**The long run effects of anti-immigrant institutional discrimination: Evidence from Philadelphia**

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I estimate the long-run and intergenerational effects of institutional discrimination using a policy targeting Irish immigrants in 19th century Philadelphia. To do this, I construct a panel of US Census data from 1850 to 1910 linked to inmate data from a large prison, and find that the rate of incarceration for Irish men increased following the implementation of the policy. Using a differences-in-differences design, I find that impacted Irish individuals had worse labor market outcomes nearly 25 years after the enactment of the policy, and are more likely to move to a different county. While the effects of the discriminatory policy do not persist across generations on average, first-generation mobility contributes to the persistence of effects. Irish individuals who moved from Philadelphia and their children are less negatively affected than those who stayed, suggesting that institutional discrimination has lasting effects for those unable to move away from the source of the discrimination.

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## I. Introduction

In recent years, there has been a renewed interest in understanding how both current and historical policies and practices have contributed to the disadvantages faced by certain groups today. While much of the focus has been on the role of slavery (Logan 2022), with significant debate over its impact on the present-day circumstances of Black individuals,[1] less attention has been paid to the effects of other forms of institutional discrimination—discrimination embedded in the policies and practices of institutions. This type of discrimination has consistently appeared in areas such as employment, healthcare, political power, education, and criminal justice. Existing research has focused on the impacts of institutional discrimination against Black individuals, specifically finding that greater exposure to Jim Crow laws resulted in lower wealth, wages, and education that persisted across generations (Althoff and Reichardt 2024, Derenoncourt et al. 2022, Carruthers and Wanamaker 2017). Our understanding of the long-run effects of institutional discrimination outside of this group are largely absent.

I add to this limited literature by providing new evidence on the persistent effects of institutional discrimination implemented against Irish individuals in Philadelphia in the mid-19th century. I provide the first evidence of the long-run and intergenerational effects of institutional discrimination against immigrants on a broad array of outcomes. Immigrants, and the discrimination they face, play a prominent role throughout the history of the United States, and today comprise nearly 15% of the US population (Azari et. al 2024). Building on studies of same-race discrimination (Ferrara and Fishback 2024, Kosack and Ward 2020), my research is the first to examine the persistent effects of same-race institutional discrimination. These effects may differ substantially from those experienced by other groups, as same-race individuals may find it easier to assimilate.

To accomplish this, I examine the long-run and intergenerational effects of institutional discrimination resulting from two policies targeting Irish immigrants in Philadelphia in 1856. The first banned immigrants, primarily Irish, from serving in the newly formed police force. The

[1] While the majority of Black individuals feel that slavery has affected the modern-day position of Blacks a great deal, only 26% of White individuals feel the same (Pew Research Center, 2019).

second was a new law that prohibited drinking in public on Sunday, which targeted the large Irish immigrant population in Philadelphia, known for frequenting taverns (Sprogle 1887). Together, this set of policies contributed to an environment of institutional discrimination against Irish immigrants. Beyond the immediate impact on incarceration, this paper focuses on the long-run and intergenerational effects of institutional discrimination.

To analyze these effects I combine two data sources: a panel of linked US Census data from 1850-1910 and incarceration records from the Eastern State Penitentiary (ESP), a large prison in Philadelphia.[2] This newly combined panel dataset allows me to assess whether institutional discrimination in Philadelphia had an immediate impact on incarceration. Using a difference-in-differences strategy, I compare Irish men in Philadelphia with non-Irish men and find that following the implementation of these discriminatory policies, incarceration rates for Irish men increased by about 1 inmate per 1,000—a rise of nearly 60%.

Beyond the immediate effects, I also estimate institutional discrimination's long-run and intergenerational impacts using a difference-in-differences model comparing Irish individuals and non-Irish individuals in Philadelphia and New York. This approach allows me to isolate the effect of institutional discrimination in Philadelphia from the broader, non-institutionalized discrimination against Irish immigrants in New York.

I find evidence of persistent long-run effects on both mobility and labor market outcomes for Irish individuals in Philadelphia. By 1880, nearly 25 years after the discriminatory policies were enacted, affected Irish individuals were less likely to be in the labor force and had lower-quality jobs. I also find that impacted Irish individuals are more likely to move to a different county and are more likely to engage in agriculture, consistent with the hypothesis that individuals facing institutional discrimination may move to avoid it.

Mobility patterns appear to play a crucial role in mediating the intergenerational persistence of the effects of institutional discrimination. While the children of impacted Irish

[2] The linked US Census data are provided by the Census Tree project (www.censustree.org), and the linking process is outlined in Price et. al (2021).

individuals appear unaffected on average, there is heterogeneity based on whether an impacted individual had moved from Philadelphia. Children of those who relocated are more likely to be in the labor force, be employed, and have higher quality jobs. In contrast, the negative effects of institutional discrimination appear to persist among the children of those who stayed in Philadelphia. These findings appear to be robust to attempts to account for selection in who chooses to move, and suggest that the institutional discrimination in Philadelphia had persistent effects across generations.

As further evidence that these estimates reflect the causal effects of institutional discrimination, I examine whether there are long-run impacts for German individuals, another large immigrant group that faced many of the same challenges but was not targeted by the anti-Irish policies (Higham 2002). Consistent with the laws specifically targeting Irish immigrants, I find no effect on the incarceration of German immigrants. I similarly find no long-run impacts on labor market outcomes for German immigrants. I find largely similar results when considering all non-Irish immigrants.

In combination, my findings suggest that while institutional discrimination against immigrants had long-run effects for the first generation, it did not have negative intergenerational effects on average. This is consistent with recent evidence that demonstrates high rates of intergenerational mobility among immigrants (Collins and Zimran 2019, Abramitzky et. al 2021). This may result from the capacity of same-race individuals to assimilate more easily in subsequent generations. Or it may result from the ability of immigrants to move elsewhere to avoid the effects of discrimination. Indeed, this second hypothesis is consistent with the heterogeneity in effects that I observe.

## II. Policing in the 19th Century United States

As a result of riots in the United States in the early 19th century, cities established professional police forces, with New York, Philadelphia, and Boston among the early adopters (Grubbs 2015). In 1854, communities surrounding Philadelphia consolidated with the city of

Philadelphia, creating a single city within Philadelphia County. As a result of consolidation, the modern Philadelphia Police Department was formed (Elkins 2016).

In 1856, Philadelphia newly elected mayor Robert Conrad described the role of police as "prevention" and "overspreading and guarding the whole community" (Sprogle 1887). At the same time, the police department issued a policy requiring all officers to be of native birth. While this policy was only officially implemented for a few years, no Irish immigrant police officers were hired by the department until the early 1900s (Elkins 2016). In contrast, by 1896 the department had hired about 60 Black officers who were primarily serving in Black neighborhoods (Elkins 2016). At the same time as the immigrant hiring ban, police began enforcing the newly passed Sunday Liquor Law, banning drinking in public on Sunday (Sprogle 1887). This set of policies disproportionately affected Irish individuals, who faced discrimination from native born individuals. Irish individuals were also more likely than native born individuals to drink in pubs and taverns (Nepa 2013) and were thus more likely to be affected by the Sunday Liquor Law. As a result of these discriminatory policies, I find an immediate increase in arrests of Irish individuals in the years following implementation. As a result of this institutional discrimination, Irish individuals may have seen fewer job prospects and lower quality jobs in the long-run, and may have anticipated reduced returns to remaining in Philadelphia.

Other police departments in cities similar to Philadelphia did not institute these discriminatory policies toward Irish individuals. In New York City, Irish individuals comprised a large fraction of the police force (Gest 2021, Galway 2014). Boston hired one of the first Irish immigrant police officers in 1851 (Anthony 2014). While these cities did see discrimination against Irish immigrants (Fried 2016), it does not appear that there existed any institutional discrimination within their respective police forces.

## III. Data

To measure the effect of institutional discrimination on incarceration, I use data provided by Ancestry.com from the Eastern State Penitentiary (ESP), a large prison in Philadelphia. The

data contain admissions records for prisoners from 1842 to 1873, with some years omitted because of data availability (1851-1854, 1862-1865). I link these data to the linked US Census panel (Price et. al 2021) using a fuzzy matching algorithm. Because the vast majority of prisoners in the ESP data are men, I link to only men in the census panel. I match using name and birth year, and am able to link about 70% of the prisoners in the ESP data to the census panel. These data allow me to estimate the immediate effect of institutional discrimination, and to provide evidence that the discriminatory policy had disparate impacts on Irish individuals.

In addition to the incarceration data, a second dataset that follows individuals across long periods of time is needed to estimate long-run effects. This necessitates the creation of a panel of US Census data by linking individuals across censuses. To link individuals across censuses, a combination of rule-based and machine learning methods are used, as described in Price et. al (2021). The rule-based methods link individuals across censuses that satisfy a set of requirements, such as being born in the same year, having the same name, and living in the same state. The machine learning methods use a set of already linked Census records from a genealogical website as data to teach a machine learning model to link individuals across censuses. This model then identifies individuals that should be linked across censuses. Together, these methods allow for the creation of a large panel of data that facilitate estimating long-run effects, running from the 1850 Census to the 1910 Census.

These linked Census data facilitate estimating intergenerational effects by linking parents in Philadelphia and New York to their children. A key feature of the linked Census data is that it allows me to follow individuals within their households over time. This allows me to view individuals in the households in the 1850 Census where they are children as well as the households in the 1880 Census where they are adults. I then identify children living in these 1880 households to create a sample of second generation individuals, allowing me to estimate intergenerational effects. I am able to follow the children in the second generation sample through the 1910 Census.

The linked panel of Census data contains several long-run outcomes that are essential for understanding the lasting effects of institutional discrimination. Because the panel includes

individuals' locations throughout the US across time, I am able to see if individuals migrate away from Philadelphia. The census also has key labor market outcomes including labor force participation, employment (in 1910) and several measures of occupational quality.[3] These measures of occupational quality provide several different ways to rank occupations from lowest to highest quality. I construct a composite index of these rankings by computing the average percentile rank across the measures. This composite measure allows me to estimate the effect of discrimination on quality of occupation. I also have measures of property values in the 1870 Census, allowing me to estimate the effect of the policy on wealth.

**Table 1.** Summary statistics, 1850 Census

| | Philadelphia | | New York | | Phil*Irish |
|---|---|---|---|---|---|
| | Irish | Non-Irish | Irish | Non-Irish | Estimate |
| A. Demographics | | | | | |
| Female | .494 | .486 | .51 | .477 | -0.025*** |
| | | | | | (0.007) |
| White | .998 | .968 | .999 | .979 | 0.009 |
| | | | | | (0.008) |
| Black | .002 | .032 | .001 | .021 | -0.009 |
| | | | | | (0.008) |
| Age | 32.71 | 30.978 | 31.928 | 30.727 | 0.531* |
| | [16.267] | [16.666] | [14.893] | [16.085] | (0.308) |
| Head of Household | .286 | .254 | .29 | .26 | 0.002 |
| | | | | | (0.007) |
| B. Outcomes | | | | | |
| Labor Force | .538 | .465 | .551 | .481 | 0.004 |
| | | | | | (0.012) |
| Property Value | 533.744 | 871.824 | 289.462 | 708.19 | 80.648 |
| | [4853.608] | [9404.541] | [4661.319] | [8830.086] | (109.102) |
| Occupation Standing | 36.872 | 35.933 | 38.042 | 37.241 | 0.138 |
| | [18.872] | [20.501] | [18.972] | [21.028] | (0.437) |
| Farm | .026 | .053 | .015 | .026 | -0.016* |
| | | | | | (0.009) |
| N | 18,214 | 80,589 | 31,976 | 73,505 | |

[3] These measures include: Occupation income score, Duncan Socioeconomic Index, Seigel occupational prestige score, Occupational earnings score, Occupational education score, and the Nam-Powers-Boyd occupational status score.

*Notes:* Data are from the 1850 US Census, prior to the implementation of the discriminatory policies. The sample is restricted to individuals who were living in Philadelphia or New York in 1850 and 1860. Statistics in panel A are reported for all individuals. Statistics in panel B are reported for only men. Irish includes individuals who were born in Ireland and individuals whose parents were born in Ireland. Occupation Standing is a measure that is the average percentile ranking of an individual across six measures of occupational quality in the census. Standard deviations in brackets, standard errors in parentheses. *** $p < 0.01$, * $p < 0.1$

Table 1 includes summary statistics for Irish and non-Irish individuals in Philadelphia and New York, a comparable city in terms of both size and Irish population in 1850. The Irish populations in Philadelphia and New York appear similar in demographics, as do the non-Irish populations. Interestingly, Irish individuals in both cities appear to be more likely to be in the labor force (7 p.p.) than their non-Irish counterparts. In terms of other outcomes, it appears that the Irish in Philadelphia are somewhat better off than the Irish in New York in terms of property values that are about $250 higher, although they have slightly worse occupations.

## IV. Identification Strategy

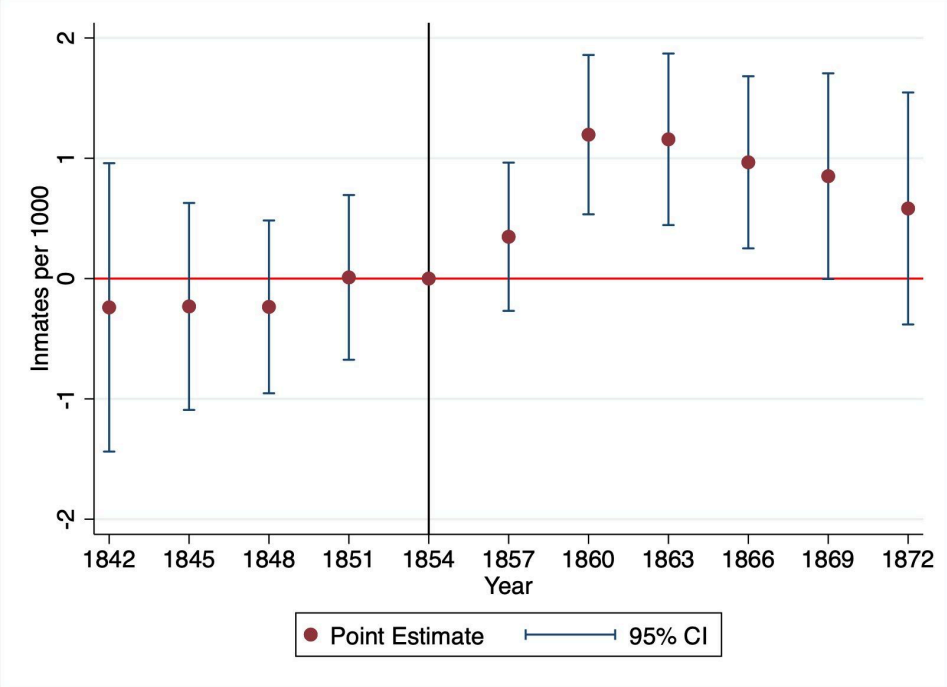
To estimate the immediate effect of institutionalized discrimination on incarceration I use a differences-in-differences approach. I use the linked Census data and the incarceration data to create a panel of individual-by-year measures of incarceration for men in Philadelphia. I then estimate the following differences-in-differences equation:

$$Incarceration_{it} = \alpha + \beta Irish_i + \theta IrishPost_{it} + \gamma_t + X_{it}\delta + \epsilon_{it} \qquad (1)$$

In Equation 1, *Incarceration* is the incarceration rate per 1000 men, *Irish* is an indicator for whether an individual is Irish, *Post* is an indicator for being after the enactment of the discriminatory policy in 1856, $\gamma_t$ is year fixed effects, $X_{it}$ is a vector of demographic controls including race and age, and $\epsilon_{it}$ is a random error term.

The key assumption of this differences-in-differences design is that incarceration rates among Irish men would have followed the same trend as incarceration rates among non-Irish men in the absence of the discriminatory policy. To provide evidence in support of this assumption, I estimate a dynamic differences-in-differences model, with the resulting estimates reported using an event study in Figure 1. This event study figure supports the identifying assumption by showing no difference in incarceration rates prior to the policy.

**Figure 1.** Event study estimates of institutional discrimination on imprisonment of Irish men in Philadelphia




*Notes:* Data are from an individual-by-year panel constructed from the linked US Census-Eastern State Penitentiary (ESP) data. The linked Census-ESP data are created by matching individuals in the 1860 and 1880 Censuses in Philadelphia to the ESP data using a fuzzy matching algorithm that matches on name, birth year and gender. Point estimates report the difference between Irish and non-Irish men using all years from 1842 to 1873. Point estimates are consolidated into 3 year bins, with the midyear of each bin reported on the x-axis. Race is controlled for in the regression.

To estimate the long-run and intergenerational effects of the discriminatory policies in Philadelphia, I again use a differences-in-differences approach. However, because everybody is exposed to institutional discrimination in Philadelphia in the long-run, I compare the difference

between all Irish and non-Irish individuals in Philadelphia with the difference between Irish and non-Irish individuals in New York. I use New York as a comparison group because in the 19th century it was similar to Philadelphia in both size and Irish population, but did not have institutional discrimination targeting Irish individuals like Philadelphia. The data contain Irish and non-Irish individuals in Philadelphia and New York from 1850 to 1880. I estimate the following equation:

$$Y_i = \alpha + \beta Irish_i + \gamma Philadelphia_i + \theta Irish * Philadelphia_i + X_i\delta + \epsilon_i \quad (2)$$

In Equation 2, *Irish* is an indicator for whether an individual is Irish, *Philadelphia* is an indicator for whether an individual was living in Philadelphia when the discriminatory policy was instituted, *X* is a vector of demographic controls including race and gender, and ϵ is a random error term. *Y* is one of several long-run outcomes including labor market outcomes, migration, literacy, and property values.

This strategy enables me to estimate the effect of *institutionalized* discrimination specifically, since Irish individuals were also discriminated against in New York, but not in the legalized way that occurred in Philadelphia. Thus, the difference between Irish and non-Irish individuals in New York captures the broader effect of discrimination, while the difference between Irish and non-Irish individuals in Philadelphia estimates both the effect of broader discrimination and the additional effect of institutionalized discrimination. The difference of these differences allows me to estimate the effect of institutionalized discrimination.

The identifying assumption for this design is that the long-run difference between Irish and non-Irish individuals in Philadelphia would have been the same as the difference between Irish and non-Irish individuals in New York in the absence of the discriminatory policy. This is a strong assumption. Because all Irish individuals in Philadelphia are exposed to institutional discrimination in the long run, I am unable to do a standard event study to test the identifying assumption. To provide evidence in support of the assumption, I estimate equation 2 for demographics and outcomes in the 1850 Census using the linked US Census panel, prior to the implementation of the discriminatory policies. While this does not directly test the identifying

assumption, it can provide evidence for whether the assumption can be falsified, and it tests whether Philadelphia and New York were facing similar levels of discrimination prior to the discriminatory policies. As can be seen in the final column of Table 1, for almost all outcomes there is no statistically significant difference between Irish and non-Irish individuals in Philadelphia and New York, with the exception of farm status, which is marginally significant. For demographic controls, only gender and age are statistically different, though these differences are small in magnitude and unlikely to be driving my results.

## V. Theoretical Predictions

Institutional discrimination can lead to significant social and economic consequences, particularly for marginalized groups. Increased incarceration rates and worse labor market outcomes are among the expected effects. The public announcement of the Philadelphia Police Department ban may have served as a signal that labeled Irish individuals as "low-quality workers," and this would be reflected by Irish individuals having lower labor force participation and lower quality jobs. This discourages employers from hiring Irish workers, leading to a more profound impact on their economic opportunities. The working-age population is especially vulnerable, as they are directly exposed to discriminatory policies and bear the brunt of these labor market disadvantages.

In response to such adverse conditions, individuals may choose to migrate to different counties, seeking better opportunities. Those who relocate are generally expected to be less negatively affected, as they may escape some of the direct impacts of discrimination in their new environments. However, the localized nature of this institutional discrimination implies that there may be pronounced consequences for those who remain exposed to this institutional discrimination in Philadelphia

## VI. Results

I first examine the immediate impact of institutional discrimination on incarceration. Table 2 reports the results from estimating Equation 1. Column 1 estimates Equation 1 for Irish men in Philadelphia, while column 2 estimates it for German men in Philadelphia as a placebo

test. The estimates show that the discriminatory policies increased the incarceration rate of Irish men by nearly 1 additional inmate per 1,000 men, a 64% increase over a baseline incarceration rate of 1.6 inmates per 1,000 men. In contrast, German men do not see an increase in incarceration after the discriminatory policies.

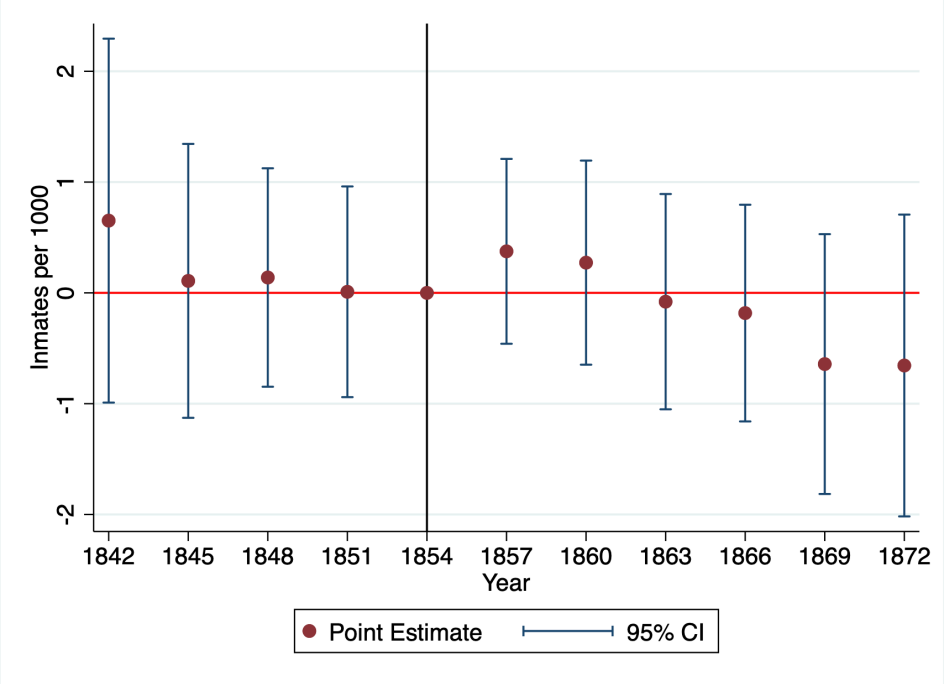
**Table 2.** Effect of institutional discrimination on imprisonment of immigrants in Philadelphia

| | (1) Irish Men | (2) German Men |
|---|---|---|
| Treat*Post | 0.952** | -0.376 |
| | (0.381) | (0.550) |
| Treat | -0.019 | -0.237 |
| | (0.210) | (0.311) |
| Observations | 1,047,528 | 903,624 |
| Pre-Treatment Mean | 1.639 | 1.636 |

*Notes:* Data are from an individual-by-year panel constructed from the linked US Census-Eastern State Penitentiary data. The outcome variable in each regression is the rate per 1,000 men of individuals who were ever inmates in the Eastern State Penitentiary (ESP). Treat is an indicator for being Irish in Column 1, and an indicator for being German in Column 2. Column 1 compares imprisonment outcomes between Irish and non-Irish men using all years from 1842 to 1873, excluding 1851-1854 and 1862-1865 due to data availability. Column 2 compares outcomes between German and non-German men using all years from 1842 to 1873, excluding 1851-1854 and 1862-1865 due to data availability. Race, age and year fixed effects are controlled for in both regressions. Robust standard errors in parentheses, ** $p<0.05$

Figure 1 shows an increase in the incarceration rate of Irish men immediately after the discriminatory policy was implemented. As a placebo test, I estimate the same event study in Figure 2 for German and non-German men in Philadelphia, who were not targeted by the discriminatory policies. The event study in Figure 2 does not show an increase in German incarceration in Philadelphia at the time of policy implementation, providing additional evidence that the policy in Philadelphia was targeted toward Irish individuals. These results provide evidence that institutional discrimination affects incarceration.

**Figure 2.** Event study estimates of institutional discrimination on imprisonment of German men in Philadelphia




*Notes:* Data are from an individual-by-year panel constructed from the linked US Census-Eastern State Penitentiary data. The linked Census-ESP data are created by matching individuals in the 1860 and 1880 Censuses in Philadelphia to the ESP data using a fuzzy matching algorithm that matches on name, birth year and gender. Point estimates report the difference between German and non-German men using all years from 1842 to 1873. Point estimates are consolidated into 3 year bins, with the midyear of each bin reported on the x-axis. Race is controlled for in the regression.

I next turn to the long-run effects of the discriminatory policy in Table 3. Because Irish individuals were excluded from jobs (Fried 2016), I expect Irish individuals in areas with stronger discrimination to be discouraged from working and less likely to enter the labor force and to be in lower quality jobs. I find that Irish individuals in Philadelphia were 4 percentage points less likely to be in the labor force nearly 25 years after the implementation of the discriminatory policy, a 16% decrease, and they were in lower quality occupations. I also expect that Irish individuals may be more likely to move away from areas with greater discrimination, and I find that impacted Irish individuals in Philadelphia were 6.5 percentage points more likely to move to a different county than their New York counterparts, a 13% increase. Similarly, I find

that impacted Irish individuals were 1 percentage point more likely to be farmers, implying that some of the migration was urban to rural.

**Table 3.** Effect of institutional discrimination on long-run outcomes, first generation

| | (1) Labor Force | (2) Occupation Standing | (3) Move County | (4) Farm | (5) Number of Children | (6) Real Estate Value | (7) Personal Property |
|---|---|---|---|---|---|---|---|
| Irish*Phil | -0.043*** | -0.860*** | 0.065*** | 0.012*** | 0.176*** | 304.212 | 53.125 |
| | (0.006) | (0.245) | (0.007) | (0.004) | (0.037) | (514.411) | (312.482) |
| Phil | 0.039*** | 1.025*** | -0.106*** | -0.010*** | -0.079*** | -1,114*** | 185.673 |
| | (0.003) | (0.112) | (0.003) | (0.002) | (0.016) | (240.195) | (177.447) |
| Irish | 0.056*** | -0.145 | -0.038*** | -0.013*** | 0.092*** | -1,672*** | -910.6*** |
| | (0.004) | (0.163) | (0.005) | (0.003) | (0.023) | (390.596) | (203.741) |
| N | 85,878 | 85,878 | 85,878 | 85,878 | 85,878 | 49,900 | 49,900 |
| Control Mean | 0.604 | 42.70 | 0.261 | 0.0678 | 2.141 | 3546 | 1500 |

*Notes:* Sample is restricted to individuals who were living in Philadelphia and New York in the 1850 and 1850 US Censuses. Labor Force, Occupation Standing, Move County, and Farm are from the 1880 Census and Real Estate Value and Personal Property are from the 1870 Census due to data availability. All regressions contain demographic controls including age, gender and race. Irish is an indicator for whether an individual or their parents were born in Ireland. Phil is an indicator of whether an individual was living in Philadelphia in the 1850 Census. Irish*Phil is the coefficient of interest, which captures the effect of institutionalized discrimination for Irish in Philadelphia. Occupation Standing is a measure that is the average percentile ranking of an individual across six measures of socioeconomic status in the census: Occupational income score, Duncan Socioeconomic Index, Seigel occupational prestige score, Occupational earnings score, Occupational education score, and the Nam-Powers-Boyd occupational status score. The construction of this variable is discussed in Section III. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4 reports estimates of the intergenerational effects of institutional discrimination. As prior research has shown, children of immigrants are economically and socially mobile (Collins and Zimran 2019), so one would expect to see relative improvement in labor market outcomes for the second generation. The labor market results for the second generation are small and statistically insignificant (0.2 p.p. decrease in labor force participation, 0.6 p.p increase in employment), reflecting an improvement in the socioeconomic status of the second generation.

**Table 4.** Effect of institutional discrimination on second generation outcomes

| | (1) Labor Force | (2) Employment | (3) Occupation Standing | (4) Move County | (5) Farm |
|---|---|---|---|---|---|
| Irish*Phil | -0.003 | 0.009 | 0.547 | 0.016 | -0.012 |
| | (0.008) | (0.010) | (0.404) | (0.014) | (0.009) |
| Phil | 0.001 | -0.001 | -0.723*** | -0.080*** | 0.010*** |
| | (0.003) | (0.004) | (0.170) | (0.006) | (0.003) |
| Irish | 0.015** | 0.003 | -0.731*** | 0.049*** | 0.026*** |
| | (0.006) | (0.007) | (0.275) | (0.009) | (0.006) |
| N | 34,332 | 34,332 | 34,332 | 34,332 | 34,332 |
| Control Mean | 0.724 | 0.659 | 46.84 | 0.587 | 0.081 |

*Notes:* Sample is restricted to children of individuals who were living in Philadelphia and New York in the 1850 and 1850 US Censuses. All outcomes are from the 1910 Census. Irish is an indicator for whether an individual's parents or grandparents were born in Ireland. Phil is an indicator of whether an individual's parent was living in Philadelphia in the 1850 Census. Irish*Phil is the coefficient of interest, which captures the intergenerational effect of institutionalized discrimination for Irish in Philadelphia. Occupation standing is a measure that is the average percentile ranking of an individual across six measures of socioeconomic status in the census: Occupational income score, Duncan Socioeconomic Index, Seigel occupation score, Occupational earnings score, Occupational education score, and the Nam-Powers-Boyd occupation status score. All regressions contain demographic controls including age, gender and race. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

However, there is important heterogeneity in both first and second generation outcomes by migration status. These results are seen in Tables 5 and 6. In general, individuals who moved from Philadelphia and their children have better labor market outcomes than those who stayed in Philadelphia. First generation individuals who move are 5 percentage points more likely to be in the labor force and have jobs that are 2 percentiles higher quality. Second generation individuals who move are 3 percentage points more likely to be in the labor force, 5 percentage points more likely to be employed, and have jobs that are 1.5 percentiles higher quality. Thus, while the overall second generation results show no significant intergenerational impacts of the policy, this heterogeneity shows that there are persistent effects of discrimination. Children of those who

moved see gains that children of those who stayed do not see, indicating that this discriminatory policy had intergenerational effects.

**Table 5.** Heterogeneity in long run effects for first generation, by migration status

| | (1) Labor Force | (2) Occupational Standing | (3) Farm | (4) Number of Children | (5) Real Estate Value | (6) Personal Property |
|---|---|---|---|---|---|---|
| Phil*Move*Irish | 0.055*** | 2.212*** | 0.017 | -0.267*** | -2,598.60** | -170.993 |
| | (0.014) | (0.550) | (0.016) | (0.094) | (1,274.025) | (830.281) |
| Phil*Move | -0.037*** | -1.693*** | 0.015** | 0.261*** | 982.587 | -235.722 |
| | (0.006) | (0.260) | (0.007) | (0.039) | (662.422) | (444.463) |
| Irish*Move | -0.046*** | -1.909*** | 0.027*** | 0.197*** | 1,437.962 | 145.003 |
| | (0.009) | (0.349) | (0.009) | (0.057) | (1,074.503) | (463.486) |
| Phil*Irish | -0.054*** | -1.112*** | -0.003 | 0.228*** | 946.984* | 116.392 |
| | (0.007) | (0.281) | (0.002) | (0.041) | (550.288) | (340.209) |
| Phil | 0.043*** | 0.965*** | 0.008*** | -0.121*** | -1,371.3*** | 208.085 |
| | (0.003) | (0.129) | (0.001) | (0.018) | (273.698) | (203.850) |
| Move | -0.016*** | -3.193*** | 0.195*** | 0.005 | -807.000** | -142.435 |
| | (0.004) | (0.186) | (0.005) | (0.026) | (390.747) | (309.809) |
| Irish | 0.066*** | 0.181 | -0.012*** | 0.046* | -2,080.9*** | -951.67*** |
| | (0.005) | (0.191) | (0.001) | (0.027) | (379.453) | (227.365) |
| Observations | 85,878 | 85,878 | 85,878 | 85,878 | 49,900 | 49,900 |
| Control Mean | 0.604 | 42.70 | 0.068 | 2.141 | 3546 | 1500 |

*Notes:* Sample includes individuals who were living in Philadelphia or New York in the 1850 and 1860 US Censuses. Labor Force, Occupation Standing, and Farm are from the 1880 Census and Real Estate Value and Personal Property are from the 1870 Census due to data availability. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Move is an indicator for whether an individual had moved from Philadelphia by the 1880 Census. Irish is an indicator for whether an individual or their parents were born in Ireland. All regressions contain demographic controls including age, gender and race. Phil*Move*Irish is a key coefficient of interest and captures effects for Irish who moved from Philadelphia, while Phil*Irish captures effects for Irish individuals who did not move. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table 6.** Heterogeneity in intergenerational effects, by migration status

| | (1) Labor Force | (2) Employment | (3) Occupational Standing | (4) Farm |
|---|---|---|---|---|
| Phil*Move*Irish | 0.030* | 0.050** | 1.346* | -0.005 |
| | (0.017) | (0.021) | (0.814) | (0.016) |
| Phil*Move | -0.014** | -0.019** | -0.945*** | 0.021*** |
| | (0.007) | (0.008) | (0.340) | (0.007) |
| Irish*Move | -0.025** | -0.033** | -1.612*** | 0.030*** |
| | (0.012) | (0.014) | (0.559) | (0.010) |
| Phil*Irish | -0.019 | -0.018 | -0.107 | -0.013* |
| | (0.014) | (0.016) | (0.613) | (0.007) |
| Phil | 0.008 | 0.008 | -0.384 | 0.008*** |
| | (0.005) | (0.006) | (0.238) | (0.003) |
| Move | 0.004 | 0.004 | -1.079*** | 0.096*** |
| | (0.005) | (0.006) | (0.256) | (0.005) |
| Irish | 0.029*** | 0.021* | 0.250 | 0.004 |
| | (0.009) | (0.011) | (0.431) | (0.005) |
| Observations | 34,332 | 34,332 | 34,332 | 34,332 |
| Control Mean | 0.724 | 0.659 | 46.84 | 0.081 |

*Notes:* Data are from the 1910 US Census. Sample includes children of individuals who were living in Philadelphia and New York in the 1850 and 1860 US Censuses. Phil is an indicator for whether an individual's parents were living in Philadelphia in 1856. Move is an indicator for whether an individual's parents had moved from Philadelphia after 1856. Irish is an indicator for whether an individual's parents or grandparents were born in Ireland. Phil*Move*Irish is a key coefficient of interest and captures effects for Irish who moved from Philadelphia, while Phil*Irish captures effects for Irish individuals who did not move. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

Ex ante, I expect the labor market results to be strongest for individuals who were 20 to 50 years old at the time of the policy because this subset of individuals is most likely to be working. To examine whether there is heterogeneity by age group, I estimate Equation 2 for individuals who were less than 20 years old at the time of the policy and individuals who were 20 to 50 years old, given in Table A1. As expected, I find that the labor force participation effect is 1.2 percentage points larger in magnitude for 20 to 50 year olds, and that the effect on

occupation quality is being driven by that age group, as younger individuals see no effect on occupational quality. Interestingly, I find that 20 to 50 year olds are 5 percentage points more likely to move as younger individuals, and they see a 2 percentage point increase in likelihood of farming, while younger individuals see no significant increase.

## VII. Robustness Checks

To assess the robustness of the incarceration results, I examine whether my results are robust to several potential threats to their validity. One of the primary threats to validity is that non-Irish and Irish men would have experienced different trends in incarceration in the absence of the discriminatory policies. To examine this, I observe whether or not Irish and non-Irish men were experiencing different trends in incarceration prior to the treatment in Figure 1, which shows they were following a similar trend. Another potential issue is that the discriminatory policies were enacted in response to a relative increase in the incarceration of Irish people. Figure 1 provides evidence that there was not a relative increase in Irish incarceration prior to the institutional discrimination.

Another threat to the validity of my results is that the discriminatory policies may have affected non-Irish individuals as well as Irish individuals. This is unlikely to be the case, since non-Irish individuals were not subject to the police department hiring ban. While it is possible that non-Irish individuals could have been incarcerated as a result of the Sunday Liquor Law, this would suggest that my findings are a lower bound of the true effect of institutional discrimination on incarceration. Similarly, there is concern if there are other policies enacted at the same time that differentially affected Irish and non-Irish individuals. A search of the laws passed in Pennsylvania at the same time as these discriminatory policies went into effect finds no laws that would differentially affect Irish people in Philadelphia (Hamilton 1856).

A final threat to the validity of my incarceration results is that Irish and non-Irish men may be different in terms of observable characteristics, which could bias my results. To account for this, I use propensity score matching to match each Irish individual to their nearest neighbor based on demographic characteristics and baseline labor market outcomes in the 1850 Census. I

then estimate the differences-in-differences specification in Equation 1 using this matched control group, given in Table A2. The results using the matched sample are similar to the main results, and show an increase in incarceration rates for Irish men, with no increase for German men. Figure A1 is the event study from this exercise, and looks similar to the main event study, implying that the incarceration results don't appear to be driven by baseline differences between Irish and non-Irish men.

I also examine whether my long-run and intergenerational results are robust to several threats to their validity. One potential threat to validity is that there are baseline differences between Irish and non-Irish people in Philadelphia and New York. I examine average baseline characteristics in Table 1, and it appears that the baseline differences between Irish and non-Irish in Philadelphia are similar to those in New York. I test this formally by estimating the differences-in-differences specification on these baseline characteristics in column 5 of Table 1, and find that Philadelphia and New York are largely similar.

Another threat to the validity of the long-run results is that there could be something other than the discriminatory policies that affected all immigrants negatively in Philadelphia. To examine whether this is the case, I estimate the long-run specification for German and non-German individuals. At the time of the institutional discrimination, Germans were another large immigrant group, although they did not face the same negative sentiment that Irish immigrants faced. German immigration would not peak in the United states until around 1900, and anti-German sentiment would not peak until World War I. Therefore, doing the long-run analysis using Germans is a reasonable falsification test for the main results. The long-run results in Table A5 show largely no significant effects on labor market outcomes for the first generation, and weakly positive effects for the second generation. While German individuals are more likely to move, it appears that German individuals who move do not see improved outcomes in Table A7, contrasting with the positive gains that Irish movers see. I also estimate the long run analysis for all non-Irish immigrants in Table A6, and find similar null effects for the first generation and marginally positive effects for the second generation. However, non-Irish immigrants who move do not see gains from moving in Table A8. These results indicate that the institutional

discrimination was targeted toward Irish individuals and my estimates represent the causal effect of institutional discrimination.

Another potential threat to validity is that the treatment effect is biased due to post-implementation differences between Philadelphia and New York that are not a result of the institutional discrimination. To examine this, I estimate the long-run analysis using an alternate control group, Irish and non-Irish individuals in Boston. Like New York, Boston is a large city with a comparable Irish population to Philadelphia that did not have institutional discrimination like Philadelphia. Similar to the main results, Table A9 shows that first generation individuals had worse labor market outcomes and were more likely to migrate. Second generation individuals largely did not see any effects on labor market outcomes, although they were more likely to migrate. These results indicate that the main findings are not a result of post-implementation differences between Philadelphia and New York unrelated to institutional discrimination.

A potential issue with my heterogeneity analysis of migration is that my findings could be driven by selection in who chooses to move. To examine this, I estimate the heterogeneity analysis on baseline characteristics in the 1850 Census in Table A3. The estimates indicate that there is largely no selection in who chooses to move. Individuals in the first generation who move tend to have marginally higher quality occupations, but the migration heterogeneity results remain unchanged when controlling for baseline characteristics in Table A10. Similarly, the results in the heterogeneity analysis could be driven by Irish individuals from Philadelphia ending up in better places as a result of migration. To test this hypothesis, I determine the county-level average baseline characteristics in the 1850 Census, and then I estimate the heterogeneity analysis on the average baseline characteristics of the counties where individuals were living after the implementation of the policy in Table A4. These results indicate that the heterogeneity I see by migration status is not being driven by moving to better places.

## VIII. Discussion

I find evidence that institutional discrimination has lasting effects that carry across generations However, the effects of institutional discrimination are not uniform. Some

individuals can mitigate these impacts by relocating to new areas and blending into broader communities. This provides a "lower bound" estimate of the persistent consequences of discrimination, highlighting how mobility and adaptation can serve as partial remedies. For those unable to avoid such conditions, the economic and social disadvantages are profound and long-lasting, affecting their labor market prospects and overall well-being.

The historical context of the immigrant experience in the United States, particularly for Irish immigrants, exemplifies these dynamics. Institutional discrimination not only shaped their labor market opportunities but also influenced their geographic settlement patterns. The stigmas and barriers they faced serve as a reminder of how deeply entrenched societal attitudes can influence policy and shape outcomes for marginalized groups, with implications that extend far beyond the immediate generation.

## IX. Conclusion

Little is known about the long-run and intergenerational effects of discrimination, particularly discrimination against immigrant groups. Furthermore, little is known about how institutional discrimination can have long lasting consequences. Understanding these questions is important for designing the optimal policy to help immigrants and their children. I utilize a ban on hiring immigrants in the Philadelphia Police Department in 1856, in combination with increased enforcement of a law that disparately affected Irish immigrants, to determine the long-run and intergenerational effects of institutional discrimination. In contrast, other police forces during this time had large numbers of Irish officers, making Philadelphia a useful natural experiment.

I first use a panel of linked US census data from 1850 to 1910 that has been probabilistically matched to inmate data from the Eastern State Penitentiary, a large prison in Philadelphia to estimate both the immediate effect on incarceration as well as long-run and intergenerational effects. I find evidence that the discriminatory policy increased incarceration rates for Irish men. In addition to the immediate effect on incarceration, I estimate the long-run and intergenerational effects of discrimination by comparing all Irish and non-Irish individuals in

Philadelphia with their counterparts in New York, a city that is similar in size and immigrant population to Philadelphia that did not ban immigrants from serving in the police force.

As expected from research showing exclusion of Irish immigrants from jobs (Fried 2016), I find that impacted Irish individuals in Philadelphia are more likely to be discouraged from participating in the labor force and work in lower quality occupations. The discriminatory environment in Philadelphia also increases the likelihood that Irish individuals migrate to a different county. Children of impacted Irish individuals see relatively better labor market outcomes than their parents. Additionally, those who moved from Philadelphia have better labor market outcomes than those who stayed.

These findings show that discrimination against immigrants can have lasting effects. However, their children often do not experience the same negative impacts. This may be because children of Irish immigrants looked physically similar to native-born Americans, which likely reduced discrimination and made assimilation easier. Consequently, the negative effects of discrimination might persist across generations in other groups. Investigating these persistent impacts in different groups is crucial for future research. Moreover, children of those who left Philadelphia tend to have better labor market outcomes than those who stayed, suggesting that institutional discrimination can hinder socioeconomic advancement across generations for those unable to escape the source of discrimination. Understanding the influence of location on socioeconomic well-being is another important area for future study.

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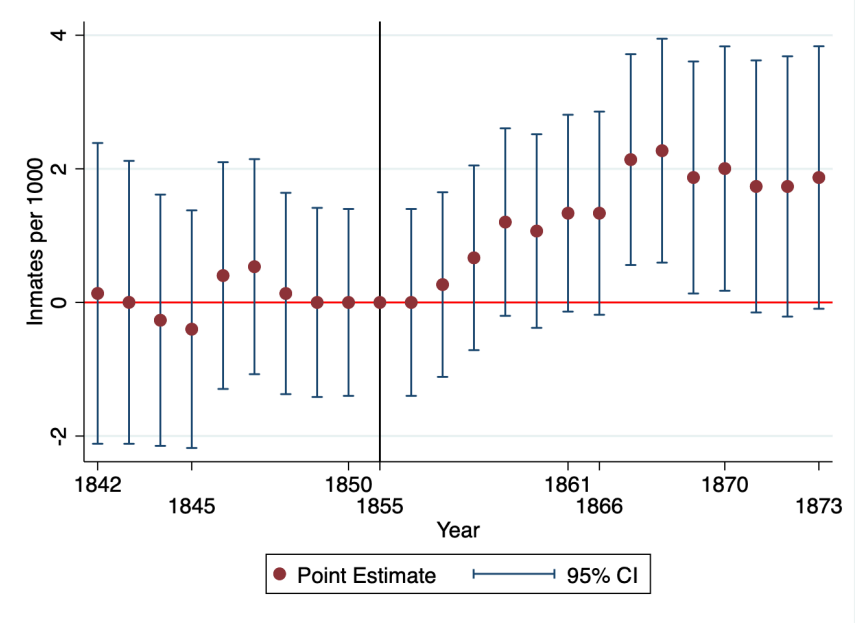
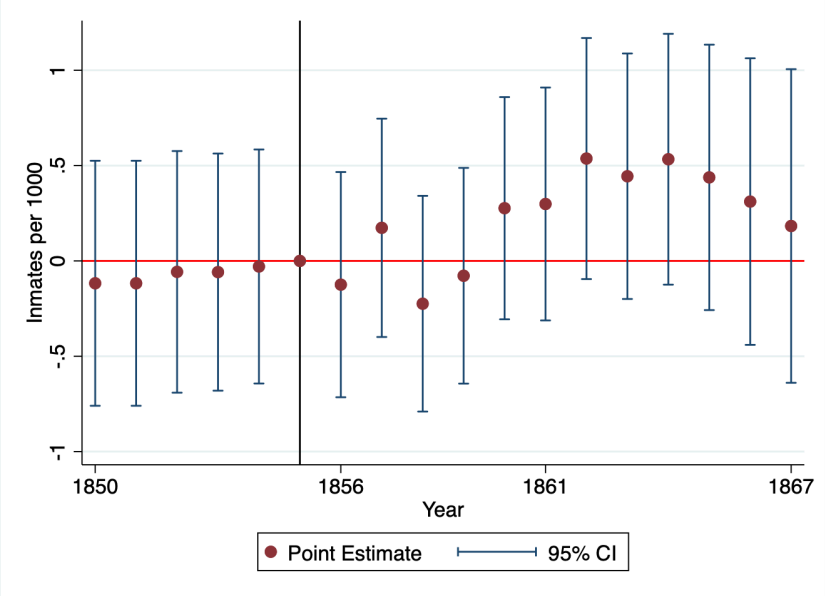
## Appendix A: Additional Tables and Figures

**Figure A1.** Event study estimates of institutional discrimination on imprisonment of Irish men in Philadelphia, matched control group




*Notes:* Data are from an individual-by-year panel constructed from the linked US Census-Eastern State Penitentiary (ESP) data. The linked Census-ESP data are created by matching individuals in the 1860 and 1880 Censuses in Philadelphia to the ESP data using a fuzzy matching algorithm that matches on name, birth year and gender. The control group consists of non-Irish men who were matched to Irish men based on baseline demographic and socioeconomic characteristics from the 1850 Census. Point estimates report the difference between Irish and non-Irish men using all years from 1842 to 1873, excluding 1851-1854 and 1862-1865 due to data availability. Race is controlled for in the regression.

**Figure A2.** Event study estimates of institutional discrimination on imprisonment of Irish people in New York




*Notes:* Data are from an individual-by-year panel constructed from the linked US Census-New York Governor's Inmate Registers (NYGR) data. The linked Census-NYGR data are created by matching individuals in the 1860 and 1880 Censuses in New York to the NYGR data using a fuzzy matching algorithm that matches on name, birth year, and gender. Point estimates report the difference between Irish and non-Irish men from 1850 to 1867. Race is controlled for in the regression.

**Table A1.** Long-run estimates for first generation, by age at time of policy

| | (1) Labor Force | (2) Occupation Standing | (3) Move County | (4) Farm | (5) Real Estate Value | (6) Personal Property |
|---|---|---|---|---|---|---|
| A. Less than 20 years old | | | | | | |
| Irish*Phil | -0.032*** | -0.279 | 0.038*** | 0.004 | 124.723 | -247.089 |
| | (0.009) | (0.380) | (0.013) | (0.007) | (274.043) | (185.741) |
| Phil | 0.041*** | 0.752*** | -0.094*** | -0.005* | -378.213* | 134.765 |
| | (0.004) | (0.155) | (0.005) | (0.003) | (193.681) | (116.422) |
| Irish | 0.057*** | 0.086 | 0.013 | -0.003 | -299.763 | -69.158 |
| | (0.006) | (0.252) | (0.009) | (0.005) | (246.257) | (115.442) |
| N | 35,963 | 35,963 | 35,963 | 35,963 | 20,337 | 20,337 |
| B. 20-50 years old | | | | | | |
| Irish*Phil | -0.044*** | -1.056*** | 0.082*** | 0.019*** | 569.344 | 469.634 |
| | (0.008) | (0.321) | (0.008) | (0.005) | (642.479) | (434.820) |
| Phil | 0.035*** | 1.080*** | -0.118*** | -0.014*** | -1,571*** | 84.599 |
| | (0.004) | (0.160) | (0.004) | (0.003) | (386.698) | (292.859) |
| Irish | 0.049*** | -0.634*** | -0.066*** | -0.020*** | -2,529*** | -1,481*** |
| | (0.005) | (0.212) | (0.006) | (0.003) | (539.491) | (295.682) |
| N | 47,725 | 47,725 | 47,725 | 47,725 | 28,248 | 28,248 |

*Notes:* Panel A reports estimates from individuals who were less than 20 years old in 1856, while Panel B reports estimates from individuals who were between 20 and 50 years old in 1856. Irish is an indicator for whether an individual or their parents were born in Ireland. Phil is an indicator of whether an individual was living in Philadelphia in the 1850 Census. Occupation Standing is a measure that is the average percentile ranking of an individual across six measures of occupational status in the census: Occupational income score, Duncan Socioeconomic Index, Seigel occupational prestige score, Occupational earnings score, Occupational education score, and the Nam-Powers-Boyd occupational status score. Labor Force, Occupation, Move, and farm are from the 1880 Census. Real Estate Value and Personal property are from the 1870 Census. All regressions contain demographic controls including age, gender and race. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

**Table A2.** Effect of institutional discrimination on imprisonment of immigrants in Philadelphia, matched control group sample

| | (1) Irish Men | (2) German Men |
|---|---|---|
| Treat*Post | 1.339*** | -0.221 |
| | (0.467) | (0.723) |
| Treat | -0.158 | 0.465 |
| | (0.270) | (0.424) |
| Observations | 358,968 | 122,640 |
| Pre-Treatment Mean | 2.839 | 2.870 |

*Notes:* Data are from an individual-by-year panel constructed from the linked US Census-Eastern State Penitentiary data. The control group consists of non-immigrant men who were matched to each respective immigrant group based on baseline demographic and socioeconomic characteristics from the 1850 Census. The outcome variable in each regression is the rate per 1,000 men of individuals who were ever inmates in the Eastern State Penitentiary (ESP). Treat is an indicator for being Irish in Column 1, and an indicator for being German in Column 2. Column 1 compares imprisonment outcomes between Irish and non-Irish men using all years from 1842 to 1873, excluding 1851-1854 and 1862-1865 due to data availability. Column 2 compares outcomes between German and non-German men using all years from 1842 to 1873, excluding 1851-1854 and 1862-1865 due to data availability. Race, age, and year fixed effects are controlled for in both regressions. Robust standard errors in parentheses, ** $p<0.05$

**Table A3.** Selection into migration

| | Labor Force 1850 | Occupational Standing 1850 | Farm 1850 | Real Estate Value 1850 |
|---|---|---|---|---|
| A. First Generation | | | | |
| Phil*Move*Irish | 0.015 | 1.001* | -0.007 | 138.838 |
| | (0.013) | (0.517) | (0.006) | (120.916) |
| Observations | 85,878 | 83,681 | 83,681 | 83,681 |
| B. Second Generation | | | | |
| Phil*Move*Irish | 0.012 | -0.381 | 0.007 | 15.325 |
| | (0.022) | (0.902) | (0.009) | (31.562) |
| Observations | 33,741 | 33,741 | 33,741 | 33,741 |

*Notes:* Data are from the 1850 US Census. Sample includes individuals who were living in Philadelphia or New York in 1856. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Move is an indicator for whether an individual had moved from Philadelphia for the first generation, and an indicator for whether an individual's parents had moved from Philadelphia in the second generation. Irish is an indicator for whether an individual or their parents were born in Ireland. Main effects are included in each regression. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.*** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Table A4.** Effect of institutional discrimination on average 1850 characteristics of residence county in 1880, by migration location

| | Pct. in Labor Force 1850 | Avg. Occupational Standing 1850 | Pct. on Farms 1850 | Avg. Real Estate Value 1850 |
|---|---|---|---|---|
| A. First Generation | | | | |
| Phil*Irish | -0.002* | -0.224*** | 0.018 | 23.334*** |
| | (0.001) | (0.042) | (0.013) | (8.702) |
| Observations | 84,150 | 84,150 | 84,150 | 84,150 |
| Control Mean | 0.278 | 27.24 | 0.0963 | 236 |
| B. Second Generation | | | | |
| Phil*Irish | -0.001 | -0.032 | 0.003 | 5.073 |
| | (0.002) | (0.090) | (0.012) | (10.995) |
| Observations | 32,216 | 32,216 | 32,216 | 32,216 |
| Control Mean | 0.276 | 26.57 | 0.206 | 282.7 |

*Notes:* Data are from the 1850 US Census. The outcome variable in each regression is the average baseline characteristic for each county in 1850. The regression specification is then estimated using the average baseline characteristics of the places where individuals ended up moving. Sample includes individuals who were living in Philadelphia or New York in 1856. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Irish is an indicator for whether an individual or their parents were born in Ireland. Main effects are included in each regression. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

**Table A5.** Effect of institutional discrimination on first and second generation outcomes for German individuals

| | Labor Force | Occupational Standing | Move County | Farm | Employment |
|---|---|---|---|---|---|
| A. First Generation | | | | | |
| Phil*German | -0.021* | -0.351 | 0.106*** | 0.040*** | |
| | (0.012) | (0.494) | (0.014) | (0.009) | |
| Observations | 53,611 | 53,611 | 53,611 | 53,611 | |
| Control Mean | 0.587 | 42.79 | 0.276 | 0.0727 | |
| B. Second Generation | | | | | |
| Phil*German | 0.016 | 1.268* | 0.077*** | 0.005 | 0.030* |
| | (0.014) | (0.677) | (0.024) | (0.014) | (0.017) |
| Observations | 23,649 | 23,649 | 23,649 | 23,649 | 23,649 |
| Control Mean | 0.710 | 46.70 | 0.571 | 0.075 | 0.650 |

*Notes:* Data are from the 1880 US Census for panel A, and the 1910 Census for panel B. Sample includes individuals who were living in Philadelphia or New York in 1856 in panel A, and their children in panel B. Phil is an indicator for whether an individual was living in Philadelphia in 1856. German is an indicator for whether an individual or their parents were born in Germany. Main effects are included in each regression. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table A6.** Effect of institutional discrimination on first and second generation outcomes for non-Irish and non-German individuals

| | Labor Force | Occupational Standing | Move County | Farm | Employment |
|---|---|---|---|---|---|
| A. First Generation | | | | | |
| Phil*Imm | 0.003 | 0.252 | 0.036*** | 0.013** | |
| | (0.009) | (0.362) | (0.010) | (0.006) | |
| Observations | 58,277 | 58,277 | 58,277 | 58,277 | |
| Control Mean | 0.584 | 42.71 | 0.275 | 0.0713 | |
| B. Second Generation | | | | | |
| Phil*Imm | 0.016 | 1.323** | 0.013 | 0.017 | 0.026* |
| | (0.011) | (0.569) | (0.020) | (0.011) | (0.014) |
| Observations | 24,527 | 24,527 | 24,527 | 24,527 | 24,527 |
| Control Mean | 0.709 | 46.62 | 0.578 | 0.074 | 0.648 |

*Notes:* Data are from the 1880 US Census for panel A, and the 1910 Census for panel B. Sample includes individuals who were living in Philadelphia or New York in 1856 in panel A, and their children in panel B. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Imm is an indicator for whether an individual or their parents were non-Irish immigrants. Main effects are included in each regression. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table A7.** Heterogeneity in effects by migration status for first and second generations, German individuals

| | Labor Force | Occupational Standing | Farm | Employment |
|---|---|---|---|---|
| A. First Generation | | | | |
| Phil*Move*German | 0.005 | 0.549 | 0.068** | |
| | (0.026) | (1.056) | (0.030) | |
| Observations | 53,611 | 53,611 | 53,611 | |
| Control Mean | 0.521 | 0.464 | 0.111 | |
| B. Second Generation | | | | |
| Phil*Move*German | -0.040 | -2.283* | -0.013 | -0.037 |
| | (0.028) | (1.348) | (0.026) | (0.034) |
| Observations | 23,649 | 23,649 | 23,649 | 23,649 |
| Control Mean | 0.710 | 46.70 | 0.075 | 0.650 |

*Notes:* Data are from the 1880 US Census for panel A, and the 1910 Census for panel B. Sample includes individuals who were living in Philadelphia or New York in 1856 in panel A, and their children in panel B. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Move is an indicator for whether an individual had moved from Philadelphia in panel A, and an indicator for whether an individual's parents moved from Philadelphia in panel B. German is an indicator for whether an individual or their parents were born in Germany. Main effects are included in each regression. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table A8.** Heterogeneity in effects by migration status for first and second generations, non-Irish and non-German individuals

| | Labor Force | Occupational Standing | Farm | Employment |
|---|---|---|---|---|
| A. First Generation | | | | |
| Phil*Move*Imm | 0.018 | 1.487* | -0.026 | |
| | (0.019) | (0.814) | (0.022) | |
| Observations | 58,277 | 58,277 | 58,277 | |
| Control Mean | 0.603 | 42.70 | 0.067 | |
| B. Second Generation | | | | |
| Phil*Move*Imm | -0.021 | -0.311 | 0.003 | -0.008 |
| | (0.023) | (1.142) | (0.022) | (0.029) |
| Observations | 24,527 | 24,527 | 24,527 | 24,527 |
| Control Mean | 0.709 | 46.62 | 0.074 | 0.648 |

*Notes:* Data are from the 1880 US Census for panel A, and the 1910 Census for panel B. Sample includes individuals who were living in Philadelphia or New York in 1856 in panel A, and their children in panel B. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Move is an indicator for whether an individual had moved from Philadelphia in panel A, and an indicator for whether an individual's parents moved from Philadelphia in panel B. Imm is an indicator for whether an individual or their parents were non-Irish immigrants. Main effects are included in each regression. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table A9.** Effect of institutional discrimination on first and second generation outcomes for Irish individuals, Boston control group

| | Labor Force | Occupational Standing | Move County | Farm | Employment |
|---|---|---|---|---|---|
| A. First Generation | | | | | |
| Phil*Irish | -0.024*** | 0.541 | 0.081*** | 0.002 | |
| | (0.009) | (0.365) | (0.011) | (0.005) | |
| Observations | 58,213 | 58,213 | 58,213 | 58,213 | |
| Control Mean | 0.540 | 40.88 | 0.315 | 0.044 | |
| B. Second Generation | | | | | |
| Phil*Irish | -0.015 | 1.063* | 0.059*** | 0.017* | 0.002 |
| | (0.013) | (0.597) | (0.012) | (0.010) | (0.016) |
| Observations | 23,599 | 23,599 | 23,599 | 23,599 | 23,599 |
| Control Mean | 0.702 | 47 | 0.963 | 0.0508 | 0.644 |

*Notes:* Data are from the 1880 US Census for panel A, and the 1910 Census for panel B. Sample includes individuals who were living in Philadelphia or Boston in 1856 in panel A, and their children in panel B. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Irish is an indicator for whether an individual or their parents were born in Irish. Main effects are included in each regression. Demographic controls including race, gender, and age are included in each regression. Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table A10.** Heterogeneity in long run effects for first generation, by migration status, controlling for baseline characteristics

| | (1) Labor Force | (2) Occupational Standing | (3) Farm | (4) Number of Children | (5) Real Estate Value | (6) Personal Property |
|---|---|---|---|---|---|---|
| Phil*Move*Irish | 0.056*** | 2.229*** | 0.019 | -0.287*** | -2,747.677* | -351.048 |
| | (0.015) | (0.569) | (0.017) | (0.099) | (1,407.415) | (769.912) |
| Phil*Move | -0.036*** | -1.624*** | 0.012 | 0.278*** | 1,103.486* | -119.253 |
| | (0.008) | (0.349) | (0.009) | (0.043) | (642.507) | (428.473) |
| Irish*Move | -0.047*** | -1.868*** | 0.025* | 0.225*** | 1,455.750 | 191.120 |
| | (0.010) | (0.343) | (0.013) | (0.050) | (1,252.896) | (408.431) |
| Phil*Irish | -0.056*** | -1.216*** | 0.001 | 0.233*** | 982.468* | 220.549 |
| | (0.010) | (0.411) | (0.005) | (0.058) | (559.703) | (356.162) |
| Phil | 0.046*** | 1.115*** | 0.004 | -0.109*** | -1,283.044*** | 253.473 |
| | (0.006) | (0.277) | (0.006) | (0.029) | (386.140) | (294.499) |
| Move | -0.015*** | -3.208*** | 0.198*** | 0.012 | -889.825** | -209.883 |
| | (0.005) | (0.228) | (0.006) | (0.026) | (377.026) | (311.811) |
| Irish | 0.069*** | 0.338 | -0.008** | 0.052 | -1,810.231*** | -768.331*** |
| | (0.006) | (0.232) | (0.004) | (0.040) | (397.604) | (203.415) |
| Observations | 85,878 | 85,878 | 85,878 | 85,878 | 49,900 | 49,900 |

*Notes:* Sample includes individuals who were living in Philadelphia or New York in the 1850 and 1860 US Censuses. Labor Force, Occupation Standing, and Farm are from the 1880 Census and Real Estate Value and Personal Property are from the 1870 Census due to data availability. Phil is an indicator for whether an individual was living in Philadelphia in 1856. Move is an indicator for whether an individual had moved from Philadelphia by the 1880 Census. Irish is an indicator for whether an individual or their parents were born in Ireland. All regressions contain demographic controls including age, gender and race. Phil*Move*Irish is a key coefficient of interest and captures effects for Irish who moved from Philadelphia, while Phil*Irish captures effects for Irish individuals who did not move. Demographic controls including race, gender, and age are included in each regression. Baseline labor market and socioeconomic factors in the 1850 Census are controlled for in each  Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

## Appendix B: Data

### I. Linking the Eastern State Penitentiary Data to the Census

The first step to link the Eastern State Penitentiary data to the Census is preprocessing the raw data. This involves extracting surname and given name from the name variable, extracting birth year information, and creating blocking variables to expedite the linking process. The blocking variables in the data include first initial, last initial, and decade of birth. These block variables are used to create blocks in the census data for each observation in the ESP data that contain all individuals in Philadelphia County that have the same first initial, last initial, and birth decade. A similar preprocessing is done with the Census data to create blocking variables. In addition to this preprocessing, I match on only male individuals, as the vast majority of observations in the ESP data are male.

After preprocessing, the data are linked using a fuzzy matching algorithm. I use the *reclink* algorithm (Blasnik 2010) to link the ESP data to the census, matching on given name, surname, and birth year. I implement the linking process as outlined in Table B1.

**Table B1.** Linking process for ESP-Census data creation

| | Process | Blocking Variables |
|---|---|---|
| Step 1 | Link to 1860 Census using name and birth year | First initial, last initial, birth decade |
| Step 2 | Exclude matches from step 1, link using new blocks | First initial, last initial |
| Step 3 | Exclude matches from step 2, link using new blocks | Birth decade |
| Step 4 | Exclude matches from step 3, repeat steps 1-3 using 1880 Census | |

After the linking process is completed, I ensure the matches are high quality. The *reclink* algorithm creates a match score ranging from 0 to 1, with 1 being a perfect match. I exclude all matches with a match score below 0.8. I also exclude any matches to multiple individuals in the US Census. This process yields a match rate of 81%.

## II. Creating the Intergenerational Sample

To create the intergenerational sample, I first identified individuals in the 1860 Census who were children at the implementation of the institutional discrimination and had formed their own households in the 1870 and 1880 Censuses. I identify 27,424 individuals in the main sample who were children in 1860 and had their own children in 1870 or 1880. I remove duplicate children (a result of main sample individuals forming households together), yielding 69,896 unique children in the second generation sample.

Once the children in the second generation sample have been identified, I link them to their census records in adulthood. I use the Census Tree dataset (see Price et. al 2021) to link these individuals to the 1910 Census. I am able to link 34,363 individuals to the 1910 Census, a linking rate of 49%. After excluding a small number of observations with incomplete data, I have a final intergenerational sample of 34,332.