Old Immigrants, New Niches: Russian Jewish Agricultural Colonies and Native Workers in Southern New Jersey, 1880-1910

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Abstract

The effect of immigration shocks on native workers in a labor niche remains an open question. We test how workers in the farm and nonfarm sectors were affected by the establishment of Russian Jewish agricultural colonies in southern New Jersey in the late nineteenth century. By following the same individuals across the 1880 and 1910 US censuses, we avoid making assumptions about the substitutability of immigrants and native workers. Russian Jews established themselves as farmers or factory workers with the help of international aid societies. Many native workers increased their occupational standing by transitioning to occupations complementary to agricultural and semi-skilled factory work, the immigrants' main niches. We see no impact on farmers, likely due to the structure of agricultural markets. We also find a decreased probability of out-migration for natives living near a successful agricultural colony, with occupational upgrading concentrated among stayers.

Keywords: Immigration, Native Response, Farming, Spillovers.

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American history is populated by immigrants who came to the United States to escape persecution, economic disaster, and violence. Like other groups before them, one and a half million Jews from the Russian Empire found their way to the United States starting in 1881 (Spitzer 2015). The similarities of their plight to earlier immigrant groups was not lost on contemporaries. As William Stainsby, the Chief Statistician for New Jersey, wrote in a 1901 report:

> They had been cast out as paupers; their humble homes in Russia had been taken from them, and they fled as did the Pilgrim fathers from tyranny and relentless persecution to a land they knew not, but with the promise of such assistance as would enable them to make homes for themselves and children, and where they would be free to worship God in their own way, assured of liberty and the protection of the laws (pp. 3-4).

As the population of ethnic enclaves in cities swelled, some of these newcomers were dispersed to the countryside. With the help of aid agencies, farming colonies were established across the United States (Shpall 1950). We will focus on the effects of the flagship agricultural colonies, located in southern New Jersey, had on native workers both in the farm and nonfarm sectors by combining longitudinal, individual-level data and new quasi-experimental variation. In their introduction, the economist Giovanni Peri and the sociologist Susan Eckstein discuss how natives in occupations that become niches for immigrants may be displaced by the new arrivals. We are able to examine the impact of immigrants entering a new niche on the outcomes of natives both inside and outside the niche, pockets of concentrated employment in a specific occupation within a community, in a uniquely rural context

Jewish charities funneled refugees and funds into clusters of farms across southern New Jersey chosen for the affordability of land and relative proximity to New York City and Philadelphia. Before the establishment of the first agricultural colony at Alliance in 1882, no Russians lived in the area, allowing us to isolate the effect of the immigrant inflow. We compare the 1910 labor market outcomes of native-born men living next to the colonies in 1880 to those

living in the rest of southern New Jersey. The influx of Russian immigrants was equivalent to approximately one percent of the total population in areas next to agricultural colonies. While Russian Jews were not historically farmers, due to restrictions on landowning in Russia, they scrapped out a living in New Jersey as farmers, albeit with the help of charity-funded training. To keep the Russian Jewish immigrants employed when demand for crops was low, international aid societies also helped construct factories in the colonies.

We find that men living near a colony had not only a decreased probability of moving away by 1910, but also a higher probability of upgrading to higher-paying jobs complementary to refugee-occupied niches. Men who lived near agricultural colonies had a 4.7 percent higher income than men who did not live near a colony. In contrast to the positive results for the nonfarm sector, we find there to be no effect of living near a colony on farmers, despite the influx of new farmers. We will begin with a brief literature review, followed by a thorough investigation of the historical context of this immigration shock. Next, we detail our data and describe our specification. Finally, we present and discuss our quantitative results.

Literature Review

The literature on the impact of immigration on native worker labor market outcomes is vast. This paper fits neatly into the intersection of historical work on the Age of Mass Migration, more modern work using longitudinal individual-level studies, and examinations of refugee and immigrant shocks using natural experiments.

At the heart of the debate on the effect of immigration on native worker outcomes lie two different assumptions about how similar native and immigrant workers are. Because of data constraints, researchers often use cross-sectional survey data. Identification of this effect requires

strong assumptions about substitutability across workers; before determining how immigrants affect workers, the researcher must decide how susceptible each worker's job is to an influx of immigrants. While the economist George Borjas (1999) has focused on wholly substitutable immigrants and natives within an education and work experience group, economists Giovanni Peri and Chad Sparber (2009) allow for differences between native and immigrant workers, which shifts the direction of impact on native wages from negative to zero. The economists Mark Partridge, Dan Rickman, and Kamar Ali (2008) found results consistent with other nationwide studies when looking specifically at rural areas, but noted that for high-poverty regions, higher immigration was associated with higher in-migration of natives, suggesting immigrants added to the economic vitality of the local area. We will track the same individuals over time, allowing us to abstract from the assumptions made in previous studies. Other researchers have used unexpected events as quasi-experiments to estimate the impact of immigrants on native workers. The economist David Card's 1990 examination of the Mariel Boatlift is probably the most well-known use of this empirical strategy in the immigration literature; he used this method to examine the effects of a large and unexpected influx of Cuban immigrants on the Miami labor market, finding no impact on the wages or unemployment rates of low skilled workers already in Miami.

Modern longitudinal work has focused on European countries for data accessibility reasons. Several papers also treat a Danish refugee settlement program as a natural experiment. From 1986 to 1998, this program randomly dispersed new refugees to municipalities across the county. Looking at wages within Danish firms 1993-2004, the economists Nikolaj Malchow-Møller, Jakob Munch, and Jan Rose Skaksen (2012) find that when firms increase their employment of low-skilled immigrant workers, the wages of native workers at the same firm

drop significantly. However, a study that looked specifically at Danish farms found that farms that employed immigrants were larger, with greater job creation and revenue (Malchow-Møller, Munch, Seidelin, and Skaksen 2013). In the work that is the most similar in spirit to ours, the economists Mette Foged and Giovanni Peri (2016) leverage this program to examine the long-term outcomes of low skill native workers in cities that received a substantial shock of immigrants. Overall, they find a small positive mean effect on income for native workers from 1991 to 2008. Consistent with earlier work, low-skilled native workers were more likely to transition into occupations with less manual intensity as low-skilled immigrants arrive. On the migration margin, Danish-born workers migrated with a lower frequency given more refugee immigrants moving into their municipality. Spillovers, ripple effects of the immigration shock across the economy, provide some explanation for why these results differ from those in Malchow-Møller et al (2012). While we will use a similar time window, we will focus more on skill-upgrading and migration responses in a much less industrialized society.

In the literature on the large wave of unchecked immigration into the United States 1880-1913, most work has focused on the experience of immigrants, not native workers.[1] Some of this work complements the focus of our work on Russian immigrants. The economist Yannay Spitzer (2015) focuses on Russian Jewish immigrants and finds that overall, pogroms did not drive emigration to the United States. The economist Leah Platt Boustan (2007) concludes that demographic growth was a key driver of Russian Jewish immigration. Using a 1909 Immigration Commission report on weekly wages across industries and immigrant groups, economist Barry Chiswick (1992) finds Russian-born Jews' lifetime earnings profiles were higher than those of

[1] Classic works on immigration to the United States includes work by economists like Chiswick (1992) and the two books by Timothy J. Hatton and Jeffery G. Williamson (1998, 2005). More recent scholarship includes work by Abramitzky et al (2012, 2014).

other immigrant groups, though still lower than natives, indicating that they were imperfect substitutes for native workers, just as the modern literature would suggest, due to their language differences.

Economic historian Claudia Goldin (1994) provides the closest analog to our work. She combines city-level annual wages, decennial demographic information, and decennial industry-city wage series to look at the change in wages after immigration shocks, measured as the change in the share of the population that is foreign-born. Goldin concludes that immigration pushed down wages in the clothing and unskilled labor sectors. We complement this work by moving away from aggregate data (and the substitution assumptions embedded in that method) to using longitudinal data. Further, we address the potential endogeneity of immigrants' locational choices and natives' economic outcomes by using a cleanly-identified natural experiment.

Additionally, there is a specific literature on the impacts of refugees, much of it in the context of developing countries. Refugees require separate analysis because their migration is forced and external aid charities often ease their transition. The economists Isabel Ruiz and Carlos Vargas-Silva (2016) examine a large inflow of refugees into Tanzania in the early 1990s as a result of ethnic conflicts in Burundi and Rwanda. Looking at individuals before and seventeen to nineteen years after the shock, they find evidence that individuals in areas that received a larger flow of refugees into their area were more likely to be engaged in household agricultural work or self-employment as opposed to casual day work, where they would have competed with the incoming refugees. Although the economist Javier Baez (2011) finds immediate adverse health impacts for children in the areas that experienced these refugee inflows, the economists Jean-François Maystadt and Philip Verwimp (2014) present evidence of net economic benefits, although with substantial heterogeneity across occupations. Self-

employed farmers were most likely to benefit from the refugee inflow, consistent with occupational transitions Ruiz and Vargas-Silva find. None of these studies take into account the outcomes of those individuals who migrated after the inflow, an important potential mechanism for natives' adjustment.

By combining a previously unused natural experiment with longitudinal data, we provide a minimally-structured environment in which to test how native workers respond to the entrance of immigrants in their labor market, both generally and into their specific niche. Instead of having to impose how and if immigrants competed with native-born Americans, we can measure the impact directly. Additionally, this paper is the first to our knowledge to examine this question in the Age of Mass Migration. Finally, most previous work has focused on urban labor markets. A rural context, then, is novel. We turn next to the historical record to examine how Russian Jews ended up farming in some parts of southern New Jersey.

Historical Context

Before proceeding with a quantitative exploration of how native-born workers in New Jersey responded to the establishment of agricultural colonies in their midst, we provide some background on how Russian Jews became New Jersey farmers.

About half of the world's Jewish population in 1880 lived in the Pale of Settlement, an area of the Russian Empire consisting of most of modern-day Lithuania, Poland, Belarus, Moldova, Latvia, and Ukraine (Popper 2006, 2). This concentration did not come about organically. Beginning with decrees passed by Catherine the Great in the 1790s, Russian law confined the Jewish population to the Pale, wherein many had already resided (Eisenberg 1995, 4). Jewish craftsmen found themselves pushed out by new factories, which often refused to hire

Jewish workers (Popper 2006, 3). Such targeted policies resulted in widespread poverty. In 1849, only 3 percent of the Jewish Pale population owned any capital, and they were considered a "separate, inferior category," below even peasants (Eisenberg 1995, 5; Lederhendler 2008, 514). Jewish military conscripts were substantially shorter than non-Jewish conscripts, suggesting lower standards of living (Kopczyński 2011, 206).

After the assassination of Alexander II in 1881, the Russian government enacted the explicitly anti-Semitic May Laws. Jewish people could no longer move to rural areas or enter beyond a certain quota into schools or professional work. Further, villages could expel anyone deemed "undesirable" (Brandes and Douglas 1971, 18; Eisenberg 1995, 13). When mob violence erupted, workers in the more manufacturing-driven North had an easier time emigrating. Jewish people in the South were at the center of anti-Jewish violence and needed international aid to escape (Eisenberg 1995 6-17; Spitzer 2015, 26). Pogrom survivors from the southern Pale joined people from nearby towns in a mass exodus to the Austro-Hungarian border town of Brody. Swiftly, the refugees exhausted the resources of international aid foundations (Spitzer 2015, 8).

The international community was divided on the "Jewish problem." European Jews did not want to absorb the refugee inflows on their own. German Jews worried that visibly supporting other Jews might violate their German citizenship, and French Jews were just entering the period of anti-Semitism characterized by the Dreyfus Affair (Eisenberg 1995, 63-65). Many in the Jewish community in the United States worried that an influx of poor, uneducated, Yiddish-speaking migrants bearing "the ineffaceable marks of permanent pauperism" would set them back socially (Osofsky 1960, 183). The Hebrew Emigrant Aid Society (HEAS) emissary declared to European aid societies that the "America [was] not a poorhouse…[nor] an asylum for the paupers of Europe" (Szajkowski 1950, 225). In the 1880s,

American aid societies even paid to deport the poorest immigrants on cattle steamers to avoid saturation (Brandes and Douglas 1971, 122). If the flood could not be stopped from entering the United States, then perhaps it could be diverted to under-settled areas. To that end, the international Jewish community settled on the idea of lending skilled, able-bodied refugees money to establish farms in the United States and Argentina (Osofsky 1960, 174-175; Shpall 1950, 124).

The Sicily Island, Louisiana Jewish farm colony was established in 1881. Thirty-four families from pogrom-stricken Kiev and Elizabethgrad left Brody for New York with the help of French charities and on to the tract of land purchased by the HEAS (Shpall 1950, 129; Eisenberg 1995, 37). Histories attribute the selection of low-lying, mosquito-ridden, isolated land in the north of Louisiana to corruption or ignorance (Price and Shpall 1958, 84; Shpall 1950, 130; Eisenberg 1995, 38). Either way, a spring Mississippi River flood destroyed the colony's crops at the same time as a malaria outbreak struck the colony (Shpall 1950, 130-131). Other farm colonies followed across the western United States and all failed quickly. Though the larger Jewish philanthropic community wished settlers well, they also were trying to divert as many immigrants as possible from large urban centers. This "marked antagonism" resulted in sites being chosen "with almost no thought to the agronomic phase of the colonization" (Goldstein 1921, 13).

By mid-1882, it was clear these colonies were not set up to survive without constant aid inflows. Even if several of the colonies did not fail, immigration continued to surge, suggesting that a more efficient system was imperative if the Russian newcomers were to be diverted from urban centers. In response, philanthropists were determined to find a site with a good climate which was close to pre-existing Jewish communities. Keeping the colonies close to urban centers

would make them better safety valves for continued elevated levels of immigration and abler to receive financial and religious support. New Jersey had recently appointed a commissioner of immigration eager to bring immigrants into New Jersey, particularly if they were willing to buy his land. Because Commissioner Augustus Seeman was a partner in a realty firm near Vineland, and there was land with good soil available near the New Jersey Central Railroad, which connected to both Philadelphia and New York City, the HEAS was happy to oblige (Shpall 1950, 22). That is not to say that southern New Jersey was abnormally pro-immigrant. When the immigrants arrived in Vineland, natives scorned them because the newcomers could not tell tomatoes from weeds (Brandes and Douglas 1971, 86).

Alliance, New Jersey was thus established. Settlers were assigned land through a lottery: each family got twelve to fifteen acres of land with generous mortgage terms and a weekly wage for clearing the land. Income was supplemented by picking berries, working in the nearby cigar factory (which charities wooed to the area), or doing needlework at home (Stainsby 1901, 5). Several other colonies followed Alliance. Those that received help, like Carmel, Rosenhayn, and Norma survived. Seven other colonies failed quickly and were abandoned; contemporary observers attributed this to a lack of startup capital, due either to rank exploitation or mismanagement, not to the quality of the land itself (Stainsby 1901, 27; Eisenberg 1995, 105; Brandes and Douglas 1971, 67).[2]

The biggest colony was founded in 1891 by one of the most prominent Jewish philanthropists of the age, Baron Maurice de Hirsch. Farming, a healthy and ennobling endeavor, would raise the profile of the Jew no matter the external prejudice; de Hirsch claimed “rainfall

[2] We conducted falsification tests on the placement of these failed colonies and found no relationship between failed colony placement and 1880 characteristics of our matched sample. Results available upon request. Natives living near these failed colonies are not considered treated in our analysis.

[was] insensitive to religion" (Popper 2006, 11). When suburban land around New York City, Philadelphia, and Trenton proved too expensive, and a deal for land near Newark fell through, the Baron de Hirsch Fund turned to a 5,000-acre plot 20 miles southeast of Vineland (Brandes and Douglas 1971, 114). Unlike the earlier colonies, industry was planned in Woodbine. The town included an electrical plant, larger houses, a hotel, a Russian bath, and many houses intended for factory workers (Ibid., 115).

The climate was similar across the New Jersey colonies of Alliance, Rosenhayn, Carmel, Norma, and Woodbine which define our immigrant shock. Farmers grew a variety of fruits and vegetables for sale at market, because the soil was ill-suited for growing wheat or other staple crops (Stainsby 1901, 8). In particular, the colonies were renowned in Philadelphia and New York for their sweet potatoes, berries, and farm animals (Ibid., 20; Ibid., 60). Part of this fame perhaps derived from the marketing cooperatives farmers organized on their own initiative starting in 1889 (Brandes and Douglas 1971, 96). The colonies expanded from 1,109 people in 1889 to approximately 2,227 in 1901 and 2,739 in 1919 (Robinson 1913, 65-67; 1901; Rosenthal 1906; Goldstein 1921, 29).[3] The Jewish Agricultural Society attributed the colonies' survival to settlers' innovation, daring, and frugality (Jewish Agricultural Society 1954, 9). While the colonists' hard work cannot be denied, it is certain external aid also played a large role in their continued existence.

Jewish aid societies remained heavily involved in the day-to-day lives of the colonists. Well before the passage of the Federal Farm Loan Act, the Jewish Agricultural and Industrial Aid Society (JAIAS) provided Jewish farmers with farm improvement loans (Stainsby 1901, 95;

[3] Population in 1901 uses 1889 values for Rosenhayn due to missing data.

Robinson 1912, 52-53). To help the new farmers, who were so ignorant that they did not know if potatoes grew above or below ground, the JAIAS also published a Yiddish language newsletter and sent experts to discuss innovations with the colonists (Ibid., 54; Brandes and Douglas 1971, 86). The nation's first agricultural secondary school was established in Woodbine in 1893 to provide training in a more basic, applied manner than offered at universities (Stainsby 1901, 22; Goldstein 1921, 22). Other educational directives established community libraries and education supervising bureaus, which helped the immigrants' children outpace natives in school (Eisenberg 1995, 148; Robinson 1912, 67). These efforts were helpful, but still colonists needed more.

Despite the colonies' agricultural ethos, aid societies realized very early that nonfarm employment would be needed to sustain the immigrants. The soil was workable, but still required substantial investment to sustain a family. With industry, "it should not take forty years to lead their brethren out of the wilderness" (Brandes and Douglas 1971, 120-126). After the first year in Alliance, charities donated three thousand dollars to fund factory construction to provide offseason employment (Ibid., 58). After 1900, the JAIAS provided mortgages, below-market rent, and annual subsidies for factories willing to relocate to the colonies in order to keep Jewish families fed during the winter (Dubrovsky 1992. 20; Brandes and Douglas 1971, 149). Norma, in particular, enjoyed high economic and population growth after the construction of the Allivine Canning Company in 1901. The JAIAS helped build the factory to provide a local market for farmers' produce (Robinson 1912, 66). By 1919, there were twenty-one factories in the Jewish colonies, with more in the surrounding areas (Goldstein 1921, 41).

Anti-Semitism was alive before the arrival of the Russian immigrants but increased with the expansion of the colonies. In 1885, for example, the *Vineland Evening Journal* printed that Eastern European Jews had murdered one of their own, just as they did to Jesus Christ, thus

reiterating the blood libel which had provided a spark for several Russian pogroms (Brandes and Douglas 1971, 173). Jewish businesses were open on Sundays, which proved to be a temptation for neighboring Christians. Because some Christians went shopping in Rosenhayn, the *Vineland Evening Journal* suggested that businesses closing on Sundays was an "American custom," so that anyone open for business should leave the country (Ibid., 187-188). Anti-Semitism also flared up in the workplace. In September 1891, workers at a glass factory refused to work alongside Jewish workers, chased the Jewish workers through the streets, and went on strike until the factory fired the Jews for being "unfit to work" (Eisenberg 1995, 124).

While there was some cultural tension, for the most part, native-born Americans welcomed Jewish workers' work ethic and patronage. When some accused the Jews of not being good workers, one employer wrote the local newspaper to dismiss those charges as "slanderous," and the founder of Vineland suggested that some non-Jewish farmers could learn from the colonists' diligence (Brandes and Douglas, 175). Other benefits came as spillovers from Jewish charity. When philanthropists' labor-oriented guidelines proved to constrain profits, some factories relocated to nearby Vineland (Ibid., 156-159). These differential responses suggest that there may be substantial heterogeneity in the effects of the colonial immigration shock on native worker outcomes. We turn next to a quantitative analysis to distinguish just how native-born workers changed their labor market behavior due to exposure to immigrants.

Data

From the historical record, as discussed above, we can identify areas with agricultural colonies. Starting with the 1880 Census, the Census Bureau divided counties into smaller

districts in order to administer the census. Each census taker would have been assigned one or more districts across which they would administer the census questionnaire to each household (Haddad 2012). Using these enumeration districts allows us to take advantage of finer and more precise locational variation in exposure to the immigrant shock. To our knowledge, we are the first to use enumeration district-level variation in historical work. This gives us 108 localities with which to work instead of 8 counties.

In southern New Jersey, the enumeration district boundaries follow the established municipal boundaries in the county, called townships, which are analogous to local labor markets (Morse 2016).[4] Using the 1872 State Atlas of New Jersey (Beers 1872), we can match the colony locations to their census enumeration districts. The darkest-shaded townships in figure 1 denote locations of agricultural colonies. Only townships in southern New Jersey, here defined as Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Ocean, and Salem counties, are included in our sample. We exclude the city of Camden, as our analysis focuses on more rural labor markets. Townships colored white in figure 1 did not contain any observations in our matched sample, which is described below.

[Figure 1]

Given this township-level shock, we take men observed in both the 1880 and 1910 US Censuses as our unit of study (Ruggles et al 2015). This time-frame allows us to look at long term outcomes, but other events occurring in those thirty years could affect our results.[5] Using a procedure similar to that observed in Abramitzky et al (2014), we take an 1880 observation and a

[4] There are slight deviations in enumeration district borders from modern township boundaries as mapped in Figure 1 in south central New Jersey. We have chosen to color townships based on the proximity of the majority of the township to a colony.

[5] The 1890 census schedules were destroyed by a combination of fire and congressional mandate, and 1900 census schedules are still in the process of being digitized. We thank Katherine Eriksson for her assistance with the 1910 full count data.

1910 observation as matched if they share a first and last name, a state of birth, and have birth years within five years of each other. Names are cleaned using the New York State Identification and Intelligence System, a phonetic algorithm, to correct for enumerator spelling errors. We first match those with the same birth year and remove them from the pool of available matches, then those with birth years within one year of each other and remove those from the pool, and finally those with birth years within two years of each other. Then we keep only those observations which are unique by first name, last name, and birth place within a centered five-year birth year window to ensure that the matches are unique and maximize the probability that we have indeed found the same person in both censuses. Further cleaning is done to create uniform occupation variables across our sample in 1910.[6] We restrict our sample to native-born men under age sixty-five in 1880 living in the counties described above. Although the matched sample is technically a panel data set, our specifications use it as a 1910 cross section with pre-period information from 1880.

[Table 1]

As we see in table 1, our sample began the period at age 25. Most of them were living in rural areas, but only just under 7 percent were farmers in 1880. One-fifth of the sample were exposed to a colony, and on average they were 20 miles away from a colony. The average occupational score is around that of a laundry operative or a fisherman. By the end of the period, their occupational score nearly doubled to the level of a teacher or a stonecutter. Well over half the sample migrated away from their initial county of residence. Appendix table A1 demonstrates the similarity between the entire 1880 southern New Jersey male population under 65 and our matched sample.

[6] Additional information on the matching and cleaning processes described here available upon request.

In 1880, when we first observe our matched sample, southern New Jersey was still very rural. Eighty percent of all people living in our area of interest were classified as rural by the Census Bureau at the time, and 28 percent of people were in a household with at least one person involved in agriculture. Given the rural nature of the area, it is not surprising that these townships were small. The average population of the townships in our area of study was 1,944 in 1880. The townships that receive successful colonies were slightly smaller, with an average population of 1,872. An inflow of over two thousand refugees would definitely have been noticed by the locals. The modal occupation category, representing 18 percent of men over 16 was owning, managing, or renting a farm. Agriculture was also the most common industry in which to work, claimed by 43 percent of men reporting an sectoral specialization. This was an important economic niche for native workers as well. 99 percent of working-age men were literate, and 90 percent of them were born in the United States. There were no immigrants from the Russian Empire in the area in 1880 (Ruggles et al 2015).

Midsize farms were the norm in southern New Jersey. In 1880, fewer than 8 percent were under 10 acres and not even 1 percent were over 500. The average farm size was 89 acres, and 13.8 percent of the farms were between 10 and 49 acres, similar in size to those the colonists would later work (Haines and ICPSR 2010; Stainsby 1901). The average farm's output was 888 dollars, equivalent to approximately 21,800 dollars in 2016. Although farming was still the dominant industry, manufacturing also had a presence in this area. Even Cape May County, the least developed, had 36 manufacturing establishments in 1880. On a per capita basis, the value of manufacturing output had already surpassed agricultural output, with manufacturing establishments producing about 104 dollars of output per person in 1880 and farming producing

about 50 dollars per person, which are approximately 2,490 dollars and 1,230 dollars in 2016, respectively (Haines and ICPSR 2010).

Specification

To estimate the impact of newly-arrived immigrants on native workers using this natural experiment and linked individual data we use specifications of the following form:

(1) $Y_{id} = \alpha + \beta Colo_{d} + \gamma_i + \rho_{c(d)} + \varepsilon_{id}$

where *i* is the linked individual, *d* is the enumeration district, and *c* is the county of the individual's initial enumeration district. γ_i represents individual controls, which includes controls for individuals' age and their initial occupational category. Although we considered clustering standard errors at the county level, we then run into the small number of clusters problem (Cameron and Miller 2015). Instead, we use robust standard errors and accept that our standard errors are likely reduced because there is some spatial correlation that remains unaccounted for in our estimates.

We control for variation in county economic composition stemming from proximity to either the Atlantic Ocean or Philadelphia with $\rho_{c(d)}$, which divides the townships in our sample into three categories: those in a county with an Atlantic border, a Philadelphia border, or neither. Thus any initial conditions relating to port or major city activity are washed out.

$Colony_d$ is an indicator for whether an individual lived in a township with a colony or next to one with a colony. We chose this proximity measure to reflect the localized nature of rural labor markets at the time (Parman 2012). The *Vineland Evening* Journal expressed amazement that colonists walked about 5 miles from Alliance to Vineland to shop every day

(Brandes and Douglas 1971, 172). Walking from one township to another was considered a long, but feasible daily commute. We try a variety of distance-based measures and find similar results, available in appendix figure A1.

Y_{id} is either the native worker i's occupational standing in 1910 or an indicator variable which takes on a value of one if the individual migrated out of their 1880 county of residence by 1910. Additionally, we examine the probability of entering three specific occupational niches: farming, white-collar work, or craftsmen (skilled blue collar). Unfortunately, the Census Bureau did not collect earnings information at this time. We follow the lead of other economic historians by using occupational standing as a proxy for labor earnings (Abramitzky et al 2014). Specifically, we use the occupational score calculated by IPUMS which gives each occupation a score based on the median income of individuals in that occupation in 1950, measured in hundreds of 1950 dollars. For ease of interpretation we convert these incomes to 2016 dollars using the CPI deflator in the discussion of our results (Ruggles et al 2015). For men under sixteen in 1880, we use the father's occupation score to measure economic status before the immigration shock (Abramitzky et al 2014).

We are interested in the migration response of natives to the Jewish agricultural colonies. Migration away from the township-level shock is defined as moving away from the county of observation in 1880 by 1910. A main advantage of following the same individuals over time is the ability to examine this migration response. Migration, both westward and into cities, was a major force at this time. As seen in table 1, more than half of our sample will migrate over this time period. Many of them move to Philadelphia or other urban centers on the East Coast, but some of them move west as well.

For this specification to give us a true estimate of the impact of these immigrants on native workers, we need to make a parallel trends assumption: in the absence of the colonies, the occupational and migratory patterns of native-born men in areas near a colony would have been the same as those living farther away. As we are comparing the same individuals across time, we do not have to make assumptions about the comparability of people living in a given area in 1880 and in 1910. The specific tracts of land purchased within southern New Jersey happened to be available for sale by the newly-appointed state commissioner of immigration at the same time Jewish charities were looking for affordable, high-quality farmland between New York and Philadelphia. Due to the quasi-random nature of the agricultural land selection process, we believe that any pre-existing trends in our sample should be unrelated to the shock experienced by our treated group, those who live in or contiguous to a township with a successful agricultural colony.

Because the data necessary for an examination of pre-immigration shock trends in individual labor market outcomes do not exist, we look for possible pre-trend shocks at the county level. [7] Figure 2 shows average farm value including crops and livestock across counties with and without colonies in our sample. While the no-colony group has more valuable farms, the trends in farm value appear to be similar, suggesting that other economic trends are not driving the selection of the colonies, and immigrants did not receive particularly unusable land.

[Figure 2]

Finally, to address any remaining concerns about international aid organizations' selection of local labor markets in which to invest within southern New Jersey, we use our matched sample to run the following regression:

[7] Occupational information has only been digitized for a small subset of 1870 census returns. The sample from the counties relevant to our study is too small for meaningful analysis.

$$(2)\ C_{id} = \alpha + \delta X_i + \gamma_i + \rho_{c(d)} + \upsilon_{id}$$

C_d indicates if an enumeration district contains a colony or any treated individuals (adding enumeration districts that are contiguous to those with colonies). X_i is one of our three characteristics of interest: $occscore_i$, the 1880 occupation score of a matched individual; age_i, his 1880 age; or $farm_i$, the matched individual's household's farm status.[8] γ_i represents the individual's age and age squared in 1880 (only included when looking at occupation or farm status), $\rho_{c(d)}$ indicates if the enumeration district is in a county that borders either Philadelphia or the Atlantic Ocean, and υ_{id} is a randomly distributed error term. We find no relation between the initial occupational scores, age, or farm status of our matched sample and the location of the agricultural colonies. All the estimates, presented in appendix table A2, are very small in magnitude; none are statistically significant.

Results

We present our quantitative results in tables 2 through 4. All subgroups are defined by initial period characteristics. We chose age and farm household as subgroups because age at the time of this event is likely to influence the spectrum of possible responses and the introduction of the agricultural colonies may represent a different type of shock for farm households versus non-farm households. We find that being next to a Jewish agricultural colony is associated with a 4.2 percentage point decrease in the probability a native-born worker leaves his 1880 county, which is similar to findings in Foged and Peri (2016). Given the general population's tendency to migrate at this time, the choice to stay implies positive impacts from immigrants. These

[8] A household is categorized by the Census Bureau as a farm household if it is located on a tract of land used for agricultural purposes of if any member of the household gives farmer as their occupation.

migration results also rule out the story that natives left treated areas, perhaps due to competition with immigrants, and found better jobs in other labor markets. This result underscores the importance of using a matched sample; if we had compared areas contiguous to colonies before and after the inflows, the two groups would have been systematically different because of this reduced probability of migration.[9]

Not only were workers in areas with inflows of refugees and international aid less likely to move, they also experienced increases in occupational score relative to workers in labor markets not next to colonies. As seen in panel B of table 2, those native workers living next to a Jewish agricultural colony earned 1,277 more dollars (in 2016 terms) in 1910. This represents a premium of approximately 4.7 percent at the mean 1910 occupational score. Although this is larger than the 2.4 percent wage premium found in Foged and Peri (2016), we also have an immigrant shock approximately double the size of the shock in that study. This response is primarily driven by men who start the period in non-farm households. Their incomes increased 1,893 dollars on average in 1910, a premium of 6.9 percent.

[Table 2]

Next we look at natives' occupational sector choices in order to better understand the difference between farm and non-farm households. The combined impact of the refugee labor shock and philanthropic capital shock can be felt through natives' occupational choices. Part of this premium may be due to a shift away from farming, as shown in panel A of table 3. Younger men and men starting the period in non-farm house holds were both relatively less likely to be in a farming occupation in 1910. For natives under the age of sixteen in 1880, there was a decline in the probability of being a farmer in 1910 of 3.5 percentage points when living near a successful

[9] Note, all matched individuals are included in the following analyses, regardless of migration status.

agricultural colony. This is consistent with a complementarity story; as immigrants moved in and began to farm, more native born workers could transition to better-paid, nonfarm occupations, particularly given the establishment of aid-supported industry nearby.

[Table 3]

In fact, as demonstrated by panels B and C of table 3, workers near agricultural colonies in 1880, particularly those not living on farms at the time, were 3 to 4 percent more likely to be white-collar or crafts workers in 1910. This is an effect of approximately 10 percent relative to the mean for white-collar workers and almost 25 percent for craftsmen. International aid organizations provided substantial funding in the colonies for Russian Jews to farm and work in factories, allowing native workers to reap the benefits of increased demand for positions that required more specialized training or intrapersonal skills, like mechanics or floor managers. We find additional support for this conclusion by examining the effect on occupation score separately for those who migrate versus those who do not by interacting an individual's occupation score with his migration status. Because migration is also affected by the location of an agricultural colony, these conditional correlations are not necessarily causal but do provide additional information on the impacts of the colonies. Table 4 presents the results of the following regression:

$$(3)\ occscore * \mathbf{I}(migration)_{id} = \alpha + \theta Colony_d + \gamma_i + \rho_{c(d)} + \varepsilon_{id}$$

The exercise is repeated for both migrants and non-migrants. We find the strongest, positive effects on occupation status for individuals who do not migrate, but stay in southern New Jersey. Overall, the occupation score increases by 1.84 (associated with an increase of 1,840 dollars in 2016 terms) for native workers near an agricultural colony who do not move. Although this is a larger impact than we found in panel B of table 3, we cannot reject the hypothesis that the two

coefficients are the same ($p=0.58$). While the coefficient of interest is negative for the regression focusing on those who moved, the results are also very imprecise and not statistically different from zero.

[Table 4]

Given the nature of these refugee inflows, we cannot separately identify the impacts of the refugees and of the aid that accompanied them. We use the variation in funding within the colonies to test roughly whether increases in external aid provide an additional benefit to native workers. To do so, we added an interaction term to several of our main specifications to measure the specific effect of the Woodbine colony, which received the most investment and guidance from aid organizations. The extra funding associated with proximity to the Woodbine colony did not affect native outcomes more than other colonies did. Although the aid agencies' investment and programming are an important part of the effects we observe, we believe this is evidence that our results are not solely driven by external aid flows, but also by immigration.

The concentration of this effect in non-farm households across the initial occupational distribution indicates that native workers who were poised to compete with refugees in the labor market actually benefited from the immigrants' presence. Native-born workers near agricultural colonies moved into non-farming niches, that may not have existed otherwise, at a higher rate, leading to higher occupational scores. Ultimately, the impact of these Jewish colonists on natives depended on both the natives and the market in which the two would interact. For farming households, we see no impacts across the board. Agricultural markets were already regionally integrated by 1880 (Kim and Margo 2004). The colonies' farms were just drops in the bucket compared to the larger markets in Philadelphia or New York where both native and immigrant farmers sold their products. However, labor markets were more locally constrained by

transportation. Individuals not engaged in faming were more likely to directly engage or compete with these newcomers. Knowledge spillovers from the colonies to native farmers from the large amount of investment in refugee agricultural development like the Woodbine school or refugees' agricultural innovations like marketing cooperatives do not appear to have occurred. Within the agricultural niche, we do not find impacts either way from the immigrant shock.

Conclusion

Using the establishment and continued presence of Jewish agricultural colonies in southern New Jersey as a natural experiment, we estimate the impact of an influx of refugees on native workers' long term outcomes using rich historical data and fine-grained locational variation. Overall, we find results that are consistent with a complementarity story. Many workers, particularly young workers and workers with skills opposite the immigrants' own, were able to make profitable adjustments to these labor market changes. Because rural labor markets in this period were relatively self-contained, spillovers from Jewish aid societies and immigrant innovations were concentrated in groups of natives who would have interacted with immigrants in the labor market. While we see no impacts on farmers, men living in nonfarm households in 1880 were less likely to move away and upgraded their occupational standing. Philanthropic efforts to open factories benefited natives who could shift towards being craftsmen or white collar workers in particular. The colonies' original intention was to divert part of the massive inflow of Russian Jewish immigrants away from cities and keep the ire of native-born Americans at bay. In retrospect, native-born Americans did not have an economic reason to be angry. Instead of immigrants and their funding crowding out the communities already established in southern New Jersey, they created new opportunities.

The children of Russian immigrants and native-born Americans alike left the southern New Jersey colonies for bigger cities (Eisenberg 1995, 164). As observed in the 1920 census, these two groups' average occupational scores are incredibly close, suggesting that the colonies achieved the assimilation desired by Jewish philanthropists. Those who stayed provided the basis for a close-knit agricultural community that would attract Jewish refugees from Germany and Poland well into the 1950s (Eisenberg 1995, 168; Brandes and Douglas, 1971 327). While the JAIAS did not found more colonies on the scale of those in southern New Jersey, they continued to offer educational and financial support in tandem to new Jewish immigrants and channel some towards southern New Jersey, suggesting that they found the experiment to be a success.

Eventually, Jewish immigrants stopped selecting into agriculture. Today, the ease with which workers historically moved out of the agricultural niche has disappeared. Agricultural work was the most common niche for low-skilled immigrants from 1990 to 2010 (Liu and Van Holm, this issue). However, the nature of the agricultural work done by modern-day immigrants and the socio-economic context of the immigrants is very different than the case we presented above. In modern agricultural work, the immigrants are often seasonal workers in positions with little-to-no upward mobility. Many of them are undocumented, leaving them particularly vulnerable (Eckstein and Peri, this issue). A surge of immigrants into agriculture today would probably not allow those already adjacent to the niche to upgrade their occupation as it did in southern New Jersey.

Another caveat limiting the external validity of our results is the large amount of institutional support over the entire lifetime of the colonies. When demand within the agricultural niche slackened, charities helped attract capital to build factories and maintain employment for immigrants and native-born workers alike. Thus an increase in the southern New Jersey labor

supply did not make it more difficult for native-born workers to leave agriculture, in contrast to the Filipino nurses described by sociologist Yasmin Ortiga in this issue. Immigrants were not marooned within the niche either, unlike call center employees in Mexico City (Da Cruz,this issue). By educating immigrants on farming, colonists could leave the niches they would have entered in urban areas. The differences in immigrant experiences between the agricultural colonies and other niches in this issue can be traced back to the continued involvement of Jewish charity, providing another instance of the positive impact of co-ethnic proximity, as seen in work by sociologists Ming-Cheng Lo and Emerald Ngyuen (this issue). The colonies were good for the native-born Americans living nearby at least in part because of spillovers from Jewish charity.

If we take our results at face value, relocating immigrants to a new niche would not negatively impact native-born workers in the same labor market, particularly with continuing philanthropic involvement. Inserting immigrants into a labor market in which participants do not compete directly and providing them training does not hurt native-born workers.

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Appendix

[Figure A1]

[Table A1]

Table A2 tests the relationship between the 1880 characteristics of our sample and the location of the colonies. Column one is the most critical as this contains the results for our treatment variable as we define it in our main specification. above. These results support our decision to run our analyses as a cross section with pre-period information.

[Table A2]

Using our matched sample, we run the following regression, presented in appendix table 3:

$$(A1)\ Y_{id} = \alpha + \beta SuccessfulCol_d + \theta Woodbine_d + \delta SuccessfulColony * Woodbine_d + \gamma_i + \rho_{c(d)} + \mu_{id}$$

where *i* is the linked individual, *t* is the township, and *c* is the county of the individual's initial enumeration district. We run this regression for all Y_{it} described in the specification section. $SuccessfulColony_t$ is an indicator for whether an individual was located in a township with a successful colony or next to one with a successful colony. $Woodbine_t$ is an indicator that equals one if the closest colony to township *t* is Woodbine, regardless of whether the township is contiguous to Woodbine. $SuccessfulColony*Woodbine_t$ interacts these two and will take a value of one if the township is next to Woodbine. δ is the coefficient of interest in this table. γ_i represents individual controls, which includes controls for individuals' age and their initial occupational category. As in our main specifications, we control for variation in county economic composition stemming from proximity to either the Atlantic Ocean or Philadelphia

with $\rho_{c(t)}$, which divides the townships in our sample into three categories: those in a county with an Atlantic border, a Philadelphia border, or neither. μ_{it} is a random error term.

[Table A3]

Figures

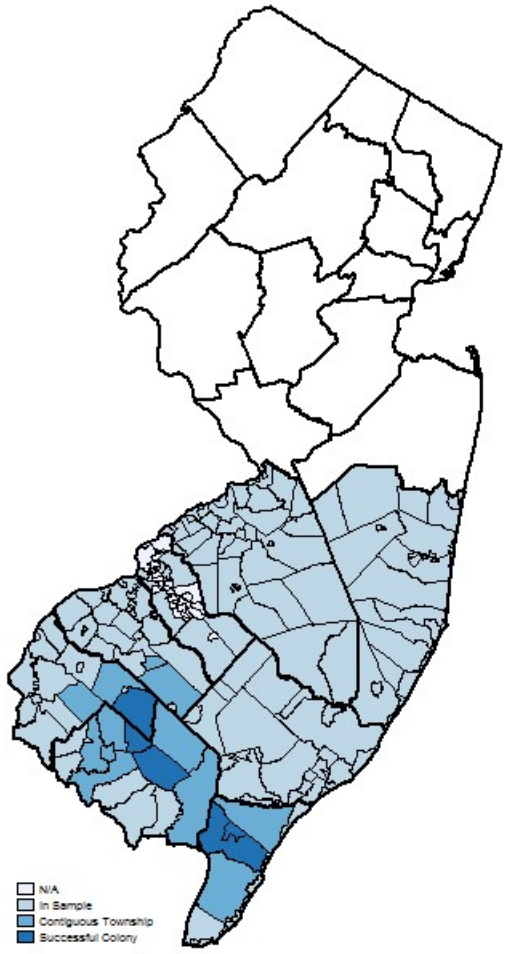
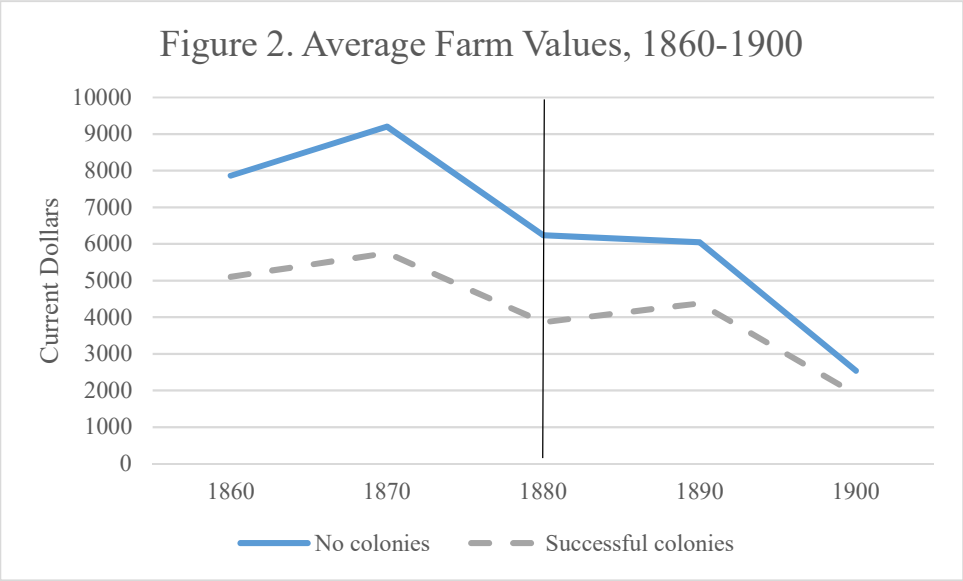


Figure 1: Agricultural Colonies by Township in Southern New Jersey
Source: NJOIT-OGIS (2010) and authors' calculations



Notes: Indicates the average value of farms in a county in current dollars.

Source: Haines and ICPSR 2010 and authors' calculations

Tables

Table 1. Summary Statistics

Variable	(1) Observations	(2) Mean	(3) Standard Deviation	(4) Minimum	(5) Maximum
A. 1880 starting point					
Age	3693	25.010	13.817	0	65
Rural	3693	0.704	0.454	0	1
Occupation score	3693	15.589	13.504	0	80
Farmer	3693	0.069	0.254	0	1
White collar job	3693	0.170	0.375	0	1
Craftsman	3693	0.163	0.370	0	1
B. Colony distance					
Same or contiguous district of a colony	3693	0.180	0.384	0	1
Distance to closest colony	3693	23.884	12.353	0	64
C. 1910 outcomes					
Migrate	3693	0.841	0.341	0	1
Occupation score	3210	27.341	12.064	4	80
Farmer	3693	0.135	0.341	0	1
White collar job	3693	0.290	0.454	0	1
Craftsman	3693	0.180	0.384	0	1

Source: 1880 and 1910 US Censuses (Ruggles et al 2015) and authors' own calculations

Table 2. Colony presence and later outcomes in 1910

A. Migration

	(1)	(2)	(3)	(4)	(5)
	All	Farm household	Non-Farm household	Under 16	16 and older
Colony	-0.0419*	-0.00598	-0.0587**	0.00493	-0.0587**
	(0.0218)	(0.0381)	(0.0265)	(0.0315)	(0.0274)
Observations	3693	807	2886	1021	2672

B. Occupational Score

	All	Farm household	Non-Farm household	Under 16	16 and older
Colony	1.277*	-0.261	1.893**	1.319	1.280
	(0.744)	(1.345)	(0.892)	(1.190)	(0.923)
Observations	3210	723	2487	938	2272

Panel A dependent variable is an indicator which takes the value 1 if an individual is observed in a different county in 1910 than in 1880. Panel B dependent variable is the individual's 1910 occupational score; to translate to approximate 2016 dollars, multiply coefficients by 1,000. Colony indicates if the individual was in or contiguous to a township with a successful colony. Robust standard errors in parentheses. All specifications include controls for age, initial occupation category, and proximity to Philadelphia and the Atlantic Ocean.

Source: 1880 and 1910 US Censuses (Ruggles et al 2015) and authors' own calculations.

* p<0.10 ** p<0.05 *** p<0.01

Table 3. Colony presence and occupation choice in 1910

A. Farming Occupation

	(1)	(2)	(3)	(4)	(5)
	All	Farm HH	Non-Farm HH	Under 16	16 and older
Colony	-0.0418**	-0.0375	-0.0400*	-0.0354	-0.0473**
	(0.0195)	(0.0395)	(0.0224)	(0.0334)	(0.0238)
Observations	3693	807	2886	1021	2672

B. White collar job

	All	Farm HH	Non-Farm HH	Under 16	16 and older
Colony	0.0429*	0.0123	0.0535*	0.0355	0.0433
	(0.0259)	(0.0497)	(0.0305)	(0.0537)	(0.0294)
Observations	3693	807	2886	1021	2672

C. Craftsmen

	All	Farm household	Non-Farm household	Under 16	16 and older
Colony	0.0344	0.00797	0.0471*	0.0153	0.0378
	(0.0223)	(0.0362)	(0.0278)	(0.0447)	(0.0259)
Observations	3693	807	2886	1021	2672

Dependent variables are indicators that equal one if the individual is employed in a farming occupation, a white-collar job, or a skilled craft, respectively. Colony indicates if the individual was in or contiguous to a township with a successful colony. Robust standard errors in parentheses. All specifications include controls for age, initial occupation category, and proximity to Philadelphia and the Atlantic Ocean.

Source: 1880 and 1910 US Censuses (Ruggles et al 2015) and authors' own calculations.

* p<0.10 ** p<0.05 *** p<0.01

Table 4. Colony presence and occupation score in 1910

A. Non-migrants

	(1)	(2)	(3)	(4)	(5)
	All	Farm household	Non-Farm household	Under 16	16 and older
Colony	1.840***	0.834	2.279**	1.386	2.022**
	(0.696)	(1.024)	(0.894)	(1.029)	(0.881)
Observations	3210	723	2487	938	2272

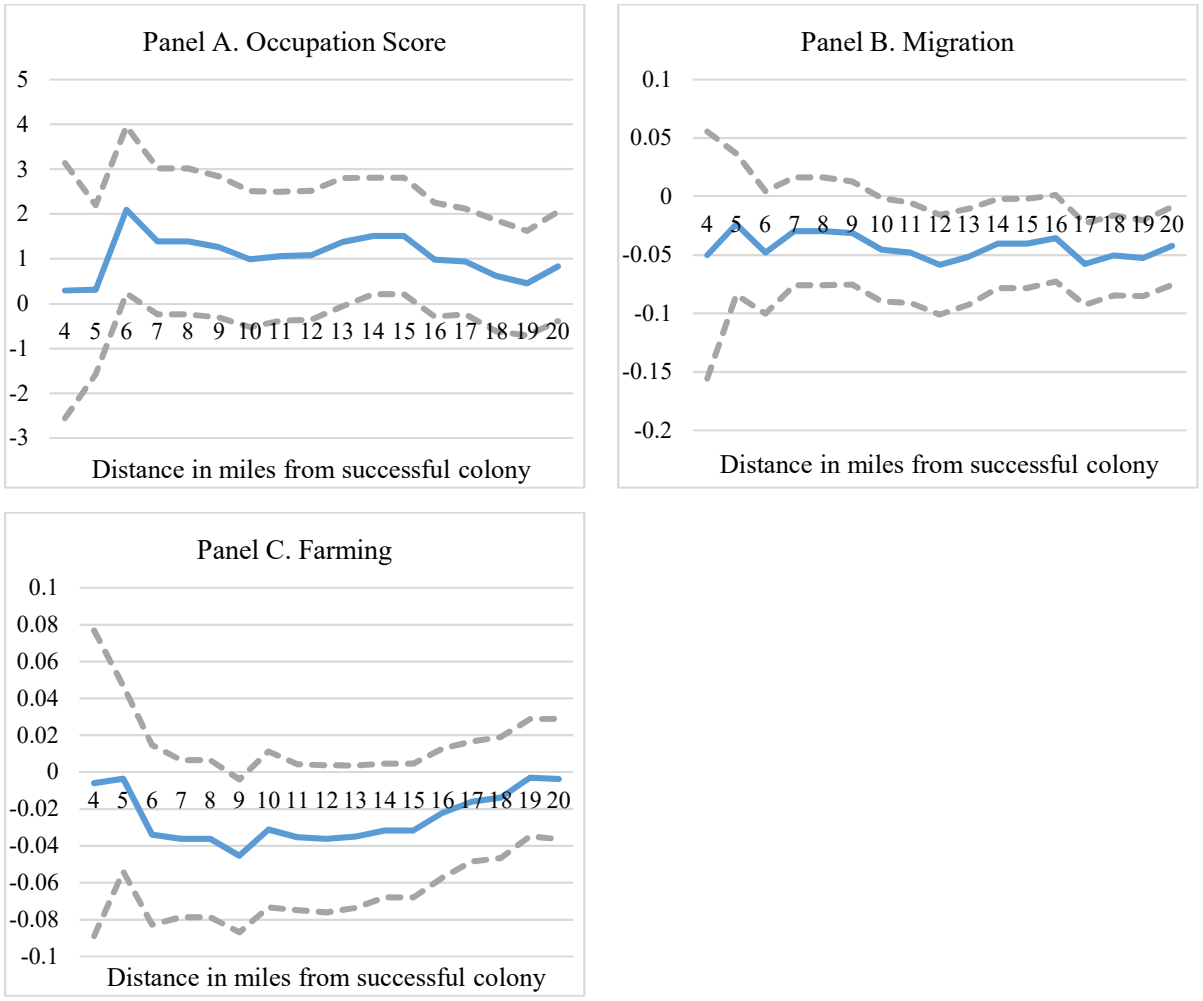
B. Migrants

	All	Under 16	16 and older	Semi-skilled and service	Laborers
Colony	-0.563	-1.096	-0.385	-0.0665	-0.743
	(0.929)	(1.647)	(1.132)	(1.433)	(1.166)
Observations	3210	723	2487	938	2272

Panel A dependent variable is the individual's 1910 occupation score interacted with an indicator for if he had not migrated. Panel B dependent variable is the individual's 1910 occupation score interacted with an indicator for if he had migrated. Colony indicates if the individual was in or contiguous to a township with a colony. Robust standard errors in parentheses. All specifications include controls for age, initial occupation category, and proximity to Philadelphia and the Atlantic Ocean.
Source: 1880 and 1910 US Censuses (Ruggles et al 2015) and authors' own calculations.
* p<0.10 ** p<0.05 *** p<0.01

Appendix Figure

Figure A1. Coefficients of interest at varying degrees of distance from a successful colony



Notes: See notes to the main tables for descriptions of dependent variables. Coefficient is an indicator for weather a colony is X miles or less distance away from an individual's enumeration district. Coefficient in solid line, robust standard errors in dashed lines. Source: 1880 and 1910 Censuses (Ruggles et al 2015) and authors' calculations.

Appendix Tables

Table A1. 1880 Balancing Table

	1880 Total	Matched
Age	32.22	25.01
	(17.58)	(13.82)
Percent Literate	99.1	98.9
	(9.55)	(10.5)
Percent Live on Farm	32.6	22.5
	(46.9)	(41.8)
Occupational score	15.51	15.59
	(12.14)	(13.50)
Percent white	93.7	85.9
	(24.4)	(34.8)
Observations	75778	3693
Match rate	*4.87%*	

Standard deviations in parentheses.
Includes native-born males living in specified counties. Occupation score for those with occupations.
Sources:1880 US Census (Ruggles et al 2015) and authors' own calculations

A2. Predicting colony placement with 1880 characteristics

	(1) Contiguous & Success	(2) Success
A. 1880 Occupation score	0.000493	-0.000181
	(0.000535)	(0.000535)
Observations	3693	3693
B. 1880 Farm status	0.000893	0.000520
	(0.0162)	(0.00471)
Observations	3693	3693
C. 1880 Age	-0.000248	0.0000302
	(0.000358)	(0.0000829)
Observations	3693	3693

Dependent variable is an indicator variable which takes the value 1 if the individual's township satisfies the column category. Robust standard errors in parentheses. All specifications include controls for age and proximity to Philadelphia and the Atlantic Ocean.
Source: 1880 US Census (Ruggles et al 2015) and authors' own calculations.
* p<0.10 ** p<0.05 *** p<0.01

A3. Woodbine specific effects on main outcomes of interest

	(1) Occupation score	(2) Migration	(3) Farming	(4) White Collar	(5) Craftsmen
Colony	1.368*	-0.0442*	-0.0401*	0.0542**	0.0294
	(0.786)	(0.0234)	(0.0214)	(0.0275)	(0.0231)
Woodbine	-0.977	0.101***	0.0324	-0.0102	-0.0861***
	(1.028)	(0.0300)	(0.0280)	(0.0355)	(0.0292)
Woodbine*Colony	-0.230	-0.0277	-0.0264	-0.0778	0.0736
	(2.050)	(0.0608)	(0.0486)	(0.0694)	(0.0597)
Observations	3210	3693	3693	3693	3693

Dependent variables indicated by column titles. Colony indicates if the individual was in or contiguous to an enumeration district with a successful colony. Woodbine indicates if the closest colony to the individual was the Woodbine colony. Robust standard errors in parentheses. All specifications include controls for age and proximity to Philadelphia and the Atlantic Ocean.
Source: 1880 and 1910 US Censuses (Ruggles et al 2015) and authors' own calculations.
* p<0.10 ** p<0.05 *** p<0.01