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



SIOBHAN O'KEEFE AND SARAH QUINCY

We look at the effect of immigration shocks on native workers in a labor niche by testing 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 U.S. censuses, we avoid making assumptions about the substitutability of immigrants and native workers. Many native workers improved their occupational standing by transitioning to occupations complementary to agricultural and semiskilled factory work, the immigrants' main niches. We see no impact on farmers, probably owing to the structure of agricultural markets. We also find a decreased probability of out-migration for natives living near an agricultural colony, with occupational upgrading concentrated among stayers.

Keywords: immigration, native response, farming, spillovers

American history is populated by immigrants who came to the United States to escape persecution, economic disaster, and violence. Like other groups before them, 1.5 million Jews from the Russian Empire found their way to the United States, starting in 1881 (Spitzer 2015). The similarity of their plight to that of earlier immigrant groups was not lost on contemporaries. As William Stainsby (1901, 3–4), 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.

Siobhan O'Keefe is a graduate student in economics at the University of California–Davis. **Sarah Quincy** is a graduate student in economics at the University of California–Davis

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As the population of ethnic enclaves in U.S. cities swelled, some of these newcomers were dispersed to the countryside, where, with the help of aid agencies, farming colonies were established across the United States (Shpall 1950). We focus on the effects of the flagship agricultural colonies in southern New Jersey on native workers in both 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 the potential displacement of natives in occupations that become niches for new immigrants. We examine the impact of new immigrants entering labor market niches—pockets of concentrated employment in specific occupations within a community—on the outcomes of natives both inside and outside the niches in a uniquely rural context.

Jewish charities funneled refugees and funds into clusters of farms across southern New Jersey chosen for their affordability and relative proximity to New York City and Philadelphia. Because no Russians lived in the area before the establishment of the first agricultural colony at Alliance in 1882, we can 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 the outcomes of native-born men living elsewhere in southern New Jersey. The influx of Russian immigrants was equivalent to approximately 1 percent of the total population in areas next to the agricultural colonies. Although restrictions on landowning in Russia had prevented Russian Jews from farming, they eked out a living in New Jersey as farmers, 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 were not only less likely to move away by 1910 but also more likely to upgrade to higher-paying jobs that were complementary to refugee-occupied niches. Men who lived near agricultural colonies had a 4.7 percent higher income in 1910 than men who did not live near a colony. In contrast to the positive results for the

nonfarm sector, we find no effect of living near a colony on farmers, despite the influx of new farmers.

We 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 the labor market outcomes of native workers is vast. Our study 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 potential assumptions about the extent of labor market similarities between native and immigrant workers. Data constraints often compel researchers to use cross-sectional survey data. Identification of this effect then requires an assumption on the extent of substitutability between immigrants and natives; before determining how immigrants affect workers, the researcher must decide how susceptible each worker’s job is to an influx of immigrants. On the one hand, the economist George Borjas (1999) assumes immigrants and natives are completely substitutable within an education and work experience group. On the other hand, the economists Giovanni Peri and Chad Sparber (2009) allow for differences between native and immigrant workers; doing so shifts the direction of the impact on native wages from negative to zero. We will track the same individuals over time, allowing us to refrain from making either assumption. The economists Mark Partridge, Dan Rickman, and Kamar Ali (2008) have results consistent with other nationwide studies when looking specifically at rural areas, but they note that, for high-poverty regions, higher immigration is associated with higher in-migration of natives, suggesting that immigrants add to the economic vitality of a local area. 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 best-known use of this empirical strategy in the immigration literature; in using this method to examine the effects of a large and unexpected influx of Cuban immigrants on the Miami labor market, he finds 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 have treated 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 from 1993 to 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 employ immigrants are larger, create more jobs, and have higher revenue (Malchow-Møller et al. 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 arrived. On the migration margin, Danish-born workers were less likely to migrate away from their original municipality when more refugee immigrants moved into their municipality. Spillovers—the ripple effects of the immigration shock across the economy—provide some explanation for why these results differ from those of Malchow-Møller and his colleagues (2012). Although we

use a similar time window, we focus more on skill upgrading and migration responses in a much less industrialized society.

In the literature on the Age of Mass Migration—the large wave of unchecked immigration into the United States from 1880 to 1913—most work has focused on the experience of immigrants, not native workers.¹ Some of this work complements our work focused on Russian immigrants. The economist Yannay Spitzer (2015) finds that pogroms did not drive Russian Jewish 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, the economist Barry Chiswick (1992) finds that Russian-born Jews' lifetime earnings profiles were higher than those of other immigrant groups, though still lower than those of natives, indicating that their language differences made them imperfect substitutes for native workers, just as the modern literature would suggest.

The 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 foreign-born population. Goldin concludes that immigration pushed down wages in the clothing and unskilled labor sectors. We complement this work by moving away from using 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

1. Classic works on immigration to the United States includes work by economists like Barry Chiswick (1992) and the two books by Timothy Hatton and Jeffrey Williamson (1998, 2005). More recent scholarship includes work by Ran Abramitzky, Leah Platt Boustan, and Katherine Eriksson (2012, 2014).

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 the shock and then seventeen to nineteen years after it, they find evidence that individuals in areas that received a larger flow of refugees were more likely to be engaged in household agricultural work or self-employment rather than 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 the occupational transitions that 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 into 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 article is the first to our knowledge to examine this question in the Age of Mass Migration. Finally, with most previous work focused on urban labor markets, our examination of a rural context is novel. We turn next to the historical record to examine how Russian Jews ended up farming in some parts of southern New Jersey.

THE HISTORICAL CONTEXT

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 organ-

ically. Beginning with decrees passed by Catherine the Great in the 1790s, Russian law confined the Jewish population to the Pale, wherein many 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; Lederhändler 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, Jewish 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, where the refugees quickly 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 "America [was] not a poorhouse . . . [or] 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 of refugees could not be stopped from entering the United States, however, then perhaps it could be diverted to undersettled 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, 174–75; Shpall 1950, 124).

Although the larger Jewish philanthropic community in the United States wished settlers well, they also were trying to divert as many immigrants as possible away 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). In 1881, thirty-four families from pogrom-stricken Kiev and Elizabethgrad left Brody for New York with the help of French charities and settled on a tract of land in Sicily Island, Louisiana, 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). In any event, a spring Mississippi River flood destroyed the colony’s crops at the same time as it was struck by a malaria outbreak (Shpall 1950, 130–31). Other farm colonies followed across the western United States, and all failed quickly.

By mid-1882, it was clear that 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 that had a good climate and was close to preexisting Jewish communities, where they would better serve as safety valves for continued elevated levels of immigration and more easily receive financial

and religious support. New Jersey had recently appointed a commissioner of immigration, Augustus Seeman, who was a partner in a realty firm near Vineland. He was eager to bring immigrants into New Jersey, particularly if they were willing to buy his land. There was land with good soil available near the New Jersey Central Railroad, which connected to both Philadelphia and New York City, and the HEAS was happy to oblige (Shpall 1950, 22). Seeman’s enthusiasm notwithstanding, southern New Jersey was not abnormally pro-immigrant. When the Russians arrived in Vineland, natives scorned them because they 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 were subsequently established, and those that received help, like Carmel, Rosenhayn, and Norma, survived. Contemporary observers attributed the quick failure and abandonment of seven other colonies to a lack of start-up capital, stemming from either 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, Woodbine, was founded in 1891 by one of the most prominent Jewish philanthropists of the age, Baron Maurice de Hirsch, who believed that farming was a healthy and ennobling endeavor that would raise the profile of the Jew no matter what external prejudice he faced; “rainfall,” de Hirsch claimed, 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 twenty miles southeast of Vineland (Brandes and Douglas 1971, 114). Un-

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.

like 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 on which we focus our examination of immigrant shock: Alliance, Rosenhayn, Carmel, Norma, and Woodbine. Because the soil was ill suited for growing wheat or other staple crops, farmers grew a variety of fruits and vegetables for sale at market (Stainsby 1901, 8). In particular, the colonies were renowned in Philadelphia and New York for their sweet potatoes, berries, and farm animals (*ibid.*, 20, 60). This fame may have derived in part from the marketing cooperatives that the 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 1912, 65–67; Stainsby 1901; Rosenthal 1906; Goldstein 1921, 29).³ The Jewish Agricultural Society (1954, 9) attributed the colonies' survival to settlers' innovation, daring, and frugality. While their hard work cannot be denied, it is certain that external aid also played a large role in the colonies' continued existence. For instance, 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; Robinson 1912, 52–53).

Jewish aid societies remained heavily involved in the day-to-day lives of the colonists in other ways as well. To help the new farmers, who were so ignorant about farming that they did not know if potatoes grew above or below ground, the JAIAS published a Yiddish-language newsletter and sent experts to discuss innovations with them (Robinson 1912, 72; Brandes and Douglas 1971, 86). The nation's first agricultural secondary school was established in Woodbine in 1893 (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 aid society efforts were helpful, but colonists needed still more. Despite the colonies' agricultural ethos, the 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, 120–26). After the first year in Alliance, charities donated \$3,000 to fund factory construction to provide off-season 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 present in southern New Jersey 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 killed Jesus Christ, reiterating the blood libel that 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 some neighboring Christians who went shopping in Rosenhayn. The *Vineland Evening Journal* suggested that businesses closing on Sundays was an "American custom" and that anyone open for business on that day should leave the country (*ibid.*, 187–88). 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).

3. Population in 1901 uses 1889 values for Rosenhayn owing to missing data.

However, even though there was some cultural tension, for the most part native-born Americans welcomed the work ethic and patronage of Jewish workers. When some accused the Jews of not being good workers, one employer wrote the local newspaper to dismiss those charges as “slandrous,” 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.*, 156–59). These differential responses suggest that there may have been 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 after exposure to immigrants.

DATA

From the historical record, we can clearly locate areas in southern New Jersey with agricultural colonies. Starting in 1880, 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 researchers to use enumeration district-level variation in historical work. This gives us 108 localities in New Jersey with which to work instead of eight counties.

In southern New Jersey, the enumeration district boundaries follow each county’s established municipal boundaries, called town-

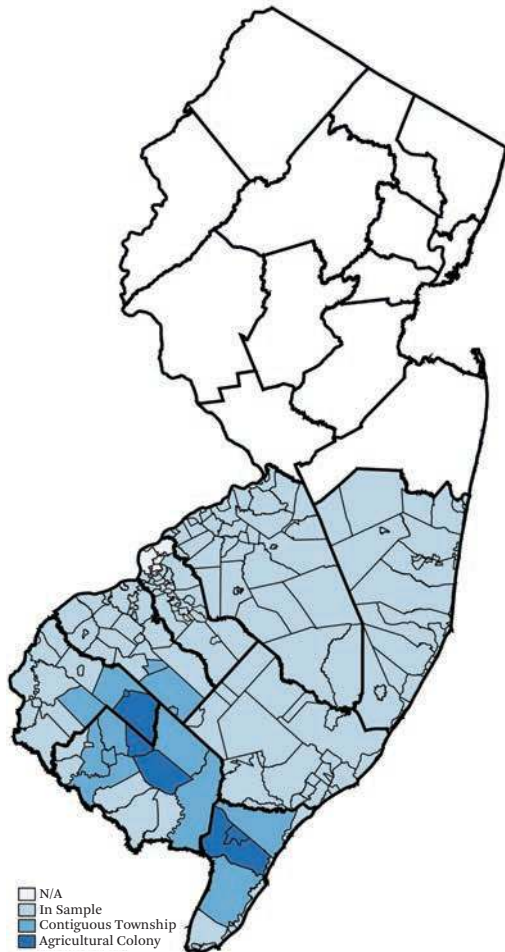
ships, which are analogous to local labor markets (Morse 2016).⁴ Using the 1872 *State Atlas of New Jersey* (Beers 1872), we can match the colony locations to their census enumeration districts. The darkest-shaded townships in figure 1 denote the locations of the agricultural colonies. Only townships 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.

Given this township-level shock, we take men observed in both the 1880 and 1910 U.S. 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, Boustan, and Eriksson (2014), we take an 1880 observation and a 1910 observation as matched if they share a first and last name, share 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 (NYSIIS), 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 finally those with birth years within two years of each other, also removing the latter two groups from the pool. Then we keep only those observations that 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 to maximize the probability that we have indeed found the same person in both censuses. We undertook further cleaning to create uniform occupation variables across our

4. There are slight deviations in enumeration district borders from modern township boundaries in south-central New Jersey, as mapped in figure 1. 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 being digitized. We thank Katherine Eriksson for her assistance with the 1910 full-count data.

Figure 1. Agricultural Colonies by Township in Southern New Jersey



Source: Authors' calculations based on New Jersey Office of Information Technology 2010.

sample in 1910.⁶ We restrict our sample to native-born men under age sixty-five in 1880 living in the counties described earlier. Although the matched sample is technically a panel data set, our specifications use it as a 1910 cross-section with preperiod information from 1880.

As we see in table 1, our sample began the period at age twenty-five. Most of them were living in rural areas, but fewer than 7 percent were farmers in 1880. One-fifth of the sample were exposed to a colony, and on average they

were twenty 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 sixty-five and our matched sample.

In 1880, when we first observe our matched sample, southern New Jersey was still very rural. Eighty percent of all people living in the area were classified as rural by the Census Bureau, and 28 percent 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. Their average population in 1880 was 1,944; the townships that received colonies were slightly smaller, with an average population of 1,872. An inflow of over 2,000 refugees would definitely have been noticed by the locals. The modal occupation category, representing 18 percent of men over age sixteen, was owning, managing, or renting a farm. Agriculture was also the most common industry in which to work, claimed by 43 percent of men who reported a sectoral specialization. This was an important economic niche for native workers as well. Ninety-nine 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).

Midsized farms were the norm in southern New Jersey. In 1880, fewer than 8 percent were under ten acres and not even 1 percent were over five hundred acres. The average farm size was eighty-nine acres, and 13.8 percent were between ten and forty-nine acres; these farms were similar in size to those the colonists would later work (Haines and ICPSR 2010; Stainsby 1901). The average farm's output was \$888, equivalent to approximately \$21,800 in 2016. Although farming was still the dominant industry, manufacturing also had a presence in this area. Even Cape May County, the least

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

Table 1. Summary Statistics for Russian Jewish Immigrants in Agricultural Colonies in Southern New Jersey, 1880–1910

	(1)	(2)	(3)	(4)	(5)
Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
A. 1880 starting point					
Age	3,693	25.010	13.817	0	65
Rural	3,693	0.704	0.454	0	1
Occupation score	3,693	15.589	13.504	0	80
Farmer	3,693	0.069	0.254	0	1
White-collar job	3,693	0.170	0.375	0	1
Craftsman	3,693	0.163	0.370	0	1
B. Colony distance					
Same or contiguous district of a colony	3,693	0.180	0.384	0	1
Distance to closest colony	3,693	23.884	12.353	0	64
C. 1910 outcomes					
Migrated	3,693	0.841	0.341	0	1
Occupation score	3,210	27.341	12.064	4	80
Farmer	3,693	0.135	0.341	0	1
White-collar job	3,693	0.290	0.454	0	1
Craftsman	3,693	0.180	0.384	0	1

Source: Authors' calculations based on 1880 and 1910 U.S. censuses.

developed, had thirty-six 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 of output per person in 1880 and farming producing about \$50 per person (approximately \$2,490 and \$1,230, respectively, in 2016) (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:

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

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 include

controls for individuals' age and their initial occupational category. We considered clustering standard errors at the county level, but we would have 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 to be 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, those with a Philadelphia border, and those with 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 five miles from Alliance to Vineland to shop every day (Brandes and Douglas 1971, 172), but nonetheless immigrants walked from one township to another daily. We try a variety of distance-based measures and find similar results (available in appendix figures A1 to A3).

Y_{id} is either the native worker i 's occupational standing in 1910 or an indicator variable that takes on a value of 1 for individuals who 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 craftsman (skilled blue-collar work). 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 the Integrated Public Use Microdata Series (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 consumer price index (CPI) deflator in the discussion of our results (Ruggles et al. 2015). For men who were younger than 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 migrated over this time period. Many of them moved to Phil-

adelphia or other urban centers on the East Coast, and some of them moved west.

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 the patterns of 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. Owing to the quasi-random nature of the agricultural land selection process—the southern New Jersey tracts of land purchased by Jewish charities happened to be available for sale by newly appointed commissioner Seeman—we believe that any preexisting trends in our sample should be unrelated to the shock experienced by our treated group, that is, those who lived in or contiguous to a township with an agricultural colony.

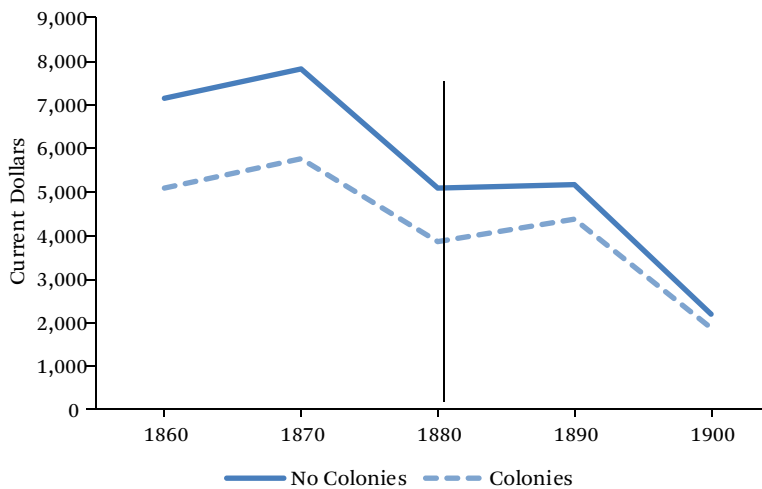
Because the data necessary for an examination of pre-immigration shock trends in individual labor market outcomes do not exist, we look for possible pre-trend shocks at the county level.⁷ Figure 2 shows average farm value, including crops and livestock, across the counties with and without colonies in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

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:

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

C_d indicates if an enumeration district contains a colony or any treated individuals (adding enumeration districts that are contiguous to

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

Figure 2. Average Farm Values in Southern New Jersey, 1860–1900

Source: Authors' calculations based on Haines and ICPSR 2010.

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 (included only 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 v_{id} is a randomly distributed error term. We find no relation between the initial occupational score, 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 nonfarm households. We find that being next to a Jewish agricultural colony is associated with a 4.2-percentage-point decrease in the probability that a native-born worker would leave 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 migration results also rule out the story that natives left the treated areas, perhaps owing 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 the 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, but they also experienced increases in occupational scores relative to workers in labor markets that were not next to colonies. As seen in panel B of table 2, native workers living next

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 or if any member of the household gives "farmer" as their occupation.

9. Note that, unless otherwise specified, all matched individuals are included in the following analyses, regardless of migration status.

Table 2. Russian Jewish Immigrants’ Presence in Agricultural Colonies and Later Outcomes in 1910

	(1)	(2)	(3)	(4)	(5)
	All	Farm Household	Nonfarm Household	Under Age Sixteen	Age Sixteen and Older
A. Migration					
Colony	-0.0419* (0.0218)	-0.00598 (0.0381)	-0.0587** (0.0265)	0.00493 (0.0315)	-0.0587** (0.0274)
Observations	3,693	807	2,886	1,021	2,672
B. Occupational score					
Colony	1.277* (0.744)	-0.261 (1.345)	1.893** (0.892)	1.319 (1.190)	1.280 (0.923)
Observations	3,210	723	2,487	938	2,272

Source: Authors’ calculations based on 1880 and 1910 U.S. censuses.

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

* $p < .10$; ** $p < .05$; *** $p < .01$

to a Jewish agricultural colony earned \$1,277 more (in 2016 dollars) 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 started the period in nonfarm households. Their incomes increased \$1,893 on average in 1910, a premium of 6.9 percent.

Next we look at natives’ occupational sector choices in order to better understand the difference between farm and nonfarm households. The combined impact of the refugee labor shock and the 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 nonfarm households 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 agricultural col-

ony. 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.

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 migrated and those who did 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

Table 3. Russian Jewish Immigrants' Presence in Agricultural Colonies and Occupation Choice in 1910

	(1)	(2)	(3)	(4)	(5)
	All	Farm Household	Nonfarm Household	Under Age Sixteen	Age Sixteen and Older
A. Farming occupation					
Colony	-0.0418** (0.0195)	-0.0375 (0.0395)	-0.0400* (0.0224)	-0.0354 (0.0334)	-0.0473** (0.0238)
Observations	3,693	807	2,886	1,021	2,672
B. White-collar job					
Colony	0.0429* (0.0259)	0.0123 (0.0497)	0.0535* (0.0305)	0.0355 (0.0537)	0.0433 (0.0294)
Observations	3,693	807	2,886	1,021	2,672
C. Craftsman					
Colony	0.0344 (0.0223)	0.00797 (0.0362)	0.0471* (0.0278)	0.0153 (0.0447)	0.0378 (0.0259)
Observations	3,693	807	2,886	1,021	2,672

Source: Authors' calculations based on 1880 and 1910 U.S. censuses.

Notes: The dependent variables are indicators that equal 1 if the individual is employed in a farming occupation, a white-collar job, or a skilled craft. "Colony" indicates if the individual was in or contiguous to a township with a colony. Robust standard errors are in parentheses. All specifications include controls for age, initial occupation category, and proximity to Philadelphia and the Atlantic Ocean.

* $p < .10$; ** $p < .05$; *** $p < .01$

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:

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

The exercise is repeated for both migrants and nonmigrants. We find the strongest positive effects on occupation status for individuals who did not migrate but stayed in southern New Jersey. Overall, the occupation score increases by 1.84, associated with an increase of \$1,840 (in 2016 dollars), for native workers near an agricultural colony who did 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 ($p = 0.58$). Although 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.

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 provided an additional benefit to native workers. To do so, we add 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 proximity to other colonies did. Although the aid agencies' investment and programming are an important part of the effects we observe, we believe that this is evidence that our results are not solely driven by external aid flows, but also by immigration.

The concentration of this effect in nonfarm 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 im-

Table 4. Presence in Agricultural Colonies of Migrants and Nonmigrants and Occupation Score in 1910

	(1)	(2)	(3)	(4)	(5)
A. Nonmigrants					
	All	Farm Household	Nonfarm Household	Under Age Sixteen	Age Sixteen and Older
Colony	1.840*** (0.696)	0.834 (1.024)	2.279** (0.894)	1.386 (1.029)	2.022** (0.881)
Observations	3,210	723	2,487	938	2,272
B. Migrants					
	All	Under Age Sixteen	Age Sixteen and Older	Semiskilled and Service	Laborer
Colony	-0.563 (0.929)	-1.096 (1.647)	-0.385 (1.132)	-0.0665 (1.433)	-0.743 (1.166)
Observations	3,210	723	2,487	938	2,272

Source: Authors' calculations based on 1880 and 1910 U.S. censuses.

Notes: The panel A dependent variable is the individual's 1910 occupation score interacted with an indicator for if he had not migrated. The 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 are in parentheses. All specifications include controls for age, initial occupation category, and proximity to Philadelphia and the Atlantic Ocean.

* $p < .10$; ** $p < .05$; *** $p < .01$

migrants' presence. Native-born workers near agricultural colonies moved into nonfarming niches that might 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 interacted. 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 and New York, where both native and immigrant farmers sold their products. However, labor markets were more locally constrained by transportation. Individuals not engaged in farming were more likely to directly engage or compete with these newcomers. There appear to have been no knowledge spillovers from the colonies to native farmers from the large investments in refugee agricultural development, like the Woodbine school, and from refugees' agricultural innovations, like the marketing cooperatives. 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 have estimated the impact of an influx of refugees on native workers' long-term outcomes using rich historical data and fine-grained locational variation. Overall, our results are consistent with a complementarity story. Many workers, particularly young workers and workers with skills different from the immigrants', 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. Although we see no impacts on farmers, men living in nonfarm households in 1880 were less likely to move away, and they upgraded their occupational standing. Philanthropic efforts to open factories benefited natives, who could shift toward crafts work or white-collar work 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 had no economic reason to be angry. Instead of crowding out the communities already established in southern New Jersey, immigrants and their funding created new opportunities for them.

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). The JAIAS would not found more colonies on the scale of those in southern New Jersey, but it did continue to offer educational and financial support to new Jewish immigrants and to channel some of them toward southern New Jersey, suggesting that the JAIAS found the experiment to be a success.

Eventually, Jewish immigrants stopped electing to become farmers. Today the ease with which workers historically moved out of the agricultural niche has disappeared. Agricultural work is still a common niche for low-skilled modern-day immigrants (Eckstein and Peri, this issue), but the nature of their agricultural work and socioeconomic context are both very different from the work encountered by the Russian Jewish immigrants and the economic realities of their settlement in New Jersey. In modern agricultural work, immigrants are often seasonal workers in positions with little to no upward mobility. Many of them are undocumented, which leaves them particularly vulnerable to exploitation (Eckstein and Peri, this issue). A surge of immigrants into agricul-

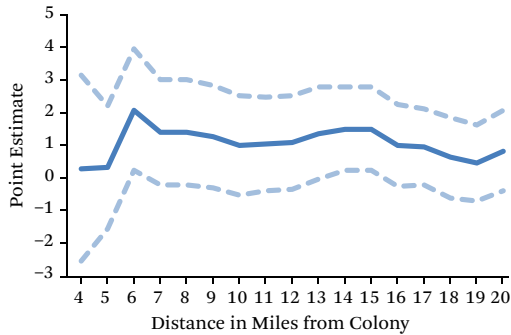
ture today would probably not be associated with occupation upgrades for those already adjacent to the niche, as happened in southern New Jersey in the late nineteenth and early twentieth centuries.

Another caveat limits the external validity of our results: unlike other immigrant settlements, the colonies received a large amount of institutional support. 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 the sociologist Yasmin Y. Ortiga in this issue. Immigrants were not marooned within the niche either, unlike call center employees in Mexico City (Da Cruz, this issue). By becoming educated in farming, colonists could leave the niches they would have entered in urban areas. The differences in immigrant experiences between the agricultural colonies and other labor market niches discussed in this issue can be traced back to the continued involvement of Jewish charity, which provided another instance of the positive impact of coethnic proximity, as seen in work by the sociologists Ming-Cheng M. Lo and Emerald T. Nguyen (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 does not have a negative impact on 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 with training does not hurt native-born workers.

APPENDIX

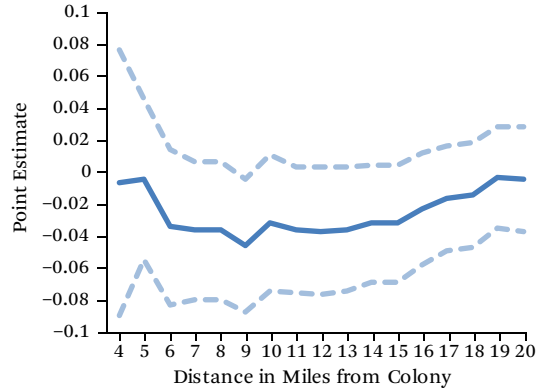
Figure A1. Coefficients of Interest at Varying Degrees of Distance from a Colony, Occupation Score



Source: Authors' calculations based on 1880 and 1910 U.S. censuses.

Notes: See notes to tables 1 through 4 for descriptions of dependent variables. Coefficient is an indicator for whether a colony is within X miles or less of an individual's enumeration district. Coefficient is in solid line, robust standard errors are in dashed lines.

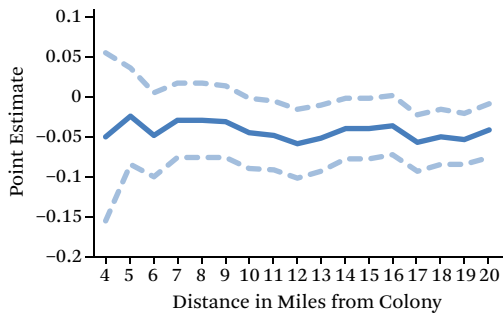
Figure A3. Coefficients of Interest at Varying Degrees of Distance from a Colony, Probability of Farming Occupation



Source: Authors' calculations based on 1880 and 1910 U.S. censuses.

Notes: See notes to tables 1 through 4 for descriptions of dependent variables. Coefficient is an indicator for whether a colony is within X miles or less of an individual's enumeration district. Coefficient is in solid line, robust standard errors are in dashed lines.

Figure A2. Coefficients of Interest at Varying Degrees of Distance from a Colony, Probability of Migration



Source: Authors' calculations based on 1880 and 1910 U.S. censuses.

Notes: See notes to tables 1 through 4 for descriptions of dependent variables. Coefficient is an indicator for whether a colony is within X miles or less of an individual's enumeration district. Coefficient is in solid line, robust standard errors are in dashed lines.

Table A1. 1880 Balancing Table

	1880 Total	Matched
Age	32.22 (17.58)	25.01 (13.82)
Percentage literate	99.1 (9.55)	98.9 (10.5)
Percentage live on farm	32.6 (46.9)	22.5 (41.8)
Occupational score	15.51 (12.14)	15.59 (13.50)
Percentage white	93.7 (24.4)	85.9 (34.8)
Observations	75,778	3,693
Match rate	4.87%	

Source: Authors' calculations based on 1880 U.S. census.

Notes: Standard deviations are in parentheses. Native-born males living in specified counties are included. Occupation score is for those with an occupation.

Table A2 tests the relationship between the 1880 characteristics of our sample and the location of the colonies. Column 1 is the most critical: it contains the results for our treatment variable as we define it in our main specification (1). These results support our decision to run our analyses as a cross-section with pre-period information.

Using our matched sample, we run the following regression, presented in appendix table A3:

$$Y_{id} = \alpha + \beta Colony_d + \theta Woodbine_d + \delta Colony * Woodbine_d + \gamma_i + \rho_{c(d)} + u_{id}, \quad (A1)$$

where i is the linked individual, d is the enumeration district, and c is the county of the individual's initial enumeration district. We run this regression for all Y_{id} described in the specification section. $Colony_d$ is an indicator for whether an individual was located in a township with a colony or next to one with a colony. $Woodbine_d$ is an indicator that equals 1 if the closest colony to enumeration district d is Woodbine, regardless of whether the township is contiguous to Woodbine. $Colony * Woodbine_d$ interacts these two and takes a value of 1 if the township is next to Woodbine. δ is the coefficient of interest in this table. γ_i represents individual controls, which include controls for

Table A2. Predicting Colony Placement with 1880 Characteristics

	(1) Contiguous or Colony	(2) Colony
1880 occupation score	0.000493 (0.000535)	-0.000181 (0.000535)
Observations	3,693	3,693
1880 farm status	0.000893 (0.0162)	0.000520 (0.00471)
Observations	3,693	3,693
1880 age	-0.000248 (0.000358)	0.0000302 (0.0000829)
Observations	3,693	3,693

Source: Authors' calculations based on 1880 U.S. census.

Notes: The dependent variable is an indicator variable that takes the value of 1 if the individual's township satisfies the column category. Robust standard errors are in parentheses. All specifications include controls for age and proximity to Philadelphia and the Atlantic Ocean.

* $p < .10$; ** $p < .05$; *** $p < .01$

Table A3. Woodbine Specific Effects on Main Outcomes of Interest

	(1) Occupation Score	(2) Migration	(3) Farming	(4) White-Collar Job	(5) Craftsman
Colony	1.368* (0.786)	-0.0442* (0.0234)	-0.0401* (0.0214)	0.0542** (0.0275)	0.0294 (0.0231)
Woodbine	-0.977 (1.028)	0.101*** (0.0300)	0.0324 (0.0280)	-0.0102 (0.0355)	-0.0861*** (0.0292)
Woodbine*colony	-0.230 (2.050)	-0.0277 (0.0608)	-0.0264 (0.0486)	-0.0778 (0.0694)	0.0736 (0.0597)
Observations	3,210	3,693	3,693	3,693	3,693

Source: Authors' calculations based on 1880 and 1910 U.S. censuses.

Notes: Dependent variables are indicated by column titles. "Colony" indicates if the individual was in or contiguous to an enumeration district with a colony. "Woodbine" indicates if the closest colony to the individual was the Woodbine colony. Robust standard errors are in parentheses. All specifications include controls for age and proximity to Philadelphia and the Atlantic Ocean.

* $p < .10$; ** $p < .05$; *** $p < .01$

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 $\rho c_{(d)}$, which divides the townships in our sample into three categories: those in a county with an Atlantic border, those with a Philadelphia border, and those with neither. μ_{id} is a random error term.

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