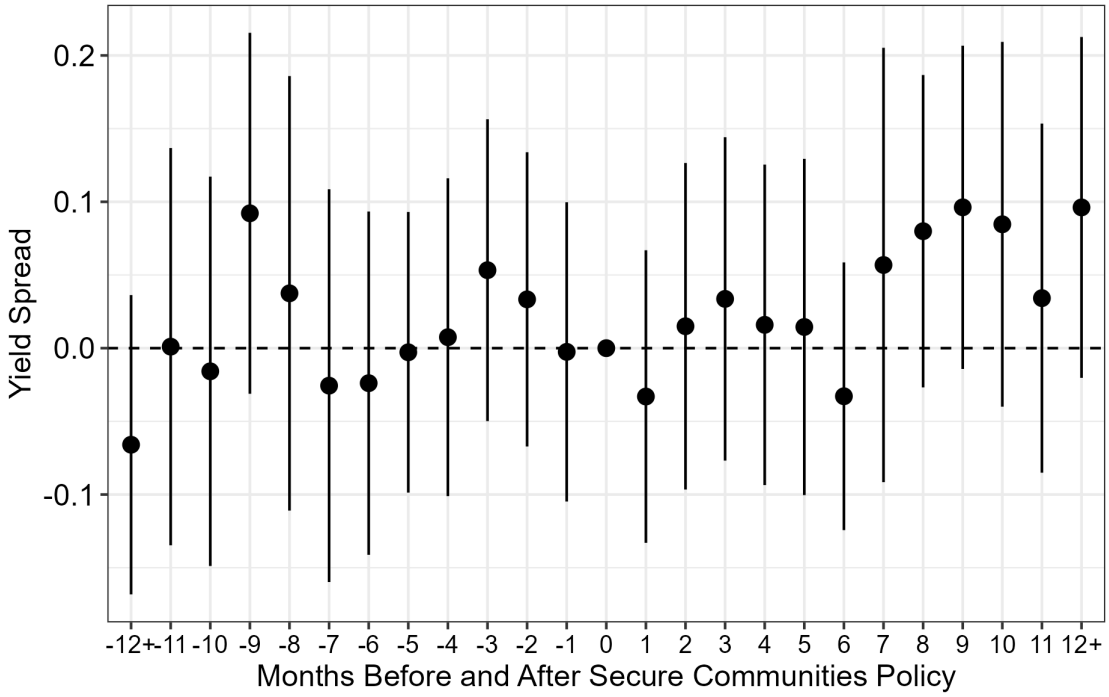


Table A.1: Country-County Level Regressions of Immigration on Push-Pull Factors
This table presents coefficient estimates for the instrument construction shown in equation 5 to explain immigration at the country × county level. Each coefficient estimate is estimated from a separate regression. For example, in column (1) $Immigration_{o,d}^{1985}$ loads on $\widehat{Ancestry}_{o,d,1980} \times \widetilde{Imm}_{o,-r(d),1985}$ with a coefficient of 0.0009 while $Immigration_{o,d}^{1990}$ loads on $\widehat{Ancestry}_{o,d,1985} \times \widetilde{Imm}_{o,-r(d),1990}$ with a coefficient of 0.0011. *County × Country Controls* includes time-invariant controls such as the distance between the two locations and the distance in latitude. *Contemp. LO-Continent Immigration* controls for the flow of immigrants into county d in year t from outside the home continent of the focal country and *Contemporaneous Push-Pull* controls for the interacted flow of immigrants from origin country o to other Census regions with the proportion of immigrants from outside the focal country's home continent settling in county d in year t. Immigration data are based on county inflows of those arriving within the last five year from responses to the US census. Fixed effects include Census region × county fixed effects, county × continent fixed effects, and year fixed effects. Standard errors are clustered at the country level. The sample includes only county × year observations appearing in the municipal bond sample. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	$\text{Immigration}_{o,d,t}$				
	(1)	(2)	(3)	(4)	(5)
$\widehat{Ancestry}_{o,d,1980} \times \widetilde{Imm}_{o,-r(d),1985}$	0.0009***	0.0009***	0.0009***	0.0009***	0.0009***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,1985} \times \widetilde{Imm}_{o,-r(d),1990}$	0.0011***	0.0011***	0.0011***	0.0011***	0.0011***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0001)
$\widehat{Ancestry}_{o,d,1990} \times \widetilde{Imm}_{o,-r(d),1995}$	0.0004***	0.0004***	0.0004***	0.0003***	0.0003***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,1995} \times \widetilde{Imm}_{o,-r(d),2000}$	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2000} \times \widetilde{Imm}_{o,-r(d),2005}$	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2005} \times \widetilde{Imm}_{o,-r(d),2010}$	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2010} \times \widetilde{Imm}_{o,-r(d),2015}$	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2015} \times \widetilde{Imm}_{o,-r(d),2020}$	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	2,564,445	2,564,445	2,564,445	2,564,445	2,564,445
R^2	0.620	0.620	0.669	0.671	0.669
County × Country Controls	No	Yes	Yes	Yes	Yes
Region × Country F.E.	No	No	Yes	Yes	Yes
County × Continent F.E.	No	No	Yes	Yes	Yes
Year F.E.	No	No	Yes	Yes	Yes
Contemp. LO-Continent Immigration	No	No	No	Yes	No
Contemp. Push-Pull	No	No	Yes	Yes	Yes

Table A.2:
Country-County Level Regressions of Unauthorized Immigration on Push-Pull Factors
This table presents coefficient estimates for the instrument construction shown in equation 5 to explain immigration at the country × county level. Each coefficient estimate is estimated from a separate regression. For example, in column (1) *Unauthorized Immigration*$^{1985}_{o,d}$ loads on $\widehat{Ancestry}_{o,d,1980} \times \widetilde{Imm}_{o,-r(d),1985}$ with a coefficient of 0.0003 while *Unauthorized Immigration*$^{1990}_{o,d}$ loads on $\widehat{Ancestry}_{o,d,1985} \times \widetilde{Imm}_{o,-r(d),1990}$ with a coefficient of 0.0003. *County × Country Controls* includes time-invariant controls such as the distance between the two locations and the distance in latitude. *Contemp. LO-Continent Immigration* controls for the flow of immigrants into county d in year t from outside the home continent of the focal country and *Contemporaneous Push-Pull* controls for the interacted flow of immigrants from origin country o to other Census regions with the proportion of immigrants from outside the focal country's home continent settling in county d in year t. Unauthorized immigration data are based on county inflows of those arriving within the last five years based on data from notice to appear (NTAs) obtained via FOIA through the Transactional Records Access Clearinghouse (TRAC), augmented with data on parolees, and scaled up to match the aggregate distribution. See the Internet Appendix for more details. Fixed effects include Census region × county fixed effects, county × continent fixed effects, and year fixed effects. Standard errors are clustered at the country level. The sample includes only county × year observations appearing in the municipal bond sample. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Unauthorized Immigration$_{o,d,t}$				
	(1)	(2)	(3)	(4)	(5)
$\widehat{Ancestry}_{o,d,1985} \times \widetilde{Imm}_{o,-r(d),1990}$	0.0003***	0.0003***	0.0003***	0.0003***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,1990} \times \widetilde{Imm}_{o,-r(d),1995}$	0.0003***	0.0003***	0.0003***	0.0003***	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,1995} \times \widetilde{Imm}_{o,-r(d),2000}$	0.0003***	0.0003***	0.0003***	0.0003***	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2000} \times \widetilde{Imm}_{o,-r(d),2005}$	0.0001***	0.0001***	0.0001***	0.0001***	0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2005} \times \widetilde{Imm}_{o,-r(d),2010}$	0.0001***	0.0001***	0.0001***	0.0001***	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2010} \times \widetilde{Imm}_{o,-r(d),2015}$	0.0001***	0.0001***	0.0001***	0.0001***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$\widehat{Ancestry}_{o,d,2015} \times \widetilde{Imm}_{o,-r(d),2020}$	0.0001***	0.0001***	0.0001***	0.0001***	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	1,951,436	1,951,436	1,951,436	1,951,436	1,951,436
R^2	0.494	0.496	0.541	0.545	0.594
County × Country Controls	No	Yes	Yes	Yes	Yes
Region × Country F.E.	No	No	Yes	Yes	Yes
County × Continent F.E.	No	No	Yes	Yes	Yes
Year F.E.	No	No	Yes	Yes	Yes
Contemp. LO-Continent Immigration	No	No	No	Yes	No
Contemp. Push-Pull	No	No	Yes	Yes	Yes

Table A.3: IV: First Stage Estimates: Immigrant Exposure & Immigrant Inflows
This table presents estimates of the relationship between immigration exposure and immigrant inflows. Panel A shows the first-stage relationship for total immigrant inflows over the last 5-years based on data from the U.S. census. Panel B shows the first-stage relationship for unauthorized immigrant inflows over the last 5-years based on county inflows of those arriving within the last five years based on data from notice to appear (NTAs) obtained via FOIA through the Transactional Records Access Clearinghouse (TRAC), augmented with data on parolees, and scaled up to match the aggregate distribution. See the Internet Appendix for more details.. The unit of analysis is at the bond issuance level to align with the main unit of analysis. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: % Immigration							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Immigration Shock	0.017***	0.016***	0.013***	0.012***	0.019***	0.019***	0.018***	0.019***
	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
F-Statistic	53.26	56.84	155.41	151.77	465.75	415.91	281.14	261.98
Observations	73322	73322	73322	73322	73322	73322	73322	73322
State F.E.	Yes	Yes	Yes	Yes	No	No	No	No
County F.E.	No	No	No	No	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	No	Yes	No	Yes	No	Yes	No	Yes
County Controls	No	No	Yes	Yes	No	No	Yes	Yes
Y-mean	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58

	Panel B: % Unauthorized Immigration							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unauthorized Imm. Shock	0.011***	0.011***	0.008***	0.008***	0.014***	0.014***	0.013***	0.014***
	[0.003]	[0.003]	[0.002]	[0.002]	[0.003]	[0.003]	[0.004]	[0.003]
F-Statistic	11.20	11.37	22.47	22.92	21.46	20.62	12.68	12.29
Observations	68713	68713	68713	68713	68677	68677	68677	68677
State F.E.	Yes	Yes	Yes	Yes	No	No	No	No
County F.E.	No	No	No	No	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	No	Yes	No	Yes	No	Yes	No	Yes
County Controls	No	No	Yes	Yes	No	No	Yes	Yes
Y-mean	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04

Table A.4: IV: Heterogeneous County Effects of Immigration on Yield Spreads: Median Across Full Sample

This table presents estimates of the heterogeneous relationship between immigration and a municipal bond's yield spread across different county characteristics. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of immigrants, *% Immigration*, and *% Immigration* × *County Characteristic*, which are instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7 and the interaction of the exogenous inflow of immigrants and the county characteristic, respectively. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. County characteristics include whether a county is above the median county characteristic for the full time series across measures of unemployment rates, labor force participation, labor-intensive employment, distance to the U.S. border, and poverty. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

Characteristic Type:	Yield Spread				
	Labor				Financial
	(1)	(2)	(3)	(4)	(5)
% Immigration	-0.021	-0.047***	-0.043***	-0.055	-0.117***
	[0.022]	[0.016]	[0.014]	[0.036]	[0.029]
% Immigration × 𝕀(Unemployment Rate)	-0.024				
	[0.017]				
% Immigration × 𝕀(Labor Force Participation Rate)		-0.034			
		[0.028]			
% Immigration × 𝕀(% Labor Intensive)			-0.027		
			[0.016]		
% Immigration × 𝕀(Distance to Border)				-0.417	
				[1.026]	
% Immigration × 𝕀(% Below Poverty)					0.072**
					[0.033]
F-Statistic	31.52	17.60	84.04	0.07	15.90
Observations	73322	73322	73322	73322	73322
County F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes
Y-mean	2.32	2.32	2.32	2.32	2.32

Table A.5:

IV: Effect of Legal versus Undocumented Immigration on Yield Spreads: Median Across Full Sample

This table presents estimates of the relationship between immigration and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the % inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (9). *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. *% Legal Immigration* is created by taking the total immigration over the last 5 years in the decennial census less *% Unauthorized Immigration* the NTA notices in a given county scaled by the county's population from 5 years prior. Columns (2-3), (5-6), and (8-9) split issuances by whether the county's lagged unemployment rate is below the time series median, *low*, or above the time series median, *high*. Unauthorized immigration data are based on county inflows of those arriving within the last five years based on data from notice to appear (NTAs) obtained via FOIA through the Transactional Records Access Clearinghouse (TRAC), augmented with data on parolees, and scaled up to match the aggregate distribution. See the Internet Appendix for more details. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread								
Sample:	1985-2020								
Split:	All	Lag Unemp %		All	Lag Unemp %		All	Lag Unemp %	
Group:	All	Low	High	All	Low	High	All	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Immigration	-0.032***	-0.173***	0.027**						
	[0.011]	[0.030]	[0.012]						
% Legal Immigration				-0.034**	-0.210***	0.027**			
				[0.013]	[0.044]	[0.013]			
% Unauthorized Immigration							-0.164***	-0.280	-0.102**
							[0.047]	[0.295]	[0.043]
F-Statistic	264.46	25.28	192.85	1050.56	24.53	505.75	12.29	7.30	7.42
Observations	68677	33512	34839	68677	33512	34839	68677	33512	34839
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y-mean	2.09	2.01	2.17	2.09	2.01	2.17	2.09	2.01	2.17

Table A.6: IV: Effect of Immigration on Municipal Bond Yields

This table presents robustness estimates of the relationship between immigration and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipal bond's Yield Spread onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The first panel represents the base specification from column (8) of Table 3. The second panel shows results from various sampling choices: Row 2A uses rolling 5-year immigration windows rather than non-overlapping, row 2B includes all bonds within a given issuance rather than only the longest-dated issuance, row 2C weights observations by the initial county's population in 1970, and row 2D excludes bonds issued in 2021. The third panel shows results which include alternative controls and fixed effects: row 3A controls for the Census flow of internal migration, row 3B excludes bond ratings as a control, row 3C includes county × use of proceeds fixed effects (e.g., water & sewer facilities), row 3D includes county × use of proceeds × issuer type fixed effects (e.g., County/Parish), and row 3E includes state × year fixed effects. The fourth panel presents results from altering the instrument: Row 4A uses immigration in levels as the endogenous variable (*Immigration* is per an additional 100,000 immigrants entering a county over the last five years), row 4B keeps only counties with immigration inflows below the 99th percentile, and row 4C scales immigration flows by the county's initial population in 1980. Row 4D scales a municipal bond's *Yield Spread*, the endogenous immigration inflows, and the instrumented inflows using the inverse hyperbolic sine transformation. Row 4E accounts for accounts for state-level spillovers, Row 4F excludes counties from the push factor with correlated county settlement patterns rather than Census regions, and Row 4G excludes European immigration from the push factor and uses European immigration as a consistent leave-out group for the pull factor. Row 4H replaces predicted ancestry with predicted ancestry in 1975 for all periods, and Row 4I takes the sum of push-pull interactions up to 1960 only. Row 4J uses realized immigration shares while Row 4K uses realized ancestry shares following the framework of Card (2001). Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread			
Instrument Variable	Coefficient	Standard Error	F-Statistic	Observations
1. Base Specification				
% Immigration	-0.048***	0.01	261.98	73,322
2. Sampling Choices				
A. Use Rolling 5-Year Flows				
% Immigration	-0.117***	0.03	99.79	225,087
B. Use All Bonds Within an Issuance				
% Immigration	-0.034*	0.02	136.45	493,396
C. Weight by Initial County Population				
% Immigration	-0.042*	0.02	249.64	73,322
D. Exclude COVID-period				
% Immigration	-0.091***	0.03	221.45	50,618

(Continued on next page)

Table (*continued*)

Yield Spread				
Instrument Variable	Coefficient	Standard Error	F-Statistic	Observations
3. Alternative Controls & Fixed Effects				
A. Control Census Flow of Internal Migration				
% Immigration	-0.031***	0.01	264.39	68,664
B. Exclude Bond Ratings				
% Immigration	-0.043***	0.02	260.12	73,322
C. Include County × Use of Proceeds F.E.				
% Immigration	-0.055***	0.01	251.62	67,797
D. Include County × Use of Proceeds × Issuer Type F.E.				
% Immigration	-0.050***	0.02	245.98	65,385
E. Include State × Year F.E.				
% Immigration	-0.076***	0.01	123.51	73,320
4. Instrument Choices				
A. Immigration Flows in Levels (000,000's)				
Immigration	-0.062***	0.02	4809.83	73,322
B. Immigration ≤ 99th Percentile				
% Immigration	-0.146***	0.02	67.90	72,537
C. Scale Immigration by Initial County Population				
% Immigration	-0.039***	0.01	105.11	73,322
D. Use Inverse-Hyperbolic Sine Transformation				
IHS(% Immigration)	-0.164***	0.05	89.47	73,322
E. Account for Spatial Spillovers				
% Immigration	-0.041***	0.014	81.46	73,322
F. Leave-out Correlated Counties from the *Push* Factor				
% Immigration	-0.059**	0.02	427.79	73,322
G. Use European Immigration as Leave-out Group for *Pull* Factor				
% Non-Eur. Imm.	-0.076***	0.02	361.54	73,322
H. Predicted Ancestry in 1975 Only as Shares				
% Immigration	-0.052***	0.01	285.08	73,322
I. Stop Push-Pull in 1960				
% Immigration	-0.063***	0.02	60.84	73,322
J. Realized Immigration Shares from Card (2001)				
% Immigration	-0.081***	0.02	48.78	73,322
K. Realized Ancestry Shares from Card (2001)				
% Immigration	-0.122***	0.02	23.68	73,322

Table A.7: IV: Effect of Immigration on Yield Spreads Across Bond Characteristics

This table presents estimates of the relationship between immigration and a municipal bond's yield spread across different bond types. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Regressions are estimated by splitting the sample across whether a bond is *insured* in columns (1) and (2), its type of either *revenue vs general obligation* in columns (3) and (4), whether a bond is part of a *refinancing* in columns (5) and (6), whether the bond is a negotiated bid in columns (7) and (8), and the length of the longest bond issuance being above or below the median in columns (9) and (10). Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread									
Sample:	Insured		Bond Type		Refinancing		Negotiated Bid		Issue Length	
Split:	Yes	No	REV	GO	Yes	No	Yes	No	Short	Long
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
% Immigration	-0.059***	-0.052***	0.025*	-0.086***	0.005	-0.062***	-0.037***	0.003	0.011	-0.052***
	[0.014]	[0.015]	[0.013]	[0.025]	[0.018]	[0.015]	[0.013]	[0.030]	[0.022]	[0.018]
F-Statistic	189.62	298.26	193.04	133.52	286.38	241.17	214.49	189.64	258.45	206.29
Observations	14567	58244	21819	50914	24065	48689	40242	32505	36961	35783
State F.E.	No	No	No	No	No	No	No	No	No	No
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y-mean	2.48	2.28	2.87	2.09	2.30	2.34	2.51	2.09	1.81	2.86

Table A.8: IV: Effect of Immigration on Use of Bond Proceeds

This table presents estimates of the relationship between immigration and a municipal bond's stated use of bond proceeds. The table displays the IV second-stage results from regressing a municipal bond's *Use of Bond Proceeds* onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include uses across *Transportation*, *Utilities*, *Economic Development*, *Education*, *General*, *Healthcare*, and *Housing*. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Transportation	Utilities	Economic Dev.	Education	General	Healthcare	Housing
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
% Immigration	0.006***	-0.006*	0.011***	-0.037***	0.026***	-0.003***	0.004***
	[0.001]	[0.004]	[0.002]	[0.004]	[0.004]	[0.001]	[0.001]
F-Statistic	279.79	279.79	279.79	279.79	279.79	279.79	279.79
Observations	73322	73322	73322	73322	73322	73322	73322
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	No	No	No	No	No	No	No
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y-mean	0.04	0.16	0.03	0.36	0.36	0.03	0.02

Table A.9: IV: Effects on Immigration on Internal Migration and Population

This table presents estimates of the relationship between immigration and internal migration and population. The table displays the IV second-stage results from regressing measures of internal migration and population onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include *% Stayers* which is the percent of returning residents from a given county, *% Joiners* is the inflow of domestic residents scaled by the previous year's population, *% Net Flow* is the inflow of domestic residents (those who join less those who leave) scaled by the previous year's population, and *Log(Population)* is the logarithm of population. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	% Stayers	% Joiners	% Net Flow	Log(Population)
	(1)	(2)	(3)	(4)
% Immigration	-0.001	-0.001	0.005	0.009***
	[0.004]	[0.001]	[0.004]	[0.003]
F-Statistic	140.41	140.54	140.74	164.67
Observations	10433	10431	10425	11362
County F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes

Table A.10: IV: Effect of Immigration on Capital Raising & Bond Characteristics

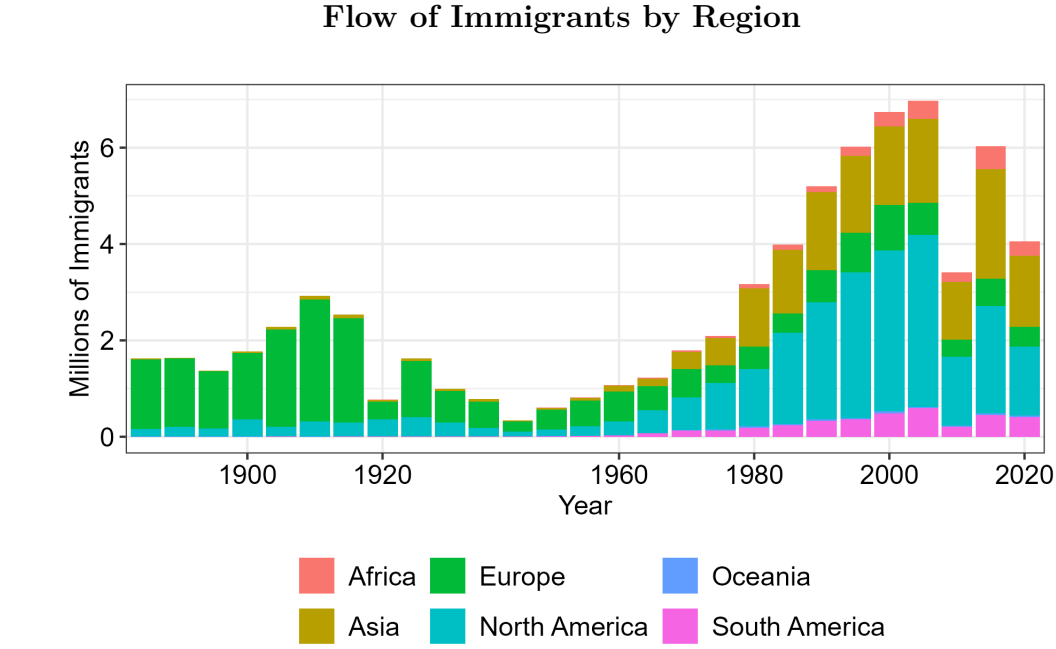
This table presents estimates of the relationship between immigration and municipal borrowing activity and bond characteristics. Columns (1) and (2) examine the extensive margin by regressing county-level capital raising outcomes during the five-year immigration inflow *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. Columns (3) to (10) examine the intensive margin by regressing characteristics of individual bond issuances on instrumented *% Immigration*. The dependent variables on the extensive margin include the logarithm of the number of bond issuances *# Issues*, logarithm of the total amount raised *Total Amount* and on the intensive margin include a given bond issuance's *Issue Amount*, continuous *Rating*, indicator for whether *Unrated*, continuous *Rating* conditional on receiving a rating, *Years to Maturity*, indicator for whether *Callable*, *Insured*, or the bond is a *Refinancing*. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Extensive Margin		Intensive Margin: Bond Level							
	Log(# Issues)	Log(Total Amount)	Log(Issue Amount)	Rating	Unrated	Rating| Rated	Years to Maturity	Callable	Insured	Refinancing
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
% Immigration	0.037*	-0.003	-0.044***	-0.202***	0.032***	-0.021	0.091	-0.013**	-0.001	-0.006
	[0.019]	[0.015]	[0.013]	[0.034]	[0.005]	[0.015]	[0.093]	[0.005]	[0.004]	[0.007]
F-Statistic	182.15	182.15	281.14	281.14	281.13	307.74	281.14	281.14	281.14	281.14
Observations	10671	10671	73322	73322	73319	41334	73322	73322	73322	73322
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	No	No	No	No	No	No	No	No	No	No
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y-mean	2.52	4.23	1.75	3.46	0.43	6.09	14.66	0.69	0.20	0.33

Appendix A: Additional Figures and Tables

Figure IA.1: Immigration to the United States Over Time

This figure shows the composition of immigration to the United States by continent over time by immigrants' birth continent. Panel A displays this in absolute magnitudes while Panel B displays this in relative magnitudes. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.



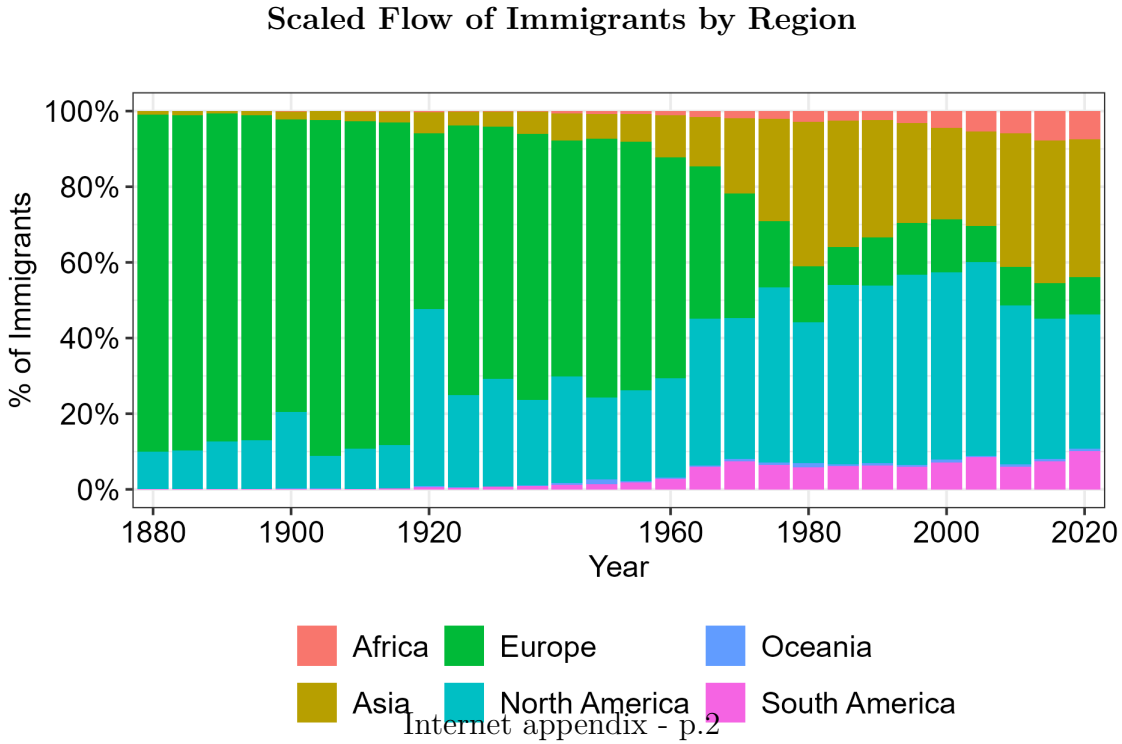


Figure IA.2: Immigrant Type and Settlement Location

This figure shows the settlement of immigrant location by its composition of Census-based versus unauthorized immigration. The figure plots the decile bin of unauthorized immigrants scaled by immigrants captured by the Census from 1990 to 2020 across the United States where 1 is the lowest decile and 10 is the largest decile. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey and Unauthorized immigration data are based on county inflows of those arriving within the last five years based on data from notice to appear (NTAs) obtained via FOIA through the Transactional Records Access Clearinghouse (TRAC), augmented with data on parolees, and scaled up to match the aggregate distribution. See the Internet Appendix for more details. These reporting sources are not mutually exclusive.

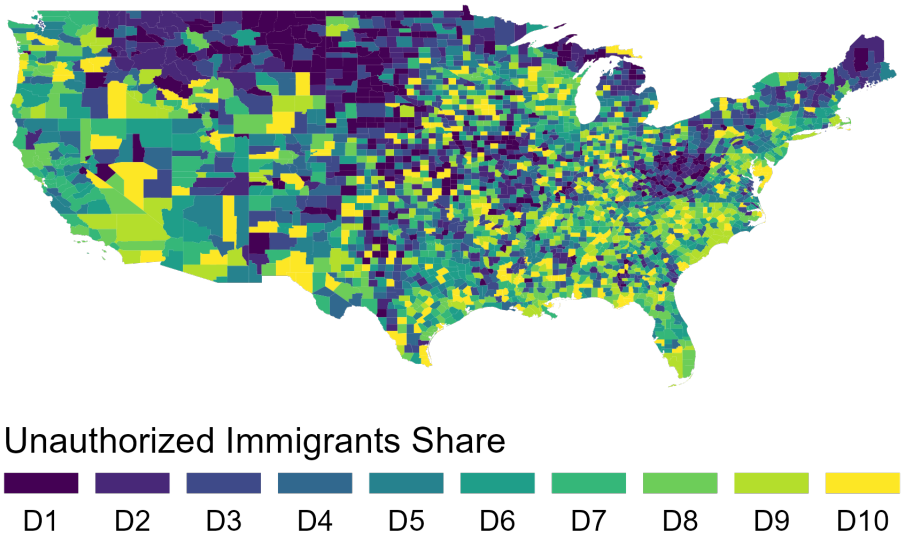
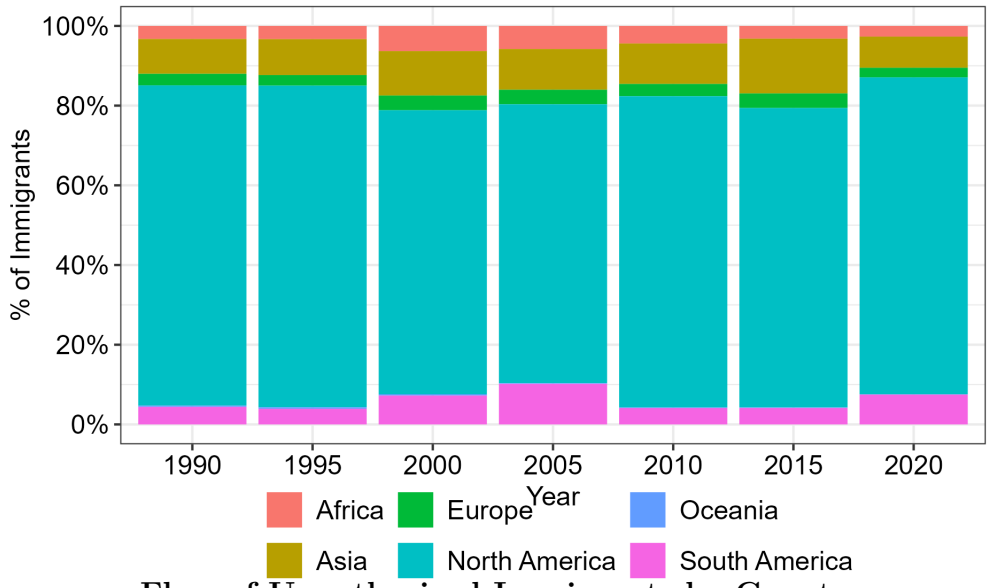


Figure IA.3: Unauthorized Immigration to the United States Over Time

This figure shows the flow of unauthorized immigrants by region and country over time. Panel A shows the flow of unauthorized immigrants over 5-year windows by continent of origin. Panel B shows the flow of unauthorized immigrants over 5-year windows by country of origin for the 9 largest sender countries over our sample. Unauthorized immigration data are based on county inflows of those arriving within the last five years based on data from notice to appear (NTAs) obtained via FOIA through the Transactional Records Access Clearinghouse (TRAC), augmented with data on parolees, and scaled up to match the aggregate distribution. See the Internet Appendix for details.

Flow of Unauthorized Immigrants by Continent



Flow of Unauthorized Immigrants by Country

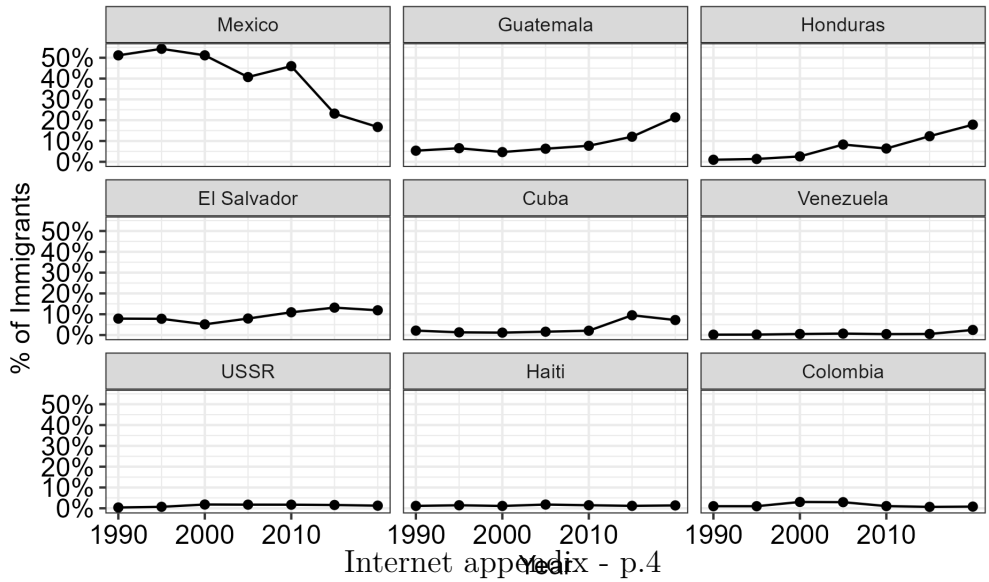


Figure IA.4: Immigration and Ancestry × Location Correlations Over Time
This figure reports pairwise correlations across years for ancestry × location, immigration country × location, and total immigration × location at different geographic aggregation levels. Within each row, the left panel reports ancestry correlations , the middle panel reports geography-by-origin-country immigrant flow correlations, and the right panel reports total immigrant flow correlations aggregated across origin countries. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.

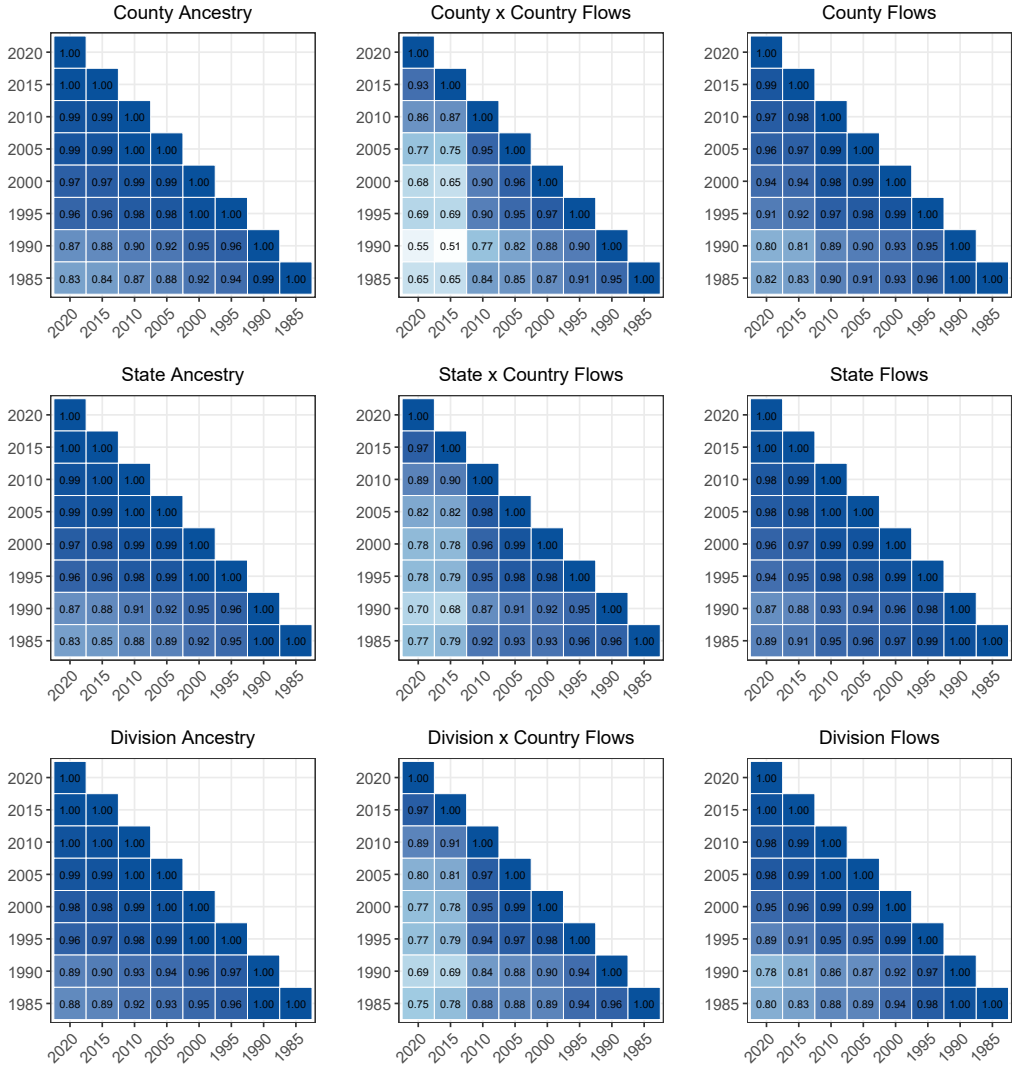


Figure IA.5: IV: Effect of Immigration by Lagged County Unemployment Rates
This figure presents estimates of the binned relationship between immigration and a municipality's yield spread conditioning on its lagged unemployment rate. Panel A shows the effect defining immigration bins *within* a given sample period. Panel A ensure that observations within a given period are evenly dispersed across bins (as it conditions to exposing within the prior period) while Panel B shows the effect defining immigration bins across *all* sample periods. Panel B allows for all observations within a given period to fall within a given bin (based on how it falls within the full time series) while.

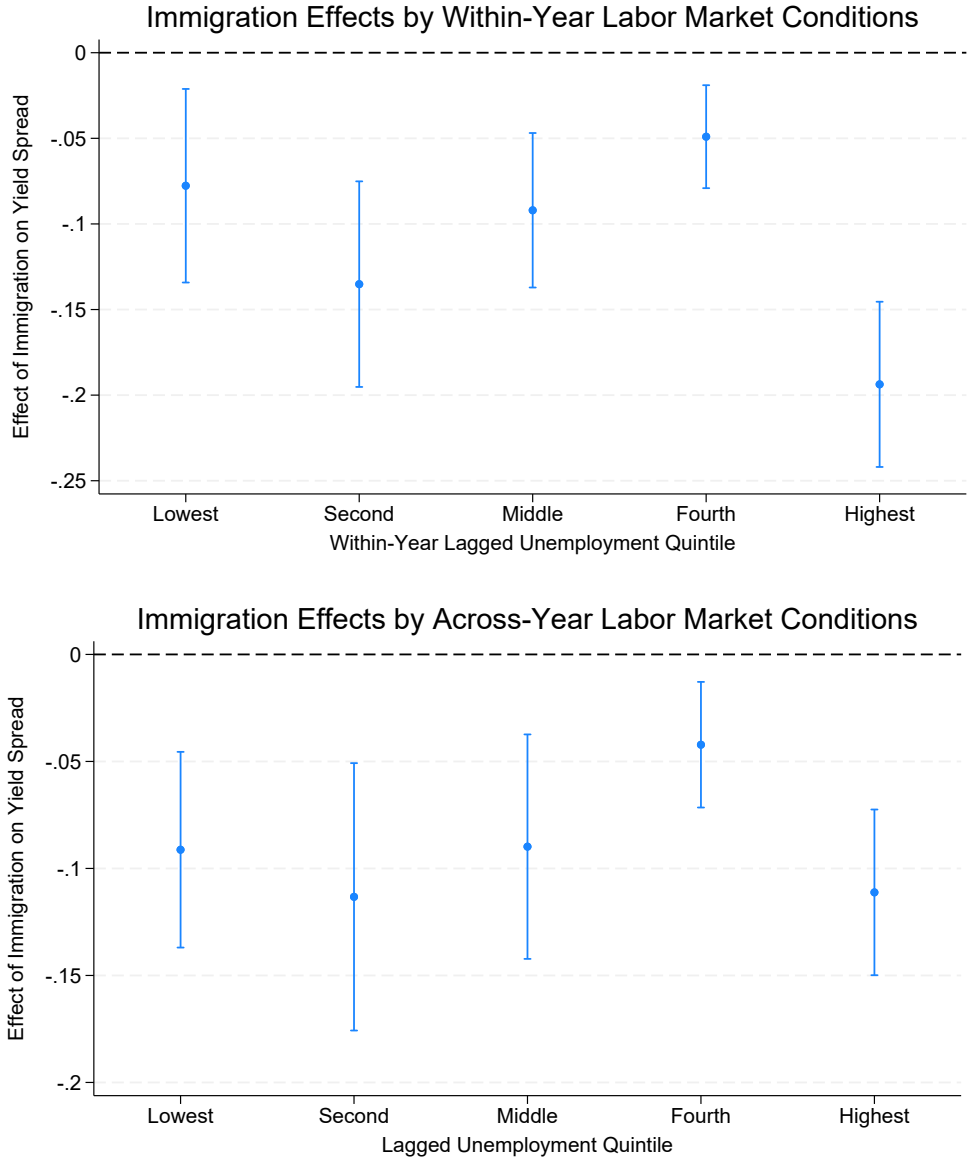


Table IA.1: IV: Effect of Unauthorized Immigration on Yield Spreads

This table presents estimates of the relationship between immigration and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of undocumented immigrants, *% Unauthorized Immigration*, which is instrumented by the exogenous inflow of % Unauthorized immigrants over the last five years as described in Equation 7. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (8). *% Unauthorized Immigration* is per a 1% increase in undocumented immigrants relative to the county's population from 5 years prior. Unauthorized immigration data are based on county inflows of those arriving within the last five years based on data from notice to appear (NTAs) obtained via FOIA through the Transactional Records Access Clearinghouse (TRAC), augmented with data on parolees, and scaled up to match the aggregate distribution. See the Internet Appendix for more details. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Unauthorized Immigration	-0.193***	-0.155***	-0.304***	-0.312***	-0.065**	-0.156***	-0.074**	-0.164***
	[0.053]	[0.041]	[0.059]	[0.049]	[0.024]	[0.023]	[0.034]	[0.047]
F-Statistic	11.20	11.37	22.47	22.92	21.46	20.62	12.68	12.29
Observations	68713	68713	68713	68713	68677	68677	68677	68677
State F.E.	Yes	Yes	Yes	Yes	No	No	No	No
County F.E.	No	No	No	No	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	No	Yes	No	Yes	No	Yes	No	Yes
County Controls	No	No	Yes	Yes	No	No	Yes	Yes
Y-mean	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09

Table IA.2: IV: Heterogeneous County Effects of Unauthorized Immigration on Yield Spreads

This table presents estimates of the heterogeneous relationship between Unauthorized immigration and a municipal bond's yield spread across different county characteristics. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of undocumented immigrants, *% Unauthorized Immigration*, and *% Unauthorized Immigration* × *County Characteristic*, which are instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7 and the interaction of the exogenous inflow of immigrants and the county characteristic, respectively. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. Unauthorized immigration data are based on county inflows of those arriving within the last five years based on data from notice to appear (NTAs) obtained via FOIA through the Transactional Records Access Clearinghouse (TRAC), augmented with data on parolees, and scaled up to match the aggregate distribution. See the Internet Appendix for more details. County characteristics include whether a county is above the median county characteristic within a given issuance period across measures of location, social capital, immigration policy adoption, county wealth, labor, and demographic characteristics. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

Characteristic Type:	Yield Spread				
	Labor				Financial
	(1)	(2)	(3)	(4)	(5)
% Unauthorized Immigration	-0.204**	-0.159***	-0.177***	-0.164***	-0.377***
	[0.100]	[0.049]	[0.061]	[0.047]	[0.113]
% Unauthorized Immigration × 𝕀(Unemployment Rate)	0.038				
	[0.061]				
% Unauthorized Immigration × 𝕀(Labor Force Participation Rate)		0.064			
		[0.102]			
% Unauthorized Immigration × 𝕀(Labor Intensive)			-0.082		
			[0.052]		
% Unauthorized Immigration × 𝕀(Distance to Border)				-0.009	
				[0.042]	
% Unauthorized Immigration × 𝕀(% Below Poverty)					0.197***
					[0.065]
F-Statistic	8.50	4.66	4.72	12.76	8.24
Observations	68677	68677	68677	68677	68677
County F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes
Y-mean	2.09	2.09	2.09	2.09	2.09

Table IA.3: IV: Heterogeneous Immigrant Effects on Yield Spreads

This table presents estimates of the heterogeneous relationship between immigration education and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto *% Immigrants over 25*, *% Immigrants over 25* × *Education Level*, and *Education Level*, which are instrumented by the exogenous inflow of immigrants over the last five years scaled by the county's population from five years prior as described in Equation 7 at the origin country o × county c level for the top 20 origin nations as a joint set of instruments. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. *Years School* and *Years College* are demeaned so that the interacted effect is for an additional year of education above the average, and the main effect of *Immigrants over 25* reflects the average effect per immigrants over 25 at the average level of education. *% Immigration* is per an additional 1% increase in immigrants entering a county over the last five years relative to its population at time *t-5*. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Yield Spread					
	(1)	(2)	(3)	(4)	(5)	(6)
% Immigrants Over 25	-0.240***	-0.185***	-0.303***	-0.302***	-0.282***	-0.237***
	[0.021]	[0.031]	[0.038]	[0.083]	[0.038]	[0.059]
% Immigrants Over 25 × Years School			-0.066**	-0.105***		
			[0.026]	[0.030]		
% Immigrants Over 25 × Years College					-0.143**	-0.159***
					[0.056]	[0.043]
F-Statistic	> 200	> 200	25.84	32.05	61.56	31.71
Observations	73322	73322	73322	73322	73322	73322
State F.E.	Yes	No	Yes	No	Yes	No
County F.E.	No	Yes	No	Yes	No	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Bond Controls	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes
Y-mean	2.32	2.32	2.32	2.32	2.32	2.32

Table IA.4: IV: Effect of Immigration on Operating Margin and Balance Sheet of County Government
This table presents estimates of the relationship between immigration and the county government's operating margin and balance sheet. The table displays the IV second-stage results from regressing the county government's operating margin and balance sheet items onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include the logarithm of a county's *Total Revenues*, *Total Expenses*, *Net Margin*$_t$, *Net Margin*$_{t+5}$, *Net Margin*$_{t+10}$, *Total Debt*, *Financial Assets*, and *Debt/Financial Assets*. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. All county entities are aggregated together to create these measures. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Log(Total Revenues)	Log(Total Expenses)	Net Margin$_t$	Net Margin$_{t+5}$	Net Margin$_{t+10}$	Log(Total Debt)	Log(Fin. Assets)	Debt/ Fin. Assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	-0.009	0.015	-0.027**	-0.010	-0.009	0.166**	-0.004	0.659
	[0.011]	[0.010]	[0.011]	[0.012]	[0.014]	[0.071]	[0.053]	[0.821]
F-Statistic	174.23	174.43	174.23	133.99	570.94	225.45	177.41	177.41
Observations	11346	11337	11346	9659	7830	9205	11158	11158
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.5: IV: Effect of Immigration on County Government Revenues

This table presents estimates of the relationship between immigration and the county government's revenue sources. The table displays the IV second-stage results from regressing the county government's revenue sources onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include the logarithm of a county's government's revenue from *Total Taxes*, *Property Taxes*, *Sales Tax*, *Total Intergovernmental Transfers*, *Federal Intergovernmental Transfers*, *State Intergovernmental Transfers*, and *Local Intergovernmental Transfers*. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. All county entities are aggregated together to create these measures. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Log(Taxes)			Log(General)	Log(Intergovernmental Transfers)			
	Total	Property	Sales & Rec	General	Total	Fed	State	Local
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	0.006	-0.007	0.126**	0.105***	-0.006	0.001	0.008	0.175***
	[0.013]	[0.015]	[0.050]	[0.037]	[0.034]	[0.046]	[0.024]	[0.041]
F-Statistic	174.57	174.66	191.63	174.91	174.78	287.26	175.22	208.63
Observations	11312	11293	7554	11234	11287	8145	11250	7417
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.6: IV: Effect of Immigration on County Government Expenses

This table presents estimates of the relationship between immigration and the county government's expense sources. The table displays the IV second-stage results from regressing the county government's expense sources onto the inflow of immigrants, *% Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 7. The dependent variables include the logarithm of a county government's spending on *Education*, *Police*, *Judicial*, *Health*, *Public Welfare*, *Parks*, *Capital*, and *Roads*. County controls are lagged five years and include the logarithm of population, labor force participation rate, percent of labor-intensive employment, unemployment rate, logarithm of average income, county's net income margin, social capital index, percent of working population age, percent below the poverty line, and median age. *% Immigration* is per a 1% increase in immigrants relative to the county's population from 5 years prior. All county entities are aggregated together to create these measures. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Log(Public Goods Expenses)						Log(Infrastructure)	
	Education	Police	Judicial	Health	Welfare	Parks	Capital	Roads
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Immigration	-0.022	0.024	0.129***	-0.131***	-0.071	0.028	0.074***	-0.011
	[0.045]	[0.023]	[0.025]	[0.031]	[0.062]	[0.035]	[0.023]	[0.014]
F-Statistic	495.40	173.32	174.68	180.00	583.75	192.14	180.24	179.14
Observations	3444	11131	10993	10312	9249	8114	10480	10711
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix B: Variable Definitions

Yield Spread (%).

We compute a bond's yield spread as:

$$\text{Yield Spread}_{i,d,t} = \frac{Yield_{i,d,t}}{(1-\tau_{d,t})} - r^{f}_{m,t} \tag{1}$$

$\text{Yield}_{i,d,t}$ is the bond's issuance yield, $\text{r}^{f}_{m,t}$ is the yield of treasury bill of maturity m issued at time t, $\tau_{d,t}$ is the marginal tax rate on personal income calculated as $\tau_{d,t} = \tau_t^{Federal} + \tau_{d,t}^{State} \times \mathbf{1}[Exemption^{State}]_{d,t}$ where $\tau_t^{Federal}$ is the federal tax rate for top earners after adjusting for the deductability of state income taxes at the federal level and $\tau_{d,t}^{State}$ is the state income tax rate for top earners with both measures provided by NBER Taxsim (Feenberg & Coutts, 1993). $\mathbf{1}[Exemption^{State}]_{d,t}$ is an indicator variable that takes a value of one for bonds issued in states that exempt income taxes on municipal bonds. Source: LSEG's SDC Platinum

Years to Maturity. The maturity of the longest dated bond within a given issuance. Source: LSEG's SDC Platinum

Amount Final Maturity. The issuer amount of the longest dated bond within a given issuance. Source: LSEG's SDC Platinum

Issue Amount. The issuer amount of the longest dated bond within a given issuance. Source: LSEG's SDC Platinum

$\mathbb{I}$(**Callable Issue**). Denotes whether a given bond issuance is callable. Source: LSEG's SDC Platinum

$\mathbb{I}$(**Insured**). Denotes whether a given bond issuance is insured. A bond's insured status is based on whether it has a long-term insured-based rating. Source: LSEG's SDC Platinum

$\mathbb{I}$(**Negotiated Bid**). Denotes whether a given bond issuance is sold through a negotiated bid. Source: LSEG's SDC Platinum

$\mathbb{I}$(**Revenue Bond**). Denotes whether a given bond issuance is a revenue bond. Source: LSEG's

SDC Platinum

$\mathbb{I}$(**Tax-Exempt**). Denotes whether a given bond issuance is tax-exempt. Source: LSEG's SDC Platinum

$\mathbb{I}$(**Ratings Combined**). Ratings from Fitch, Moody's, and S&P are converted into a common ordinal scale ranging from 0 to 7, where 7 corresponds to AAA/Aaa, 6 to AA-category ratings, 5 to A-category ratings, 4 to BBB-category ratings, 3 to BB-category ratings, 2 to B-category ratings, 1 to CCC-category ratings, and 0 to unrated bonds (NR). For insured bonds, we use the insured rating; for uninsured bonds, we use the underlying rating. Source: LSEG SDC Platinum.

$\mathbb{I}$(**Sinking Fund**). Denotes whether a given bond issuance has a sinking fund. Source: LSEG's SDC Platinum

$\mathbb{I}$(**Refinancing**). Denotes whether a given bond issuance is part of a refinancing. Source: LSEG's SDC Platinum

Immigration. The number of total immigrants reported in the U.S. Census in a given county that arrived within the last five years. Source: US Census Bureau decennial and American Community Survey

Unauthorized Immigration. The number of unauthorized immigrants reported in a given county that arrived within the last five years. Source: Notice to Appear (NTA) filings from the Transactional Records Access Clearinghouse at Syracuse University, Humanitarian parole counts from U.S. Customs and Border Protection (CBP) and the Office of Field Operations (OFO), Warren and Warren (2013), Wilson and Zhou (2026). See Internet Appendix C for additional details.

Total Population. The total number of people living in a given county. Source: NHGIS IPUMS

% Immigration. Defined as the percentage inflow of newly arriving immigrants into a county over the last five years scaled by the county's population from five years before.

$$\frac{Immigration_{d,[t-4,t]}}{Population_{d,t-5}} \tag{2}$$

Source: US Census Bureau decennial and American Community Survey

% Unauthorized Immigration. Defined as the percentage inflow of newly arriving unauthorized immigrants into a county over the last five years scaled by the county's population from five years before.

$$\frac{\text{Unauthorized Immigration}_{d,[t-4,t]}}{Population_{d,t-5}} \tag{3}$$

% Legal Immigration. Defined as the net of % Immigration and % Unauthorized Immigration over the last five years scaled by the county's population from five years before.

$$\%\text{ Legal Immigration}_{d,t} = \frac{\text{Immigration}_{d,[t-4,t]} - \text{Unauthorized Immigration}_{d,[t-4,t]}}{\text{Population}_{d,t-5}} \tag{4}$$

Source: Notice to Appear (NTA) filings from the Transactional Records Access Clearinghouse at Syracuse University, Humanitarian parole counts from U.S. Customs and Border Protection (CBP) and the Office of Field Operations (OFO), Warren and Warren (2013), Wilson and Zhou (2026). See Internet Appendix C for additional details.

Unemployment Rate. The county's unemployment rate. We use data from the Local Area Unemployment Statistics (LAUS) produced by the U.S. Bureau of Labor Statistics from 1990 onward and U.S. Census data for 1980. We linearly interpolate unemployment rates for 1985.

Source: U.S. Bureau of Labor Statistics, U.S. Census

Labor Force. The county's labor force. We use data from the Local Area Unemployment Statistics (LAUS) produced by the U.S. Bureau of Labor Statistics from 1990 onward and U.S. Census data for 1980. We linearly interpolate unemployment rates for 1985.

Source: U.S. Bureau of Labor Statistics, U.S. Census

Ages 18-64. The population in a given county between the ages of 18-64. We linearly interpolate between Census periods to create annual estimates. Source: NHGIS IPUMS

% Ages 18-64. The % of the total population in a given county between the ages of 18-64. We

linearly interpolate between Census periods to create annual estimates. Source: NHGIS IPUMS

Distance to US Border. The distance of a county to the U.S. border. Source: R rnaturalearth package

% Below Poverty. The percentage of a county's population below the poverty line. Source: NHGIS IPUMS

% Labor-Intensive. The percentage of a county's employment in blue-collar oriented sectors. We classify industries as labor-intensive (blue-collar) or non-labor-intensive (white-collar) based on two-digit NAICS codes. Labor-intensive industries include agriculture (11), mining (21), utilities (22), construction (23), manufacturing (31-33), wholesale trade (42), retail trade (44-45), transportation and warehousing (48-49), administrative and waste services (56), arts, entertainment, and recreation (71), accommodation and food services (72), other services (81), and public administration (92). White-collar industries include information (51), finance and insurance (52), real estate (53), professional and technical services (54), management of companies (55), educational services (61), and health care and social assistance (62). We fill in 2020 using data from 2018 given the harmonized data stops then. Source: U.S. Census County Business Patterns (Eckert et al., 2020)

Employment. The total number of employees in the county. Source: Quarterly Census of Employment and Wages from the Bureau of Labor Statistics.

Enrollment. The total number of enrolled students in the county. Source: Harmonized Government Finance Database from Williamette University for the aggregate county entities (includes school districts, townships, municipalities, and governments). Pierson, Hand, and Thompson (2015) is based on data from the US Census Bureau's Census of Governments and Annual Survey of State and Local Government Finances

County Finance Variables. County finance variables are constructed from the harmonized Government Finance Database from Williamette University for the aggregate county entities (includes school districts, townships, municipalities, and governments). Pierson, Hand, and Thompson (2015) is based on data from the US Census Bureau's Census of Governments and Annual Survey of State

and Local Government Finances

Total Revenue. The total revenue for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Total Taxes. The total tax revenue for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Property Taxes. The total tax property tax revenue for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Total Sales & Recreational Taxes. The total sales and recreation tax revenue for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Miscellaneous General Revenue. The total miscellaneous and general tax revenue for the aggregate county Source: Pierson, Hand, and Thompson (2015)

Total Intergovernmental Revenue. The total of federal, state, and local intergovernmental revenue. Source: Pierson, Hand, and Thompson (2015)

Federal Intergovernmental. The total federal intergovernmental revenue for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

State Intergovernmental. The total state intergovernmental revenue for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

State Intergovernmental Education. The total state intergovernmental revenue targeted towards education for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

State Intergovernmental Public Welfare. The total state intergovernmental revenue targeted towards public welfare for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

State Intergovernmental General Support. The total state intergovernmental revenue targeted towards general support for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

State Intergovernmental Other General Support. The total state intergovernmental revenue targeted towards other general support for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

State Intergovernmental Health. The total state intergovernmental revenue targeted towards health for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Local Intergovernmental. The total local intergovernmental revenue for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Total Expenditures. The total expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Education Expenditures. The total education expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Capital Outlays. The total expenditures on capital outlays for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Police Expenditures. The total police expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Highway Expenditures. The total highway expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Public Welfare Expenditures. The total public welfare expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Health Expenditures. The total health expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Parks and Recreation Expenditures. The total parks and recreation expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Judicial Expenditures. The total judicial expenditures for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Net Margin. Computed as follows:

$$\frac{\text{Total Revenues} - \text{Total Expenditures}}{\text{Total Revenues}} \tag{5}$$

Source: Pierson, Hand, and Thompson (2015)

Total Debt. The total debt outstanding for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Total Long-term Debt. The total long-term debt outstanding for the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Total Cash Securities. The total cash securities held by the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Non-Insured Trust Cash Securities. The total non-insured cash securities held by the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Other Non-Insured Trust Cash Securities. The total other non-insured cash securities held by the aggregate county. Source: Pierson, Hand, and Thompson (2015)

Leverage. Computed as follows:

$$\frac{\text{Debt}}{\text{Total Assets}} \tag{6}$$

. Source: Pierson, Hand, and Thompson (2015)

Appendix C: Unauthorized Immigration Methodology

Measuring Unauthorized Immigration

Data Sources

We construct annual estimates of unauthorized immigrant arrivals to the United States at the county-of-residence × country-of-origin × year-of-entry level for fiscal years 1990–2025 by combining four data sources:

1. **Notice to Appear (NTA) filings** from the Transactional Records Access Clearinghouse (TRAC) at Syracuse University. TRAC publishes counts of NTAs disaggregated by the respondent's nationality, the fiscal year in which the NTA was issued, the duration of U.S. residence at the time of filing, and the county of residence.
2. **Humanitarian parole counts** from U.S. Customs and Border Protection (CBP) and the Office of Field Operations (OFO), obtained at the country × month level.
3. **State-level aggregate inflow estimates for 1990–2009** from Warren and Warren (2013) Table A3.
4. **National aggregate inflow estimates for 2010–2016** from Warren (2019) and **for 2014–2025** from Wilson and Zhou (2026). The Wilson–Zhou data are monthly and decompose total inflows into three components: humanitarian parolees (`parole`), NTA issuances (`nta`), and entries without inspection (`gotaway`).

Year of Entry

The TRAC data record the fiscal year in which the NTA was filed, but the quantity of interest for this study is the fiscal year of *entry* into the United States. Each NTA includes a self-reported "How Long in U.S." field with the following ordered bins: *Up to 1 year*, *Between 1 and 2 years*, . . . , *Between 15 and 20 years*, and *20 years or more*. We map each bin to its lower bound in integer

years (e.g., *Between 3 and 4 years* $\rightarrow 3$; *20 years or more* $\rightarrow 20$), and define the estimated entry fiscal year for each record as

$$fye = (\text{Fiscal Year NTA Dated}) - (\text{years in U.S.}).$$

Imputing Entry Year for "Not Known" Duration Records

A non-trivial share of NTA filings carry a *Not Known* value in the duration field. We treat these records as missing-at-random conditional on nationality and NTA fiscal year, and impute their distribution of entry years from the empirical distribution of known-duration filings in the same nationality $\times$ NTA-year cell.

Formally, for each nationality n and NTA fiscal year t, we compute the weight assigned to duration bin $k \in \{0, 1, \ldots, 20\}$ as

$$w_{n,t,k} = \frac{\sum_i v_i \cdot \mathbf{1}[i \in n, t, k, \text{ duration known}]}{\sum_i v_i \cdot \mathbf{1}[i \in n, t, \text{ duration known}]},$$

where v_i is the NTA count for record i. Each *Not Known* record in cell (n, t) is then split into 21 fractional records, with the kth fractional record receiving share $w_{n,t,k}$ of the original count and assigned an imputed entry year $fye = t - k$. In nationality $\times$ NTA-year cells with no known-duration records, all *Not Known* mass is placed at $k = 0$ (i.e., assigned an entry year equal to the NTA-filing year). Imputed records are recombined with the original known-duration records and aggregated to the (nationality $\times$ *fye* $\times$ county) level. We refer to the resulting object as the *duration-imputed NTA count*.

Incorporating Parolees

Individuals admitted under humanitarian parole at the southwest border are largely absent from NTA filings but represent a substantial share of recent unauthorized inflows. We incorporate them

as follows.

Allocation to counties. Parolees are assumed to settle in the same county distribution as other recent arrivals from the same country of origin who entered in the same fiscal year, as reflected in the duration-imputed NTA data. Operationally, for each nationality n and entry fiscal year t we compute a country-year inflation factor

$$r_{n,t} = \frac{V_{n,t} + P_{n,t}}{V_{n,t}},$$

where $V_{n,t}$ is the sum of duration-imputed NTA counts and $P_{n,t}$ is the scaled parolee count for (n, t). We then multiply every county-level cell (n, t, c) by $r_{n,t}$. This procedure preserves the within-country–year county distribution implied by NTA filings while inflating totals to reflect parole flows.

Scaling to Aggregate Population Estimates

NTAs are issued only to a subset of unauthorized entrants (those who come to the attention of immigration enforcement) and so the parole-adjusted NTA counts cannot be interpreted as population totals. We rescale them to match published aggregate estimates of unauthorized-immigration inflows, using the best-available source for each period. In every case the scaling preserves the within-cell distribution of the rescaled units (county and/or nationality) and adjusts only the overall level.

Fiscal years 1990–2009: state × year scaling. Warren and Warren (2013, Table A3) provide annual inflow estimates by state of residence. For each state s and year t in this range we compute

$$\sigma_{s,t} = \frac{E^{\mathrm{WW}}_{s,t}}{\sum_{n,\, c \in s} \tilde{V}_{n,t,d}},$$

where $E^{\mathrm{WW}}_{s,t}$ is the Warren–Warren estimate for state s in year t and $\tilde{V}_{n,t,d}$ is the parole-adjusted NTA count for nationality n, entry year t, and county d. Every (n, t, d) observation in state s is multiplied by $\sigma_{s,t}$.

Fiscal years 2010–2013: national × year scaling. Warren (2019) provides updated national totals through 2016 but no state-level breakdown beyond 2010. For 2010–2013 we apply a national-year scaling factor

$$\sigma_t = \frac{E^{\mathrm{W}}_t}{\sum_{n,s,d} \tilde{V}_{n,t,d}},$$

multiplying every record in t by σ_t. Records with unknown state are excluded from the denominator (and from the final dataset).

Fiscal years 2014–2025: national × year scaling using Wilson–Zhou totals. For the most recent period we use the Wilson–Zhou (2026) decomposition. National fiscal-year totals are computed as

$$E^{\mathrm{WZ}}_t = \sum_{m \in \mathrm{FY}(t)} (\mathrm{parole}_m + \mathrm{nta}_m + \mathrm{gotaway}_m),$$

and the corresponding scaling factor $\sigma_t = E^{\mathrm{WZ}}_t / \sum_{n,s,d} \tilde{V}_{n,t,d}$ is applied to all observations in t.

Appendix D: Extending Terry et al. (2026) and Validation

Overview of Extension Our approach builds on the framework and extensive data work of Terry et al. (2026) which harmonize data from the U.S. decennial census from 1880 to 2010 across countries and counties over time to study the impacts of non-European immigration on innovation and wage growth at the county level from 1975 to 2010. We extend their framework in three ways. First, we extend the ancestry and immigration panel through the 2020 decennial Census. Second, we generalize the construction to include all immigrant origin countries rather than restricting to non-European immigration. Third, we adapt the framework to accommodate alternative inflow measures based on the unauthorized immigration data described in the previous section. In the section that follows, we outline how we implement these changes to the existing code provided by the replication package of Terry et al. (2026) along with steps we take to verify our work.

Extend Census Coverage to 2020 First, we download data from the 2020 decennial census matching the measures collected by Terry et al. (2026) in prior censuses from IPUMs. As the unit of geography relies on public use microdata areas (PUMAs) within this Census, we download the file "geocorr2012.csv" from the Missouri Census Data Center's https://mcdc.missouri.edu/help/data-allocation/ which contains a mapping from PUMAs to counties as designated in the 2020 Census. Next, we create a mapping from U.S. counties in 2020 to 1990 which serves as the harmonized county location. We download an updated county shapefile from 2020 and examine the spatial overlap to create this transition. We manually build the transition group from 2020 PUMAs to 1990 counties relying on these two input files which allow us to build the transition group file needed for the subsequent analysis.[34]

[34]We manually create the transition file for 2020 for simplicity and replicated the birthplace file from 2010 given consistency of Census birthplaces between 2010 and 2020. Our results are nearly identical when building the transition file for 2020 following their code.

To extend the framework through 2020, we make several modifications to the underlying code base, including expanding the number of Census periods used throughout the construction of the ancestry and immigration panels. We make some adjustments to include all immigrant countries (not just non-European) and broaden the scope of the immigrant leave out groups.

Include All Immigrant Groups In the original approach from Terry et al. (2026), they measure exposure to only non-European immigrants excluding them from their broader flow measure and only using this group as a proxy for a county's past desirability. To extend their work, we include all immigrant groups and proxy for desirability at the county × country level using all immigrants from the continents outside of the focal continent. Rather than defining Europe as the leave-out group, we define the leave-out group relative to each origin country's continent. Consequently, immigrant inflows from a given country are predicted using settlement patterns of immigrants from all other continents, allowing the framework to incorporate all origin countries while preserving the leave-out structure of the original design. The last difference in the update, is that we do not filter out county × country observations where the country is European where as Terry et al. (2026) exclude these observations.

Use Alternative Inflow Data: Unauthorized Immigration Data We also modify the original design of Terry et al. (2026) to accommodate alternative inflow data on unauthorized immigration data. To begin, we aggregate our annual data on unauthorized immigrants at the county × country level from the Transactional Records Access Clearinghouse (TRAC), scaled up by parolees as detailed above, to rolling 5-year periods.[35] Similar to before, we make a few high-level adjustments to expand the number of immigration periods within the coding files and set-up.

As we have a limited time series on unauthorized immigrant arrivals, we rely on the same data from

[35] As limited county border changes occur in the United States from 1990 onward we use raw counts from TRAC based on reported totals. Similarly, we use raw counts by a given immigrant group as country borders are fairly rigid.

the decennial census to construct county × ancestry exposures. The main modification we make when constructing the instruments in our Bartik instrument design is to keep the ancestry shares the same as before while substituting our decennial census based flow measure to our unauthorized immigration flows. This modification preserves the ancestry-based variation underlying the original Bartik design while replacing overall immigrant inflows with unauthorized immigrant inflows. We use no forward looking information to do so fixing the shares from at least 5 years prior to time period t, the flows from time period t-5 to time period t and the corresponding effect on yields in time period t+1.

Verifying Data Extension of Terry et al. (2026) We examine the validity of our extension of the framework of Terry et al. (2026) in the following ways. First, we replicate their analysis (excluding European immigrants) to build instrumented immigrant exposures at the county level and ensure that our results mirror theirs at the county level. Second, we extend their framework to include all countries (now including European immigrants), and we examine how our additional time periods in 2015 and 2020 compare to prior periods. Figure IA.4 shows these correlations at three different geographic levels of aggregation: (1) county level, (2) state level, and (3) Census division or region level. Across each geographic level, we show the correlation at the ancestry level, location × country level, and overall location level over 5-year periods. Reassuringly, the extended data exhibit persistence patterns nearly identical to those observed in the original sample period. Overall, from the left-most column we observe that the ancestry in a given location is highly persistent over time whether measured at the county, state, or broader Census division level. Our added time periods in 2015 and 2020 based on Census data closely match the persistence patterns present in other Census patterns from before 2010. For example, the correlation between 2020 county ancestry and 2010 county ancestry ≈ 0.99 and the correlation between the 2010 county ancestry and 2000 county ancestry is also ≈ 0.99. The middle column compares data at the location × country level. We observe that there is slightly less persistence in immigration patterns in the

5-year periods ending in 2015 and 2020, but this is broadly consistent with large shifts in the composition of immigrants over this period shifting from North American to Asian as shown in Panel B of Figure IA.4. These correlations while slightly smaller in magnitude remain economically similar as the the correlation between 2020 county $\times$ country flows and 2010 county $\times$ country flows ≈ 0.86 while the correlation between the 2010 county $\times$ country flows and 2000 county $\times$ country flows is also ≈ 0.90. Consistent with these most recent Census waves shifting who comes rather than where they go, the rightmost column shows the flow of immigrants at the geographic level has remained highly persistent. For example, the correlation between 2020 county immigrant flows and 2010 county immigrant flows ≈ 0.97 and the correlation between the 2010 county immigrant flows and 2000 county immigrant flows is ≈ 0.98.

Appendix E: LSEG's SDC Platinum Yield Data

Within LSEG's SDC Platinum, yields for the longest maturity bond within a given bond *final maturity yield* contain a mix of prices at redemption and the bond's true yield of interest. Fortunately, the bond issuances, contain all the necessary information to compute the yield for the longest maturity bond within a given bond *final maturity yield* across the full time series of our analysis. This section details our cleaning and creation of yields for municipal bond issuances.[36]

We use the *final maturity yield* reported by SDC Platinum whenever its value is less than 20. For observations where the reported *final maturity yield* exceeds 20, manual inspection indicates that SDC Platinum has populated this field with the bond price rather than the yield as shown in Figure IA.E.1 Panel A.[37] In these cases, we recompute yields assuming semiannual compounding. For non-callable bonds, we calculate the yield-to-maturity using the issue (or delivery) date, final maturity date, coupon rate, observed bond price, and a redemption value of 100. For callable bonds, we calculate the yield-to-call using the first call date as the maturity date and the first-call redemption price as the terminal value. All yields are reported in percentage terms, and transformed distribution used in our analysis is shown in Figure IA.E.1 Panel B.

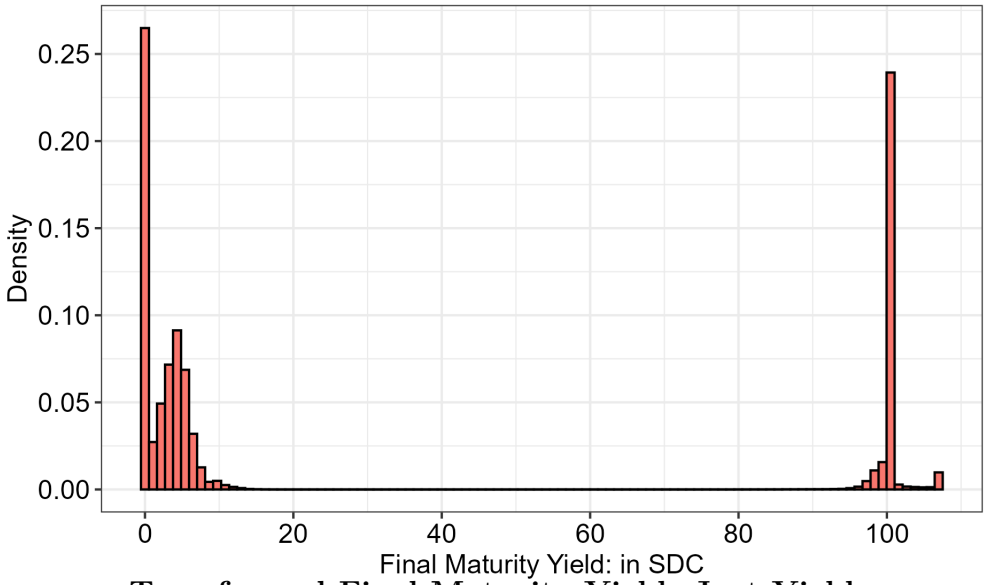
[36] We focus on the longest dated bonds within a given issuance as the coupon rate for the final maturity bond within a given issuance is always available allowing us to compute and validate the longest-dated bond's yield within a given issuance. In contrast, prior to 2003, the coupon rate for shorter-dated bonds within a given issuance is only available 1.5% of the time.

[37] Conditional on this filter, the 99th percentile for the *final maturity yield* is 8, suggesting our threshold of 20 removes only observations which SDC has populated the *final maturity yield* with a price rather than a yield.

Figure IA.E.1: Raw Versus Transformed Yields in SDC

This figure shows the raw *Final Maturity Yield* in SDC Platinum compared to our transformed *Final Maturity Yield*. Panel A shows the raw measure reported in the data which contains both yields (clustered near zero) and price (clustered near 100). Panel B shows our transformed measure used in our analysis which computes the true *Final Maturity Yield* in cases when SDC reports prices in this field instead. We winsorize both measures at the 1st and 99th percentiles.

Raw Final Maturity Yield: Mix of Yields and Prices



Transformed Final Maturity Yield: Just Yields