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Enclaves and Assimilation in the Age of Mass Migration: Evidence from Ethnic Catholic Churches

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**ABSTRACT**

Immigrant enclaves offer valuable ethnic amenities but may delay assimilation. We study enclave formation in the Age of Mass Migration by using the centralized location decisions for “ethnic” Catholic churches. After a church opening, same-ethnicity residents of chosen neighborhoods experienced falling earnings but strengthened communal ties, as compared to residents of areas matched on baseline characteristics. Treated residents held more manual occupations, and increased in-group marriage and naming. These effects persist into the second generation and are not observed for non-ethnic neighbors. Consistent with the historical record, Poles organized communal life around neighborhood parishes, but Italians were less church-centered.

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# 1 Introduction

From 1850-1913, a period known as the Age of Mass Migration, around 30 million European immigrants moved to the United States. At the time, like today, many immigrants lived in ethnic enclaves (Cutler et al., 2008; Eriksson and Ward, 2019). Living in enclave neighborhoods could have delayed assimilation by isolating immigrants from exposure to English and wider labor market networks. However, immigrant neighborhoods also offered a welcoming environment for recent arrivals who relied on their extended family members or countrymen to find housing and employment and provided potentially valuable local amenities like religious and cultural institutions.

In this paper, we study the economic and cultural effects of living in an ethnic enclave for immigrants and their children in the early twentieth century. We exploit the centralized decisions made by local Catholic dioceses about where to build new “ethnic” (as opposed to “territorial”) Catholic parishes; these new parishes then served as anchors for the formation of enclaves for ethnic groups that organized their social and cultural life around the church. When selecting the site for a new church, qualitative sources suggest that dioceses considered the distribution of Catholic households of different ethnicities, as well as the location of existing churches, and often built churches ahead of local demand (McGreevy (1998)). We mimic this selection process by comparing neighborhoods within a given distance (say, 1 kilometer) of a new ethnic church and comparison neighborhoods that were farther away from an ethnic church but are otherwise matched on baseline attributes. We confirm that, after matching, these treatment and control neighborhoods are balanced on observable characteristics. We then compare residents of neighborhoods with a new ethnic parish to residents of matched control neighborhoods, in the decades before and after the church is constructed.<sup>1</sup>

We focus on the Polish and Italian communities, two predominately Catholic immigrant groups who arrived in the US in large number in the early twentieth century. These groups

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<sup>1</sup>Our method is similar to Garin and Rothbaum (2024), who study counties selected for federal funding during World War II and to Fenizia and Saggio (2024) in their study on organized crime and growth.

represented roughly 60 percent of Catholic immigrants living in the US in 1930. Historians have documented that Polish Americans organized their communal life around neighborhood parishes, whereas Italian Americans were less focused on the church (Thomas and Znaniecki, 1919; Radzilowski, 2009). For example, Polish parents were six times more likely than Italian parents to send children to parochial schools (McGreevy (1998), p. 12). Because Irish and German Catholic populations arrived much earlier in the 1850s and 1860s, we do not have pre-period data to study these cases (the modern Census begins in 1850).

Our analysis is based on two main data sources. First, we compile detailed data on the locations and ethnic designations of Catholic churches from the *Official Catholic Directory*. We digitized the church records for all Catholic churches in four large immigrant-receiving cities: Boston, Chicago, Philadelphia and New York from 1900-1930. These cities were home to 80 percent of the “new” Catholic immigrants from southern and eastern Europe in 1900. We then geolocated these churches using exact street addresses and align these locations with Census geography by enumeration district using the shapefiles produced in Shertzer et al. (2016). Second, using the complete-count US census, we compile records for the millions of Italian and Polish immigrants living in these cities, as well as various other ethnic groups for comparison. The Census provides information on occupation, English-language fluency, homeownership, citizenship, and detailed information on household members, including spouse and children. We link existing residents of neighborhoods to the next Census using algorithms described in Abramitzky et al. (2024), and link children growing up in these neighborhoods to their adult records in the 1940 Census.

We find that, following the construction of a new Polish church, Polish Catholic residents in the surrounding neighborhood intensified their communal ties. These residents were more likely to marry Polish-born spouses and to give their children Polish-sounding names, relative to residents in comparison neighborhoods. However, heightened opportunities to interact with other Polish immigrants came at an economic cost. Polish Catholic residents of these enclave areas worked in occupations associated with lower income scores, and were less

likely to hold occupations that required complex abstract tasks. Results are similar when we redefine treatment using a wider geographic radius around a new church opening, ensuring that residents of control neighborhoods are too far away to walk comfortably to the church or parish school.

We use linked Census data to separate the direct effect of a new church on existing residents (*neighborhood effect*) from the attraction of new residents who particularly valued proximity to other Polish immigrants (*magnet effect*). In particular, we use linked data to follow residents who were already living in these neighborhoods before a new church was built. We estimate that church openings affected the economic and cultural outcomes of these pre-existing residents to a similar degree as in the full sample. We also use the linked data to observe the pre-move attributes of households who move into these neighborhoods after a church is constructed and find that new Polish churches attracted residents who particularly valued living near their fellow countrymen (as measured by being married to a Polish Catholic and names given to children), as well as immigrants who were not US citizens and did not speak fluent English.

Linked census data also allows us to observe children (age 0-10) who were raised in sample neighborhoods before and after new church construction and follow these children to adulthood in the 1940 Census. Relative to comparison neighborhoods, children in Polish Catholic households growing up after the construction of a Polish church attained fewer years of schooling. Like their parents, these children were more likely to hold manual occupations and less likely to work in jobs that require abstract skills. These children were also less likely to leave their childhood city later in life, which may be a revealed preference measure of the value of living in enclaves, even for the next generation.

Church construction can affect neighborhoods in various ways. Churches may encourage the growth of enclave size and ethnic amenities, may encourage religious affiliation and attendance, or may simply be built in neighborhoods that were otherwise on an upward or downward economic trajectory. We find that the construction of a new Polish Catholic church

increased the size of the local ethnic enclave. The Polish share of residents in the surrounding neighborhood rose due to the inflow of new Polish households. The rising Polish Catholic share in these new enclaves was counterbalanced by losses in the share of likely Protestant residents, including both the US-born and immigrants from majority Protestant countries.

Ethnic Catholic churches bundled direct religious amenities like daily mass and religious rites with communal goods like parochial schools, welfare services for poor families and orphans, as well as newspapers, cultural offerings and sports leagues. We present suggestive evidence that churches affected outcomes through their strengthening of ethnic ties, rather than through intensification of religious faith (see [Hirschman \(2004\)](#) contra [Herberg \(1945\)](#) and [Milton M. Gordon \(1964\)](#)). First, we find that parents shifted toward the use of non-religious (non-biblical or saint) Polish names, rather than names that were both Polish and religious. Second, we find similar effects of new church construction on household heads with and without religious names, despite the fact that men with religious names were perhaps more likely to have had a religious upbringing and to attend church services. Third, we do not find an effect on Polish Catholic households when a non-Polish (territorial) Catholic church is built in their neighborhood. Fourth, we do not find effects of new Italian Catholic churches on the size of Italian enclaves or on the economic and cultural outcomes of Italian residents, consistent with the qualitative record that churches were coordination sites for Polish communal life, but less so for Italians.

We provide three arguments that cast doubt on the possibility that our findings are driven by the selective placement of churches in neighborhoods that were otherwise on a downward trajectory. First, we present our main results as event studies, documenting the pre-construction balance between treatment and comparison neighborhoods, and then their post-construction divergence of key outcomes. Second, for one outcome – the names of children born in different years – we are able to construct an *annual* event study, confirming that assimilation trends change only after church construction is announced and completed. Third, we consider the effect of church construction on various “out-groups,” in-

cluding Polish-born residents who are likely Jewish, rather than Catholic, and other groups of non-Polish Catholics in the neighborhood. The construction of a Polish Catholic church has much smaller (and often null) effects on Polish-born residents with likely Jewish names. Furthermore, the construction of a Polish Catholic church has no effect on other Catholic groups in the neighborhood, including Italians, Germans or Irish residents, or other non-Catholic residents.

**Contributions to literature:** Our paper contributes to three literatures: one on residential segregation and ethnic enclaves, one on immigrant assimilation and one on the relationship between religious practice and economic activity. On ethnic enclaves, the “gold standard” for identifying the effects of enclave residence, to date, has been papers studying a series of refugee assignment policies in European countries in the late 1980s and early 1990s. These papers find that immigrants assigned to live near others from their home country enjoy *higher earnings*, perhaps because of community support (Edin et al., 2003; Damm, 2009; Martén et al., 2019; Andersson et al., 2021). Although refugee assignment programs offer compelling experimental variation, the typical enclaves in these settings are quite small (e.g., the typical enclave in Sweden had 200 ethnic residents, representing 1 percent of the municipal population; Edin et al. (2003)). Living with a few compatriots may be beneficial, but, after a certain point, ethnic enclaves may grow “too big,” isolating residents from opportunities to learn the destination language or to join labor market networks. Furthermore, refugees may particularly need the support offered in enclaves, but these benefits may be less central for non-refugees.

We study larger enclaves (typically around 20 percent of the population) with a new source of identification, using centralized decisions on the location of new ethnic Catholic parishes (see Waldfogel (1999) and Waldfogel (2010) on the idea of “ethnic public goods”). In contrast with studies based on refugee assignment, we find that enclave residents have lower earnings. The economic cost of living in a large enclave is balanced by stronger ethnic ties, an amenity that immigrants seem to value. Our findings are consistent with the theoretical

concept of ethnic capital (Borjas, 1992) and with recent work on larger enclaves, which finds that living in ethnic communities can slow integration (Xie and Gough, 2011; Danzer and Yaman, 2013, 2016; Laliberté, 2019; Danzer et al., 2022).

Our study also adds to the growing historical literature documenting immigrant assimilation in the US during the Age of Mass Migration (Abramitzky et al., 2014; Abramitzky and Boustan, 2017; Abramitzky et al., 2020, 2021b; Collins and Zimran, 2019, 2023; ?; Lleras-Muney and Shertzer, 2015; Bandiera et al., 2019; Fouka, 2020). We contribute to this literature by studying whether enclave residence slows immigrant assimilation (see also Eriksson (2020); Abramitzky et al. (2024)). Closest to our paper is Gagliarducci and Tabellini (2022), which studies the effect of the construction of Italian Catholic churches. This paper compares counties within the same state that were differentially exposed to the presence of an Italian Catholic church. Building the first Italian churches in a county reduced the social assimilation of Italian immigrants and had mixed effects on immigrants' economic outcomes. By contrast, our paper finds a null effect of Italian churches at the neighborhood level. This difference is likely due to scale (neighborhood versus county). Gagliarducci and Tabellini study the first Italian Catholic church in a county and emphasize that this construction increased the salience of and likely discrimination against the Italian community, as evidenced by disparaging articles about Italian Americans in local newspapers. Our setting is unlikely to capture this form of heightened discrimination because residents of treatment and control neighborhoods likely participated in the same broader labor market .

Finally, we add to a growing literature relating religious practice to economic activity, both in developing countries and in economic history, surveyed recently by Becker et al. (2024). We can think of ethnic Catholic churches as clubs that provide community and social services to members in exchange for costly actions that signal membership (Iannaccone, 1992, 1998; Berman, 2000; Abramitzky, 2008). Clingingsmith et al. (2009), Campante and Yanagizawa-Drott (2015) and Montero and Yang (2022) study specific religious practices, including pilgrimage, fasting and festival days, that can take time away from productive



activity. They show that these costly actions lower productivity but also raise social capital and well-being. Immigrants newly arrived in the US faced substantial uncertainty and may have turned to church community as a hedge against risk. [Chen \(2010\)](#) and [Ager and Ciccone \(2018\)](#) show that investment in religious community rises during periods of economic distress or risk. We document some of the costs associated with religious participation, including lower income and slower upward mobility for children, but also hint at the perceived benefits in community cohesion and social capital.

## 2 Historical background

Since the Council of Trent in 1545, Catholic parishes have been organized on a territorial basis, with all Catholic parishioners of a local area designated to attend the same church. The Vatican makes exceptions, however, for large minority groups, which are allowed to found “national” or ethnic churches. Although masses were held in Latin until the Second Vatican Council of the early 1960s, ethnic churches often conduct all other church business (including the priest’s homily) in the home language and organize festivals for local saints. Immigrant groups were granted authorization to organize ethnic parishes in the United States ([Matovina, 1999](#)). The first ethnic parish was Holy Trinity German National Parish founded in Philadelphia in 1788. By 1930, around 30 percent of Catholic parishes in the US were ethnic parishes.

In many American cities, Catholic immigrant groups organized their social and cultural life around the church. “The Catholic churches. . . simply ‘dominate[d] the life and activities of the community’ with ‘quite popular and well-attended programs’” according to a survey of neighborhood life in Newark, NJ. Beyond religious rites, “most parishes also contained a large number of formal organizations – including youth groups, mothers’ clubs, parish choirs, and fraternal organizations” ([McGreevy \(1998\)](#), p. 14-15). [Breton \(1964\)](#) (p. 196) refers to this network of overlapping organizations as “institutional completeness,” which restricts

“social relations of the immigrants within [the] boundaries” of an ethnic community. Breton finds that ethnic parishes encourage in-group social connections even for residents who do not regularly attend church.

The establishment of ethnic parishes encouraged the development or expansion of enclave neighborhoods. Newcomers from the “in group” sought to move nearby and members of other groups often relocated elsewhere. Describing the Back of the Yards, a set of neighborhoods in Chicago, McGreevy (1998) (p. 10) writes: “the very presence of the church and school buildings encouraged parishioners to purchase homes nearby, helping to create Polish, Bohemian, Irish and Lithuanian enclaves within the larger neighborhood.” After the construction of Polish churches, Thomas and Znaniecki (1919) (p. 26) observed that “the original population of the district is slowly but ceaselessly driven away, for an Irish, German or Italian tenant or houseowner who sees Polish families take the place of his former neighborhoods and knows that they have come to stay near their parish-center soon moves to a more congenial neighborhood.”

Ethnic churches were particularly central to the development of Polish neighborhoods in American cities. Local case studies of Polish enclaves in Texas and Connecticut describe how the earliest Polish immigrants first worshipped at Irish or German churches but quickly formed their own institutions, starting with a mutual aid society, followed by a parish and a parochial school (Buczek 1976; Januszewski 1985). Polish churches were not only – or even primarily – religious organizations, but also were central places encouraging ethnic community. As Thomas and Znaniecki (1919) (p. 41, 43) describe, “the Polish American parish is much more than a religious association for common worship. . . . If the Poles with few exceptions refuse to join the Irish-American parishes, it is because what the Polish colony really wishes in establishing a parish is not merely religious services but a community center of its own.” These community centers offered many services, including in one case “six parochial grammar schools, two parish high schools. . . one college. . . several orphanages, two newspapers. . . hundreds of parish societies, several social welfare and cultural organizations

and even one Polish-run hospital.” (Radzilowski, 2009)).

Polish churches also fueled the growing nationalist sentiment among Polish-Americans. In some parishes, local groups established life insurance associations that funneled premiums back to Poland to fund nationalist activity (Erdmans, 1998). Local parish schools taught students Polish history and the Polish language (Monzell, 1969). In the school, children “split their history classes into thirty minutes on American history and thirty minutes on Polish history” (McGreevy (1998), p. 26).

Civic and religious activity in Italian neighborhoods was less dependent on ethnic parishes for organization. Italian immigrants organized parades on festival days, veneration of local saints, and celebrations of Columbus Day outside of the confines of the church. Some of this antipathy stemmed from discord in the previous generation between Italian nationalists and the church during the unification of Italy, an era that was still fresh in the minds of many Italian immigrants (Vecoli (1969), p. 221-35). Local communities, composed primarily of immigrants from Southern Italy, also objected to the installation of priests from the North (Vecoli (1969), p. 235-43). McGreevy (1998) (p. 27) summarizes this view, writing that the fact that religious activity “in Italian communities proceeded apart from the parish church [was] a reflection of anticlericalism in southern Italy and a popular theology centered around home and family.”

The indifferent attitude of Italian immigrants towards the church was frequently noted by Catholic leaders at the time. Father Bernard Reilly, pastor of Church of the Nativity in Manhattan is quoted as saying “the Italians are callous as regards religion... When they are told that they are about the worst Catholics that ever came to this country, they don’t resent it or deny it” (McGreevy (1998), p. 12). The same refrain was heard throughout New York City; “pastor after pastor complained that Italians seldom came to church, received the sacraments, contributed to the collection, or assimilated with the ‘American’ portion of the congregation” (Brown (1987); see also Tricarico (1986)). In Philadelphia, Italian families readily became “members of territorial parishes, previously almost exclusively Irish, but

then transformed into heterogeneous parishes composed of diverse cultural groups” rather than forming parishes of their own (Juliani, 1985). Tomasi (1975) describes Italian Catholic parishes in New York City as progressing through three stages: a first stage, in which Italian parishes were shared with other ethnicities in a “duplex” fashion; a second stage in which parishes became more uniquely Italian (often by the 1930s and 1940s); and a third more Americanized phase into the 1950s. Pozzetta (1989) provides case studies of Italian communities throughout the country which echo the same themes.

We validate these qualitative accounts of the stronger attachment of Polish immigrants to the church relative to Italians by comparing the enrollment at parochial schools in 1920. The data we collect on church ethnicity and location (described below) also contains information on parish school enrollments. In Appendix Table A.1, we count the students enrolled in schools associated with Polish and Italian churches respectively and compare these enrollment numbers to the total number of school-aged children in households headed by Polish- and Italian-born household heads. In both Chicago and Philadelphia, we find that 50 percent of Polish children were enrolled in parochial school, compared to only 8 percent of Italian children, a ratio of 6.25 to one. In New York City, children in both groups were less likely to go to parish schools. These counts match McGreevy (1998) (p. 12) estimates that “in Chicago, thirteen times more Polish children than Italian children were enrolled in parochial schools by 1930, even though Poles outnumbered Italians by only two to one.”

Historical accounts reveal three main characteristics of the process of new church construction. First, churches were often built ahead of demand; second, the location and funding for Catholic churches was centralized (as opposed to Protestant churches or Jewish synagogues, which relied on local communities); and, third, the site location often replaced existing housing units, rather than requiring large vacant lots. The diocese tried to get ahead of the booming populations of American cities, building ahead of demand. In describing the construction of Our Lady Queen of Martyrs in the Bronx, the *New York Times* writes that “basement only finished” and “building of upper part will wait till parish grows and needs

it for services.” St. Charles Borromeo was said to have a temporary “edifice... designed to last about 10 years, until the growth of the congregation warrants the erection of a larger and more splendid temple.”

The decision of where to locate Catholic churches and when to build them was determined by the central diocese, not by the local community. Holy Innocents Parish in Brooklyn was described in the *New York Times* as follows: “The Right Rev. Thomas Edmund Molloy, D. D. Bishop of Brooklyn, has given approval to the Rev. Francis J. McMurray of Holy Innocents parish Brooklyn for the construction of the new Holy Innocents church.” By contrast, an article announcing the construction of St. Bartholomew’s, an Episcopal church in Manhattan, describes how the local community raised \$1 million in funds and received word of the construction process at an “all-parish meeting.” Centralization meant that parishes could not be moved elsewhere once they were established. By contrast, “Jewish synagogues and Protestant churches could sell their buildings... to relocate” (McGreevy (1998) p. 19; Gamm (2001)).

Polish churches, in particular, were highly visible structures built in what is now called the Polish cathedral architectural style. Appendix Figure A.1 contains a few images of these imposing buildings. Williams (2000) (2000, p. 179) writes that Polish immigrants “chose to make monumental statements in the Renaissance style of their mother country. The scale of these structures was often enormous.” Our reading of newspaper accounts of church construction suggests that building often took around two years, and Polish cathedrals may have taken even longer. We take potential “anticipation effects” into account when considering an annual event study of the names that Polish parents selected for their children.

### 3 Data

We combine data from the *Official Catholic Directory* and the Census of Population to create a panel of church locations and resident outcomes from 1900 to 1930.

**Church identity and location:** We digitize the list of 564 Catholic churches in Boston, Chicago, New York and Philadelphia from the *Official Catholic Directory* in five years (1900, 1910, 1920, 1930 and 1940). The list includes the church name, its ethnic designation (if any), exact street address, the names of up to four clergymen, the name of the associated parochial school (if any) and school enrollment. There are 71 ethnic designations in our data. Despite this large assortment of ethnic churches, the three largest ethnic groups – Germans, Italians and Poles – accounted for 65 percent of ethnic churches. Of the 564 churches in our list, 192 churches were assigned an ethnic designation (34 percent). We consider the remaining 372 churches to be “territorial” parishes. In practice, most territorial parishes served an Irish population, a pattern borne out by the Irish-sounding names of the priests associated with these churches.

We collected the year of church opening from the websites of churches that are still extant and from historical websites for churches that have since closed or consolidated. Figure 1 reports the opening dates of Polish churches. 36 of the 52 Polish churches in our data were built between 1900 and 1920 and thus can be matched to a comparison neighborhood both before and after church construction. We add to these the 12 Lithuanian Catholic churches because we are unable to differentiate Polish-born from Russian-born Catholics in some Census years. Results are stable when we drop these churches for robustness below.

We geolocate churches in our sample and overlay these church locations with Census geography. We use the 2011 North American TIGER/Line shapefile to identify the latitude and longitude of each church. We then combine church locations with shape files for Census enumeration district boundaries provided by Allison Shertzer and described in [Shertzer et al. \(2016\)](#). We aggregate enumeration districts into the constant boundary hexagons created by Shertzer and co-authors to address boundary changes over time. For brevity, we often refer to these hexagons as “enumeration districts” throughout the paper. We then calculate the distance between each church and the centroid of each enumeration district hexagon.

Figure 2 maps the churches already in place by 1900 in one sample city (Chicago), and the

churches built by the end of our analysis in 1940. Territorial churches are denoted with open circles, Polish churches with red triangles, and all other ethnic churches with blue squares. In 1900, Chicago already had 10 Polish churches scattered throughout the city. By 1940, 21 new Polish churches were built in Chicago with notable clusters on the North Side, the West Side, and in the Far Southeast and Southwest.

We define treatment for an enumeration district hexagon as equal to one the first time a new Polish church (or Italian church) is built within one kilometer of the district centroid, and the district remains treated thereafter. The average church opening is associated with treatment of 1.66 districts and each district contains around 2,000 residents. The date of church opening allows us to define pre- and post-treatment periods for each church.

**Resident sample:** Our main sample of neighborhood residents includes first- and second-generation immigrants. We incorporate both men and women in the analysis when possible and restrict attention to prime-aged adults (ages 15-65). We report details on sample restrictions for specific outcome variables in the table notes.

**Definition of Polish identity:** We consider the effect of church construction on same-ethnicity residents (Polish, Italian) as well as residents in other ethnic groups. We define Italian residents as those who were born (or whose parents were born) in Italy. We define Poles similarly in 1900, 1920 and 1930. However, Poland was not included as a country of birth option in the 1910 Census. Ideally, we could use the “mother tongue” variable to classify Poles in 1910, but this variable was mis-transcribed in the complete-count Census. We therefore have to classify Poles using only information on place of birth. For our main analysis, we create a *consistent measure of Polish identity* including anyone who reports being born or having parents born in Poland or the Russian Empire and who is not ‘likely Jewish’ ( $> 1.4$  on our Jewish Names Index) in all Census years (Abramitzky et al., 2024).<sup>2</sup>

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<sup>2</sup>According to the 1910 1% IPUMS sample (which contains accurate “mother tongue” information), Polish speakers were evenly divided in reporting their place of birth between the Russian Empire and Germany/Austria. However, Poles (and Lithuanian Catholics) represent 68 percent of non-Jewish residents from the Russian Empire, but only 13 percent of non-Jewish residents from Germany/Austria. We thus limit our definition of Polish Catholics to the Russian Empire in 1910 to avoid substantial false positives (i.e., observations classified as “Polish” who were truly German or Austrian).

Likely Jews reflect around 25 percent of the sample. For robustness, we create a *time-varying measure of Polish identity*, classifying Polish Catholics as anyone who was born in or with parents born in Poland in 1900, 1920 and 1930, and anyone who reports being born in the Russian Empire (or Poland as a write-in) in 1910, excluding all likely Jews.

**Resident outcomes:** We incorporate data on residents of the four sample cities in 1900, 1910, 1920 and 1930 from the complete-count Census data. For each individual, we observe enumeration district of residence, ethnicity based on country of birth (or parental country of birth), spouse’s ethnicity, the names and number of own children living in the household, and a set of socio-economic variables including occupation, home ownership, reported English ability and citizenship status. We convert occupations into abstract, routine and manual tasks using Dictionary of Occupation Titles data constructed by [Autor and Dorn \(2013\)](#) and into income scores following [Abramitzky et al. \(2021b\)](#). We classify names as religious (biblical and saints names) or non-religious, as well as high or low on the Polish Names Index (or Italian Names Index).

We define Polish-sounding (or Italian-sounding) names using name indices that follows Fryer and Levitt’s Black Names Index ([Fryer and Levitt, 2004](#)) and Abramitzky, et al.’s Foreign Names Index ([Abramitzky et al., 2020](#)) . In particular, we count the number of Polish-born men (or women) with a given first name and the number of US-born individuals with the same name. We then calculate the relative probability that the name is given to a Polish-born versus a US-born individual, scaled to fall between 0-100 with 100 being a distinctively Polish name. Formally, the index is calculated as follows:

$$\mathbf{FNI\ (Polish\ Name):} \quad 100 \times \frac{\frac{\mathbf{Polish\ names}}{\mathbf{Total\#\ Polish}}}{\frac{\mathbf{Polish\ names}}{\mathbf{Total\#\ Polish}} + \frac{\mathbf{\#native\ names}}{\mathbf{Total\#\ natives}}} \quad (1)$$

**Following residents over time:** We link the male residents of each enumeration district to the previous Census (i.e., we link residents in 1910 to the 1900 Census) using two linking approaches: the ABE-Extra Information (“ABE-EI”) conservative algorithm and the ABE



basic conservative algorithm (Abramitzky et al., 2021a, 2024). We report the ABE-EI results in the text because this new algorithm has been shown to improve both match rates and accuracy, particularly for immigrant populations (Abramitzky et al., 2024). Linked data allows us to classify residents as either incumbents or new entrants. We use this linked data for two exercises. First, we assess the effects of church openings on a sub-sample of residents who were already living in the district before the church was constructed. Second, we assess whether a church opening attracts a different composition of new entrants into a neighborhood. We also link children in each enumeration districts forward to the 1940 Census to measure outcomes in adulthood. The 1940 Census is the first year to include individual wage and salary data (excluding self-employment income) and completed years of schooling.

## 4 Estimation

Our goal is to estimate the effect of newly constructed churches on the economic and cultural outcomes of local residents. One concern is that neighborhoods designated by the diocese to receive a new church may otherwise have had a large foreign born and poor population at baseline. To address this issue, we match neighborhoods in which a Polish or Italian church was built (treated) to a comparison neighborhood that otherwise looks similar on baseline attributes.

Treated neighborhoods are defined as those for which an ethnic church is built within one kilometer of the district centroid within the sample period. We use a parsimonious set of baseline characteristics (in 1900) to match each treated district to a comparison district within the same city, to which we then assign the same (counterfactual) date for a church opening.<sup>3</sup> Variables used for propensity score matching are: shares Polish Catholic (or

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<sup>3</sup>Every eventually treated district is matched to a comparison (never-treated) district within the same city with the closest propensity score at baseline. We ensure that each potential control district is matched to only one treated neighborhood. Matching is conducted without replacement and priority for matching is based on the earliest timing of church construction.

Italian) [+], likely Jewish [-], likely Catholic [+] and female [+], along with log population [+], median income score [-], and the existence of a German Catholic church [-]<sup>4</sup> The sign in parentheses indicate the direction of the relationship between each matching variable and treatment status for Polish churches. As expected, new Polish churches are more likely to be built in areas with more Catholics, more Polish immigrants, families that may use parochial schools (higher share female), as well as in poorer areas and places already served by a German Catholic parish (the first type of ethnic churches built in the US).

Our final sample of Polish churches consists of 66 treated neighborhoods, each matched to a corresponding control neighborhood. Figure 3 illustrates the set of treated and comparison neighborhoods in one example city (Chicago), with red squares marking the treated areas and blue circles denoting their comparison neighborhoods. Comparison neighborhoods are close to treatment neighborhoods, underscoring that they likely faced similar housing and economic conditions but also raising questions about spillovers. Residents of comparison neighborhoods could travel a short distance (often a mile) to attend church or use the parochial school in a treatment neighborhood. As a result, we likely underestimate the true effect of new church construction on enclave size and resident outcomes.

Figure 4 presents the difference between baseline attributes (in 1900) in treatment and other districts in sample cities. Figure 4a compares treatment districts to all neighborhoods in our four cities and Figure 4b compares treatment districts to their matched controls. Before matching, districts that eventually receive a Polish church have a higher baseline share of Polish non-Jews, Germans and likely Catholics. These districts also have more residents, lower average income levels, and more Catholic churches (both German and territorial churches). Matching generates balance on all of these dimensions. The first seven variables are directly targeted for balance in the matching procedure, whereas the remaining five variables were not. In each case, we find point estimates for the difference between treatment

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<sup>4</sup>Our measure of the “likely Catholic” share of a neighborhood is created by merging information on the relative probability that a first or last name is held by Catholic individual (versus Protestant or other religions) in the Canadian Census of 1911 with names in the US complete-count data.

and control that are very close to and not statistically different from zero.

With a sample of treated and control districts in hand, we estimate the following matched difference-in-difference equation:

$$y_{itdp} = \sum_{\tau \neq -1} (\beta_{\tau} Treated_d) * \alpha_t + \eta_p + \epsilon_{itdp} \quad (2)$$

where  $i$  indexes individual residents,  $d$  indexes enumeration districts,  $p$  indexes the matched pair,  $t$  represents calendar time and  $\tau$  is the year relative to church construction. Outcomes ( $y_{itdp}$ ) include district-level population characteristics, including population shares and counts for Poles and other ethnic groups, as well as individual-level socio-economic attributes like marriage to a Polish Catholic and occupation-based income score.  $Treated_d$  is an indicator equal to one for districts that receive a new Polish church at some point during the sample period and  $\alpha_{\tau}$  are event-time fixed effects that are equal to zero in Census years before the church opening and one thereafter. We consider robustness of this staggered difference-in-differences design to the [Borusyak et al. \(2024\)](#) methods below.

Our coefficients of interest are  $\beta_{\tau}$ , which represent differences between treatment and comparison districts for some outcome at event time  $\tau$ . We omit  $\tau = -1$ , so each  $\beta_{\tau}$  represents the treat-control difference at event time  $\tau$ , relative to the same difference immediately before church construction (at event time  $-1$ ). The equation also includes fixed effects for enumeration district pairs  $\eta_p$  (one treatment and one control district in each pair) and Census year ( $\gamma_{\tau}$ )<sup>5</sup>. Standard errors are clustered at enumeration district level.

We present results in event-study format, plotting all  $\beta_{\tau}$  coefficients to observe both pre-trends and the evolution of treatment effects through time, and also report coefficients from a simple difference-in-differences regression in which  $Treated$  is interacted with a single indicator after a church opening ( $Post$ ).

We can interpret  $\beta_{\tau}$  as the causal effect of church construction if treatment and compari-

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<sup>5</sup>Regressions also control for an indicator for gender and a quadratic in age.

son districts were following similar trends before a church opening and would have continued to follow these trends in the absence of a new church. This identification assumption will be violated if districts that received a new church were otherwise on a downward economic trajectory (e.g., if church leadership wanted to serve areas that were projected to house a growing number of needy residents). In that case, we would expect to observe differences in the trends between treatment and comparison areas even before church construction.

After presenting our main results, we test for selective placement of new churches in three ways. First, we assess the effect of new church construction on other neighborhood residents, including Polish Jews and non-Polish Catholics (Irish, Italians and Germans), who were less likely to engage in church-based community but who may have been subject to common neighborhood level trends. If we find an "effect" of church openings on these groups, we would be concerned that these estimates might be picking up neighborhood trends. Second, we compare the effect of new Polish churches to the effect of new Italian churches. Italian churches did not play an important role in fostering Italian community, but the diocese may have followed the same logic in placing these new churches in given locations. Third, we convert one outcome – the names that Polish parents select for their children – into an annual event study, allowing us to test more precisely for pre-trends in neighborhood attributes before church construction.

## **5 Effect of church opening on resident outcomes**

### **5.1 Economic and cultural outcomes**

We begin by studying the effect of church openings on a set of economic and cultural outcomes. We focus first on the opening of Polish Catholic churches, which the historical literature suggests were particularly important in creating and sustaining ethnic community.

Figure 5 presents event study estimates for our two main outcomes: marriage to a fellow Polish Catholic and occupation-based income score. We find that both measures are balanced

between treatment and control districts before the opening of a new Polish Catholic church. After church construction, the income score of Polish Catholic residents in treatment districts drops by 6-10 percent, and the share of these residents married to a fellow Polish Catholics increases by around 16 percentage points and remains high thereafter.

We report coefficients from simple difference-in-difference specifications for all outcomes in Table 1, and report similar event studies for the eight remaining outcomes in Appendix Figure A.2. After church construction, Polish Catholic residents faced worse economic outcomes on a number of dimensions. The income score of Polish Catholic residents in treated districts falls by 8 percent. Lower income scores are associated with occupations that require more manual and fewer abstract tasks (coefficients imply an 8 percent increase in manual tasks relative to the mean, and a 21 percent decline in abstract tasks). These outcomes are all balanced before church construction (Appendix Figure A.2, Panels A-C). The rise in manual tasks is driven by a large increase in the share of men working as laborers, a smaller increase in the share working as bakers, machinists and molders, and a fall in the share working as managers, salesmen, stenographers, clerical jobs and bookkeepers.

Polish Catholics experience stronger community bonds after the opening of a Polish church. The likelihood of marrying a Polish Catholic spouse increases by 18 percentage points (relative to a mean of 77 percent, or a 24 percent gain), leading to near-complete rates of endogamy. The increase in in-group marriage is not driven by an overall increase in the marriage rate and is unchanged after controlling for the general increase in the area's Polish Catholic resident share (that is, it is not driven by random matching). Parents are also 7 percentage points more likely to give their children a name in the top quartile of the Polish Names Index (relative to a baseline of 28 percent). We will present an annual event study on name selection below. The number of children living at home increases by 0.2 (relative to a mean of 2.3, or a 9 percent increase), consistent with retaining the higher fertility norms of Poland at the time. Effects on speaking English and homeownership are driven primarily by new arrivals, as we discuss in the next section, and we see no relationship

between enclave residence and naturalizing as a US citizen.<sup>6</sup>

In Appendix Figure A.3, we illustrate levels (rather than differences) for each outcome for treatment and control neighborhoods before and after church construction. For our main cultural variables, differences after church construction are driven by changes in treatment neighborhoods (see: Polish names and being married to a Polish Catholic). For income and occupational tasks, differences are driven by a combination of declines in treatment areas and growth in comparison neighborhoods.

## 5.2 Effects on pre-existing residents and new arrivals

Thus far, we have examined changes in economic and cultural outcomes for residents of treated and control neighborhoods in a set of repeated cross-sections. Resident outcomes can change either because existing residents shift their behavior in response to neighborhood environment (*neighborhood effect*) or because new residents with different attributes are attracted into the area (*magnet effect*). We present evidence that both of these forces are at work.

Table 2 focuses on the effect of new church construction on existing residents. The sample underlying this table consists of residents who lived in a treated or comparison area at both the beginning and the end of a census decade, and thus could not have moved into the district in response to the new church opening. In particular, we measure outcomes in three years – 1910, 1920 and 1930 – for residents who already lived in the enumeration district in the previous Census wave (1900, 1910 or 1920). We report results using the ABE-EI conservative algorithm in the text and show comparable results using the ABE basic conservative algorithm in the appendix.

The construction of a new Polish church has, if anything, larger effects on the core economic and cultural outcomes for this group of existing residents relative to the full sample

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<sup>6</sup>At the time, immigrants had unrestricted access to citizenship after five years of residence in the country. Shertzer et al. (2016) finds that applications for citizenship rise with group size within a political ward. As an immigrant group becomes pivotal for electoral outcomes, campaigns for voter registration and citizenship increase. This force does not appear to operate at the enumeration district level.

that includes both existing residents and new arrivals (Table 1). Income falls by 16 percent, employment in manual tasks rises by 34 percent (0.46 relative to a mean of 1.35) and abstract tasks falls by 28 percent (0.60 relative to a mean of 2.12). The likelihood of being married to a Polish spouse rises by 31 percentage points (a 44 percent increase). The use of Polish-sounding names and the number of children at home rise more than in the full sample, by 14 percentage points and 27 percent respectively. Households in this ‘stayers’ sample have stronger roots in the United States, in the sense that they are more likely to be homeowners, to speak English and to be a citizen (compare sample means in Table 1 and Table 2). In this sample of pre-existing residents, we find no effect on speaking English, acquiring citizenship or homeownership, but these outcomes are mostly irreversible and were already near their maximum levels at baseline.

Table 3 studies who is attracted to neighborhoods after the construction of a new Polish Catholic church. In particular, we compare the baseline (pre-move) attributes of residents who move into a treated or comparison neighborhood over a given Census period. In the linked sample, we identify households who were living outside the enumeration district in a given Census year (1900, 1910 or 1920), and move into a treated district by the next Census (1910, 1920 or 1930).

After a church is constructed, residents who newly move into a treated neighborhood had 3 percent lower income at baseline and were less likely to hold occupations with abstract tasks. Poorer households tend to rely more heavily on fellow countrymen for social support in a new country and thus are more attracted to neighborhoods with a newly-constructed ethnic church. However, this magnet effect is smaller than the treatment effect on existing residents. Furthermore, new entrants were already more attached to Polish culture, being 14 percentage points more likely to name their children top quartile Polish-sounding names and 21 percentage points more likely to be married to a Polish spouse. These newcomers were also less likely to speak English and to hold US citizenship before moving to the neighborhood. These ”magnet effects suggest that any effect on these outcomes in the full sample in 1

are driven by attraction of new residents, rather than the effect of neighborhood change on existing residences.

Overall, there is evidence that new ethnic churches both affect the outcomes of existing residents and attract a new set of residents to the area, and results are similar when using samples matched with ABE basic conservative (Appendix Tables 2-3). Existing residents find their economic opportunities diminished but also experience strengthening community bonds. At the same time, ethnic churches attract newcomers who are poorer and more identified with the Polish community at baseline. One concern might be that these selected inflows would indirectly "treat" control neighborhoods, which disproportionately lose households with a strong Polish identity. However, each control neighborhood is just one of the many enumeration districts in the city. Newcomers mostly hailed from other neighborhoods not selected as a control, from other cities, or directly from Poland as new immigrants. As a result, our estimates are primarily driven by changes in treatment neighborhoods, not by corresponding changes in control areas.

### 5.3 Second generation outcomes

Children who are raised in enclave neighborhoods may have a different life trajectory than children who live in more integrated areas (Borjas, 1992). In this context, children raised in enclaves were more likely to have parents with lower earnings and who were more likely to work in manual jobs. But the communal ties in enclaves were stronger, and ethnic churches also came bundled with local amenities including parish schools that may have had direct effects on children's education (Putnam, 2007).

Table 4 compares children (ages 0-14) who grew up in treated neighborhoods before and after new church construction, relative to children who grew up in comparison neighborhoods. For our baseline specification, we classify any child observed in a Census before the church construction date as growing up "before" construction and any child observed in a Census after the construction date as growing up "after" church construction. We also report a



specification with linear years of exposure to a neighborhood ethnic church below. We link all children to their adult outcomes in the 1940 Census. The 1940 Census is the first Census to include information on individual wage and salary income (excluding the self-employed). For this analysis, we replace the occupation-based income score with individual income.

Growing up in an enclave neighborhood harmed children's economic outcomes along some dimensions. Children raised in enclaves had somewhat lower earnings conditional on working (5% decline) but this relationship is not statistically significant (column 1). However, these children are also less likely to report zero income (column 2) so, overall, children raised in enclaves experienced some income compression and were less likely to exhibit very poor outcomes. Yet, like their fathers, these children were more likely to work in manual (and routine) tasks and were less likely to hold occupations with abstract content (columns 3-5). This pattern is consistent with enclaves providing social insurance at the bottom but also limiting opportunities for upward mobility at the top. Consistent with holding lower-skilled occupations, children raised in enclave neighborhoods had 0.7 of year fewer years of schooling, and were less likely to graduate from 8th grade, high school or college (columns 6-9).

Children raised in enclaves appear to have a strong revealed preference to continue living in an ethnic setting. These children are substantially less likely to move some distance away from the location of their childhood (column 10-11): 37 percentage points less likely to leave their city of birth (relative to a mean of 26 percent), and 3 percentage points less likely to leave their state of birth (relative to a mean of 3 percent). Results are similar when using the ABE basic conservative algorithm instead of ABE-EI conservative (Appendix Table A.4). We also find similar patterns when we replace the indicator for growing up in an enclave with a linear exposure measure for the number of years exposed to an ethnic church before age 14 (Appendix Table A.5). In this case, for example, we find that 10 years of exposure to a Polish church increases the manual task content by 0.17 on a base of 1.28 (13 percent) and lowers years of schooling by 0.5 of a year relative to a mean of 9.6 years of schooling.

## 6 Enclave size and ethnic amenities

Thus far, we have shown that the opening a new Polish Catholic church in a neighborhood affects the outcomes of existing Polish Catholic residents in the area. The church could affect outcomes in a variety of ways. Most simply, the church may attract Polish Catholic residents, leading the local ethnic enclave to grow in size. Furthermore, the church may offer religious or ethnic amenities that change the activities of neighborhood residents.

### 6.1 Enclave size

We start in Figure 6 by considering the effect of the openings of new Polish churches on enclave size, as measured by the share of residents who are Polish Catholic. Neighborhoods that would receive a Polish church were no different from control neighborhoods in the years before a church opening (Panel A). After church construction, the Polish Catholic share of the neighborhood increased by 5 percentage points in the first decade and eventually by 10 percentage points two or three decades after the church opened its doors. If the Polish share of the population increased, other groups must represent a smaller share of area population. In the decades immediately after church construction, a higher Polish Catholic share was counterbalanced by a lower share of Italians (Panel E). In the longer run, the gain in Polish Catholics was countered by a declining Protestant share, including US-born households and households headed by immigrants from majority Protestant countries (Panel F). The share of Polish likely Jews (Panel B) and other likely Catholic groups (Germans and Irish in Panels C and D) did not change throughout the period. In the long run, the construction of a Polish Catholic church made neighborhoods both more Polish and more Catholic.

A rising Polish Catholic share could be due to the arrival of new Polish Catholic households, the departure of existing households in other groups, or a combination of the two. In Appendix Figure A.4, we present the same analysis but replace population shares with the logarithm of population counts. The increase in Polish Catholic share is *entirely* driven by

the arrival of Polish Catholic households, not by the departure of other groups. The Polish Catholic population in a district more than doubled in size in the decades after church construction. The share of Polish Catholics increased in these areas because the pace of population growth for Polish Catholics was higher than the pace for other groups, which was either positive and small or close to zero.

## **6.2 Religious vs. ethnic amenities**

Polish churches offered both religious amenities like the celebration of daily mass and religious festivals, and ethnic amenities like social welfare organizations and curriculum focused on Polish national history at the parish school. Church openings could affect economic and cultural outcomes either by intensifying religious faith or by strengthening ethnic ties (or both). Although we cannot definitively distinguish between these mechanisms, we provide suggestive evidence in this section that ethnic ties were more important than religious activity.

### **6.2.1 Naming patterns suggest ethnic ties increased more than religious faith**

The names that Polish Catholic parents select for their children are useful for our analysis two reasons. First, name choices offer an annual (rather than decadal) measure of assimilation when associating either child with his or her birth year, allowing us to test more precisely for pre-trends. Second, names provide clues for whether the opening of a Polish church affected local community through ethnic or religious means.

We divide names into three categories: Polish and religious (biblical or saints names that are in the top quartile of the Polish Names Index), Polish and non-religious (names without clear religious connotations that are in the top quartile of the Polish index) and non-Polish names (names outside the top quartile of the Polish index). We find that Polish Catholic parents switch toward Polish, non-religious names after the opening of a Polish Catholic church, rather than Polish religious names, suggesting that the church served as a coordinating

device to strengthen Polish identity and feelings of communal and national solidarity.

Figure 7 present patterns for the names that Polish Catholic parents select for their children in the nine years leading up to a church opening and the nine years after construction is complete. Panel A graphs Polish, non-religious names and Panel B graphs Polish religious names. We report coefficients on each birth year relative to the omitted year of -1 (one year before the church opening). The dotted line at year zero represents the year of a church opening, whereas the dotted line at year -2 represents the year that church construction likely began (based on historical records suggesting that church construction usually took two years).

The names that Polish Catholic parents selected for their children were very stable in the years before church construction. After church opening, parents shifted toward Polish non-religious names, eventually becoming 3 percentage points more likely to use these names (on a baseline of around 12 percent). However, parents were no more likely to select Polish religious names in these years, a pattern that is more consistent with churches influencing behavior through the strengthening of Polish ethnic community (Hirschman, 2004), rather than through a reinforcement of religious faith (Milton M. Gordon, 1964; Herberg, 1945). We find a similar effect of church construction on the selection of Polish names for sons and daughters, although the baseline level of Polish naming is somewhat higher for sons.

### **6.2.2 Italian churches had little effect on Italian residents**

Italian Catholic churches were used to celebrate daily mass and religious rites but, according to historians, were not a central location for Italian ethnic or community activity (see Section 2 for this history). If church openings affect residents by enhancing opportunities for religious activity, we would expect to find an effect of new Italian churches. Instead, we do not find an effect of Italian Catholic churches on Italian residents, further suggesting that church openings matter because they provide central locations for ethnic community for some groups (Poles) but not others (Italians).

Figure 8 shows that the opening of an Italian church had no effect on the Italian share of the local population relative to comparison neighborhoods (Panel A). Italian residents were no more (or less) likely to marry another Italian and did not experience falling (or rising) income. Treated areas had 5 percent higher Italian population share at baseline. After the church opening, the shares converged and remained similar for thirty years. There is no evidence that Italian immigrants were attracted into treated districts by a new Italian church relative to comparison areas. These patterns do not contrast with [Gagliarducci and Tabellini \(2022\)](#), who find that building the *first* Italian church in a county attracts Italian settlement in the area and raises the salience of the Italian population among existing residents. Our question is quite different: We focus on the exact site location of church openings in cities that already had sizeable Italian populations by 1900. We find that, in these cities, precise church location did not affect the construction of Italian community at the neighborhood level.

Perhaps because of the lack of enclave formation, Table 6 shows that Italians living in neighborhoods that receive a new Italian church do not experience economic or cultural changes on any dimension. We find no effect of new church construction on income score, occupation task content, marriage to a fellow Italian, selecting Italian-sounding names (marginally significant, and substantially smaller than effect on Polish name choices), or homeownership. Italian residents of treated neighborhoods appear, if anything, to engage in more cultural assimilation, in the sense that they have fewer children (0.18 children relative to a mean of 2.6 at home) and increase their rates of speaking English and applying for citizenship by 5-6 percentage points.

### **6.2.3 Polish church openings affected non-religious Poles**

Immigrants who had religious first names may have been more likely to come from families that prioritized Catholic religiosity and were perhaps more likely to be devout Catholics themselves. In that case, and if the opening of a church changed economic and cultural

behavior through religious attendance, we would expect individuals with religious names to be more affected by living in a treated area. Appendix Table A.6 divides the sample into the 80 percent of household heads who themselves had a religious given name and the 20 percent who did not. We find that the estimated effect of church openings on all outcomes – income, occupational tasks, marriage and fertility patterns and English ability – are highly similar across these two subsamples, suggesting that church attendance was not a necessary prerequisite for being influenced by new church openings.

#### **6.2.4 Territorial church openings had little effect on Polish Catholic residents**

The opening of a new territorial church would provide opportunity for religious engagement but would not foster Polish ethnic community in particular. Appendix Table A.7 considers the effect of building a new territorial church on Polish Catholic residents in the neighborhood. We find no effect of a new territorial church on income or occupational tasks, and also no effect on marrying a Polish Catholic spouse or giving children Polish-sounding names. If anything, Polish Catholic families in these areas reduce fertility and homeownership rates. This pattern also suggests that the rise in manual tasks is not driven by construction jobs associated with building the church itself.

## **7 Concerns about unobserved neighborhood trends**

Catholic bishops had substantial discretion over where to build new churches of various ethnic designations (McGreevy, 1998). Although local priests or community members could lobby for churches to be built in particular locations, the ultimate decisions about new site locations were centralized at the diocese level. Despite this centralization, bishops may have intentionally placed churches in areas with a large immigrant population or a concentration of poor parishioners. The adoption of matched control neighborhoods addresses any targeting of church construction on baseline attributes, but may not control for unobserved trends (i.e.,

neighborhoods that were receiving new inflows of recent immigrants or were on a downward economic trajectory). Although we cannot definitively rule out the presence of unobserved trends, we cast doubt on this possibility in this section in two ways.

## **7.1 Annual pre-trends suggest against unobserved trends**

If local diocese chose to locate Polish Catholic churches in neighborhoods that were attracting a growing number of recent Polish immigrants, we would expect to find that treated areas would experience systematic pre-trends in Polish identity before the announcement or opening of a new church. Because our main outcomes are drawn from decadal Censuses, we have limited ability to present annual pre-trends. One outcome – the names that Polish Catholic parents select for their children – can be presented on an annual basis by associating the name of each child with his/her year of birth. Figure 7 shows that the naming patterns in treated neighborhoods do not begin to shift until the church is opened. The likelihood of receiving a Polish, non-religious or Polish religious name is unchanged in the nine years before church opening (with the exception of one significant negative coefficient for Polish, non-religious names in year -7). These flat pre-trends suggest that churches were not designated to be built in areas that were already attracting more recent Polish immigrants or residents with a more intensive connection to Polish culture.

## **7.2 Polish churches did not affect likely Jews or non-Polish Catholics**

If we are estimating the true effect of a Polish church opening on the ethnic community, we would expect this relationship to be concentrated among Polish Catholics and to be much smaller or zero for other ethnic groups. If, instead, our estimates are picking up non-random placement of new Polish churches, we would expect to find similar associations between new church construction and the economic and cultural behavior of residents outside of the Polish Catholic community. We consider the effect of a Polish church opening on two outside groups: Polish likely Jews and non-Polish Catholics (Italians, Irish and Germans). We note

that some of the Poles considered to be “likely Jews” may be misclassified – for example, 31 percent of men who we classify as Polish likely Jews were married to Polish Catholic spouses, compared to 77 percent of Polish likely Catholics. As a result, we do not expect the estimated effect of a church opening on this group to be zero, but simply to be smaller than the main estimates.

Table 5 presents the estimated effect of a Polish church opening on Polish likely Jews and non-Polish Catholics. Starting with economic outcomes, Polish church openings have no effect on the income score or manual and abstract task content for non-Polish Catholics. Economic effects are 60-70 percent smaller for Polish likely Jews than for Polish Catholics and only the effect on income (a 3 percent decline) is marginally significant. Turning to cultural outcomes, again we find no effect of a Polish church opening on non-Polish Catholics. Estimated effects are 75-85 percent smaller for Polish likely Jews, with a marginally significant 2 percentage point increase in marrying a Polish Catholic (a 7 percent increase relative to a mean of 31 percent) and a marginally significant 2 percentage point increase in the likelihood of giving their children a top quartile Polish-sounding name. If anything, Polish church openings are associated with rising English ability and citizenship status for both Polish likely Jews and non-Polish Catholics, suggesting that churches may have been located in areas with a growing (not falling) attachment to American identity among the immigrant population. When we instead consider the effect of Polish church construction on all other residents of a neighborhood (combined), patterns are similar; that is, we find no significant effects on income, abstract tasks, naming, intermarriage or fertility.

## 8 Robustness

We present a series of robustness checks considering the definition of inclusion in the sample and the choice of estimation approach.

Appendix Table [A.8-A.10](#) consider restrictions of our main sample, including men only



(Appendix Table A.8), household heads only (Appendix Table A.9) and first-generation Polish immigrants only (Appendix Table A.10). Results are very stable across the sub-samples. Living in a treated district lowers income score more for men and for household heads than for the sample including women (around 10 percent versus 8 percent declines). The effect on marrying another Polish Catholic is somewhat smaller for men and for household heads than for the full sample (14 percentage point increase versus 18 percentage point increase). Results on all outcomes are similar when focusing only on first-generation immigrants; the effect on homeownership is weaker on this group. We also find similar effects of church construction on immigrants by broad category of years since arrival (more/less than 10 years in the US).

Appendix Table A.11 returns to our main sample but redefines Polish identity. Our main analysis uses a *consistent* measure of Polish Catholic identity, including individuals who report Polish (when available) or Russian Empire as their place of birth in all years, after excluding likely Jews. For robustness, we here create a *time-varying* definition that considers only individuals with a Polish birthplace in 1900, 1920 and 1930 (excluding those who report the Russian Empire when Poland is offered as a birthplace option on the Census), and only considering individuals who report Russian Empire as a birthplace in 1910.<sup>7</sup> We find similar effects on all outcomes except number of children. Income is 5 percent lower in treated districts after church construction, abstract content of tasks falls by 15 percent (0.27 relative to a mean of 1.76), the use of Polish-sounding names rises by 6 percentage points and marriage to a Polish Catholic increases by 13 percentage points.

Appendix Table A.12 drops the 12 Lithuanian churches from the sample (out of 51 total church openings). Results are highly stable. The one outcome affected by this restriction is income, which now declines by 5 percent in treated districts (rather than 8 percent).

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<sup>7</sup>We tried using Polish names to differentiate Polish Catholics from non-Jews from the Russian Empire but found we could not reliably do so. In years when Poland is a birthplace reported on the Census, we have ‘ground truth’ (who is really Polish). We then compared a names-based measure of Polish identity in a sample that included only the Polish- and Russian-born and found that it was not able to distinguish the two.

Appendix Table [A.13](#) considers robustness to our geographic definition of treatment in order to minimize the chance that residents in a control district could attend the newly constructed church. In our main analysis, we consider any enumeration district within 1 kilometer of a new Polish church to be treated. Appendix Table [A.13](#) provides two alternative definitions: Panel A uses a continuous measure of proximity to the nearest church (with control districts still selected according to the 1-kilometer definition), and Panel B instead defines treatment as any district within 2 kilometers with a new sample of control districts. In both cases, results look similar. A 2 kilometer radius ensures that residents in a control district could not comfortably walk to church or to the parish school.

Thus far, we have used standard difference-in-difference analysis. We assess robustness of our estimates to the [Borusyak et al. \(2024\)](#) approach in Appendix Figure [A.5](#) and results are very similar. Our setting is not likely to be subject to the biases outlined by Borusyak and co-authors because we do not rely solely on ever-treated units, instead comparing treated units to matched control districts. Furthermore, church openings are concentrated in two decades (1900-10 and 1910-20), and so we do not have many units that are treated long before others.

## 9 Conclusion

Immigrants, both in the past and today, often live in enclave neighborhoods. Enclaves can isolate immigrants from the local-born, limiting language acquisition and access to labor market networks, but they can also foster strong ethnic communities that provide crucial support to newcomers. We study the construction of ethnic Catholic churches in four large American cities at the turn of the century, comparing neighborhoods that received an ethnic church – and thus experienced enclave growth – to comparison areas with similar attributes at baseline. Typically, ethnic amenities arise endogenously through community investments or local business leaders, whereas the location of Catholic churches are determined centrally,

funded by the dioceses, and often built ahead of neighborhood demand.

We compare two Catholic ethnic groups that moved to the US in large numbers in the early 20th century: Italians and Poles. Historians argue that Poles were more likely to center their communal life around church activity. Consistent with this qualitative evidence, we find that new Polish Catholic church openings lead Polish residents to experience slower economic assimilation, including falling income scores and a shift toward manual occupations, counterbalanced with stronger communal ties, as measured by heightened within-group marriage and greater use of Polish names. These patterns persist into the second generation, and are not apparent for Italians, who were less focused on the church. We do not find any evidence that Polish church openings affect other residents of the neighborhood (Polish likely Jews or other Catholics), suggesting that the church was not placed in a neighborhood that was otherwise on a downswing.

Our paper documents that living in an ethnic enclave can hinder the economic mobility of immigrants. In particular, we estimate a 7 percent decline in earnings associated with a 10 percentage point increase in own-ethnicity population share.<sup>8</sup> Some immigrants are willing to pay this economic cost to live in an enclave that offers ethnic amenities and community, and hence enclaves persist and even grow. This finding contrasts with recent work showing that living in a small refugee enclave in Sweden, Denmark and Switzerland improves economic outcomes relative to living in an area with very few others from the home country. If living in a small enclave is better than living alone *and* living in a small enclave is better than living in a larger one, then perhaps there is some optimal enclave size whereby immigrants can benefit from support and cultural connection but without being isolated from the mainstream economy. Understanding optimal enclave size will be a fruitful area for future research.

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<sup>8</sup>Our estimate is consistent with a 4 percent decline in earnings for a 7 percentage increase in own-ethnicity share in [Abramitzky et al. \(2024\)](#).

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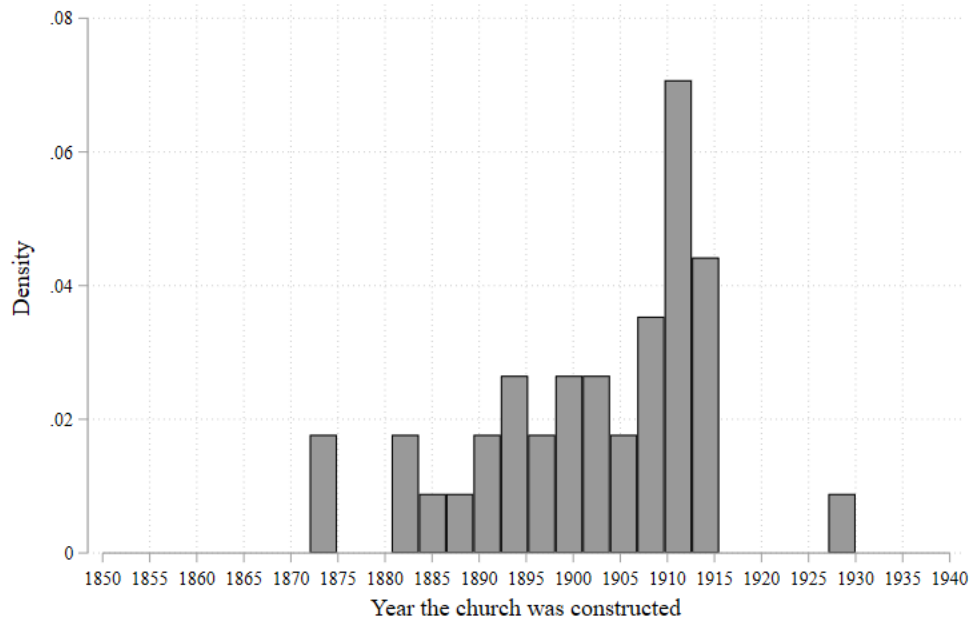
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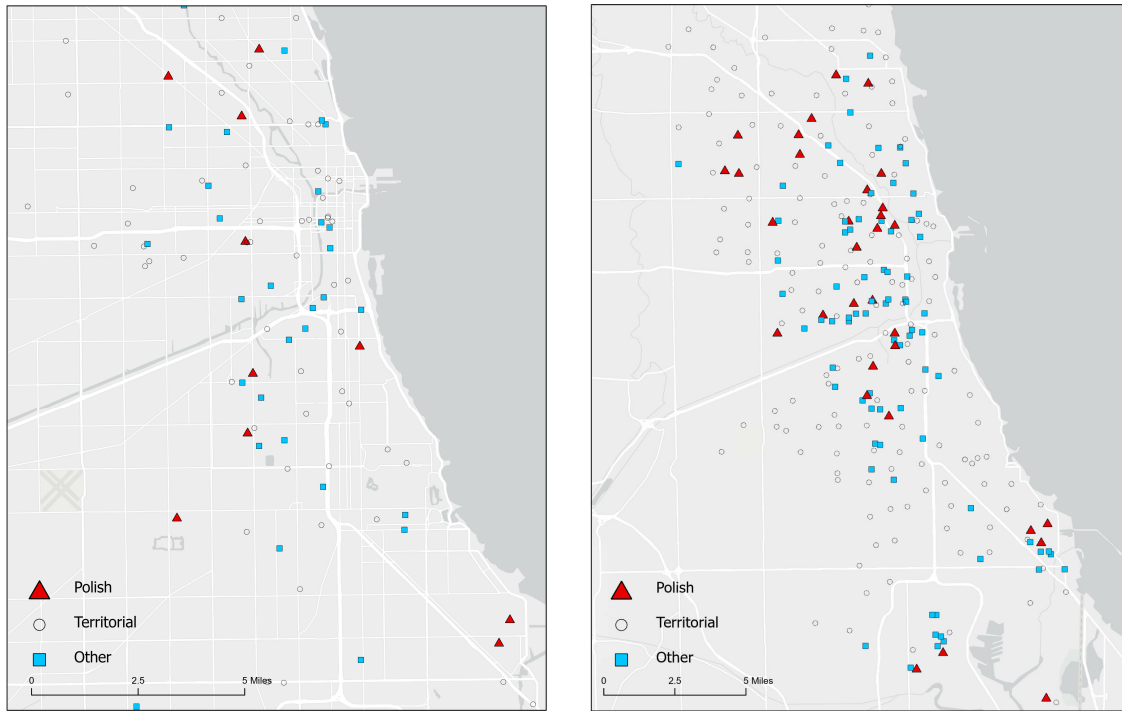
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Figure 1: Construction dates of Polish Catholic churches in sample



*Notes:* The figure illustrates the variation in the year of construction of Polish Catholic churches across the dioceses of Boston, Chicago, New York, and Philadelphia. The year of church construction was obtained from the Official Catholic Directory (1900-1940), supplemented with information from church websites and other online sources when necessary.

Figure 2: Catholic churches in Chicago, 1900 and 1940

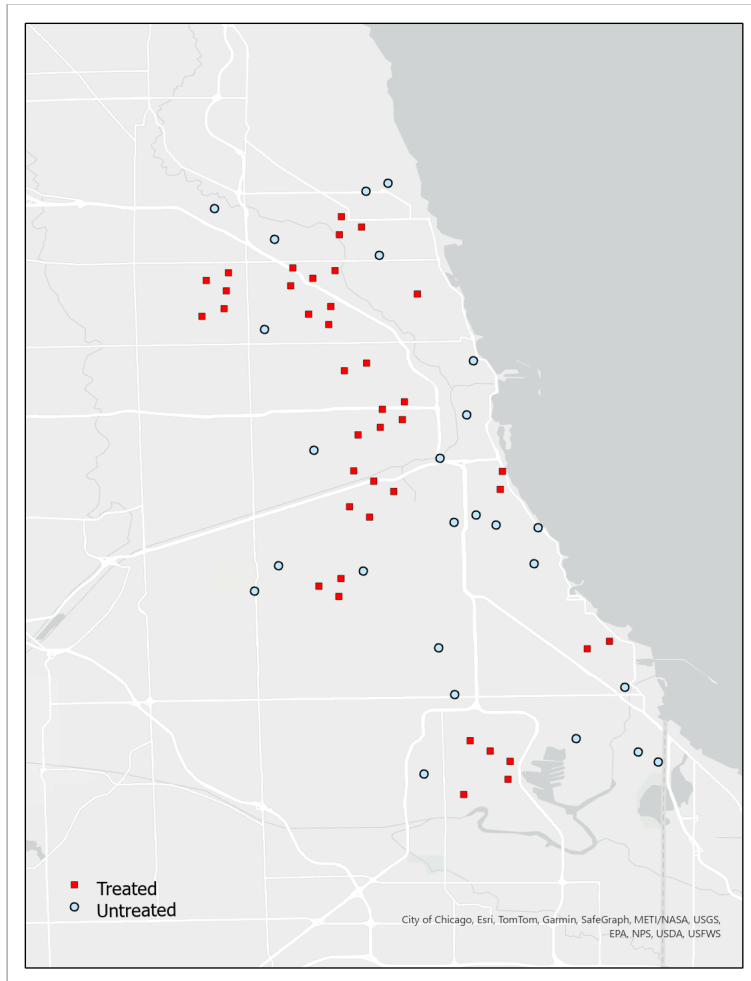


a) 1900

b) 1940

*Notes:* The figure shows the distribution of Polish (red triangles), territorial (white circles), and other ethnic churches (blue squares) in Chicago in 1900 and 1940.

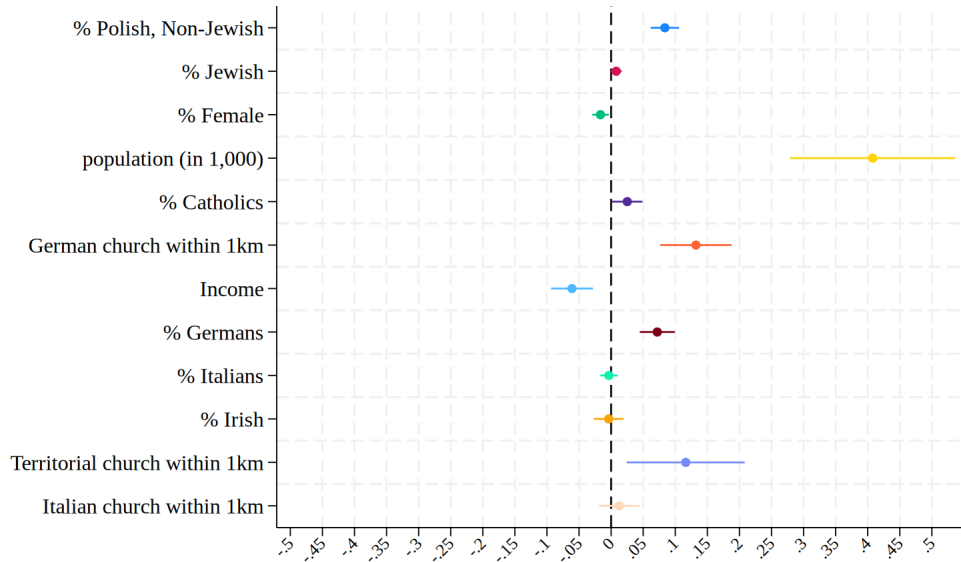
Figure 3: Matched neighborhoods



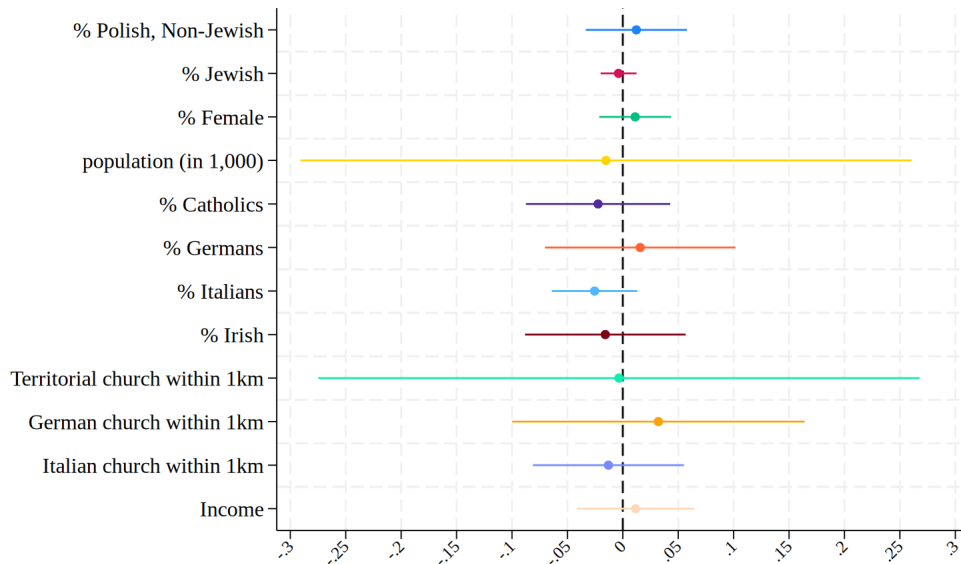
*Notes:* In red squares are the centroids of the treated neighborhoods (i.e., enumeration districts, EDs), and in light blue circles are the centroids of the matched control neighborhoods. Neighborhoods were matched using propensity score matching based on observable characteristics, including occupational score, population demographics, and proximity to German Catholic churches.

Figure 4: Balance between neighborhoods (EDs) with a Polish church within 1km from the ED centroid and other EDs

a) Treated vs all other neighborhoods



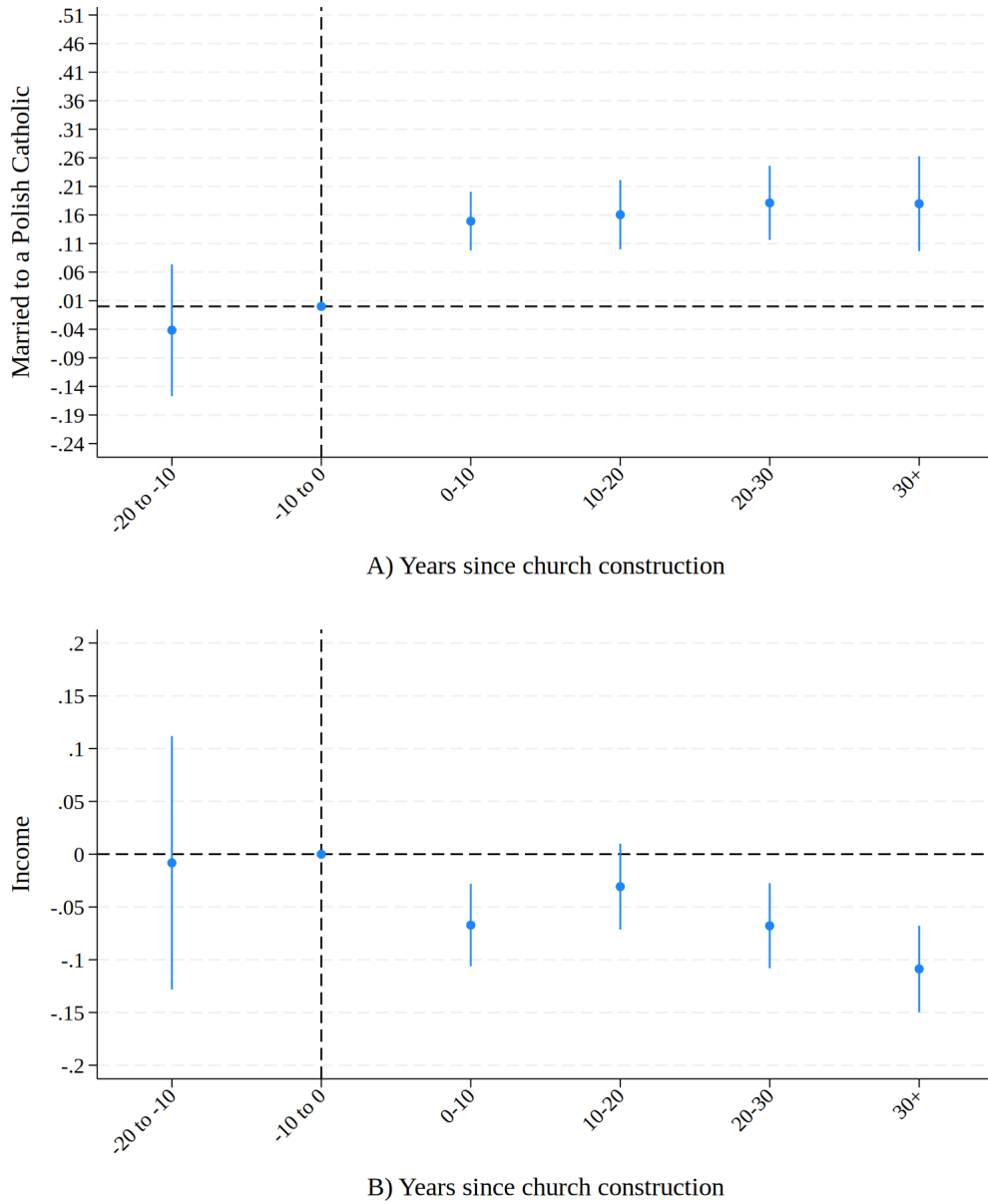
b) Treated vs matched neighborhoods (EDs)



*Notes:* The figure displays the differences in observable characteristics between matched enumeration districts (EDs) in the treatment and control groups. Neighborhoods were matched using nearest-neighbor propensity score matching, with variables including occupational score, the share of non-Jewish Polish, the share of Jewish residents, the share of women, the log of population, the share of likely Catholics, and the presence of a German Catholic church within 1km.

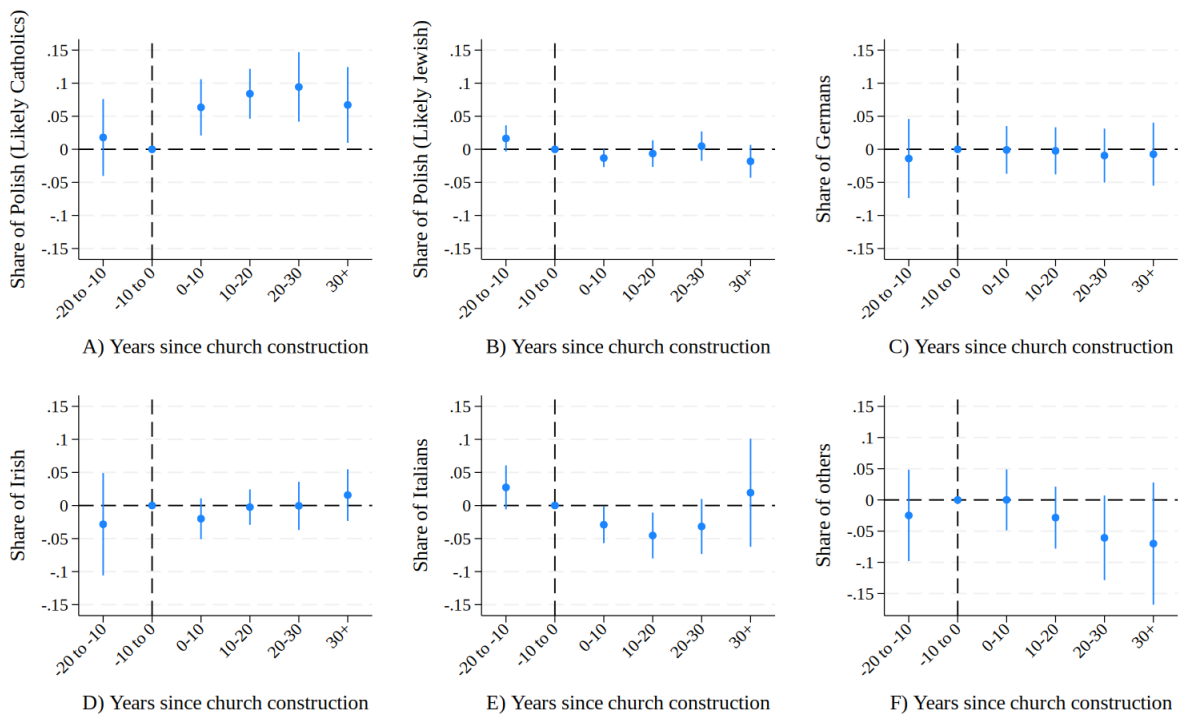


Figure 5: Impact of Polish church construction on cultural and economic assimilation



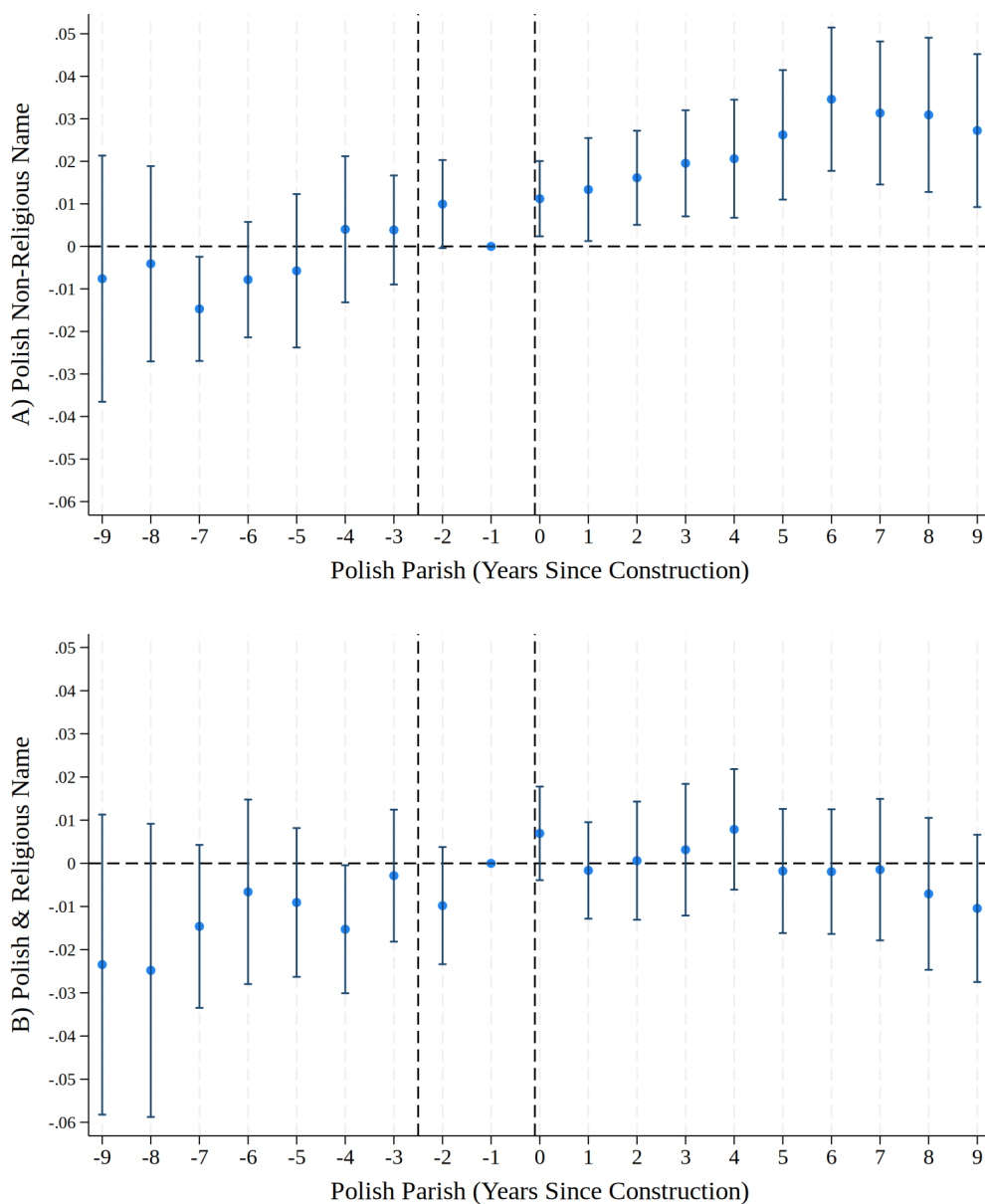
*Notes:* This figure illustrates the relationship between the construction of Polish Catholic churches and measures of cultural and economic assimilation, using data from the 1900, 1910, 1920, and 1930 US Census. The year of church construction was obtained from the Official Catholic Directory, supplemented with information from church websites and other online sources when necessary. All estimates include enumeration district pairs fixed effects. Standard errors are clustered at the ED level.

Figure 6: Impact of Polish church construction on neighborhood demographic composition



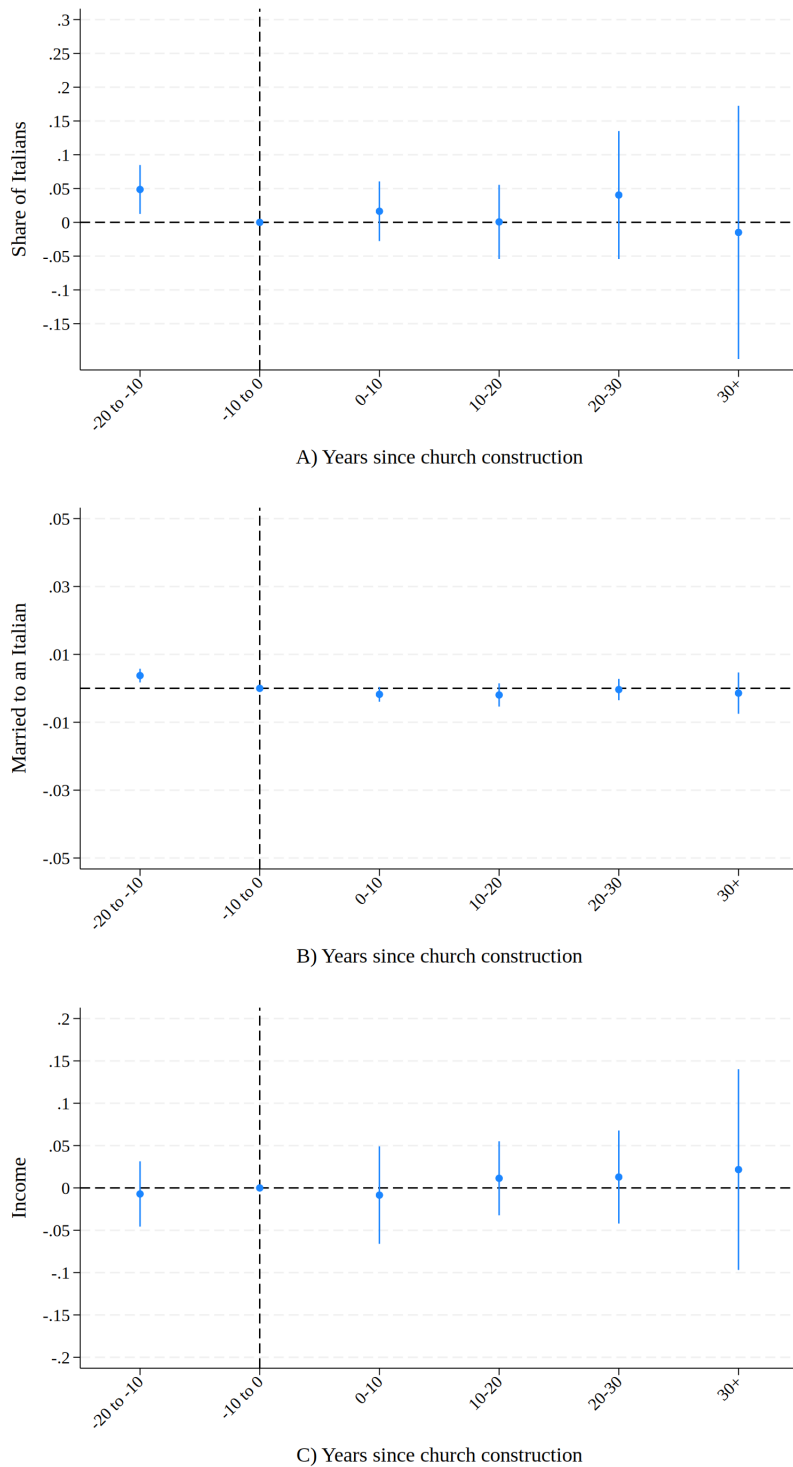
*Notes:* This figure shows the relationship between Polish Catholic church construction and changes in neighborhood demographic composition, using data from the 1900, 1910, 1920, and 1930 US Census. Construction dates were sourced from the Official Catholic Directory and supplemented with online records when necessary. All estimates include enumeration district pairs fixed effects. Standard errors are clustered at the ED level.

Figure 7: Impact of Polish church construction on naming patterns



*Notes:* This figure examines the relationship between Polish Catholic church construction and the share of second-generation with a distinctively Polish name. The upper panel focuses on Polish names classified as non-religious. The lower panel focuses on Polish names classified as religious. Polish non-religious names are those ranked in the top quartile of the Polish Names Index (PNI) without clear religious connotations, while Polish religious names include names of saints and biblical figures that rank high on the PNI. Construction dates were sourced from the Official Catholic Directory and supplemented with church websites and other online records when necessary. These analysis explore variation in the birth year of children aged 0-20. All the estimates include controls of child's age, gender, year and enumeration district pairs fixed effects. Standard errors are clustered at the neighborhood (ED) level.

Figure 8: Impact of Italian church construction on cultural and economic assimilation



*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All estimates include enumeration district pairs fixed effects. Standard errors are clustered at the ED level.

Table 1: Impact of proximity to Polish Catholic church on economic and cultural assimilation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.079*** (0.018)	0.113*** (0.041)	0.128 (0.101)	-0.405*** (0.079)	0.066*** (0.013)	0.182*** (0.025)	0.200*** (0.059)	-0.056*** (0.018)	-0.020 (0.025)	0.099** (0.039)
Observations	94,553	98,745	98,745	98,745	112,106	77,135	91,519	140,419	121,184	197,217
Number of ED-pairs	66	66	66	66	66	66	66	66	66	66
Mean of Dep. Var.	6.686	1.382	4.700	1.925	0.276	0.769	2.322	0.804	0.416	0.343
std. dev.	0.442	1.128	2.432	1.623	0.447	0.422	1.816	0.397	0.493	0.475

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) pairs fixed effects. Standard errors are clustered at the ED level.

Table 2: Impact of proximity to Polish Catholic church on economic and cultural assimilation, stayers (ABE-EI)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.160*** (0.024)	0.463** (0.182)	0.643*** (0.185)	-0.606*** (0.223)	0.141** (0.066)	0.309** (0.131)	0.315** (0.129)	0.051 (0.034)	0.149 (0.096)	0.037 (0.069)
Observations	622	1,260	1,260	1,260	1,154	669	2,001	737	2,001	1,995
Mean of Dep. Var.	6.683	1.353	4.645	2.131	0.252	0.707	1.145	0.957	0.888	0.642
std. dev.	0.477	1.249	2.431	1.863	0.434	0.455	1.850	0.204	1.236	0.480

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, year and enumeration district pairs (ED) fixed effects. Standard errors are clustered at the ED level. Residents were linked across Census years using the ABE-EI (Abramitzky, Boustan, Eriksson - Extra Information) algorithm.

Table 3: Impact of proximity to Polish Catholic church on economic and cultural assimilation, inflows (ABE-EI)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.034*** (0.025)	-0.042 (0.105)	0.124 (0.145)	-0.439*** (0.104)	0.136*** (0.018)	0.212*** (0.044)	0.097** (0.032)	-0.054*** (0.021)	-0.049* (0.032)	0.113*** (0.029)
Observations	2,411	2,409	2,409	2,409	3,070	1,495	5,768	2,133	2,049	5,733
R-squared	0.059	0.042	0.045	0.084	0.096	0.278	0.494	0.046	0.158	0.082
Mean of Dep. Var.	3.247	1.334	4.870	2.132	0.203	0.694	0.830	0.874	0.420	0.312
std. dev.	0.289	1.167	2.435	1.800	0.402	0.461	1.637	0.332	0.494	0.464

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, year and enumeration district pairs (ED) fixed effects. Standard errors are clustered at the ED level. Residents were linked across Census years using the ABE-EI (Abramitzky, Boustan, Eriksson - Extra Information) algorithm.

Table 4: Impact of proximity to Polish Catholic on second-generation, 1940 US Census (ABE-EI)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	log(income)	no wage	Manual Tasks	Routine Tasks	Abstract Tasks	Grade	Middle-school	High-school	College	Moved (city)	Moved (state)
Within 1 km from Polish Catholic church	-0.052 (0.036)	-0.042** (0.020)	0.235*** (0.070)	0.425*** (0.149)	-0.476*** (0.149)	-0.797*** (0.170)	-0.052*** (0.011)	-0.112*** (0.031)	-0.036*** (0.009)	-0.375*** (0.078)	-0.030*** (0.008)
Observations	3,287	5,733	3,887	3,887	3,887	6,921	6,921	6,921	6,921	7,226	7,226
Mean of Dep. Var.	6.490	0.427	1.280	4.385	2.029	9.621	0.792	0.299	0.0368	0.259	0.0288
std. dev.	0.897	0.495	1.234	2.296	1.653	2.945	0.406	0.458	0.188	0.438	0.167

*Notes:* The sample is restricted to children aged 0-10 in the 1900-1930 US Census and linked to their records in 1940. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include paired enumeration district (ED) and year fixed effects. Standard errors are clustered at the ED level. Residents were linked across Census years using the ABE-EI (Abramitzky, Boustan, Eriksson - Extra Information) algorithm.



Table 5: Impact of proximity to Polish Catholic church on other residents of neighborhood

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Panel A: Polish, likely Jewish										
Within 1km from Polish Catholic church	-0.029* (0.017)	-0.035 (0.056)	0.039 (0.113)	-0.101 (0.084)	0.017** (0.008)	0.023* (0.012)	0.083 (0.067)	0.015 (0.011)	0.018 (0.027)	-0.041 (0.025)
Observations	26,586	27,749	27,749	27,749	15,673	20,738	24,979	41,988	34,845	54,984
R-squared	0.712	0.072	0.056	0.078	0.067	0.029	0.363	0.106	0.110	0.129
Mean of Dep. Var.	6.819	1.233	4.746	2.604	0.166	0.311	2.417	0.887	0.521	0.212
std. dev.	0.448	1.190	2.628	2.065	0.372	0.463	1.817	0.316	0.500	0.409
Panel B: other Catholics										
Within 1km from Polish Catholic church	-0.006 (0.015)	0.032 (0.024)	0.121** (0.061)	-0.083 (0.056)	0.001 (0.008)	-0.019 (0.027)	0.095 (0.087)	0.062*** (0.018)	0.047** (0.019)	0.038 (0.027)
Observations	447,080	472,785	472,785	472,785	407,956	300,598	351,422	507,042	380,265	894,656
R-squared	0.605	0.028	0.064	0.041	0.012	0.103	0.173	0.146	0.196	0.160
Mean of Dep. Var.	6.736	1.513	4.269	1.944	0.247	0.765	2.298	0.812	0.491	0.239
std. dev.	0.448	1.278	2.403	1.615	0.431	0.424	1.984	0.390	0.500	0.427

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) pairs fixed effects. Standard errors are clustered at the ED level.

Table 6: Impact of proximity to Italian Catholic church on Italians

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Italian Catholic church	0.006 (0.018)	-0.048 (0.038)	0.075 (0.079)	-0.003 (0.075)	0.018* (0.011)	-0.005 (0.024)	-0.181** (0.088)	0.054** (0.027)	0.064** (0.024)	0.019 (0.038)
Observations	62,725	65,443	65,443	65,443	85,869	48,114	60,519	96,727	83,651	128,130
R-squared	0.663	0.020	0.039	0.119	0.031	0.080	0.256	0.178	0.119	0.193
Mean of Dep. Var.	6.650	1.560	1.706	4.435	0.238	0.994	2.597	0.686	0.337	0.255
std. dev.	0.423	1.120	1.495	2.203	0.426	0.0795	2.075	0.464	0.473	0.436

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) pairs fixed effects. Standard errors are clustered at the ED level.

# Appendix

## A. Figures and tables

Figure A.1: Neighborhood Polish churches in Chicago



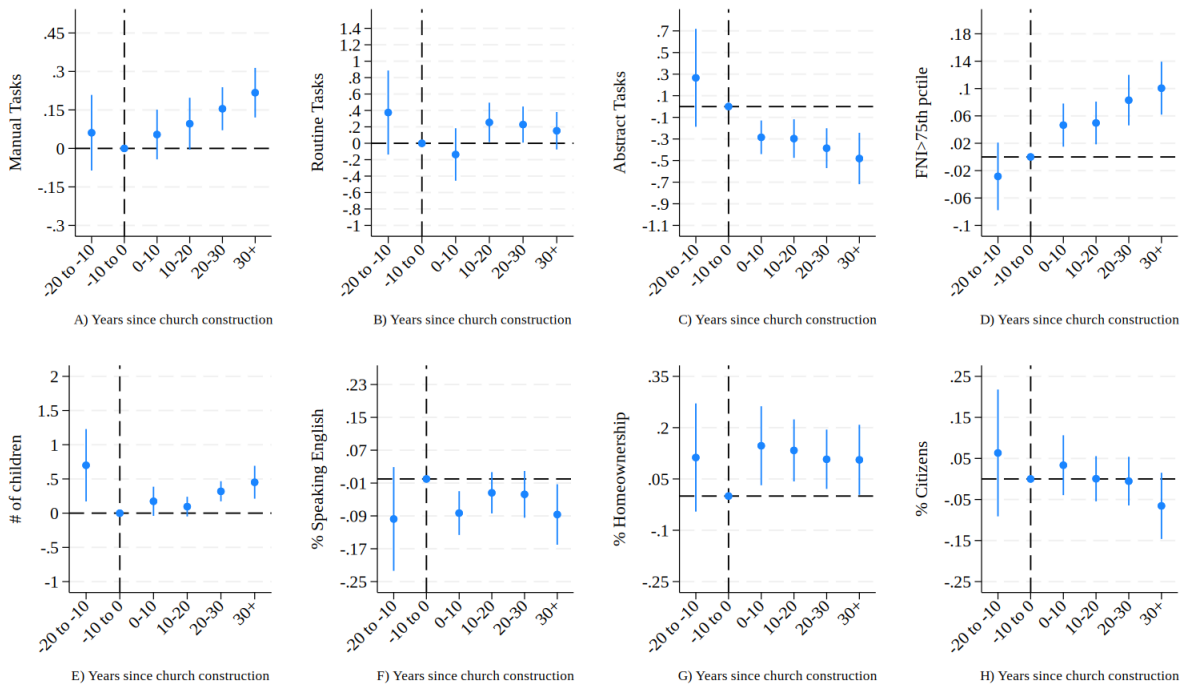
St. Mary of the Angels (1899) , Bucktown, Chicago



St. Mary of Czestochowa (1905), Cicero, Illinois

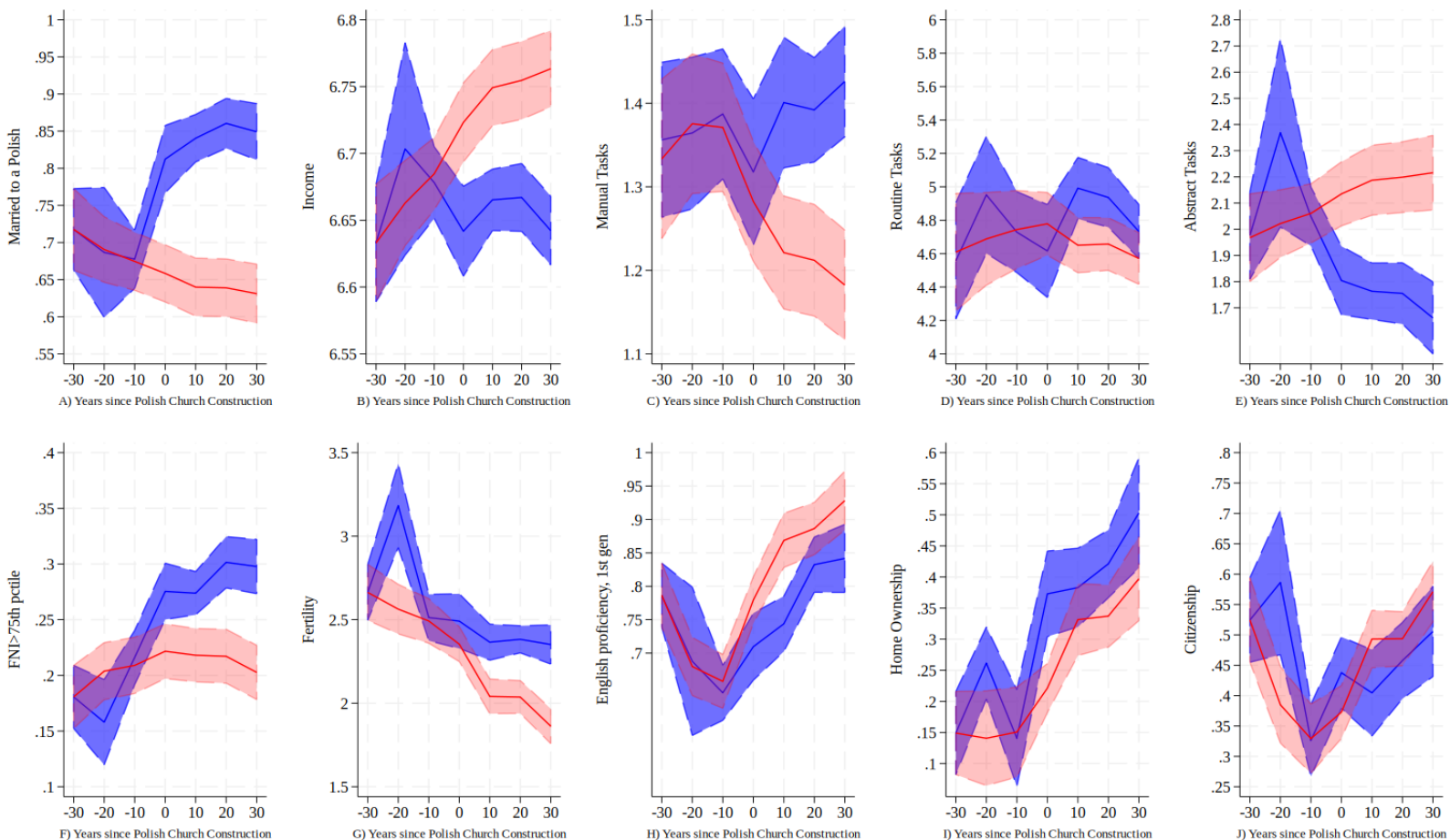
*Notes:* This figure displays pictures of two Polish Cathedrals: St. Mary of the Angels (1899), Bucktown, Chicago; and St. Mary of Czestochowa (1905), Cicero, Illinois.

Figure A.2: Impact of Polish Catholic church on other outcomes



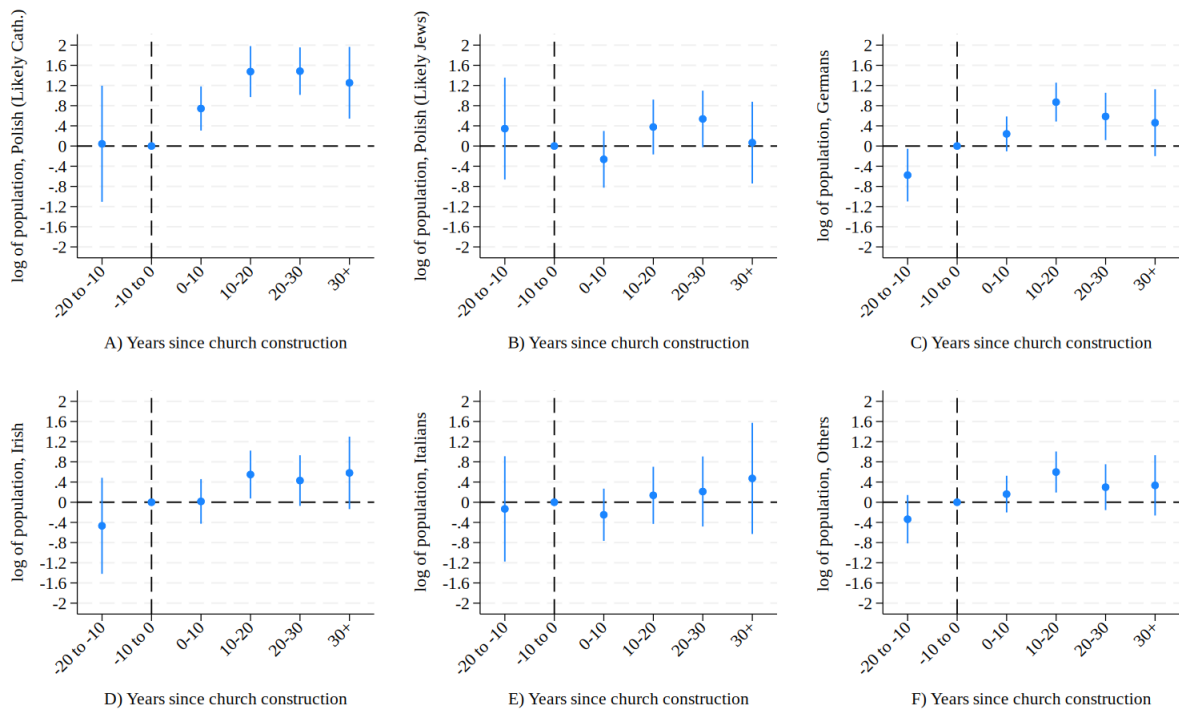
*Notes:* This figure depicts trends in economic and cultural assimilation outcomes, comparing enumeration districts (EDs) that experienced the construction of a Polish Catholic church (blue line with confidence intervals) to paired EDs that did not (red line with confidence intervals). Data are drawn from the 1900, 1910, 1920, and 1930 US Census. Church construction dates were obtained from the Official Catholic Directory and supplemented by church websites and other online sources. All estimates include year and enumeration district pairs fixed effects. Standard errors are clustered at the ED level.

Figure A.3: Impact of Polish Catholic church on economic and cultural assimilation, levels



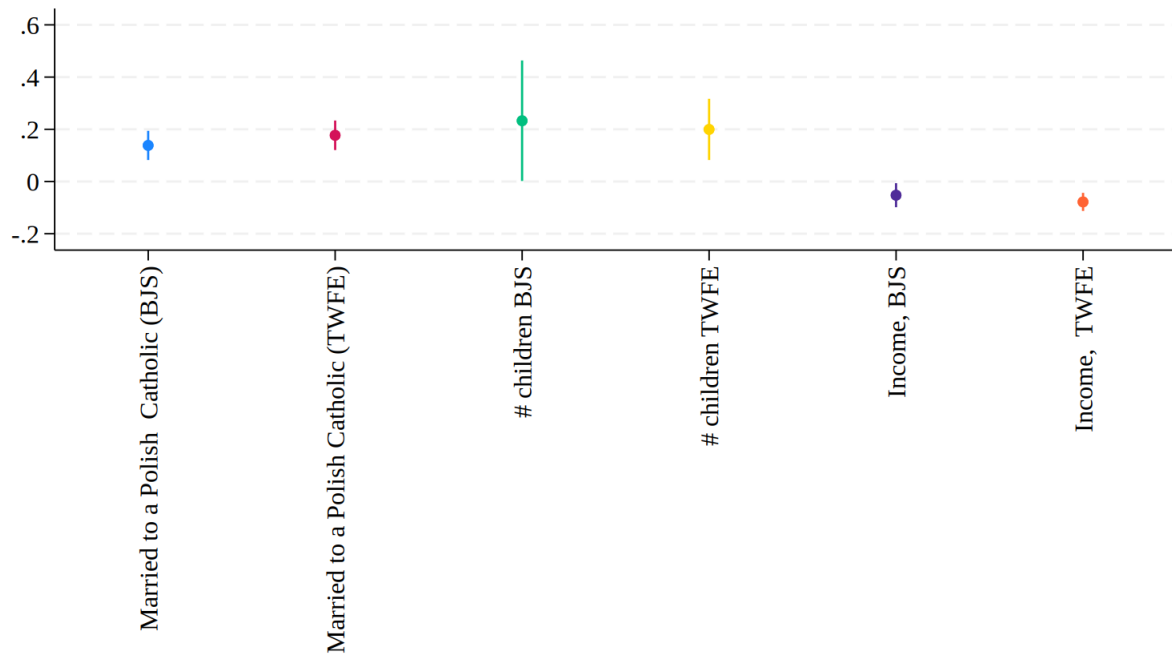
*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. The blue line and CI describe the trend in levels among individuals living in a treated enumeration district (ED). The red line and CI describe the trend in levels among individuals in the paired ED that did not experience the construction of a Polish church. All estimates include year and enumeration district pairs fixed effects. Standard errors are clustered at the ED level.

Figure A.4: Impact of Polish church construction on ED demographic composition (logs)



*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All estimates include year and enumeration district pairs fixed effects. Standard errors are clustered at the ED level.

Figure A.5: Robustness: Borusyak et al. (2024)



*Notes:* This figure presents robustness checks for the relationship between Polish Catholic church construction and key outcomes, following the approach of Borusyak et al. (2024). Data are drawn from the 1900, 1910, 1920, and 1930 US Census, with church construction dates obtained from the Official Catholic Directory and supplemented by other sources. All the estimates include controls for a quadratic in age, gender, year and enumeration district pairs fixed effects. Standard errors are clustered at the ED level.



Table A.1: Comparing Catholic school attendance across cities: parochial school enrollment in 1920

City	Total	All Polish	Polish (Non-Jewish)	Italian
Boston	19.17	0	0	4.84
Chicago	24.14	47.83	50.26	8.29
New York	8.76	3.62	6.19	4.59
Philadelphia	24.19	44.57	48.79	7.87

*Notes:* This table presents data on the percent of school-age children in each of the four major cities presented who are in Catholic school, where school-age is fixed as 5 to 13. In column (1), the rate presented is the total number of students enrolled in Catholic schools over the total number of school-age children in the city. In column (2), the numerator is the number of children enrolled in Polish Catholic schools, and the denominator is the number of Polish school-age children in the city. In column (3), the denominator is limited to non-Jewish Polish school-age children in each city, where a Jewish name index is used to determine who is likely Jewish. The same statistics from column (2) are presented in column (4) for Italian Catholics. No Jewish name index is used for Italian Catholics because Jews likely make up a sufficiently small proportion of Italian immigrants in our sample.

Table A.2: Impact of proximity to Polish Catholic church on economic and cultural assimilation, stayers (ABE)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.154*** (0.045)	0.496** (0.205)	0.647*** (0.212)	-0.535** (0.209)	0.086 (0.071)	0.241* (0.141)	0.150 (0.162)	0.067 (0.046)	0.045 (0.093)	-0.000 (0.066)
Observations	487	956	956	956	859	485	1,510	512	1,510	1,506
Mean of Dep. Var.	6.653	1.357	4.619	2.126	0.243	0.682	1.082	0.959	0.806	0.643
std. dev.	0.461	1.278	2.439	1.823	0.429	0.466	1.388	0.199	1.194	0.479

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) pairs fixed effects. Standard errors are clustered at the ED level. This analysis uses the basic matching ABE algorithm (Abramitzky, Boustan, and Eriksson) for linking residents across Census years.

Table A.3: Impact of proximity to Polish Catholic church on economic and cultural assimilation, inflows (ABE)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.127*** (0.025)	-0.011 (0.105)	0.105 (0.145)	-0.419*** (0.104)	0.121*** (0.018)	0.177*** (0.044)	0.055* (0.032)	-0.054** (0.021)	-0.075** (0.032)	0.102*** (0.029)
Observations	2,170	2,317	2,317	2,317	2,599	1,249	5,380	2,050	1,950	5,278
Mean of Dep. Var.	6.951	1.380	4.786	2.106	0.208	0.691	0.759	0.864	0.389	0.329
std. dev.	0.363	1.157	2.402	1.808	0.406	0.462	1.580	0.342	0.488	0.470

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) pairs fixed effects. Standard errors are clustered at the ED level. This analysis uses the basic matching ABE algorithm (Abramitzky, Boustan, and Eriksson) for linking residents across Census years.

Table A.4: Impact of proximity to Polish Catholic on second-generation, 1940 US Census (ABE)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	log(income)	no wage	Manual Tasks	Routine Tasks	Abstract Tasks	Grade	Middle-school	High-school	College	Moved (city)	Moved (state)
Within 1km from Polish Catholic church	-0.076** (0.032)	-0.035* (0.020)	0.172** (0.077)	0.449*** (0.118)	-0.541*** (0.145)	-0.663*** (0.164)	-0.028** (0.012)	-0.086*** (0.030)	-0.042*** (0.009)	-0.352*** (0.070)	-0.035*** (0.011)
Observations	4,004	6,411	4,798	4,798	4,798	7,426	7,426	7,426	7,426	7,815	7,815
Mean of Dep. Var.	6.666	0.375	1.260	4.248	2.341	9.809	0.808	0.328	0.0528	0.305	0.0787
std. dev.	0.928	0.484	1.259	2.328	1.956	3.040	0.394	0.470	0.224	0.460	0.269

*Notes:* The sample is restricted to children aged 0-10 in the 1900-1930 US Census and linked to their records in 1940. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) pairs fixed effects. Standard errors are clustered at the ED level.

Table A.5: Impact of proximity to Polish Catholic on second-generation, 1940 US Census (ABE-EI) , years of exposure

	Panel B: Exposure before 1940										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	log(income)	no wage	Manual Tasks	Routine Tasks	Abstract Tasks	Grade	Middle-school	High-school	College	Moved (city)	Moved (state)
Years of exposure	0.002 (0.002)	-0.005*** (0.001)	0.009*** (0.003)	0.020*** (0.006)	-0.016*** (0.006)	-0.032*** (0.010)	-0.000 (0.001)	-0.006*** (0.002)	-0.002*** (0.001)	-0.016*** (0.003)	-0.001*** (0.000)
Observations	3,287	5,733	3,887	3,887	3,887	6,921	6,921	6,921	6,921	7,226	7,226
R-squared	0.229	0.299	0.044	0.144	0.067	0.420	0.379	0.235	0.094	0.687	0.022
Mean of Dep. Var.	6.490	0.427	1.280	2.029	4.385	9.621	0.792	0.299	0.0368	0.259	0.0288
std. dev.	0.897	0.495	1.234	1.653	2.296	2.945	0.406	0.458	0.188	0.438	0.167

	Panel B: Exposure before Age 14										
Years of exposure before age 14	-0.003 (0.003)	-0.003** (0.002)	0.017*** (0.005)	0.030*** (0.011)	-0.033*** (0.010)	-0.055*** (0.012)	-0.004*** (0.001)	-0.008*** (0.002)	-0.002*** (0.001)	-0.027*** (0.006)	-0.002*** (0.001)
Observations	3,287	5,733	3,887	3,887	3,887	6,921	6,921	6,921	6,921	7,226	7,226
R-squared	0.229	0.295	0.044	0.065	0.146	0.422	0.380	0.233	0.090	0.703	0.023
Mean of Dep. Var.	6.490	0.427	1.280	4.385	2.029	9.621	0.792	0.299	0.0368	0.259	0.0288
std. dev.	0.897	0.495	1.234	2.296	1.653	2.945	0.406	0.458	0.188	0.438	0.167

*Notes:* The sample is restricted to children aged 0-10 in the 1900-1930 US Census and linked to their records in 1940. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include paired ED (ED) and year fixed effects. Standard errors are clustered at the ED level. Residents were linked across Census years using the ABE-EI (Abramitzky, Boustan, Eriksson - Extra Information) algorithm.

Table A.6: Impact of Polish church proximity by religiosity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	Married to a	# children Polish Catholic	Speak English	Citizen	Home owner
Panel A: Non-religious names									
Within 1km from Polish church Catholic church	-0.078*** (0.019)	0.114*** (0.040)	0.034 (0.090)	-0.399*** (0.089)	0.168*** (0.023)	0.194*** (0.057)	-0.060*** (0.021)	-0.036 (0.027)	0.091** (0.037)
Observations	19,810	20,700	20,700	20,700	15,685	20,736	25,952	26,774	44,715
Mean of Dep. Var.	6.680	1.321	4.756	2.001	0.848	2.245	0.790	0.410	0.320
std. dev.	0.446	1.124	2.479	1.647	0.359	1.793	0.407	0.492	0.467
Panel B: Religious names									
Within 1km from a Polish Catholic church	-0.078*** (0.017)	0.111** (0.042)	0.158 (0.107)	-0.404*** (0.078)	0.180*** (0.031)	0.199*** (0.063)	-0.064*** (0.019)	-0.015 (0.025)	0.101** (0.040)
Observations	74,743	78,045	78,045	78,045	54,516	70,783	86,633	94,409	152,502
Mean of Dep. Var.	6.687	1.398	4.685	1.905	0.844	2.344	0.808	0.418	0.350
std. dev.	0.441	1.128	2.419	1.616	0.363	1.822	0.394	0.493	0.477

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. Panel A restricts the sample to households where the household head has a first name classified as non-religious. Panel B restricts the sample to households where the household head has a first name classified as religious. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) pairs fixed effects. Standard errors are clustered at the ED level.

Table A.7: Impact of proximity to territorial churches on economic and cultural assimilation of Polish residents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Territorial Catholic church	0.002 (0.030)	0.011 (0.034)	0.113 (0.138)	0.041 (0.119)	-0.021 (0.023)	-0.010 (0.057)	-0.161* (0.087)	0.060 (0.043)	-0.013 (0.048)	-0.132** (0.051)
Observations	152,179	158,274	158,274	158,274	194,150	77,135	91,519	140,419	121,184	197,217
Mean of Dep. Var.	6.678	1.417	4.561	1.862	0.295	0.769	2.322	0.804	0.416	0.343
std. dev.	0.438	1.088	2.404	1.596	0.456	0.422	1.816	0.397	0.493	0.475

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) fixed effects. Standard errors are clustered at the ED level.

Table A.8: Impact of proximity to Polish Catholic church, Polish men

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.093*** (0.020)	0.098** (0.044)	0.179 (0.114)	-0.469*** (0.091)	0.073*** (0.018)	0.135*** (0.023)	0.179*** (0.062)	-0.047** (0.020)	-0.028 (0.025)	0.099** (0.040)
Observations	71,881	75,113	75,113	75,113	54,722	33,758	41,518	74,893	72,744	101,418
Mean of Dep. Var.	6.756	1.461	4.558	1.954	0.377	0.791	2.248	0.833	0.410	0.343
std. dev.	0.428	1.169	2.394	1.738	0.485	0.406	1.767	0.373	0.492	0.475

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, year and paired enumeration district (ED) fixed effects. Standard errors are clustered at the ED level.



Table A.9: Impact of proximity to Polish Catholic church on household heads

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.106*** (0.019)	0.091* (0.049)	0.175* (0.103)	-0.589*** (0.106)	0.066*** (0.013)	0.136*** (0.023)	0.177*** (0.066)	-0.049*** (0.015)	-0.025 (0.025)	0.100*** (0.036)
Observations	41,796	43,863	43,863	43,863	112,106	31,856	39,402	52,113	51,757	59,089
Mean of Dep. Var.	6.934	1.503	4.604	2.122	0.276	0.796	2.335	0.865	0.471	0.315
std. dev.	0.336	1.162	2.411	1.945	0.447	0.403	1.757	0.341	0.499	0.465

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) fixed effects. Standard errors are clustered at the ED level.

Table A.10: Impact of proximity to Polish Catholic church on first-generation Polish residents

Generation:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1	1	1	1	2	1	1	1	1	1
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.077*** (0.019)	0.053 (0.043)	0.015 (0.125)	-0.411*** (0.084)	0.066*** (0.013)	0.181*** (0.028)	0.221*** (0.065)	-0.056*** (0.018)	-0.020 (0.025)	0.081* (0.041)
Observations	66,721	69,887	69,887	69,887	112,106	60,790	75,174	140,419	121,184	138,563
Mean of Dep. Var.	6.762	1.481	4.610	1.900	0.276	0.801	2.515	0.804	0.416	0.301
std. dev.	0.416	1.082	2.401	1.694	0.447	0.399	1.838	0.397	0.493	0.459

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) fixed effects. Standard errors are clustered at the ED level.

Table A.11: Impact of proximity to Polish Catholic church: alternative definition of Polish ethnicity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.054*** (0.017)	0.046 (0.045)	0.009 (0.137)	-0.275*** (0.068)	0.056*** (0.012)	0.136*** (0.034)	0.104 (0.076)	-0.068** (0.026)	0.003 (0.025)	0.094** (0.040)
Observations	60,987	63,486	63,486	63,486	79,247	49,239	58,371	86,417	69,819	124,143
Mean of Dep. Var.	6.648	1.438	4.726	1.768	0.273	0.719	2.434	0.760	0.408	0.375
std. dev.	0.445	1.100	2.370	1.482	0.446	0.449	1.885	0.427	0.491	0.484

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. In this table, we define Polish identity according to Polish birthplace in 1900, 1920 and 1930 and Russian Empire in 1910. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) fixed effects. Standard errors are clustered at the ED level.

Table A.12: Impact of proximity to Polish Catholic church on household heads, excluding Lithuanian churches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Within 1km from Polish Catholic church	-0.054*** (0.018)	0.082* (0.045)	0.115 (0.116)	-0.282*** (0.079)	0.066*** (0.013)	0.182*** (0.025)	0.200*** (0.059)	-0.056*** (0.018)	-0.020 (0.025)	0.099** (0.039)
Observations	83,568	87,191	87,191	87,191	112,106	77,135	91,519	140,419	121,184	197,217
Mean of Dep. Var.	6.694	1.361	4.729	1.977	0.276	0.769	2.322	0.804	0.416	0.343
std. dev.	0.444	1.140	2.445	1.655	0.447	0.422	1.816	0.397	0.493	0.475

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) fixed effects. Standard errors are clustered at the ED level.

Table A.13: Impact of proximity to Polish Catholic church: robustness to distance measure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	log(Income)	Manual Tasks	Routine Tasks	Abstract Tasks	FNI $\geq$ 75	Married to a Polish Catholic	# children	Speak English	Citizen	Home owner
Panel A: Proximity in km (continous distance)										
Proximity to Polish Catholic church (in km)	-0.018*** (0.003)	0.024*** (0.009)	0.023 (0.017)	-0.088*** (0.019)	0.016*** (0.002)	0.038*** (0.005)	0.036*** (0.011)	-0.009* (0.005)	0.002 (0.006)	0.025*** (0.006)
Observations	94,553	98,745	98,745	98,745	112,106	77,135	91,519	140,419	121,184	197,217
Mean of Dep. Var.	6.686	1.382	4.700	1.925	0.276	0.769	2.322	0.804	0.416	0.343
std. dev.	0.442	1.128	2.432	1.623	0.447	0.422	1.816	0.397	0.493	0.475
Panel B: Treatment defined as within 2km										
Within 2km from Polish Catholic church	-0.083*** (0.023)	0.109*** (0.026)	0.158 (0.104)	-0.458*** (0.106)	0.160*** (0.031)	0.179*** (0.031)	0.331*** (0.068)	-0.098*** (0.028)	-0.046*** (0.017)	0.145*** (0.040)
Observations	121,156	126,657	126,657	126,657	155,292	99,587	119,098	181,539	155,697	253,000
Mean of Dep. Var.	6.678	1.401	4.550	1.905	0.291	0.761	2.278	0.762	0.399	0.319
std. dev.	0.443	1.109	2.419	1.647	0.454	0.426	1.808	0.426	0.490	0.466

*Notes:* Data are drawn from the 1900, 1910, 1920 and 1930 US Census. Data on the year of construction were obtained from the Official Catholic Directory, or when missing from church website, and other online sources. All the estimates include controls for a quadratic in age, gender, year and paired enumeration district (ED) fixed effects. Standard errors are clustered at the ED level.