

ENTER STAGE LEFT: IMMIGRATION AND THE CREATIVE ARTS IN AMERICA

K. PUN WINICHAKUL, NING ZHANG

ABSTRACT. To what extent have immigrants contributed to the growth of the United States creative arts economy? In this paper, we explore the impact of immigration during the Age of Mass Migration on the development of the arts in the U.S. over the past century. In the short run, our results suggest that immigration helped produce greater numbers of native artists. Over a century later, counties with greater historical immigration house more arts businesses and nonprofit organizations that generate more revenue, employ a larger proportion of the community, and have earned more federal arts grants. When evaluating potential mechanisms, we see that arts development was not solely attributable to immigrant artists or artists from immigrant families. Our analysis instead suggests that broader interactions between the general immigrant population and natives contributed to this growth. Altogether, our results highlight the important role that immigrants played in the early development of the creative arts in America.

Keywords: Immigration, Creative Arts, Economic Development

JEL Classification: F22, O35, Z11

Date: April 27, 2021.

*University of Pittsburgh, Department of Economics, kpw18@pitt.edu; niz17@pitt.edu. We thank Jason Cook, Joseph Doyle, Claire Duquenois, Osea Giuntella, Hillel Rapoport, Frank Schilbach, Allison Shertzer, Noam Yuchtman, and seminar/conference participants at the IV Workshop on Migration, Health, and Well-being, and the University of Pittsburgh. All errors are our own.

1. INTRODUCTION

The Age of Mass Migration (1850-1920) fundamentally reshaped American communities, as people were exposed to new cultures and practices from all over Europe. The creative arts was one arena that appeared to benefit from these innovative experiences. Fields such as music, dance, and the visual arts, for instance, integrated immigrant voices and ideas (Scheffler, 2009; Smith et al., 2011; Pareles, 2019; Hirschman, 2013). With its growth over the past century, the production of the cultural arts is now one of the largest sectors of the U.S. economy. The arts industry is estimated to contribute nearly \$900 billion to the U.S. economy each year (4.5% of annual GDP), and employs more than 5 million workers nationwide who earn more than the average American worker (National Endowment for the Arts, 2020).¹ Taken together, the stories of immigrant involvement in creative endeavors suggest that they may have played an important role in the development, and the continued success, of this American industry today.

In this paper, we systematically analyze the impact of immigration on the growth of the creative arts in the United States. To the best of our knowledge, we are among the first papers to provide empirical evidence regarding this question. Researchers in related work have highlighted the role immigration has played in scientific innovation (Hunt and Gauthier-Loiselle, 2010; Moser et al., 2014; Moser and San, 2020). We build upon this prior literature by highlighting the impact of immigration on the American cultural arts, where the creative process may require distinct methods from those used in the sciences (Furnham et al., 2011; Botella and Lubart, 2016). Scholars have also studied the economic benefits of diversity in American cities, including the labor market impact of immigrant artists on native artists (Ottaviano and Peri, 2006; Borowiecki and Graddy, 2018). Our paper focuses on the broad impact of immigration on progress in the arts. Through this comprehensive scope, we measure short and long run outcomes that capture the development and growth of the American arts industry as a whole.

To explore our research question, we use data from the Age of Mass Migration (AMM) to first examine short run outcomes for counties who experience greater inflows of immigrants during the prior decade. To address potential identification concerns with using ordinary least squares (OLS) estimates, our main analysis adopts the instrumental variables strategy used by Sequeira et al. (2020). In their work the authors leverage the gradual expansion of the railway network,

¹Workers in arts-related occupations earn an average of \$52,800 annually, \$8,000 more than the average American worker (National Endowment for the Arts, 2019).

and differences in national immigration flows into the United States by decade, to instrument for county-level immigration. We find that the instrument is a strong predictor of actual immigrant inflows during this period.

In the short run, we find that greater immigration into a county during the prior decade increases the share of natives employed in arts occupations in the county in the following decade. We also evaluate the long-term impact on arts communities roughly 100 years after the Age of Mass Migration. We note that counties that experienced greater inflows of migrants during the AMM have greater arts presences today. These counties house a larger number of arts businesses and arts nonprofits that employ a larger fraction of county populations. Beyond employment, these arts institutions have been awarded a larger number of National Endowment for the Arts grants with greater average award value. Finally, counties with higher historical immigration report larger revenues from arts organizations. The long run results are robust to the potential impact of the Great Migration and more recent international migration patterns.

To understand the mechanisms behind *how* immigration has contributed to progress in the American cultural arts, we first note that the development of the arts was not solely due to immigrant *artists*. We estimate the impact of immigrant non-artists and artists separately, and find that both groups led to greater numbers of natives employed in arts-related jobs. We also document that the short run effects of immigration on natives employment in the arts are driven by individuals who were not themselves children of immigrants. Finally, we observe that counties who experienced greater immigrant inflows from particular European nations (e.g. France) exhibited larger increases in the number of natives employed in arts fields (e.g. sculpture) popular in those countries of origin. We interpret these results as evidence that the development of the creative arts was not solely due to collaborations among artists of different cultural and ethnic backgrounds, nor was it driven by those who grew up in immigrant households. Instead, the creative arts appeared to develop through the everyday interactions and integration of immigrants with native populations in their communities.

Our findings regarding the development of the creative arts add to recent work exploring the association between immigration and patent activity and invention.² Researchers have also illustrated the contributions of immigrants to industry growth and firm capacity (Borjas and Doran, 2012;

²See, for example, Moser et al. (2014); Hunt and Gauthier-Loiselle (2010); Akcigit et al. (2017); Burchardi et al. (2020); Moser and San (2020); Doran and Yoon (2020).

Kerr and Lincoln, 2010; Khanna and Lee, 2018).³ We complement the prior research regarding scientific innovation by focusing on the creative arts and cultural innovation. Beyond the economic importance of the arts industry, existing scholarship has also documented the mental and physical health benefits of the creative arts (e.g., Hansumaker, 1980; Secker et al., 2011).⁴

Our paper also complements work that explores the short- and long-term impact of immigrants who arrived in the United States during the Age of Mass Migration. These papers have documented immigrant contributions to county and city economic development, as well as backlash immigrants received from natives during this time period (Abramitzky and Boustan, 2017; Sequeira et al., 2020; Tabellini, 2020). Economists have suggested that a key mechanism through which economic development occurs is the sharing of diverse cultural backgrounds (Ottaviano and Peri, 2006). Therefore in complement to this research, we highlight the cultural contributions of immigrants who arrived during the AMM to the creative arts economy.

This paper closely resembles the research question posed in Borowiecki and Graddy (2018). In their paper, the researchers examine the influence of immigrant artists on native artists in the United States. We complement, but diverge, from their work in the following ways. First, we investigate the aggregate impact of immigration on the development of the creative arts in America. We study whether immigrant artists affected native occupation choices, but also evaluate other measures of arts industry growth. In other words, we not only look at the role of immigrant artists but at the broader effect of the immigrant community as a whole. Second, we adopt a different empirical strategy. Borowiecki and Graddy (2018) rely on changes in immigrant inflows by decade beginning from 1850 to today. Our identification strategy focuses on population movements during the Age of Mass Migration in particular, one of the most notable periods of immigration in American history. We then leverage variation in county access to the railway, and national-level immigration inflows, over this time. Finally, by adopting a different empirical strategy we are also able to evaluate long run effects in addition to the short run impact of immigration on the arts.

The rest of the paper proceeds as follows. In Section 2, we provide background regarding the Age of Mass Migration and arts development in the United States. In Section 3 we describe the data we use. In Section 4, we outline our empirical strategy and report results in Section 5. In Section 6, we review potential mechanisms behind our results. Finally, in Section 7 we conclude.

³Related literature has also documented the outsized share of immigrants involved in entrepreneurial activities (Kerr and Kerr, 2018; Azoulay et al., 2020).

⁴As a practical example, children’s hospitals across the United States utilize arts therapy programs as part of their treatment for kids in their care.

2. BACKGROUND

2.1. The Age of Mass Migration. Nearly 30 million Europeans arrived in the United States during the Age of Mass Migration. In prior waves of European immigration, the majority of individuals arrived from the western part of the continent. Individuals who crossed the Atlantic during this time period were instead largely from southern and eastern Europe (Abramitzky and Boustan, 2017). The unique set of sending countries was reflected in the diversity of languages spoken and religious customs followed (Sequeira et al., 2020; Hatton and Williamson, 2005; Daniels, 2002).

Immigrants from southern and eastern Europe also held a wide range of occupations. They worked in a mix of (traditionally-defined) less-skilled and skilled work. Immigrants from certain sending countries were disproportionately employed in areas such as carpentry, cabinet-making, and clock-making, among others (Abramitzky et al., 2014). Immigrants also pursued work in the creative arts. They brought influences from their countries of origins to America, introducing new styles and genres across music, dance, and the visual arts (Glueck, 2004). Many Americans credit immigrant creatives as influences on their own work. Some scholars suggest that immigrants were able to contribute significantly due to their socialization in multiple cultures and languages. They argue these experiences were just as important to their artistic successes as any inherent individual artistic talents (Hirschman, 2013).

Beyond the particular influence of immigrant artists, natives had more regular opportunities to interact with new cultures that could have sparked their own creativity. As the AMM led to more frequent interactions in many aspects of everyday life, immigrants in both arts and non-arts work may have had significant influences on native work. Figure 1 plots immigration inflows to the United States during the Age of Mass Migration. It also plots changes in the number of native artists as a share of the U.S. population during this time. Figure 1 illustrates that changes in the number of native artists are correlated with immigration inflows. This association suggests immigrants could have affected native occupational choices, including pushing them toward arts-related work.

2.2. American art history before and during the Age of Mass Migration. Many early American colonial paintings reflected the social and political struggle of the nation. In the nation's infancy, paintings often documented major events and figures of the Revolutionary War. Beyond paintings, colonial Americans filled their homes with fine arts such as woodcraft and pottery to

signal social status and refined cultural taste (Miller et al., 2008). Outside of European Americans, American indigenous art often captured the natural and spiritual characteristics of their societies. As families of American colonists expanded westward, their art also began to include images of natural lands. At the same time, their art reflected the conflict and violence toward indigenous communities. Eastern Americans documented their contentious encounters with American indigenous peoples, whose communities were being upended by colonists coming from the east (Miller et al., 2008). However even as artistic diversity began to grow by the mid-19th century, the total number of individuals who reported arts-related jobs as their primary occupation still remained limited (Borowiecki, 2019).

In the latter part of the 19th century, American art incorporated styles of innovative artists from abroad. A select number of Americans with financial means traveled to Europe to formally study under European artists. Others did not receive formal training but instead immersed themselves in the cultures across the Atlantic (Cotter, 2012). Experiences from traveling abroad shaped their own work when they returned to the United States. In addition to the few Americans who traveled abroad, many Europeans, particularly those from southern and eastern Europe, began arriving on American shores at this time. Immigrants who arrived during the AMM also brought their artistic tastes. American art began to reflect the creative demand brought from overseas, and immigrants helped define what constituted American culture and art styles during this period. Their influence was reflected across many modes of art, including music, dance, and cinema (Hirschman, 2013).

3. DATA

We take advantage of multiple data sources for our analysis. In particular, we leverage U.S. Census data from IPUMS USA and NHGIS (Ruggles et al., 2020), digitized railway network data from Sequeira et al. (2020), and aggregate U.S. immigration inflow data from Willcox (1929). We also utilize data from County Business Patterns regarding arts businesses in 2000, and the Urban Institute’s National Center for Charitable Statistics regarding arts nonprofit organizations from 1987-2018 (National Center for Charitable Statistics, 2020). Finally, we compile data on National Endowment for the Arts (NEA) grants disbursed between 1998 and 2020 (National Endowment for the Arts, 2021).

First, we use U.S. Census micro-data from 1860 to 1920 through IPUMS USA. In the data, we examine the presence of artists across the U.S. during this time period. We define artists as

individuals who work primarily in an arts-related occupation. Examples of arts-related occupations include actors, artists, sculptors, teachers of art, authors, designers, musicians, teachers of music, architects, and photographers. Beyond occupation information, we use Census data drawn from NHGIS to obtain the share of immigrants in a county, based on nativity.

Second, we use historical data on county connections to the railway network from Sequeira et al. (2020). The authors constructed each county's access to rail transit using historical maps that outlined both national and regional coverage. Sequeira et al. (2020) obtained a geo-referenced shapefile of the current railway network from the United States Department of Transportation. They then overlaid the shapefile onto a digitized version of a paper map to precisely identify the railway lines in each decade between 1830 and 1920. We take advantage of the data they provide to document each county's connection to the railway. We consider a county to have access to the railway if its boundary is intersected by at least one rail line.

Third, we measure national immigration inflows into the U.S. using data from Willcox (1929). Inflow estimates are calculated from passenger lists provided by the masters of arriving vessels. We use the lists to calculate the total number of immigrants from Europe who arrived in the U.S. each year between 1860 and 1920. Immigrants were defined as foreign passengers who arrived in the U.S. with the intention of settling down.

Fourth, we collect information from County Business Patterns (CBP) to study the potential impact of historical immigration on the formation of arts businesses in the United States in contemporary times. The CBP data are accessible through the U.S. Census Bureau and include information on businesses and employees at the county level during the week of March 12, 2000. We apply the 6-digit NAICS code to identify arts businesses. The industry code that denotes arts-related firms (NAICS code 7111-7121) includes organizations related to the performing and visual arts, such as theater, dance, musical groups, and museums, as well as independent artists, writers, and performers, among others.

Fifth, we explore arts nonprofit financial information from the Urban Institute's National Center for Charitable Statistics (NCCS) between 1987 and 2018. The data complement the CBP business data by measuring the presence of arts nonprofits in the United States over the past few decades (National Center for Charitable Statistics, 2020). The NCCS data are compiled from Form-990 tax documents completed by all U.S. nonprofit institutions each year who receive revenue above a minimum reporting threshold. In the data, we identify arts nonprofits by codes that delineate

each organization’s primary cause/mission. The data also include information about organization annual revenues and expenditures.

Finally, we leverage comprehensive information on National Endowment for the Arts grant recipients from 1998 to 2020 (National Endowment for the Arts, 2021). The National Endowment for the Arts is a federal agency that is one of the largest arts grant-making institutions in the United States. Each year, it awards thousands of grants to provide Americans with diverse opportunities to participate in, and complete, arts projects and programs. NEA provides cost/share matching grants to nonprofit organizations for a wide range of arts projects such as literature fellowships for creative writers and translators, and Partnership Agreements with 62 state/jurisdictional arts agencies and regional arts organizations. The grant database includes a comprehensive list of all individuals and organizations who have received an NEA grant since 1998. The database lists the award amount for each grant, the geographic location of the recipient, and the applicable sub-field for the grant.

To motivate our empirical analysis outlined in Section 4, in Table 1 we provide summary statistics for our data. Data are summarized by two different types of counties – those with and those without historical railway access in 1920. As mentioned earlier and elaborated below in Section 4.1.1, our preferred empirical strategy relies on variation resulting from access to the railway network.⁵ As shown in Table 1, counties with railway access in 1920 had slightly larger average immigration inflows than counties without railway access. Counties with access to the railway network in 1920 experienced average immigration inflows per decade of approximately 9 percent of the county’s population. Counties without access to the railway network experienced average immigration inflows per decade of approximately 8 percent of the county’s population.

Further, historical railway access also appears to be positively correlated with arts-related outcomes in the short- and long-term. Counties with railway access by 1920 had greater shares of native artists in their communities during the AMM. Native artists made up an average of 0.20 percent of the population in these counties, but only 0.06 percent of the population in counties without historical rail access. Over a century later, counties with historical railway access house more arts businesses that employ more individuals. According to CBP data, these counties average over nine arts business that employ over 400 employees; meanwhile, counties without historical rail

⁵More precisely, our preferred empirical strategy relies on variation in railway access *over time*, as well as national immigration inflows *over time*. These sources of variation are not explored in the summary statistics provided in Table 1.

access average less than five arts businesses that employ approximately 250 individuals. Finally, on average, counties with historical railway access have more arts nonprofits (8.92 vs. 3.54), have been awarded more NEA arts grants (36.94 vs. 30.22), and have been awarded NEA arts grants of greater average value (\$1.78 million vs. \$0.95 million), than counties lacking historical connection to the railway.

4. EMPIRICAL STRATEGY

We analyze the impact of immigration during the Age of Mass Migration on the development of the creative arts both in the short- and long-term. Below, we elaborate on our identification strategy.

4.1. Short-term effects. In the baseline specification for identifying short-term effects, we use a panel of U.S. counties from 1860–1920 and estimate the following ordinary least squares equation:

$$(1) \quad \frac{Y_{ct}}{Pop_{ct}} = \beta_0 + \beta_1 \frac{I_{ct}}{Pop_{ct}} + \mathbf{X}_{ct}\Gamma + \mu_t + \mu_c + \epsilon_{ct}.$$

In the specification above, Y_{ct} is the outcome of interest for county c in decade t . For instance Y_{ct} could represent the number of native artists. The term Pop_{ct} is a county’s population in decade t . Thus, the term $\frac{Y_{ct}}{Pop_{ct}}$ represents the share of the county population that are native artists in period t . The term I_{ct} represents the number of immigrants, and the term $\frac{I_{ct}}{Pop_{ct}}$ stands for the share of the county population that are immigrants in decade t . The term \mathbf{X}_{ct} is a vector of contemporaneous county characteristics, and μ_t and μ_c are a set of decade dummies and county dummies, respectively. The coefficient of interest is β_1 , which measures the effect of immigration on short-term county outcomes. We weight the regressions by county population, and cluster standard errors at the county level to account for serial correlation.

However, estimating equation (1) could suffer from endogeneity bias. For instance, one possibility is that counties with favorable economic conditions could have offered greater opportunities in the creative arts, all while attracting a larger number of immigrants. On the other hand, counties with fewer economic opportunities, including those available in the arts, could have brought in greater numbers of immigrants if natives discriminated against non-native populations and pushed them toward less-desirable locales. Each of these forces would be unobservable to the econometrician. The resulting correlation with the error term would cause β_1 in the OLS model to be biased upward with respect to the former factor, or downward with respect to the latter example. Independently,

β_1 could be biased toward zero due to measurement error, although weighting the specifications by county population would reduce this bias.

To address the potential endogeneity bias described above, we employ an instrumental variables approach (2SLS), and leverage two different instruments for immigration inflows. Our preferred specification is described below.

4.1.1. *Instrument 1: Rail access and national immigration inflows.* We adopt the instrument constructed by Sequeira et al. (2020), which interacts fluctuations in national immigrant inflows with the gradual expansion of the railway network in the United States. This instrument leverages two levels of variation related to immigration during the AMM. First, national immigration inflows fluctuated greatly across decades. Second, arriving immigrants tended to rely on rail transit to travel inland to their final destinations (Faulkner, 1960; Foerster, 1969). During this period of expansive railway construction, it is therefore likely that the timing of a county’s connection to the railway network, coupled with when the U.S. was experiencing large national inflows of immigrants, affected the number of individuals that settled in a county. The benefit of combining the timing of railway construction with the timing of national immigration booms is that the interaction between the two produces variation that is unlikely to affect our arts outcomes of interest other than through its influence on immigration to a county.⁶

With this instrument, we estimate the first- and second-stage of the 2SLS analysis, described in equations (2) and (3) below.

$$(2) \quad \frac{I_{ct}}{Pop_{ct}} = \alpha_1 \frac{\Delta I_{t-1}}{Pop_{t-1}} \times I_{ct-1}^{RR} + \alpha_2 I_{ct-1}^{RR} + \alpha_3 \frac{I_{ct-1}}{Pop_{ct-1}} + \mathbf{X}_{ct-1} \Pi + \mu_t + \mu_c + \nu_{ct}$$

$$(3) \quad \frac{Y_{ct}}{Pop_{ct}} = \beta_1 \frac{I_{ct}}{Pop_{ct}} + \beta_2 I_{ct-1}^{RR} + \beta_3 \frac{I_{ct-1}}{Pop_{ct-1}} + \mathbf{X}_{ct-1} \Gamma + \mu_t + \mu_c + \xi_{ct}.$$

The term $\frac{\Delta I_{t-1}}{Pop_{t-1}}$ represents national immigration inflows (ΔI_{t-1}) between periods $t - 1$ and t as a share of the total U.S. population in period $t - 1$ (Pop_{t-1}). The term I_{ct-1}^{RR} is an indicator variable that equals one if county c is connected to the railway in period $t - 1$. The term $\frac{\Delta I_{t-1}}{Pop_{t-1}} \times I_{ct-1}^{RR}$ is the interaction between national immigration inflows as a share of the United States population, and whether a county is connected to the railway network in period $t - 1$. The interaction term

⁶While the interaction is important to the construction of the instrument, we sometimes refer to this as the “railway instrument” for expositional ease moving forward.

captures the heterogeneous effect of access to a railway on immigrant settlement in a county during immigration booms relative to immigration lulls. The term $\frac{I_{ct-1}}{Pop_{ct-1}}$ is the lagged immigrant share in county c . It is included to control for the mechanical effect of the size of the immigrant population in the prior period on the size of the immigrant population in period t .

As is noted in Sequeira et al. (2020), we are also concerned with the possibility that immigrant inflows to a county are associated with business cycle variations. To allow the effect of being connected to a railway to vary differentially depending on national GDP growth, the term $GDP_{t-1} \times I_{c,t-1}^{RR}$ is included in X_{ct-1} in our specification. This interaction captures any differential effects that being connected to a railway may have had due to economic cycles. The vector of controls X_{ct-1} also include county characteristics such as a lagged indicator for county urbanization, lagged county population density, the interaction between the lagged urbanization measure and lagged immigration inflows as a share of total population, and polynomials for latitude and longitude, each of which flexibly capture different factors that could affect immigrant share estimates.⁷

4.1.2. *Instrument 2: Shift-share.* The second instrument we use is inspired by the broader class of shift-share instruments. This instrument estimates changes in county immigrant populations stemming from changes in national immigrant inflows by origin regions. To illustrate, suppose immigrants from southern Europe prefer to settle in counties in the Northeastern United States because other Europeans from the same region have already settled there. Likewise, suppose immigrants from northern Europe prefer another region of the United States, such as the Midwest, for similar reasons. Then, a large national increase in the share of immigrants from northern Europe would lead to larger increases in immigration to the Midwest, relative to the Northeast.

Formally, the predicted change in the number of immigrants in county c predicted by changes in national inflows from origin region k , can be written as:

$$\Delta \widehat{M}_{ct} = \sum_k \frac{M_{ck1860}}{M_{k1860}} \Delta M_{kt} = \sum_k \lambda_{ck1860} \Delta M_{kt}.$$

In the above equation, λ_{ck1860} is county c 's "share" of the national total of immigrants from region k in 1860, and ΔM_{kt} is the national "shift," or change in the number of immigrants from region

⁷One way to evaluate the validity of the railway instrument is to compare the baseline characteristics of counties who differ by when they are connected to the railway and the national immigration inflows at that time. This analysis is shown in Tables 1 and A2 of Sequeira et al. (2020), using county characteristics from 1820-1840, as well as economic characteristics by decade from 1850 to 1890. The authors illustrate that the baseline economic characteristics of counties that connect to the railroads during immigration booms did not significantly differ from counties that connected to the railway during immigration lulls.

k between years t and $t + 1$. We use 17 source regions or countries, listed in Appendix Table A.1. Because the variable that is instrumented, $\frac{\Delta I_{ct}}{Pop_{ct}}$, is measured as a first-difference in proportions, we also estimate $\Delta \widehat{M}_{ct}$ as a first-difference in proportions by dividing by the county population at the start of the period, which is:

$$\frac{\Delta \widehat{M}_{ct}}{Pop_{ct}}$$

With the shift-share instrument, we estimate the first- and second-stage of the 2SLS analysis, as shown in equations (4) and (5) below.

$$(4) \quad \frac{\Delta I_{ct-1}}{Pop_{ct-1}} = \alpha_1 \frac{\Delta \widehat{M}_{ct-1}}{Pop_{ct-1}} + \mathbf{X}_{ct-1} \Pi + \mu_t + \nu_{ct}$$

$$(5) \quad \frac{Y_{ct}}{Pop_{ct}} = \beta_1 \frac{\Delta I_{ct-1}}{Pop_{ct-1}} + \mathbf{X}_{ct-1} \Gamma + \mu_t + \xi_{ct}$$

Though the shift-share instrument is a powerful predictor of regional immigration flows, it may conflate short and long run responses to immigration shocks. It therefore may be less of an effective empirical tool to identify short run causal effects (Jaeger et al., 2018). We include this instrument as a complement to our preferred 2SLS specification described in Section 4.1.1, albeit with caution due the concerns cited above.⁸

4.2. Long-term effects. The effect of immigration on the development of the creative arts may evolve over many years. We therefore explore whether immigration during the Age of Mass Migration has had lasting effects on the arts industry in present times. In particular, we focus on outcomes that reflect the robustness of arts communities in counties across the United States from the 1990s to today.

We begin by estimating the following equation:

$$(6) \quad Y_{c,s} = \beta_1 \frac{1}{T} \sum_{t=1}^T \frac{I_{ct,s}}{Pop_{ct,s}} + \frac{1}{T} \sum_{t=1}^T \mathbf{X}_{ct,s} \Gamma + \mu_s + \epsilon_{c,s}.$$

⁸To further examine this empirical strategy, we also follow Goldsmith-Pinkham et al. (2020) and construct Rotemberg weights to evaluate the sensitivity-to-misspecification of our shift-share instrument. The Rotemberg weights summarize the relative weight of each sending region in the construction of the shift-share instrument. We report results from this analysis in Appendix Tables A.11, A.12 and Figure A.6. The results suggest that this shift-share instrument is not likely to be sensitive to misspecification, with further discussion provided in Section 5.

In Equation (6), the term $Y_{c,s}$ is the outcome of interest in county c and state s . For example, this measure could be the average annual number of NEA grants that individuals and arts organizations have received per county over the past twenty years. The term $\frac{1}{T} \sum_{t=1}^T \frac{I_{ct,s}}{Pop_{ct,s}}$ summarizes the historical immigration county c experienced during the AMM. In particular, the term represents the average share of migrants in county c and state s over the county's population across years t , where $t \in \{1860, 1870, 1880, 1900, 1910, 1920\}$. The term $\frac{1}{T} \sum_{t=1}^T \mathbf{X}_{ct,s}$ represents the average county-, state-, and year-specific characteristics over the same historical time period. The term μ_s represents state fixed effects, which capture geographic and historical factors that may be similar among counties within a state. The coefficient of interest is β_1 , which measures the effect of a county's average immigrant share between 1860 and 1920 on present measures of arts prosperity.

4.2.1. *Instrument 1: Rail access and aggregate immigration inflows.* As with the short-term results, we are still concerned about potential endogeneity bias in the OLS specification outlined in Equation 6. To resolve concerns about endogeneity, we adopt our preferred instrument described in Section 4.1.1; namely, the interaction between national immigration inflows and the gradual expansion of the railway network in the United States. However given the long-term time frame of this analysis, we must make a modification to the instrument in Section 4.1.1 above. In particular, for our 2SLS specification we follow Sequeira et al. (2020) to estimate zero-, first-, and second-stage equations, as represented by equations (7), (8), and (9) below.

We begin by estimating the following zero-stage equation:

$$(7) \quad \frac{I_{ct}}{Pop_{ct}} = \alpha_1 \frac{\Delta I_{t-1}}{Pop_{t-1}} \times I_{c,t-1}^{RR} + \alpha_2 I_{c,t-1}^{RR} + \alpha_3 \frac{I_{ct-1}}{Pop_{ct-1}} + \mathbf{X}_{ct-1} \Gamma + \mu_t + \mu_c + \nu_{ct}$$

which is identical to equation (2), the short run first-stage.

After estimating Equation (7), we calculate the immigrant share in each county and year that is predicted by the railway instrument:

$$\widehat{\frac{I_{ct}}{Pop_{ct}}} = \widehat{\alpha}_1 \frac{\Delta I_{t-1}}{Pop_{t-1}} \times I_{c,t-1}^{RR}$$

where $\widehat{\alpha}_1$ is the estimate of α_1 from equation (7). However, in order to study long-run outcomes we must form a composite measure of the decade-by-decade estimates produced from equation (7). In the next step, we take the average of the predicted immigrant shares over the decades 1860–1920:

$$\frac{1}{T} \sum_{t=1}^T \widehat{\frac{I_{ct}}{Pop_{ct}}} = \frac{1}{T} \sum_{t=1}^T \widehat{\alpha_1} \frac{\Delta I_{ct-1}}{Pop_{ct-1}} \times I_{c,t-1}^{RR}$$

We estimate the effect of immigration on measures of long-term arts development using $\frac{1}{T} \sum_{t=1}^T \widehat{\frac{I_{ct}}{Pop_{ct}}}$ as an instrument for the average immigrant share in county c during the AMM. Formally, we estimate the first- and second-stage equations given by equations (8) and (9).

$$(8) \quad Avg Immig Share_{c,s} = \alpha_1 \frac{1}{T} \sum_{t=1}^T \widehat{\frac{I_{ct}}{Pop_{ct}}} + \mathbf{X}_{c,s} \Pi + \mu_s + \nu_{c,s}$$

$$(9) \quad Y_{c,s} = \beta_1 Avg Immig Share_{c,s} + \mathbf{X}_{c,s} \Gamma + \mu_s + \xi_{c,s}$$

where c and s index counties and states. The vector $\mathbf{X}_{ct,s}$ includes the interaction between average national GDP growth and connection to the railway $\frac{1}{T} \sum_{t=1}^T \hat{\alpha}_3 \Delta GDP_{t-1} \times I_{c,t-1}^{RR}$, where $\hat{\alpha}_3$ is the coefficient estimate in front of the $\Delta GDP_{t-1} \times I_{c,t-1}^{RR}$ term in the zero-stage equation. We are also concerned about the fact that the timing of connection to the railway may directly affect long-term outcomes through industrialization. Thus, we control for average levels of industrialization and connection to the railway on the predicted immigrant share in county c , $\frac{1}{T} \sum_{t=1}^T \hat{\alpha}_4 Industrialization_{t-1} \times I_{c,t-1}^{RR}$. The term $Industrialization_{t-1}$ is a measure of the average annual level of industrialization between years $t-1$ and t . Similar to $\hat{\alpha}_3$, the coefficient $\hat{\alpha}_4$ is the coefficient in front of the $Industrialization_{t-1} \times I_{c,t-1}^{RR}$ term in the zero-stage equation. We also control for the duration of a county's connection to the railway as of 2000 to allow for the effect of early railway access on long-term outcomes. Finally, we also include polynomials for latitude and longitude in $\mathbf{X}_{ct,s}$, in order to control for the correlation between the instrument and county geographical characteristics.

5. RESULTS

5.1. Short-term effects of immigration on native occupations. We first examine the impact of immigration during the AMM on outcomes in the same period. In Table 2 we report estimates of the effect of immigration on the share of natives working in arts-related occupations. The outcome of interest is the share of native artists normalized by county population, i.e., $\frac{Y_{ct}}{Pop_{ct}} = \frac{NA_{ct}}{Pop_{ct}}$, where NA_{ct} is the number of natives working in arts occupations in county c and period t .

We report the OLS estimates in column (1) of Panel A in Table 2. The point estimate measuring the effect of immigration on the share of native artists in a county is small and not statistically different from zero. However, given the endogeneity concerns with the OLS specification that would bias our estimates, we turn to our 2SLS estimation. We start with the first-stage results, reported in Panel B of Table 2. Panel B reports estimates using both the shift-share instrument (column (2)) and our preferred railway instrument (column (3)). We find that predicted immigrant shares using both instruments are strongly correlated with actual immigrant shares. The shift-share and railway instruments yield Kleibergen-Paap F-statistics of approximately 7.04 and 12.62, respectively. The magnitude of the point estimate using the shift-share instrument suggests that a one percentage point increase in the predicted immigrant share is associated with a 0.011 percentage point increase in the actual average immigrant share. The magnitude of the point estimate using the railway instrument suggests that a one percentage point increase in the predicted immigrant share is associated with a 0.159 percentage point increase in the actual average immigrant share.

The second-stage estimates are reported in Panel A of Table 2. We again use the change in the share of native artists in a county as our outcome of interest. Column (2) reports the 2SLS estimates when using the shift-share instrument, and column (3) reports 2SLS estimates when using the preferred railway instrument. According to the 2SLS estimates in columns (2) and (3), counties with larger immigration inflows observe significantly larger increases in the share of native artists. The magnitude of the column (2) coefficient suggests a one percentage point increase in the share of immigrants will increase the share of native artists working in a county by 0.027 percentage points. The estimated effect is statistically significant and is larger in magnitude than the OLS estimate. To further alleviate concerns noted earlier with the shift-share instrument, we turn to the results in column (3) using the railway instrument.⁹ The results from column (3) show that a one percentage point increase in the share of immigrants in a county increases the share of native artists in the same county by 0.075 percentage points, statistically significant at the 10% level. While the magnitudes alone do not appear large, it is important to note that the change is quite substantial relative to the average share of natives working as artists in this time period. During the AMM, the creative arts economy was in its emerging stages. According to Census data, about

⁹The results in Appendix Table A.11 and Figure A.6 suggest that the shift-share instrument is not likely to be sensitive to misspecification. In particular, we find that the individual instruments constructed for each sending region are concentrated around the overall Bartik instrument estimate, both for sending regions that receive greater Rotemberg weights as well as those that receive lesser Rotemberg weights (Goldsmith-Pinkham et al., 2020).

80% of county-year observations had no artists. The average share of natives working as artists for all counties was 0.19%, and conditional on reporting *any* artists, the average share was 0.94%. Altogether, the results suggest that immigration during the AMM had a significant effect on the composition of native workers in the labor force in the short run, shifting many natives toward occupations related to the arts.¹⁰

5.2. Long-term effects of immigration on arts development. Beyond outcomes during the Age of Mass Migration, we also explore the persistent effects of immigration during that period on arts institutions today. To study the long-term effects of immigration on the development of the creative arts, we highlight how immigration from roughly a century ago has affected the prosperity of arts communities in U.S. counties over the past few decades.

We first examine how immigration contributes to the establishment and presence of arts businesses in a county. To do this, we first use the CBP data and 6-digit NAICS code to count the number arts businesses and employees in a county. Arts establishments (with NAICS codes from 7111 to 7121) include organizations related to a wide range of art activities. These businesses include, theaters, dance studios, musical groups, and museums, among others. Arts employees include individuals working in the types of establishments above, as well as agents, managers for artists, and other public figures. We report estimates for the effect of immigration on the number of arts businesses and employees of arts businesses in Table 3. The OLS estimate in column (1) suggests that a one percentage point increase in the average historical immigrant share in a county between 1860 and 1920 has contributed to 0.27 more arts businesses in a county in 2000, a 3.1% increase relative to the mean. Column (2) in Panel B reports results from the first-stage when we instead use our preferred railway instrument. The first stage results suggests that a one percentage point increase in the average predicted immigrant share is associated with a 4.97 percentage point increase in the actual historical immigrant share in a county. The Kleibergen Paap F-statistic is 28.2, indicating the strong predictive power of the instrument. Column (2) of Panel A reports the second-stage estimate, which is larger in magnitude than the estimate in the OLS specification. A one percentage point increase in the average historical immigrant share has contributed to 1.44 more arts businesses in a county, a 16.6% increase relative to the mean.

¹⁰We also test whether the effect of immigration on arts development in the short-term could be driven by certain large metropolitan areas such as Los Angeles and New York. To test the sensitivity of our results to these potential outliers, we re-run the main analysis and iterate through counties in our sample, omitting one county a time. We plot the range of coefficients as well as the confidence intervals of these analyses in Figure A.1. The figure shows that our estimates are not driven by any single county.

We also examine the effect of historical immigration on the number of employees in arts businesses, reported as a share of the county population. The results are reported in columns (3) and (4) of Table 3. The OLS estimate in column (3) suggests that immigration during the AMM had a positive effect on the share of employees in arts businesses today. A one percentage point increase in the average historical immigrant share in a county contributes to a 0.008 percentage point increase in share of employees in art businesses. The 2SLS estimate in column (4) suggests a larger effect – a one percentage point increase in the average historical immigrant share contributes to a 0.046 percentage point increase in share of employees in art businesses. The OLS and 2SLS estimates are equivalent to 3.0 and 17.0 percent increases relative to the mean, respectively.

In complement to the CBP data, we leverage the NCCS data that has aggregated information on the universe of U.S.-based nonprofits since 1987. These data also list organizations by their primary cause, which allows us to identify organizations related to the arts. In Table 4, we report the results from this analysis. Our outcome of interest for columns (1) and (2) is the average number of arts nonprofits in a county per year. The OLS estimate in column (1) suggests that a one percentage point increase in the average historical immigrant share in a county between 1860 and 1920 has contributed to an increase of 1.25 more arts nonprofits in a county today. This effect is equivalent to a 15.7 percent increase in the number of arts nonprofits in a county, relative to the mean. Column (2) of Panel A reports the second-stage results using our preferred railway instrument, and describes a positive effect of larger magnitude than estimated in the OLS specification. A one percentage point increase in the average historical immigrant share has contributed to approximately 2.5 more arts nonprofits in a county today. This effect is equivalent to over a 30% increase in the number of arts nonprofits in a county today, relative to the mean.

Not only do the results suggest a greater presence of arts nonprofits in counties with greater historical immigration, but subsequent analyses demonstrate that these institutions are successful and contribute other positive benefits to the community. In these analyses, we proxy for the prosperity of arts institutions through a few different measures. First, in columns (3) and (4) of Table 4, we examine the average annual revenue that arts nonprofits receive. The results show for every one percentage point increase in the average historical immigrant share in a county, arts institutions earn 3.6 percent more in average revenue. Although the second-stage estimate in the 2SLS specification is no longer statistically significant, the point estimate remains consistent with the OLS estimate.

To continue measuring the success of arts organizations, we use data on NEA grant recipients over the past two decades. For our outcomes, we use the number NEA grant recipients in a county, and the average value of those grant awards, in Table 5. In particular, the dependent variable in columns (1) and (2) of Panel A is the log of the average number of NEA art grants in county c between 1998 and 2020. The dependent variable in columns (3) and (4) of Panel A is the log of the average art grant award amount in county c between 1998 and 2020.

The OLS estimates in columns (1) and (3) suggests that a one percentage point increase in a county's average immigrant share during the Age of Mass Migration has contributed to a 6.4 percent increase in the average number of NEA grants received by arts groups in that county; in complement, the average value of NEA grant award amounts increases by 7.4 percent. Columns (2) and (4) in Panel A report the second-stage estimates and suggest a larger long-term impact of historical immigration than estimated in the OLS specification. The coefficients imply that if the average immigrant share in a county during the Age of Mass Migration increases by one percentage point, the average number of NEA grants awarded to art nonprofits in the same location increases by 25 percent, and the average value of those NEA grants increases by 27 percent.

The long run results demonstrate the lasting effects of immigration during the AMM on arts communities. Today, areas that received larger numbers of immigrants during the AMM have more arts businesses and nonprofits. These businesses employ a larger share of the population, earn more revenue, and have been awarded more NEA grants.¹¹ Further, a consistent pattern across these results is that the 2SLS estimates are larger than the OLS estimates. This pattern suggests that the OLS estimates are biased downward, which would support the argument that immigrants faced discrimination from natives. Immigrants may have been forced to settle in locations that previously were less developed and likely had less growth potential with respect to the arts. Altogether, the results regarding the positive growth of the creative arts industry, as well as the downward bias of the OLS estimates, is consistent with prior work that highlights other long-term effects of immigration into the United States during the Age of Mass Migration (Sequeira et al., 2020).

¹¹Similar to our short-term results, we also test whether the effect of historical immigration on arts development in the long-term could be driven by certain large metropolitan areas. Figures A.2-A.5 show that our estimates are not driven by any single county.

6. MECHANISMS

In this section, we describe analyses that explore possible mechanisms behind the impact of immigration on the American cultural arts. Most of these results focus on short run outcomes. As part of this exercise, we examine the effects of immigrant artists and non-artists separately, as well as native outcomes split by children of immigrants (second-generation immigrants) and individuals with longer families histories in America. We also consider the cultural influences of particular sending regions, medium run outcomes, potential geographic spillover effects, and the robustness of the long-term results to more recent migration patterns.

6.1. The impact of immigrant artists versus non-artists. The development of the creative arts in America could have been driven primarily by immigrants working in arts occupations. That is, immigrant artists could have shared particular artistic skills and methods with natives. Alternatively, the effect of immigration on the arts could have been more expansive. The benefits could have accrued simply due to regular interactions between different immigrant and native cultures and customs, irrespective of whether immigrants worked in the arts. We examine which channel may be more important in Table A.2. Compared to immigrants in non-arts work, migrant artists appear to have a larger impact on growing the number natives working as artists. The 2SLS point estimate in column (2) of Table A.2 shows that for every one percentage point increase in the number of migrant artists in a county, the number of native artists in that location increases by 0.544 percentage points. However, greater presences of both immigrant artists and non-artists appear to increase the number of native artists in a county. The 2SLS point estimate in column (4) of Table A.2 shows that for every one percentage point increase in the number of non-artist migrants in a county, the number of native artists in that location increases by 0.028 percentage points. While the latter estimate is much smaller in magnitude, the estimate is significant at the 10% level. We interpret these results as showing suggestive evidence that immigrant artists during the AMM had a large effect on the development of the arts through direct knowledge transfers. Yet, the result regarding non-immigrant artists suggests that immigration as a whole promoted broader diversity and artistic tastes among natives.

6.2. Artists among second-generation and non-second-generation immigrants. In this section, we explore whether certain native populations are more likely to choose arts-related occupations. In particular, we consider whether natives from immigrant families (i.e., second generation

immigrants) are more likely to be employed in the arts than immigrants from families with more established roots in the United States. We study these different populations to better understand whether arts interests came from within immigrant families or whether arts growth emerged from other families.

We report the results of this analysis in Table A.3. The dependent variable in column (1) is the share of the second-generation immigrant population that works in arts occupations. The dependent variable in column (2) is the share of the non-second-generation immigrant population that is employed in arts occupations. Our results suggest that immigration did not meaningfully impact the share of second-generation immigrants working in arts occupations; instead, the results show that immigration had a positive effect on non-second-generation natives. The coefficient is similar to the 2SLS estimate provided in Table 2 when evaluating the aggregate impact of immigration. These heterogeneous effects highlight how immigrants may have influenced arts growth beyond their immediate families and instead through collaborations with natives.

6.3. The cultural influences of sending regions. If immigration helped boost native creativity by exposing them to new experiences and ideas, we might expect to find a positive association between region-specific immigrant shares for sending countries known for their originality in a particular form of art, and the number of natives working in those specific creative fields. For example, during the Age of Mass Migration, France was a leader in arts fields such as sculpture and architecture (Lee, 2016; Widewalls, 2016). We might then expect U.S. counties with larger numbers of French immigrants to also have larger numbers of natives working in sculpture and architecture.

In Table A.4, we examine the association between French immigrants and native sculptors and architects in a county in the short run. We also test for the association between sculptors and architects and immigrants for a “placebo” European country, e.g., the United Kingdom, which historically was less well-known for these forms of art (Causey et al., 2002; Chu, 2003). We conduct a similar analysis with German and Austrian immigrants, but now looking at natives in music occupations (Kralik et al., 1959). The estimates in column (1) and (2) of Table A.4 highlight that French immigrant inflows to a county are positively and significantly associated with the number of native sculptors and architects in the same location; meanwhile immigrant inflows from the U.K. to a county are not significantly associated with the outcome. Turning to music, counties with larger numbers of German and Austrian immigrants also have greater numbers of native

musicians. Again, the share of U.K. immigrants in a county does not positively predict the number of native employed as musicians (columns (3) and (4)). We take this evidence to further suggest that immigration impacted native occupational choices in the short-term through the sharing of cultural preferences and promoting new creative channels for natives.

6.4. Medium-term effects of immigration on arts development. We also provide estimates of the impact of immigration in the medium-term, i.e., during the 1930's, the decade following the end of the Age of Mass Migration. This analysis mimics the empirical strategy used on long-term outcomes. Our first outcome measures natives in arts occupations in 1940. We also examine Federal Theatre Project (FTP) productions held between 1935-1939. Data for productions is included in the Library of Congress's FTP collection (Library of Congress, 2021). The FTP was one of multiple arts-related New Deal programs enacted after the Great Depression in the United States. FTP productions were intended to get struggling artists back to work, and to boost American morale.

The results described in Appendix Table A.5 show that a one percentage point increase in the average immigrant share over the prior half century significantly increased the share of natives working in the arts by 0.014 percentage points in 1940, an effect of approximately 7 percent relative to the mean. The results also suggest that a greater number of Federal Theatre Project productions were held in counties with greater average immigration over the prior half-century. These latter effects regarding FTP plays are not statistically significant as we lack power to make meaningful conclusions from this analysis. However, we interpret the qualitative results and the direction of the coefficient estimates to be consistent with our main results.

6.5. Spillover effects. While our geographic unit of interest is the U.S. county, it is possible that the effects of immigration on local arts development could be broader in geographic scope. In order to address this possibility, we investigate the spillover effects of immigration on arts development in adjacent counties. We weight each neighboring county equally and include the average immigration share among all neighboring counties in the OLS and 2SLS specifications. For the 2SLS approach, we apply the average of the interaction between railway access and national immigration inflows across all adjacent counties as an additional instrument to predict the average immigration share among all the neighboring counties. The results are presented in Table A.6 and Table A.7. For the short run results, we use the share of native artists as the outcome of interest. For the long run results, we use the number of arts businesses and nonprofits as the outcome of interest. In both the

short and long run, the effect of immigration on arts development in adjacent counties are small and not statistically different from zero.

6.6. Migration effects beyond the Age of Mass Migration. In addition to the Age of Mass Migration, the United States has experienced other significant domestic and international migration over the past century. With respect to domestic migration, between 1920 and 1970 the United States saw large numbers of Southern blacks leave the South and move to Northern cities during the Great Migration (Collins, 2021). The United States has also experienced a Second Age of Mass Migration over the past few decades, receiving a greater number of immigrants from Asia and Latin America (Abramitzky et al., 2020). Each of these major population shifts could have impacted the long-run development of American creative arts, independent of the impact of immigration during the Age of Mass Migration.

Tables A.8, A.9, and A.10 test the robustness of the long run results reported in Tables 3, 4, and 5, to the impact of these other significant migration events. To proxy for the potential effect of the Great Migration on arts development, we include a control for the change in the black share of a county’s population between 1920 and 1970. To proxy for the potential impact of recent immigration waves, we include a measure for the immigrant share in a county as of 2000. Across Tables A.8-A.10, we find that the long run results are not affected by the inclusion of controls for other meaningful migration events.¹²

7. CONCLUSION

When immigrants arrive in new surroundings, they share a diversity of cultures, skills, and experiences with their communities. These novel interactions between immigrants and natives have led to important advances in many domains, including in the sciences. The creative arts is another arena where several narratives have been written about the contributions of immigrants and the profitable experiences of learning from, and working collaboratively with them. Yet for a sector that accounts for roughly 4.5% of U.S. annual GDP, there has been limited systematic exploration of the role that immigrants played in how the arts came to flourish in American society.

¹²We also note that during the Age of Mass Migration, natives may have moved to different locations within the United States as a response to immigrant resettlement in their communities. Such selective domestic migration could bias our results. However as shown in Sequeira et al. (2020), the authors find no significant changes to internal migration patterns of natives during the Age of Mass Migration.

In this paper, we explore the impact of immigration on the growth of the creative arts in the United States. We focus on immigration during the Age of Mass Migration, a time when American communities changed considerably as individuals were exposed to many new cultures and practices, predominantly from Europe. By studying this particular migration event in American history, we are able to examine both short and long run effects. In the short run, we focus on whether immigrant inflows from the prior decade alter natives' occupations in the subsequent decade. In the long run, we focus on measures that describe the robustness of arts communities across America. These measures include the total presence of arts nonprofits and businesses located in a county, the revenue-generating ability of such organizations, and the number and value of federal grants awarded to the arts institutions. To address potential identification concerns with using ordinary least squares estimates, our preferred analysis adopts an instrumental variables strategy that leverages the expansion of the railway network in the United States, and interacts it with national immigration inflows across decades from 1860-1920 as an instrument for county-level immigration.

We find that immigration had a significant effect on native work during the Age of Mass Migration. Larger increases in immigrant inflows into a county led to significant shifts in native work toward arts-related occupations. Over a century later, areas with greater historical immigration also have larger arts presences today. These communities have more arts businesses and non-profit organizations in their jurisdiction. These institutions employ a larger share of county populations, generate more revenue, and receive a larger number of National Endowment of the Arts grants than organizations in counties with less historical immigration. These effects appear to be larger when we address concerns with endogeneity bias in where immigrants settled in the late 19th and early 20th century. The analysis suggests that immigrants were more likely to settle in areas with fewer opportunities in the arts and generally worse economic conditions, likely due to discrimination from natives.

By documenting the impact of immigration during the Age of Mass Migration on the arts, this paper broadens our understanding of the arenas through which immigrants have shaped development in the United States. Though we focus on the Age of Mass Migration, we do not suggest that other waves of immigration or migration events did not influence American cultural arts. Immigrants from a diverse set of countries and regions have established roots across America throughout the 20th and 21st century. Separately, major population movement within the United States, such as the Great Migration, may have also influenced the cultural arts in the United States. We also

acknowledge that the definition of art continues to evolve, and therefore new forms of art have been developed over the past century. We view our analysis as an initial exploration of the impact of immigration on more traditional categories of art. Future work may explore the effects of migration outside of the AMM, as well as the impact of immigration on the development of newer or particular forms of art over the past 150 years.

Overall, our results suggest that immigrants have made significant contributions to the early growth, and continued success of the American creative arts economy. Much of our existing academic knowledge focuses on the role of immigration in advancing scientific innovation. Our paper notes the equally significant impact that immigration has had on the development of American art. As policymakers continue to review the rules on *who* should be prioritized to be able to resettle in the United States, our results expand the set of domains through which immigrants have been shown to contribute to American society. In particular, our findings suggest that it may be important consider the contributions of immigrants to the American creative arts industry, which plays a critical economic and cultural role in U.S. communities today.

REFERENCES

- Abramitzky, Ran and Leah Boustan**, “Immigration in American Economic History,” *Journal of Economic Literature*, 2017, 55 (4), 1311–1345.
- , ———, and **Katherine Eriksson**, “Do Immigrants Assimilate More Slowly Today Than in the Past?,” *American Economic Review: Insights*, 2020, pp. 125–141.
- , **Leah Platt Boustan**, and **Katherine Eriksson**, “A Nation of Immigrants: Assimilation and Economic Outcomes in the Age of Mass Migration,” *Journal of Political Economy*, 2014, 122 (3), 467–506.
- Akcigit, Ufuk, John Grigsby, and Tom Nicholas**, “Immigration and the Rise of American Ingenuity,” *American Economic Review: Papers & Proceedings*, 2017, 107 (5), 327–331.
- Azoulay, Pierre, Benjamin Jones, J. Daniel Kim, and Javier Miranda**, “Immigration and Entrepreneurship in the United States,” 2020. NBER Working Paper No. 27778.
- Borjas, George J. and Kirk B. Doran**, “The Collapse of the Soviet Union and the Productivity of American Mathematicians,” *Quarterly Journal of Economics*, 2012, 127 (3), 1143–1203.
- Borowiecki, Karol Jan**, “The Origins of Creativity: The Case of the Arts in the United States since 1850,” *Working Paper*, 2019.
- and **Kathryn Graddy**, “Immigrant Artist: Enrichment or Displacement,” *Working Paper*, 2018.
- Botella, Marion and Todd Lubart**, “Creative Processes: Art, Design and Science,” in G.E. Corazza and S Agnoli, eds., *Multidisciplinary Contributions to the Science of Creative Thinking*, Springer Science+Business Media Singapore, 2016, pp. 53–65.
- Burchardi, Konrad B, Thomas Chaney, Tarek Alexander Hassan, Lisa Tarquinio, and Stephen J Terry**, “Immigration, Innovation, and Growth,” Technical Report, National Bureau of Economic Research 2020.
- Causey, Andrew, David Curtis, Gijs van Tuyl, and Richard Cork**, *Blast to Freeze: British Art in the 20th century*, Hatje Cantz Pub, 2002.
- Collins, William J.**, “The Great Migration of Black Americans from the US South: A Guide and Interpretation,” *Explorations in Economic History*, 2021.
- Cotter, Sara**, “Straddling the Atlantic: European Influences on the American Art of the Weir Family,” 2012.
- Daniels, Roger**, *Coming to America: A History of Immigration and Ethnicity in American Life*, Harper Perennial, 2002.
- Doran, Kirk and Chung Eun Yoon**, “Immigration and Invention: Evidence from the Quota Acts,” *Working Paper*, 2020.
- Faulkner, Harold Underwood**, *American Economic History*, Harper and Row Publishers, 1960.
- Foerster, Robert**, *The American Immigration Collection*, Arno Press Inc., 1969.
- Furnham, Adrian, Mark Batey, Tom W. Booth, Vikita Patel, and Dariya Lozinskaya**, “Individual Difference Predictors of Creativity in Art and Science Students,” *Thinking Skills and Creativity*, 2011, 6, 114–121.
- Glueck, Grace**, “European Influences on Americans’ Views,” *New York Times*, 2004.
- Goldsmith-Pinkham, Paul, Isaac Sorkin, and Henry Swift**, “Bartik Instruments: What, When, Why, and How,” *American Economic Review*, 2020, 110 (8), 2586–2624.
- Hansumaker, James**, “The Effects of Arts Education on Intellectual and Social Development: A Review of Selected Research,” *Bulletin of the Council for Research in Music Education*, 1980, pp. 10–28.
- Hatton, Timothy J. and Jeffrey G. Williamson**, *Global Migration and the World Economy: Two Centuries of Policy and Performance*, MIT Press, 2005.
- Hirschman, Charles**, “The Contributions of Immigrants to American Culture,” *Daedalus*, 2013, 142 (3), 26–47.
- Hunt, Jennifer and Marjolaine Gauthier-Loiselle**, “How Much Does Immigration Boost Innovation?,” *American Economic Journal: Macroeconomics*, 2010, 2 (2), 31–56.
- Jaeger, David A, Joakim Ruist, and Jan Stuhler**, “Shift-share Instruments and the Impact of Immigration,” Technical Report, National Bureau of Economic Research 2018.
- Kerr, Sari Pekkala and William R. Kerr**, “Immigrant Entrepreneurship in America: Evidence from the Survey of Business Owners 2008 & 2012,” 2018. NBER Working Paper No. 24494.
- Kerr, William R and William F Lincoln**, “The Supply Side of Innovation: H-1B Visa Reforms and US Ethnic Invention,” *Journal of Labor Economics*, 2010, 28 (3), 473–508.
- Khanna, Gaurav and Munseob Lee**, “High-Skill Immigration, Innovation, and Creative Destruction,” 2018. NBER Working Paper No. 24824.
- Kralik, Heinrich, Othmar Wessely, and Beatrix Kempf**, *Austria: Land of Music*, Press and Information Service of the Austrian Government, 1959.
- Lee, Patina**, “The Evolution of French Architecture,” 2016. Widewalls Magazine.
- Library of Congress**, “About this Collection: Federal Theatre Project, 1935 to 1939,” 2021. Available from: <https://www.loc.gov/collections/federal-theatre-project-1935-to-1939/about-this-collection/>.
- Miller, Angela L., Janet C. Berlo, Bryan J. Wolf, and Jennifer L. Roberts**, *American Encounters: Art,*

- History, and Cultural Identity*, Washington University Libraries, 2008.
- Moser, Petra, Alessandra Voena, and Fabian Waldinger**, “German Jewish Emigres and US Invention,” *American Economic Review*, 2014, 104 (10), 3222–3255.
- and **Shmuel San**, “Immigration, Science, and Invention. Lessons from the Quota Acts,” *Working Paper*, 2020.
- National Center for Charitable Statistics**, “Core File 1989-2013 Public Charities Fiscal Year Trend [data set],” *Urban Institute*, 2020. Available from: <http://nccs-data.urban.org>.
- National Endowment for the Arts**, “Artists and Other Cultural Workers: A Statistical Portrait,” *National Endowment For The Arts*, 2019.
- , “The U.S. Arts Economy (1998-2017): A National Summary Report,” *National Endowment For The Arts*, 2020.
- , “Grant Database: Recent Grants [data set],” 2021. Available from: <https://apps.nea.gov/grantsearch/>.
- Ottaviano, Gianmarco I.P. and Giovanni Peri**, “The Economic Value of Cultural Diversity: Evidence from US Cities,” *Journal of Economic Geography*, 2006, 6, 9–44.
- Pareles, Jon**, “Immigrants Created American Music. A New Festival Tells Their Stories,” *New York Times*, 2019.
- Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek**, “IPUMS USA: Version 10.0 [data set],” 2020.
- Scheffler, Samuel**, “Immigration and the Significance of Culture,” in “Nationalism and Multiculturalism in a World of Immigration,” Springer, 2009, pp. 119–150.
- Secker, Jenny, Mick Loughran, Kirsten Heydinrych, and Lyn Kent**, “Promoting Mental Well-being and Social Inclusion Through Art: Evaluation of an Arts and Mental Health Project,” *Arts & Health*, 2011, pp. 51–60.
- Sequeira, Sandra, Nathan Nunn, and Nancy Qian**, “Immigrants and the Making of America,” *Review of Economic Studies*, 2020, 87, 382–419.
- Smith, Laura, Brieahn DeMeo, and Sunny Widmann**, “Identity, Migration, and the Arts: Three Case Studies of Translocal Communities,” *The Journal of Arts Management, Law, and Society*, 2011, 41 (3), 186–197.
- Tabellini, Marco**, “Gifts of the Immigrants, Woes of the Natives: Lessons from the Age of Mass Migration,” *The Review of Economic Studies*, 2020, 87 (1), 454–486.
- ten Doesschate Chu, Petra**, *Nineteenth-century European Art*, Abrams, 2003.
- Widewalls**, “French Art History,” 2016. Widewalls Magazine.
- Willcox, Walter F.**, *International Migrations, Volume I: Statistics*, National Bureau of Economic Research, 1929.

TABLE 1. Summary statistics

Historical railway network	Counties With Access		Counties Without Access	
	Mean	Std. Dev.	Mean	Std. Dev.
<u>Historical Variables</u>				
Immigration Inflow Share	0.09	0.10	0.08	0.13
Native Artist Share	0.20%	0.55%	0.06%	0.44%
<u>Contemporaneous Variables</u>				
Art Businesses	9.46	9.51	4.68	7.01
Art Business Employees	439	4,767	252	2,232
Art Nonprofits	8.92	37.76	3.54	20.99
Avg. Art Nonprofits Revenue (in \$ thousands)	26.70	75.40	35.18	79.92
Arts Grants	36.94	260	30.22	231
Avg. Arts Grant Value (in \$ millions)	1.78	10.50	0.95	6.58
No. of Observations	2,465		301	

Note: This table shows the summary statistics for the variables of interest. Historical variables measure county characteristics during the Age of Mass Migration and into the 1930's. Contemporaneous variables measure county characteristics around the year 2000. Immigration inflow share and native artist share are calculated based on U.S. Census data. Arts businesses and their employees are drawn from the County Business Patterns. Art nonprofits data is from the NCCS, and arts grants data is from the NEA.

TABLE 2. Short run effects of immigration on natives working in arts occupations

	(1)	(2)	(3)
	OLS	2SLS: Shift-share	2SLS: Lag Rail Access x Lag Immigration Inflow
Panel A: OLS and 2SLS			
Dependent Variable: <i>Native Artist Share</i>			
<i>Immigrant Share</i>	-0.004 (0.003)	0.027*** (0.005)	0.075* (0.043)
Mean of Dep. Var.	0.19%	0.19%	0.19%
Std. Dev. of Dep. Var.	0.52%	0.52%	0.52%
Observations	12,330	9,752	12,330
Panel B: First Stage			
Dependent Variable: <i>Immigrant Share</i>			
Shift-share		0.011*** (0.004)	
Lag Rail Access x Lag Immigration Inflow			0.159*** (0.044)
Kleibergen Paap F-statistic		7.04	12.62
Controls (in all panels)			
Lag Rail Access	Yes	Yes	Yes
Lag Immigration Share	Yes	Yes	Yes
Lag Urbanization Dummy	Yes	Yes	Yes
Log County Population Density	Yes	Yes	Yes
Lag Urbanization Dummy x Lag Immigration Inflow Share	Yes	Yes	Yes
Lag Rail Access x Lag GDP Growth	Yes	Yes	Yes
Polynomial of Longitude	Yes	Yes	Yes
Polynomial of Latitude	Yes	Yes	Yes
County Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes

Note: This table shows the short run effects of immigration on the share of the native population working in arts-related jobs. Column (1) in panel A reports the OLS estimate. Columns (2) and (3) in panel A reports 2SLS estimates using the shift-share and the railway instruments. The variable “*Native Artist Share*” is the share of a county’s population that is working in an arts-related occupation in period t . The variable “*Immigrant Share*” is the share of a county’s population that is foreign-born in period t . Column (2) and (3) in panel B reports the first stage estimates. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

TABLE 3. Long run effects of immigration on arts businesses

	(1)	(2)	(3)	(4)
	OLS	2SLS	OLS	2SLS
Panel A: OLS and 2SLS				
	Dependent Variable:			
	<i>No. of Businesses</i>		<i>Employee Share</i>	
<i>Avg. Immigrant Share</i>	26.937*** (3.184)	144.248*** (38.825)	0.008*** (0.003)	0.046* (0.028)
Mean of Dep. Var.	8.681	8.681	0.27%	0.27%
Std. Dev. of Dep. Var.	9.402	9.402	0.55%	0.55%
Observations	2,934	2,934	2,933	2,933
Panel B: First Stage				
	Dependent Variable: <i>Avg. Immigrant Share</i>			
Lag Rail Access		4.97***		4.97***
x Lag Immigration Inflow		(1.41)		(1.41)
Kleibergen Paap F-statistic		28.2		28.2
Controls (in all panels)				
Industrialization Predicted Immigration	Yes	Yes	Yes	Yes
Business Cycle Predicted Immigration	Yes	Yes	Yes	Yes
Total Time Connected to Rail (as of 2000)	Yes	Yes	Yes	Yes
Polynomial for Latitude and Longitude	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes

Note: This table shows the long-term effects of immigration on arts businesses. Columns (1) and (2) in panel A report OLS and 2SLS estimates using the logarithm number of arts organizations as the dependent variable. Columns (3) and (4) in panel A reports OLS and 2SLS estimates using logarithm average revenue of arts businesses as the dependent variable. The instrumental variable for the 2SLS estimation is the interaction between lag railway access and lag immigration inflow share. The variable “*Average Immigrant Share*” is the average share of a county’s population that is foreign-born between 1860-1920. Column (2) and (4) in panel B reports the first stage estimates. *** p<0.01, ** p<0.05, * p<0.1

TABLE 4. Long run effects of immigration on arts nonprofits

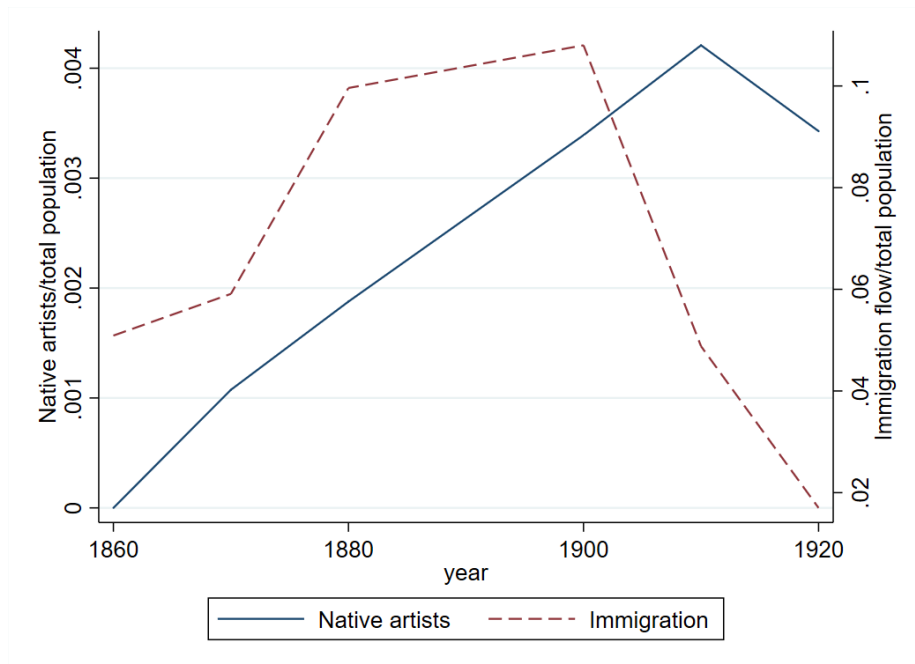
	(1)	(2)	(3)	(4)
	OLS	2SLS	OLS	2SLS
Panel A: OLS and 2SLS		Dependent Variable:		
	<i>No. of Arts Nonprofits</i>		<i>Log. Avg. Revenue</i>	
<i>Avg. Immigrant Share</i>	125.648*** (48.387)	251.526*** (92.984)	3.622*** (0.529)	3.421 (5.813)
Observations	2,925	2,925	2,599	2,599
Mean of Dep. Var.	7.990	7.990	25,006	25,006
Std. Dev. of Dep. Var.	35.17	35.17	107,695	107,695
Panel B: First Stage		Dependent Variable: <i>Avg. Immigrant Share</i>		
Lag Rail Access		4.97***		4.97***
x Lag Immigration Inflow		(1.41)		(1.41)
Kleibergen Paap F-statistic		28.2		28.2
Controls (in all panels)	Yes	Yes	Yes	Yes

Note: This table shows the long-term effects of immigration on arts nonprofits. Columns (1) and (2) in panel A report OLS and 2SLS estimates using the number of arts nonprofit organizations as the dependent variable. Columns (3) and (4) in panel A reports OLS and 2SLS estimates using the logarithm average revenue as the dependent variable. The instrumental variable for the 2SLS estimation is the interaction between lag railway access and lag immigration inflow share. The variable “*Average Immigrant Share*” is the average share of a county’s population that is foreign-born between 1860-1920. Column (2) and (4) in panel B reports the first stage estimates. All regressions control for the immigrant share predicted by industrialization, immigrant share predicted by business cycles, duration of connection to the railway network, polynomials for latitude and longitude, and state fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

TABLE 5. Long run effects of immigration on arts grants

	(1)	(2)	(3)	(4)
	OLS	2SLS	OLS	2SLS
Panel A: OLS and 2SLS		Dependent Variable:		
	<i>Log No. of Grants</i>		<i>Log Avg. Grant Amount</i>	
<i>Avg. Immigrant Share</i>	6.381*** (0.903)	25.158** (10.117)	7.435*** (1.094)	26.625** (12.589)
Mean of Dep. Var.	35.45	35.45	1.69M	1.69M
Std. Dev. of Dep. Var.	250.4	250.4	10M	10M
Observations	1,353	1,353	1,353	1,353
Panel B: First Stage		Dependent Variable <i>Avg. Immigrant Share</i>		
Lag Rail Access		4.97***		4.97***
x Lag Immigration Inflow		(1.41)		(1.41)
Kleibergen Paap F-statistic		28.2		28.2
Controls (in all panels)	Yes	Yes	Yes	Yes

Note: This table shows the long-term effects of immigration on arts grants. Columns (1) and (2) in panel A report OLS and 2SLS estimates using the logarithm number of NEA arts grants as the dependent variable. Columns (3) and (4) in panel A reports OLS and 2SLS estimates using the logarithm number of average arts grant value as the dependent variable. The instrumental variable for the 2SLS estimation is the interaction between lag railway access and lag immigration inflow. The variable “*Average Immigrant Share*” is the average share of a county’s population that is foreign-born between 1860-1920. Column (2) and (4) in panel B reports the first stage estimates. All regressions control for the immigrant share predicted by industrialization, the immigrant share predicted by business cycles, duration of connection to the railway network, polynomials for latitude and longitude, and state fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$



Note: The red dotted line shows immigration inflows as a share of the total U.S. population during the Age of Mass Migration. The blue solid line shows the share of native artists as a share of the total U.S. population. Data is drawn from the IPUMS USA Census 1% sample in 1860, 1870, 1880, 1900, 1910, and 1920.

FIGURE 1. Immigration & Native Artists Shares during the Age of Mass Migration

APPENDIX A: TABLES AND FIGURES

TABLE A.1. Immigrant regions of origin

Regions	Percent of Migrants in 1860	Percent of Migrants in 1920
Central and South America	0.6%	2.3%
Northern Europe	1.2%	5.9%
Western Europe	27%	39%
Southern Europe	0.1%	1.4%
Central Europe	0.1%	13%
Asia	0.7%	1.5%
Africa	0.1%	0.2%
Canada	3.9%	5.0%
U.K.	8.5%	3.7%
Germany	22%	6.4%
Ireland	30%	4.3%
France	2.1%	0.6%
Scotland	1.9%	1.1%
Italy	0.2%	7.3%
Spain	0.1%	0.3%
Switzerland	0.9%	0.5%
Russia	0.1%	7.1%
All Countries	100%	100%

Note: This table shows the relative share of immigration from each region in 1860 and 1920. Data is drawn from the IPUMS USA Census data 1% sample in 1860 and 1920.

TABLE A.2. Effects of migrant artists vs. migrant non-artists on natives in arts occupations

	(1)	(2)	(3)	(4)
	<i>Migrant Artists</i>		<i>Migrant Non – artists</i>	
	OLS	2SLS: Lag Rail Access x Lag Immigration Inflow	OLS	2SLS: Lag Rail Access x Lag Immigration Inflow
Panel A: OLS and 2SLS				
	Dependent variable: <i>Native Artist Share</i>			
<i>Immigrant Share</i>	0.031 (0.085)	0.544* (0.310)	-0.004 (0.003)	0.028* (0.016)
Observations	12,330	12,330	12,330	12,330
Mean of Dep.	0.19%	0.19%	0.19%	0.19%
Std.Dev. of Dep.	0.52%	0.52%	0.52%	0.52%
Panel B: First Stage				
	Dependent variable:			
	<i>Migrant Artist Share</i>		<i>Migrant Non – artist Share</i>	
Lag Rail Access x Lag Immigration Inflow		0.021* (0.012)		0.431*** (0.159)
Kleibergen Paap F-statistic		3.19		7.30
Controls (in all panels)	Yes	Yes	Yes	Yes

Note: This table shows the effects of migrant artists and migrant non-artists separately on natives working in arts occupations. Column (1) in panel A reports the OLS estimate. Columns (2) and (3) in panel A reports the 2SLS estimates using the -share and the railway instruments. The variable “*Native Artist Share*” is the share of a county’s population that is working in an arts-related occupation in period t . Column (2) and (4) in panel B reports the first stage estimates. All regressions control for lag railway access, lag immigration share, lag urbanization dummy, log county population density, lag urbanization dummy \times lag immigration inflow share, lag railway access \times lag GDP growth, polynomials for latitude and longitude, as well as county and year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

TABLE A.3. Heterogeneous effects on populations working in art occupations

	(1)	(2)
	2SLS: Lag Rail Access x Lag Immigration Inflow	2SLS: Lag Rail Access x Lag Immigration Inflow
Dependent Variable:	<i>2nd – generation Native Artist Share</i>	<i>Non 2nd – generation Native Artist Share</i>
<i>Immigrant Share</i>	-0.012 (0.014)	0.087** (0.042)
Mean of Dep. Var.	0.04%	0.13%
Std. Dev. of Dep. Var.	0.23%	0.48%
Observations	12,330	12,330
Controls	Yes	Yes

Note: This table reports 2SLS estimates of the heterogeneous effects of immigration on native artists on two populations, 2nd-generation immigrants and non native populations that are not 2nd generation immigrants. We using our preferred railway instrument for this analysis. The variable in column (1)

“*2nd – generation Artist Share*” is the share of a county’s population that is a second-generation immigrant and working in an arts-related occupation. The variable in column (2) “*Non 2nd – generation Native Artist Share*” is the share of a county’s population that is not a second-generation immigrant and working in an arts-related occupation. All regressions control for lag railway access, lag immigration share, lag urbanization dummy, log county population density, lag urbanization dummy × lag immigration inflow share, lag railway access × lag GDP growth, polynomials for latitude and longitude, as well as county and year fixed effects. *** p<0.01, ** p<0.05, * p<0.1

TABLE A.4. Country specific effects

	(1)	(2)	(3)	(4)
	OLS	2SLS: Shift-share	OLS	2SLS: Shift-share
Panel A: OLS and 2SLS		Dependent Variable:		
	<i>No. of Sculptors & Architects</i>		<i>No. of Musicians</i>	
<i>French Immigrants</i>	0.477*** (0.156)	0.544*** (0.073)		
<i>Austrian & German Immigrants</i>			0.010 (0.009)	0.078* (0.045)
<i>UK Immigrants</i>	-0.025 (0.019)	-0.124* (0.075)	-0.020** (0.009)	0.009 (0.023)
Mean of Dep. Var.	0.068	0.068	0.240	0.240
Std. Dev. of Dep. Var.	0.824	0.824	1.393	1.393
Observations	12,330	9,604	12,330	9,604
Panel B: First Stage		Dependent Variable:		
		<i>French Immigrants</i>	<i>Austrian & German Immigrants</i>	
Shift-share		0.705*** (0.250)	0.904*** (0.059)	
Kleibergen Paap F-statistic		13.22	22.28	
Controls (in all panels)	Yes	Yes	Yes	Yes

Note: This table shows the short-run country specific effects of immigration. Columns (1) and (2) in panel A report OLS and 2SLS estimates using the number of sculptors and architects as the dependent variable, and columns (3) and (4) using the number of musicians as the dependent variable. The instrumental variable for the 2SLS estimation is the shift-share instrument. Column (2) and (4) in panel B reports the first stage estimates. Regressions control for lag railway access, lag immigration share, lag urbanization dummy, log county population density, lag urbanization dummy \times lag immigration inflow share, lag railway access \times lag GDP growth, polynomials for latitude and longitude, as well as county and year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

TABLE A.5. Medium-term effects of immigration on arts development

	(1)	(2)
	2SLS	2SLS
	Year: 1930-1940	
Panel A: 2SLS	Dependent Variable:	
	<i>Native Artists Share</i>	<i>No. of Plays</i>
<i>Avg. Immigrant Share</i>	0.014** (0.007)	3.126 (6.789)
Mean of Dep. Var.	0.20%	0.137
Std. Dev. of Dep. Var.	0.494%	1.732
Observations	2,902	2,935
Panel B: First Stage	Dependent Variable: <i>Avg. Immigrant Share</i>	
Lag Rail Access	4.97***	4.97***
x Lag Immigration Inflow	(1.41)	(1.41)
Kleibergen Paap F-statistic	28.2	28.2
Controls (in all panels)	Yes	Yes

Note: This table reports the medium-term effects of immigration on the creative arts in America. Panel A reports 2SLS estimates using the native artist share, number of Federal Theatre Project plays as the dependent variables. The instrumental variable for the 2SLS estimation is the interaction between lag railway access and lag immigration inflows. All regressions control for the immigrant share predicted by industrialization, immigrant share predicted by business cycles, duration of connection to the railway network, polynomials for latitude and longitude, and state fixed effects. *** p<0.01, ** p<0.05, * p<0.1

TABLE A.6. Short run spillover effects of immigration on share working in art occupations

	(1) OLS	(2) 2SLS: Lag Rail Access x Lag Immigration Inflow
	Dependent variable: <i>Native Artist Share</i>	
<i>Immigrant Share</i>	-0.005 (0.003)	0.075* (0.043)
<i>Avg. Adjacent Co. Immigrant Share</i>	0.002 (0.003)	0.001 (0.003)
Mean of Dep.	0.19%	0.19%
Std. Dev. of Dep.	0.52%	0.52%
Observations	12,330	7,760
Controls (in all panels)	Yes	Yes

Note: This table reports the short-term spillover effects of immigration on natives working in arts-related occupations. Column (1) reports the OLS estimate. Column (2) reports 2SLS estimates using the interaction between lag railway access and lag immigration flow share as an instrument for immigrant share. The variables “*Immigrant Share*” and “*Avg. Adjacent Co. Immigrant Share*” are the share of foreign-born individuals in a county and the average share in its adjacent counties, respectively. All regressions control for lag railway access, lag immigration share, lag urbanization dummy, log county population density, lag urbanization dummy \times lag immigration flow share, the interaction between lag railway access and lag GDP growth, polynomials for latitude and longitude, as well as county and year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

TABLE A.7. Long run spillover effects of immigration on number of art businesses and nonprofits

	(1)	(2)	(3)	(4)
	OLS	2SLS	OLS	2SLS
	Dependent variable:			
	<i>No. of Businesses</i>		<i>No. of Arts Nonprofits</i>	
<i>Avg. Immigrant Share</i>	31.386*** (4.235)	134.111*** (46.408)	6.259*** (0.807)	16.992** (8.139)
<i>Avg. Adjacent Immigrants Share</i>	-10.457* (5.891)	26.378 (54.968)	-2.526** (0.106)	4.983 (10.949)
Mean of Dep. Var.	8.681	8.681	231.5	231.5
Std. Dev. of Dep. Var.	9.402	9.402	1,020	1,020
Observations	2,934	2,934	2,621	2,621
Controls (in all panels)	Yes	Yes	Yes	Yes

Note: This table shows the long-term spillover effects of immigration on the presence of the arts in counties. Columns (1) and (2) report OLS and 2SLS estimates using the logarithm number of art businesses as the dependent variable. Columns (3) and (4) reports OLS and 2SLS estimates using the logarithm number of arts nonprofits as the dependent variable. The instrument variable for the 2SLS estimation is the interaction between lag railway access and lag immigration flow. The variables "Avg. Immigrant Share" and "Avg. Adjacent Immigrants Share" are the average share that is foreign-born between 1860-1920 in a county and in its adjacent counties, respectively. All regressions control for the immigrant share predicted by industrialization, immigrant share predicted by business cycles, polynomials for latitude and longitude, and state fixed effects. *** p<0.01, ** p<0.05, * p<0.1

TABLE A.8. Long-run effects of immigration on art businesses

	(1)	(2)	(3)	(4)
	OLS	2SLS	OLS	2SLS
Panel A: OLS and 2SLS				
	Dependent Variable:			
	<i>No. of Businesses</i>		<i>Employee Share</i>	
<i>Avg. Immigrant Share</i>	16.495*** (3.213)	165.230*** (40.956)	0.005** (0.002)	0.035 (0.030)
Mean of Dep. Var.	8.681	8.681	0.27%	0.27%
Std. Dev. of Dep. Var.	9.402	9.402	0.55%	0.55%
Observations	2,934	2,934	2,933	2,933
Panel B: First Stage				
	Dependent Variable: <i>Immigrant Share</i>			
Lag Rail Access		4.95***		4.95***
x Lag Immigration Flow		(0.88)		(0.88)
Kleibergen Paap F-statistic		27.06		27.06
Controls (in all panels)				
Industrialization Predicted Immigration	Yes	Yes	Yes	Yes
Business Cycle Predicted Immigration	Yes	Yes	Yes	Yes
Total Time Connected to Rail (as of 2000)	Yes	Yes	Yes	Yes
Polynomials for Latitude and Longitude	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
Δ Share Black 1920-1970	Yes	Yes	Yes	Yes
Immigrant Share in 2000	Yes	Yes	Yes	Yes

Note: This table shows the long-term effects of immigration on arts businesses. Columns (1) and (2) in panel A report OLS and 2SLS estimates using the logarithm number of art organizations as the dependent variable. Columns (3) and (4) in panel A reports OLS and 2SLS estimates using the logarithm average revenue of art organizations as the dependent variable. The instrumental variable for the 2SLS estimation is the interaction between lag railway access and lag immigration inflow share. The variable “*Avg. Immigrant Share*” is the average share of a county’s population that is foreign-born between 1860-1920. Column (2) and (4) in panel B report the first stage estimates. *** p<0.01, ** p<0.05, * p<0.1

TABLE A.9. Long-run effects of immigration on arts nonprofits

	(1)	(2)	(3)	(4)
	OLS	2SLS	OLS	2SLS
Panel A: OLS and 2SLS				
	Dependent Variable:			
	<i>No. of Arts Nonprofits</i>		<i>Log. Revenue</i>	
<i>Avg. Immigrant Share</i>	75.127** (38.222)	257.551*** (90.834)	2.602*** (0.533)	5.026 (5.453)
Observations	2,925	2,925	2,599	2,599
Mean of Dep. Var.	7.990	7.990	25,006	25,006
Std. Dev. of Dep. Var.	35.17	35.17	107,695	107,695
Panel B: First Stage				
	Dependent Variable: <i>Immigrant Share</i>			
Lag Rail Access		4.95***		4.95***
x Lag Immigration Inflow		(0.88)		(0.88)
Kleibergen Paap F-statistic		27.06		27.06
Controls (in all panels)				
Industrialization Predicted Immigration	Yes	Yes	Yes	Yes
Business Cycle Predicted Immigration	Yes	Yes	Yes	Yes
Total Time Connected to Rail (as of 2000)	Yes	Yes	Yes	Yes
Polynomials for Latitude and Longitude	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
Δ Share Black 1920-1970	Yes	Yes	Yes	Yes
Immigrant Share in 2000	Yes	Yes	Yes	Yes

Note: This table shows the long-term effects of immigration on arts nonprofits and their revenue. Columns (1) and (2) in panel A report OLS and 2SLS estimates using number of arts nonprofits as the dependent variable. Columns (3) and (4) in panel A reports OLS and 2SLS estimates using logarithm average revenue as the dependent variable. The instrumental variable for the 2SLS estimation is the interaction between lag railway access and lag immigration flow share. The variable “*Avg. Immigrant Share*” is the average share of a county’s population that is foreign-born between 1860-1920. Column (2) and (4) in panel B report the first stage estimates. *** p<0.01, ** p<0.05, * p<0.1

TABLE A.10. Long-run effects of immigration on art grants

	(1)	(2)	(3)	(4)
	OLS	2SLS	OLS	2SLS
Panel A: OLS and 2SLS				
	Dependent Variable:			
	<i>Log. No. of Grants</i>		<i>Log. Avg. Grant Amount</i>	
<i>Avg. Immigrant Share</i>	3.190*** (0.755)	28.868*** (9.561)	3.733*** (0.942)	30.432*** (11.473)
Mean of Dep. Var.	35.45	35.45	1.69M	1.69M
Std. Dev. of Dep. Var.	250.4	250.4	10M	10M
Observations	1,353	1,353	1,353	1,353
Panel B: First Stage				
	Dependent Variable: <i>Immigrant Share</i>			
Lag Rail Access		4.95*** (0.88)		4.95*** (0.88)
x Lag Immigration inflow		27.06		27.06
Kleibergen Paap F-statistic				
Controls (in all panels)				
Industrialization Predicted Immigration	Yes	Yes	Yes	Yes
Business Cycle Predicted Immigration	Yes	Yes	Yes	Yes
Total Time Connected to Rail (as of 2000)	Yes	Yes	Yes	Yes
Polynomials for Latitude and Longitude	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
Δ Share Black 1920-1970	Yes	Yes	Yes	Yes
Immigrant Share in 2000	Yes	Yes	Yes	Yes

Note: This table shows the long-term effects of immigration on NEA arts grants. Columns (1) and (2) in panel A report OLS and 2SLS estimates using the logarithm number of art grants as the dependent variable. Columns (3) and (4) in panel A reports OLS and 2SLS estimates using the logarithm average arts grant amount as the dependent variable. The instrumental variable for the 2SLS estimation is the interaction between lag railway access and lag immigration flow. The variable “*Avg. Immigrant Share*” is the average share of a county’s population that is foreign-born between 1860-1920. Column (2) and (4) in panel B report the first stage estimates. *** p<0.01, ** p<0.05, * p<0.1

TABLE A.11. Summary of Rotemberg weights

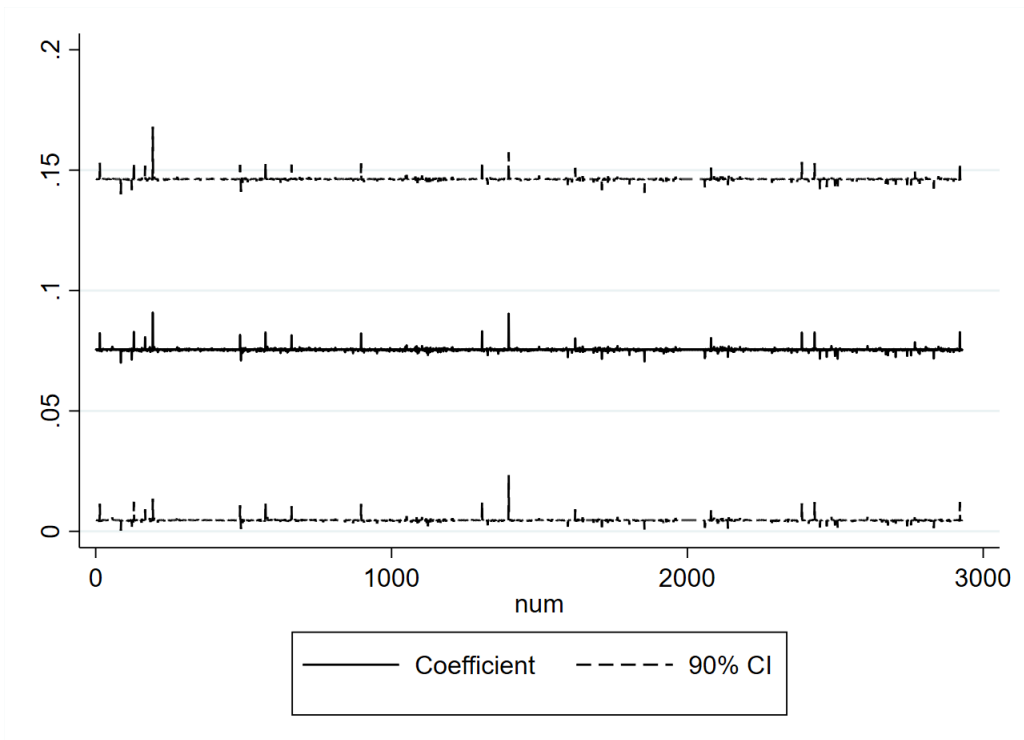
Panel A: Negative and Positive Weights					
	Sum	Mean	Share		
Negative	-0.037	-0.018	0.034		
Positive	1.037	0.069	0.966		
Panel B: Correlations of Sending Region Aggregates					
	α_k	g_k	β_k	F_k	$\text{Var}(z_k)$
α_k	1				
g_k	0.987	1			
β_k	0.133	0.086	1		
F_k	0.524	0.435	0.200	1	
$\text{Var}(z_k)$	0.095	0.029	0.329	0.249	1
Panel C: Top 5 Rotemberg Weight Sending Regions					
	$\hat{\alpha}_k$	g_k	$\hat{\beta}_k$	95 % CI	
Western Europe	0.443	24979.299	0.026	(0.020,0.030)	
Central Europe	0.129	7628.373	0.022	(0.020,0.040)	
Germany	0.099	2983.658	0.026	(0.020,0.030)	
Italy	0.108	5425.910	0.026	(0.020,0.030)	
Russia	0.089	6318.998	0.024	(0.020,0.020)	
Panel D: Estimates of β_k for Positive and Negative Weights					
	α -weighted Sum	Share of overall β	Mean		
Negative	0.000	0.006	-0.192		
Positive	0.026	0.994	0.027		

Note: This table summarizes information regarding the Rotemberg weights for our shift-share instrument. We follow Goldsmith-Pinkham et al. (2020) to calculate these statistics. The five sending regions that received the largest α weights are: Western Europe, Central Europe, Italy, Germany, and Russia.

TABLE A.12. Relationship between origin region immigrant shares and county characteristics

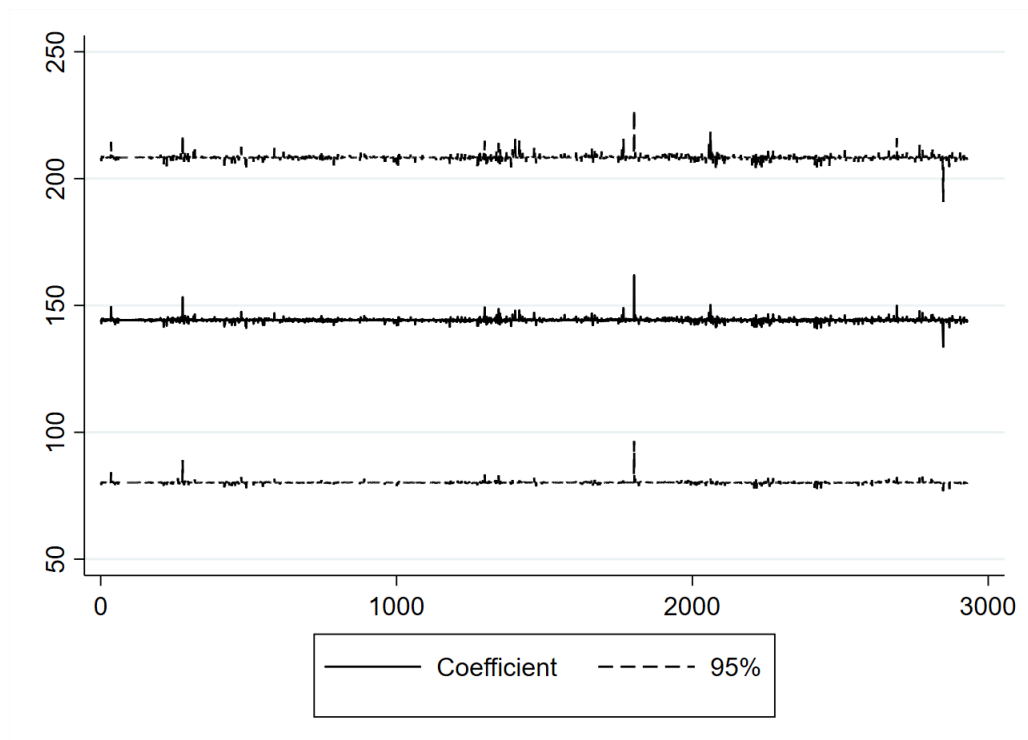
	West Europe	Central Europe	Germany	Italy	Russia	Bartik IV
Share Female	-0.038 (0.005)	0.006 (0.008)	-0.062 (0.006)	-0.050 (0.009)	-0.037 (0.008)	-4.202 (1.102)
Share Black	0.004 (0.001)	0.012 (0.002)	0.001 (0.001)	0.014 (0.002)	0.002 (0.002)	0.213 (0.279)
GDP Growth x Rail Access	0.009 (0.003)	0.005 (0.005)	0.012 (0.004)	0.010 (0.006)	0.007 (0.006)	-0.845 (0.735)
Rail Access	-0.003 (0.001)	-0.005 (0.001)	-0.005 (0.001)	-0.007 (0.001)	-0.003 (0.001)	-0.219 (0.193)
Log County Population Density	0.009 (0.000)	0.007 (0.000)	0.007 (0.000)	0.012 (0.000)	0.009 (0.000)	0.848 (0.031)
Urbanization Index	0.002 (0.001)	0.000 (0.002)	0.005 (0.001)	-0.002 (0.002)	-0.004 (0.002)	-0.097 (0.279)
Urbanization Index x Immigration Inflow Share	-0.137 (0.014)	-0.110 (0.022)	-0.131 (0.016)	-0.165 (0.023)	-0.113 (0.023)	1.827 (3.022)
R^2	0.56	0.28	0.41	0.43	0.30	0.28
N	4612	4612	4612	4612	4612	4612

Note: This table reports correlations between 1860 county characteristics and county shares of immigrants from particular regions of origin in 1860. Results are weighted by 1860 county level population. Standard errors are reported in parentheses.



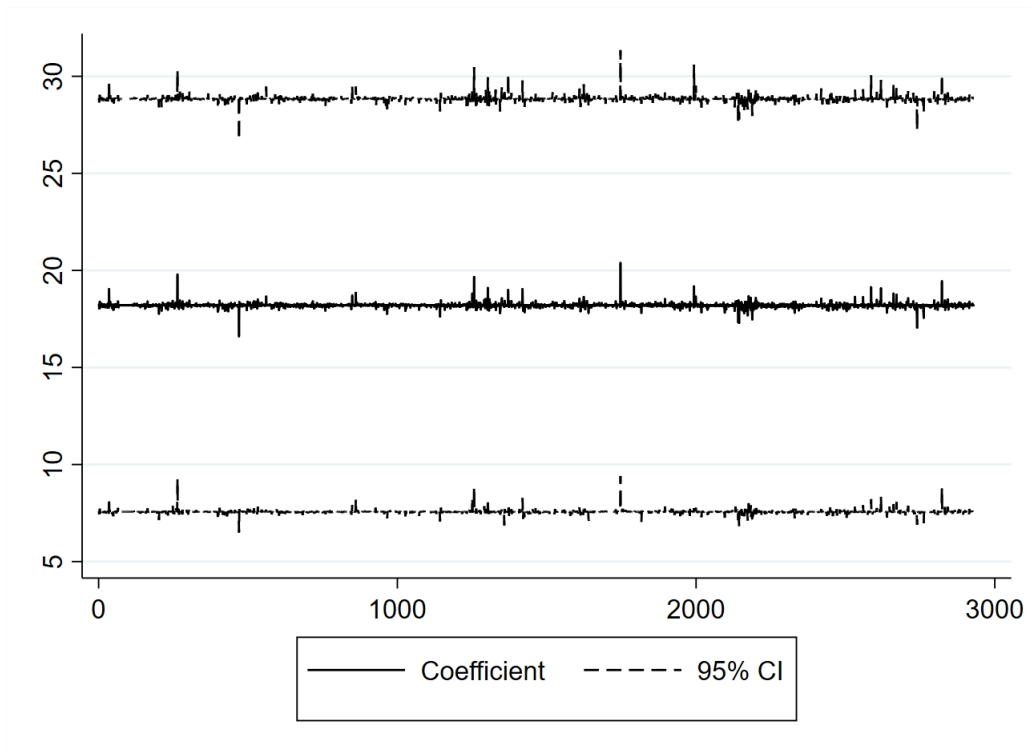
Note: This figure plots the coefficients and 95% confidence intervals (CI) by dropping one county a time.

FIGURE A.1. Short run effects on native artists, omitting one county at a time



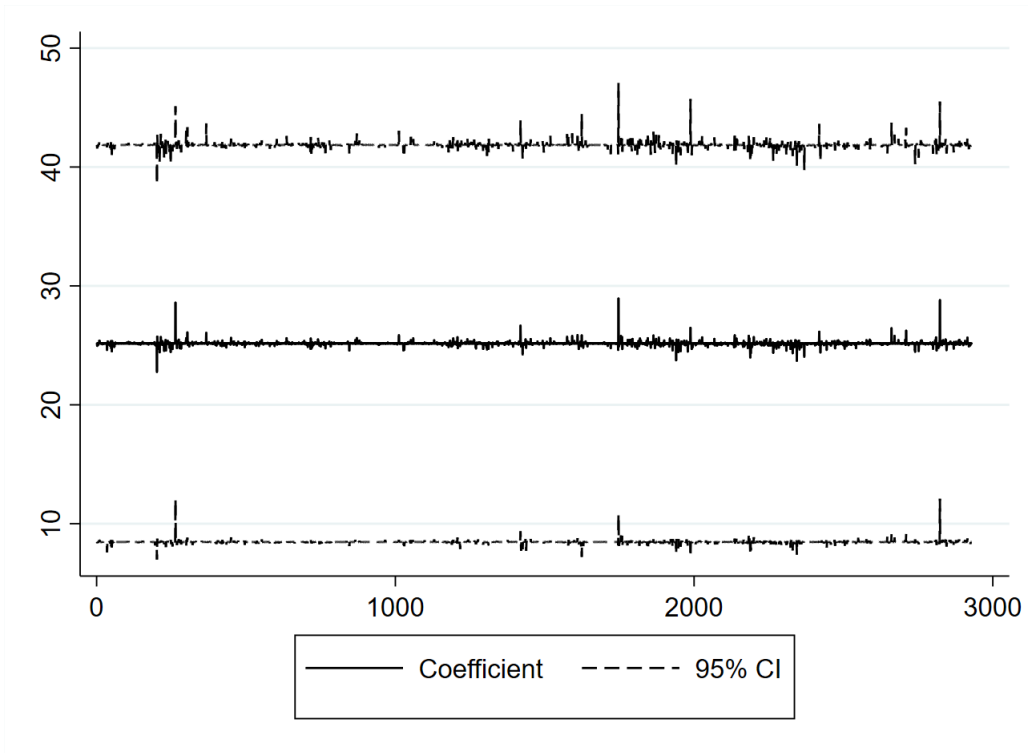
Note: This figure plots the coefficients and 95% confidence intervals (CI) by dropping one county a time.

FIGURE A.2. Long run effects on arts businesses, omitting one county at a time



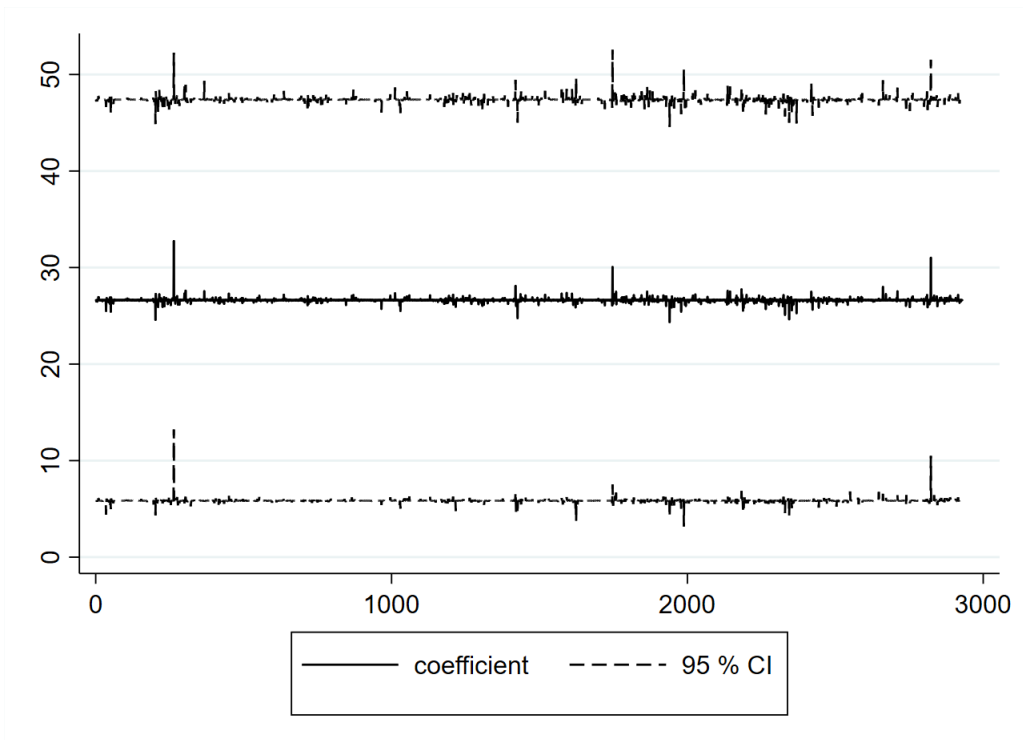
Note: This figure plots the coefficients and 95% confidence intervals (CI) by dropping one county a time.

FIGURE A.3. Long run effects on arts nonprofits, omitting one county at a time



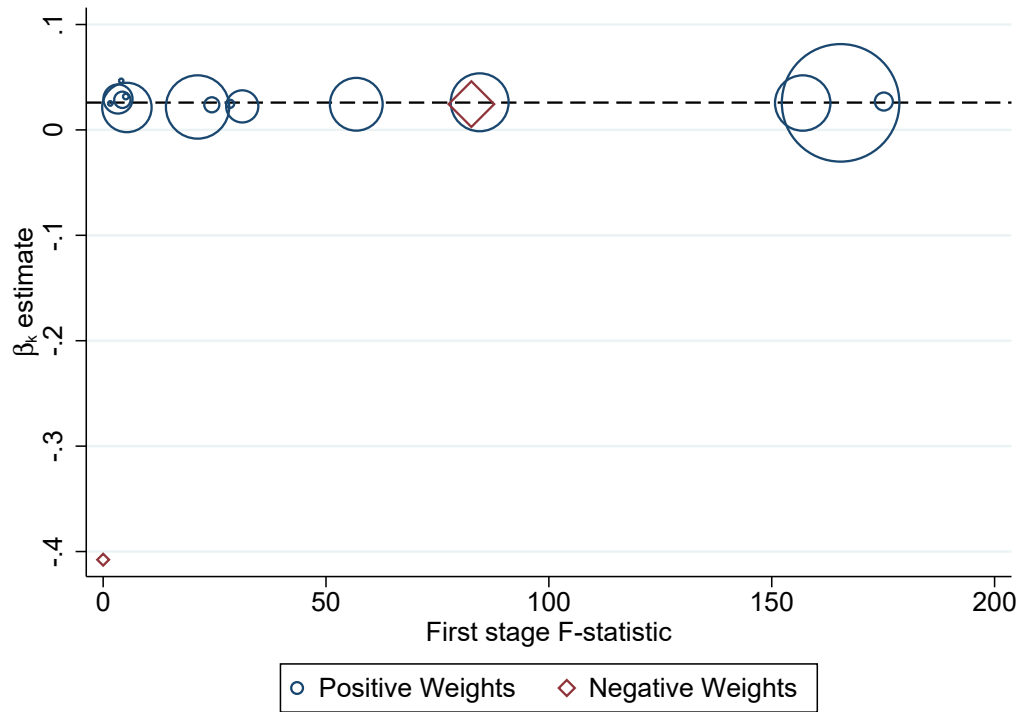
Note: This figure plots the coefficients and 95% confidence intervals (CI) by dropping one county a time.

FIGURE A.4. Long run effects on number of NEA grants, omitting one county at a time



Note: This figure plots the coefficients and 95% confidence intervals (CI) by dropping one county a time.

FIGURE A.5. Long run effects on average NEA grant amount, omitting one county at a time



Note: This figure plots the relationship between the first-stage F-statistics, the Rotemberg weights, and the value for each sending region instrument $\hat{\beta}_k$, following Goldsmith-Pinkham et al. (2020). Each plotted point is a separate instrument estimate. The estimated $\hat{\beta}_k$ for each instrument is plotted on the y-axis, while the estimated first-stage F-statistic for each instrument is plotted on the x-axis. The size of the shape (diamond or circle) defines the magnitude of the Rotemberg weights, with circles denoting positive Rotemberg weights and diamonds denoting negative weights. The horizontal dashed line represents the value of the overall $\hat{\beta}$ when using Bartik instrument.

FIGURE A.6. Heterogeneity of $\hat{\beta}_k$