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Putting People in their Place: Intergenerational Inequality in the Age of Mass Migration

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Putting People in their Place:

Intergenerational Inequality in the

Age of Mass Migration

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in Geography

by

Dylan Shane Connor

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ABSTRACT OF THE DISSERTATION

Putting People in their Place:

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by

Dylan Shane Connor

Doctor of Philosophy in Geography

University of California, Los Angeles, 2017

Professor David L. Rigby, Co-Chair

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The identity of the United States as a land of opportunity and a nation of immigrants is once again being contested. As of 2013, income inequality and the foreign-born share of the American population are at levels not seen since the end of the Age of Mass Migration (1850-1914), and intergenerational mobility is at a historical low. These changes have provoked calls for restrictive and selective immigration policies, which are better designed to attract immigrants equipped to "make it in America". Underlying these calls, however, is an assumption that the outcomes of immigration depend on *who* migrates rather than what opportunities people encounter or create for themselves after arrival.

This dissertation focuses on the difference that place and context make to the lives of people. Broadly, it asks: are intergenerational inequalities in income, education and location mainly driven by individual and family characteristics, or are they driven by people's access to opportunity and their interaction with places? This dissertation uses cutting-edge techniques and newly available

data sources from the Age of Mass Migration to tackle these questions. These data shed light on the problem of people and place by helping to address three crucial questions. First, how do places affect decisions to migrate? Second, is immigrant social mobility mainly driven by family characteristics or opportunities at settlement locations? Third, how do differences in the opportunity structures of places emerge?

The following five chapters address these three questions. Chapter 1 provides the conceptual apparatus for understanding how the characteristics of place and people shape inequality in life chances. Chapters 2 and 3 examine these questions using newly assembled data on three generations of Irish American families from 1901 to 1940. Chapter 4 exploits records from the Industrial Removal Office, an organization which helped 40,000 struggling Jewish households leave New York in the early twentieth century, as a natural experiment to study the effect of place on immigrant assimilation. Finally, Chapter 5 studies how long-run development processes have shaped intergenerational mobility outcomes from the Age of Mass Migration to today.

The dissertation of Dylan Shane Connor is approved.

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Table of Contents

List of Tables and figures

Chapter 2.

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Chapter 1. Introduction

1. What difference does place make to the lives of people?

A core question for social science is why some people earn more, live longer or attain higher educations than others. While life trajectories may be shaped by family background, beliefs around the "American Dream" suggest that social origins may matter less for socioeconomic outcomes in the United States than in other societies. Such discourses have recently been turned on their head, however, by findings that upward mobility has declined over the twentieth century and is now lower in the US than in many similarly developed countries (Corak, 2013; Long & Ferrie, 2013). This is evident from new intergenerational mobility statistics: while 7.5% of Americans born in the early '80s to low income parents made it to the top fifth of the income distribution as adults, 13.5% of their counterparts in Canada did the same (Chetty, Hendren, Kline, Saez, & Turner, 2014). Achieving the "American Dream", therefore, appears to be twice as likely in Canada as in the US.[1]

The social science of intergenerational inequality has taken a geographical turn. Recent work concludes that social mobility is a local problem which plays out at the neighborhood, city and regional scales. Raj Chetty and his collaborators in economics and sociology have led this new wave of research and they have come to two main conclusions. (Chetty & Hendren, 2015; Chetty, Hendren, Kline, & Saez, 2014). First, the life chances of people born to poorer parents vary enormously based on where they grow up: these "place effects" exist over and above individual and family characteristics. Second, while adult experiences (such as labor market discrimination) are undoubtedly important, exposure to places during childhood appears to be the dominant force shaping the lives of people. Thus, while geography matters, it matters most in childhood.

In quantitative terms, this geographical heterogeneity is striking. In recent decades, 13% of low income children growing up in cities like San Jose or Salt Lake City reached the top fifth of the national income distribution. Cities such as Atlanta and Milwaukee, in contrast, have lower rates of upward mobility than any country for which we have data (around 4.5%). Thus, poorer families in these locales are more likely to be exposed to chronic poverty across multiple generations. These spatial differences come into sharper relief when comparing more proximate places. In Queens, New York, for example, 16.8% of low income children reached the top fifth of the national distribution, while only 7.3% of their counterparts in the Bronx did the same.[2] This new evidence on the diverging lives of Americans has been fueled by new access to large administrative datasets and has put intergenerational inequality on the agenda at the highest level of policy (Obama, 2013).

While interest in place is proliferating across social science and policy spheres, conceptual and theoretical challenges are emerging quickly. This new research on *how* places affect life chances uses extensive datasets to estimate correlations between the characteristics of childhood environments (e.g. school quality or segregation) and later life outcomes such as income, education or health. This new local or community focus has broken with a tradition that long ago came to view social stratification as a system that operated across a given society or nation (Blau & Duncan, 1967; Breen, 2004; Shils, 1968; Treiman, 1977). The societal view recognizes the common coherence of achievement and deference norms, and tangible forces such as national labor, capital and housing market integration. While this new focus on the local is appealing in today's culturally and economically fragmented society, it also raises many new questions. Namely, how theoretically important is geography, how does it emerge, and how is local difference situated in space and time.

I contend that geographers are well positioned to contribute to these discussions and I propose that a framework of "people" and "place" may be valuable in doing so. This requires an analytical separation of individuals and families from specifically place-level processes, and recognizes the complicated intergenerational feedbacks between people and place. From this point, geographers could engage with discussions of how intergenerational inequality is shaped by both local and community development, and also community-society interactions (see Farole, Rodríguez-Pose, & Storper, 2011). Such a move could shift discussion beyond proximate determinants of socioeconomic outcomes, toward understanding how inequality crystalizes in specific historical or societal contexts. Further, the experience of geographers with deep development processes related to institutional development and human migration are valuable for understanding how places come to (re)produce inequality in life chances.

Greater interdisciplinary engagement on the geography of inequality and opportunity could push new frontiers in understanding what makes places what they are. Doing this effectively, however, requires greater attention from geographers to developments occurring outside of the discipline, as well as familiarizing ourselves with the "accounting tools" common across much of the social sciences. Before introducing the dissertation, the remainder of this introduction synthesizes recent developments on people, place and inequality. Specifically, Section 2 introduces the people-place spectrum and its challenges with respect to how intergenerational inequality is produced, and Section 3 outlines the specific contributions of the following dissertation chapters.

2. Recent research on people and place

2.1 Exposure to place

A vast literature has emerged over the last twenty years on whether living in particular places, mainly inner-city neighborhoods, affect life chances. Much of this research was sparked by

concerns around the deleterious effect of segregation on racial inequality (Massey & Denton, 1988; W. J. Wilson, 1987). I do not review this large literature here, as there are many excellent reviews on the topic already (e.g. Logan, 2012; Sampson, Morenoff, & Gannon-Rowley, 2002; Sastry, 2012; Sharkey, 2016; Sharkey & Faber, 2014). This literature, however, has highlighted two main points. First, the degree to which *places* shape the contours of social inequality is difficult to nail down. Second, the main argument against *place* as an explanation for social and spatial inequality, is that these geographical patterns may reflect underlying differences in the characteristics of *people*. That is, poor places are primarily poor because of the people who live there, not because places actively make people within them poorer (Cheshire, 2012; W. Clark, 2013).

Whether place is seen to have strong or weak effects, the basic operation of places can be understood in a unified way. The effect of places on life outcomes are contingent on an individual's *exposure* and their *susceptibility* to the influences in question. These processes are usefully captured in the model of educational determinants provided by Harding, Gennetian, Winship, Sanbonmatsu, & Kling (2011) (see also Sharkey and Faber, 2014). The model of Harding et al. is a derivative of the following expression:

(1) individual outcome = place x exposure to place x susceptibility to effect of place

where individual outcomes could refer to anything from income, education, occupational attainment, or other outcomes such as health. These characteristics are a function of exposure to particular places, which affect the acquisition of skills or personality characteristics which have long-run effects on people's lives. Exposure to places for greater periods of time or in more intimate ways is likely to have greater effects on the people in question. *Susceptibility* is, perhaps, the most controversial of these terms in the academic literature, as it captures malleability of people to place influences.

2.2 People

The strongest *people* perspectives tend to be those emphasizing genetic transmissions or early childhood interactions as the source of social inequality. These perspectives tend to suggest that the development of people is less dependent their surroundings. In *the Bell Curve*, for example, Herrnstein and Murray (1994) famously presented evidence of statistical regularities in IQ and socioeconomic outcomes, which they claimed to be highly robust to policy. Hernstein and Murray's concluded that intelligence was 40-80% heritable and that policy makers should be concerned by the increasing separation of the "cognitive elite" from the rest of society. In a world where intelligence is highly heritable, changes in environmental conditions are unlikely to influence the lives of people, at least with respect to cognitive development. This is particularly so when individuals with initial cognitive advantages tend to have access the more beneficial environments or opportunities for future development.

Although the work of Hernstein and Murray was heavily scrutinized, analyses or interpretations of genetic transmission are by no means out of flavor in the social sciences. Notably, Gregory Clark and collaborators have attracted much attention by applying a new surname based methodology to the study of intergenerational mobility (G. Clark, 2014; G. Clark & Cummins, 2015; G. Clark, Cummins, Hao, & Vidal, 2015). Clark et al. find stability in the socioeconomic status of surnames over hundreds of years in terms of affluence, poverty, health and other key characteristics of stratification. Clark explains this persistence in status through the underlying "social competences" which are passed down through family lines, either genetically or in early childhood. In Clark's view, geography and policy may create short-run noise in the intergenerational transmission of status, but ultimately, the deeply rooted characteristics of people are quite resilient to context.[3]

A more modest perspective on *people* is to argue that individuals are most susceptible to early childhood stimulation, and *this* is the crucial period dictating social destinies. Although genetics do feature in traditional models of human capital formation, these models strongly emphasize the role of parental investments in their children (Becker & Tomes, 1979, 1986). Such a view is supported by findings that childhood poverty experienced before age five, has particularly punitive effect on a range of outcomes including school completion (Brooks-Gunn & Duncan, 1997). Early-age development may be particularly crucial because, as Heckman (2006) argues, "the architecture of the brain and the processes of skill formation are influenced by an interaction between genetics and individual experience … [and because] later attainments build on foundations that are laid down earlier" (Heckman, 2006). That is, cognitive and "soft" skills beget skills, and individuals who develop an early advantage learn more efficiently and eagerly later in life (Heckman & Kautz, 2012; Heckman & Mosso, 2014).

While these early disadvantages are not confined to the home or family environment, these contexts tend to be the environments to which babies and young children are most exposed. This is a crucial point in the policy sphere, as interventions such as cash transfers, which may alleviate immediate poverty but keep broader family conditions stable have been shown to be less effective than alternatives. Programs which offer extra or assisted schooling such as Head Start, appear to be more effective in improving long-run outcomes for disadvantaged children (Elango, Hojman, Garcia, & Heckman, 2016). The importance of the non-family environment is supported by recent evidence that the quality of kindergarten teachers have significant effects all the way into adulthood (Chetty et al., 2011).

Although there is no doubt that work on early childhood development recognize that environments matter, the issue, however, is the emphasis placed on *when* environment matters. If inequalities

largely emerge and stabilize before age five, this may suggest that interventions at older ages will have only modest effects. Moreover, if genes matter most and people have low susceptibility to place and environment, policies addressing social inequalities face severe uphill struggles.

While debates around when human development occurs are likely to persist long into the future, its importance for geography is of immediate relevance. An estimate from Combes, Duranton, & Gobillon (2008), for example, suggests that up to 50% of the observed difference in wages across France can be explained by the fact that people with different levels of skill live in different locations. Worded differently, around half of basic spatial inequalities in income reflect underlying geographies of people or "sorting". Moreover, there is evidence that differences in the outcomes of low income families living in different neighborhoods partly reflect underlying unobserved differences between people who decide to stay or leave poorer neighborhoods ("selection") (W. A. Clark, 2005).

Issues of sorting and selection are also evident in the immigrant assimilation literature. For example, social mobility differences by ethnicity may reflect differences in discrimination and opportunity, or they could be driven by underlying differences in pre-migration skill or class background (Alba, Lutz, & Vesselinov, 2001; Borjas, 1994). This is well illustrated in a recent study from Feliciano & Lanuza (2017) who examine the "immigrant educational paradox". This paradox refers to the fact that despite starting at an apparent disadvantage, the children of immigrants perform better in school than their counterparts with US-born parents. Feliciano and Lanuza provide evidence that this upward mobility tends to be driven by the reality that these families were of relatively high status in their countries of origin, which is difficult to observe in standard data sources. Thus, considerable scientific care is required to rule out unobserved differences between people and to conclude that place matters.

2.3 Places

Perspectives on how places affect life chances vary in geographical scale and when, in the life-course, exposure appears to matter most. Perhaps the most developed body of research are "neighborhood effect" studies. This work indicates that growing up in a poor neighborhood has at least a small negative effect on life outcomes, which go beyond individual and family background (Sastry, 2012). While it is well documented that locational characteristics such as poorly funded schools, environmental hazards, noise pollution and overcrowding can negatively affect the lives of people (see Sharkey & Faber, 2014), neighborhood effects also refer to the pernicious effects of social environments and their feedback on life chances. These effects are roughly captured with the following expression:

(2) individual outcome = place[characteristics of location + people + characteristics of location x people] x exposure to place x susceptibility to effect of place

where the place term is decomposed into elements relating to the characteristics of locations which include elements of the natural and built environment and other locational endowments such as those mentioned above. Places, however, emerge through the interaction of people and locational characteristics which produce feedbacks: the "Broken Windows Theory" is a famous example (J. Q. Wilson & Kelling, 1982). The Broken Windows idea is that social disorder in neighborhoods, which can be brought about in a variety of ways or over long-periods of time, lays the foundations for crime to emerge. This concentration of crime and related issues like gangs, feedback and produce further neighborhood disorder and crime. That is, one broken window leads to another.

2.3.1. Neighborhoods

Although early work on neighborhoods found only modest contextual effects, recent findings suggest significant improvements in life chances for families moving out of high poverty

neighborhoods. Many of the major findings on neighborhoods have come from the Moving to Opportunity (MTO) program, which is viewed as the gold standard for experimental neighborhood analysis. MTO assigned vouchers to families living in high poverty areas to move to low poverty neighborhoods. Initial comparisons between these families and various control groups suggested that participation in MTO had no significant effect on adult economic self-sufficiency or on children's test scores four to seven years after the move (Ludwig et al., 2008; Sanbonmatsu, Kling, Duncan, & Brooks-Gunn, 2006). These early findings, however, have been turned around by a recent follow-up showing that the age at which children moved, requires consideration. After following MTO participants using administrative records, Chetty, Hendren, & Katz, (2016) found that children moved from high to low poverty neighborhoods before age 13 were more likely to attend college, earn more and were less likely to be single parents.

This new evidence that neighborhoods matter for childhood and adolescent development has also been accompanied by conceptual progress. It has long been noted that neighborhoods can provide valuable forms of information, role models and amenities (e.g. W. J. Wilson, 1987). Robert Sampson, however, also argues that "collective efficacy" is a key resource through which neighborhoods affect their residents. In collective efficacy, Sampson refers to the forms of social organization that support the intervention of neighbors to improve local social conditions. These community or network influences are not conceptually distant from ideas like social capital (Putnam, 2016). The basic idea is that these communal properties improve conditions in the neighborhood by regulating behavior, and this can a self-reinforcing effect. Neighborhoods which score higher on measures of collective efficacy have lower rates of crime and teen pregnancy, and stronger schooling outcomes (Sampson, 2012; Sampson, Raudenbush, & Earls, 1997).

The effect of neighborhoods also interact with the characteristics of people. In the recent MTO findings discussed above, for example, younger children appear to benefit more from moving between low and high income neighborhoods. In addition, Chetty, Hendren, Lin, Majerovitz, & Scuderi (2016) show that gender gaps in socioeconomic outcomes vary substantially by neighborhood. Low-income boys who grow up *within* neighborhoods with high crime and concentrated poverty exhibit lower levels of employment and are more likely to be involved in criminal activity than girls. Chetty et al. also finds the greatest variation in outcomes *across* neighborhoods for boys growing up in poor, single-parent families. Thus, neighborhoods have heterogeneous effects across the life-course and between different people.

The fact that neighborhood influences become, to some degree, embodied, means that places can have persisting effects long after people have moved away or even over generations. For example, new evidence is showing a powerful link between neighborhoods and cognitive ability, which increases as family's are exposed to neighborhood poverty for two or more consecutive generations (Sharkey & Elwert, 2011). It is difficult to determine whether there is a genetic component to these effects or if they are passed across generations through social and familial interactions. In addition to direct socioeconomic transmissions, places can also affect subsequent generations by altering fertility, health, migration, marriage patterns and parenting (Mare, 2011). Thus, places themselves can shape family demographic trajectories with far reaching effects.

2.3.2. Cities and regions

Much of the cutting-edge research in intergenerational inequality is at the scale of the city or the region. Rather than emerging from particular housing market or residential structures, as in the case of the neighborhood literature, these higher scale effects appear to result from differences in

regional development trajectories which affect the geography of institutions, opportunities and policies.

In a series of studies, Chetty and collaborators use administrative data and new techniques to identify whether the life chances of children born to low income parents vary across the United States. Their results provide strong evidence that upward intergenerational mobility is more likely in places with lower levels of segregation and income inequality, higher social capital and K-12 funding and fewer single parent households (Chetty, Hendren, Kline, & Saez, 2014). Further studies have also confirmed that the manufacturing intensity of employment and urban sprawl are both associated with less upward mobility (Ewing, Hamidi, Grace, & Wei, 2016; Kourtellos, Marr, & Tan, 2016). By examining differences between sons who moved at different ages, Chetty & Hendren (2015) show that these regional effects appear to be additive in that place exposures, at least at higher scales, continue to affect people into early adulthood.

While labor markets affect individual's economic performance and attainment, relatively little is known of their intergenerational effects. Several studies suggest that the institutional and occupational structure of labor markets affect earnings inequality by race, gender and ethnicity (Goodwin-White, 2012, 2016b, 2016a). Further, workers more exposed to import competition through the geographical concentration of manufacturing appear to have experienced earnings penalties as a result of offshoring and outsourcing (Rigby & Breau, 2008). Putnam (2016) suggests that the loss of industrial employment in some regions of the US has had a trickle-down effect on household conditions, with likely intergenerational consequences. On the other side, evidence from the US and the UK suggests that workers experience "learning effects" and earn more when they work in larger service-oriented labor markets (Champion, Coombes, & Gordon, 2013; De la Roca & Puga, 2017; Fielding, 1992). By working in these cities, workers acquire new skills and

access to new information which leave a lasting mark on earnings. While these studies have broken new ground, there is still much unknown about what forms of urban labor markets reinforce or weaken intergenerational inequality.

There is also much ground to be broken on how structures of income inequality relate to intergenerational mobility. Cross-national and county analyses suggest that intergenerational mobility tends to be lower when income inequality is higher (Chetty, Hendren, Kline, & Saez, 2014; Krueger, 2012). The mechanisms connecting these two phenomena are not well understood. One argument is that this relationship is indirectly driven by the common effect of institutional arrangements and political preferences toward redistribution (Alesina, Stantcheva, & Teso, 2017; Torche, 2015).[4] A more structural argument suggests that knowledge creation drives the economy toward greater income inequality but also greater intergenerational mobility (Aghion, Akcigit, Bergeaud, Blundell, & Hemous, 2015). In this hypothesis, the creation of new technologies increases income inequality by means of returns to inventors and investors, but boosts intergenerational mobility through the process of "creative destruction". The challenge in identifying the causal forces at play here highlight how far we are from understanding the structural conditions underlying income and intergenerational inequality.

3. Overview of dissertation chapters

There are now calls in the literature to move from questions of *if* place matters to how, when, why and for whom it matters (Sharkey & Faber, 2014). In addition to deepening these questions, there is a clear need to situate these place effects in an historical and societal context. This requires studying both why places *matter* and why places *differ*. The people-place spectrum not only has value in understanding proximate determinants of intergenerational inequality, but also the longer-running history of places and the conceptual challenges with understanding how these differences

emerge in particular historical moments. Most previous research has focused on trying to correctly estimate how intergenerational mobility outcomes have changed over time or what place characteristics affect mobility outcomes within two generations. Due to recent advances in methods and data, we are only now reaching the point where we can appropriately contextualize intergenerational inequality and study its geographical evolution.

This dissertation contributes to these topics by focusing on social mobility within the context of historical international migration, and by studying how intergenerational outcomes evolve over long periods of time. The foreign born share of the American population is now at its highest level in a century and we know little concrete about the forces which will shape the socioeconomics trajectories of these immigrant families. In addition to these current issues, the movement of people between societies at different levels of economic development, and with disparate cultural and social institutions, make the study of immigrant intergenerational mobility inherently interesting. This topic is vastly untapped, as the data sources and techniques required to undertake rigorous analyses of these processes have been severely limited.

I use new data on historical Irish and Jewish immigration to the United States at the end of the Age of Mass Migration (1850-1913) to pull apart how people and place affect intergenerational mobility. Specifically, I focus on the social mobility of immigrants and their children in the 1900 to 1940 period. By taking a deep dive into the experiences of these families, I have two cases from which to study how different people developed and changed through their interaction with American society. These populations were also formative in American history, their descendants now number up to 50 million and they arrived in a key period of US economic development.

In the previous sections, I have argued that to understand how places affect life chances, we must understand the geography of embodied traits, skills, abilities and norms. Failure to do so would

risk an aggregation fallacy, where one could mistakenly attribute causal power to place, which actually reflect underlying differences between people. Thus, I see decisions around migration and social inequality as inherently linked, and deeply connected to how places affect life chances. As such, each of the components of this dissertation is concerned with intergenerational inequality *and* migration decisions.

Chapter 2 begins by studying who decided to leave Ireland for the United States in the early twentieth century, and how conditions in Ireland pushed some people to leave but not others. I do this by comparing the family backgrounds of international migrants, to migrants and non-migrants within Ireland. The sons of poorer landholders were overrepresented in the migration flow from Ireland. Thus, I explore whether access to agricultural opportunities and land within families and communities shaped who decided to leave. Canonical models frame migration decisions as responses to differences in the returns to individual's skills (Borjas, 1991). The results of Chapter 1 suggests that this focus on income provides an overly narrow perspective on people and their decisions, and a focus on the embeddedness of people in family, local and national sending contexts may provide a more powerful apparatus for understanding migration behavior.

Chapter 3 examines how these economic and class origins in Ireland shaped the experiences of immigrants and their children after arriving in the United States. The alternate hypothesis is that the opportunity structure of the United States was what mattered most. I test these hypotheses by exploiting the heterogeneity of class backgrounds and American settlement patterns within the Irish-American migration flow. While I do find evidence of minor or elite persistence in economic outcomes before and after migration, the lives of the children of Irish immigrants appear to have unfolded along very different trajectories across the major regions of the United States. Notably,

families who settled outside of the major Irish enclaves of Northeastern cities experienced sluggish economic progress in the immigrant generation but the most rapid gains in the second generation.

High rates of second generation upward mobility is clearest in Western US states, where the children of Irish immigrants could better access expanding schooling and labor market opportunities. While these findings suggest that the American reception context mattered more for second generation outcomes than initial class origins in Ireland, this process also highlights the importance of timing. My findings suggest that there is, contrary to many previous claims, a strong disconnect between the status of immigrants before and after migration, with the attainment of their children in the new country. Thus, the influence of place exposures may not only fluctuate across the life-course but also across generations.

Chapter 4 focuses explicitly on Jewish immigrant assimilation and intergenerational mobility. We use unique data from an immigrant resettlement program, the Industrial Removal Office (IRO), to study Jewish outcomes across the United States in the early twentieth century. The IRO emerged as a response from the American-born Jewish elite to the formation of large Jewish immigrant enclaves in New York and other gateway cities. In an effort to stymie anti-immigrant and anti-Semitic sentiment, philanthropists and organizers established the IRO to help disperse 40,000 Jewish households from New York across a thousand towns and cities throughout the United States.

This unusual program provides the quasi-experimental conditions to study how living in an enclave or in a place with different characteristics, affect immigrant and second generation assimilation. This program is, in some respects, a hybrid of contemporary refugee resettlement strategies and the MTO program discussed above. On the one hand, the random of assignment of households to many locations permit us to study how places affect socioeconomic outcomes, while on the other,

it provides a rare opportunity to observe immigrants subsequent migration decisions, from which we can infer how people value places. Additionally, our comparison of assimilation among IRO participants and other Jewish households across the US also paints a first broad picture of the geography of Jewish American assimilation in this period.

While these group- or ethnic-specific analyses provide new insight on how places affect immigrant and second generation progress, the field has been largely silent on how socioeconomic outcomes come to be structured differently in different places. Thus, Chapter 5 represents an ambitious attempt to study the geography of intergenerational mobility for all American-born sons in the 1900 to 1915 birth cohorts. Using these historical estimates, I study the spatial persistence of intergenerational mobility outcomes across the US over the twentieth century, and additionally, how historical patterns of regional development shape short- and long-run mobility outcomes. I interpret these outcomes by developing a conceptual model to contextualize local variation in intergenerational outcomes.

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Chapter 2. The cream of the crop? Inequality and migrant selectivity in Ireland during the Age of Mass Migration

Abstract

During the Age of Mass Migration (1850-1913), over 30 million people moved from Europe to North America. European policy-makers feared that migration would attract the "best and brightest" workers. I study the selectivity of migration from Ireland, the European country with the highest emigration rate, using a new longitudinal dataset of 300,000 migrants and non-migrants. I find that migrants tended to come from mid-status, farming families ("intermediately selected"). Yet migration *within* Ireland drew from both lower and higher status families. Children who were more likely to inherit valuable land were less likely to leave their home county.

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1. Introduction

During the Age of Mass Migration (1850-1913), almost thirty million Europeans moved to the United States. Up to four and half million of these migrants came from Ireland. Emigration from Ireland was driven by growing overseas demand for labor, coupled with sluggish urban and rural development. From 1845 to 1911, this migration flow contributed to a decline in the Irish population from over eight million to less than four and a half. Ireland's annual emigration rate of 13 per 1,000 was double any other major European source-country.

Official reports frequently expressed concern that highly skilled migrants were leaving Ireland. The Royal Commission on Labor emphasized the high rate of rural unemployment and argued that this resulted in the loss of Ireland's "best men" to emigration (B.P.P., 1893-4, p. 49). Over half a century later, the Commission on Emigration and Other Population Problems (1955) arrived at similar conclusions, suggesting that rural and industrial development policy could reduce excessive emigration. Others rejected this prescription. Instead, arguing that the loss of the most able and "gifted" people was the outcome of a society that stifled self-development, along with high overseas wages and a liberal migration policy (Carter et al., 1956, p. 6-12; Geary, 1935).

On the other side of the Atlantic, emigration from Ireland may have benefited the American economy. The benefits of mass migration are highlighted by recent historical studies showing positive long-run effects from immigration (Ager & Brückner, 2013; Glaeser, 2005; Glaeser, La Porta, Lopez-de-Silanes, & Shleifer, 2004; Rodríguez-Pose & von Berlepsch, 2014). Specifically, immigration tends to benefit the receiving economy when the skills of immigrants compare favorably to natives (Borjas, 2014). Thus, migration from Ireland would likely have benefited the American economy if Ireland did, in fact, lose its most highly skilled people to emigration.

In this paper, I ask two questions related to these discussions. Was it the 'best and brightest' that left Ireland to cross the Atlantic? Did access to local economic opportunities in Ireland affect who migrated? I address the first of these questions by comparing the occupational profiles and literacy levels of emigrants and their fathers to the Irish labor force as a whole. I then study whether domestic opportunities influenced migration decisions. I do this by comparing emigrants to internal migrants, and further, by analyzing whether opportunities to acquire land influenced individuals' decisions to leave their place of childhood.

I find that migrants from Ireland to the USA were more likely to be drawn from the middle of the wealth and skill distribution. Migrants tended to have fathers who were poor landholders (rather than wealthy farmers or landless laborers). The sons of landholders were 31 percent more likely to leave Ireland than laborers' sons. Moreover, the sons of poorer landholders were up to 45 percent more likely to emigrate than their wealthier landholding counterparts. As such, I conclude that migrants were intermediately selected into international migration.

Selection into internal migration was quite different from selection abroad: sons of laborers, on the one hand, and of white-collar or skilled blue-collar workers on the other were more likely to move within Ireland, either to another rural county or to an urban area. Thus, internal migration exhibited bimodal selection (both positive and negative). Overall, the sons of farmers were *less* likely to leave their home counties, even though, conditional on moving, they were more likely to move to the United States. This preference for longer distance moves among the sons of farmers was alluded to by the Royal Commission on Labor in Ireland (B.P.P., 1893).

Access to land played a role in out-migration from rural areas. In Ireland at the time, first and last sons were more likely to inherit family land. I find that middle sons were thus more likely to leave their home county, particularly from households with land. The middle sons of landholders were

15 percent more likely to move than their first and last born counterparts. Further, they were 40 percent more likely to migrate than the sole heirs of landholders. These non-inheriting sons (as inferred by birth order) migrated at similar rates to sons without land.

Local economic conditions also influenced the likelihood of migration. Sons of farmers were particularly unlikely to leave areas where land values and inequality levels were high, perhaps because these areas offered the best opportunity to inherit family land. Sons of white-collar or blue-collar workers were the most likely to leave their home areas, but this probability of migration increased in poor, unequal areas which may have lacked opportunities for non-agricultural employment.

Intermediate selection of migration to the United States is not consistent with standard economic models of migrant selection (Borjas, 1987, 1991; Grogger and Hanson, 2011). These models assume that migrants have two choices – stay in home country or move abroad – and that they then compare returns to skill in each place, either in relative or absolute terms, generating predictions of either negative or positive selection from Ireland. My results suggest that landholding status and the opportunity for internal migration may influence the direction of selection abroad.

The emigration of landholders' sons to the United States could reflect more widely observed household migration strategies. I find that non-inheriting sons of landholders were as likely to leave their home areas as the sons of landless laborers, but more likely to move to the United States.[5] This proclivity for overseas migration may have been motivated by farming households' dependence on cash transfers sent by family members in America. Strategies among farming families to finance investment and diversify risk through migration are common in accounts of Irish emigration and in the New Economics of Labor Migration (NELM) literature (Arensberg & Kimball, 1940; Rosenzweig & Stark, 1989; Taylor, Rozelle, & De Brauw, 2003; Turner, 2002).

I draw these conclusions from a novel dataset of over 300,000 Irish males who decided to either stay in Ireland or move to America in the early twentieth century. I built this data by linking individuals between the 1901 and 1911 censuses of Ireland and to the 1910 American decennial census with the methods pioneered by Abramitzky, Boustan and Eriksson (2012) and earlier by Ferrie (1996). I linked this new sample to high quality data on the value and distribution of land wealth across 158 local areas (Poor Law Unions), which I digitized from the Irish land census. Using this data, I analyze whether selection into rural outmigration varied with inequality and land values.

These data are particularly well suited to studying how inequality and (land) wealth influence selection. Typically, wealth is endogenous to the migration process: wealth affects the costs and returns of migration but remittances and migrant networks also influence wealth holdings (Garip, 2012; McKenzie & Rapoport, 2007). However, in this context, I observe source area wealth and parents' landholding status for individuals in childhood. Thus, these characteristics are pre-determined for the men deciding to move.

This unique data allows for a number of important contributions to the literature on migrant selection. This is the first dataset to link migrants back to their homes in Ireland and to compare selection into emigration and internal migration within Ireland. Even though studies increasingly show that detailed data are needed to correctly gauge selection (Moraga, 2013; Rendall & Parker, 2014), data of this quality are still rare. In addition, my source area analysis of land values and inequality contribute to a new literature concerned with subnational patterns of selection (Juif, 2015; Spitzer & Zimran, 2015).

There are two reasons why studying migration from Ireland is helpful for understanding migration today. First, international migration from low-income to high-income countries is now heavily

regulated and costly. The liberal migration policy operated by the United States in the early twentieth century provides a unique opportunity to observe migration behaviors in the absence of the current restrictions imposed on labor mobility. Moreover, the cost of transatlantic travel was quite low in this period (Ó Gráda & O'Rourke, 1997). Thus, travel costs may have been less of a deterrent to migration compared with today.[6]

Second, the scale and scope of Irish migration make Ireland a valuable laboratory from which to study selectivity. In the early twentieth century, Ireland's GDP per capita (around 3,000 present day dollars) and its sectoral employment in agriculture (47 percent), services (31 percent) and industrial occupations (22 percent) were similar to present-day Guatemala, the Dominican Republic, El Salvador and to a lesser extent, Mexico.[7] Only migrant sending countries in South Asia such as the Philippines or India have urban shares as low as historical Ireland (32 percent).

The Irish immigrant flow is also one the largest in American history. The Irish share of the foreign-born population in 1880 – 28 percent – was identical to the Mexican-born share in 2013. Moreover, in 1980, 40 million Americans claimed Irish ancestry. As such, the Irish migration provides a case of historic importance to European and North American economic history. At the same time, migration from Ireland over five decades after the Great Famine (1845-1852) was not so atypical as to thwart comparisons with contemporary migrant flows.

2. Migrant selection and the Age of Mass Migration

2.1. Skill and the Roy model

Who decides to migrate from one country to another? Neoclassical approaches model migration as a decision made by individuals in response to differences in returns to skill between locations. This approach can be used to generate predictions of the skill-level of migrants, as in Borjas' (1987) canonical mode of selection, which was derived originally from the Roy (1950) model of

occupational choice. If, for example, the returns to skill were relatively higher in the migrant-receiving country compared to the sending country, the Borjas model would predict migrants to be higher skilled relative to the source population ("positive selection"). By extension, if the returns to skill were lower in the receiving country than the sending country, the model would predict migrants to be less-skilled ("negative selection").

Support for the predictions of the Borjas model are mixed. A number of studies find evidence of positive selection in the contemporary era, irrespective of the earnings gap between countries (Feliciano, 2005; Grogger & Hanson, 2011). Grogger and Hanson propose an alternate model of "Generalized Positive Selection". This model follows a logic similar to Borjas but instead assumes that individuals respond to absolute, rather than relative returns to migration. The absolute returns to migration tend to be greater for highly skilled workers, thus, the Grogger and Hanson model usually predicts positive selection for most scenarios of migration from poor to wealthy countries (Borjas, 2014).

Studies of the Age of Mass Migration provide more support for Borjas model predictions than contemporary studies. Findings of intermediate and positive selection from historical Mexico and Britain are consistent with model predictions (Kosack & Ward, 2014; Long & Ferrie, 2013), as are the findings of negative selection from historical Norway, Italy and Spain (Abramitzky, Boustan and Eriksson, 2012; Juif, 2015; Spitzer & Zimran, 2015). One reason historical migration flows may conform better to Borjas model predictions is because international borders imposed lower costs on migrants in the past (Boustan & Abramitzky, 2016). Thus, the international migration of poorer and less skilled individuals was likely less constrained than it is today.

The Borjas model predicts negative selection from Ireland to the US, while the Grogger and Hanson model predicts positive selection: laborers stood to gain more than skilled workers in

relative earnings but less in absolute terms. These opposing predictions are illustrated by the earnings differences of Carpenters and Farm Laborers in Panel A and Panel B of Figure 1. In relative terms (Panel A), the wages of carpenters and laborers in 1901 were roughly similar in being 60 percent of their American levels. When considered along with the relatively higher returns to migration for building laborers, and the lower returns for skilled fitters, the Borjas model would predict higher rates of low skilled migration from Ireland to the USA ("negative selection"). In contrast, in absolute terms (Panel B), carpenters stood to earn 70 cents more per day in America (19 present day dollars) but farm laborers only 22 cents more (6 present day dollars). These higher returns to skill in the USA, in absolute terms, results in a prediction from the Grogger and Hanson model of skilled migration from Ireland to America ("positive selection").

2.2. Landholding and the New Economics of Labor Migration

However, migration decisions are not solely made by individuals but also collectively by households. NELM studies model migration as a household strategy to diversify risk and finance capital investment (Rosenzweig & Stark, 1989; Stark & Bloom, 1985). In low income agricultural areas, for example, credit markets are often poorly developed. A primary means of financing land and capital investment in these places is through remittances sent by family members living abroad. These payments may be the return on a collective decision or agreement to trade-off the labor supply of household members in the short term, so that they can migrate and finance investment in the long term (Taylor et al., 2003).

Typically, NELM approaches predict members of the poorest households to be most motivated to move. The returns to migration from low income agricultural areas to high income urban areas tend to be high. These returns imply that the poorest households, with respect to land, wealth and income, face the highest relative gains from migration (Stark & Taylor, 1989; VanWey, 2005).

Studies from historical Ireland and Norway support this by showing more migration among land-poor individuals (Abramitzky, Boustan, & Eriksson, 2013; Guinnane, 1997). Similarly, emigration from historical Italy appears to have been motivated by an intention to purchase or invest in land on return (Cinel, 2002). These findings are consistent with recent work by Dustmann & Okatenko (2014) which suggest that once migration costs can be met, poorer individuals are more likely to move.[8]

A NELM approach would predict a higher rate of migration among land-poor individuals (negative selection). Landholding can influence migration in different ways: it can be liquefied to overcome cost constraints; it is a source of agricultural employment; and its purchase and investment could be financed with remittances (VanWey, 2005). As discussed, cost constraints on migration from Ireland during this period were minimal. Further, larger, export-oriented farms were prospering in Ireland in the early twentieth century. The strong economic position of large farms and low migration costs suggest that land-poor individuals and households had the greatest incentives to migrate.

3. Emigration and selection on the eve of the First World War

This article is not the first to study selection from Ireland. Earlier studies of historical Ireland suggest that changes in poverty across time and space influenced selection patterns. Studies from the Great Famine period (1845-1852) suggest that migrants were poorer than the population as a whole, even though the very poorest faced poverty constraints (Anbinder & McCaffrey, 2015; Mokyr & Ó Gráda, 1982; Ó Gráda, 2000). Other studies imply that over time, emigrants in the post-Famine period were more likely to originate in the poorest Irish regions but, compared with earlier waves of migration, they tended to be relatively better skilled than non-migrants (Fitzpatrick, 1980, 1984; Stolz & Baten, 2012).

Irish emigrants conformed to the standard migrant profile of being young, single adults in search of work. By 1900 up to two-thirds of emigrants were unskilled and 60 per cent were aged between 15 and 24 (Guinnane, 1997, p. 106). Although many emigrants interpreted their migration decision as a form of political exile, evidence suggest that they left for similar reasons to other Europeans – poverty and unemployment (Miller, 1988, 2008). Emigration from these bleak conditions in nineteenth century Ireland was exacerbated by the great demand for labor in North American cities (O'Rourke, 1991).

Opportunities in rural Ireland declined throughout most of the nineteenth century. The modernization of the Irish economy and its exposure to liberal international trade contributed to the contraction of opportunities in agriculture and artisanal production (O'Rourke, 1997; Miller, 2008, p. 79-80). These poor economic opportunities combined with longer running trends in the decline of marriage and inheritance. This confluence resulted in unusually high rates of female emigration (Guinnane, 1990 & 1997, p. 105). Later, I discuss the challenge with analyzing outcomes among females using record linkage data.

Despite considerable aggregate wage growth in Ireland, regional inequality increased in the late nineteenth century. Between 1881 and 1905, Irish wages rose by up to 60 percent compared to British levels (Begley, Geary & Stark, 2014). There is disagreement on whether this growth resulted from the mass-migration of the poor or if it was capital accumulation and productivity growth (Begley et al., 2014; Boyer, Hatton, & O'Rourke, 1994; O'Rourke & Williamson, 1997). Whatever its source, Figure 2 shows that emigration was highly localized in western Ireland at the turn of the century.[9] These regions were characterized by high poverty and fertility, subsistence farming, and distance from ports and cities (Fernihough, 2011; Hatton & Williamson, 1993). In

the appendix, I show that these were the least developed regions of Ireland (as measure by land value per acre).

In many ways, Ireland was a "classic case" of uneven development (Miller, 2008, p. 12). The decline of population in the west of Ireland occurred alongside population growth in the east.[10] Figure 3 shows high rates of internal migration around the manufacturing centers of Belfast, Dublin and the more prosperous agricultural regions of the southeast (Bourke, 1993; Kelly, Slingsby, Dykes, & Wood, 2013; Slingsby, Kelly, Dykes, & Wood, 2012). This regional pattern of internal migration appears to be the inverse of the map of emigration shown in Figure 2.

Though there were broad regional disparities in development and migration behaviors, local areas were also internally heterogeneous. In rural areas with high levels of inequality, agricultural growth and farm consolidation occurred alongside smallholding and subsistence economies. While some areas had Gini coefficients higher than 0.6, others were mostly poor or wealthy across the board with coefficient of less than 0.3. The relatively weak spatial relationship between land values and inequality in personal land holdings, permit me to isolate the effect of these characteristics on migration decisions.

4. Data and estimation

4.1. Record linkage

My goal was to create a sample of Irish-born migrants and non-migrants whom I could observe in their homes in Ireland as children or as young men before deciding whether to move within Ireland or to the United States. To do this I used the record linkage techniques developed by Abramitzky, Boustan and Eriksson (2012) and Ferrie (1996). The application of these techniques to the Irish and American historical censuses provided the main samples for this analysis.

This linkage procedure relies on uniquely matching males between census years. I searched for individuals that were enumerated in the complete-count 1901 census of Ireland, in either the 1911 census of Ireland or the 1910 American census.[11] These individuals were matched using their name, age and county of birth (for those who stay in Ireland). To mitigate potential problems due to misreporting, ages were permitted to deviate by up to two years in cases where no exact match could be found.

A more complete picture of selection from Ireland could be provided if females were also included in this analysis. Half the migration flow from Ireland at this time was comprised of females. However, these record linkage approaches are not well suited to matching females, as they are more likely to change their names after marriage. Female samples matched using these techniques tend to be non-representative of the population as a whole. As a result, only the migration of males is within the scope of this study.

This matching approach produced a sample on par or larger than those typically found in the literature. In total, 9,237 people were successfully matched from Ireland to the US, along with 56,420 inter-county movers and 344,147 non-movers within Ireland. These samples correspond to a match rate of 39 percent within Ireland and 13 percent for Irish immigrants in the United States. The difference between the migrant and non-migrant samples is mostly due to the extra information on county of birth from the Irish census, which allowed me to better distinguish between individuals with similar names and ages.

4.2. Robustness sample

I provide an alternate matching approach to address potential concerns with the construction of this sample. This alternative method uses identical criteria to match individuals in Ireland and the United States and ignores the information on county of birth from the Irish census. The match rate

of this robustness sample ("Equal Match") drops to 17 percent. For comparison, I include results from the Equal Match for comparison with the main sample ("Full Match").

The characteristics of these matched samples are similar to the full census population. Table 1 compares 6 to 40 year olds between these samples and the full census. While the share literate is similar across these samples, the occupational score of the matched samples are slightly higher on average than in the census data. Catholics were also less likely to be linked due to having more common names. It is notable that farmers are slightly overmatched in the Full Match and white-collar workers are more likely to be matched in the Equal Match.

This comparison suggests that the Full Match is of similar or higher quality to the Equal Match. This is evident from the greater share of white-collar workers and white-collar sons in the Equal Match, which suggests that higher status individuals may be overrepresented in samples matched with less information. Further, the Full Match has more than twice as many observation as the Equal Match and is more similar to the original census in its composition. Given these strengths, I relied on the Full Match as the primary data source for this analysis.

4.3. Estimating selection by occupation and skill

I test for selection by studying the influence of economic characteristics on migration outcomes. I analyze decisions to migrate across counties or to the United States. The variables of interest are measures of occupation and literacy. The literacy measures were taken directly from the census and were observed for potential migrants and their fathers in 1901. The measures of occupation required further work.

I relied on recent research to rank occupations in the Irish census and to measure differences by socioeconomic class. The occupational returns in the Irish census are not standardized. However, Fernihough, Ó Gráda, and Walsh (2015) have recently linked the occupational returns to a

corresponding code in the Historical International Classification of Occupations (HISCO) (van Leeuwen & Maas, 2011). These codes permitted me to rank each occupation on the Historical Cambridge Social Interaction and Stratification Scale (henceforth "HISCAM index") and the Historical International Social Class Scheme (HISCLASS). The HISCAM index is a continuous ranking of occupations, constructed by measuring social distances between occupations in historical Europe (Lambert, Zijdeman, Van Leeuwen, Maas, & Prandy, 2013). The HISCLASS categories correspond to identifiable socioeconomic classes and provide important information with respect to skill, class and land ownership.

I needed to link sons to obtain reliable measure of pre-migration status. The economic characteristics of migrants cannot be reliably inferred from post-migration occupations, or from arrival or departure records.[12] In the receiving country, migrants may hold occupations below their true level of skill (Abramitzky, Boustan, & Eriksson, 2014). Conversely, the decision to migrate may be motivated by transitory job loss (Fernández-Huertas Moraga, 2011). To overcome these problems, I analyze the characteristics of the fathers of potential future migrants while their sons were in childhood in Ireland. Further, this helps avoid reverse causality in fathers' wealth through the migration of their sons.

This father and son data is used to analyze selection into internal or international migration with a series of binary logistic regressions. These models predict whether migrants and non-migrants differed from each other with respect to skill, landholding or education. The logistic regression models take the following form:

$$(1)\quad \ln\left[\frac{Y}{1-Y}\right] = \beta_0 + \Sigma_{k=1..K}\beta_k X_k$$

where Y refers to the probability of an Irish male in 1901, moving county to an area within Ireland or to the United States by 1910/1911. All coefficients are presented as odds ratios where

coefficients greater than one indicate higher odds of migration while values below one imply lower odds. Thus, β_k can be interpreted as the change in the odds of an individual migrating to a destination associated with a one-unit change in the k^{th} independent variable. In this case, selection is inferred from the differences in the odds of migration by own and fathers' occupation and literacy, where the reference population are individuals living in all other destinations in 1910/1911.

One could argue that a multinomial logit approach would be better suited to this analysis. A multinomial logit approach uses a fixed base category to compare location decisions, typically between movers to different destinations and non-movers. However, when analyzing selection into international migration, it is preferable to compare migrants to the entire population rather than just the people who stay in their county of origin. This is particularly important when migration decisions to other destinations are also selective (as shown later). Thus, I use a series of binary logistic regressions, as the reference category is better suited to this study.

4.4. Estimating selection by source region conditions

The study of selection in response to source area inequality is a main contribution of this study. I focus on whether selection varies with birth order and local landholding across PLUs. This analysis is data intensive and requires a different approach. Instead of analyzing selection across a set of potential destinations, the outcome variable in these models is a binary choice for whether or not individuals in rural areas stayed in their childhood county.

The data on birth order was extracted from the 1901 census. Individuals were assigned a birth order of "First Son", "Last Son", "Middle Son" or "Only Son" based on their age relative to their siblings which was observed from their childhood households. This variable will be mis-measured

for families where older siblings have already left home. To mitigate this problem, the sample is confined to sons with younger mothers (aged under 43).[13]

The data on local inequality and the value of landholdings were transcribed from the Irish land census of 1901. These registers detail the valuation and number families living on agricultural holdings within each PLU.[14] The census classified valuations into eleven categories ranging from £4 or less to greater than £300. I used this information to measure the average per acreage value of landholdings and to construct a within PLU Gini index of inequality. Data from the land census apply only to families living on agricultural holdings. Thus, the Gini index reflects inequality among agricultural landholders and is mainly applicable to rural areas.

This land register data needed to be manually linked to the census records. The digitized 1901 census contains information on street address, electoral division and county of residence and birth. Having no information on PLU of residence required that I use the Irish Topographical Index to compile and link each of the 3,000 enumeration districts from the census to one of the 158 PLUs from the land census. All cases were successfully matched to a PLU and I could assign each individual the land value and Gini index of their PLU of residence.

The value of holdings may be a better indicator of income or consumption than of wealth. The history of tenancy in historical Ireland makes it difficult to draw a sharp distinction between owners and occupiers (Turner, 2002). Thus, land values may be limited measures of individual wealth. This said, studies suggest that the price of agricultural land mainly reflects the rents that can be extracted from agriculture (Burt, 1986; Featherstone & Baker, 1987) and secondly, the capitalization of amenities and future land use opportunities (Borchers, Ifft, & Kuethe, 2014; Plantinga, Lubowski, & Stavins, 2002). As such, the value of land may be a reasonable proxy for economic opportunity in agricultural areas.

I used a binary logistic model to analyze the effects of land inequality and birth order on the decision to leave ones' source county. These models take the following form:

$$(2)\ ln\left[\frac{Y}{1-Y}\right] = \quad \beta_0 + \beta_1 X_1 + \beta_k X_k + \beta_1 X_1 \beta_k X_k$$

where Y refers to the probability of an individual leaving their childhood county between 1901 and 1911. $\beta_1 X_1$ refers to the landholding status of an individual's father, which is inferred from whether the father reported being a "Farmer" (landholder) or working in a non-farming occupation (non-landholder). I use the landholding status as the primary measure of selection. The interaction term $\beta_1 X_1 \beta_k X_k$ interacts landholding status with $\beta_k X_{kj}$, which refers to a measure of PLU inequality or family birth order. This interaction term allows selection on landholding to vary with local inequality or birth order position.

These models make use of a weighting procedure. It is challenging to study source area effects on selection if match rates vary geographically. Figure 2 showed that emigrants to America, which had a lower match rate, were more likely to originate in western Irish counties. These lower match rates mean that contextual influences on migration would be underestimated in high emigration areas and overestimated elsewhere. I overcome this problem by reweighting the sample of international migrants to be equivalent in size to the population staying in Ireland.

5. Results

I test for selection over four analyses. First, I gauge selection into transatlantic migration using measures of own and fathers' literacy and socioeconomic class. These results are presented for the Full Match and Equal Match samples. Second, I compare the profiles of international migrants to individuals who moved within Ireland. This provides an indirect assessment of whether domestic opportunities influenced the composition of the flow of migration overseas. These analyses show that most overseas migrants originated in agricultural areas. In the third section, I test whether rural

outmigration was influenced by differences in inequality and land values within and between PLUs. Finally, I conclude with an examination of whether land inheritance was a primary channel through which landholding influenced migration decisions.

5.1. Selection to the USA

5.1.1. All occupations

Table 2 estimates the basic relationship between own and fathers' occupation and migration to the USA.[15] These estimates consistently show that migrants held occupations below the mean prior to migration but their fathers held above average occupations. This divergence is expressed by Columns 1 and 2, which show the odds of emigration associated with a standard deviation increase in the HISCAM index.[16] An occupational improvement of this size *reduces* an individuals' odds of emigration by 3 percent. However, the same shift in fathers' occupation increases sons' emigration by 9 percent. This is a preliminary indication of negative selection on own occupation but positive selection on fathers' occupation.

Divergence in migration outcomes based on own and fathers' occupation is mainly driven by landholding status. Column 3 shows men occupied as farmers and white-collar workers to be 5 percentage points less likely to emigrate than laborers. However, only the lower odds of migration for farmers (relative to "medium skilled workers") is statistically significant. In contrast, in Column 4 farmers' sons are 28 percent, and white-collar and skilled workers' sons (non-significant) 10 to 20 percent, more likely to emigrate. This provides quite strong evidence that migration was selective with respect to landholding and selective to a lesser extent on skill-level.

Results presented later in this article suggest that land acquisition can account for the differences in migration between farmers and their sons. Inheritance norms and competition among siblings meant that farmers' sons were limited in their opportunity to acquire land. Thus, young men

declaring themselves as a "farmer" had, at a relatively young age, inherited land or acquired it elsewhere. As a result, their siblings who did not anticipate inheriting land may have decided to leave the household and emigrate for work. This process may account for why farmers' sons are more likely to emigrate but farmers themselves are less likely to do so.

These findings are similar for the Equal Match, which produces slightly stronger selection estimates. Columns 5 and 6 shows similar patterns of negative selection on own occupation and positive selection on fathers' occupation. Similarly, Column 8 shows higher odds of emigration for farmers' sons than laborers' sons. The most notable difference in the Equal Match is the lower odds of migration for white-collar workers and their sons. As already discussed, white-collar workers are particularly sensitive to the matching procedure and as such, caution should be exercised in drawing inferences from their outcomes.

5.1.2. Agricultural occupations

Further decomposition is required to understand selection from agricultural areas. Farmers differed in the value and productivity of their land, as well as in their orientations toward subsistence and market production. This makes it challenging to interpret differences in migration by occupation from agricultural areas. As such, Table 3 analyzes selection on agricultural occupations by decomposing farmers and laborers by the value of land in rural source areas.[17] Estimates of selection from the Full Match and Equal Match yield similar conclusions.

Columns 1 and 2 show higher odds of emigration from poorer rural areas. Overall, this implies that selection on landholding constitutes a more intermediate form of selection. The sons of farmers in poor areas are more likely to emigrate than the sons of farmers in wealthier areas or landless laborers. More generally, individuals in poor areas are up to twice as likely to move: this

difference is largest for farmers' sons in poor areas relative to laborers' sons in wealthy areas. These patterns are consistent with high rates of emigration from Ireland's poorer west coast.

Within area comparisons show the sons of farmers are more likely than laborers' to move to the USA. Laborers' sons are from 3 percent (in medium areas) to 70 percent (in wealthy areas) less likely to emigrate than farmers' sons. However, this finding reverses when own occupations are analyzed. The odds of emigration for men occupied as farmers is around 13 percent lower than for laborers. This provides further support for the role of land acquisition in migration.

Findings of intermediate selection for migration from Ireland to the USA are not consistent with predictions derived from differences in returns to skill between the two countries. The main occupational differences in migration appear to have been between the sons of poorer farmers and others. This highlights the importance of landholding on migration decisions. One means through which land may have been influential was through the provision of employment opportunities in source areas.

5.2. Selection into internal and international migration

I begin examining the influence of source country opportunities on selection into emigration by comparing international migrants to people who moved within Ireland. To describe the characteristics of internal and international migrants, I model occupational differences and location choices using logistic regression models. This analysis yields two main findings. First, the sons of agricultural workers are less likely to move overall. Second, conditional on moving, white-collar workers' and farm laborers' sons are more likely to move to urban and rural areas in Ireland respectively, while the sons of farmers tend to move to the USA.

5.2.1. Descriptive analysis

In contrast to intermediate selection into overseas migration, selection into internal migration appears to have been bimodal. This is evident in Figure 4, which compares the distribution of own and fathers' occupation for non-movers, internal migrants and migrants to the USA. These plots show that the fathers of migrants to the USA held higher ranking occupations than non-migrants, who were overrepresented in low- and mid-ranking occupations. In contrast, cross-county movers were more likely to hold occupations at the tails of the distribution. This bimodal form of selection into internal migration is characterized by higher migration among laborers' sons on one side, and higher skilled and white-collar sons on the other.

Analysis of occupational categories rather than quantitative rankings show lower levels of migration among the sons of agricultural workers. Table 4 presents the share of sons that migrated within Ireland and abroad by fathers' occupation.[18] For interpretation, Columns 1 and 2 provide qualitative and quantitative rankings of these occupations. Column 3 shows that while 78 to 88 percent of the sons of non-agricultural workers stayed in their childhood county, over 88 to 91 percent of agricultural workers' did the same.

Table 4 suggests that these migration patterns may reflect domestic demand for skill. In Column 3, relatively large shares of sons with highly skilled fathers moved county. Further, Column 4 and 5 suggest that location choice varied with agricultural skill. Conditional on moving, two in five farm laborers' sons moved to rural areas while only one in five white-collar sons did the same. Similarly, urban areas attracted sons with higher skilled fathers. While 9 and 15 percent of skilled and white-collar sons moved to an urban area, only 4 to 6 percent of farmers' or laborers' sons did the same.

The sons of farmers were most highly represented in the flow to America. Table 4 shows that around 3 percent of farming sons moved to the USA, compared with 2 percent of white-collar and laboring sons. This point is strengthened when compared to the population as a whole: farmers' sons comprised 50 percent of the total population, 35 percent of the migrant flow within Ireland but 59 percent of the flow to America. Among movers only, 30 percent of farmers' sons chose America while only 17 percent and 9 percent of white-collar and laborers' sons did the same.

5.2.2. Logit estimation

I more formally study this location choice by own and fathers' occupation by incorporating control variables in a logistic regression analysis. These models take the following form:

$$(3)\ ln\left[\frac{Migrate}{1-Migrate}\right] = \beta_0 + \beta_1 Occupation_1 + \beta_2 Literacy_2 + \Sigma_{k=1..K}\beta_k X_k$$

where the outcome variable *Migrate* refers to whether an individual decided to move county to one of three discrete destinations: a rural area in Ireland ("Moved Rural"); an urban area in Ireland ("Moved Urban"); or to the United States ("Moved USA"). The odds of migrating to each destination are presented separately in Tables 5 and 6. The variables of interest *Occupation* and *Literacy* refer to the characteristics of individuals or their fathers while $\beta_k X_k$ refers to a set of control variables, which include provincial fixed effects.

Table 5 presents the results based on own pre-migration characteristics. These results confirm that individuals moving within Ireland were drawn from both tails of the skill distribution. Column 1 shows farm and non-farm laborers and skilled and white-collar workers to be more than twice as likely as farmers to move to rural areas in Ireland. Column 2 shows similarly high rates of migration to urban areas for men working outside of agricultural occupations. In this case, migration to urban areas is more likely for non-farm laborers and skilled and white-collar workers.

Along with Table 2, these results indicate that owner-occupier farmers are less likely to migrate to any destination.

Consistent with earlier tables, Column 3 shows weak patterns of selection to the USA on own occupation and literacy. Differences in these characteristics are small and non-significant. In contrast, Irish speaking ability and residence in the western provinces of Connaught and Munster provide evidence of strong geographical selectivity. Further analysis in the Appendix uses a finer fixed effects specification to show that selection on Irish speaking ability reflects greater migration from PLUs in the west of Ireland.

Estimates of selection on fathers' occupation in Table 6 corroborate the finding of intermediate selection into trans-Atlantic migration and bimodal selection into internal migration. Columns 1 and 2 show more migration to urban areas for the sons of skilled and white-collar workers, and higher rates of migration to rural areas for farm laborers' and white-collar workers' sons. Column 3 shows the sons of farmers and white-collar workers to be significantly more likely than agricultural and non-agricultural laborers' sons to move to the United States. These results are robust to provincial fixed effects and a range of control variables.

These findings may suggest that opportunities in Ireland deterred migration to the United States. Migration to rural areas among the sons of agricultural laborers is consistent with the expansion of Irish agricultural opportunities at this time, while migration among white-collar sons to urban areas likely reflects the high returns to skill in Irish towns and cities. While farmers' sons are most likely to move to the United States, the historical literature provides no strong evidence that these men were better prepared than others, for work in the urban labor markets of America.[19] Thus, the overrepresentation of farmers' sons among emigrants may be reflective of differences in domestic opportunities.

5.3. Selection and inequality in landholdings

In this section, I analyze rural outmigration for sons across areas which varied in their value and distributions of land. I focus on differences between the sons of landholding farmers, landless laborers and skilled and white-collar workers. An earlier study by Hatton and Williamson (1993) used county-level data to show that migration rates were lower in areas with more small farms. Hatton and Williamson interpreted this result as an effect of local opportunity: the acquisition of land was easier where holdings were less concentrated. In this study, I use the Gini index to study whether the structure of landholding affects the probability and selectivity of rural outmigration.

Hatton and Williamson's study and the NELM literature provides two hypotheses. First, outmigration is lower where land is distributed more equally (low inequality). In these places it would, conceivably, be easier to acquire land. Second, sons from land-poor households are more likely to leave rural areas, as they had the most to gain from migration. I test these hypotheses with the following specification:

$$(4)\ ln\left[\frac{Migrate}{1-Migrate}\right] = \beta_0 + \beta_1 Laborer_{1i} + \beta_2 Skilled/WhiteCollar_{2i} + \beta_3 Gini_{3j} + \beta_4 Land\ Value_{4j} + \beta_3 Gini_{3j}\beta_4 Land\ Value_{4j} + \beta_1 Laborer_{1i}\beta_3 Gini_{3j} + \beta_2 Skilled/WhiteCollar_{2i}\beta_3 Gini_{3j} + \Sigma_{k=1\ldots K}\beta_k X_k$$

where *j* denotes the childhood PLU of each individual and the outcome variable is whether a son left their 1901 county of residence to move to any location. The explanatory variables of interest, *Gini* and *Land Value*, refer to the Gini index and average land value per acre of the PLU, and *laborer* and *skilled/whitecollar* refer to fathers' occupation. I allow the effects of inequality and land value to vary together and with fathers' occupation. In this equation, β_k refers to a set of control variables including age and age squared.

Table 7 suggests that the effects of land value and inequality on migration are interdependent. Column 1 estimates a model with main effects for land value and the Gini coefficient. While the

Gini coefficient has a small positive effect on migration, land value appears to have none. Column 2 shows that the underlying interaction of these variables masks their true influence on migration decisions. Once interacted, increases in the Gini index and land value (significant at 0.10 level) predict higher odds of outmigration. This implies that no direct prediction can be drawn from these characteristics in isolation.

Panel A and B of Figure 5 plot predicted probabilities from the interaction of land value, the Gini index and fathers' occupation (see Equation 4). Panel A displays predictions of migration from poor areas while Panel B depicts migration from wealthy areas.[20] Gini index values of around 0.25 refer to areas where landholdings are quite equally distributed while values of 0.60 indicate that local land is concentrated among a relatively small number of families. In these plots, selection varies with both inequality and land value.

The effect of inequality and land value on migration are dependent on fathers' occupation. Panel A and B shows the sons of skilled and white-collar workers to be most likely to leave agricultural areas. The probability of these sons moving county or to the United States is around 18 percent on average. This increases to 24 percent for sons in poor and unequal areas (Panel A). Further, the difference in migration between skilled and white-collar workers' sons and agricultural workers' sons, remains stable with changes in inequality: the odds of migration for skilled and white-collar sons is consistently 5 to 6 percentage points higher than for other sons.

Higher rates of outmigration among laborers' sons, relative to farmers' sons, supports the hypothesis that land-poor individuals moved more. On average, the probability of these sons leaving their home area is around 14 percent, with no significant difference between farmers' and laborers' sons. However, these probabilities only diverge in Panel B in places where inequality levels and land values are both high. The probability of migration for farmers' sons drops from 14

percent in areas with low inequality to 11 percent where inequality is high. In contrast, migration among laborers' sons does not vary with inequality in holdings.

These findings provide mixed support for the hypothesis of lower migration from more equal areas. On the one hand, migration is *less* likely from poor areas with lower levels of inequality: the probability of migration increases from around 13 to 15 percent between places with low and high levels of inequality. This is consistent with Hatton and Williamsons' finding of lower migration from areas with large shares of small farms. However, the odds of migration appears to *decrease* with inequality, in areas with higher land values.

Local opportunities for employment and land acquisition may have driven differences in migration across places. The high migration rate of skilled and white-collar sons may have been a response to a lack of blue and white-collar jobs in rural areas. This is notable from poor and unequal areas where opportunities for white-collar workers were most sparse. Moreover, lower migration among farmers' sons in places with high inequality and land values may have resulted from greater opportunities to acquire land through inheritance or other means.

5.4. Birth order and migration

The inheritance of land may have been a primary channel through which landholding status affected migration outcomes. I examine whether migration behavior varied with inheritance opportunities, as inferred by birth order. An earlier study of rural Ireland by Ó Gráda (1980) suggests that the first and last sons of farmers were more likely to inherit than their siblings in the middle of the birth order (primogeniture and ultimogeniture). This generates two hypotheses. First, the sons of farmers are less likely to leave their home areas. Second, farmers' sons in the middle of the birth order are more likely to migrate than their first and last born siblings. I test this with the following specification:

$$(5)\ ln\left[\frac{Migrate}{1-Migrate}\right] = \beta_0 + \beta_1 Farmer_{1i} + \beta_2 Birth\ Order_{2i} + \beta_1 Farmer_{1i}\beta_2 Birth\ Order_{2i} + \Sigma_{k=1\ ..K}\beta_k X_k$$

where the outcome is whether a son left their childhood county. The parameter β_1 indicates whether the father is a farmer or a laborer, β_2 refers to an individuals' birth order position among his siblings while $\beta_1\beta_2$ refers to the interaction between fathers' occupation and birth order.

I find the sons of farmers to be less likely to leave their childhood counties. In Column 1 of Table 8, the sons of laborers are 16 percent more likely than the sons of farmers to migrate across counties or to the United States. This lower probability of all-destination migration for farmers' sons remains unchanged with the addition of birth order controls in Column 2. On average, sons in the middle of the birth order are around 12 percent more likely to migrate than first or last sons, and 50 percent more likely to migrate than sons with no siblings.

The middle sons of farmers are more likely to migrate than siblings positioned elsewhere in the birth order. Figure 6 graphs the interaction of birth order and fathers' occupation on migration (Column 3, Table 8). The first and last sons of farmers are, at a minimum, ten percentage points less likely to migrate than laborers' sons positioned throughout the birth order. This gap increases by up to 50 percent for farmers' sons with no siblings. Notably, the probability of migration for farmers' sons in the middle of the birth order is similar to that of laborers' sons.

Access to inheritance provides the most likely explanation for birth order differences. This is best highlighted by the difference in behaviors between the middle and only sons of farmers. By being sole heirs, only sons were insulated from competition and variation in inheritance norms. This position made only sons highly likely to inherit and as a result, less migratory.[21] The influence of inheritance on migration is also underscored by the similarity in behaviors between the middle sons of farmers, the least likely to inherit, and the sons of landless men (laborers). Overall, these

results provide quite strong evidence that inheritance was the main source of difference in the outmigration behavior of farmers' and laborers' sons.

The importance of inheritance in historical Ireland can be directly compared to other contexts. Abramitzky, Boustan and Eriksson (2013) study birth order and migration in nineteenth century Norway. They find eldest sons in asset-holding households to be 7.3 percentage points less likely to migrate than their siblings. By estimating a comparable model for Ireland, I find that first born sons are 11.6 percentage points less likely to migrate. Further, if the definition of inheriting son is widened to include both first and last born sons, being an heir reduces the probability of migration by 16.8 percentage points. The strong effect of birth order on migration implies that land inheritance may have been of unusual importance in historical Ireland.

6. Discussion and conclusion

A century ago, industrial growth in Ireland was sluggish and hundreds of thousands of Irish people emigrated from Ireland. Policy-makers were concerned that Ireland was losing its most talented and able individuals to the United States. My findings provide limited support for these concerns. I show that emigrants were typically drawn from poorer farming households in the least developed western Irish counties. These migrants were drawn from households near the middle of the national wealth distribution (intermediately selected).

I find evidence of sorting between internal and international migration which suggests that labor market opportunities in Ireland may have selectively deterred emigration. While international migrants were drawn from the middle of the wealth distribution, movers within Ireland tended to be the sons of highly skilled workers or landless laborers. The sons of highly skilled workers were more likely to make urban moves, and landless laborers, rural moves. Historical accounts of this period have emphasized greater demand for skill in urban areas and for agricultural labor in rural

areas. These differences in location choices indicate that employment opportunities may have deterred emigration among individuals with valuable skills in the Irish economy.

The pull of domestic opportunities is also evident in which men decided to leave their home areas. The sons of white-collar and skilled workers were more likely to leave rural locations, particularly those where employment in blue- or white-collar occupations was limited. In similar fashion, the sons of farmers were less likely to leave agricultural areas where holdings were consolidated and valuable. These areas, perhaps, provided employment opportunities or greater opportunities to acquire land. This point is strengthened by the finding that landholders' sons were the least likely to migrate when their prospects of inheritance were strong. These findings challenge claims that emigration from historical Ireland can be largely explained by high overseas wages (e.g. Geary, 1935).

These findings are not fully consistent with canonical models of selection into international migration. Among the population of Irish farming households, emigrants *were* negatively selected. This would be consistent with predictions from the Borjas model. However, what remains to be resolved is why poorer farmers' sons were, relative to laborers' sons, similarly likely to leave their home areas but more likely to move to the USA. This is challenging to interpret as there is little evidence of differences in the returns to migration for laborers' and poorer farmers' sons or of differences in the ability to meet the costs of migration.

Historical accounts of Irish emigration and NELM models provide a speculative explanation. In their classic anthropological study, Arensberg & Kimball (1940) argued that small farmers in western Irish counties became dependent on the flow of American dollars sent by letter from the USA: Schrier (1958) estimated these flows to be around 260 million dollars in total. Recent studies

echo the claim that smallholding families relied on migrating family members to finance capital investment and to support large families (Meagher, 2005; Miller, 2008; Turner, 2002).

It is challenging to bring direct evidence on this hypothesis. However, I do find that non-inheriting sons of farmers disproportionately took to emigration. This finding could be explained by higher motivation for migration to locations which offered high absolute returns to low skilled work, particularly, among sons who wanted to finance personal consumption *and* subsidize families in source areas. This motivation would conceivably have been greatest among individuals from poorer farming families whose livelihoods largely depended on relatively uneconomical smallholdings.

7. Tables and figures

Table 1. Comparison of samples

Comparison of Samples				
		1901 Census	**Full Match**	**Equal Match**
	Total Observations	1,346,277	421,759	187,210
	Age (mean)	21	21	21
	Share literate	0.87	0.87	0.87
	Share Catholic	0.75	0.72	0.72
Own occupation	White-collar workers	0.10	0.11	0.13
	Foremen and skilled workers	0.12	0.12	0.13
	Farmers and fishermen	0.37	0.39	0.37
	Medium skilled workers	0.10	0.10	0.10
	Laborers	0.13	0.11	0.11
	Farm laborers	0.18	0.17	0.16
	Mean Occupational score (HISCAM index)	50	51	51
Occupation of father	White-collar workers	0.08	0.08	0.10
	Foremen and skilled workers	0.12	0.11	0.12
	Farmers and fishermen	0.51	0.53	0.52
	Medium skilled workers	0.07	0.07	0.07
	Laborers	0.10	0.09	0.09
	Farm laborers	0.11	0.11	0.10
	Mean Occupational score (HISCAM index)	53	53	53
	Sample: males, aged 6-40			

Table 2. Selection to the USA with sample comparison

Selection to the USA with Sample Comparison

	Dependent Variable: Moved to the USA							
	Full Match				Equal Match			
	1	2	3	4	5	6	7	8
HISCAM index	0.97*	1.09***			0.95**	1.08***		
	(-2.02)	(4.09)			(-3.09)	(3.62)		
Occupation [reference = Laborer]								
Farmers			0.95	1.28**			1.00	1.34***
			(-0.95)	(3.22)			(0.04)	(3.71)
Skilled farm workers			1.05	1.52			1.14	1.51
			(0.29)	(1.79)			(0.74)	(1.70)
Farm laborer			1.01	1.01			1.08	1.08
			(0.11)	(0.07)			(1.26)	(0.79)
White-collar workers			0.96	1.20			0.80**	0.98
			(-0.57)	(1.81)			(-3.21)	(-0.15)
Foremen and skilled workers			1.01	1.12			0.94	1.03
			(0.15)	(1.22)			(-0.96)	(0.30)
Medium skilled workers			1.07	0.92			0.98	0.84
			(1.05)	(-0.75)			(-0.31)	(-1.59)
Characteristics of:	Son	Father	Son	Father	Son	Father	Son	Father
Observations	168,438	128,341	168,438	128,341	76,993	54,650	76,993	54,650

Notes: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Controls include: age, age squared, province fixed effects

Test statistics presented in parentheses.

Table 3. Selection to the USA from agricultural areas

Selection to the USA from Agricultural Areas				
	Dependent Variable: Moved to the USA			
	Full Match		Equal Match	
	1	2	3	4
Occupation [reference = Laborer (poor area)]				
Farmer (poor area)	0.87	1.12	1.12	1.13
	(-0.45)	(0.85)	(0.39)	(0.93)
Farmer (medium area)	0.56***	0.77**	0.67**	0.87
	(-4.21)	(-3.06)	(-2.85)	(-1.59)
Laborer (medium area)	0.69***	0.74***	0.85*	0.81***
	(-5.98)	(-5.93)	(-2.51)	(-3.90)
Farmer (wealthy area)	0.59***	0.85***	0.72***	0.93
	(-5.87)	(-2.94)	(-3.60)	(-1.29)
Laborer (wealthy area)	0.75	0.50***	0.84	0.53***
	(-1.66)	(-3.72)	(-0.98)	(-3.37)
Characteristics of:	Son	Father	Son	Father
Observations	82,258	110,709	32,971	47,352
Notes:				*p < 0.05, **p < 0.01, ***p < 0.001
Controls include: age, age squared, province fixed effects				
Test statistics presented in parentheses.				

Table 4. Migration decisions and father's occupations (row percentages)

	1	2	3	4	5	6	7
Occupation	Occupational Status	HISCAM Index (mean)	Stayed in County	Moved County to Rural Area	Moved County to Urban Area	Moved to the USA	Total
Agricultural							
Farmers	High	58	57284 / 90%	1596 / 3%	2821 / 4%	1605 / 3%	63306 / 100%
Skilled farm workers	Medium	53	675 / 91%	15 / 2%	29 / 4%	21 / 3%	740 / 100%
Farm laborers	Low	52	12469 / 88%	674 / 5%	741 / 5%	229 / 2%	14113 / 100%
Non-agricultural							
White-collar workers	High	58	9181 / 78%	570 / 5%	1827 / 15%	218 / 2%	11796 / 100%
Foremen and skilled workers	Medium	50	13729 / 86%	501 / 3%	1431 / 9%	295 / 2%	15956 / 100%
Medium skilled workers	Medium	46	8653 / 86%	302 / 3%	922 / 9%	144 / 1%	10021 / 100%
Laborers	Low	35	11537 / 88%	460 / 4%	846 / 6%	206 / 2%	13049 / 100%
Total	-	53	113528 / 88%	4118 / 3%	8617 / 7%	2718 / 2%	128981 / 100%

Note: This table shows migrant selection among sons aged 18 or under and living with father in 1901. Base year is 1901 and the outcome year is 1910/1911. All characteristics are pre-migration characteristics. Provincial fixed effects. Odds coefficients.

Table 5. Binary logistic models for selection on own characteristics.

Binary Logistic Models for Selection on Own Characteristics

	Dependent Variable:		
	Moved Rural	Moved Urban	Moved USA
	1	2	3
Occupation [reference = Laborer]			
Farmers	0.50***	0.50***	0.96
	(-18.02)	(-20.86)	(-0.71)
Skilled farm workers	0.44***	0.93	1.02
	(-4.31)	(-0.56)	(0.09)
Farm laborer	0.95	0.77***	0.99
	(-1.39)	(-7.54)	(-0.11)
White-collar workers	1.54***	1.71***	0.95
	(11.25)	(16.04)	(-0.79)
Foremen and skilled workers	1.01	1.28***	1.01
	(0.16)	(7.41)	(0.22)
Medium skilled workers	1.10*	1.25***	1.07
	(2.27)	(6.29)	(0.96)
Can read and write	1.10*	1.20***	1.00
	(2.48)	(4.87)	(0.07)
Protestant	0.93*	1.63***	0.96
	(-2.57)	(21.50)	(-0.99)
Speaks Irish	0.84**	0.78***	1.41***
	(-3.18)	(-5.17)	(5.54)
Lives with parents	0.46***	0.63***	0.88***
	(-28.87)	(-21.19)	(-3.81)
Unmarried	1.41***	1.27***	1.06
	(10.20)	(8.60)	(0.86)
Province [reference = Leinster]			
Connaught	0.81***	0.62***	2.19***
	(-5.48)	(-12.25)	(15.66)
Munster	0.65***	0.79***	1.80
	(-13.73)	(-8.51)	(13.02)
Ulster	0.77***	1.05*	1.30***
	(-9.09)	(1.98)	(5.49)
Observations	168,438	168,438	168,438

Notes: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Controls include: age, age squared

Test statistics presented in parentheses.

Table 6. Binary logistic regressions for selection based on father's occupation

Binary Logistic Models for Selectin on Father's Characteristics

	Dependent Variable:		
	Moved Rural	Moved Urban	Moved USA
	1	2	3
Occupation of father [reference = Laborer]			
Farmers	0.72***	0.70***	1.31***
	(-5.78)	(-8.41)	(3.45)
Skilled farm workers	0.61	0.65*	1.47
	(-1.88)	(-2.19)	(1.64)
Farm laborer	1.40***	0.87*	1.00
	(5.42)	(-2.56)	(-0.02)
White-collar workers	1.35***	2.37	1.23*
	(4.56)	(19.22)	(2.06)
Foremen and skilled workers	0.86	1.26***	1.15
	(-2.19)	(5.08)	(1.52)
Medium skilled workers	0.83*	1.25***	0.93
	(-2.50)	(4.36)	(-0.61)
Father can read and write	1.15**	1.50	0.87**
	(3.27)	(11.62)	(-2.96)
Protestant	1.09	1.58***	1.13*
	(1.91)	(15.81)	(2.03)
Speaks Irish	0.82	0.80**	1.38***
	(-1.93)	(-3.13)	(3.56)
Province [reference = Leinster]			
Connaught	0.86**	0.72***	2.32***
	(-2.74)	(-7.18)	(12.77)
Munster	0.79	0.83***	2.01***
	(-4.99)	(-5.42)	(11.34)
Ulster	0.83	1.12***	1.32***
	(-4.08)	(3.71)	(4.21)
Observations	128,332	128,332	128,332
Notes:	*p < 0.05, **p < 0.01, ***p < 0.001		
Controls include: age, age squared			
Test statistics presented in parentheses.			

Note: This table shows migrant selection among sons aged 18 or under and living with father in 1901. Base year is 1901 and the outcome year is 1910/1911. All characteristics are pre-migration characteristics. Provincial fixed effects. Odds coefficients.

Table 7. The effect of land wealth on migration from rural areas

The Effect of Land Wealth on Migration from Rural Areas

	Dependent Variable: Left Home County			
	1	2	3	4
Gini	1.02	1.04	1.09	1.12
	(0.28)	(0.54)	(1.13)	(1.44)
Land value	1.00	1.07	0.97***	1.06
	(-0.64)	(1.95)	(-3.48)	(1.72)
Gini x Land value		0.84*		0.81**
		(-2.15)		(-2.59)
Occupation of father [reference = Farmer]				
Laborer			1.13***	1.14***
			(6.22)	(6.37)
Skilled/white-collar workers			1.65***	1.65***
			(24.37)	(24.41)
Observations	142,943	142,943	142,943	142,943

Notes: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Controls include: age, age squared

Test statistics presented in parentheses. Column 4 shows the main effects for the interaction graphed in Figure 5.

Note: Estimates from the Interaction effect of Land Value, Gini and Occupation are presented in Figure 5.

Table 8. The effect of birth order on migration from rural areas

The Effect of Birth Order on Migration from Rural Areas

	Dependent Variable: Left Home County		
	1	2	3
Occupation of father [reference = Farmer]			
Laborer	1.16***	1.16***	1.21***
	(4.07)	(4.14)	(3.65)
Birth order [Reference = First son]			
Last son		1.02	0.98
		(0.31)	(-0.32)
Middle son		1.12**	1.19***
		(2.99)	(4.07)
Only son		0.75***	0.66***
		(-4.45)	(-5.11)
Laborer x Last son			1.15
			(1.17)
Laborer x Middle son			0.79**
			(-3.01)
Laborer x Only son			1.46**
			(2.76)
Observations	38,236	38,236	38,236
Notes:	*p < 0.05, **p < 0.01, ***p < 0.001		
Controls include: age, age squared			
Test statistics presented in parentheses. Column 3 shows the interactions which are graphed in 6.			

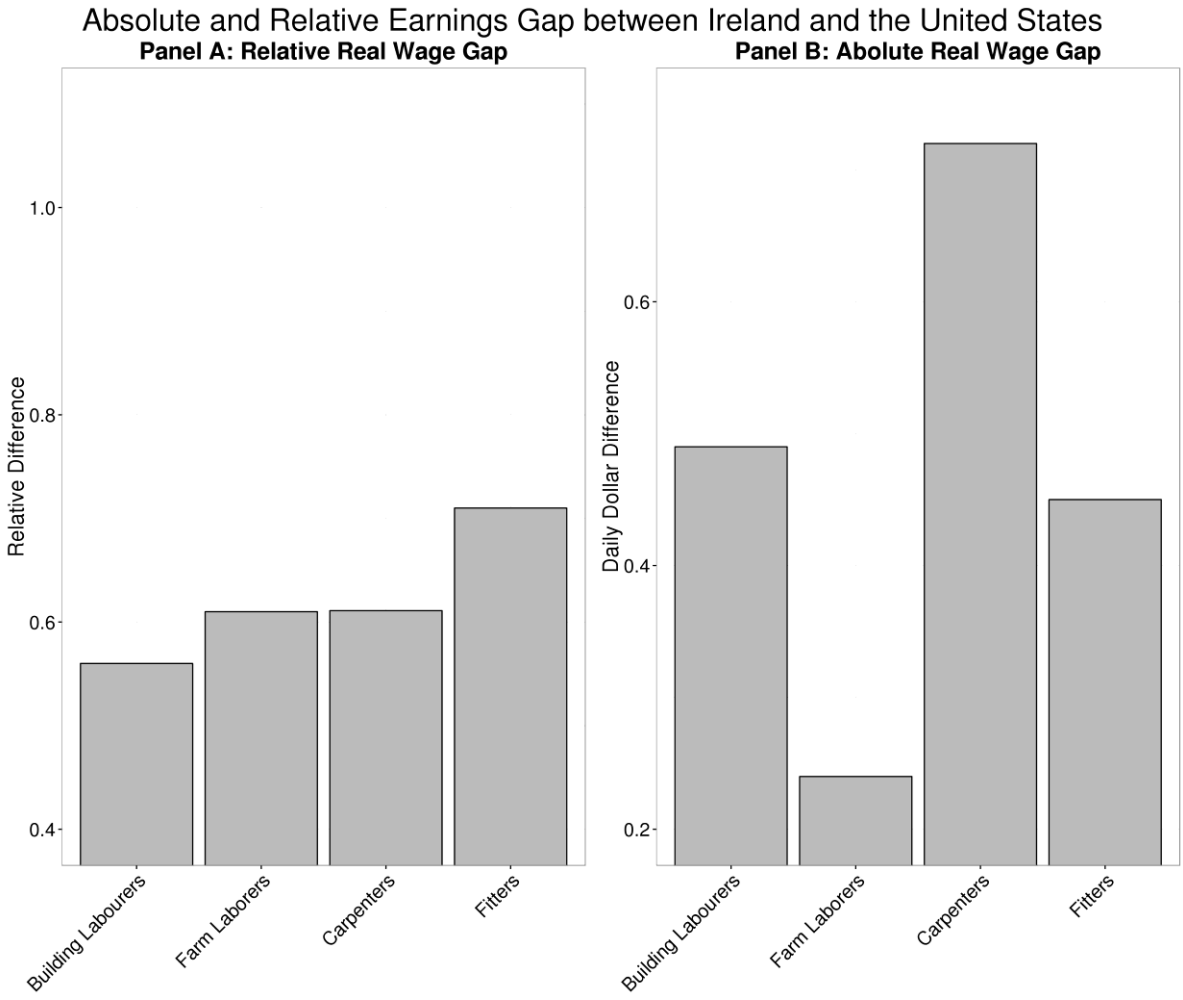


Figure 1. Absolute and relative earnings gap between Ireland and the United States

Note: The bars in Figure 1 show the real wage gap between building laborers, carpenters, farm laborers and fitters in Ireland and the United States. In Panel A, a value of 1 implies that real wages are identical in Ireland and the US while a value of 0.6 implies a given occupational wage in Ireland is 60 percent of its US level. Panel B shows the absolute gap in wages by occupation between Ireland and the US. The data on relative wages came from Boyer et al. (1993, 1994) while the data on absolute wages came from the reports of the Bureau of Labor Statistics.

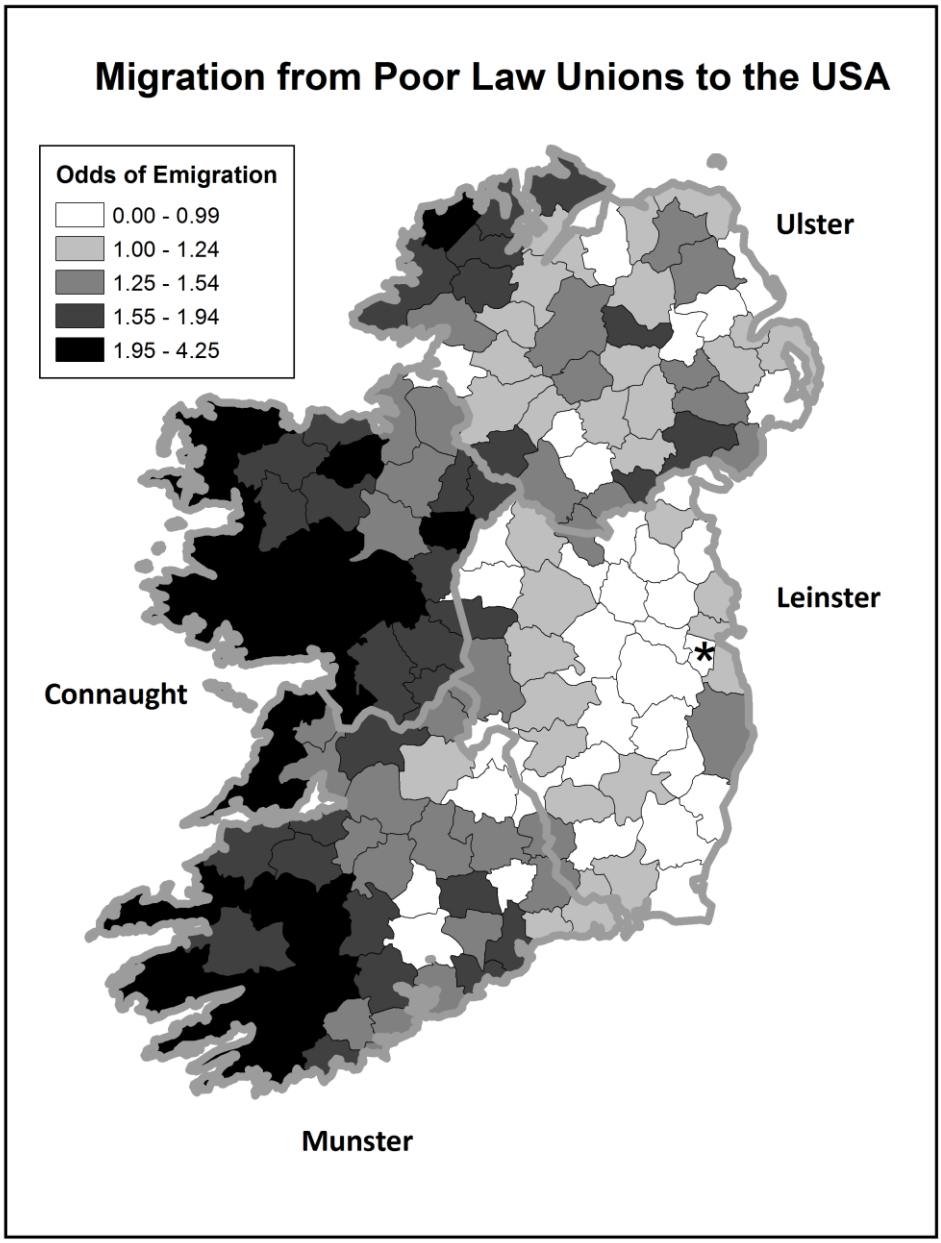


Figure 2. Migration from Poor Law Unions to the USA

Note: Figure 2 shows the odds ratios derived from a Multinomial logit model with Poor Law Union (PLU) fixed effects in 1901. The omitted category for the fixed effects was the PLU of Dublin South (marked on the figure with an asterisk "*". Breaks in the data were assigned using quantiles.

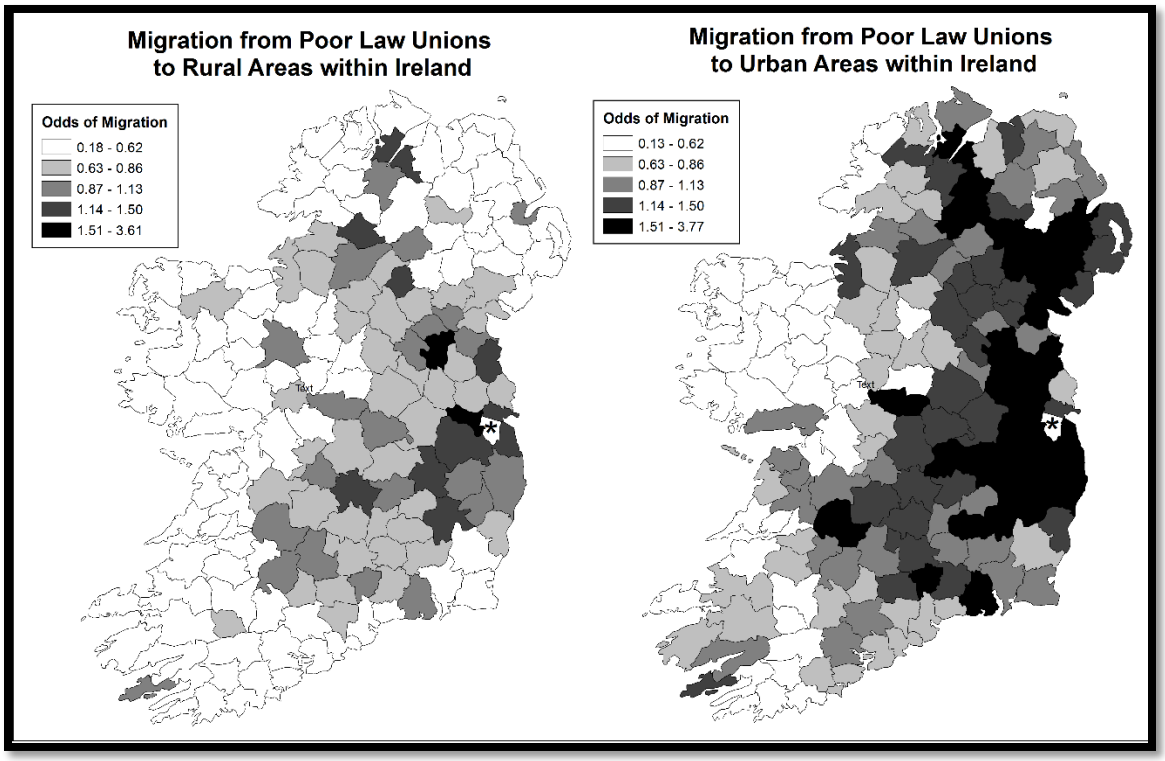


Figure 3. Migration from Poor Law Unions to areas within Ireland

Note: Figure 3 shows the odds ratios derived from a Multinomial logit model for migration within Ireland with Poor Law Union (PLU) fixed effects. The omitted category for the fixed effects was the PLU of Dublin South (marked on the figure with an asterisk "*'). Breaks were assigned consistently in both maps and were determined using quantile breaks.

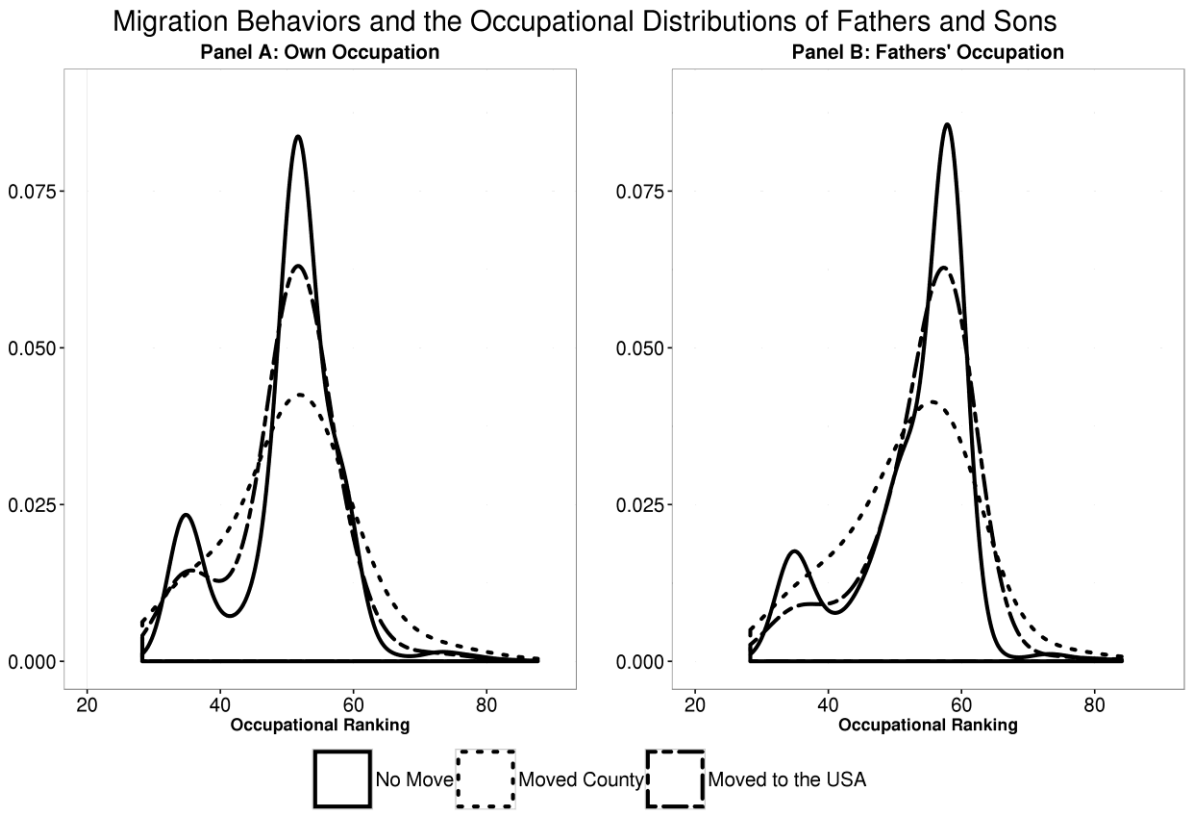


Figure 4. Migration behaviors and the occupational distributions of fathers and sons

Note: These graphs plot the kernel density of the HISCAM index for non-movers, inter-county and international migrants. Higher values of the index correspond to higher status occupations. The graphs shows evidence of positive selection into all forms of migration. However, inter-county movers are overrepresented at the tails of the distribution.

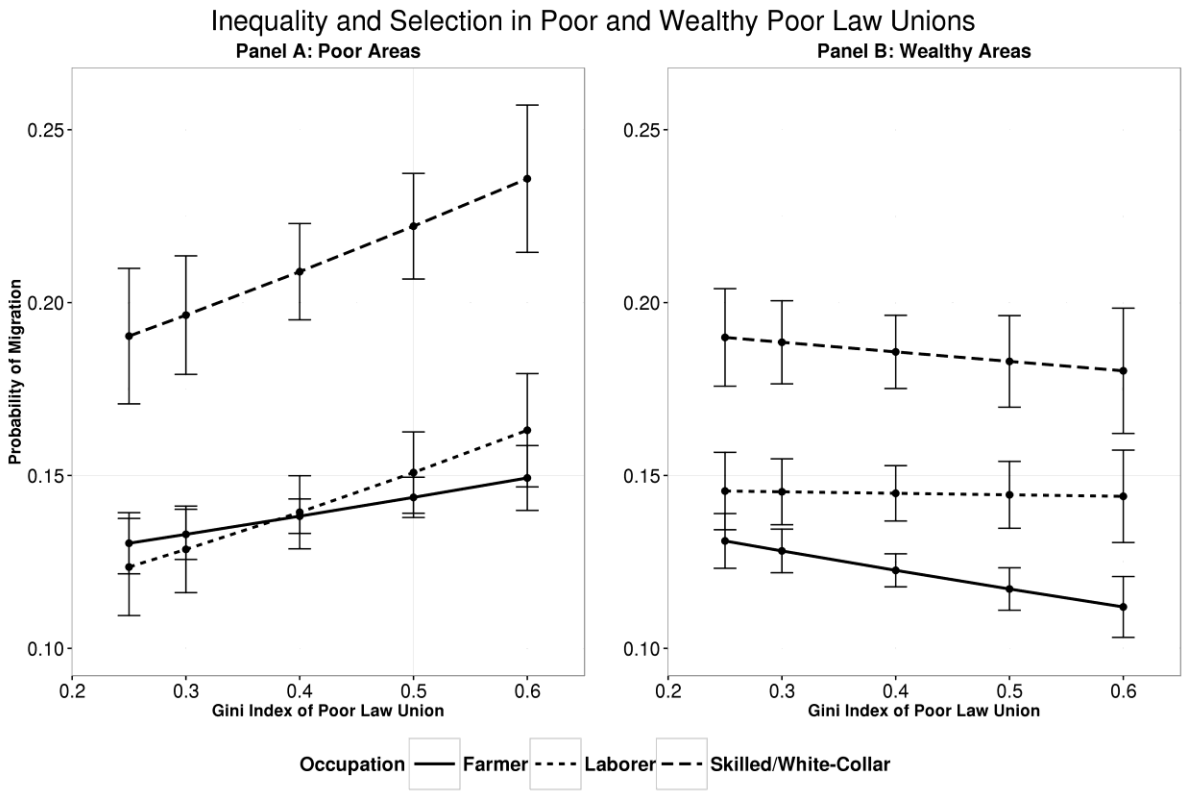


Figure 5. The effect of inequality on migration in farming and laboring families

Note: Confidence intervals set at 95%. The maximum, minimum and mean values of the Gini value correspond to 0.64, 0.22 and 0.44 respectively. These predictions are derived from Model 4 in Table 7.

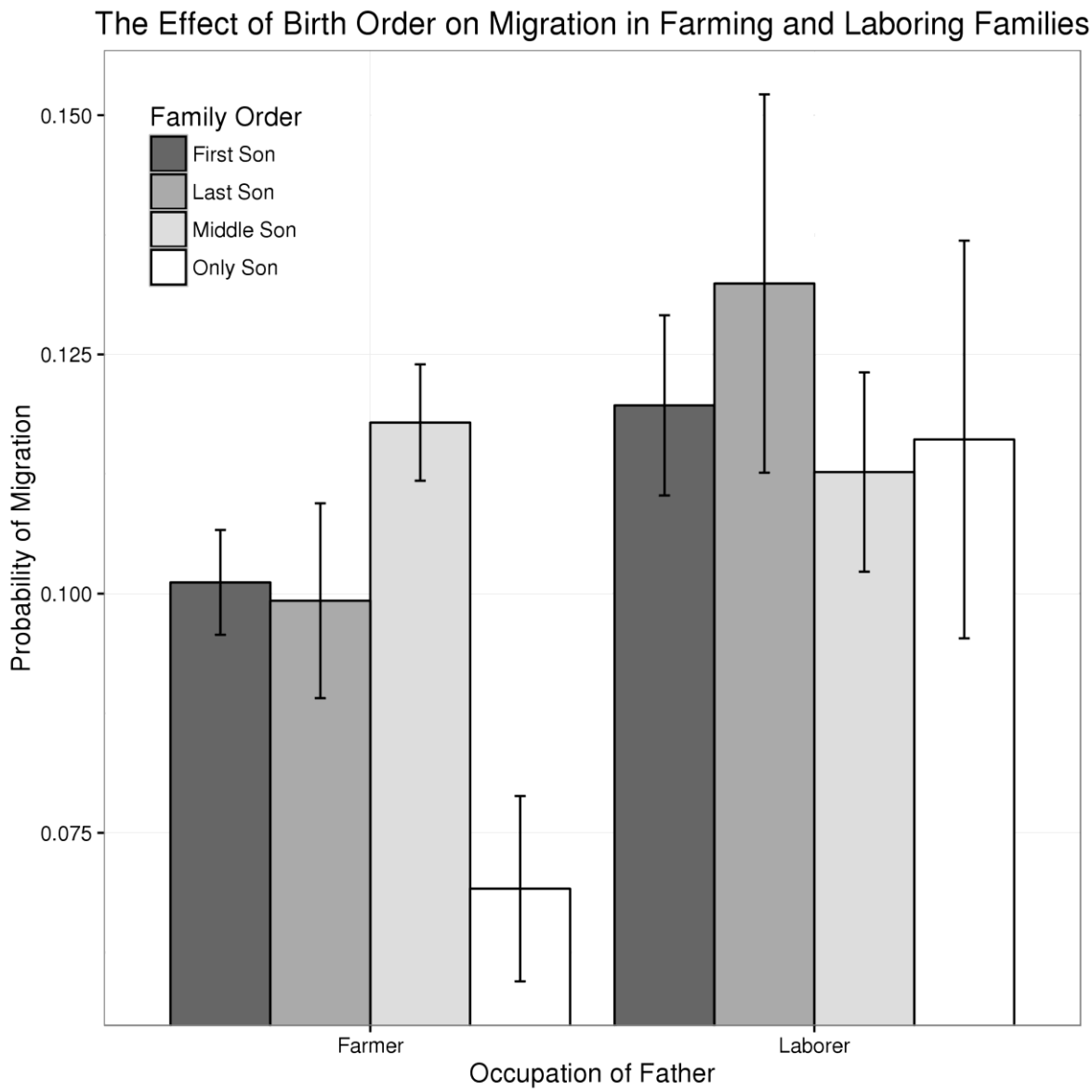


Figure 6. The effect of birth Order on migration in farming and laboring families

Note: Confidence intervals are set at 95%.

8. Appendix

Appendix Table 1. Migration decisions and own occupations (row percentages)

	1	2	3	4	5	6	7
Occupation	Status	HISCAM Index (mean)	Stayed in County	Moved County to Rural Area	Moved County to Urban Area	Moved to the USA	Total
Agricultural							
Farmers	High	58	77064 / 90%	2657 / 3%	3491 / 4%	2165 / 3%	85377 / 100%
Skilled farm workers	Medium	53	1311 / 87%	43 / 3%	101 / 7%	46 / 3%	1501 / 100%
Farm laborers	Low	52	30001 / 84%	2322 / 6%	2424 / 7%	1025 / 3%	35772 / 100%
Non-agricultural							
White-collar workers	High	58	17856 / 72%	2624 / 11%	3856 / 16%	526 / 2%	24862 / 100%
Foremen and skilled workers	Medium	50	22333 / 79%	1882 / 7%	3332 / 12%	638 / 2%	28185 / 100%
Medium skilled workers	Medium	46	16744 / 78%	1600 / 7%	2515 / 12%	548 / 3%	21407 / 100%
Laborers	Low	35	20741 / 82%	1728 / 7%	2190 / 9%	614 / 2%	25273 / 100%
Total	-	53	186050 / 84%	12856 / 6%	17909 / 8%	5562 / 3%	222377 / 100%

Appendix Table 2. Selection to the USA with sample comparison

Selection to the USA with Sample Comparison

	Dependent Variable: Moved to the USA							
	Full Match				Equal Match			
	1	2	3	4	5	6	7	8
HISCAM index	0.99	1.16**			0.97	1.15***		
	(-0.73)	(7.03)			(-1.74)	(6.40)		
Occupation [reference = Laborer]								
Farmers			1.09	1.55***			1.15**	1.61***
			(1.69)	(5.79)			(2.93)	(6.17)
Skilled farm workers			1.24	1.75*			1.41*	1.72*
			(1.23)	(2.38)			(2.11)	(2.25)
Farm laborer			1.05	1.04			1.15**	1.13
			(0.81)	(0.37)			(2.58)	(1.22)
White-collar workers			0.95	1.26*			0.81**	1.22
			(-0.72)	(2.32)			(-3.27)	(0.29)
Foremen and skilled workers			1.00	1.14			0.89*	1.04
			(-0.04)	(1.46)			(-1.98)	(0.39)
Medium skilled workers			1.04	0.90			0.94	0.81
			(0.54)	(-0.99)			(-1.05)	(-1.90)
Characteristics of:	Son	Father	Son	Father	Son	Father	Son	Father
Observations	168,438	128,341	168,438	128,341	76,993	54,650	76,993	54,650

Notes: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Controls include: age, age squared, province fixed effects

Test statistics presented in parentheses.

Appendix Table 3. Binary logistic models for selection on own characteristics with PLU fixed effects

Binary Logistic Models for Selection on Own Characteristics with PLU Fixed Effects

	Dependent Variable:		
	Moved Rural	Moved Urban	Moved USA
	1	2	3
Occupation [reference = Laborer]			
Farmers	0.49***	0.52***	0.94
	(-17.63)	(-18.52)	(-1.16)
Skilled farm workers	0.51***	1.01	0.82
	(-3.49)	(0.08)	(-1.10)
Farm laborer	0.96	0.78***	1.02
	(-1.07)	(-6.94)	(0.37)
White-collar workers	1.52***	1.78***	0.93
	(10.73)	(17.21)	(-1.04)
Foremen and skilled workers	1.00	1.29***	1.01
	(-0.01)	(7.60)	(0.17)
Medium skilled workers	1.11*	1.26***	1.07
	(2.52)	(6.35)	(0.94)
Can read and write	1.07	1.17***	1.06
	(1.79)	(4.17)	(1.01)
Protestant	1.02	1.65**	0.97
	(0.51)	(20.69)	(-0.70)
Speaks Irish	1.03	0.92	1.09
	(0.43)	(-1.59)	(1.13)
Lives with parents	0.47***	0.64***	0.86***
	(-27.96)	(-20.48)	(-4.35)
Unmarried	1.34***	1.21***	1.13
	(7.92)	(6.36)	(1.79)
Observations	168,438	168,438	168,438
Notes:	*p < 0.05, **p < 0.01, ***p < 0.001		
Controls include: age, age squared, PLU FE			
Test statistics presented in parentheses.			

Appendix Table 4. Binary logistic models for selection on father's characteristics with PLU fixed effects.

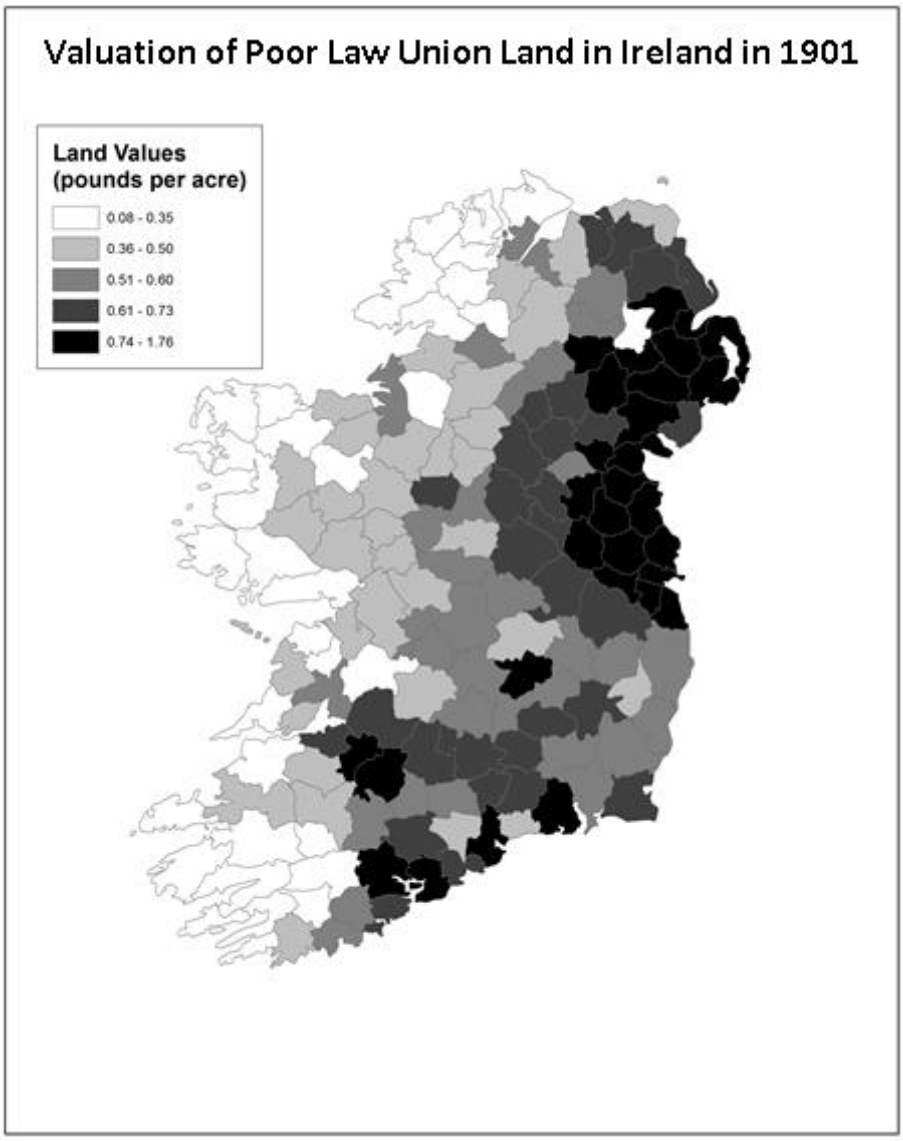
Binary Logistic Models for Selection on Father's Characteristics with PLU Fixed Effects

	Dependent Variable:		
	Moved Rural	Moved Urban	Moved USA
	1	2	3
Occupation of father [reference = Laborer]			
Farmers	0.59***	0.62***	1.14
	(-8.97)	(-10.94)	(1.65)
Skilled farm workers	0.70	0.72	1.31
	(-1.34)	(-1.66)	(1.12)
Farm laborer	1.20***	0.77***	0.98
	(2.84)	(-4.82)	(-0.20)
White-collar workers	1.26***	2.41***	1.18
	(3.45)	(19.27)	(1.60)
Foremen and skilled workers	0.84**	1.28***	1.12
	(-2.62)	(5.30)	(1.23)
Medium skilled workers	0.87	1.28***	0.93
	(-1.83)	(4.89)	(-0.61)
Father can read and write	1.15**	1.51***	0.93
	(3.18)	(11.69)	(-1.53)
Protestant	1.33***	1.74***	1.20**
	(6.25)	(17.89)	(2.94)
Speaks Irish	1.18	1.04	1.05
	(1.47)	(0.57)	(0.43)
Observations	128,332	128,332	128,332

Notes: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

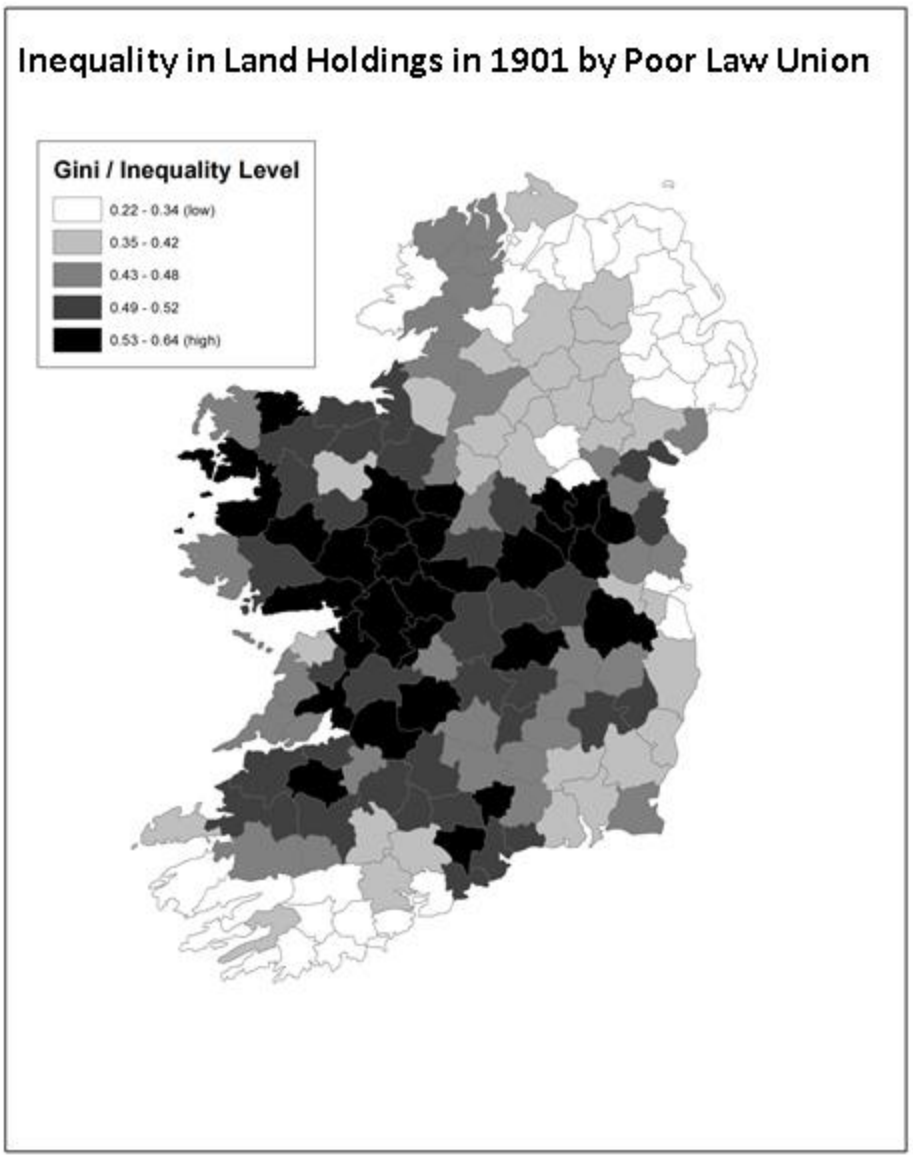
Controls include: age, age squared, PLU FE

Test statistics presented in parentheses.



Appendix Figure 1. Valuation of Poor Law Union land in Ireland in 1901

Note: This map shows land value per acre, where black represents high land values and white corresponds to low land values. Land values were lower on Ireland's less developed west coast and higher in the more prosperous in-land agricultural and in more urbanized areas along the eastern and southern coast.



Appendix Figure 2. Inequality in land holdings in 1901 by Poor Law Union

Note: This map shows lower levels of inequality on the northern coast of Ireland and in the southwest.

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Chapter 3. Is immigrant social mobility driven by the people or the place? The case of Irish Americans in the early twentieth century

Abstract

Proponents of restrictive immigration policies often claim that families arriving with fewer skills and resources will be less socially mobile. This claim is challenging to test as pre-migration characteristics are not easily separated from immigrant's interaction with the American context. This article uses unique multigenerational data on Irish Americans in the early twentieth century, before and after migration, to study how source country background and settlement context affect economic attainment for the children of immigrants. These results show relatively modest effects of pre-migration status and immigrant attainment on second generation outcomes. The reception context, particularly as it relates to schooling inclusivity, appears to have been of greater importance for upward mobility. These findings suggest that the childhood environments of the second generation may be of greater priority than the selectivity of migration for ensuring intergenerational progress in immigrant families.

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1. Introduction

During the Age of Mass Migration (1850-1913), thirty million people moved from Europe to the United States. The belief that this diverse population of Europeans 'made it in America' has shaped how we understand assimilation today. In the conventional view of the immigrant and second generation experience, European families quickly overcame low levels of education and income and reached parity with natives within two generations (Alba & Nee, 2003; Gordon, 1964).[22] This claim, however, has been challenged by findings suggesting that the traces of poor immigrant origins from this era persisted for more than four generations (Borjas, 1994; Glazer & Moynihan, 1963; Ward, 2017). These facts are important to establish as they reflect on the ability of American society to absorb mass migration from low income countries.

Opportunities to examine immigrant and second generation economic progress, however, are severely constrained by the lack of data on immigrant families before and after migration. A common approach to overcoming this shortfall is to study differences among national-origin or ancestry groups who differ in their average levels of schooling (e.g. Borjas, 1994). The drawback to this approach is that it conflates the group- and family-level processes affecting immigrant outcomes, and overestimates the true rate of persistence in economic status (Alba, Lutz, & Vesselinov, 2001; Luthra & Soehl, 2015). Moreover, recent evidence suggests that educational characteristics may not be directly comparable across sending country contexts, or between foreign- and native-born populations (Feliciano & Lanuza, 2017; Luthra, Soehl, & Waldinger, 2017).

This article gains new traction on this issue by using novel data on Irish Americans in the early twentieth century to examine how pre-migration background and the American opportunity structure affected second generation progress. In this new sample, I observe the sons of Irish

immigrants in 1940 ("second generation"), their immigrant parents in 1920 and their grandparents in Ireland in 1901. I exploit the settlement patterns of Irish families across the United States to examine how different reception contexts affected second generation attainment. In using this multigenerational sample to compare outcomes *within* a single immigrant population, I avoid confounding pre-migration background with ethnic-specific interactions with American society.

My findings suggest that the effect of pre-migration origins on second generation outcomes tends to be overstated. After 40 years in the US, only the grandchildren of white-collar workers hold any observable occupational advantage in the second generation, and there are no significant differences in schooling outcomes by class background ($p < 0.05$). Possessing a higher status Irish surname – a new measure of pre-migration background – is positively associated with income and schooling, but this effect halves from the immigrant to the second generation.[23] This analysis of multigenerational data suggests limited, or at best only "elite", persistence in status from immigrant parents to the second generation. These findings indicate that the American context encountered by the second generation may be of greater concern than pre-migration background in affecting social mobility outcomes.

The Irish second generation were more upwardly mobile in counties with higher average incomes and higher levels of schooling attainment. Controlling for grandfathers' occupation in Ireland, the second generation in Pacific states held higher earning occupations and attained 1-2 years more schooling than their counterparts in the Middle Atlantic. Second generation schooling and earnings outcomes were stronger in counties with smaller but more economically prosperous Irish communities, and with higher average schooling and income levels. While these results imply negative effects of group concentration on second generation social mobility (Beaman, 2012; Borjas, 2014), they also highlight the importance of local schooling and economic contexts in

shaping second generation trajectories (Goodwin-White, 2016; Vigdor, 2002; Xie & Greenman, 2011). These stark geographical differences in outcomes illustrate that there was no uniform historical Irish-American experience, or indeed, any spatially undifferentiated process of assimilation (Ellis & Almgren, 2009).

I constructed these data by linking the children of Irish immigrants in the US back to their grandparents in the source country. This work complements a new wave of research using historical data to study context and socio-demographic outcomes (Catron, 2017; Connor, 2017; Gutmann et al., 2016; Logan & Shin, 2016). I use record linkage techniques to find individuals in the Irish census of 1901 and the US censuses of 1920 and 1940 with unique name, age and birth place combinations (Abramitzky, Boustan, & Eriksson, 2012; Connor, 2016; Ferrie, 1996). Although these techniques provide new opportunities for immigration scholarship, concerns have been raised over biases due to false linkages (Bailey, Massey, & Henderson, 2016). To investigate this, I create a second highly conservative linked sample and my main results are consistent across both sets of data.

2. Irish immigration in the Age of Mass Migration

The immigration of more than four million people from Ireland spanned the nineteenth and early twentieth century. In 1860, Irish immigrants comprised 39 percent (1.6 million) of the foreign-born population. This early wave of immigrants mainly settled in Northeastern cities and experienced sluggish economic progress in the first and second generations (Clark, 1982; Handlin, 1941; Thernstrom, 1973). The Irish immigration flow remained high up to the early twentieth century, even though heightened immigration from Southern and Eastern Europe attenuated the Irish share of the foreign-born population to 10 percent by 1910. These later arrivals and their children experienced greater economic mobility: Irish immigrants were the eleventh highest

earning foreign born population in 1910 (of thirty two groups), and their position improved with time spent in the US and into the second generation (Abramitzky, Boustan, & Eriksson, 2014; Borjas, 1994). Improving fortunes among these later arrivals coincided with increases in the educational selectivity of Irish immigrants and also the development of a more favorable reception context to white, English speaking immigrants (Roediger, 2005; Stolz & Baten, 2012).[24]

In addition to discussions of change over time, explanations based on context and immigrant selectivity both feature in accounts of geographical difference among Irish Americans. Small sample and cross sectional evidence from many different periods suggest that Irish families made greater economic progress in more Western states and in smaller settlements (Dolan, 2010; Erie, 1978; Ferrie, 1999). Expanding opportunities in Western states is suggested by the growth of the share of Irish people living in Pacific states from two to six percent over the 1860-1920 period. Contrary to the opportunity hypothesis, other evidence suggests that Irish concentration in Northeastern cities constrained Irish upward mobility (Casey, 1996; Cirenza, 2016). Underlying these explanations of geographical difference, however, is the possibility that families with greater economic potential may have settled in different regions of the United States (Burchell, 1979; Campbell, 2002).

An initial overview of this new data confirm that the Irish second generation made substantial occupational progress on their parents from 1920 to 1940, and that upward mobility was also more pronounced in Western US states. This can be inferred from the occupational score of fathers ("Father's Occ.") and sons ("Son's Occ.") in Table 1: despite being an average of fourteen years younger at year of observation, sons in 1940 held occupations which paid 10 percent more than those of their fathers in 1920.[25]

Table 1. Description of variables

These differences are decomposed in Figure 1 by census division of residence in 1920.[26] Immigrant fathers in the East North Central (contains Chicago) and the Middle Atlantic (contains New York) divisions earned around 3 percent more than their Pacific and New England counterparts. By 1940, however, this pattern had reversed for the second generation. Relative to Middle Atlantic states, the children of immigrants held similarly earning occupations in New England but earned 4 percent more in Pacific states. This is a striking improvement, as Irish immigrants in Pacific states were the third lowest earners in 1920 but their children had risen to being the top earners by 1940. The focus of this article is to try and account for these intergenerational patterns.

Figure 1. First and second generation economic outcomes by census division

3. Construction of data and analytical approach

I tailored these data to study the effect of reception context and pre-migration background on second generation outcomes. To examine the persistence of Irish class background, I linked immigrants back to their childhood homes in Ireland, where I observe their fathers' occupations when the migrants were in childhood, and their American-born sons forward in the US in 1940.[27] These data allow me to study intergenerational persistence within families. Record linkage is costly for sample size. As such, I supplement these linked data with a new measure of pre-migration class derived from the average occupational status of the surnames of household heads in Ireland in 1901. This surname measure provides a novel means of studying changing economic outcomes between Ireland and the US while minimizing sample attrition.

3.1. Linked samples

I built these samples by linking immigrants in the US in 1920 to their childhood homes in Ireland in 1901 and their co-resident sons (in 1920) forward to the 1940 census ("Full Match"). The second generation sons observed from 1920 to 1940 belonged to the 1900 to 1915 birth cohorts and were

aged 25 to 40 in 1940. These samples were linked by iteratively matching individuals across censuses using unique combinations of names, ages and birth places (Abramitzky et al., 2012, 2014).[28] Individual ages were allowed to vary by up to two years. The names were also standardized using the *NYSIIS* algorithm to allow for differences in reporting. Individuals who could not be uniquely identified due to name commonness were dropped from the sample.

Recent evidence from Bailey et al. (2016) suggests that this iterative approach may be particularly sensitive to false linkages. This is a challenging issue to resolve as increasing matching accuracy will reduce sample representativeness. To investigate whether false linkages seriously distorted my results, I created a new multigenerational sample using a matching criterion of full names, with no phonetic standardization, and where individual's name, age and birthplace combinations were unique within a five-year age band in 1901, 1920 and in 1940 ("Strict Match"). This approach provides a high degree of confidence in linkage quality but resulted in a 75 percent loss in observation count.

The linkage rate for the Full Match is on par with what is typically found in the literature. In total, 35,976 people were successfully matched from the US back to Ireland, which corresponds to a match rate of 27 percent. Due to their age of observation, less than half of these people were co-resident with their fathers in Ireland. I then matched approximately 65,443 children of Irish immigrant sons between the 1920 and 1940 US census with a match rate of around 36 percent. The complement number of cases from the two samples, where full information is observed on the immigrant (father), their fathers (grandfather) and their sons (grandson) is 1,789.

3.2. Inferring pre-migration background from surname data

Sample attrition is one of the major costs imposed using linked panel data, as it can weaken a sample in its statistical power and lead to less generalizable conclusions. Thus, I also employ an

alternate surname-based to study the effect of class background. This approach is motivated by recent studies showing that surnames can provide stable measures of socioeconomic status within a population over time (Clark, 2014). This approach has not previously been applied to the study of immigrant social mobility.

Surnames provide economic and geographical information on Irish family background.[29] Recent studies by Greg Clark and his collaborators show strong intergenerational persistence in wealth, income and physical characteristics for surnames across decades and even centuries. Although this work has come under considerable critique (Torche & Corvalan, 2016), the technique has value in circumstances where data resources are limited: linking surname groups between Ireland and the United States is easier than following individuals. Further, unlike first names, which may be endogenous to economic outcomes due to changing parental tastes or Americanization, surnames are less likely to change in response to economic conditions (see Boustan, Abramitzky, & Eriksson, 2016; Stecklov & Goldstein, 2016).

I measured the economic status of surnames in Ireland by restricting the Irish census of 1901 to male heads of household, who were aged from 24 to 54 and employed outside of farming.[30] I scored the occupations of these men using to the Irish adaptation of the Historical Cambridge Social Interaction and Stratification Scale ("HISCAM") (Fernihough, Ó Gráda, & Walsh, 2015; Lambert, Zijdeman, Van Leeuwen, Maas, & Prandy, 2013). I excluded non-farming occupations as there is no intuitive way to rank farmers' income or occupation in the Irish census.[31] With this sample, I estimate occupational status for every surname held by at least ten household heads and de-trend for age.

The Irish context provides a reasonable case to use surnames to study class persistence. Historical Ireland was stratified by class and religion, and intermarriage was uncommon (Fernihough et al.,

2015). Thus, surname fluidity was low in Ireland, and the transfer of surnames from parents to their immigrant children and second generation grandchildren provides an interesting opportunity to analyze changes in economic status over time. Table 2 lists the twenty highest and lowest ranking common surnames. It is notable that highly ranking surnames tend to be more Anglican in origin and remain uncommon in the Irish working-class today (e.g. Malley, Gilmartin, Joyce).

Table 2. Highest and lowest ranking surnames

3.3. Measuring contextual effects

I exploit the settlement patterns of Irish immigrants to examine how different contexts affect second generation outcomes. I begin by examining broad differences in occupational and schooling outcomes across the seven major census divisions of residence. These census divisions are inferred based on the childhood homes of the second generation in 1920 and are pre-determined by their parents' settlement decisions. While one might argue that census divisions are a broad aggregation, Appendix Table 1 shows that major cities within these census division exhibit quite similar patterns in terms of Irish upward mobility.

An additional advantage to using census divisions is the greater sample coverage it provides to more confidently estimate the effect of reception context. Almost all research on context and immigrant outcomes is exposed to bias from the correlation of settlement patterns with unobserved economic potential and pre-migration background. For example, it is possible that the second generation may be more upwardly mobile in the Pacific because higher status families were more likely to settle there. I gain traction on this problem by studying the robustness of census division effects to grandfathers' occupation in Ireland and by estimating differences *within* divisions based on surname ranking.

Following these analyses, I estimate differences in the characteristics of counties within census divisions to better identify the factors associated with second generation upward mobility. I focus on county-level determinants that are captured by Portes & Rumbaut's (2006) "context of reception". This concept refers to the factors affecting the incorporation of immigrant groups in American society and is usually focused on dimensions of government policy, labor market conditions and the characteristics of ethnic groups. I adapt this concept to predict second generation outcomes using differences in these characteristics within the United States.

I describe local contexts based on the childhood county or state of residence for the second generation. For the characteristics of ethnic groups, I use the total share and average occupational score of the Irish population of each county. To examine basic labor market differences, I use the average occupational income ("occscore") of each county. For policy, I exploit state level differences in compulsory schooling laws (Goldin & Katz, 2011; Lleras-Muney & Shertzer, 2015). The introduction of compulsory schooling laws in the early twentieth century coincided with a five-fold increase in high school graduation. However, the effectiveness of these laws been debated by Goldin and Katz, particularly as most states were already on fast upward schooling trajectories. Thus, I complement this schooling measure with the high school graduation rate for the 1890 to 1899 birth cohorts, which preceded my sample. These variables are described in Table 1.

4. Persistence of pre-migration status on US outcomes

The section uses the three-generation samples and the Irish surname ranking to study how pre-migration background and settlement context affect the economic outcomes of immigrants and their children. I estimate these models with the following equation:

$$(1)\ Economic\_outcome_t = \beta_0 + \beta_1[Grandfather\_class]_1 + \beta_2[Catholic]_2 + \beta_3[YoB]_3 + \beta_3[CensusDiv\_1920]_3$$

where the outcome variable refers to natural log of the occupational score of an Irish immigrant or second generation son in 1920 or 1940, or the completed years of schooling for the son in 1940. *Grandfather_class* and *Catholic* are observed in the 1901 census of Ireland and *YoB* refers to a set of year of birth fixed effects. *CensusDiv_1920* refers to the census division where the household was resident in 1920.

Table 3 presents the results from these models. Models 1-3 refer to estimates from the sample using the Irish surname rankings while Columns 4-6 and 7-9 estimate differences by grandfathers' occupation in Ireland for the Full Match and Strict Match, respectively. If class background had a strong and enduring influence on subsequent outcomes, one would expect the children and grandchildren of white-collar and skilled workers to earn more than low skill workers, and for individuals from wealthier farming backgrounds to earn more than their poorer farming counterparts. These models test for class persistence and the robustness of census division effects to pre-migration background.

Table 3. Irish background and outcomes for fathers and sons

In Columns 1-3 higher ranking Irish surnames are associated with higher, albeit attenuating, occupational and educational outcomes in the US. In Column 1, an increase in the natural log of the surname ranking of grandfathers in Ireland is associated with a significant 0.19 log point increase in the occupational score of immigrant fathers in the United States. This effect, however, halves in Column 2: second generation grandchildren with high ranking surnames earn around

0.09 log points more than their low-ranking counterparts. In addition, holding a very high-ranking surname is associated with an increase of 0.8 extra years of schooling for the second generation.

This occupational persistence appears to be concentrated mainly in families from the highest class backgrounds in Ireland. The estimates from the Full Match in Columns 4 and 5 suggest that the children and grandchildren of white-collar workers both earn 3-7 percent more than the children of lower skilled workers. There are no other significant differences by grandfather's class background. These results are consistent across the Strict Match and Full Match for the immigrant generation (Columns 4 & 7), but not in the second generation (Columns 5 & 8). Disagreement between the samples likely reflects sample size, as the grandchildren of white-collar workers comprise less than 10 percent of the already small second generation Strict Match sample (n = 373). In contrast, individuals from wealthier farming backgrounds do not earn significantly more than their poor farming counterparts. Taken together, these results show only modest or elite intergenerational persistence in class.

Differences in economic outcomes across census divisions appear to be highly robust to controls for class origin, surname ranking and religion. In each of the nine models, variation across the 1920 census divisions of residence are estimated relative to the Middle Atlantic. These models indicate only minor differences in occupation between the Middle Atlantic and New England in 1920 and 1940. Although there are some differences in significance levels, economic and schooling outcomes appear to be stronger in the East North Central division across both generations: earnings are from 1-6 percent higher for fathers and sons, and sons complete significantly more years of schooling.

The upward mobility of sons in the Pacific states is also robust to pre-migration controls. Across all samples in Table 3, the immigrant father generation earn around 5 percent less in the Pacific in

1920. By 1940, however, the second generation growing up in Pacific states have either caught up on or overtaken their counterparts in the Middle Atlantic and New England. In addition, the second generation in Pacific states have completed 1.5-2 extra years of schooling. The consistency of these effects across the three samples suggest that these disparities are not driven by selective settlement by pre-migration background across census divisions.

These results indicate weak persistence in pre-migration background but strong regional context effects in the second generation. While there is evidence that the children and grandchildren of higher status Irish men held better paying occupations and completed more years of schooling in the US, these differences are weaker and less consistent than the patterns observed across census divisions. This suggests that the reception context may have been particularly influential in shaping second generation attainment. In addition, the relative change in outcomes across census divisions by generation suggests that experiences in the immigrant generation may not have been determinative of second generation outcomes.

5. Reception context and second generation attainment

5.1. Parental attainment and 1940 outcomes

The differences observed in immigrant and second generation attainment by census division confounds individual- and group-level outcomes. It is not clear, for example, whether second generation progress in the Pacific reflect extreme economic gains among a small and select population, or if these outcomes represent more widely experienced improvements for both high and low attaining families in the immigrant generation. I examine this by estimating differences by parental attainment and census division. This model is specified as:

$$(2)\ Economic\_outcome\_1940 = \beta_0 + \beta_1[Parents\_income\_1920]_1 + \beta_2[YoB_i]_2 + \beta_3[CensusDiv\_1920]_3 + \beta_1[Parents\_income\_1920]_1\ x\ \beta_3[CensusDiv\_1920]_3$$

where the response $Economic\_outcome\_1940$ is either a binary variable predicting whether a second generation son reached the top fifth of the income distribution by 1940, or a continuous variable for self-reported years of schooling. $Parental\_attainment\_1920$ is a dummy variable indicating whether or not a father held a farming or unskilled urban occupation in 1920 ("low income").[32] This measure of immigrant attainment is interacted with the household census division of residence in 1920. YoB refers to a set of birth cohort fixed effects.

These results are presented in Figure 2. Panel A plots the probability of a son reaching the top fifth of the income distribution by 1940, by census division and father's income as of 1920. Similarly, Panel B plots the total years of schooling for the second generation. The dashed vertical lines in both panels represent the respective national Irish American averages for each outcome.

Figure 2. Children of immigrants: childhood census division and later outcomes

Panel A of Figure 2 suggests that second generation sons with higher attaining fathers had higher average levels of attainment. The probability of low- and high-income sons reaching the top fifth of the income distribution is 0.21 and 0.25, respectively. The higher probability of upward mobility for high-income sons also tends to be significant within census division and above the nationwide average for the Irish second generation (0.23). This suggests that second generation outcomes are linked to both childhood location *and* parental attainment.

The strength of the father-son relationship, however, varies by census division. The degree to which high-income sons attained high earning occupation over low-income sons is stable across

New England, the Middle Atlantic and the East North Central divisions. In contrast, the gap is larger in the West North Central division: the probability of upward mobility for low income sons is 0.16 and only half the level experienced by high income sons in the same division (0.29). Second generation outcomes are higher and more ubiquitous by fathers' income in the Pacific and Mountain divisions. The probability of reaching the top fifth for low- and high-income sons are relatively high in the Pacific and ranges from 0.26 to 0.31. Moreover, the attainment of low-income sons in the Pacific is higher than that of high income sons in the Middle Atlantic.

Occupational outcomes are also correlated with educational attainment across census divisions. This is evident from comparisons of New England, the Pacific and the West North Central division in terms of income and average years of schooling in Panel B. Low-income sons in the Pacific have 11.3 years of schooling on average and high-income sons have 11.9 years. These sons have upward mobility probabilities of 0.26 and 0.31, respectively. Co-variation in these measures is comparable in New England: low income sons have 10.7 years of schooling and an upward mobility probability of 0.20, while high income sons have a probability that is 0.05 higher and spent almost half a year more in school on average. This co-variation is even consistent in the West North Central division, where income differences are highly unequal.

These results provide further evidence that while family background influenced second generation attainment, there appear to be sizeable differences across census divisions. In addition, the correlation of schooling outcomes and income by census division suggests that these regional differences reflect experiences earlier in life rather than solely favorable labor market conditions after coming of age.

5.2. Selective settlement patterns by census division

How selective were patterns of settlement across census divisions by Irish class background? I answer this question by predicting household locations in 1920 based on class background in Ireland. This linear probability model takes the following form:

$$(3) \qquad CensusDiv\_1920 = \beta_0 + \beta_1[Grandfather\_class]_1 + \beta_2[Catholic]_2 + \beta_3[YoB]_3$$

where the response refers to the household census division in 1920 and the Middle Atlantic is the reference category. The independent variables are identical to those presented in Table 3 (Equation 1). These results are presented in Table 4 for the Middle Atlantic, New England, East North Central and Pacific census divisions, which comprise around 90 percent of the sample.

Table 4. Irish background and destination choice in the US

The children of white-collar workers appear to have been more likely to settle in Pacific states than in other major immigrant receiving locations. Across the Full and the Strict samples, the children of white-collar workers were 3-5 percentage points more likely to move to the Pacific over the Middle Atlantic. When viewed alongside the fact that white-collar workers were also less likely to move to New England and the Middle Atlantic (Column 5), this suggests that sons from the highest status backgrounds were generally less likely to settle in Northeastern and Midwestern states.

Patterns of settlement by religion are also notable with respect to the Pacific. Compared to Protestants, Catholics appear to have been 4-7 percentage points more likely to settle in census divisions other than the Pacific. Differences in Catholic settlement are largest between New England and the Pacific states. Together with the settlement patterns by class background, these results paint a picture of largely similar or mixed settlement across census divisions but for the greater propensity of higher status men and Protestants to move to Pacific states. Given that the

previous analyses suggest that census division effects are robust to pre-migration background, these findings indicate that individuals from higher skilled families were more likely to move to places offering greater opportunity but this selectivity is not the primary force driving differences across census divisions.

5.3. Second generation outcomes by surname ranking

A more direct way to identify how context affects second generation outcomes is to compare differences by grandfathers' occupation within and across census divisions. Unfortunately, the linked sample does not contain sufficient observations for this purpose. As an alternative, I study differences by surname rank within census divisions. One would expect that if pre-migration background was determinative of second generation outcomes, there should be observable differences by surname rank within the same census division. To the contrary, the following results suggest that the regional context is the primary factor shaping second generation outcomes.

Figure 3 shows individuals with high ranking surnames to be more upwardly mobility than their low-ranking counterparts. These estimates refer to the probability of a second generation son reaching the top fifth of the income distribution by 1940 for sons with surnames ranking one standard deviation above ("High Ranking") and below ("Low Ranking") the mean. Although individuals with high ranking surnames tend to be more upwardly mobile, the difference is rarely significant within census divisions. Only in the Pacific, where upward mobility is unusually high, is the gap between high and low-ranking names significant. Second generation sons with high ranking surnames in the Pacific are five percentage points (or 19 percent) more likely to reach the top fifth than their low-ranking counterparts.

Figure 3. Surname ranking and occupational outcomes by childhood census division

These estimates support the claim that regional contexts fostered significant differences in second generation outcomes. Despite showing slight differences by surname rank *within* census divisions, there are large differences *across* divisions for men with similar ranking names. Men with low ranking surnames in the Pacific, for example, are from three to five percentage points (or 17-22 percent overall) more likely to reach the top fifth of the income distribution by 1940 than men with low ranking names in New England or the Middle Atlantic. Further, differences across divisions are even more pronounced for men with high ranking names.

Figure 4. Surname ranking and educational outcomes by childhood census division

Differences between divisions are more striking for educational attainment. The estimates in Figure 4 have an identical interpretation to Figure 3 but for the outcome variable, which represents completed years of schooling. While there are no significant differences in schooling outcomes by surname rank within census divisions, there are substantial differences across divisions. Figure 3 and Figure 4 lead to similar conclusions: schooling and occupational outcomes were lowest in the Middle Atlantic and the South, at intermediate levels in New England and the East North Central states, and highest in the Mountain and Pacific states. These patterns provide further evidence for the link in regional schooling differences and intergenerational progress.

5.4. County- and state-level effects on second generation outcomes

This section directly examines the more proximate determinants of second generation outcomes. In addition to studying local variables rather than regions, the inclusion of census division fixed effects provides two other analytical opportunities. First, in analyzing county- and state-level effects I attempt to explain away differences between census divisions. Second, I have been careful to highlight the potentially selective nature of settlement patterns across the United States. Thus, in controlling for census division fixed effects, the comparison of county-level differences is

effectively a *within* census division comparison that would control for differential migration patterns between, for example, the Pacific and the Middle Atlantic. The results from the models in Columns 1-3 of Table 5 are estimated from the following equation:

$$(4)\ son's\_school\_attainment_{1940} = \beta_0 + \beta_1[Parents\_income\_1920]_1 + \beta_2[YoB_i]_2 + \beta_3[CensusDiv\_1920]_3 + \beta_k[contextual\_effects]_k$$

where schooling attainment is predicted by k contextual effects based on an individual's county or state of childhood and a set of standard control variables. The model predicting whether a son held an occupation in the top fifth of the occupation is specified as:

$$(5)\ top\_fifth\_occupation_{1940} = \beta_0 + \beta_1[Parents\_income\_1920]_1 + \beta_2[YoB_i]_2 + \beta_3[CensusDiv\_1920]_3 + \beta_4[son's\_school\_attainment_{1940}]_4 + \beta_k[context\_effects]_k$$

and contains an identical set of predictor variables to Equation 4, but for the variable referencing son's schooling attainment. This strategy of estimating aggregate effects on micro-level units may violate the assumption of independent errors and downwardly bias my standard errors (Moulton, 1990). Thus, in Appendix Tables 2 and 3 I estimate these models with cluster-robust standard errors (Cameron & Miller, 2015) and these estimates are fully consistent with the main results presented here.[33]

Table 5. Explaining regional differences in outcomes of sons

Almost half of the difference in schooling attainment across census divisions can be explained by county- and state-level characteristics. Columns 1 predicts the baseline differences in school years

completed and Columns 2-3 add local control variables. The higher years of school completion in the Pacific states relative the Middle Atlantic declines from 1.3 years in the baseline model to 0.75 years in Column 3, or 42 percent. The gap between the Middle Atlantic and the New England and East North Central division also declines by 53 and 25 percent, respectively. Most of this attenuation occurs with the inclusion of characteristics related to the local Irish population and the general schooling context (Column 2).

Second generation schooling outcomes are stronger in areas with relatively smaller and higher earning Irish-born populations, and in areas with higher levels of high school graduation. The estimates in Column 2 and 3 are largely consistent with each other, so I will focus on the results from the full model (Column 3). A 10 percent reduction in the Irish born population of a county or an increase in the average occupational score of a county by 10 points, are both associated with around a tenth of a year more of schooling.

These effects seem relatively minor compared to effects related to the general schooling context. While compulsory schooling laws appear to have no effect on school completion outcomes, an increase in the high school graduation rate of earlier birth cohorts has a large significant effect on the Irish second generation: growing up in a county where everyone in the 1890-1899 birth cohorts completed high school predicts a four year improvement in schooling attainment in the 1900-1915 Irish cohorts.

In addition to the strong effects of school completion, the occupational score of the general population is also associated with upward mobility for the children of Irish immigrants. In Column 5, the direction of effects for the Irish population share and occupational status is the same for occupation as it is for schooling outcomes (Column 3). These effects disappear in Column 6, however, once controls are added for more general place characteristics and son's individual

schooling attainment. A one year increase in the grade attainment of a son or a ten point increase in the average occupational score of a county are associated with a 4-5 percentage point increase in the share of sons reaching the top fifth of the occupational distribution.

Further, son's schooling attainment and the average occupational score of the county explain almost all the variation in upward mobility across census divisions. The baseline model in Column 4 shows higher upward mobility in the East North Central, New England, Mountain and Pacific census divisions relative to the Middle Atlantic. Once controls are introduced in Column 6, these effects disappear but for those in the Pacific: The Pacific effect halves from 7.6 percentage points to 4.1 percentage points. This overall attenuation suggests that much of the geographical variation in second generation outcomes across the US may be explained by processes relating to second generation schooling attainment.

6. Discussion and conclusion

The question of whether immigrant families in the late nineteenth and early twentieth overcame poor economic origins to 'make it in America' remains highly contentious. The Age of Mass Migration was a formative period in US history and continues to serve as a point of reference for immigration policy today. By analyzing differences in skills across national-origin groups, several studies have found high levels of persistence over time in pre-migration skill differences. Studying differences by ethnicity, however, conflates pre-migration skill with ethnic adaption to the United States. I gain traction on this topic using a new multigenerational sample to analyze economic outcomes among Irish American families who differed in their class backgrounds in Ireland and their settlement patterns in the US.

From this multigenerational sample, I find persistence only among elite Irish grandparents to their American-born grandchildren, but significant differences in schooling and occupational outcomes

based on the reception context within the United States. Specifically, second generation attainment was higher in areas with expanding educational and economic opportunities, and where the Irish population was relatively small and more prosperous. I conclude that within group interactions and the general reception context appear to be of greater significance for future outcomes than individual differences in pre-migration background.

It is currently unknown how unique these patterns are to the Irish experience and to what degree they represent wider processes of immigrant intergenerational mobility. Ascertaining this requires further analyses of different ethnic groups across a variety of historical and geographical contexts. If these effects are representative of wider intergenerational processes, this suggests that policy concerned with immigrant assimilation may be better directed toward improving the environments in which the second generation grow up and come of age, rather than attempting to increase the selectivity of immigration.

These geographical differences in the intergenerational outcomes of the Irish second generation suggest that there is no single Irish American experience in the United States. The fact that Irish American adaptation played out differently across cities and regions points to the need for scholarship to focus more directly on the local and regional processes underpinning immigrant intergenerational mobility. In the case of Irish immigrants, much of the existing scholarship has focused on Northeastern cities in the nineteenth century (Meagher, 2009). Due to recent developments in data access and techniques, there are many new possibilities to study heterogeneity among Irish and other immigrant populations across time and place.

The elevated levels of schooling achieved by Irish Americans in Pacific states were situated within the broader development of Western US states. While the populations of New York and Massachusetts doubled from 1900 to 1950, the population of California grew sevenfold. Many

western states were rapidly expanding in their economic and industrial bases, and their investment in public education (Goldin, 1998; Rhode, 2001). The Irish second generation appear to have benefited from growing up in this context of expanding opportunity.

The Irish second generation likely gained from their more favorable position in the ethnic hierarchy of Western cities. Historical evidence suggests that the Irish benefited from the religiously desegregated schooling systems outside of Northeastern cities and by being perceived as "whiter" than their counterparts of non-European ancestry in these locations (Burchell, 1979; Campbell, 2002; Ignatiev, 1995). The greater educational and occupational inclusivity of Western cities to the Irish second generation may be consistent with a greater willingness toward redistribution and public expenditure in more Northern and Western European communities in the US (Costa & Kahn, 2003; Goldin & Katz, 1999). Further research should explore whether these upward mobility trends were specific to the Irish or of a more general nature.

7. Tables and figures

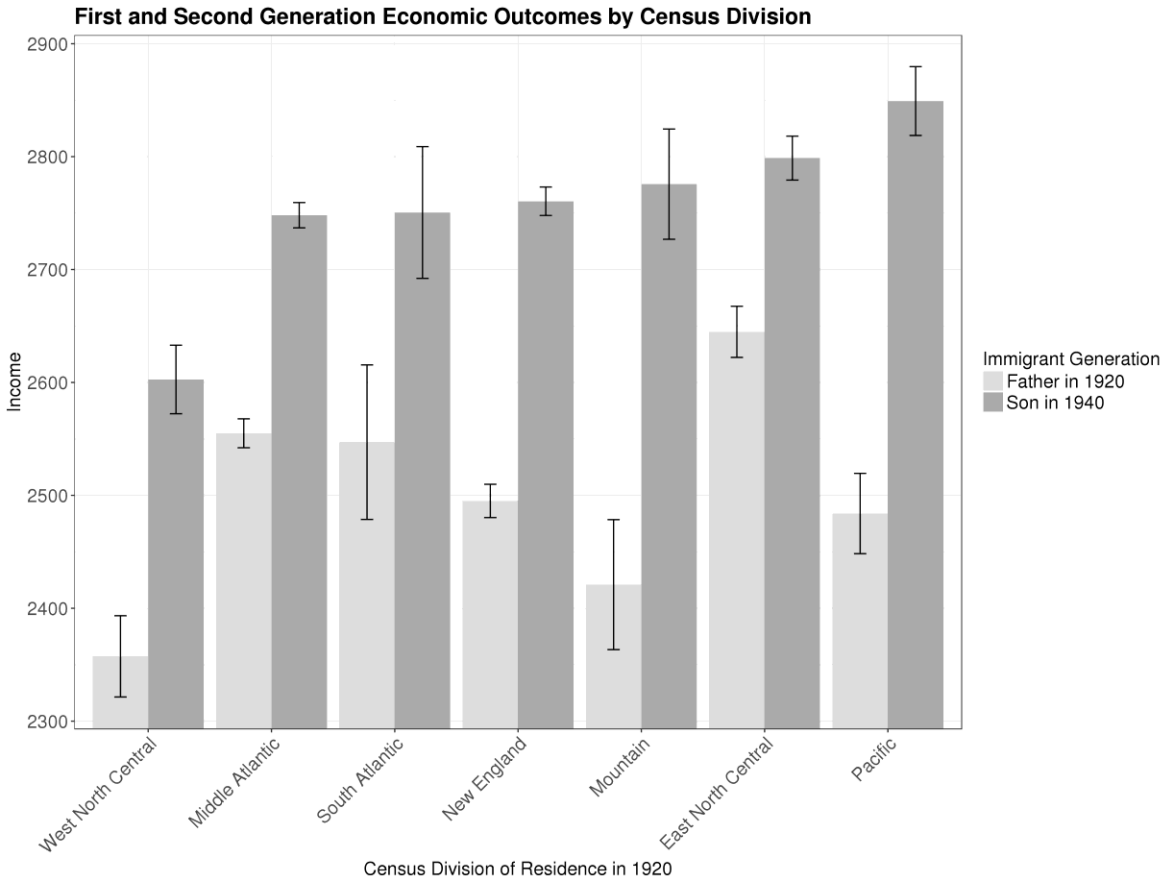

Figure 1. First and second generation economic outcomes by census division

Note: The measure of income refers to the 1950 median earnings for each occupation. Confidence intervals are constructed at the 95% level.

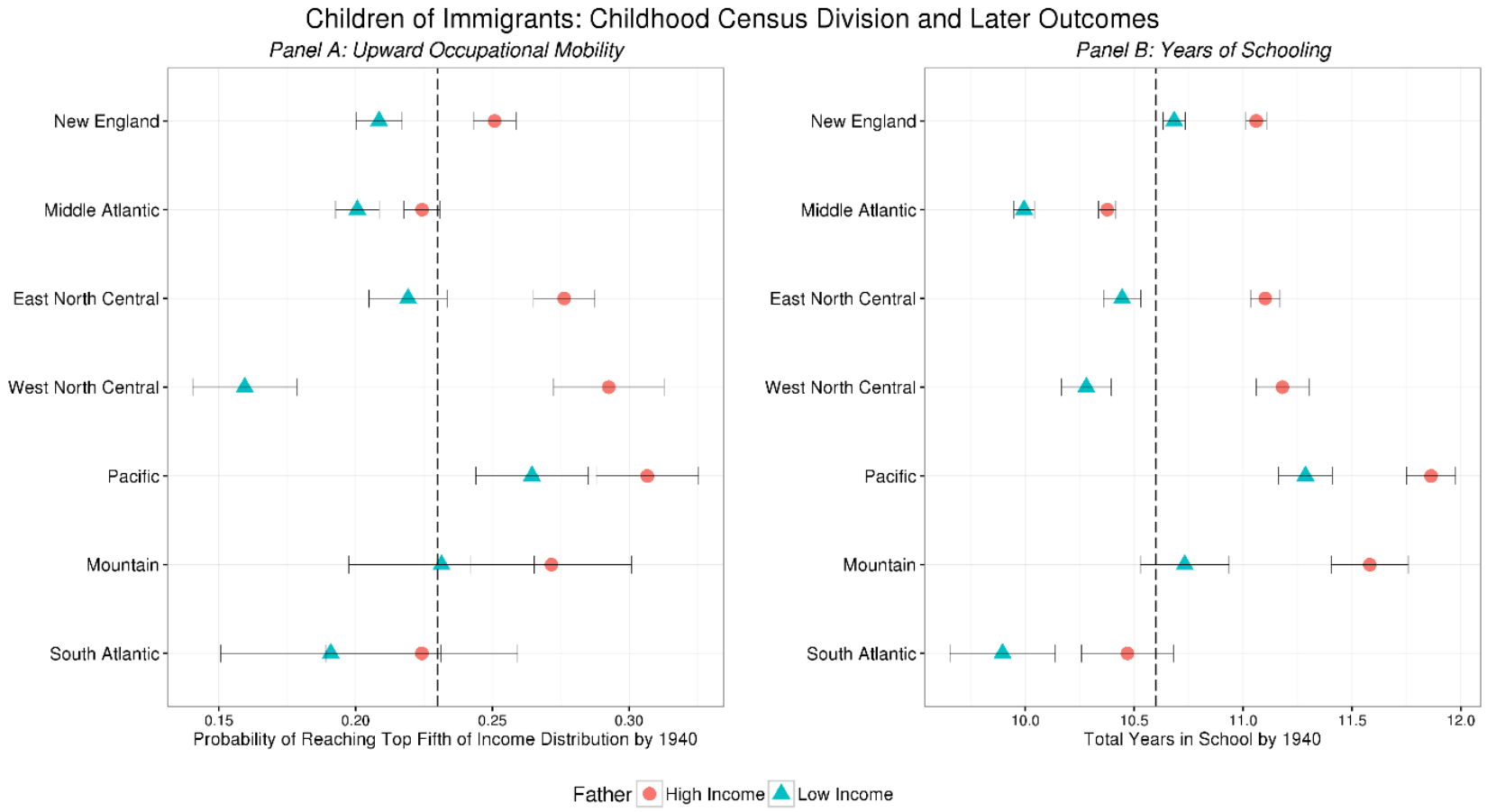

Figure 2. Children of immigrants: childhood census division and later outcomes

Note: The dashed lines correspond to the national averages for individuals across all census divisions. Confidence intervals are constructed at the 95% level

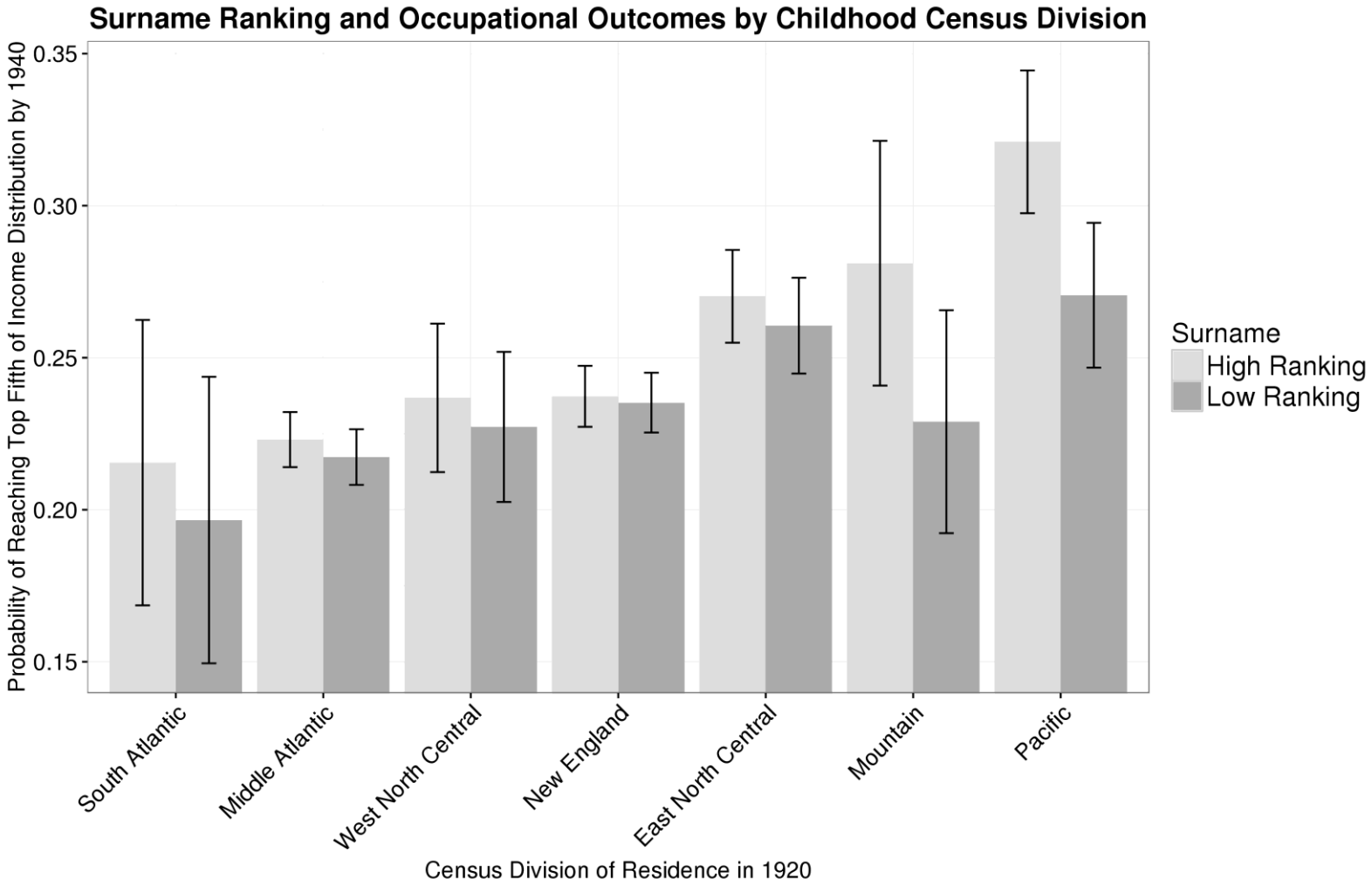

Figure 3. Surname ranking and occupational outcomes by childhood census division

Note: High Ranking and Low-Ranking surnames refer to predicted outcomes which one standard deviations above and below the mean. Confidence intervals are constructed at the 95% level.

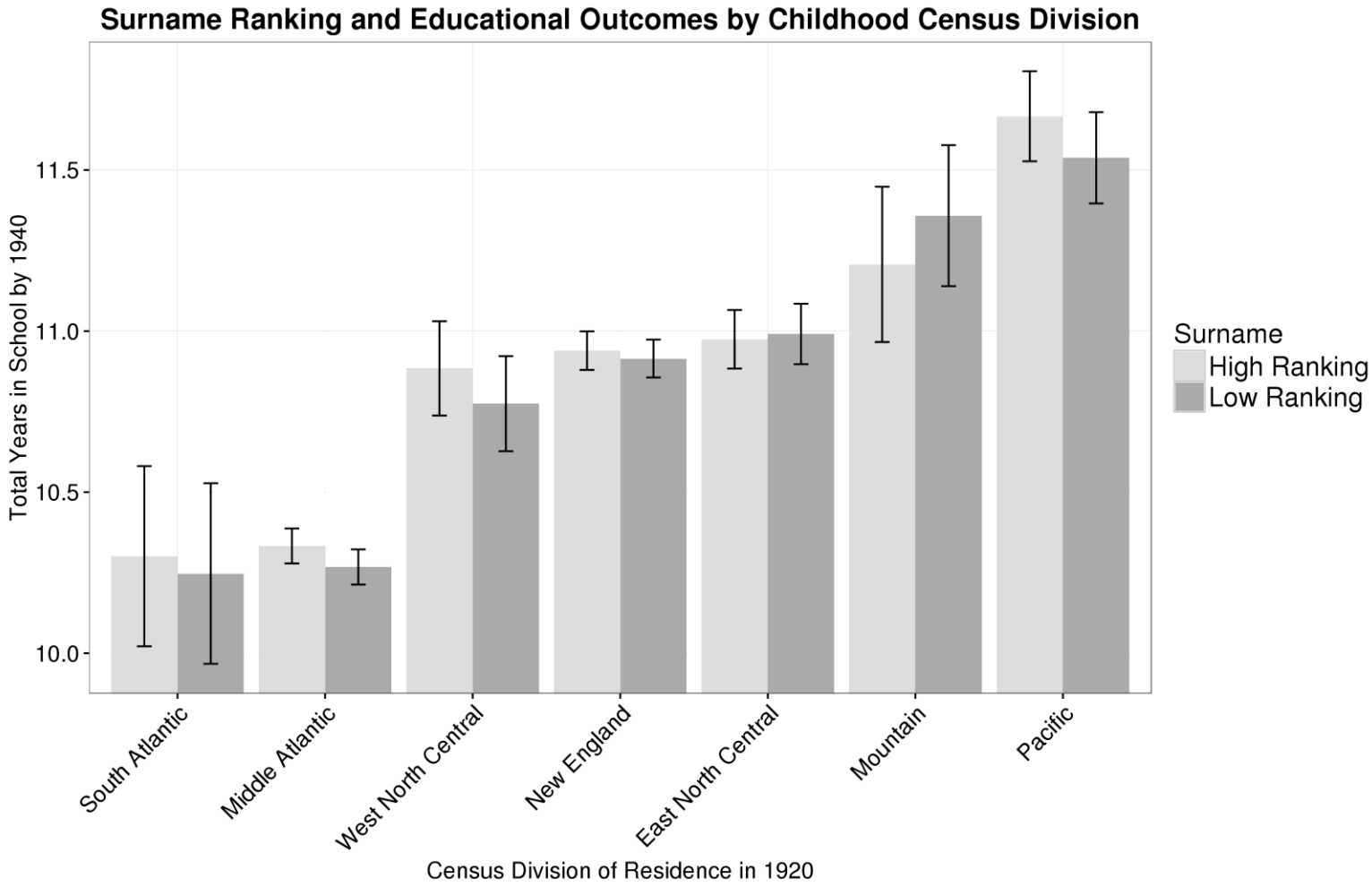

Figure 4. Surname ranking and educational outcomes by childhood census division

Note: High Ranking and Low-Ranking surnames refer to predicted outcomes which one standard deviations above and below the mean. Confidence intervals are constructed at the 95% level.

Table 1. Description of variables

Variable	Year of Meas.	Categories	Obs.	Mean	SD	Min	Max
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Grandfather's Occupation in Ireland	1901	Low skill worker	3,763				
		Poorer farmer	2,874				
		Skilled worker	1,249				
		Wealthier farmer	7,833				
		White-collar	1,527				
Father is Catholic	1901	Yes	15,732				
		No	4,585				
Surname Ranking	1901			48.76	8.65	28.28	84.08
Son's age	1940			33	5	25	40
Father's age	1920			47	7	18	60
Father's Occ.	1920			2536	971	300	8000
Son's Occ.	1940			2781	946	300	8000
Son's years of schooling	1940			10.64	2.56	8	16
Son in top fifth of national occ. distrib.	1940			0.24	0.43	0	1
Census division of residence	1920	East North Central	8732				
		Middle Atlantic	26322				
		Mountain	1380				
		New England	20738				
		Pacific	3559				
		South Atlantic	972				
		West North Central	3549				
Irish average occscore (county)	1920			0.11	0.06	0.00	0.50
Irish population shr. (county)	1920			27.20	3.63	7.33	62.00
High school grad. shr. 1890-99 (county)	1920			0.31	0.07	0.05	0.83
Average occscore (county)	1920			26.60	2.28	12.5	42
Population total (county)				150,677	153,867	279	615,841
Compulsory years of schooling (state)	1900-40			8.18	1.03	0	11

Table 2. Highest and lowest ranking surnames

Least Prestigious Names	Name	Obs.	HISCAM Index	Most Prestigious Names	Name	Obs.	HISCAM Index
1	Bryan	103	48.31	1	Malley	160	56.22
2	Lawlor	239	48.33	2	Gilmartin	125	56
3	Cairns	124	48.51	3	McHale	133	56
4	Hayden	172	48.54	4	Ruane	113	55.66
5	Lavery	177	48.57	5	Noone	117	55.55
6	Mason	128	48.66	6	Lavelle	114	55.3
7	McCartney	146	48.84	7	Deane	102	55.27
8	Brien	704	48.85	8	Folan	115	55.16
9	O'Toole	157	48.86	9	Coneely	228	55.16
10	Redmond	351	48.92	10	McDonagh	410	55.15
11	Keogh	323	48.93	11	Lydon	118	55.05
12	McVeigh	152	48.94	12	Mannion	224	55.05
13	McDowell	335	49.06	13	Joyce	438	54.94
14	Hart	107	49.08	14	McGovern	363	54.88
15	Byrne	2392	49.09	15	Gallagher	1520	54.78
16	Mcilroy	120	49.18	16	Cawley	100	54.77
17	Hoey	157	49.21	17	McHugh	461	54.76
18	Kinsella	264	49.21	18	Flannery	133	54.71
19	Desmond	132	49.28	19	Faherty	107	54.7
20	Ferris	161	49.29	20	Cosgrove	154	54.68

Note: These names are drawn from the 660 surnames held by at least one hundred household heads

Table 3. Irish background and outcomes for fathers and sons

	Surname			Full Match			Strict Match		
	(1) Father's Occ. (1920)	(2) Son's Occ. (1940)	(3) Son's Schooling (1940)	(4) Father's Occ. (1920)	(5) Son's Occ. (1940)	(6) Son's Schooling (1940)	(7) Father's Occ. (1920)	(8) Son's Occ. (1940)	(9) Son's Schooling (1940)
Surname ranking (ln)	0.19**	0.098*	0.78*						
	(0.06)	(0.04)	(0.30)						
Grandfather's class (ref = low skill worker)									
Poorer farmer				0.0069	-0.0050	-0.045	0.00032	0.046	-0.11
				(0.01)	(0.02)	(0.17)	(0.02)	(0.05)	(0.37)
Skilled worker				0.0022	0.025	-0.23	-0.019	-0.055	0.25
				(0.01)	(0.03)	(0.24)	(0.02)	(0.08)	(0.56)
Wealthier farmer				0.013	0.020	0.010	0.0097	0.057	0.20
				(0.01)	(0.02)	(0.14)	(0.01)	(0.04)	(0.31)
White-collar				0.032**	0.068*	0.35	0.073***	0.00051	0.069
				(0.01)	(0.03)	(0.23)	(0.02)	(0.08)	(0.53)
Grandfather Catholic	0.04	0.02***	0.10*	-0.0041	-0.0099	-0.16	0.029*	0.0032	-0.20
	(0.01)	(0.01)	(0.04)	(0.01)	(0.02)	(0.14)	(0.01)	(0.04)	(0.30)
Census division (ref = Middle Atlantic)									
East North Central	0.04***	0.01**	0.66***	0.062***	0.020	0.78***	0.044**	0.024	0.60
	(0.01)	(0.01)	(0.04)	(0.01)	(0.02)	(0.16)	(0.02)	(0.05)	(0.40)
East South Central	0.02	-0.04	0.20	0.038	0.027	1.93*	0.067	-0.080	0.99
	(0.04)	(0.02)	(0.19)	(0.05)	(0.12)	(0.79)	(0.11)	(0.22)	(1.68)
Mountain	-0.11***	-0.02	0.97***	-0.059***	-0.039	1.17**	-0.041	-0.073	1.69
	(0.02)	(0.01)	(0.08)	(0.02)	(0.06)	(0.42)	(0.03)	(0.22)	(1.67)
New England	-0.01	0.01	0.63***	-0.016*	0.016	0.70***	-0.022	0.0032	0.32
	(0.01)	(0.00)	(0.03)	(0.01)	(0.02)	(0.13)	(0.01)	(0.04)	(0.27)
Pacific	-0.05***	0.02***	1.31***	-0.063***	0.036	1.55***	-0.045*	0.036	1.91***
	(0.01)	(0.01)	(0.06)	(0.01)	(0.04)	(0.25)	(0.02)	(0.07)	(0.47)
South Atlantic	0.02	0.02	0.37***	-0.11***	0.080	0.35	-0.054	0.45*	2.89
	(0.02)	(0.01)	(0.09)	(0.02)	(0.09)	(0.64)	(0.05)	(0.22)	(1.68)
West North Central	-0.11***	-0.10***	0.53***	-0.065***	-0.076	0.90**	-0.037	-0.18	-1.82*
	(0.01)	(0.01)	(0.05)	(0.02)	(0.05)	(0.34)	(0.03)	(0.12)	(0.93)
West South Central	0.07	-0.03	0.79***	-0.14**	0.11	3.02*	-0.25***	-	-
	(0.04)	(0.02)	(0.19)	(0.04)	(0.31)	(1.37)	(0.07)		
Constant	2.36***	2.06***	6.66***	3.14***	3.05***	10.7***	3.08***	3.04***	9.83***
	(0.26)	(0.18)	(1.41)	(0.01)	(0.06)	(0.42)	(0.02)	(0.15)	(1.03)
Observations	35208	42027	42027	16373	1789	2051	4372	373	415
Adjusted R2	0.009	0.019	0.038	0.015	0.031	0.041	0.019	0.043	0.060
Controls	YoB	YoB	YoB	YoB	YoB	YoB	YoB	YoB	YoB

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Table 4. Irish background and destination choice in the US

Sample	Full Match			Strict Match		
	(1)	(2)	(3)	(4)	(5)	(6)
Destination (ref = Middle Atlantic)	East North Central	New England	Pacific	East North Central	New England	Pacific
Grandfather's class (ref = low skill worker)						
Poorer farmer	0.013	-0.039**	0.014	0.039	-0.053	0.043
	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.02)
Skilled worker	0.0062	-0.0041	-0.0079	-0.018	0.019	-0.043
	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)
Wealthier farmer	0.012	0.019	-0.0055	0.031	0.010	0.011
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
White-collar	0.0076	-0.051**	0.029*	0.037	-0.048	0.053*
	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)
Grandfather Catholic	-0.019	0.032**	-0.040***	-0.011	0.027	-0.061***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Constant	0.24***	0.29***	0.12***	0.26***	0.33***	0.13***
	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)	(0.03)
Observations	10514	12196	9422	2788	3234	2519
Adjusted R2	0.000	0.004	0.004	0.000	0.001	0.014

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. Explaining regional differences in outcomes of sons

	(1) son's school attainment (1940)	(2) son's school attainment (1940)	(3) son's school attainment (1940)	(4) top fifth occupation (1940)	(5) top fifth occupation (1940)	(6) top fifth occupation (1940)
Census division (ref = Middle Atlantic						
East North Central	0.68***	0.57***	0.51***	0.044***	0.036***	0.012
	(0.04)	(0.04)	(0.04)	(0.01)	(0.01)	(0.01)
East South Central	0.22	0.22	0.17	0.027	0.022	0.012
	(0.20)	(0.20)	(0.20)	(0.03)	(0.03)	(0.03)
Mountain	1.00***	0.81***	0.53***	0.031*	0.031*	0.0037
	(0.08)	(0.08)	(0.09)	(0.01)	(0.01)	(0.02)
New England	0.63***	0.40***	0.29***	0.015**	0.018**	0.0075
	(0.03)	(0.04)	(0.04)	(0.00)	(0.01)	(0.01)
Pacific	1.30***	0.89***	0.75***	0.076***	0.070***	0.041***
	(0.05)	(0.07)	(0.07)	(0.01)	(0.01)	(0.01)
South Atlantic	-0.018	-0.014	-0.10	-0.013	-0.012	-0.014
	(0.10)	(0.11)	(0.11)	(0.02)	(0.02)	(0.02)
West North Central	0.53***	0.54***	0.39***	0.012	0.015	0.0023
	(0.06)	(0.06)	(0.06)	(0.01)	(0.01)	(0.01)
West South Central	0.58**	0.44	0.37	0.048	0.043	0.022
	(0.21)	(0.22)	(0.22)	(0.04)	(0.04)	(0.04)
surname rank (ln)		0.47	0.49		0.097	0.078
		(0.30)	(0.30)		(0.05)	(0.05)
catholic surname		0.089*	0.10*		-0.0066	-0.011
		(0.04)	(0.04)		(0.01)	(0.01)
father's occscore 1920 (ln)		0.54***	0.55***		0.046***	0.021***
		(0.03)	(0.03)		(0.00)	(0.00)
state: required years of schooling		-0.028	-0.029		0.00063	0.00077
		(0.01)	(0.02)		(0.00)	(0.00)
county: high school grad. shr (1890-1899)		3.46***	3.98***		0.073	-0.14**
		(0.27)	(0.29)		(0.05)	(0.05)
county: irish population shr		-1.39***	-0.90**		-0.11*	-0.089
		(0.32)	(0.33)		(0.05)	(0.05)
county: irish average occscore		0.0030	0.0092*		0.0015**	0.001
		(0.00)	(0.00)		(0.00)	(0.00)
county: population total (ln)			-0.082***			-0.0022
			(0.02)			(0.00)
county: average occscore			-0.00056			0.0056***
			(0.01)			(0.00)
son's school attainment (1940)						0.043***
						(0.00)
Constant	10.8***	6.57***	7.08***	0.21***	-0.36	-0.70***
	(0.06)	(1.17)	(1.18)	(0.01)	(0.20)	(0.19)
Observations	42934	42934	42934	42934	42934	42934
Adjusted R2	0.003	0.006	0.069	0.039	0.053	0.054
Controls	YoB	YoB	YoB	YoB	YoB	YoB

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8. Appendix

Appendix Table 1. Share reaching top fifth in five largest counties of each census division

Share Reaching Top Fifth of National Income Distribution in Five Largest Counties of each Census Division

State	County	Irish share	Total share	School Gap in years	State	County	Irish share	Total share	School Gap in years
Middle Atlantic					***New England***				
NY	NEW YORK	0.21	0.28	-0.6	MA	SUFFOLK	0.22	0.28	-0.3
PA	PHILADELPHIA	0.20	0.26	-0.4	MA	MIDDLESEX	0.23	0.26	-0.1
NY	KINGS	0.22	0.29	-0.5	RI	PROVIDENCE	0.22	0.23	+0.2
NJ	HUDSON	0.21	0.25	-0.2	CT	NEW HAVEN	0.26	0.28	0.0
PA	ALLEGHENY	0.20	0.21	0.0	MA	ESSEX	0.21	0.24	0.0
Total		0.21	0.23	-0.1	Total		0.23	0.24	+0.2
Pacific					***Mountain***				
CA	SAN FRANCISCO	0.30	0.30	+0.1	MA	SILVERBOW	0.24	0.26	+0.2
CA	ALAMEDA	0.30	0.32	+0.2	CO	DENVER	0.24	0.32	+0.7
CA	LOS ANGELES	0.30	0.32	+0.2	MA	DEER LODGE	0.23	0.25	+0.1
WA	KING	0.30	0.28	+0.2	CO	PUEBLO	0.23	0.24	+0.1
OR	MULTNOMAH	0.27	0.28	+0.4	CO	LAKE	0.26	0.24	+0.8
Total		0.29	0.25	+0.4	Total		0.25	0.21	+0.5
East North Central					***West North Central***				
Il	COOK	0.26	0.28	+0.5	MO	ST LOUIS	0.23	0.26	+0.1
OH	CUYAHOGA	0.25	0.29	-0.23	MN	RAMSEY	0.25	0.28	-0.3
MI	WAYNE	0.24	0.28	+0.4	NE	DOUGLAS	0.28	0.26	+0.3
OH	HAMILTON	0.25	0.29	-0.1	MO	JACKSON	0.26	0.29	+0.1
IN	MARION	0.30	0.28	+0.2	MN	HENNEPIN	0.27	0.28	0.0
Total		0.25	0.22	+0.4	Total		0.22	0.18	+0.5
South Atlantic									
MD	BALTIMORE	0.21	0.27	+0.1					
DE	NEWCASTLE	0.18	0.25	-0.2					
WV	OHIO	0.27	0.23	-0.4					
GA	CHATHAM	0.34	0.32	+0.1					
MD	ALLEGANY	0.10	0.17	+0.2					
Total		0.21	0.18	+0.4					

Note: "Irish share" refers to share of Irish second generation in top fifth of national income distribution; "total share" refers to share of the county population in the top fifth of the national income distribution; "school gap" refers to the average difference in schooling years between the Irish and count population.

Appendix Table 2. Robust census division estimates

	(1) son's occscore 1940	(2) top fifth occupation (1940)	(3) son's school attainment (1940)
East North Central	0.013***	0.042***	0.66***
	(0.00)	(0.00)	(0.00)
East South Central	-0.020***	0.026***	0.20***
	(0.00)	(0.00)	(0.01)
Mountain	-0.0081***	0.036***	1.05***
	(0.00)	(0.00)	(0.01)
New England	0.0018***	0.016***	0.63***
	(0.00)	(0.00)	(0.00)
Pacific	0.030***	0.079***	1.34***
	(0.00)	(0.00)	(0.01)
South Atlantic	-0.0069***	-0.012***	-0.0046
	(0.00)	(0.00)	(0.00)
West North Central	-0.082***	0.017***	0.59***
	(0.00)	(0.00)	(0.01)
West South Central	-0.027***	0.044***	0.54***
	(0.00)	(0.00)	(0.00)
father's occscore 1920	0.054**	0.047***	0.56***
	(0.01)	(0.01)	(0.06)
Constant	3.02***	0.062	9.02***
	(0.05)	(0.03)	(0.25)
Observations	42934	42934	42934
Adjusted R^2	0.022	0.006	0.049
Controls	YoB	YoB	YoB

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: These three regression models are estimated with clustered standard errors at the census division level.

Appendix Table 3. Robust county estimates

	(1) son's occscore 1940	(2) top fifth occupation (1940)	(3) son's school attainment (1940)
East North Central	0.015*	0.034***	0.51***
	(0.01)	(0.01)	(0.06)
East South Central	-0.015	0.019	0.17
	(0.04)	(0.04)	(0.29)
Mountain	0.016	0.026	0.53***
	(0.01)	(0.01)	(0.11)
New England	0.021***	0.020**	0.29***
	(0.01)	(0.01)	(0.07)
Pacific	0.056***	0.073***	0.75***
	(0.01)	(0.01)	(0.08)
South Atlantic	0.0074	-0.019	-0.10
	(0.03)	(0.02)	(0.14)
West North Central	-0.038**	0.019	0.39**
	(0.01)	(0.01)	(0.13)
West South Central	-0.014	0.037	0.37
	(0.03)	(0.04)	(0.34)
surname rank (ln)	0.083*	0.099*	0.49
	(0.04)	(0.05)	(0.30)
catholic surname	0.011	-0.0072	0.10
	(0.01)	(0.01)	(0.05)
father's occscore 1920	0.046***	0.044***	0.55***
	(0.00)	(0.01)	(0.04)
state: required years of schooling	-0.00099	-0.00045	-0.029
	(0.00)	(0.00)	(0.02)
county: high school grad. shr (1890-1899)	-0.085	0.031	3.98***
	(0.05)	(0.05)	(0.43)
county: share irish	-0.13	-0.13*	-0.90
	(0.07)	(0.06)	(0.53)
county: average occscore irish	0.00031	0.00041	0.0092
	(0.00)	(0.00)	(0.00)
county: population total	-0.00050	-0.0057*	-0.082**
	(0.00)	(0.00)	(0.03)
county: average occscore	0.014***	0.0056***	-0.00056
	(0.00)	(0.00)	(0.01)
Constant	2.38***	-0.39*	7.08***
	(0.14)	(0.19)	(1.18)
Observations	42934	42934	42934
Adjusted R^2	0.029	0.006	0.054
Controls	YoB	YoB	YoB

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 4. Census division estimates with surname fixed effects

	(1) son's occscore 1940	(2) top fifth occupation (1940)	(3) son's school attainment (1940)
East North Central	0.012*	0.045***	0.63***
	(0.01)	(0.01)	(0.04)
East South Central	-0.025	0.038	0.13
	(0.03)	(0.04)	(0.22)
Mountain	-0.00093	0.040**	1.04***
	(0.01)	(0.01)	(0.09)
New England	0.00044	0.014**	0.60***
	(0.00)	(0.01)	(0.03)
Pacific	0.034***	0.082***	1.33***
	(0.01)	(0.01)	(0.06)
South Atlantic	-0.0041	-0.014	0.030
	(0.01)	(0.02)	(0.11)
West North Central	-0.080***	0.019	0.61***
	(0.01)	(0.01)	(0.06)
West South Central	-0.032	0.050	0.59**
	(0.03)	(0.04)	(0.23)
father's occscore 1920	0.051***	0.045***	0.55***
	(0.00)	(0.00)	(0.03)
Constant	3.03***	0.071***	9.05***
	(0.01)	(0.02)	(0.11)
Observations	42934	42934	42934
Adjusted R^2	0.030	0.009	0.061
Controls	YoB	YoB	YoB

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 5. County estimates with surname fixed effects

	(1)	(2)	(3)
	son's occscore 1940	top fifth occupation (1940)	son's school attainment (1940)
East North Central	0.015*	0.034***	0.51***
	(0.01)	(0.01)	(0.06)
East South Central	-0.015	0.019	0.17
	(0.04)	(0.04)	(0.29)
Mountain	0.016	0.026	0.53***
	(0.01)	(0.01)	(0.11)
New England	0.021***	0.020**	0.29***
	(0.01)	(0.01)	(0.07)
Pacific	0.056***	0.073***	0.75***
	(0.01)	(0.01)	(0.08)
South Atlantic	0.0074	-0.019	-0.10
	(0.03)	(0.02)	(0.14)
West North Central	-0.038**	0.019	0.39**
	(0.01)	(0.01)	(0.13)
West South Central	-0.014	0.037	0.37
	(0.03)	(0.04)	(0.34)
surname rank (ln)	0.083*	0.099*	0.49
	(0.04)	(0.05)	(0.30)
catholic surname	0.011	-0.0072	0.10
	(0.01)	(0.01)	(0.05)
father's occscore 1920	0.046***	0.044***	0.55***
	(0.00)	(0.01)	(0.04)
state: required years of schooling	-0.00099	-0.00045	-0.029
	(0.00)	(0.00)	(0.02)
county: high school grad. shr (1890-1899)	-0.085	0.031	3.98***
	(0.05)	(0.05)	(0.43)
county: share irish	-0.13	-0.13*	-0.90
	(0.07)	(0.06)	(0.53)
county: average occscore irish	0.00031	0.00041	0.0092
	(0.00)	(0.00)	(0.00)
county: population total	-0.00050	-0.0057*	-0.082**
	(0.00)	(0.00)	(0.03)
county: average occscore	0.014***	0.0056***	-0.00056
	(0.00)	(0.00)	(0.01)
Constant	2.38***	-0.39*	7.08***
	(0.14)	(0.19)	(1.18)
Observations	42934	42934	42934
Adjusted R^2	0.029	0.006	0.054
Controls	YoB	YoB	YoB

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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Chapter 4. Leaving the enclave: Location and economic outcomes in the Age of Mass Migration

With Leah Boustan (UCLA, Economics) and Ran Abramitzky (Stanford University, Economics)

Abstract

Between 1880 and 1920, more than two million Jewish immigrants moved to the United States, with most settling in large gateway cities. We study Jewish assimilation in this period using unique records from a New York-based self-help organization which assisted 40,000 struggling Jewish households with leaving New York for towns and cities throughout the United States. We find that within ten years, participating households closed a substantial earnings deficit on other Jewish households in New York, and this level of parity persisted into the second generation. By exploiting the assignment of participants to different locations, our analysis reveals that immigrant households valued living among other Jews, and in denser areas with high average incomes. Further, second generation sons earned significantly more after 30 years when moved to cities or during the early years of childhood.

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1. Introduction

Thirty million immigrants arrived in the United States during the Age of Mass Migration (1850-1914). More than two million of these new entrants were Jewish immigrants from Eastern and Central Europe. Jewish immigrants were highly concentrated in a few gateway cities: 56% of Jews lived in New York; an additional 9% in Chicago, 7% in Philadelphia and 5% in Boston.[34] Jewish residence in gateway cities is often used to explain high rates of Jewish upward economic mobility.[35] Specifically, in cities such as New York Jewish immigrants are believed to have benefited from Jewish social networks and access to economic opportunity and public schools (Berrol, 1976; Burstein, 2007).

We use unique data from the early twentieth century to test whether living in gateway cities promoted economic assimilation for Jewish immigrants and their children. While living in gateway cities or immigrant enclaves may provide economic opportunity and ease the transition to the new country (Bauer, Epstein, & Gang, 2005; Munshi, 2003), it could also hamper immigrant households by inhibiting English language acquisition or access to broader labor market networks (Beaman, 2012; Borjas, 2014). This is difficult to test as gateway cities may attract people who would otherwise be less equipped to navigate the US labor market. In addition, most evidence on enclaves comes from the contemporary era, in which the return to English speaking may be particularly high. We gain new insight on this issue using resettlement records from an immigrant self-help program in the early twentieth century.[36]

From 1899 to 1922, the Industrial Removal Office (IRO) assisted Jewish immigrants in moving out of New York and aimed to promote economic and cultural assimilation. In self-proclaimed

efforts to "disperse the ghetto", the IRO relocated 40,000 households to over a thousand towns and cities throughout the United States (Glazier, 1998). We examine the effects of participation on the earnings of Jewish immigrants and their children relative to other Jewish families living in New York. The assignment of families to different locations also provides an opportunity to study how immigrant households responded to and or affected by the characteristics of assignment locations (e.g., population density, job opportunities).

Program participants initially held lower paying occupations than their counterparts in New York, presumably because the program was intended to help the chronically under-employed. Despite initially holding lower paying occupations, IRO household heads closed a 7 percent deficit in earnings, and were at parity with their New York counterparts within ten years. Participants were also more likely to apply for US citizenship. Benefits of the program were, however, confined to a single generation: the sons of participants did not continue to gain.

The program successfully moved Jewish immigrants out of New York. Around 10 years after relocation, program participants were 20 percentage points less likely to live in New York than other Jewish New Yorkers. Yet, most people left their original assignment area within 10 years. The relocation of participants across different areas allow us to study how places appealed to Jewish households. We find that migrants were especially likely to stay in their assigned location if they were allocated to a city with high population density and larger Jewish population shares, suggesting that Jewish clusters in large cities were due to migrant choice rather than constraint.

We arrived at these findings by constructing novel data on Jewish economic life in the early twentieth century. Following the transcription and preparation of the IRO records, we followed participants from the organization's ledgers through the US complete count decennial censuses (Abramitzky, Boustan, & Eriksson, 2012, 2014). In doing so, we could create follow-ups for

participants in 1920 and their children in 1940. Using a similar approach, we created comparison groups of Jewish immigrant households who lived inside and outside of New York in 1910, and also followed these families over the same time period.

The US census does not collect information on religion and this has posed a major barrier to studying Jewish American assimilation. We overcame this problem by constructing a new "Jewish index" representing the probability that an individual was a Yiddish speaker based on their first and last name. We used this index to construct our comparison groups, to measure the distribution of Jews across the United States, and to study cultural assimilation. Thus, a further contribution of this article is the broader portrait it provides of American Jewish life in this era.

2. The Industrial Removal Office

The Industrial Removal Office emerged in a period of mass Jewish immigration to the United States. Anti-Semitic events in Europe coincided with broader declines in rural employment, advancing ship and rail infrastructure, and the spread of migrant networks. These development prompted over two million Jews to leave Europe in the late nineteenth and early twentieth century (Boustan, 2007; Spitzer, 2013). The conception of the IRO program by American Jewish philanthropists and organizers, of mainly German descent, came in an effort to direct new Eastern and Southern European Jewish immigrants away from the crowded neighborhoods of New York's Lower East Side (Glazier, 1998).

The IRO was only one of many organizations concerned with Jewish immigrant life in New York. Other programs focused on poor relief, housing shelters and even a bureau for deserted wives (Fridkis, 1981; Szajkowski, 1973). Efforts at immigrant resettlement were premised on the increasing pressures new arrivals placed on these programs, and the perceived consequences of renewed immigration for assimilation outcomes, and in exacerbating anti-immigrant and anti-

sematic sentiment (Romanofsky, 1975). In addition to the IRO, other short-lived programs included attempts to route Jewish immigrants through the port of Galveston, Texas, and to create Jewish agricultural colonies in Europe and the US (Eisenberg, 1995; Marinbach, 2012). The focus of the IRO on resettlement to urban areas emerged from these earlier failed attempts at rural resettlement.

The IRO emerged following a series of anti-sematic decrees in Romania at the turn of the century, which pushed large numbers of Jews to migrate from Romania to the United States. Figure 1 shows the number of successful resettlements ("removals") by the IRO in each year of operation. With support from the Baron de Hirsch Foundation and the B'nai B'rith network, the IRO began its initial resettlement of Romanian Jews. Demand for the program among the wider Jewish immigrant population, however, continued to grow following the *Kishinev pogrom* of 1903.[37] The program was most active from this period until the recession of 1907, which coincided with a drop in overall immigration and a decline in the willingness of communities to accept and assist participants. In response to this shortfall, the IRO commissioned a new survey of US towns and cities to find suitable locations for resettlement. These efforts were largely in vein, as the program ceased operation after the decline of Jewish immigration and the closing of the US border with Europe in the 1920s.

The IRO targeted young Jewish immigrants experiencing economic hardship. The IRO reported that in nine out of ten cases, applicants had experienced low levels of employment for up to twelve weeks (Arkush, 1911, p. 6). Participants learned about the program through public lectures, newspapers, plays, and referrals from other Jewish charities. From 1902-1904, the IRO also experimented with intercepting individuals immediately after disembarking from their transatlantic voyage, and trying to convince new arrivals to immediately leave New York. As an

incentive for participation, the IRO offered short-term lodging, help with job search and moving expenses commensurate with around 2% of annual earnings. Table 1 shows that the average age of participants was just under 27: 78 percent moved alone and participants were more concentrated in the Lower East Side than other Jewish New Yorkers.

The acceptance and assignment of participants to locations was assessed on a case by case basis. Around half of the cases were processed as "direct removals" comprising individuals with "no definite place to which they desire to be sent and who [left] the selection of the place to the judgement and discretion of the officials of the office." (Arkush, 1911, p. 8). These cases are identified in the records and we refer to them as "IRO random". The location decisions for other cases were more ambiguous and included individuals who stated a locational preference, moved to meet family, or who were leaving New York after being offered a job in another town or city ("IRO other"). Although we do not directly observe whether individuals actually moved to their assigned locations, internal IRO documentation reports that around 90 percent of participants were residing at the assignment location in the first year.

Participants' assignment locations were highly varied and spanned over a thousand locales across the United States. Figure 2 maps all cities of resettlement utilized by the IRO. While the program resettled people to many smaller towns and cities in the US, much of the resettlement was also concentrated on major cities outside of the Northeast. The cities receiving the highest shares of IRO removals were the Midwestern cities of Chicago (7.6%), Detroit (6.8%), St. Louis (6.6%), Cincinnati (4.3%) and Cleveland (4.3%). Following the recession of 1907, the IRO broadened its locations to increasingly include Mountain and Pacific cities: this is reflected in the shares moving to Denver (3.1%), Los Angeles (2.2%) and San Francisco (1.9%). We describe these assignment

locations in terms of their schooling outcomes, population density, average income, Jewish share and distance from New York.

These characteristics describe IRO participants' State Economic Areas (SEA) of assignment and the 1910 SEAs of residence for the Jewish comparison groups. Table 2 shows that IRO participants were assigned to locations with lower than average population density, relative to non-participating Jews, and SEAs which were further from New York: the average non-New York Jew lived in an SEA with 50 percent higher population density than the average IRO assignment location, and lived around 800 kilometers nearer to New York. The assignment locations do not appear to have been attractive to IRO participants in the long-run: by 1920, 87-92 percent of IRO participants had left their new place of residence.[38] This mobility rate compares to around 64 percent for other Jews who lived outside of New York, and only 37 percent for Jews who originally lived in New York

3. Data and methods

We obtained the IRO database from the American Jewish Historical Society. These ledgers contain information on the name, age, year of removal and city of assignment for each participant. We transcribed further information from these ledgers on pre-participation occupation, New York address and party size. We used this information to determine the likelihood of participants living in the Lower East Side of New York, and to group individuals based on their SEA of assignment. We were able to locate almost all cities of assignment and around 80 percent of the New York addresses with historic maps and address databases.

We created our IRO follow-ups and comparison groups using the complete count decennial censuses (Ruggles, Genadek, Goeken, Grover, & Sobek, 2015). We identified our New York and non-New York comparison samples using the 1910 census. We created our first follow-up by matching IRO participants and the comparison groups to the 1920 census. Our sample comprises

foreign-born individuals who were aged 18-40 at first year of observation. We match these individuals using unique names, ages and birthplaces, with a phonetic name standardization and age bands of up to two years. After finding individuals in 1920, we could identify and follow the sons of participants and the comparison group through to 1940 using a similar approach. To compare reporting of pre-participation occupations in IRO ledgers and the census, we also linked IRO participants to the 1910 census before they left New York (Appendix Table 1).

The US decennial census does not ask a question on religion and we needed to devise a new approach to identify likely Jewish immigrants for our comparison groups. We created the Jewish index by compiling data on names and mother tongue across the historical US complete count censuses (1920-1940). We calculated the share of individuals with a given first name or last name who spoke Yiddish or Hebrew. We then set a cut-off value, when the Jewish rate of each name is at 1.4 or above: this was our main criteria for likely Jewish and non-Jewish individuals. We benchmarked this cut-off from the Jewish population estimates of Kuznets (1975): when our index is applied to the 1920 census, our Jewish population estimate roughly matches the Kuznets estimate for the total US Jewish population.

4. Results

4.1. IRO effects on primary outcomes

Table 3 presents occupational and residential differences between IRO and comparison households prior to IRO participation (1910 census for comparison groups), after participation in 1920 for the immigrant generation, and in 1940 for second generation sons. These estimates were derived from models of the following form:

(1) $$OCCSCORE_t = \beta_0 + \beta_1[jewish\_group]_1 + \beta_2[age]_2 + \beta_3[arrival\_year]_3$$

(2) $NY\_resident_t = \beta_0 + \beta_1[jewish\_group]_1 + \beta_2[age]_2 + \beta_3[arrival\_year]_3$

where $OCCSCORE$ refers' to individuals occupational score and $NY\_resident$ is a binary variable for residence in New York in time t.[39] The term $jewish\_group$ refers to the IRO or comparison groups with the New York comparison group families as the reference category. We estimate these models with a full set of age and age at arrival fixed effects, meaning that these models compare two likely Jewish men who arrived in the US in the same year and were of the same age in 1920.

Table 3. Program outcomes: occupation and residential outcomes

The IRO random and IRO other groups held lower earning occupations than other New York Jews prior to participating in the program. The OCCSCORE estimates in Column 1 suggest that IRO participant earned 7-8 percent less than other New York Jews and around 4 percent less than Jews outside of New York. This form of negative selection into the program is consistent with the program's objective of assisting Jewish immigrants who were unemployed or struggling economically.

This initial gap between participants and non-participants narrowed within 10 years of participation. Despite starting at a significant occupational disadvantage, the estimates in Column 2 show that the difference between the IRO groups and other Jewish New Yorkers had fully attenuated by 1920 and was not statistically significant. To a lesser extent, the difference between Jews in New York and Jews elsewhere halved from 4 to 2 percent over the same period. These earnings differences remain quite stable for sons in 1940, suggesting that the IRO had its main impact on earnings within the immigrant generation.

There are two main interpretations for the catch up in earnings of IRO participants. First, the program may have had a real treatment effect, and had participants stayed in New York they would

have continued to lag behind. The second possibility is that we initially observe IRO participants at an unusually bad moment (upon application to IRO). If this is the case, participants may have found other ways to catch up on their New York neighbors. To distinguish between these hypotheses, we find IRO participants at an earlier point time in the 1910 census and examine whether initially poorer circumstances of IRO participants are reflective of earlier economic performance. Appendix Table 1 shows that while the IRO other group held relatively higher earnings in the 1910 census than reported in the IRO records, the earnings of the IRO random group were at similarly low levels. This suggests that the IRO program may have had a real treatment effect on the earnings of the IRO random group.

In addition to increasing the earnings position of participants, the program had strong effects in moving people out of New York. The lower tier of rows in Table 3 show that IRO participants were 20 percentage points less likely to live in New York in 1920. This estimate is around half way between the outcomes of the New York Jewish and non-New York Jewish comparison groups, who were 38 percentage points less likely to live in New York at the first follow-up. Similar to the occupational effects, differences in the share living in New York remain mostly stable into second generation.

In spite of the low rate of retention at assignment locations, these estimates suggest that the program was highly effective in moving Jews out of New York and promoting economic progress. Table 1 helps contextualize the effect of the program on residential outcomes: while 57 percent of participants lived outside of New York by 1920, only 37 percent of other Jews who had lived in New York in 1910 left over the same period. When taken with the fact that 90 percent of participants had left their assignment locations within 10 years, this suggests that the occupational

progress of participants was achieved, in part, through migration back to New York or elsewhere after relatively short periods of time at the assignment location.

4.2. IRO effects on other assimilation outcomes

The IRO appears to have had effects on cultural assimilation and other economic indicators. We examine differences in homeownership and citizenship acquisition for participants, and school year completion and the likely Jewishness of participants' daughters-in-law. We estimate the effect of participation on these outcomes with the following equations:

$$(3)\ adult\_outcome_{1940} = \beta_0 + \beta_1[jewish\_group]_1 + \beta_2[age]_2 + \beta_3[arrival\_year]_3 + \beta_4[base\_occscore]_4 + \beta_5[fathers\_occscore]_5 + \Sigma_{k=1\ldots K}\beta_k X_k$$

$$(4)\ son\_outcome_{1940} = \beta_0 + \beta_1[jewish\_group]_1 + \beta_2[age]_2 + \beta_3[father\_arrival\_year]_3 + \beta_4[father\_age]_4 + \beta_5[fathers\_occscore]_5 + \beta_5[father\_age\_obs]_5 + \Sigma_{k=1\ldots K}\beta_k X_k$$

where $adult\_outcome_{1920}$ refers to binary variables indicating whether participants had become homeowners, and had obtained citizenship or were in the process of obtaining it. These models are estimated with age and arrival year fixed effects and linear controls for initial occupation and age at which the initial occupation was observed. In the regression for sons, the outcome variable $son\_outcome_{1940}$ refers to continuous variables of the years of schooling completed and the Jewish index of wife's names. These models include linear controls for fathers' age, fathers' initial occupations and age at which the fathers' initial occupations were observed. These outcomes are also estimated with fixed effects for the age of the son and the arrival year of the father. Thus, the estimates here can be interpreted as a comparison between sons born in the same year whose fathers also arrived in the same year. The $\beta_k X_k$ terms refers to a set of further control variables of interest.

Controlling for other characteristics, IRO participants were more likely to be homeowners and citizens by 1920. In Column 1 of Table 4, IRO participants are from 5-7 percentage points more likely to be homeowners than other Jewish New Yorkers but less likely than other Jews outside of New York. IRO participants were also 4 percentage points more likely to be citizens or in the process of acquiring citizenship. These results suggest that participation in the program had effects on assimilation beyond occupation.

Although participation appears to have had strong effects on the outcomes of immigrant fathers, program effects do not appear to persist for the sons. There does not appear to be large differences in schooling among any of the comparison or IRO groups. Further, Column 4 suggests that the daughters-in-law of IRO participants had similarly Jewish names compared to their counterparts in the New York Jewish group. This suggests that IRO sons were as likely to marry Jewish women as the control group.

Table 4 may also provide some rationale for the IRO program itself. Initial residence in the Lower East Side appears to be associated with poorer outcomes across a variety of characteristics. Individuals who lived in the Lower East Side earned 2 percent less by 1920 and were less likely to be citizens. In addition, the sons of men who lived in the Jewish Lower East Side neighborhoods of New York completed fewer years of schooling and were less likely to marry women with distinctly Jewish names.

5. The effect of assignment location on the sons of participants

5.1. Analysis of persistence at assignment location

The unusual structure of the IRO program provides a rare opportunity to study how immigrants evaluate places. If individuals reveal their preferences by pursuing some options over others (Samuelson, 1938), then by deciding to leave one location or stay in another, migrants reveal their

own preferred locations. Observational data is not well suited for this form of analysis, however, as observed locations reflect existing preferences: households may initially live in New York because that is where they want to be. Moreover, place characteristics come as a bundle, and highly valued attributes are not easily distinguished from those which are not. One could ask, for example, whether many Jewish households lived in New York because of its Jewish neighborhoods, its public schools or because of underlying tastes for cities. Randomly assigned IRO households either did not choose their assignment or had limited knowledge of the locations they would move to. Thus, it may not be surprising that most IRO households left. However, the migration response of IRO participants to these new locations provide insight into the attributes of places which Jewish immigrants found attractive.

We can undertake this analysis for IRO participants only. To examine the factors associated with migration or retention at the assignment location, we estimate a series of multinomial logits with k-1 equations for three potential outcomes ($Migrate$): stayed at assignment; returned to New York; and moved to an SEA other than New York. This analysis takes the following form:

$$(5)\ ln\left[\frac{Migrate}{1-Migrate}\right] = \beta_0 + \beta_1[age]_1 + \beta_2[arrival\_year]_2 + \beta_3[place\_attributes]_3 + \Sigma_{k=1\ ..K}\beta_k X_k$$

where $place\_attributes$ refer to the characteristics of locations discussed previously in Table 2 and the age and arrival year of the participants are added as control variables. We also include a set of participant specific variables of interest, as migration decisions are not only a function of preferences for places, but also individual characteristics and circumstances. These estimates are presented in Table 5 as odds ratios, where positive values are associated with higher outmigration to New York or another SEA, and values below one imply that households are more likely to stay at their SEA of assignment. For this analysis, the IRO random group provides the best identified

results, as we can be confident that these households permitted the IRO to determine their assignment location.

Columns 1 and 2 suggests that participants were significantly less likely to leave more urban SEAs with large Jewish populations and high average incomes. Increasing the average occupation score of an SEA by one point, its population density by a full log point or the share Jewish by one standard deviation (1%), is associated with a 35-45 percent reduction in the odds of leaving an SEA of assignment for either New York or another SEA. The high school graduation share has no significant effect on migration decisions. We include distance from New York as a control variable, as there may be differences in the economic cost of leaving assignment SEAs. Consistent with this hypothesis, a 100 kilometer increase in the distance of an SEA from New York is associated with a 50 percent decreases in the odds of leaving the assignment.

Individual and household characteristics also appear to have important effects on who moved and stayed. Participants who moved in large groups, typically in parties with children ("more than two") were, as indicated by the estimated odds ratio of 0.5, twice as likely to stay in their assignment location. Likewise, participants who moved before age 28 are twice as likely to leave their assignment location. Having previously lived in the Lower East Side and holding a higher skilled occupation prior to participation is associated with greater outmigration, but these differences are rarely significant. Having a more Jewish name is the only characteristic which predicts return to New York but not movement to other SEAs: this could indicate these individuals had stronger preferences for Jewish neighbors.

These results suggest strong household preferences for high income cities with larger Jewish populations. We find little evidence that public schooling was an important determinant of Jewish residential decisions (e.g. Berrol, 1976). It is more challenging for us to make direct claims

regarding the higher migration rate of younger men who moved without families. This is because there were probably initial unobservable differences in the selection of younger and older men into the IRO program at baseline.

5.2. The impact of assignment characteristics on the sons of participants

The program provides some scope to analyze how places affect assimilation outcomes. It is generally challenging to identify how exposure to places affect outcomes, as observational data confounds exposure to place with the selection and sorting of individuals across space. In this case, however, households' program assignment and the pre-determination of program participation for sons by their parents, make this a valuable context to study place effects on second generation assimilation. We exploit variation in childhood locations to predict differences in economic, cultural and residential outcomes for the sons of IRO participants with an equation of the following form:

$$(6)\ son\_outcome\_1940_i = \beta_0 + \beta_1[father\_occscore]_{1i} + \beta_2[place\_attributes]_{2i} + \beta_3[age]_{3i} + \beta_4[father\_arrival\_year]_{4i} + \Sigma_{k=1\ ..K}\beta_k X_k$$

where the response variable $son\_outcome\_1940$ refers to one of four separately predicted outcomes: OCCSCORE in 1940; school years completed; whether or not a son moved SEA from 1920 to 1940; and the Jewishness of a son's wife's name. These models are estimated independently for three groups (i): IRO random; IRO other: and the non-New York Jewish comparison group. We omit the New York control group as they exhibit no variation in their initial location. Although the non-New York Jewish comparison confounds the effect of growing up in an area with selection into those places, they provide a valuable comparison case for the more clearly identified IRO groups. These results are presented in Table 6.

Being assigned to a more densely populated area is associated with higher earnings and schooling outcomes for the sons of IRO participants. For the IRO other group, a log increase in the population density of the assignment location is associated with 4 percent increase in earnings outcomes and with 0.22 more years of schooling. Stronger schooling outcomes in population-dense areas are consistent with the estimates from the IRO random and the other Jewish comparison groups.

Among the sons of non-IRO men who lived outside New York in 1910, increasing the high school graduation share of the childhood location is positively associated with sons' schooling and income. An increase in the share completing high school in the 1890 to 1899 period from zero to one is associated with a 24 percent increase in income and almost three extra years of schooling for the sons of Jewish men outside of New York. This effect is considerably weaker in the two IRO groups.

The sons of Jewish immigrants also appear to value places in similar ways to their parents. The results presented in Table 5 suggested that IRO assignees were less likely to leave areas with higher population density and Jewish shares, and locations further from New York. In Column 3 of Table 6, these factors all predict significantly lower rates of internal migration for the sons of Jewish men outside of New York and mostly consistent but non-significant effects for the sons of IRO participants.

Given that most households left their assignment locations within ten years, it may not be surprising that we find stronger place effects for the comparison group over the IRO sons. For assignment locations to positively affect the sons of participants, the attributes of places need to make households less likely to leave and beneficially affect the earnings outcomes of sons. The population density of the assignment SEA appears to be the only characteristics to pass this stringent test.

5.3. Impact of IRO participation by year of birth of sons

Recent experimental literature stresses the importance of place characteristics for early childhood development (Chetty, Hendren, & Katz, 2015; Ludwig et al., 2008). It is not easy to test for these effects with the IRO data, as we do not observe how long families stayed at their assignment locations. Some children may have been too old to benefit from the move, while others may have been born years after the parents had left the assignment location. Thus, we perform a relatively simple test for exposure effects: whether being born within a year of participation was associated with differences in outcomes. Children born in this period were likely exposed to the assignment location at very young ages. We do this with the following specification:

$$
\begin{aligned}
(7)\, son\_outcome\_1940_i \quad = {} & \beta_0 + \beta_1[father\_occscore]_1 + \beta_2[age]_2 \\
& + \beta_3[father\_arrival\_year]_3 + \beta_4[jewish\_group]_4 \\
& + \beta_5[born\_in\_IRO\_year]_5 \\
& + \beta_4[jewish\_group]_4 \; X \; \beta_5[born\_in\_IRO\_year]_5 \\
& + \Sigma_{k=1\,..K}\beta_k X_k
\end{aligned}
$$

where the control variables mirror those discussed in previous equation. We add the term $born\_in\_IRO\_year$ which refers to whether a son was born within a year of a household participating in IRO. This group is defined as individuals who were born no more than a year before or after their parents participated in IRO and comprise 20 percent of the IRO cases. This term is interacted with the IRO categories to test for differences among sons born nearer and further from the year of removal. These results are presented in Table 7 where the reference category are the sons of randomly assigned IRO families who moved within a year of their birth.

Sons born within a year of resettlement earned significantly more than their counterparts who were resettled at older ages or who were born several years after participation. In Column 1, the sons of IRO random and IRO other movers earn 6-7 percent more than IRO sons resettled in other years.

It is of further interest that sons resettled around the time of their birth appear to earn slightly more than the sons of men who stayed New York: this is the only IRO group to exhibit this pattern. These effects persist even after controlling for the initial convergence of fathers up to 1920, and are even more pronounced when the OCCSCORE of fathers in 1920 is dropped from the analysis (not shown).

There is some limited evidence that resettlement around the time of birth has other effects on sons' outcomes. For example, these sons exhibit higher levels of school completion. These are, however, not statistically significant. Sons who moved around birth also appear to be slightly more likely to move SEA between 1920 and 1940. Effects on the probability of marrying a Jewish woman are weak in all analyses.

These age of resettlement effects are some of the only directly observable influences of the IRO that persist into the second generation. One explanation for these effects is that these sons were more exposed to assignment locations during particularly formative years. Large Northeastern cities were particularly harmful for young children at this time (Alsan & Goldin, 2015). Thus, a possible hypothesis for these earnings differences could be that resettlement in early childhood benefited sons through exposure to healthier environments, before their parents subsequently moved from the assignment location and back to places providing economic opportunity.

6. Concluding remarks

In this article, we constructed a new intergenerational sample of Jewish households in the early twentieth century and used records from an immigrant resettlement program to study how enclaves affect immigrants and their children, and the motivations underlying patterns of immigrant settlement. The effects of this program during the Age of Mass Migration is not only of historical interest but also provides a rare opportunity to study the effect of enclaves in a US context.

We found that Jewish households in relatively poor economic circumstances made progress by leaving New York City through the IRO program. Although most participating households left their initial assignment location, these households appear to have been reluctant to return to New York even though the earnings of other Jewish New Yorkers were relatively high in this period. These findings suggest that households struggling to adjust to life in New York benefited from either being connected to other locations or by receiving a nudge to leave the city through small incentives offered by the IRO program. The economic progress experienced by these households occurred with limited constraints on subsequent migration, which is a point of departure from many immigrant and refugee resettlement programs today.

The program helped us identify what factors attracted immigrants to cities during this period and how place characteristics affected economic assimilation. Although households benefited from participation in the IRO program, the higher retention rates of more Jewish, population dense and higher income assignment locations suggest that these characteristics were highly valued, even by households who decided to leave New York.

Cities appear to have been beneficial for the earnings of the immigrant the second generation. In addition to finding high average earnings among Jewish households in New York, participants resettled to more urban locations appear to have earned more and completed more years of schooling. This said, we also find evidence of beneficial effects for children exposed to assignment locations at very young ages. This suggests that while cities provided greater economic opportunity, they may have imposed costs on early childhood development.

7. Tables and figures

Table 1. Description of variables

	IRO other		IRO random		Jewish in New York in 1910		Jewish outside New York in 1910	
	1	2	3	4	5	6	7	8
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
IRO participants & other Jewish immigrants								
Age at first observation	26.51	5.86	26.72	5.74	28.6	6.45	29.59	6.44
Age in 1920	38.33	7.54	37.78	6.86	38.6	6.45	39.59	6.44
Year arrived in the US	1902	7.97	1903	7.53	1900	7.12	1898	8.14
Year of participation in IRO	1908	4.58	1909	3.55	-	-	-	-
Moved before age 28	0.61	0.49	0.60	0.49	-	-	-	-
Jewish index of name	1.74	0.29	1.74	0.29	1.81	0.15	1.74	0.17
Party size: one	0.78	0.42	0.84	0.37	-	-	-	-
Party size: two	0.05	0.21	0.04	0.20	-	-	-	-
Party size: more than two	0.13	0.34	0.12	0.33	-	-	-	-
Lived in LES	0.48	0.50	0.47	0.50	0.44	0.50	-	-
Occscore base	24.14	4.81	24.38	4.74	26.83	8.87	26.35	9.77
Occscore 1920	28.96	10.26	29.10	10.06	29.56	10.10	29.08	10.36
Homeowner in 1920	0.21	0.41	0.19	0.39	0.17	0.37	0.29	0.45
Citizen or in process in 1920	0.74	0.74	0.74	0.44	0.77	0.42	0.80	0.40
New York resident in 1920	0.42	0.49	0.43	0.50	0.63	0.48	0.24	0.43
N	2440		2,165		11,822		10,194	
Sons								
Age in 1940	30.50	5.05	29.95	5.17	30.60	5.24	30.85	5.14
Father's occscore 1920	28.86	10.23	28.78	10.20	28.84	10.12	28.62	10.78
Occscore 1940	30.34	12.64	30.71	12.96	31.31	13.10	30.69	12.81
School years completed	11.38	2.92	11.54	3.06	11.56	3.18	11.39	3.19
Moved SEA from 1920 to 1940	0.38	0.49	0.40	0.49	0.27	0.45	0.37	0.45
New York resident in 1940	0.34	0.47	0.39	0.49	0.55	0.50	0.20	0.40
Jewish index of wife's first name	0.53	0.33	0.45	0.32	0.55	0.50	0.45	0.32
N	766		638		4,344		4,088	

Table 2. SEA characteristics from ITT sample of kids

		IRO other (assignment)		IRO random (assignment)		Jewish in New York (1910 census)		Jewish outside New York (1910 census)	
		1	2	3	4	5	6	7	8
1	Assignment characteristics	Mean	SD	Mean	SD	Mean	SD	Mean	SD
2	Average occscore of SEA	19.24	3.34	19.57	3.00	19.04	0	19.29	2.74
3	HS grad shr of SEA (1890-99 chrts)	0.28	0.06	0.28	0.05	0.29	0	0.29	0.07
4	Population density (people per m^2)	0.21	0.21	0.24	0.20	1.12	0	0.29	0.31
5	Share Jewish	0.01	0.01	0.01	0.01	0.03	0	0.02	0.01
6	Distance from NY (100 km)	13.68	9.20	12.59	7.87	0	0	5.34	8.38
7	Share outside assigned/original SEA	0.87	0.31	0.92	0.27	0.37	0.48	0.64	0.48
8	Number of SEAs covered	119		45		1		186	
9	N	1,404		638		4,344		4,088	

Table 3. Program outcomes: occupation & residential outcomes

	(1) occscore base period (ln)	(2) occscore in 1920 (ln)	(3) son's occscore in 1940 (ln)
Reference: Jewish inside NY in 1910			
IRO (other)	-0.08***	0.003	-0.025
	(0.008)	(0.009)	(0.02)
IRO (random)	-0.07***	0.009	-0.0091
	(0.009)	(0.009)	(0.02)
Jewish outside NY in 1910	-0.04***	-0.02***	-0.019**
	(0.005)	(0.005)	(0.01)
Constant	3.17***	3.01***	2.85***
	(0.012)	(0.024)	(0.14)
		In New York in 1920	Son in New York in 1940
Reference: Jewish inside NY in 1910			
IRO (other)	-	-0.20***	-0.20***
		(0.011)	(0.02)
IRO (random)	-	-0.19***	-0.15***
		(0.011)	(0.02)
Jewish outside NY in 1910	-	-0.38***	-0.34***
		(0.006)	(0.01)
Constant	-	0.86***	0.85***
		(0.269)	(0.18)
Observations	25697	26592	9572
FE	fath. AY, fath. age	fath. AY, fath. age	fath. AY, son's age
Controls			fath. age, fath. age obs.

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01

Note: The base period occupation is observed in the IRO records for IRO participants and in the 1910 census for other Jewish comparison groups. The 1920 occupational score is observed after the program in the 1920 census and the occupations of sons are drawn from the 1940 census.

Table 4. Program effects: other assimilation outcomes

	Immigrant outcomes in 1920		Son's outcomes in 1940	
	(1) homeowner	(2) citizen or in process	(3) School years completed	(4) jewishness of wife's fname
Reference: Jewish inside NY in 1910				
IRO (other)	0.069***	0.044***	-0.066	0.017
	(0.01)	(0.01)	(0.13)	(0.02)
IRO (random)	0.051***	0.044***	0.10	-0.0033
	(0.01)	(0.01)	(0.13)	(0.02)
Jewish outside NY in 1910	0.10***	0.018***	-0.056	-0.058***
	(0.01)	(0.01)	(0.07)	(0.01)
lived in LES	-0.0095	-0.012*	-0.16**	-0.022*
	(0.01)	(0.01)	(0.08)	(0.01)
jewishness of fath. name (ln)	-0.065***	0.010	0.91***	0.13***
	(0.01)	(0.01)	(0.09)	(0.01)
occscore before removal (ln)	0.0032	0.028***	0.66***	0.013
	(0.01)	(0.01)	(0.09)	(0.01)
Constant	0.044	0.20	9.27***	-0.0037
	(0.24)	(0.24)	(1.13)	(0.17)
Observations	25432	24570	8859	4790
FE	fath. AY, fath. age	fath. AY, fath. age	fath. AY, son's age	fath. AY, son's age
Controls	fath. age obs.	fath. age obs.	fath. age, fath. age obs.	fath. age, fath. age obs.

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01

Note: Col. 1-2 refer to the outcomes of immigrants in 1920 and col. 3-4 refer to the outcomes of their sons. Each of these outcome variables are drawn from the census.

Table 5. Predicting IRO migration from assignment location by local characteristics

	IRO (random)		IRO (other)	
	(1)	(2)	(3)	(4)
	Returned to NY	Moved SEA	Returned to NY	Moved SEA
average occscore of SEA	0.79*	0.76*	0.79**	0.77**
	(0.11)	(0.11)	(0.09)	(0.08)
HS grad shr of SEA (1890-99 chrts)	0.20	0.38	0.042	0.051
	(0.49)	(0.93)	(0.09)	(0.10)
pop density (ln)	0.69**	0.70**	0.76**	0.73***
	(0.10)	(0.10)	(0.08)	(0.08)
share jewish (sd)	0.71***	0.75***	0.83*	0.82**
	(0.08)	(0.08)	(0.08)	(0.08)
distance from NY (100 km)	0.73**	0.66***	0.86	0.88
	(0.11)	(0.10)	(0.11)	(0.11)
lived in LES	1.32	1.16	1.40*	1.27
	(0.28)	(0.24)	(0.24)	(0.22)
occscore before removal (ln)	1.20	1.58	1.16	1.12
	(0.50)	(0.66)	(0.42)	(0.40)
jewishness of name	1.49	0.78	1.72*	0.90
	(0.52)	(0.27)	(0.50)	(0.25)
moved before age 28	2.23**	1.98**	1.08	0.99
	(0.73)	(0.64)	(0.31)	(0.28)
Party size: two	0.76	1.25	0.35***	0.37***
	(0.43)	(0.69)	(0.10)	(0.11)
Party size: more than two	0.50***	0.48***	0.47***	0.38***
	(0.13)	(0.13)	(0.10)	(0.08)
Observations	2043	2043	2091	2091
Controls	fath. AY, fath. age, fath. age obs.	fath. AY, fath. age, fath. age obs.	fath. AY, fath. age, fath. age obs.	fath. AY, fath. age, fath. age obs.

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01

Note: this sample includes IRO participants only. The characteristics of these assignment State Economic Areas are measured in the 1920 census and refer to the locations to which IRO participants were assigned. Average occscore of SEA refers to the average male occscore of an SEA in 1920. HS grad shr of SEA (1890-99 chrts) refers to the share of people living in an SEA in 1920 and born in the 1890-1899 birth cohorts who completed high school (schooling variable observed from the 1940 census). Pop density (ln) measures the natural log of the SEA population per square kilometer of the 1920 SEA. Share Jewish (sd) refers to the Jewish share of the SEA in 1920 transformed into standard units: a one unit increase in the Jewish share corresponds to a one standard deviation increase. Distance from NY measures the distance of the SEA of assignment from the SEA incorporating New York City in 1920; this variable is standardized to be in 100s of kilometers.

Table 6. Effect of assignment location on outcomes of sons

	(1) occscore in 1940 (ln)	(2) School years completed	(3) son moved SEA 1920-40	(4) jewishness of wife's fname
Jewish outside New York in 1910				
father's occscore in 1920 (ln)	0.23***	1.89***	-0.0039	0.031*
	(0.02)	(0.12)	(0.02)	(0.02)
average occscore of SEA	0.0068	0.065	0.0013	-0.0048
	(0.01)	(0.05)	(0.01)	(0.01)
HS grad shr of SEA (1890-99 chrts)	0.24**	2.81***	0.079	-0.0059
	(0.10)	(0.72)	(0.13)	(0.11)
pop density (ln)	0.0100	0.087*	-0.020**	0.013*
	(0.01)	(0.05)	(0.01)	(0.01)
share jewish	0.066	-3.78	-3.02***	0.86
	(0.72)	(5.36)	(0.94)	(0.83)
distance from NY (100 km)	-0.0038	0.043	-0.023**	-0.014
	(0.01)	(0.06)	(0.01)	(0.01)
Observations	3527	3537	3595	1913
IRO (other)				
father's occscore in 1920 (ln)	0.15***	0.48*	0.044	-0.060
	(0.04)	(0.27)	(0.05)	(0.05)
average occscore of SEA	0.0089	-0.023	-0.0013	0.013
	(0.01)	(0.09)	(0.02)	(0.02)
HS grad shr of SEA (1890-99 chrts)	-0.055	-0.31	-0.14	-0.56
	(0.36)	(2.60)	(0.48)	(0.48)
pop density (ln)	0.040**	0.22*	-0.018	0.0049
	(0.02)	(0.13)	(0.02)	(0.02)
share jewish	-1.04	-4.52	-0.32	-2.94
	(2.08)	(14.85)	(2.76)	(2.64)
distance from NY (100 km)	0.043*	0.26	-0.036	0.00061
	(0.02)	(0.16)	(0.03)	(0.03)
Observations	650	653	659	342
IRO (random)				
father's occscore in 1920 (ln)	0.15***	1.02***	0.17***	0.0068
	(0.05)	(0.35)	(0.06)	(0.06)
average occscore of SEA	0.00030	-0.074	0.017	-0.019
	(0.02)	(0.12)	(0.02)	(0.02)
HS grad shr of SEA (1890-99 chrts)	-0.24	1.16	-0.66	0.049
	(0.44)	(3.29)	(0.56)	(0.58)
pop density (ln)	0.0012	0.20	-0.013	0.030
	(0.02)	(0.15)	(0.03)	(0.03)
share jewish	1.90	-1.24	-3.94	-1.33
	(2.36)	(17.68)	(2.96)	(3.15)
distance from NY (100 km)	0.021	0.13	0.022	-0.025
	(0.03)	(0.20)	(0.03)	(0.03)
Observations	539	537	544	278
FE	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age
Controls	fath. age, fath. age obs.	fath. age, fath. age obs.	fath. age, fath. age obs.	fath. age, fath. age obs.

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: this sample includes IRO participants only. The characteristics of these assignment State Economic Areas are measured in the 1920 census and refer to the locations to which IRO participants were assigned. See notes on Table 5 for description of assignment characteristics.

Table 7. Effect of program participation on sons born within a year of program participation

	(1) occscore in 1940 (ln)	(2) School years completed	(3) son moved SEA 1920-40	(4) jewishness of wife's fname
Reference: IRO (random) x moved within year of birth				
Jewish inside NY in 1910	-0.048	-0.25	-0.10**	-0.042
	(0.04)	(0.29)	(0.04)	(0.04)
IRO (other) x	-0.083**	-0.48	-0.014	-0.039
moved outside year of birth	(0.04)	(0.32)	(0.05)	(0.05)
IRO (other) x	-0.025	0.068	0.10*	-0.033
moved within year of birth	(0.05)	(0.39)	(0.06)	(0.05)
IRO (random) x	-0.070*	-0.38	0.013	-0.054
moved outside year of birth	(0.04)	(0.32)	(0.05)	(0.05)
Jewish outside NY in 1910	-0.063*	-0.41	-0.0057	-0.10**
	(0.04)	(0.29)	(0.04)	(0.04)
father's occscore in 1920 (ln)	0.18***	1.45***	0.0068	0.013
	(0.01)	(0.08)	(0.01)	(0.01)
Constant	2.26***	7.06***	0.70***	0.092
	(0.15)	(1.24)	(0.19)	(0.16)
Observations	8837	9006	9006	4723
Adjusted R2	0.075	0.068	0.020	0.031
FE	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age
Controls	fath. age	fath. age	fath. age	fath. age

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

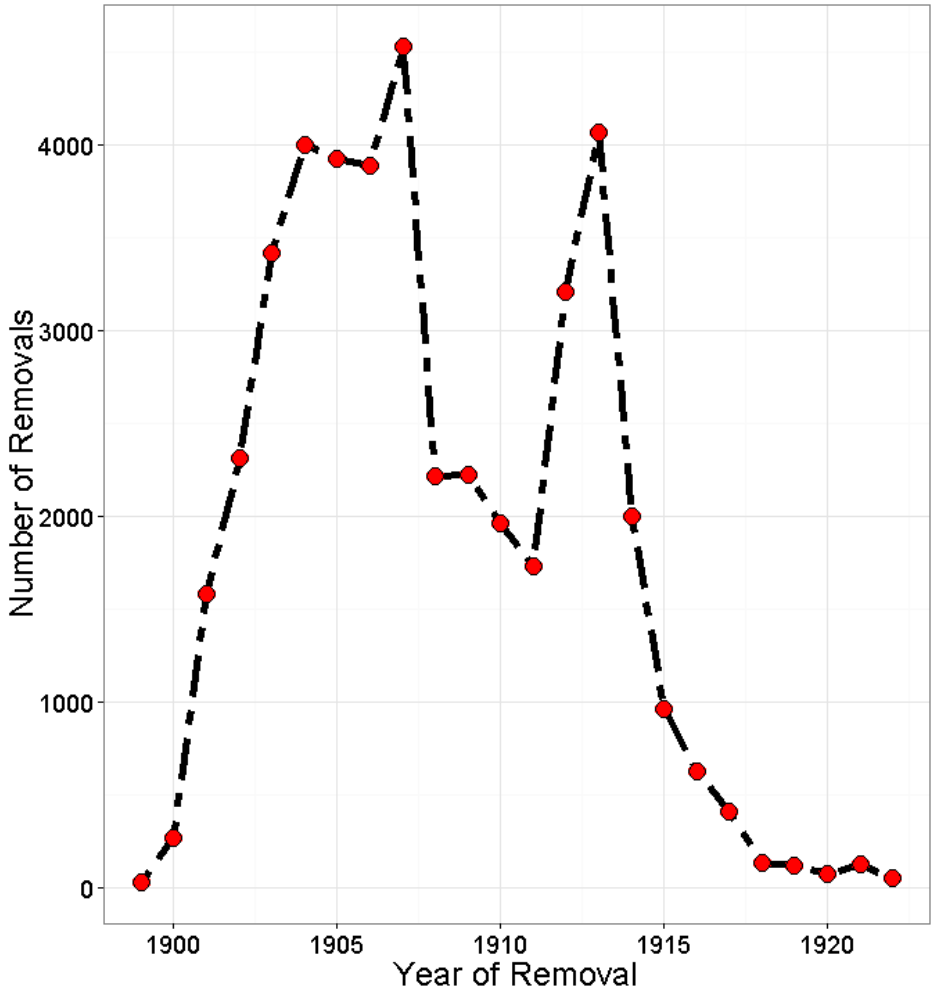

Figure 1. IRO removals by year

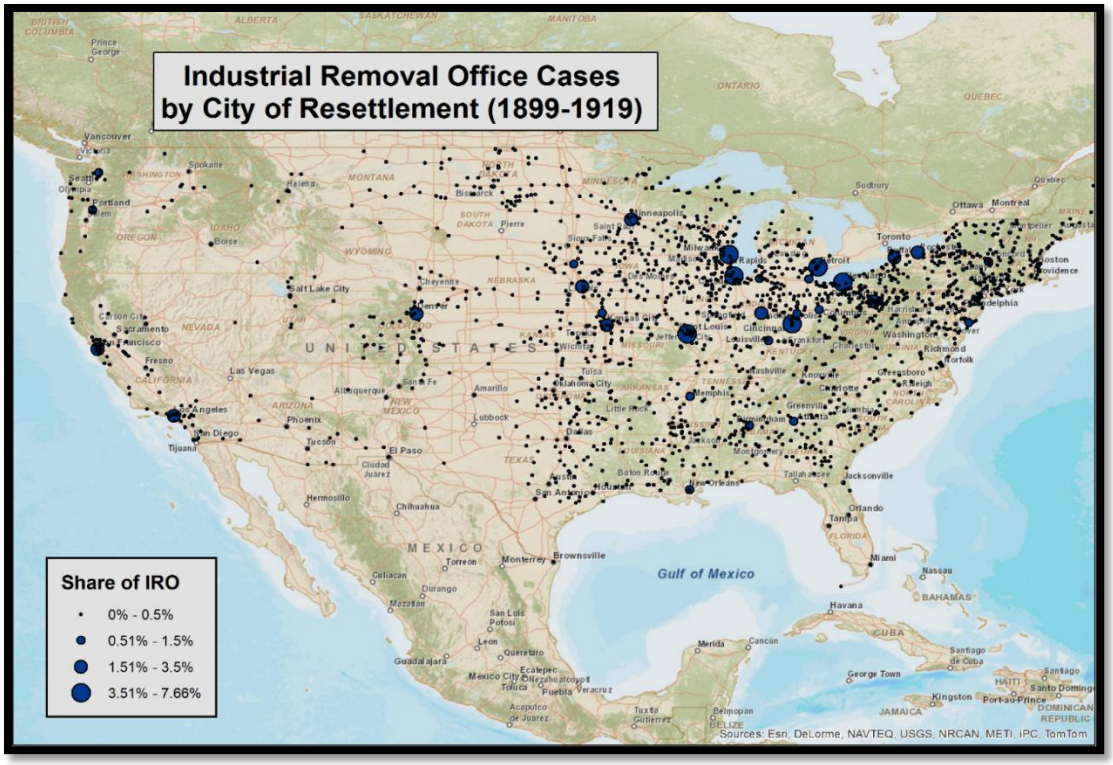

Figure 2. Share of IRO assignees by city of assignment

8. Appendix

Appendix Table 1. Robustness match to 1910 census

	(1) father's occscore 1910 census (ln)	(2) father's occscore 1910 census (ln)	(3) father's occscore 1910 census (ln)	(4) father's occscore 1910 census (ln)	(5) father's occscore 1920 census (ln)
IRO (other): removed before 1910	-0.024	-0.041	-0.064**	-0.047*	0.0089
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
IRO (other): removed 1910 or later	0.0085	0.023	0.0017	0.025	0.041
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
IRO (random): removed before 1910	-0.024	-0.033	-0.057**	-0.030	0.026
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
IRO (random): removed 1910 or later	-0.087**	-0.066*	-0.084**	-0.063*	0.027
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Jewish outside NY in 1910	-0.034***	-0.041***	-0.089***	-0.075***	-0.049***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	3.23***	3.20***	3.27***	3.23***	3.74***
	(0.00)	(0.37)	(0.37)	(0.36)	(0.35)
Observations	21965	21965	21965	21965	20722
FE	none	fath. age	fath. age, NY resident 1910	fath. age, NY resident 1910, fath. AY	fath. age, NY resident 1910, fath. AY

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: these are the occupational scores of IRO and non-IRO Jews from 1910 census. There are 600 IRO men in this sample. The occscores of individuals removed before 1910 are post-participation occupations or outcomes of the program. The occscores of individuals removed in 1910 or later refer to the occupations of men prior to program participation. These can be compared to the occupations reported in the IRO records (Table 3).

Appendix Table 2. Interactions based on whether father moved SEA between 1910 and 1920

	(1) father moved SEA 1910-20	(2) father's occscore in 1900 (ln)	(3) father's occscore in 1920 (ln)	(4) Son's occscore in 1940 (ln)	(5) School years completed
IRO (other)	0.48***	-0.063*	-0.00096	-0.072*	0.13
	(0.02)	(0.04)	(0.04)	(0.04)	(0.30)
IRO (random)	0.53***	-0.094*	-0.013	-0.011	0.35
	(0.02)	(0.05)	(0.06)	(0.05)	(0.41)
Jewish outside NY in 1910	0.27***	-0.025**	0.0062	-0.014	0.0054
	(0.01)	(0.01)	(0.01)	(0.01)	(0.09)
father moved SEA 1910-20		-0.045***	0.0059	-0.022*	-0.25***
		(0.01)	(0.01)	(0.01)	(0.09)
IRO (other) x		0.016	0.016	0.068	-0.19
father moved SEA 1910-20		(0.04)	(0.04)	(0.04)	(0.32)
IRO (random) x		0.062	0.027	0.013	-0.26
father moved SEA 1910-20		(0.05)	(0.06)	(0.06)	(0.43)
Jewish outside NY in 1910 x		0.0063	-0.038**	0.0021	-0.072
father moved SEA 1910-20		(0.02)	(0.02)	(0.02)	(0.13)
Constant	0.51	1.80***	1.80***	3.72***	16.0***
	(0.47)	(0.34)	(0.38)	(0.39)	(3.02)
Observations	9572	9282	9006	9384	9437
Adjusted R2	0.142	0.046	0.015	0.042	0.035
FE	fath. AY, fath. age	fath. AY, fath. age	fath. AY, fath. age	fath. AY, fath. age, son age	fath. AY, fath. age, son age
Controls	fath age obs.	fath age obs.	fath age obs.		

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01'

Appendix Table 3. Outcomes of son with census division fixed effects

	(1) occscore in 1940 (ln)	(2) School years completed	(3) son moved SEA 1920-40	(4) Jewishness of wife's fname
IRO (other)	-0.018	-0.11	0.13***	0.096***
	(0.02)	(0.17)	(0.02)	(0.02)
IRO (random)	-0.019	-0.11	0.17***	0.094***
	(0.02)	(0.17)	(0.02)	(0.02)
Jewish outside NY in 1910	0	0	0	0
	(.)	(.)	(.)	(.)
Constant	2.62***	14.0***	0.13	0.10
	(0.30)	(2.16)	(0.30)	(0.23)
Observations	5168	5264	5264	4127
Adjusted R2	0.084	0.056	0.060	0.063
FE	fath. AY, son's age, base cens. div.	fath. AY, son's age, base cens. div.	fath. AY, son's age, base cens. div.	fath. AY, son's age, base cens. div.
Controls	fath. age, fath. age obs.	fath. age, fath. age obs.	fath. age, fath. age obs.	fath. age, fath. age obs.

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01

	(1) occscore in 1940 (ln)	(2) School years completed	(3) son moved SEA 1920-40	(4) jewishness of wife's fname
IRO (other)	-0.0051	0.00066	0.14***	0.095***
	(0.02)	(0.15)	(0.02)	(0.02)
IRO (random)	0.025	0.20	0.19***	0.100***
	(0.02)	(0.15)	(0.02)	(0.02)
Jewish outside NY in 1910	0	0	0	0
	(.)	(.)	(.)	(.)
Constant	2.74***	11.8***	0.37**	0.39***
	(0.16)	(1.31)	(0.18)	(0.14)
Observations	5076	5171	5171	4051
Adjusted R2	0.050	0.040	0.044	0.041
FE	fath. AY, son's age, base cens. div.	fath. AY, son's age, base cens. div.	fath. AY, son's age, base cens. div.	fath. AY, son's age, base cens. div.
Controls	fath. age, fath. age obs.	fath. age, fath. age obs.	fath. age, fath. age obs.	fath. age, fath. age obs.

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01

Note: these tables include fixed effects for the SEA and census division of assignment. This is effectively a within assignment comparison between the sons of IRO participants and Jewish men outside of New York. The sons of IRO participants are significantly more likely to leave their SEA between 1920 and 1940, and are also more likely to marry non-Jewish women.

Appendix Table 4. Robustness analysis for age at removal of son

	(1) occscore in 1940 (ln)	(2) School years completed	(3) son moved SEA 1920-40	(4) jewishness of wife's fname
father's occscore in 1920 (ln)	0.13***	0.70***	0.086**	-0.030
	(0.03)	(0.21)	(0.04)	(0.04)
average occscore of SEA	0.0049	-0.012	0.018	-0.0053
	(0.01)	(0.08)	(0.01)	(0.01)
HS grad shr of SEA (1890-99 chrts)	-0.050	1.55	-0.77*	0.22
	(0.31)	(2.25)	(0.41)	(0.43)
pop density (ln)	0.019	0.27**	-0.019	0.012
	(0.01)	(0.11)	(0.02)	(0.02)
share jewish	2.03	-2.40	-1.69	-3.27
	(1.66)	(12.16)	(2.20)	(2.22)
distance from NY (100 km)	0.0096	0.24*	0.0079	-0.012
	(0.02)	(0.14)	(0.02)	(0.02)
age at removal of son	0.0091	0.069	-0.037	0.049
	(0.03)	(0.20)	(0.04)	(0.03)
average occscore of SEA # age at removal of son	-0.0036	0.00018	-0.0037	0.00085
	(0.00)	(0.02)	(0.00)	(0.00)
HS grad shr of SEA (1890-99 chrts) # age at removal of son	-0.043	-0.30	0.16	-0.21*
	(0.09)	(0.66)	(0.12)	(0.11)
pop density (ln) # age at removal of son	0.0042	-0.027	0.0043	0.0023
	(0.00)	(0.03)	(0.01)	(0.01)
share jewish # age at removal of son	-0.99*	-2.19	-0.38	0.71
	(0.52)	(3.81)	(0.68)	(0.63)
distance from NY (100 km) # age at removal of son	0.014**	-0.023	-0.0038	0.0055
	(0.01)	(0.05)	(0.01)	(0.01)
Constant	1.82***	7.32**	0.87	0.50*
	(0.40)	(2.92)	(0.53)	(0.26)
Observations	1189	1190	1203	620
Adjusted R2	0.067	0.058	0.025	0.008
FE	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age
Controls	fath. age	fath. age	fath. age	fath. age

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01

Note: this analysis is identical to Table 8 if sons are born after removal they were assigned a value of zero for their age at removal.

Appendix Table 5. Exposure to place characteristics based on age at removal of son

	(1) occscore in 1940 (ln)	(2) School years completed	(3) son moved SEA 1920-40	(4) jewishness of wife's fname
IRO all				
father's occscore in 1920 (ln)	0.13***	0.70***	0.088**	-0.027
	(0.03)	(0.21)	(0.04)	(0.04)
average occscore of SEA	-0.0035	-0.024	0.0053	-0.0050
	(0.01)	(0.07)	(0.01)	(0.01)
HS grad shr of SEA (1890-99 chrts)	-0.19	0.51	-0.52	-0.23
	(0.28)	(2.03)	(0.36)	(0.35)
pop density (ln)	0.030**	0.22**	0.0031	0.016
	(0.01)	(0.10)	(0.02)	(0.02)
share jewish	-0.16	-3.95	-2.65	-1.75
	(1.53)	(11.31)	(2.03)	(1.87)
distance from NY (100 km)	0.043**	0.22*	0.012	-0.0024
	(0.02)	(0.13)	(0.02)	(0.02)
age at removal of son	0.0077	0.031	0.0083	0.016
	(0.01)	(0.09)	(0.02)	(0.02)
average occscore of SEA x age at removal of son	-0.0024	-0.010	-0.0030	-0.00010
	(0.00)	(0.01)	(0.00)	(0.00)
HS grad shr of SEA (1890-99 chrts) x age at removal of son	-0.011	-0.11	-0.0034	-0.073
	(0.04)	(0.31)	(0.06)	(0.07)
pop density (ln) x age at removal of son	0.0040*	0.0017	0.0065**	-0.00071
	(0.00)	(0.02)	(0.00)	(0.00)
share jewish x age at removal of son	-0.45*	0.41	-0.24	0.20
	(0.25)	(1.83)	(0.33)	(0.37)
distance from NY (100 km) x age at removal of son	0.0069**	0.0013	0.0050	0.0018
	(0.00)	(0.02)	(0.00)	(0.00)
Constant	1.79***	7.28**	0.69	0.61**
	(0.40)	(2.94)	(0.53)	(0.25)
Observations	1189	1190	1203	620
Adjusted R2	0.063	0.055	0.025	0.004
FE	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age	fath. AY, son's age
Controls	fath. age	fath. age	fath. age	fath. age

Standard errors in parentheses* p < 0.10, ** p < 0.05, *** p < 0.01

Note: the effect of assignment characteristics on the outcomes of sons may depend on the number of years of exposure and also where the son is on the life-cycle. If sons were born after the year of removal, this value takes a negative number corresponding to how many years the son was born after the year of removal. For example, if a son was born five years after removal they would be assigned a value of "-5". Appendix Table 4 shows consistent effects if sons born after removal were assigned a value of zero.

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Chapter 5. The machines of opportunity or the engines of inequality? Regions and intergenerational mobility in the United States over the twentieth century

Abstract

Over the twentieth century, it became more difficult for children born to poorer parents to climb the socioeconomic ladder. This decline in upward mobility is now understood as a "local problem", which place-based policy may be well suited to address. No previous work, however, has studied the spatial persistence of local intergenerational outcomes or how susceptible places may be to change over time. This article uses a new linked sample of more than three million fathers and sons from the early twentieth century to study the geography of upward mobility in the past, and how local outcomes changed over the following 100 years. This article finds that the geography of intergenerational mobility changed substantially over the twentieth century: upward mobility declined sharply in regions historically specialized in manufacturing, and remained consistently low in areas with large Black populations. Upward mobility improved in places with institutions and characteristics favoring community cohesion and investment in public schooling. These findings indicate that local and regional development, and the interaction of these processes with wider structural economic change, is key to understanding upward mobility outcomes today.

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1. Introduction

Intergenerational mobility declined in the US over the twentieth century. Although the US once exhibited high levels of intergenerational mobility compared to other countries, this American advantage appears to have receded by the 1950s (Long & Ferrie, 2013). Intergenerational earnings growth has also stagnated since the mid-twentieth century: compared to their counterparts born 40 years previously, the children of the 1980s are half as likely to earn more than their parents (Chetty et al., Forthcoming). While there is much speculation as to why mobility has declined, the question remains open. As such, declining rates of intergenerational mobility present a pressing challenge for policy and threaten the "American Dream" as a cultural institution (Obama, 2013).

In addition to declining upward mobility, social scientists are finding large geographical disparities in intergenerational outcomes across the United States. Worded differently, the life chances of people with poorer parents depend heavily on *where* in the US one grows up (Chetty & Hendren, 2015). The rate of upward mobility in some American cities resembles that of high mobility countries such as Sweden and Denmark. Other parts of the US, in contrast, have lower upward mobility rates than any country with recorded data.[40] Upward mobility appears to be particularly sluggish in cities and neighborhoods with greater residential segregation and income inequality, lower family and community cohesion, and poorly funded school systems (Chetty, Hendren, Kline, & Saez, 2014a; Hilger, 2017; Sharkey & Faber, 2014; Shoag & Carollo, 2016). This new work has concluded that "intergenerational mobility is a local problem … that could potentially be tackled through place-based policies" (Chetty, Hendren, Kline, & Saez, 2014b, p. 1620).

I argue that understanding intergenerational mobility as a local problem requires greater attention to the historical development of cities and regions. Recent findings from Chetty et al. indicate that intergenerational mobility may not only be a product of local processes of segregation, schooling

investment or community cohesion, but also deeply rooted configurations of institutions, policy and inequality. The influence of the longue durée is suggested by the striking disparities in upward mobility across historically established US regions today: low upward mobility rates in the South and the formerly prosperous "Rustbelt" stand in sharp relief to the higher mobility regions of the Great Plains, the Northeast and the Pacific states. Thus, effectively grappling with intergenerational change requires that we study local level determinants of mobility *and* changes in upward mobility outcomes over time. In this vein, I ask two main questions:

1. Has the geography of intergenerational mobility changed over the twentieth century?
2. Are short-run determinants of intergenerational mobility predictive of long-run outcomes for future generations?

I answer these questions by comparing the rate of upward intergenerational mobility in the early and late twentieth century across 467 State Economic Areas (SEAs). I examine spatial persistence by studying how the geography of upward mobility has changed over the twentieth century. I complement this analysis by estimating how the characteristics of childhood locations predict upward mobility across SEAs in the early twentieth century, and by testing whether these initial SEA characteristics are also predictive of upward mobility for cohorts growing up in these locations 60 years later.

The geography of intergenerational mobility changed dramatically over the twentieth century. My historical estimates suggest a 10 percentile increase in the income rank of parents was associated with an average 3.2 percentile *increase* in the rank of children. When compared to Chetty et al.'s contemporary estimate of a 3.4 percentile increase in child's income rank, my estimate indicates that intergenerational mobility was slightly higher in the past.[41] A similar increase in the average

historical rate of intergenerational mobility or upward mobility for SEAs in the early twentieth century, however, is associated with 1-4 percentile *decrease* in an SEA's average mobility outcomes in the late twentieth century. Worded differently, while high income parents are more likely to have higher income children in both periods, SEAs which promoted upward mobility in the past are *less* likely to do so today. This may suggest that declining national rates of intergenerational mobility may have played out through local level declines in opportunity for low income families.

I also find that local determinants of upward mobility vary in the time horizon over which they promote upward mobility. Although SEAs historically specialized in manufacturing promoted upward mobility in the past, upward mobility was relatively low in these places in the later decades of the twentieth century. In contrast, SEAs which were formerly part of the Southern Confederacy or which had large Black populations in the early twentieth century consistently exhibit low rates of upward mobility. Finally, upward mobility has been stable or improving in places with institutions and policies favoring social cohesion and schooling, and in places with strong but diverse economic foundations.

This study contributes to rapidly growing fields concerned with geographical influences on intergenerational outcomes, and to studies of demographic change and regional development. Recent work highlights that racial, ethnic and class differences in economic outcomes vary by city and region (Boustan, 2016; Feigenbaum, 2015; Goodwin-White, 2016; Rothwell & Massey, 2015). Less is known, however, of why such spatial differences in mobility exist. Other studies have been tackled similar questions with respect to economic development by examining if historical institutional changes affect future development outcomes (Nunn, Qian, & Sequeira, 2017; Ottaviano & Peri, 2006; Rodríguez-Pose & von Berlepsch, 2014, 2015; Storper, Kemeny,

Makarem, & Osman, 2015) and how wider structural shifts have shaped societal inequality (Fischer & Hout, 2006; Goldin & Katz, 2009; Mare, 2016; Pfeffer, 2008). This article contributes to this diverse body of work by focusing attention on the long-run development of local differences in opportunity.

I arrived at these findings by combining new historical estimates of intergenerational mobility to analogous contemporary data. These historical estimates of intergenerational outcomes were derived from a new sample of over three million father and sons from the 1900 to 1915 birth cohorts, whom I observe in the 1920 and 1940 US census. I used this sample to estimate spatial differences in upward mobility and link these outcomes to contemporary data for the 1980 to 1982 birth cohorts published by the Equality of Opportunity Project.[42] I constructed the historical father-son sample by linking individuals across the restricted complete-count censuses of the United States using record linkage techniques (Abramitzky, Boustan, & Eriksson, 2012, 2014; Ferrie, 1996; Ruggles, Genadek, Goeken, Grover, & Sobek, 2015). In addition, I built a second highly conservative linked sample to mitigate potential bias due to false linkages (Bailey, Massey, & Henderson, 2016). Spatial differences in intergenerational mobility are consistent across the two samples and my results are robust to different linkage approaches.

2. Places and intergenerational mobility

2.1 Conceptual model of regional mobility outcomes

Until recently, most intergenerational mobility research has been at the national scale. The focus on differences between nations, and within nations over time, partly reflects limitations on data and evidence that industrial and post-industrial societies tend to develop similar systems of stratification and intergenerational mobility (Treiman, 1970, 1977). The availability of new intergenerational data sources, however, has helped highlight the great internal geographical

heterogeneity across the United States in mobility outcomes. This "local turn" in mobility scholarship requires that we explain how and why locales deviate from the national average.

Figure 1. Model of factors underlying contextual differences in intergenerational.

Figure 1 provides a conceptual model for understanding local deviations in intergenerational mobility. Diagram 1 presents a micro-level model for understanding intergenerational outcomes and change. Through social interaction and endowments, parents can influence the personal development of their children, and through housing and financial decisions, determine where their children go to school and with whom their children spend their time (Heckman, 2008; Johnson, 2014). The degree to which parental action and endowments affect life chances are also influenced by wider environmental factors. In this respect, neighborhood, city and regional contexts appear to be particularly important in mediating the transmission of status and income from parents to children (see Sharkey & Faber, 2014).

This micro-level model is reworked in Diagram 2 to help illustrate how aggregate intergenerational mobility outcomes may deviate from the national average over time. In similar fashion to families, places have internal endowments which may shape future aggregate socioeconomic outcomes. These endowments include a wide range of infrastructures, policies, institutions and population characteristics and the interaction of these characteristics is a primary force in producing local heterogeneity in outcomes (Combes, Duranton, & Gobillon, 2008; Farole, Rodríguez-Pose, & Storper, 2011).

How locales are situated in wider historical and geographical contexts also plays a key role in shaping local differences in intergenerational mobility. The relationship between the local and extra-local contexts has a two way effect, as people and capital move between places influencing

local availability and access to opportunity. There is ample historical evidence, for example, that migration can provide opportunities for arriving migrants but reduce opportunities for incumbents (Borjas, 2014; Boustan, 2016). More abstractly, local differences in intergenerational mobility are also contingent on the historical context in question. Local investment in public education, for example, may exert greater influence on upward mobility outcomes in contexts where knowledge intensive skills are better rewarded in the labor market. The nature of these interactions is particularly important for evaluating local differences over time. For this analysis, I categorize local characteristics into three groups: policy and institutions, economic development and socio-demographic structures. I describe how I operationalize these characteristics in Table 1 and in the sections that follow.

Table 1. Description of variables.

2.2 Description of variables

2.2.1 Economic development

Evidence on how economic development affects intergenerational mobility is mixed. Although the transition from an agricultural to an industrially oriented economy tends to be associated with increases in intergenerational mobility (Hout, 1989; Hout & Guest, 2013; Lipset & Bendix, 1959), there does not appear to be a consistent effect of 'later stage' economic development on intergenerational mobility (Breen, 1997; Erikson & Goldthorpe, 1992). Instead, it appears to be the *form* of economic and institutional development that counts, rather than, for example, the overall level of GDP per capita. Thus, I employ a diverse set of development indicators to capture the potentially heterogeneous effects of economic development on mobility outcomes.

I capture this economic diversity by focusing on industrial composition, population density, inequality and innovation. The relationship between economic specialization and intergenerational

mobility is not well understood. Manufacturing employment and related institutions, such as unions, appear to have provided opportunities for upward mobility in the past (Catron, 2016; Portes & Zhou, 1993; Waldinger, 2007), but today, manufacturing and upward mobility appear to hold a negative relationship (Kourtellos, Marr, & Tan, 2016; Rigby & Breau, 2008). Further, studies of the contemporary period suggest that dense urban areas with high average incomes provide greater opportunities for occupational advancement (Champion, Coombes, & Gordon, 2013; De la Roca & Puga, 2017; Fielding, 1992). These effects are, however, stronger in large service oriented urban economies. Given the growth in the service sector over recent decades, this relationship between the economic concentration of services and upward mobility may be unusually important in the contemporary context.

The effect of income inequality on intergenerational mobility is somewhat unclear. At local and national scales, there appears to be an inverse relationship between inequality and intergenerational mobility (Chetty, Hendren, Kline, & Saez, 2014a; Krueger, 2012). The mechanisms behind this relationship, however, are not well understood. Some argue that inequality and intergenerational mobility are indirectly related through underlying institutional arrangements or through political preferences toward redistribution (Alesina, Stantcheva, & Teso, 2017; Torche, 2015).[43] Again, the historical context is key here, as rising income inequality appears to be partly resultant from the increasing returns to skill in recent decades and concurrent limits on educational expansion (Goldin & Katz, 2009).

An argument to the contrary is that innovation drives the economy toward greater income inequality but also greater intergenerational mobility (Aghion, Akcigit, Bergeaud, Blundell, & Hemous, 2015). In this hypothesis, the creation of new technologies increases income inequality by means of returns to inventors and investors. The invention itself, however, leads to a process of

"creative destruction" – the replacement of old technologies with new technologies – which promotes intergenerational mobility. Aghion et al. point to the example of California, where income inequality and innovation have grown over the late twentieth century, and intergenerational mobility remains higher than across much of the rest of the US.

2.2.2 Policy, institutions and demography

Trust in communal institutions and reciprocal social networks appear to affect a wide variety of socioeconomic outcomes. These communal properties, broadly defined as "social capital", appear to be related to outcomes as diverse as health, teen pregnancy, crime and schooling attainment (Putnam, 2001, 2016). In the contemporary context, social capital is often measured through proxies such as voter turnout, church attendance or the number of social establishments. Putnam and others argue that social capital effects operate directly through beneficial forms of social influence, but also indirectly through community members being more willing to fund public goods and schools (see also Sampson, 2012). In the contemporary context, social capital also appears to be highly correlated with upward intergenerational mobility (Chetty, Hendren, Kline, & Saez, 2014a).

Communal properties have deep historical roots. States with higher levels of social capital have historically invested more readily in public high schooling and college (Goldin, 1998; Goldin & Katz, 2000, 1999). Goldin and Katz show these states to be mainly located in the Great Plains and on the West coast of the US, and were founded relatively late in US history. In addition to examining the year of statehood, I follow Portes & Vickstrom (2011) in using the historical Nordic share of the population as a proxy for social capital. Portes and Vickstrom and others argue that the formation of tight knit, ethnically homogenous and low inequality communities by Norwegian, Swedish, Finnish and Icelandic immigrants in northern US states with harsh climates, can account

for much of the patterns of associational life in the US today (see also Rupasingha, Goetz, & Freshwater, 2006). These communities in northern Michigan, Wisconsin, Minnesota and the Dakotas exhibit some of the highest levels of intergenerational mobility and social capital today.

Finally, the legacy of American slavery and race may have direct and indirect effects on intergenerational mobility. In addition to acute forms of discrimination throughout the US, the South has historically been limiting in terms of Black upward mobility (Boustan, 2016). In the contemporary context, limits on opportunity in the US South appear to hold for low income Black and non-Black families (Chetty, Hendren, Kline, & Saez, 2014a). This may partly reflect the institutional legacy in which individuals are less willing to invest in community resources and public education in places with greater racial segregation (Trounstine, 2015). These studies all indicate strong links between local histories of race and race relations and lower probabilities of upward mobility.

3. Sample construction and mobility estimates

I estimated historical intergenerational mobility from a sample of 3,669,739 father-son pairs linked between the 1920 and 1940 complete-count decennial censuses. This sample was used to estimate overall intergenerational mobility and upward mobility using a variety of metrics. These records were linked by finding individuals with unique first name, last name, age and places of birth combinations. As in most linked samples, these data contain some degree of error and individuals who have been incorrectly matched. To ensure this has not distorted the major findings of this article, I compare the preferred sample, which is matched with standard techniques ("full match") to a more conservatively constructed sample ("strict match"). The tests presented here suggest that these findings are robust to matching technique and to the use of different intergenerational mobility metrics.

3.1. Linkage of father-son sample from 1920 to 1940

Sons were linked to their fathers when both were observed in the same 1920 household. From these data I could observe a location of childhood for the son, as well as an occupation for the father in 1920. Sons were limited to US born men in the 1900 to 1915 birth cohorts, as these sons were old enough to have completed schooling and entered the labor force by 1940, but young enough to be co-resident with their fathers in 1920. The birth cohorts from 1916 to 1920 were excluded to reduce bias from differences in early-age mortality.

The full match sample of sons were linked between the 1920 and 1940 censuses using the iterative procedure employed by Abramitzky, Boustan, & Eriksson (2012, 2014). I linked individuals between the censuses using identical names, age and birthplaces. Full names were standardized using the *NYSIIS* algorithm to account for spelling differences and ages could vary by up to two years in cases where an individual with an exact match could not be found. Individuals who shared identical information with at least one other person were deemed ineligible for matching.

Recent evidence from Bailey et al. suggests that this iterative approach may be particularly sensitive to false linkages. This is challenging to confront as there is a trade-off between linkage accuracy and sample representativeness. To investigate whether false linkages may bias results from the full match, I relinked the sample using a matching criterion based on full names, with no phonetic standardization, and where individual's name, age and birthplace combinations were unique within a five-year age band in both 1920 and 1940. This highly conservative matching approach produced a sample with 47 percent fewer observations but a higher rate of confidence as to the validity of successful linkages.

I use these samples to examine intergenerational mobility with an OLS model of the following form:

$$(1)\, Y(OccRankingSon)_{1940j} = \beta_0 + \beta_1 OccRankingFather_{1920j_1} + \Sigma_{k=1..K}\beta_k X_k$$

where the outcome variable *OccRankingSon* refers to the occupational ranking or income measured in 1940 for a son in birth cohort j and $OccRankingFather$ refers to the within cohort ranking of the son's father as of 1920.

My preferred specification is based on a rank-rank elasticity of income. I use median based occupational earnings ("OCCSCORE") to rank occupations of fathers and sons. Although the 1940 census was the first year to ask questions about earnings, I prefer an OCCSCORE based measure as it is consistent within the two time periods and is available for all people reporting an occupation; self-employed people were not required to include an income. Similar to recent studies which use income ranks to achieve more stable intergenerational estimates, I use a ranked version of the OCCSCORE measure as it is easier to interpret. This ranking of the OCCSCORE measure is similar to other recent strategies which use income ranks to estimate intergenerational mobility (Chetty, Hendren, Kline, Saez, & Turner, 2014; Dahl & DeLeire, 2007). Appendix Figure 1 and Table 2 show that there is a strong correlation in the intergenerational elasticities (IGE) estimated directly from the OCCSCORE and from measures based on occupational ranks.

Differences in upward mobility are highly stable across the full and strict matched samples. Table 2 presents a variety of mobility metrics across different sample cuts. Specifically, the share of low income sons holding occupations in the top 20 percent of the national distribution refers to sons whose fathers held occupations in the bottom 60 percent of the distribution in 1920. The 60 percent cut off for father corresponds to employment in unskilled work, farming or agriculture labor at this time, while the top 20 percent mainly encompasses highly skilled industrial and white-collar

workers. The share upwardly mobile is around 14 percent in both columns, suggesting that the upward mobility rate is similar for each sample.

Table 2. Comparison of intergenerational *mobility outcomes across samples*

The full match, however, predicts slightly higher rates of overall intergenerational mobility than the strict match. Table 2 estimates intergenerational mobility across the two samples for sons classified as White, Black, sons with immigrant fathers, sons who moved from their childhood state, and sons with non-farming fathers. For the sample as a whole, a 10 percentage point increase in the income rank of fathers is associated with a 3.2 point increase for sons in the full sample, and a 3.5 point increase in the strict sample. The weaker association between fathers' and sons' income rank in the full sample suggests a higher average estimate of intergenerational mobility. This may be because false linkages bias the mobility estimate upward, or it may be that the true estimate of intergenerational mobility is higher for individuals with more unique characteristics and eligible for the strict match. Nonetheless, it is sufficient for this analysis that the difference in mobility outcomes are stable at 0.03 to 0.05 across all subsamples.

This bias may be concerning if there was a geographical bias between these samples, as this could affect upward mobility estimates at the SEA level. Figure 2 examines this by plotting the predicted income rank of sons with low income fathers and the within SEA IGE for the strict match and the full match. In each case, the measures are very highly correlated ($\rho = 0.94$-0.98) indicating that the SEA estimates of intergenerational mobility are stable across the two samples. The results presented in this analysis are, therefore, robust to differences in mobility metrics and to potential false matches. For the remainder of the analysis I use the full match and the rank based measure of intergenerational mobility, as they offer the greatest coverage of the population and are easier to interpret.

Figure 2. Comparison of SEA intergenerational mobility estimates across samples

4. Has the geography of intergenerational mobility changed over the twentieth century?

This section examines the persistence of upward mobility outcomes across SEAs between the early and late twentieth century. I begin by regressing intergenerational outcomes of the 1980 to 1982 birth cohorts for each SEA, on the outcomes of their counterparts from the 1900 to 1915 cohorts. This is specified as:

$$(2) \quad Y(social\_mobility\_SEA_{1980-82}) = \beta_0 + \beta_1 social\_mobility\_SEA_{1900-15_1} + \beta_2 Reg_2$$

where $social\_mobility\_SEA$ refers to either the intergenerational mobility or upward mobility of an SEA in the early or late twentieth century. These SEA measures refer to either the elasticity of income within a given SEA (intergenerational mobility), the predicted mean income of sons with low income fathers, or the national rank of an SEA based on its predicted mean income of sons (upward mobility). Reg refers to a set of regional fixed effects which are included to ensure that SEA differences are not driven by differences between the US South and the rest of the country. These estimates are presented in Table 3, where Models 1-3 represent the unrestricted estimates while Models 4-6 include regional fixed effects.

Table 3. Change in SEA intergenerational mobility rates

Column 1 of Table 3 suggests that SEAs with lower intergenerational mobility in the early twentieth century have higher intergenerational mobility today. Column 1 regresses the contemporary within SEA IGE on the historical equivalent. A decrease in the IGE of an SEA should be interpreted as an increase in intergenerational mobility, as it implies a weaker association between the income rank of parents and their children. In the models with and without fixed effects,

a one unit increase in the historical IGE is associated with a 0.12 decline in the contemporary IGE. That is, intergenerational mobility outcomes are negatively correlated across SEAs over time.

The estimates from the upward mobility measures in Columns 2 and 3 also suggest a weak or negative relationship in SEA intergenerational mobility over time. In the unrestricted model, there is no significant relationship between historical upward mobility and later upward mobility outcomes. With the inclusion of regional fixed effects, however, this relationship turns negative and the explanatory power of the model sharply increases. These models show a similar negative relationship between historical and contemporary outcomes once differences in the historical evolution of the four major US regions is accounted for. These estimates provide a picture far from spatial and temporal persistence in mobility outcomes: SEAs appear to have changed markedly in whether they promoted upward mobility or general intergenerational mobility over the twentieth century.

These associations appear to reflect patterns of both stability and change across the United States. To examine geographical change in upward mobility from the early to late twentieth century, I map the relative rank of each SEA based on the average predicted income of sons born to low income families.[44] SEAs are ranked with respect to mobility as it is challenging to directly interpret quantitative measures of change across these different data sources. The ranking of SEAs is based on the level of upward mobility within the national distribution as a whole. These rankings are presented in Figure 3, which shows the lowest to highest ranking SEAs with respect to upward mobility in the early twentieth century (Figure 3A) and the change in rank of SEAs between the early and late twentieth century based on the same measure (Figure 3B).

Figure 3. The changing geography of upward mobility over the twentieth century

Figure 3A shows large regional differences in upward mobility across SEAs in the early twentieth century. The lowest ranking SEAs are clustered throughout the South and in much of the Upper Midwest and the Great Plains. Many of these low mobility areas contained relatively large agricultural and mining labor forces at this time. Upward mobility was considerably higher in the Southwest, the Northeast and the industrial Midwest, and also throughout much of Florida. These patterns at least partially track overall levels of economic development across the US.

Figure 3B suggests that much of the *change* in upward mobility over the twentieth century appears to be driven by the relative ascendancy of the Great Plains and the Upper Midwest, and the relative decline of the formerly high mobility areas discussed above. This is evident from the large average increase in the rank of SEAs in the middle of the country. The greatest fall in the upward mobility ranking of SEAs is in the industrial Midwest and areas of the Southwest. The South stands in contrast to both of these scenarios, as upward mobility was low in the past, and remained stable or even declined over the twentieth century.

5. Are short-run determinants of intergenerational mobility predictive of long-run outcomes for future generations?

Do the characteristics predictive of upward mobility for one period or cohort also predict upward mobility for future cohorts in the same locales? This question has important implications for understanding mobility processes and designing policies to improve upward mobility outcomes. I begin by examining the determinants of upward mobility in the early twentieth century before proceeding to test for relationships between these historical SEA characteristics and later outcomes.

5.1. SEA effects on 1900 to 1915 cohorts

I examine the effect of SEA characteristics on upward mobility in the early twentieth century with the following specification:

$$(3) \quad \ln\left[\frac{top\ fifth_{1940}}{1 - top\ fifth_{1940}}\right] = \beta_0 + \beta_1 SEA\_characteristics_{1920_1}$$

where a logit model is used to examine the odds of a son with a father in the bottom 60 percent reaching the top fifth of the income distribution. The effect of $SEA\_characteristics$ on later outcomes is estimated separately for three populations: US born White, US born Black and the children of immigrants. To compare estimates across these groups, which have different average upward mobility rates, Figure 4 presents these estimates as odds ratios. Odds ratios greater than one indicate higher chances of upward mobility and value less than one indicate less upward mobility.

Figure 4. The effect of SEA characteristics on upward mobility

Figure 4 indicates that living in an SEA with a stronger economy improved sons' chances of upward mobility in the past. While a standard deviation increase in the manufacturing share of the SEA labor force is associated with a 1-5 percentage point increase in the odds of upward mobility, growing up in a highly developed or innovative SEA, as indicated by average income or patent productivity, is associated with up to a 10-percentage point increase. The US born Black population, which tended to have a low rate of upward mobility overall, tended to benefit more from living in more innovative cities.

Institutions and policies appear to have large but heterogeneous effects on upward mobility. Growing up in a Confederate state is associated with lower rates of upward mobility for everybody, and particularly so for Black sons. Although the year of statehood (linked to social capital) has a modest effect on upward mobility, a standard deviation increase in the high school graduation share is associated with a 10-percentage point increase in the odds of upward mobility for US born

whites. This suggests that the expansion of schooling was a particularly important local resource for historical intergenerational mobility.

The socio-demographic characteristics suggest that people tended to be more upwardly mobile in places with smaller shares of own group members. Black upward mobility is considerably lower in SEAs with large Black shares. Moreover, Black upward mobility is higher in SEAs with greater population density. These results are consistent, as the Black population tended to live in more sparsely populated SEAs. Likewise, upward mobility tends to be lower among the children of immigrants in areas with larger foreign born population, and White upward mobility tends to be higher in SEAs with larger foreign born and Black populations.

5.2. Correlation of SEA effects between 1900-1915 and 1980-1982 cohorts

Do these historical SEA characteristics correlate consistently with the upward mobility of future generations? Figure 5 plots the correlation of the predicted income rank of sons with low income fathers for the 1900-1915 and 1980-1982 cohorts against each variable of interest. These raw correlations provide an initial overview of how upward mobility varies with baseline 1920 SEA characteristics.

Figure 5. The correlation of SEA characteristics and upward mobility

Factors associated with economic development, schooling and urbanization appear to be positively associated with upward mobility in the 1900-1915 cohorts but are neutrally or negatively correlated with upward mobility in the 1980-1982 birth cohorts. Upward mobility in the early twentieth century is correlated with average income, share in manufacturing, patent productivity, population density and the high school graduation rate at a level of 0.5 or above. For later cohorts, however, these correlations tend to be either weak or negative. This suggests that the historical

economic foundations of SEAs are not predictive of later mobility outcomes. Interestingly, income inequality and share Nordic hold a relationship to the inverse: they are weakly correlated with upward mobility in the past but positively correlated for the outcomes of the 1980-1982 cohorts.

The only SEA characteristics with stable effects on upward mobility across the two periods relate to race and immigration. Having a large foreign born share is positively correlated with upward mobility in the early and late twentieth century, while the share Black and Confederate membership predict less upward mobility in both periods. Taken together, these results suggest that institutional and socio-demographic characteristics may have more persistent effects over time than characteristics strictly related to economic development.

5.3. Modelling SEA changes in upward mobility from 1900-1915 to 1980-1982 cohorts

Although these associations provide an initial overview of how SEA characteristics relate to the evolution of upward mobility outcomes, many of these SEA characteristics are correlated with one other (e.g. population density, average income, patent productivity and manufacturing share). As a result, it is challenging to draw direct conclusions from which characteristics predict stability or change in upward mobility outcomes over time. I explore this with a regression specified as:

$$(4) \quad Y(SEA\_Rank)_{1980-82} = \beta_0 + \beta_1 SEA\_Rank_{1900-15} + \beta_2 SEA\_characteristics_{1920_2} + \beta_3 Reg_3$$

where the outcome variable $SEA\ Rank_{1980-82}$ refers to the national rank of the SEA in terms of its upward mobility outcomes in the 1980 to 1982 birth cohorts. $SEA\ Rank_{1900-15}$ is a control variable for the initial rank of the SEA based on the 1900 to 1915 cohorts, $SEA\_characteristics$ refer to the SEA level variables of interest and Reg refers to a set of regional fixed effects.

Table 4. Predicting change in upward mobility rank of SEA

The effect of SEA characteristics on the upward mobility rank of the SEA in the late twentieth century are presented in Table 4. The economic, institutional and socio-demographic characteristics are added sequentially from Column 1 to 3, where the effects of each variable of interest is presented in their standardized form, where one unit represents a standard deviation. It is notable that the Adjusted R^2 value rises from 0.166 in Column 1 which contains only baseline economic controls and the historical rank of the SEA, to 0.585 after controlling for institutional and socio-demographic differences. The share of explained variance increases to 0.65 once the regional fixed effects are included in Column 4. This suggests that historical measures of economic development capture only a small share of the determinants of future upward mobility outcomes.

The historical specialization of SEAs in manufacturing can account for much of the change in upward mobility based on economic development indicators. Column 1 shows that a standard deviation increase in an SEA's share of manufacturing employment in 1920 predicts a 43 place decrease in the national rank of an SEA based on its upward mobility for the 1980-1982 birth cohorts. Population density is also associated with significant declines in upward mobility, suggesting that upward mobility has declined in dense, industrial areas over the twentieth century. Once institutional controls are added in Column 3 and 4, increases in historical average income, patent productivity and income inequality are associated with stability or modest improvements in relative upward mobility outcomes.

Characteristics related to race, institutions and policy all appear to have had strong influences on upward mobility outcomes. Column 2 and 3 show that SEAs that were formerly part of the Southern Confederacy experienced large declines in upward mobility outcomes. This effect weakens in Column 4 with the inclusion of regional fixed effects, which includes a dummy variable for the South. It is notable that with all of these controls included, the share Black of the SEA

continues to predict around a 55 rank decline in relative upward mobility outcomes. This suggests that the influence of race and slavery on upward mobility outcomes is more granular and far reaching than that implied by the US South as a whole.

The positive effect of social capital indicators on later upward mobility outcomes strengthen with regional fixed effects. In Column 4 a standard deviation increase in the year of statehood or the share Nordic born are associated with a 20-rank increase in upward mobility outcomes for the 1980-1982 cohorts. Although the high school graduation rate from 1890 to 1899 is associated with weak effects on future upward mobility, it may be that the measurement of this variable in the late nineteenth century and its encompassing of both public and private schooling, may not adequately capture the locations where public education expanded in later decades. Nonetheless, the historical indicators of social capital are associated with improvements in mobility outcomes over the twentieth century.

Two main conclusions can be drawn from this analysis. First, earlier waves of economic development do not necessarily translate into long-run improvements in upward mobility outcomes. Although the full array of economic and urbanization related characteristics were associated with upward mobility in the past, these influences are weak or negatively associated with upward mobility in the contemporary context. It appears that much of this effect is driven by the decline of upward mobility in historically urban and industrial SEAs. Overall, this suggests that economic opportunity may provide a short-run boost to upward mobility but the longevity of these influences may depend on the specific *form* of economic development.

The second implication is that the social and institutional characteristics of places appear to have lasting effects on upward mobility which can be salient in one period but recessive in others. These lasting effects are evident in the persistence of low upward mobility in the US South and in areas

with large Black populations. In other cases, historical indicators of social capital and communalism appear to have negligible effects on upward mobility in the past, but have relatively strong effects on contemporary mobility patterns. The combination of these findings point to durable local characteristics, which may become more or less salient over time with changes in broader economic and societal transformations.

6. Concluding remarks

Although intergenerational mobility has declined over the twentieth century, the rate of change across the United States appears to have been highly uneven. In this article, I have taken a historical approach to the "local problem" of intergenerational mobility. I examined the persistence of upward mobility outcomes over the twentieth century and found that the twentieth century was characterized by a great deal of local change. The upward mobility experiences of earlier cohorts in particular places tend to be poor predictors of later outcomes, and often these experiences are negatively related over time. To illustrate this, I estimate that a 10-percentage point increase in local upward mobility for the 1900-1915 birth cohorts is associated with up to a two-percentage point *decline* for the 1980-1982 cohorts.

In addition, I find that particular place-level characteristics may be associated with greater upward mobility in the short-run but predict poorer outcomes for future cohorts. This is most notable for denser cities and places historically specialized in manufacturing, which are associated with upward mobility in the past but predict declining mobility outcomes over the twentieth century. Conversely, proxies for institutions favoring social capital and schooling investment predict low rates of upward mobility in the past but greater upward mobility in the contemporary context. Together, these two findings are consistent with skill-biased technological change in the American

economy, where production and economic opportunity shifted away from manufacturing intensive employment to an economy focused on human capital intensive production.

This article complements recent studies highlighting the local nature of intergenerational mobility. These findings contribute to this new work by first underlining that local intergenerational mobility outcomes need to be understood in terms of the long run development of places. This has important implications because if, for example, social capital is the product of historical forces which are deeply enmeshed in the histories of places, it may be exceedingly challenging for policy interventions to try and foster such communal properties (Portes and Vickstrom, 2013). In addition, dynamic change in the salience of local effects on upward mobility over time suggests that further work is required to understand the contingency of these influences on particular historical moments and geographic contexts.

7. Tables and figures

Table 1. Description of variables

	Variable	Description	N	Mean	SD	Min	Max
Individual & family background	White		3669739	0.94	0.24	0	1
	Father is immigrant		3669739	0.15	0.35	0	1
	Father is farmer		3669739	0.35	0.48	0	1
	Moved state 1920-1940		3669739	0.25	0.43	0	1
Stratification measures	Top fifth in 1940	Sons holds occupation in top 20 percent of occupational distribution.	3669739	0.20	0.4	0	1
	Father in bottom 60 percent	Father holds an occupation in agricultural or low skilled urban occupation in 1920.	3669739	0.60	0.49	0	1
	Father's rank	National rank in 1920	3669739	0.50	0.29	0	1
	Son's rank in cohort	National rank in 1940	3669739	0.50	0.28	0	1
Economic development	Average income	Average OCCSCORE of SEA in 1920	3669739	22.9	3.66	16.27	28.47
	Share in manufacturing	Share of household heads employed in manufacturing in 1920	3669739	0.07	0.05	0.01	0.21
	Gini coefficient	Level of inequality based on OCCSCORE distribution in 1920	3669739	0.22	0.03	0.15	0.31
	Patent productivity	Ratio of people to patents from Petralia, Balland, & Rigby (2016)	3669739	0.01	0.01	0	0.02
	Population density	Population density in 1920	3669739	0.14	0.28	0	2.76
Policy and institutions	High school grad. rate	The share graduated from high school in the 1890 to 1899 census (calculated from 1940 census)	3669739	0.24	0.07	0.07	0.43
	Confederate state	Member of the Southern Confederacy	3669739	0.33	0.47	0	1
	Year of statehood	Year of state establishment	3669739	1822	34	1787	1912
Socio-demographic	Share foreign born	Share foreign born in 1920	3669739	0.12	0.11	0	0.42
	Share Nordic born	Share Nordic born in 1920	3669739	0.01	0.03	0	0.18
	Share Black	Share Black in 1920	3669739	0.08	0.13	0	0.77

Table 2. Comparison of intergenerational mobility across samples

	Sample 1 ***(full sample)***		***Sample 2*** ***(strict sample)***	
Sample of sons	3,669,739		2,101,241	
Sample of fathers	2,940,473		1,776,241	
Match rate of sons	33%		19%	
Low income sons in top 20% in 1940	14%		14%	
	IGE (rank)	IGE (occscore)	IGE (rank)	IGE (occscore)
All	0.32	0.26	0.35	0.30
White	0.30	0.25	0.34	0.29
Black	0.15	0.12	0.20	0.16
Children of immigrants	0.30	0.24	0.34	0.28
Moved state 1920-1940	0.35	0.29	0.39	0.32
Outside farming	0.23	0.17	0.26	0.19

Table 3. Change in SEA intergenerational mobility rates

		1 Within SEA intergenerational elasticity (IGE)	2 Absolute upward mobility	3 National rank of region
Model 1-3	Estimate	-0.12**	-0.03	-0.02
		(0.04)	(0.03)	(0.04)
	Constant	0.36***	3.87***	214.1***
		(0.01)	(0.12)	(11.56)
	N	467	467	467
	R^2	0.01	0.02	0.01
	Fixed Effects	None	None	None
Model 4-6	Estimate	-0.19**	-0.29***	-0.38***
		(0.04)	(0.03)	(0.04)
	Constant	0.37***	4.83***	299.9***
		(0.01)	(0.12)	(10.99)
	N	467	467	467
	R^2	0.38	0.35	0.35
	Fixed Effects	Region	Region	Region

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Predicting change in upward mobility rank of SEA

	(1)	(2)	(3)	(4)
	SEA Rank (1980-82)	SEA Rank (1980-82)	SEA Rank (1980-82)	SEA Rank (1980-82)
SEA Rank (1900-15)	0.12	-0.070	-0.25***	-0.13*
	(0.08)	(0.07)	(0.07)	(0.07)
Average Income	10.4	37.6***	29.0**	15.8
	(11.73)	(11.19)	(9.75)	(9.04)
Share in Manufacturing	-38.4***	-57.2***	-49.5***	-54.4***
	(9.24)	(8.36)	(7.34)	(6.73)
Gini Coefficient	20.5***	7.81	3.05	3.09
	(6.12)	(5.60)	(5.15)	(4.77)
Patent Productivity	28.6***	12.7	-4.00	3.82
	(8.32)	(7.66)	(6.84)	(6.41)
Population Density	-29.0***	-20.5***	-11.0*	-13.3**
	(5.46)	(5.54)	(4.90)	(4.98)
High School Grad. Rate		-26.8***	-8.45	-2.54
		(7.15)	(6.40)	(6.02)
Confederate State		-164.3***	-77.5***	-22.5
		(12.53)	(12.75)	(17.99)
Year of Statehood		-8.25	-18.0**	17.9**
		(6.33)	(5.56)	(6.50)
Share Foreign Born			22.4***	7.54
			(6.34)	(6.06)
Share Nordic Born			8.85	18.9***
			(4.94)	(4.68)
Share US Black			-61.6***	-55.2***
			(5.61)	(5.33)
Constant	67.5*	211.0***	256.7***	198.3***
	(27.84)	(27.62)	(24.61)	(26.46)
Observations	467	467	467	467
R2	0.222	0.449	0.596	0.665
Adjusted R2	0.212	0.438	0.585	0.654
Controls	No FE	No FE	No FE	Regional FE

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

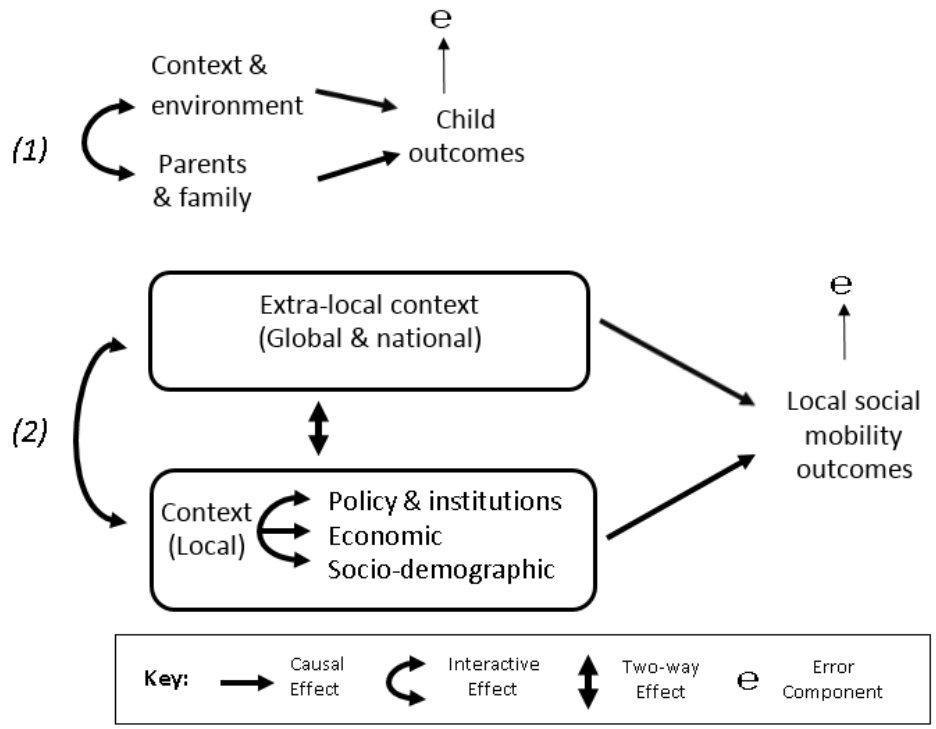


Figure 1. Model of factors underlying contextual differences in intergenerational mobility.

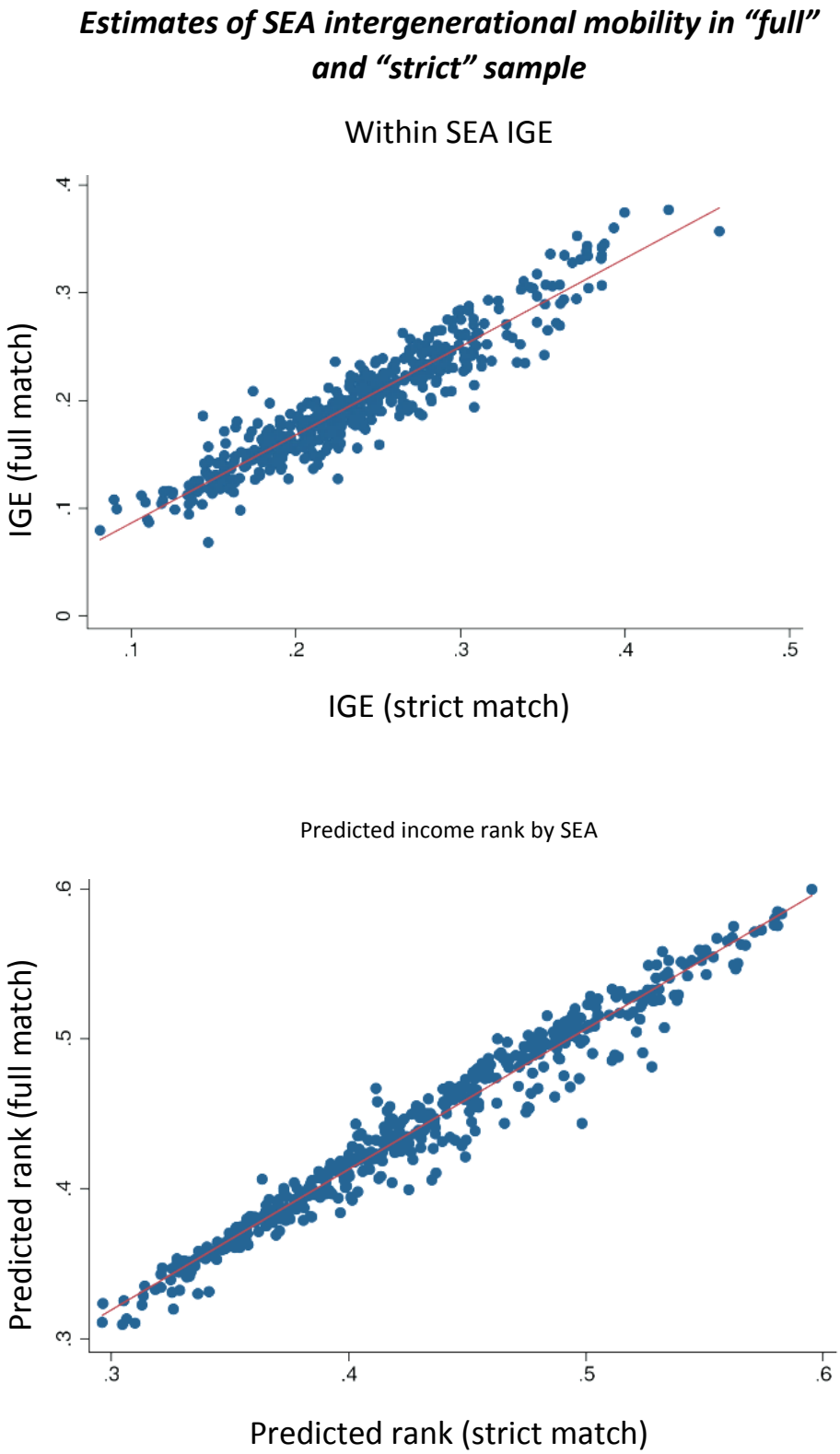
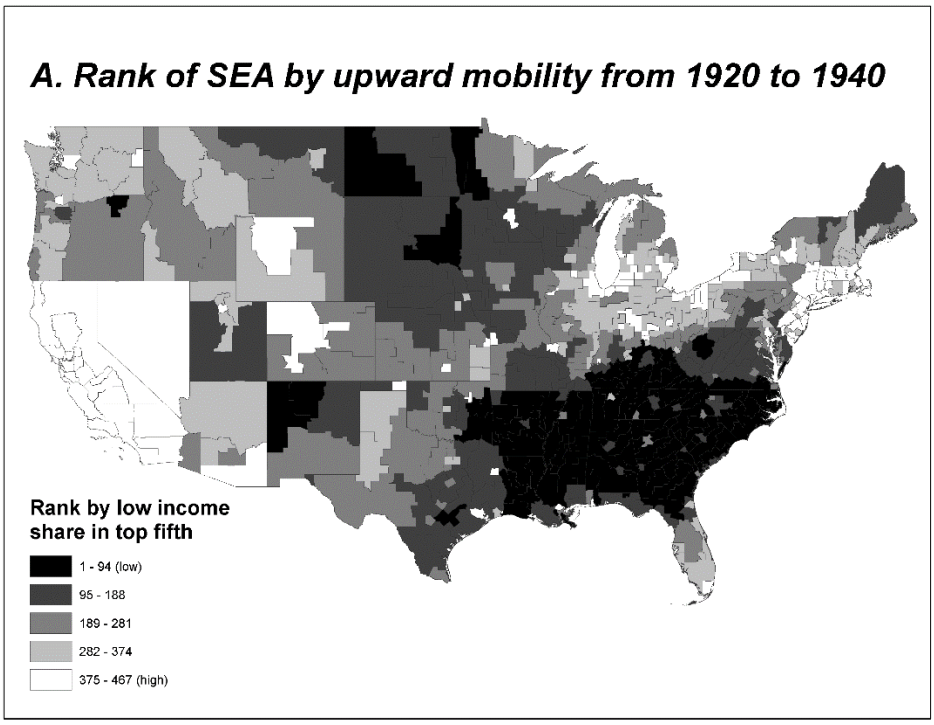


Figure 2. Comparison of SEA intergenerational mobility estimates across samples

Note: the estimate correlations are 0.94 (left) and 0.98 (right).



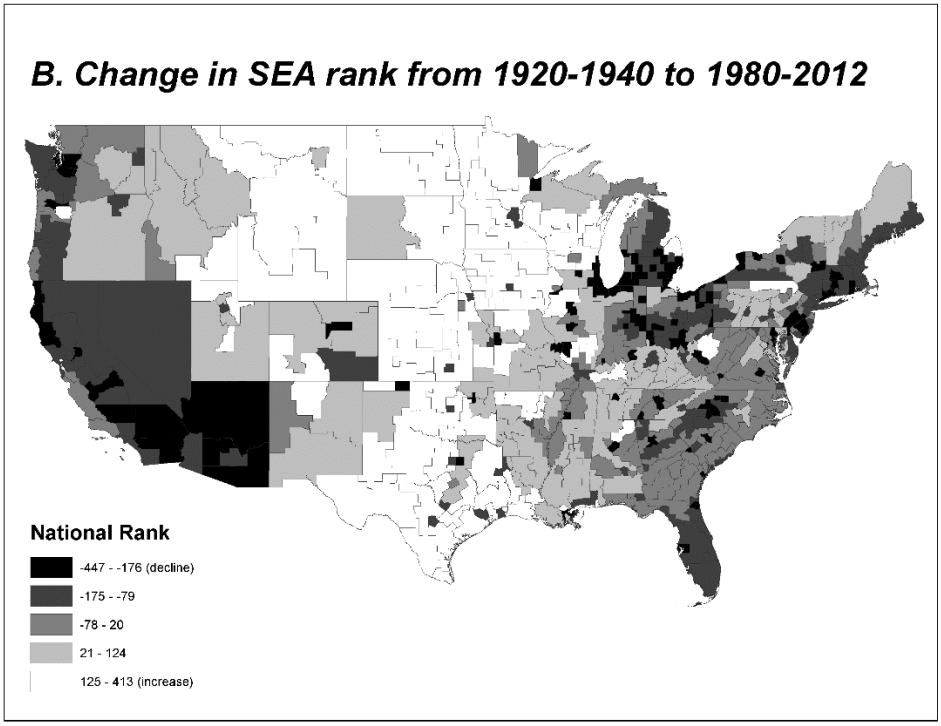


Figure 3. The changing geography of upward mobility over the twentieth century

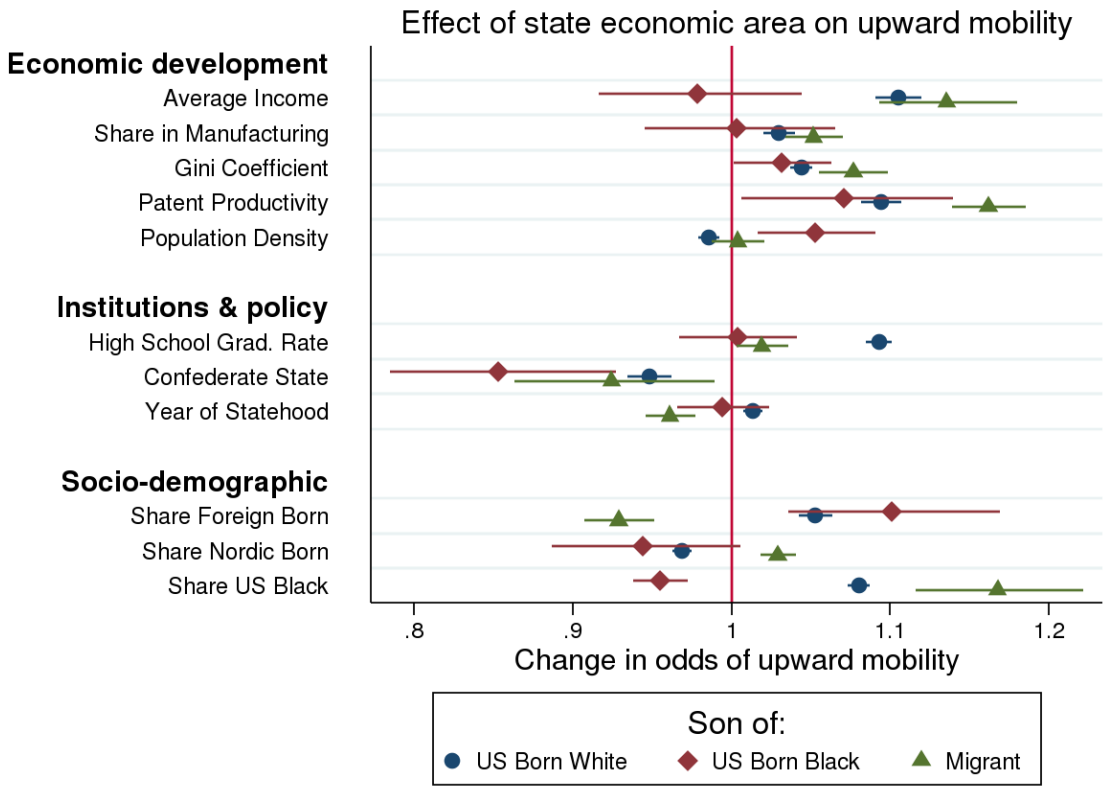


Figure 4. The effect of SEA characteristics on upward mobility

Note: estimates come from separate models white, black and migrant.

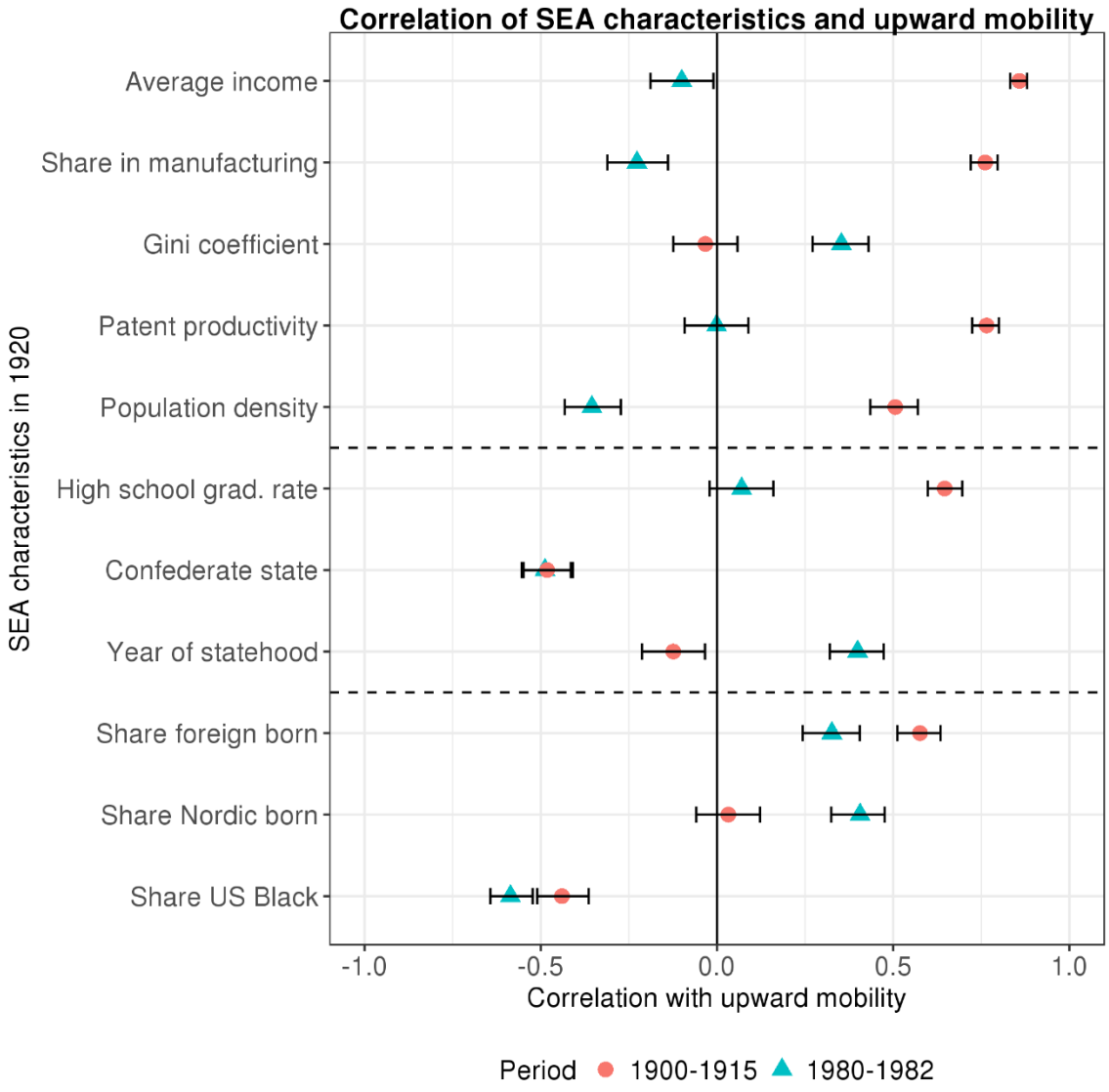


Figure 5. The correlation of SEA characteristics and upward mobility

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Notes

[1] While these estimates may seem low, Chetty highlights that in a world where parental background has no relationship with later outcomes, we would expect 20% of children to move from the bottom to the top fifth of the income distribution. In these terms, the 7 percentage point difference between the US and Canada is quite large.

[2] These statistics are available from www.equalityofopportunity.com and related data sources.

[3] The effect of family transmissions over context is supported by recent work from Olivetti, Paserman, & Salisbury's (2014) analysis of social mobility across multiple generations, and Bleakley & Ferrie's (2016) analysis of schooling and occupational attainment among white families whose wealth increased exogenously due to transfers from Georgia's Cherokee Land Lottery of 1832.

[4] Other evidence finds limited support for the claim that inequality is associated with lower willingness to invest in public goods (Boustan, Ferreira, Winkler, & Zolt, 2013).

[5] Contrary to many contemporary studies (e.g. Garip, 2012; Jones, 1998; McKenzie & Rapoport, 2007), Abramitzky, Boustan and Eriksson (2013) show that access to wealth discouraged migration from nineteenth century Norway.

[6] The cost of transportation from Ireland were commensurate with roughly one month of wages for a laborer. It is difficult to measure migration costs today but we believe that Coyote fees are commensurate with about 9 months of average Mexican wages.

[7] The historical data come from Geary & Stark (2002) and the contemporary data come from the World Bank website: http://data.worldbank.org/

[8] Other studies of contemporary migration show similar variance in the effect of land on migration (Davis, Stecklov, & Winters, 2002; Garip, 2012; Gray, 2009; Mendola, 2008).

[9] See Breathnach (2005) and Moran (2004) for discussions of development programs in these regions. The shape files for Poor Law Unions produced by Gregory (2008) were obtained online from the British Data Archive website (www.britishdataarchive.com). I linked these shapefiles to the census using the Irish Topographical Index.

[10] See Fotheringham, Kelly, & Charlton, 2013 and Kelly & Fotheringham, 2011 for analysis of population change.

[11] The Irish data has been digitized by the National Archives of Ireland and prepared by Connor (2016) and Connor, Mills, & Moore-Cherry (2011). The data from the United States has been made available by the Minnesota Population Center and its collaborator, Ancestry.com.

[12] This issue is more confined to measures of occupation and income which are transitory rather than to anthropometric indicators.

[13] This restriction only affects the magnitude of the results but not differences in significance or interpretation.

[14] A family was defined as a married couple with children (if any) or a collective of people who shared a house and boarded at the same table.

[15] These models include Provincial fixed effects, which control for differences between regions in occupational and economic conditions.

[16] A standard deviation in the HISCAM index is equivalent to the difference between general laborers and cabinetmakers or skilled construction workers such as a bricklayers.

[17] "Poor" areas are classified as one standard deviation below the national mean for value per acre, medium areas are within a standard deviation of the mean while "wealthy" areas are greater than one standard deviation above.

[18] An identical table by own occupation shows similar patterns and is included in the appendix.

[19] Conversely, the report of the Royal Commission on Labour claimed that farmers' sons were better suited than laborers' sons to agricultural work in Ireland.

[20] Poor and wealthy areas are defined as two standard deviations either side of the mean PLU land value.

[21] It is also possible that other siblings had left the house after earlier indications that the remaining son would inherit. However, the sample restriction and controls for mothers' age reduces this influence.

[22] See Alba & Nee (1997) for historical and contemporary debates on assimilation.

[23] While the average surname effect is weak, the attenuation of the surname effect from grandfather to grandson is consistent with standard estimates of grandfather-grandson income elasticities (see Solon, 2014).

[24] See Guinnane, Moehling, & Ó Gráda (2006) for other work examining persistence in Irish demographic outcomes in the United States.

[25] These estimates are derived from the OCCSCORE measure and are adjusted to a common 1950 scale. The OCCSCORE is based on the median occupational based earnings of reported occupations as of 1950 (Ruggles, Genadek, Goeken, Grover, & Sobek, 2015)

[26] The seven census divisions with large second generation Irish populations were New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Middle Atlantic (New Jersey, New York, Pennsylvania), East North Central (Illinois, Indiana, Michigan, Ohio,

Wisconsin), West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota), South Atlantic (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, DC, West Virginia), Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming), Pacific (Alaska, California, Hawaii, Oregon, Washington).

[27] Individuals are more likely to emigrate immediately following a "dip" in employment or earnings. Further, in the receiving country, immigrants often hold occupations below their true underlying skill level (Fernández-Huertas Moraga, 2013).

[28] The complete-count census data was provided by the IPUMS project at the Minnesota Population Center (Ruggles et al., 2015) and their collaborator Ancestry.com. The Irish census data was provided by the National Archives of Ireland at: http://www.census.nationalarchives.ie/

[29] See O'Grada (2016) for other recent work on Irish surnames.

[30] I use this upper age bound as there may be concerns over age misreporting at older ages in the Irish census related to eligibility for the Old Age Pension.

[31] This sectoral exclusion should not be of major concern, as earlier evidence suggests that sons from higher status or wealthier backgrounds also tended to take higher ranking occupations outside of farming (Connor, 2016).

[32] This dummy variable is coded as "1" if a father held an occupation in the bottom 60 percent of the income distribution. More than 50 percent of the fathers of the 1900 to 1915 cohorts were engaged in low paying occupations such as urban unskilled workers, agricultural laborers and farmers. Thus, the bottom 60 percent reasonably captures low income households.

[33] Appendix Tables 4 and 5 shows these place-based estimates are also robust to surname fixed effects which help account for other unobserved intergenerational transmissions (see Güell, Mora, & Telmer, 2015).

[34] These statistics are based on Yiddish speakers in the 1920 IPUMS. This paper will us a more refined measure of "Jewish".

[35] Estimates suggest that the children of these Jewish immigrants were more than twice as likely to hold highly skilled occupations or a post-graduate professional degree toward the end of their careers (Chiswick, 2010).

[36] See Damm (2009) and Edin, Fredriksson, & Åslund (2003) for other studies using immigrant or refugee dispersal programs to identify the effect of enclaves.

[37] IRO resettlement was catering to the general Jewish immigrant population and more than 70 percent of participants were Russian-born.

[38] This high rate of outmigration is consistent with analyses of IRO participants based on letters and city directories (Raphael, 1976; Rockaway, 1998)

[39] The OCCSCORE is a standard occupational measure based on the median estimated historical earnings of occupations in the US (Ruggles, Genadek, Goeken, Grover, & Sobek, 2015)..

[40] These statistics are available at: http://www.equality-of-opportunity.org/

[41] This similarity is partly driven by the larger agricultural composition of the US labor force in the past, as farming tends to be associated with much greater intergenerational stability.

[42] Data retrieved from: http://www.equality-of-opportunity.org/data/ on the 03/30/2017.

[43] Other evidence finds limited support in the US for the claim that inequality is associated with reductions in the willingness of people to invest in public goods (Boustan, Ferreira, Winkler, & Zolt, 2013).

[44] Appendix Figure 3 and Appendix Figure 4 map the IGE for each SEA and the share of low income children reaching the top fifth for each SEA. The patterns are largely consistent across irrespective of which measure is used.