Public investment in the arts and cultural agglomeration: Evidence from the New Deal

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Abstract

What is the impact of extending public funding to the arts? I draw evidence from the first major instance of federal funding to the arts via New Deal programming to evaluate the impact of artist employment programs on the per capita number of artistic professionals in US cities over time. I employ a set of New Deal spending instruments in an instrumental variables differences-in-differences design to identify the causal impacts of these programs. I determine that the program induced large increases in local per capita levels of writers, theater/film industry workers, and certain kinds of visual artists that have endured to the present-day in a "big-push" manner. Namely, present-day population-shares of writers and artists in photography and design increased by approximately 100 and 1000 professionals respectively per 1 million people in response to a one-time investment of $20,000 (present-day) per professional in 1935. I document positive, but less temporally persistent impacts on music and general visual arts. A subsequent variance decomposition demonstrates modest, yet non-negligible explanatory power (5-15%) of New Deal arts spending in determining variation within and across cities in post New Deal decades.

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1 Introduction

Public support to the arts is controversial. On one hand, work in urban economics suggests that higher skilled workers tend to endogenously sort into locations with greater amenities, and that these amenities tend to accumulate over time and benefit from agglomeration economies (Diamond (2016); Kline and Moretti (2013)). Furthermore, the seminal work on the relationship between artistic activity and urban development (Florida (2002)) argues that the development of an artistic class represents a central component to urban growth. Extending funding to the arts could induce positive externalities both to arts practitioners themselves and to the locations that host such activities (Leroux and Bernadska (2014)). On the other hand, critics question the role and efficacy of the government in supporting cultural industries that would otherwise face difficulties in sustaining themselves.

However, as a baseline, evidence on the causal impacts of government spending on the arts is scant. Due to the combined lack of natural experiments and largely non-experimental and non-randomized nature of existing arts policy, studies on the effects of arts funding are forced to make use of observational settings that cannot separate treatment and selection effects (Alper and Wassall (2006); Catteral, Dumais, and Hampden-Thompson (2012)). Behavioral research in laboratory settings and significantly smaller scale experiments represent an exception to this characterization (Bowen and Kisida (2019)), but their relatively stylized settings mitigate their scope to inform our understanding of the policy-relevant causal impacts of arts funding, such as on outcomes like artistic occupational choice.

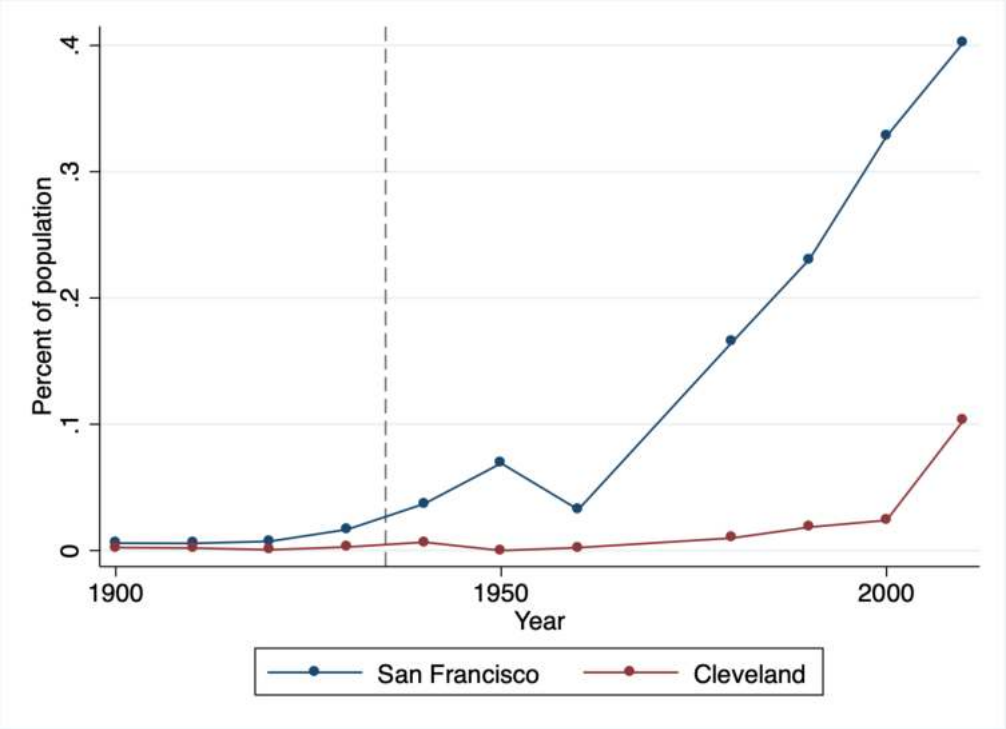
This paper is the first work to inform this discussion by estimating empirical, causal impacts of large-scale arts spending programs on the long-run population shares of artistic professionals across US cities. I the impact of large scale federal funding to the arts in the context of the New Deal on the spatial accumulation of artistic professionals. I ask: how much artistic employment does funding to the arts generate? How persistent are these effects over time? Do the localities that receive a large, unsustained funding shock (i.e. a "big-push") go on to foster flourishing arts environments well-after the funding has ceased?

These questions are key for assessing the value of public investment in the arts. Namely, if artistic activity persists heavily across and within spaces (e.g. cities) over time, then extending funding to the arts in the short run may generate considerable additional activity over a longer time horizon. This longer-run impact is particularly important to determine in light of policy and popular discussions that seek to revive New Deal arts spending programs (Jacobs (2020)). Additionally, in a world with highly autocorrelated artistic activity within localities over time (Borowiecki (2019)), the location of current "cultural hotspots" may be the result of historical, path-dependent developments. Moreover, could instances of unsustained funding to the arts generate meaningful long-run impacts on artistic activity in a "big-push" manner?

Figure 1 illustrates the underlying concept that motivates this work, plotting the evolution of the population share of writer in San Francisco and Cleveland—two cities of comparable activity and demographic characteristics in the beginning of the 20th century, the former of which benefited from substantially more New Deal funding to Writers than did the latter. The figure illustrates a divergence of the share of writers in the two cities following the Federal Writer's Project. For the case of San Francisco, Beat Generation poetry emerged from local authors that received support from the Federal Writer's Project. This initial seed of New Deal funding to authors may have spurred the growth of a literature scene that spurred the accumulation of high-skilled professionals and further development of the arts in simultaneity that fostered the growth of San Francisco to the present-day.

To study these questions, I employ newly digitized data on the New Deal arts spending encompassed under Federal Project Number One ("FPNo1", "Federal One")——the New Deal's primary artistic employment program, managed within the Works Progress Administration. The program was tasked with the employment of local artists for the dual purpose of promoting cultural production as well as extending New Deal employment efforts to white-collar workers. Importantly, the program represents the first instance of substantial centralized funding to the arts—totalling to approximately 4 billion present-day Dollars, or about half

Figure 1: Writer's share of population



This figure plots the population share of individuals identifying as an "author" as their primary occupation to the decadal US Census (variable OCC1950) in each respective city. The dashed gray vertical line represents the imposition of the Federal Writer's Project in September 1935, lasting in its primary form until March 1940. City-level disaggregations of occupation choice are unavailable for 1970.

a percent of GDP in 1935.

FPNo1 offers a promising opportunity to study the long-run impacts of a funding shock to the arts. Federal funding to the arts had not existed in the US until this point; only Boston and New York to a lesser extent featured publicly available local arts education and programming. Throughout the course of the program's run from mid-1935 to the early months of 1940, the federal government granted approximately USD 4 billion (present-day) to the arts, five times today's annual federal funding to the arts allocated to the National Endowment for the Arts. Today, between the rise of charitable giving to the arts, the variety of arts programs on the state-, local-, and national-levels, and the rise of local arts education in public schools—all in the subsequent decades—potentially render any single arts program

less salient for policy-evaluation purposes.[1] Thus, given its size and uniqueness as one of the earliest sources of federal funding to the arts in the US, the program represents a highly unique policy environment to study the long-run impacts of arts funding.

To assess the causal impact of the New Deal arts spending, I exploit the administrative structure of the program to isolate variation in local funding induced through non-arts New Deal funding, exogenous to local potential outcomes in the arts. My main specification employs a local New Deal spending leave-out instrument that is constructed as the difference between total New Deal spending and New Deal arts spending for a given locality. Importantly, the validity of this instrument relies on precluding any impact of non-arts New Deal spending on local artistic outcomes, which I empirically substantiate by demonstrating that New Deal spending had no impact on local population growth and other local economic indicators.

I find positive effects of funding across on local artist shares within their respective disciplines, some of which have endured to the present day. While the program induced large short-run increases in the shares of artists across nearly all disciplines relative to their respective pre-period baselines (typically greater than 100% increases following the immediate end of the programs), the persistence of these effects over time vary by the specific field of art.

Funding to writers generated large effects on the local share of individuals identifying as authors that persist to the present-day. In particular, an investment in 1935 of USD 20,000 per incumbent writer (present-day) generated a 20% increase in the population-share of writers relative to non-funded cities in the present-day. However, funding of musicians and visual artists demonstrates large, positive short-run impacts with mixed persistence over time. Namely, the effects of funding musicians on their local worker shares do not endure beyond a single decade, while the persistence of visual arts funding varies by subfield (with

[1] In 2018, the sum of philanthropy to arts, culture, and humanities and public spending on part of federal, state, and local governments totaled to 20.9 billion USD in 2018, with philanthropic giving representing about 90% of this amount (Stubbs and Mullaney-Loss (2019); "Giving USA 2019: The Annual Report on Philanthropy for the Year 2018" (2019)).

photographers and designers demonstrating persistent impacts and artists and painters returning to their pre-period shares after a single decade). Finally, the effects of theater funding are somewhat mixed, with null and weakly negative impacts on local shares of actors, but positive and more persistent impacts on the local share of individuals involved in either the theater or film industries. Overall, my results show that some fields responded in a "big-push" fashion this unsustained funding shock, whereas other fields exhibited a reversion to pre-shock levels of activity.

I proceed as follows: Section 2 discusses the literature on arts and arts/innovation policy, program evaluation, and agglomeration. Section 3 details a historical account of the activities and roll-out of Federal One. Section 4 discusses the data. Section 5 introduces the econometric and reduced form framework and provides ordinary least squares estimates of the relationship between Federal One funding and cities' artistic outcomes over time. Section 6 develops an instrumental variables research design in estimating the causal impacts of the New Deal arts programs. Section 7 develops a conceptual model of dynamic supply, demand, and aggregate production of services with path dependent/agglomerative qualities to illustrate the theoretical foundations of the empirical results. Section 8 contextualizes my findings in the discussion on arts policy and concludes.

2 Related literature

This work relates four seemingly disparate literatures: 1) on urban agglomeration and innovation, 2) the impacts of public amenities investment, 3) the quantitative behavior of artistic and cultural activity, and 4) work in economic history on the effects of New Deal programming during the Great Depression. In brief, this work informs the effectiveness of government spending in promoting artistic/cultural activity by demonstrating the spatial persistence of artistic activity over time and how such activity can be influenced through public investment—namely via historical New Deal funding. These connections have important implications for the role of public investment in fostering the accumulation of local amenities and for policy aimed at influencing the sorting of high-skilled labor and accruing

urban growth.

First, work in labor and urban economics aims to quantify the agglomerative tendencies of labor markets and evaluate the scope for public intervention in fostering or inhibiting the development of occupational clusters. Kline and Moretti (2013) represents the most closely related work here, studying the short- and long-run impacts of large localized and sustained investments in manufacturing through the Tennessee Valley Authority Program between 1930 and 1960, finding significant agglomeration of manufacturing jobs in the Tennessee Valley area during and after the primary funding period. More recently, Moretti (2019) documents substantial agglomeration economies among inventors within scientific fields and estimates significant productivity premiums to inventors moving to large occupational clusters, as measured by patents. Greenstone, Hornbeck, and Moretti (2010) study the agglomerative spillovers to counties induced by the location of large manufacturing plants, identifying a significant increase in total factor productivity among incumbent plants. Within the creative industries, more recent work finds minimal lasting impact of film-location tax credits on wages, employment, and production in related industries (Button (2019)). In my setting, I similarly seek to quantify the occupational agglomeration to the arts that occurs quasi-experimentally in response to public investment.

There is substantial precedent to frame artistic and cultural activity as phenomena particularly subject to agglomerative forces. A body of work has focused on the spatial clustering of artistic activity as an object of interest in of itself. Borowiecki (2013) uses exogenous variation in the distance from Classical to Post-Romantic composer's birthplaces to major cities to document significant productivity premia to geographic clustering. Kelly and O'Hagan (2007) use a similar approach leveraging variation in visual artists' birthplaces to document the emergence of various cities as artistic clusters between the 13th and 20th centuries. Hellmanzik (2010) demonstrates the geographic shift of location premiums from Paris to New York City between 1850 to 1950 by showing that works produced by artists located in those cities during their respective periods of prominence fetched higher sale prices in auction settings.

In line with the body of work that frames artistic production as a primarily agglomerative activity, this work also engages with research on the agglomeration of amenities as an urban phenomenon and the mutually beneficial relationship between artistic activity and urban development.[2] Florida (2002) is one of the earlier works to frame artistic production explicitly as central in the process of the spatial concentration of high-technology industries and broader urban growth. Diamond (2016) develops and estimates a structural model that describes the endogenous feedback between endogenous amenity accumulation and agglomeration of high-skilled workers across Metropolitan Statistical Areas. The evidence I draw on the lasting impacts of arts funding in the quasi-experimental setting of New Deal arts funding builds upon other work studying the endogenous accumulation of amenities by estimating the impact of exogenous supply shocks of said amenities. In particular, the estimates produced in this work encompass both the short-run effects of exogenous funding to the arts as well as the longer-run endogenous amenity accumulation process.

Arguing against the prevailing frame of artistic activity as primarily an urban phenomenon, Wojan, Lambert, and McGranahan (2007) demonstrate that in recent decades rural localities in the US have experienced similar growth of artistic professions as have metropolitan localities. However, the majority of related work continues to frame artistic production as an activity that focalizes around urban clustering.

One of the preliminary challenges that artistic activity faces as an object of study is the fundamental issue of how to meaningfully measure artistic activity. Of course, contention surrounding measurement and objections against the use of prices and monetary value as measures of value or willingness-to-pay arise in studying other non-arts-related topics. To this end, McCain (2006) argues that the distinction of arts and cultural goods and services from others serves a largely pragmatic function, due to the tendency for their related markets to behave differently than do more standard markets for goods and services. Examples include more extreme value-mismeasurement issues given the possibility for increased scope

[2]See overviews of this discussion in Santagata (2006) and Bille and Schulze (2006).

of heterogeneous taste, the unclear relationship between human capital, productivity, and labor market outcomes (Towse (2006); Terviö (2009)), and the ambiguous space that artistic production occupies as simultaneously a leisure activity, a primary labor market activity, and a secondary labor market activity (i.e. "moonlighting", Alper and Wassall (2006)). These examples illustrate the dilemmas that may arise in deciding how precisely to measure artistic and cultural activity.

Yet, money-metric and other value-subjective measurements of artistic value and activity still predominate in studies of arts and culture. Galenson and Weinberg (2000) and Galenson and Weinberg (2001) use this approach by employing data on art auction prices to study the role of the age in style and innovation during artistic transitionary periods of painting, finding generally that younger artists produce their most valuable work and adapt more effectively to new developments in artistic style than do older artists. Hellmanzik (2010) similarly uses auction data in determining the returns of spatial clustering of artists. Instead of monetary value, Kelly and O'Hagan (2007) measures the lasting contributions of artists based on the physical length of their respective entries in the Oxford Dictionary of Art.

Nonetheless, value-subjective approaches may prove less suitable in settings focused less on the valuation of artistic work in of itself. In this respect, I adopt a more value-secular approach in my setting: I opt to focus primarily on occupational choice and labor market outcomes as my primary object of interest, although the impacts of New Deal Arts funding may extend to results that manifest in value-normative measures. The use of occupational choice and labor market for studying artistic/cultural outcomes is common among selected outcome variables after money-metric variables, demonstrated by more visible use in surveys of arts labor markets (Alper and Wassall (2006); Towse (2006)). Moreover, the archival Federal One data distinguish between many different kinds of sub-program activities (e.g. drama theater, comedy theater, choral groups, symphony orchestras, etc.). Aggregating programmatic activity into overall employment counts regardless of specific activity simultaneously represents a decision in favor of pragmatism as well as a refrain from taking any stance on the different value-weighting of different kinds of artistic activities. Beyond valuation-oriented

concerns, there are also practical benefits to the use of labor market outcomes as measures of artistic outcomes in their wider availability and comparability over time and across different data sources.

Finally, this work contributes to discussion on the impacts of historical New Deal spending. Work here typically fits into one of two camps: either on evaluating the role of New Deal spending in alleviating the effects of the Great Depression or the effects of specific kinds of New Deal spending in stylized settings. More aggregate-focused, macroeconomic analyses of the Great Depression tend toward finding a more limited role of fiscal spending in bringing an ending the Great Depression (Romer (1992)), documenting low and even negative fiscal multipliers associated with the contemporaneous spending.

However, the more stylized New Deal works complicate this picture, portraying a landscape of different fiscal policy with widely varying degrees of effectiveness and distributional impacts; many of these works are discussed in detail in P. Fishback (2017). For instance, P. V. Fishback, Haines, and Kantor (2007) document that New Deal relief spending induced a decrease in infant mortality and suicides, and Aizer et al. (2020) find positive effects of New Deal youth employment programs on short- and long-run health outcomes and on the long-run earnings of program participants; Kline and Moretti (2013) find large positive effects on manufacturing employment in the Tennessee Valley of Tennessee Valley Authority activity that in-net decreased national manufacturing productivity via misallocation. Among many other programs (and respective analyses) for example, agricultural spending demonstrated significantly positive effects on farm activity, but with largely regressive distributional impacts, often displacing poorer tenants and sharecroppers (Sorenson, Fishback, and Kantor (2011, unpublished), Depew, P. Fishback, and Rhode (2013) in P. Fishback (2017)). My work here in turn substantiates these generally mixed effects, finding large persistence effects of writers' and visual arts spending programs, limited temporal persistence of the positive impacts of music spending, and mixed effects on actors versus theater and film industry professionals. Importantly, I do not take a stance on the welfare impacts of the New Deal arts spending programs; I instead entirely on their positivistic impacts.

3 Context: historical account of Federal One

Federal Project Number One offers a promising opportunity to study the long-run impacts of funding to the arts. As the first instance of substantial federal funding to the arts, this WPA program resulted in the gainful employment of approximately 40,000 artists per year from across the US between 1935 and 1940 across its four sub-programs separated by specific field-of-art. In total, before transitioning to significantly smaller-scale WPA sub-programs and state-led programs, the arts programming under FPNo1 comprised nearly 4 billions dollars of present-day funding over approximately five years. Moreover, its magnitude and scope of activities were unprecedented in the US, and remained so in terms of federal outlays until the mid-1970's—after ten years of operations of the National Endowment for the Arts.

In this section, I give a broad overview of Federal Project Number One. I first describe its historical background and its operations, including the division of its sub-programs between fields of art. I then proceed by detailing the program's political context and administrative structure that lend to causal identification.[3]

3.1 The background and operations of FPNo1

Federal Project Number One represents the first instance of substantial federal funding to the arts in the US. Prior to 1933, federal (as well as state- and local-level) policy was largely silent in the realm of arts programming. Additionally, due the absence of widespread standards in local education curricula, public schools did not universally feature arts programming (Whitford (1923)). In this environment characterized by an absence of popular arts-programming, education, and engagement, historian Howard Zinn describes Federal One as of the first instances where working-class populations benefited from wide access to the performing arts (Zinn (1980)). The emergence of federal arts funding through New Deal programming signified an unprecedented development in American arts policy.

[3]For a historical perspective of the context and operations of New Deal Arts programming, I primarily consult New Deal historian William Francis McDonald's comprehensive account, "Federal Relief Administration and the Arts" (McDonald 1968), though I also reference several other more specifically-focused texts.

Federal One grew out of smaller-scale white-collar employment programs from prior to the passage of the Emergency Appropriation Act of 1935 that gave rise to the Works Progress Administration. The Civil Works Administration (CWA) and the Federal Emergency Relief Act (FERA) featured employment sub-programs from 1933 that featured the limited employment of artists for cultural projects within its white-collar work-relief programming, but the scope of artistic employment prior to Federal One was considerably small in scale. Indeed, WPA historian William McDonald characterizes the extant cultural programming prior to Federal One as "conspicuous...by their rarity" (McDonald, 1969, p.59).

On August 2, 1935, New Deal administrator Jacob Baker announced the beginning of Federal One, and its first appropriations shortly followed one month later on September 12th. Harry Hopkins, one of the central architects of Federal One as well as the broader WPA positioned Federal One with a dual mandate: both as a program of white-collar work relief and as a program to promote cultural production.

On the work-relief role of Federal One, McDonald described the prevailing philosophy that,

> "*...in time of need the artist, no less than the manual worker, is entitled to employment as an artist at the public expense; and that the arts, no less than business, agriculture, and labor, are and should be the immediate concern of the ideal commonwealth.*",

and in a letter to WPA general counsel member Lee Pressman dated August 14, 1935, Hopkins emphasized the importance of cultural production as a key area of focus in New Deal programming:

> "*...it should be recognized that since a very large part of the product of this project is in a cultural service for which there is a tremendous unsatisfied demand in the US, there can be no question of excess production.*"

The dual role of arts programming in the New Deal era as both a form of employment-relief and for the promotion of cultural production is clear.

Federal One was initially installed with four programs (excluding the shortly-defunct Historical Records Survey), divided by artistic discipline: visual arts, music, theater, and writing. Importantly, these four programs were administered separately. I describe their operations in briefs:

The Federal Art Project (FAP) was the primary visual arts program under Federal One. The program engaged in four primary activities: production of individual art works (which encompassed the majority of FAP activity), providing arts education to children and communities, the completion of community art projects (e.g. murals and other group art works), and the performance of arts research. The FAP employed professional visual artists of a wide variety of media—including easel and mural painting, sculpture, and silk-screen and poster design/printing.[4]

Musicians were employed under the Federal Music Project (FMP). The FMP funded symphony orchestras and other musical ensembles that gave performances for public audiences, administered lessons in instrument performance and music appreciation and commissioned the composition of new pieces by American composers.

The Federal Theater Project (FTP) was tasked with the employment of drama professionals for the writing, production, and performance of plays for popular consumption, as well as the delivery of acting performance and theater appreciation instruction. The program featured a wide performance mandate that included black theater troupes and also catered to different language demographics.

[4]Concurrently, the Treasury Relief Art Project (TRAP) also tasked itself with the employment of visual artists for the production of painting and sculpture, but it is important to note that this program is similarly significantly smaller in scope than its homologue under Federal One (respectively, approximately 500,000 USD v. 25,000,000 USD (1935) in federal outlays).

The Federal Writers Project (FWP) employed fiction and nonfiction writers. Most notably, the FWP facilitated the creation of the American Guide Series—a anthology of guide books to states and territories, major cities, and national historical sites. The program produced early oral history collections from formerly enslaved people and also featured a literary wing. Several prominent authors found early support through FWP employment including American novelists John Steinbeck and Ralph Ellison and future playwright and historian Howard Zinn, among many others.

Federal One also featured a fifth sub-program, the Historical Records Survey (HRS), that dealt with the compilation of various historical anthologies and indices, including bibliographies of authors and musicians and lists of newspapers and religious institutions. The HRS was initially installed as a part of the Federal Writer's project, but was re-established as a separate Federal One sub-project in 1936 shortly after its inception. However, the operations of this sub-program were relatively small in comparison to the other sub-programs and was not tasked with artistic production. Moreover, the program was re-organized within the broader WPA for state direction following the reforms and wide dismantling of Federal One in 1939.

The operations of all of the sub-projects continued steadily from September 1935 up until June 1939 with the passage of legislative action that stymied the operation of the Federal One sub-projects and entirely dismantled the Federal Theater Project. Mounting tensions on several margins led to eventual reform to Federal One. In particular, critics of Federal One voiced concern over the projects' purported fiscal unsustainability and inability to "achieve a non-metropolitan character". The House Appropriations Committee focused more closely on the Federal Theater Project in light accusations from the House Committee on Un-American Activities that the sub-project promoted "communist ideals" and politically "subversive artists" (Flanagan (1940)); this political focus led to the FTP's complete dismantlement in 1939.

Following Congressional action in 1939, the remaining three artistic sub-programs of Federal

One continued operation on a significantly smaller scale, benefiting from substantially less funding than previously. The reform ceased congressional funding of the FMP, transferred the program from federal to state control, and changed its name to the WPA Music Program to reflect this shift. Additionally, the reform included the imposition and enforcement of stricter means-testing policies of artists (which were typically absent during the primary period of Federal One activity), the dismissal from local music units of all musicians on FMP employment rolls for longer than eighteen months and new requirements to generate funds from local sponsorship and concert admission fees.

There exist no precise quantitative accounts that illustrate the magnitude in decrease in activity after 1940, but historians agree on the dramatic decline of arts activity following the reforms. McDonald (1968) writes of the reforms, "As a consequence, performing units were seriously and sometimes fatally injured". After a year of scaling down in activities, by the summer of 1941, all of the state-led music projects were engaged in military and defense support. Following the attack on Pearl Harbor on December 7, 1941 and the US's entrance into World War Two, the programs continued in name only until their *de jure* dismantlement in 1943. The Federal Art and Writer's Projects similarly scaled down in operation following the 1939 reform that limited federal funding until their integration into later war efforts.

Following the full dismantling of Federal Project Number One in 1943, arts programming remained absent from icy until 1963 with the creation of the National Council on the Arts and the National Endowment for the Arts two years later.

3.2 The administrative and financial organization of FPNo1

Federal Project Number One sourced its funding from the Works Progress Administration, whose projects were themselves funded via regular congressional appropriation acts with precise recommended allocations determined by the President.

For Federal One, as for the broader WPA, the US President would make a separate recommendation/request for funding for each Federal One sub-project every several months

based on discussions with national-level Federal One leadership. Upon this making this request, relevant US Congress committees in the House of Representatives deliberated the amounts, generally fulfilling the entire funding request (typically within only a single percent deviation), after which the committees would pass on the funding allocations to the House of Representatives for approval.

From this point, Federal One sub-project leadership on the national level would allocate funding to states, which maintained their internal operations of their respective Federal One sub-projects. Finally, sub-project units within each state would make funding requests via application which for approval by the state sub-project board. As an illustrative example, the San Francisco unit of the California Federal Writer's Project would make a funding request to the California state-level Federal One administrators; the California state-level FWP has its funds apportioned by the federal-level FWP.[5] The use of applications for individual benefit from and participation in WPA and broader New Deal programming was typical, but relatively little is known on the characteristics of individual take-up and application approval (beyond the imposition of certain requirements, such as means testing for select non-arts New Deal programs).

Unlike other WPA projects, Federal One did not require local sponsorship: for the most part, funding of Federal One activities across all of the sub-programs originated from federal sources. However, strict local sponsorship requirements were put in place after legislative reform in 1939, and even beforehand Federal One projects in the performing arts (music and drama) were permitted to implement admissions fees as additional sources of funding, although such funding represented an insignificant portion of total funding (generally less than 1%). The majority of Federal One performances were free to the public.

Wages were set by the federal-project level administrators on the state- and administrative region-level. While these wages did vary between programs and states based on the cost

[5]Unfortunately, the current-status of these individual funding applications is unknown; neither records of individual applications at the National Archives and Records Administration nor evidence of their physical existence could be determined.

of living and prevailing wages for each respective field of art, they did not differ widely. Federal One workers benefited from relatively higher wages than other non-white-collar workers under other New Deal programs, typically earning about 90 USD (1935) per month (about 1800 present-day USD), about three times as much earned by Civilian Conservation Corps workers, for example.

4 Data

The central dataset consists of a panel of city-year observations that combines newly digitized data on New Deal arts spending under FPNo1 with US Census data on individuals aggregated up to the locality-level. In the main specification, I designate the city-level as the primary unit of analysis. Namely, I construct my data in order to study how the artistic occupational shares by locality themselves evolve in response to Federal One funding. Importantly, this work studies the artistic characteristics of *locations*, not individuals themselves. For this reason, I structure the data to analyze places, and the main reduced form specifications feature no weighting on population.[6] [7]

I prefer cities as the relevant geographic panel-unit of study for several reasons. First, sub-state project units almost entirely operated on the city-level, even in less-metropolitan locations where projects operations were conducted in towns, which are frequently assigned city-status in geography-level datasets, such as in the US Census. The study of cities thus allows me to maintain conformity with archival Federal One data sources. Second, arts activity has canonically been studied as a metropolitan or urban phenomenon in generating agglomeration of skilled labor to cities (Florida (2002); Diamond (2016)). Third, while de jure and de facto city boundaries change over time, their delineation generally adheres to a

[6] Figure A.9-Figure A.14 replicate the central OLS and IV analyses including weighting on each city's year 1930 and 2000 population separately.

[7] An idealized design for this research question would study the occupation activity of individuals based on continuous exposure to Federal One treatment. However, this specification requires an infeasibly detailed person-time panel with frequent observations over individuals throughout time in order infer treatment exposure.

temporally consistent and granular definition of city.[8]

Certainly, there are several limitations of using cities in this setting. In spite of the prevailing practice of research to characterize artistic activity as a primarily urban phenomenon, recent work challenges this depiction, demonstrating substantial accumulation of artistic professionals to non-metro areas as well (Wojan, Lambert, and McGranahan (2007)). Moreover, the changing definitions of cities over time may introduce measurement error in locality-level outcomes. Finally, particularly smaller cities are susceptible to being excluded from US Census samples—either by design or due to sampling variability. To this end, cities come in and out of existence and grow and shrink in de facto scope during the sample time-frame. Failure to properly account for panel-imbalance and imperfect coverage of locations may undermine the internal validity of the research design.

I construct a decadal panel of cities by processing and combining data from two main sources. Treatment variables originate from digitized primary data on Federal Project Number One activity and budgeting; outcome and control variables on locality characteristics come from aggregations of full US Census Bureau counts decadally from 1900 to 1940 and from publicly available samples cuts of the subsequent decadal Censuses. I also employ New Deal spending instruments from P. V. Fishback, Haines, and Kantor (2007). I detail the data construction process here.

4.1 Census data

Data from the US Census provide my main outcome variables: city population shares of artistic professionals.[9] City geography-units are observed for places with greater than between 50,000 and 100,000 inhabitants and are consistent with the US Census "place" use. From between 1900 and 1940, I make use of full US Census counts, aggregating up from the

[8]The US Census Bureau follows city definitions for cities as incorporated places, described in Chapter 9 of the US Census Bureau Geographic Areas Reference Manual. States define cities based on typically low population thresholds (between 200 and 2000 people), occasionally incorporating population density requirements.

[9]Ruggles et al. (2020)

individual-level to construct city-level population means (per capita artists by discipline and other geography characteristics). Subsequent to 1940, I construct these per capita occupation levels by stacking independent US Census samples from 1950 to 2015 (which typically vary from between 0.5% and 5% subsamples of the full Census) and adjusting the sampling weights for each year accordingly.[10] The main specification of the data studies only cities present in the US Census data, but in alternate specifications of the data construction, all non-city inhabitants are aggregated into a by-state "non-city" geographic unit.

Table A.1 and Table A.2 describe the city-panel balance over time. I attribute the observed variability across years to three main sources: Foremost, the full censuses are capable of recording any localities of the jurisdictional denomination "city" regardless of population, whereas the Census samples systematically exclude names of places under specific population (generally from between 50,000 and 200,000 inhabitants); indeed, the number of unique cities observed in a given census year drops off once the full US Censuses become unavailable. Second, localities may in principle move in and out of city-status by population threshold over; lastly, the large variability of smaller Census samples induces greater variability in the presence of less-populous city-places between decades.

The primary sample specification excludes all US Census-recognized city units that were absent from *either* US Census years 1930 or 1940 in order to meet the minimum threshold for the research design at the closest pre- and post-treatment periods. This sample specification includes around 955 Census-recognized cities in my analysis. Alternate specifications include varying the threshold for panel continuity—requiring continuous presence from 1920 to 1960, requiring continuous presence from 1900 to 2015 (excluding 1970). I distinguish between short- and long-run impacts as outcomes in 1940 versus starting in 1950.

4.2 Federal One activity

A central component of this work consists of digitizing the primary source of data on FPNo1 treatment; nearly all detailed records on localized programmatic funding and activity on

[10]The city-level analysis excludes results from 1970, which features no city-denominated data in available US Census samples.

part of Federal One are held physically at the National Archives and Records Administration branch in College Park, Maryland.[11] This ambitious digitization procedure resulted in the construction of several novel datasets on federal-, state-, and city-level Federal One spending and activity.

Figure A.1 and Figure A.2 display example images of digitized files. Figure A.1 displays a page from the city-level employment records from the Federal Music Project; depicts an example of the monthly Federal Art Project employment figures by state-unit during Fiscal Year 1939. In this state-level document, note in this example both that, 1) not all states received FAP funding, and 2) the "state"-level employment figures adhere to the programmatic administrative divisions that split California into two units, separated New York City from New York State, and allocated funding to Washington D.C. These documents are representative of the archival tables used to compile city- and state-level employment counts for each Federal One sub-program.

[11] In broad, the digitization procedure consisted of four parts: 1) visiting the College Park NARA branch during August 2019 where I identified and photographed relevant FPNo1 documentation (approximately 5,600 photographs); 2) organizing and prioritizing the photographs by jurisdictional level and subject matter; 3) transcribing photographs into tractable *.csv* spreadsheets; and 4) post-processing and cleaning the prepared datasets for attachment to geography-denominated data from the US Census Bureau.

4.3 Federal One treatment

I construct program-city-level employment per month variables as simple averages of all available point-in-time employment counts; I cross-validate the accuracy of these counts by aggregating up to the state-level and comparing with independently-produced state- and federal-level employment counts. The Federal Music Project makes use of three employment count compilations in 1937, 1939, and 1940 (shortly before transitioning into the significantly smaller-scale and state-led WPA Music Program). The Federal Theater Project makes use of five sets of counts from 1936 to 1937. The Federal Art Project and Federal Writer's Project featured less of the systematized record-keeping practiced by the Federal Music Project and FTP leadership. These programs feature only a single primary-source of city-level employment counts for three points-in-time that includes only the most prominent recipients of Federal One funding;[12] the Historical Records Survey records featured no sub-state employment or activity counts.

The archival records do not include city-level expense or wage variables. Instead, I impute city-program-level monthly expenses by projecting constructed state-level average monthly wages onto city-level employment counts. Specifically, I construct the total expense for sub-program l in city i and state $s(i)$ as

$$Exp._{i,l} := \frac{Total\ Expense_{s(i),l}}{Total\ Person\text{-}Month\ Employment_{s(i),l}} \times Avg.\ Person\ Month\ Emp._{i,l} \times Months\ Active_{s(i),l}.$$

This imputation method aligns with the administrative accounts of Federal One that indicate that wages were indeed set on the state-level (or sub-state- or district- level for Northern and Southern California, Washington D.C., and New York State and New York City).

The city-level employment per month counts aggregated to the state- and federal-level resemble the separate state-level counts for each of the four arts sub-programs. The Federal Art Project, Federal Music Project, and Federal Theater Project city employment records

[12]To alleviate internal and external validity-related treatment-censoring concerns of possibly analyzing only the largest Federal Writer's and Artist Project outlays, subsequent robustness checks study the impact of Music and Theater spending based on only the top-25 beneficiary cities for each program.

all reproduce state-level program employment with relative reliability, with only the Federal Writer's Project employment count estimates diverging somewhat between state- and city-level. However, even for both visual artists and authors, the imputed expenditure amounts for cities only differ from state records slightly. Importantly, these employment counts illustrate average employment counts over time, not the count of unique individuals employed by each program. Table 1 displays these aggregations.

Different methods also tend to converge on similar estimates of total expense by program. Table A.4 displays estimates of total programmatic expense, comparing imputed expenses aggregated up from cities, state-level tabulations directly from federal documentation, and figures cited in the limited historical literature on New Deal arts spending.

Table 1: FPNo1 data consistency: city-level versus state-level employment aggregations

	FAP		FMP		FTP		FWP		HRS
	City	State	City	State	City	State	City	State	State
Employment	3360	4330	10917	11626	11702	9779	1647	3709	4228
Discrepancy ratio	1.29		1.06		0.84		2.25		N/A
Expense (M. USD 1935)	18.74	18.90	51.06	46.80	78.15	59.30	9.25	12.7	12.75
Discrepancy ratio	1.01		0.92		0.76		1.37		N/A

This table compares employment and imputed expense aggregations to the federal level for each sub-program. Aggregations for the city- and state-levels are constructed from independent archival budget and activity tables.

Federal One treatment induced large increases in artistic employment during the program's operations. Table 2 displays tabulations of various parameterizations of Federal One treatment. The Music and Theater Projects reached a wide number of unique cities, whereas Arts and Writer's Projects reached fewer cities as recorded in the sub-state archival data. Conditional on program activity, the median city saw employment of around 30 artists. However, programmatic activity saw high skew in its concentration in relatively few cities as evidenced by the divergence between mean and median conditional employment.

Nonetheless, programmatic activity represented a significant increases to artistic employment in cities relative to their pre-period baseline levels in 1930. To place Federal One activity into context, I construct field-city employment shares by normalizing program em-

ployment counts by the number of artists of each respective field and city in 1930.[13] To this end, I pair the Federal Art Project with visual artists, the Music Project with musicians, the Theater Project with actors, and the Writer's Project with authors.[14] Table 2 demonstrates that the amount of Federal One activity represented a large share of pre-existing artistic activity, with the program hiring between 15- and 30% of visual artists and musicians and between 100- and 300% of pre-existing actors and writers in treated cities.

I also compute summary statistics of program expense levels and expense-per artist, providing another illustration of the magnitude of Federal One activity: In present-day terms, programs induced funding to cities of between 3- and 30 million USD (present-day) conditional on positive activity. For those hired, expenses per artist amounted to around 20,000 USD present-day to artists and musicians—and around 4-5 times more for theater practitioners and writers.[15][16] Figure A.3-Figure A.6 illustrate the spatial variation of various parameterizations of Federal One spending across the US.

[13] $Share_{i,l} = \frac{FPNo1\ Employment_{i,l}}{Employment_{i,l,1930}}$.

[14] I continue this alignment of treatments and outcomes for the reduced form framework.

[15] Although archival and historical sources suggest the outsized magnitude of theater and writer's programming, an additional explanation of the large magnitudes of their Federal One activity parameterizations normalized by pre-existing artist numbers may lie in a systematic under-counting of respective artists as Census-identified professionals (e.g. writers or actors disproportionately responding as having non-arts profession for their primary occupational activity (i.e. moonlighting, Alper and Wassall (2006)).

[16] Measures of expense per artist do not represent wages received by Federal One employment beneficiaries, but rather total programmatic outlays per pre-existing artist: $Per\ artist\ exp_{i,l} = \frac{Expense\ FPNo1_{i,l}}{Emp_{i,l,1930}} = \frac{FPNo1\ Wage_{s(i),l} \cdot FPNo1_{i,l}}{Emp_{i,l,1930}}$. Federal One artists themselves earned approximately 90 USD (1935) per month.

Table 2: FPNo1 treatment comparison

	FAP	FMP	FTP	FWP
No. cities	24	191	73	25
Avg. FPNo1 employment	140.0	53.96	158.9	65.89
Med. FPNo1 employment	39	25	37	36
Avg. FPNo1 employment share	0.152	0.321	3.228	1.898
Med. FPNo1 employment share	0.138	0.194	1.176	1.324
Avg. expense (1000s USD 1935)	780.9	267.0	1070	369.9
Med. expense (1000s USD 1935)	194.0	109.6	171.2	211.9
Avg. exp. per artist (USD 1935)	780.0	1454	4147	9885
Med. exp. per artist (USD 1935)	697.2	876.9	5196	6979
Total expense (M. USD 1935)	18.74	50.99	78.12	9.247

This table displays tabulations of program activity by city conditional on non-zero program activity. The "employment share" for a city-program is calculated as the number of artist professionals in field l in city i employed on part of Federal One divided by the number of individuals of artistic profession l in city i in 1930.

Table 3: Outcome variable city-comparison by any FPNo1 treatment status (1930)

	FPNo1	Non-FPNo1	Total	Difference
Number of cities	210	692	902	
Avg. Pop.	191609	23884	62933	167725.4**
	(568466.9)	(21037.05)	(283425.6)	(39186.06)
Avg. Pop. (2000)	464578	151137	362528	313441.1**
	(980395.7)	(85451.22)	(818455.8)	(106138.5)
Artists per 10k	3.398	2.415	2.644	.983**
	(3.352)	(3.667)	(3.619)	(.27)
Musicians per 10k	16.25	13.63	14.24	2.62**
	(6.066)	(6.487)	(6.483)	(.485)
Actors per 10k	1.466	1.077	1.168	0.389
	(2.881)	(5.283)	(4.833)	(.282)
Writer per 10k	0.542	0.359	0.401	.183*
	(1.015)	(1.458)	(1.369)	(.089)
Avg. age	29.94	29.53	29.62	.413*
	(2.031)	(2.584)	(2.471)	(.171)
Female share	0.509	0.506	0.507	0.00300
	(.017)	(.022)	(.021)	(.001)
White share	0.908	0.926	0.922	-0.0180
	(.12)	(.118)	(.119)	(.009)
Black share	0.0890	0.0720	0.0760	0.0170
	(.121)	(.119)	(.119)	(.009)
English-speaking share	0.984	0.985	0.985	-0.00200
	(.024)	(.033)	(.031)	(.002)
Avg. Occ-score	8.680	8.385	8.454	.294**
	(.634)	(.782)	(.76)	(.053)
Avg. literacy share	0.967	0.966	0.966	0.00100
	(.024)	(.048)	(.043)	(.002)

This table illustrates various 1930 summary statistics of FPNo1-recipient and non-recipient cities and estimates the magnitude and significance of their differences using cross-sectional regressions of the form $y_{i,1930} = \beta_0 + \beta_1 \cdot FPNo1_i + \varepsilon_i$. The regression coefficients in the "Difference" column are estimated with heteroskedasticity-robust standard errors clustered at the state-level. A city is considered an FPNo1-recipient if it reports non-zero activity on part of *any* of the four Federal One sub-programs.
$*p < .05$, $**p < .01$

The archival FPNo1 tables also include geographically-delineated data on more detailed program activity: for instance, concerts performed by type (e.g. opera, choral group, etc.) and number in attendance for the concert, plays performed and written, activity by genre and type of performing unit (e.g. drama, comedy; French-language, Yiddish-language; Black-

theater, etc.), and number in attendance for performances. I currently do not make use of these more detailed records of programmatic activity, primarily due to relative lack of systematization and comprehensiveness between archival tables.

4.4 Additional data

I also make use of New Deal spending data by county compiled in P. V. Fishback, Haines, and Kantor (2007). These data include spending-levels associated with different New Deal programs as well as political characteristics and congressional representation for each county. I map these data to my main cities-level specification via each city's respective contemporaneous county.

5 Reduced form framework: ordinary least squares

5.1 Reduced form framework

I employ a simple reduced form framework for drawing inference on the impacts of arts spending on artist outcomes. Throughout the reduced form work, I pair up Federal One treatments with per capita artist level outcomes by specific field of art. Each of the Federal One sub-programs $l \in \{FAP,\ FMP,\ FTP,\ FWP\} := \mathcal{L}$ corresponds with at at least one occupation/industry (standardized OCC1950/IND1950 variables in the US Census) in a set of labor market activities denoted $\mathcal{A}_l$. In particular, I align **separately** the 1) Federal Art Project with visual arts labor market activities: artists and art teachers, painters, designers, and photographers; 2) Federal Music Project with musicians/music teachers. OCC1950 also reports professional piano tuners; however, this group is discontinued in OCC1950 starting 1970. I include piano tuners as an occupational outcome group within music professionals until and including 1950.; 3) Federal Theater Project with actors, theater/motion picture industry workers, and dancers[17]; 4) Federal Writer's Project with authors and publishing industry workers.

[17]Starting 1930, IND1950 reports professional TV and radio industry professionals. However, due to lack of data available prior to 1930, I omit these professionals from the analysis.

I estimate equations of the following form:

$$y_{ilt} = \beta_0 + \beta_1 \cdot FPNo1_{il} + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \beta_{dd,lk} \cdot FPNo1_{il} \cdot 1\{Year_t = k\} + \varepsilon_{ilt},$$

for city i in decade t and arts program l and artistic professional share outcome $y_l \in \mathcal{A}_l$. $FPNo1_{il}$ stands in for various parameterizations of FPNo1 activity for a city-program pair $\{i, l\}$: a binary indicator for any programmatic activity, funds allocated, or the share of the pre-existing artist share employed by FPNo1, among other parameterizations. My preferred specification features city-level fixed effects α_i that leverage changes in fixed cities over time in response to Federal One activity. I also estimate random effects models that make include of pre-period city-level covariates, such as pre-existing artist shares and city-level socioeconomic demographic characteristics.

In this setting, coefficients $\beta_{dd,lk}$ capture the correlation between Federal One activity and changes in artistic professional shares relative to cities' 1930 baselines. I cluster standard errors at the city-level. In the case where FPNo1 funding accrued to localities in a manner exogenous to their local artistic potential outcomes, $\beta_{dd,lk}$ assesses the causal impact of FPNo1 activity in field l (by whichever parameterization) on the local population share of artists within field l in year k.

5.2 Endogenous selection into treatment, econometric framework

As is typical in program evaluation settings, there is potential endogenous selection into treatment based on potential outcomes. Namely, correlation between potential outcomes (growth in artist shares) and Federal One program treatment threatens causal identification in this setting. It may be the case that Federal One treatment simply accrued to those localities with substantial incumbent artist populations. In this case, it is unclear how selection into programmatic treatment would introduce bias, as the relationship between potential growth in artistic activity and pre-existing activity is not immediately obvious. For instance, on one hand, localities with the greatest artistic growth potential selecting into program treatment

would introduce positive bias into estimates of $\beta_{dd,k}$. On the other hand, those same localities may have been unable to sustain additional growth in their already-substantial artist populations, thus biasing estimates downward.

However, I can empirically investigate these different possibilities and their implications to an extent. In the absence of observing the true counterfactual scenarios for FPNo1-treated and -untreated cities, I study to what extent Federal One funding simply did in fact accrue to cities with large pre-existing artist shares (among other demographics differences).

Table 4 illustrates the differences in observable characteristics of Federal One beneficiary and non-beneficiary cities. Indeed, Federal One activity demonstrates strong, positive correlation with pre-existing population shares of artistic professionals, with recipient cities hosting 40% more visual artists per capita, 20% more musicians per capita, and 50% more writers per capita than non-recipient cities. The difference for actors per capita is insignificant. Federal One activity also demonstrated strong, positive correlation with city size in terms of population and income demographic as measured by OccScore.[18]

Table 5 displays these same characteristics and differences more granularly, instead distinguishing among cities by binary Federal One sub-program treatment status for each separate sub-program. The table illustrates simultaneously similar and stronger results for respective pairings of Federal One activity and artistic professional share outcomes. Table 4 displays the difference in pre-period outcomes between Federal One-treated and -untreated cities for all artistic disciplines studied here aligned with their respective Federal One sub-program.

While these cross-sectional results correlations signify a strong positive relationship between Federal One treatment and pre-existing artistic professional share, they would only repre-

[18]Income and wages per individual are not directly observable in US Census data prior to 1940. Instead, to infer income demographic characteristics of localities in 1930 and before, I make use of various occupation-score indices. These variables assign geography- and time-invariant scores to occupations based on earnings, education, prestige, and associated socioeconomic status (where OccScore is based on the 1950's median earnings of each occupation). Unfortunately, the combined unavailability of income and wage variables in the pre-period of Federal One and the geography- and time-invariant specification of the various occupation score variables precludes the study of Federal One activity on artists' wages.

sent an outright violation to causal identification in the case where future growth in artistic professionals share $\Delta y_{i,l}$ is positively related to the pre-existing relative share of these artists in the population, which may well be the case due to the role of agglomeration economies in the formation and development of artistic labor markets.

However, these descriptive results do not ultimately prescribe the direction of the possible selection bias picked up in an ordinary least squares estimation procedure. Rather, the cross-sectional results and the prior discussion serve to motivate the subsequent instrumental variables design in my causal estimation strategy.

5.3 Additional econometric assumptions

Several additional econometric assumptions frame the inference and identification strategy. The *no-interference* component of assumption of Stable Unit Treatment Value Assignment (SUTVA) requires that Federal One treatment of cities does not affect non-beneficiary cities. This assumption has important implications for the reduced form estimation strategy. In particular, hypothetically, if the estimation strategy yields positive coefficient estimates, it naturally follows to ask: from where does an increase in the local share of artists arise? If the increase in the artistic professional shares in Federal One-treated cities comes at the expense of decreased artistic professional shares in un-treated cities—that is, Federal One simply induced a *mobility* response of artists in untreated to treated localities—the Federal One treatment would violate SUTVA. Alternatively, increased movement into artistic occupations (as reported on OCC1950 or IND1950) from local individuals previously identifying a non-arts-related occupation as their primary labor force activity—effectively reflecting an impact of Federal One funding on occupation choice—would not constitute a SUTVA violation.

Historical accounts of the operations of Federal Project Number One suggest a SUTVA violation not to be the case, where programmatic activity generally drew upon *local* artist populations, and sub-state projects generally practiced local operation. Additionally, no administrative restrictions prevented Federal One funding to non-urban localities that might have otherwise induced a mobility response of artists from rural localities to urban centers.

Table 4: Comparisons of 1930 covariates by Federal One Sub-project treatment status

	FAP	Non-FAP	Difference	FMP	Non-FMP	Difference	FTP	Non-FTP	Difference	FWP	Non-FWP	Difference
Number of cities	24	878		191	711		73	829		25	877	
Avg. Populations	1.005e+06	37182	967817.3**	202807	25358	177448.5**	418858	31591	387266.5**	998624	36260	962363.5**
	(1444589)	(53371.82)	(288993.1)	(594564.9)	(25737.02)	(42966.94)	(917807.4)	(44837.12)	(106812.8)	(1414124)	(46222.87)	(277422.7)
Avg. Pop. (2000)	1.053e+06	212794	839812.1*	474854	179138	295716.8*	645230	183602	461627.7*	1.056e+06	204045	851843.6*
	(1746103)	(225489.8)	(359549.3)	(1012634)	(208025.5)	(117199.5)	(1252772)	(172306.4)	(177826.6)	(1704236)	(214081.9)	(343861.4)
Artists per 10k	6.191	2.547	3.644**	3.539	2.404	1.135**	4.181	2.509	1.672**	6.078	2.546	3.532**
	(2.657)	(3.593)	(.545)	(3.455)	(3.626)	(.284)	(2.701)	(3.659)	(.339)	(2.645)	(3.596)	(.533)
Musicians per 10k	20.39	14.07	6.315**	16.44	13.65	2.788**	17.69	13.94	3.749**	20.40	14.07	6.332**
	(6.766)	(6.397)	(1.371)	(6.046)	(6.474)	(.5)	(6.234)	(6.42)	(.759)	(6.624)	(6.397)	(1.317)
Actors per 10k	4.112	1.087	3.025*	1.516	1.074	0.442	2.392	1.060	1.332*	4.017	1.086	2.93*
	(7.402)	(4.724)	(1.489)	(3.003)	(5.214)	(.292)	(4.585)	(4.842)	(.559)	(7.263)	(4.726)	(1.434)
Writer per 10k	0.902	0.388	.514*	0.554	0.361	.193*	0.712	0.374	.338**	0.904	0.387	.517*
	(1.137)	(1.373)	(.232)	(1.041)	(1.443)	(.093)	(.863)	(1.402)	(.112)	(1.108)	(1.374)	(.222)
Avg. age	30.71	29.59	1.117**	30.02	29.52	.498**	29.93	29.60	0.329	30.61	29.60	1.011**
	(1.688)	(2.483)	(.348)	(1.982)	(2.578)	(.173)	(1.92)	(2.513)	(.24)	(1.748)	(2.484)	(.353)
Female share	0.504	0.507	-0.00300	0.509	0.506	.003*	0.509	0.507	0.00200	0.504	0.507	-0.00300
	(.013)	(.021)	(.003)	(.016)	(.022)	(.001)	(.014)	(.021)	(.002)	(.013)	(.021)	(.003)
White share	0.923	0.922	0.00100	0.919	0.923	-0.00400	0.883	0.925	-.042**	0.919	0.922	-0.00300
	(.074)	(.12)	(.015)	(.107)	(.122)	(.009)	(.116)	(.119)	(.014)	(.071)	(.12)	(.015)
Black share	0.0710	0.0760	-0.00500	0.0780	0.0750	0.00300	0.113	0.0730	.04**	0.0750	0.0760	-0.00100
	(.077)	(.12)	(.016)	(.108)	(.122)	(.009)	(.118)	(.119)	(.014)	(.075)	(.121)	(.015)
English-speaking sh.	0.985	0.985	0	0.983	0.985	-0.00300	0.982	0.985	-0.00300	0.981	0.985	-0.00400
	(.009)	(.031)	(.002)	(.025)	(.032)	(.002)	(.021)	(.032)	(.003)	(.022)	(.031)	(.005)
Avg. Occ-score	9.027	8.438	.589**	8.658	8.399	.259**	8.930	8.412	.518**	8.998	8.438	.56**
	(.549)	(.759)	(.113)	(.633)	(.782)	(.054)	(.554)	(.761)	(.07)	(.566)	(.759)	(.114)
Avg. literacy sh.	0.975	0.966	.009**	0.969	0.965	0.00300	0.966	0.966	-0.00100	0.973	0.966	.007*
	(.013)	(.044)	(.003)	(.021)	(.048)	(.002)	(.021)	(.045)	(.003)	(.017)	(.044)	(.004)

This table illustrates various summary statistics of Federal One-recipient and non-recipient cities by specific sub-program participation and estimates the magnitude and significance of their differences using cross-sectional regressions of the form $y_{i,1930} = \beta_0 + \beta_1 \cdot FPNo1_{i,l} + \varepsilon_i$ for binary treatment variable $FPNo1_{i,l} = l \in \{FAP,\ FMP,\ FTP,\ FWP\}$. The regression coefficients in the "Difference" columns are estimated with heteroskedasticity-robust standard errors.
$*p < .05$, $**p < .01$

Moreover, limiting the study to cities further precludes the scope of a rural-urban mobility response to violate no-interference treatment assignment rules, since by design, rural localities are omitted from the analysis. For the purpose of validating or invalidating this narrative here, however, the decadal structure of the Census data does not allow any research strategies to elicit such short-run mobility responses of rural artists, but longer-run validations

Table 5: Comparisons of 1930 artist shares (%) by Federal One Sub-project treatment status

	FPNo1 Sub-Project	FPNo1	Non-FPNo1	Difference
Artist	FAP	0.0619	0.0254	.0365***
		(.027)	(.036)	(.005)
Musician	FMP	0.164	0.137	.027***
		(.061)	(.067)	(.005)
Actor	FTP	0.0236	0.0106	.013***
		(.046)	(.048)	(.003)
Writer	FWP	0.00900	0.00390	.0052**
		(.011)	(.014)	(.002)
Dancer	FTP	0.00760	0.00430	.0032***
		(.006)	(.006)	(.001)
TV industry	FTP	0.00680	0.00360	.0031***
		(.006)	(.008)	(0)
Publishing ind.	FWP	0.733	0.437	.296***
		(.193)	(.292)	(.036)
Theater & film ind.	FTP	0.145	0.0963	.0486***
		(.112)	(.102)	(.009)
Piano tuner	FMP	0.00430	0.00430	0.000100
		(.004)	(.006)	(0)
Painter	FAP	0.0780	0.0615	.0165***
		(.038)	(.079)	(.006)
Photographer	FAP	0.0309	0.0247	0.00630
		(.013)	(.015)	(.003)
Designer	FAP	0.0140	0.00610	.0079***
		(.01)	(.012)	(.002)

This table illustrates various summary statistics of pre-period outcomes by Federal One-recipiency status by city and estimates the magnitude and significance of their differences using cross-sectional regressions of the form $y_{i,1930} = \beta_0 + \beta_1 \cdot FPNo1_{i,l} + \varepsilon_i$ for binary treatment variable $FPNo1_{i,l} = l \in \{FAP,\ FMP,\ FTP,\ FWP\}$. The regression coefficients in the "Difference" columns are estimated with heteroskedasticity-robust standard errors clustered on the state-level. Outcome point estimates represent percentage point population shares (i.e. "0.0619" represents "0.0619 percent of the population").
$**p < .05$, $***p < .01$

(over the course of the decade from 1930 to 1940) may signify such a mobility response.[19] To alleviate this concern here, I provide partial evidence against the presence of a mobility response by demonstrating that untreated localities did not demonstrate a decrease in their local artistic professional shares.

[19]Currently, one can investigate this possibility in a more coarse setting using the Multi-Generational Linkage Project of the US Census Bureau that connects the 1900-1940 decadal censuses in an individual panel-data format.

However, mobility responses are less relevant for assessing the validity of the longer-run impacts of Federal One funding on local artist population shares (i.e. for $\beta_{dd,t}$ coefficients starting and subsequent to 1950). The longer-run reduced form coefficient estimates will encompass agglomeration effects that outlast the initial short-run impacts of arts funding. However, long-run difference-in-differences coefficients may be biased by subsequent interventions that are operationalized in a manner correlated with local artistic activity, which is in part affected by Federal One funding. This condition requiring orthogonality of Federal One treatment and subsequent treatments is likely to hold for several decades after Federal One, with national arts programming via the National Endowment for the Arts only emerging more than two decades after the end of the New Deal arts programs. The rise of alternate arts funding policies and activities, such as widespread arts education in public schools and popular arts and humanities philanthropy in the subsequent decades may indeed have initiated spatially in response to local artistic activity and suggests future investigation.

The validity of the analysis also depends on a final exclusion restriction specific to the empirical strategy that aligns the specific Federal One projects with their respective fields of arts. Namely, 1) the Federal One treatment in one field of art cannot affect outcomes for unrelated fields of art:

$$\mathbb{E}[FPNo1_{i,l}, \Delta y_{i,-l}] = 0$$

for field of art l and unrelated field of art $-l$; and 2) outcomes in a fixed field of art also cannot directly affect the outcome of other unrelated fields of art:

$$\mathbb{E}[\Delta y_{i,l}, \Delta y_{i,-l}] = 0.$$

As an example to illustrate 1), Federal One funding that accrued to musicians through the Federal *Music* Project cannot affect the local share of *writers* in the population. As an illustration of the second restriction, local growth in the share of *visual artists* cannot affect local growth in the share of *theater practitioners*. To this end, a substantial body of work within arts and urban economics documents the spatial clustering tendencies of

artistic professionals within fields (e.g. Borowiecki (2013); Hellmanzik (2010)) as well as the endogenous accumulation of amenities within space over time (e.g. Diamond (2016), but such work does not inform the existence of cross-field causal influence of spatial clustering within artistic professions.

5.4 OLS results

The OLS results reveal the largest, most sustained increases in activity among writers and certain subsets of visual artist (namely designers and photographers among visual artists), with these groups demonstrating significant increases in employment shares relative to their 1930 baselines—typically increasing several-fold. Table 6 Panels (a) and (b) show the ordinary least squares difference-in-differences results for binary parameterizations of Federal One sub-project treatment status, illustrating generally positive and large correlations between program activity and post-period artist shares—with some variation in persistence across artistic disciplines. These tables distinguish between outcomes in 1940 and 1950. These OLS results serve to illustrate the descriptive fact that generally, among different fields of art, the cities that received Federal One treatment did proceed to foster increased artistic activity in the short- and medium-run as measured by its population share identifying as professional artists.

Figure 2 Panels (a)-(c) illustrate these results. The figures display the decadal difference-in-difference coefficients from the ordinary least squares regressions of artist share for the main artist disciplines on each respective Federal One sub-project with city fixed effects. These graphs illustrate more precisely the trajectories of artistic growth experienced by Federal One-treated cities versus non-treated cities.

Generally, the Federal One-treated cities appear to have exhibited a large increase in professional artist shares the short-run—increase of between 50 and 100% of the pre-period baseline employment shares by field, with some variation in longer-run persistence between fields of art. Figure A.7-Figure A.7 show the long-run results, illustrating that little of the impact of these programs have endured to the present day, save for the positive impacts on

writers (which substantially increased following an attenuation between 1960 and 1990)

Cities benefiting from Federal Writer's and Arts Project funding appear to exhibit relatively greater artist shares (of their respective) into the present-day. Musicians demonstrated a significant short-run increase of approximately 70% relative to their baseline shares within Federal Music Project cities, but the impact appears to have dissipated by the following decade. Importantly, the table also illustrates that these increases did not come at the *direct* expense of the artist shares of untreated-cities: that is, at the least, non-recipient localities did not exhibit a decrease in their artist shares.

The relationship between federal theater activity and theater professionals is less clear. Figure 2 Panel (c) illustrates a strong negative leading trend (albeit with no the leading-point estimates significantly different from zero) of actors shares in Federal Theater Project cities leading up to the program. This downward trend appears unfazed by the program, continuing to decrease throughout the 20th century among treated cities. Accounting for the this leading trend, the Federal Theater Project cities appear to have seen no increase (or decrease) following federal theater programming. However, the results for alternate, related fields such as dancers, appears more positive, with dancer shares increasing by 40% in treated cities in the very short-run.

Other disciplines are also characterized by leading pre-trends that mitigate the significance of the OLS results. Painters too appear to be on a decreasing trend within cities in the decades leading up to Federal One, and continue to do so following the treatment. Moreover, the increase seen by visual artists is ostensibly sustained by trend increases from 1920.

Overall, the general tendency holds that Federal One-treated cities did demonstrate significant increases in artist shares relative to non-treated cities following the end of the New Deal arts programs—with some substantial variance in the persistence of these gains as well as variation (namely within theater) of the sign and significant of the changes to artist population shares. These descriptive results likely include confounding effects—namely of

the broader trajectory of the arts in large cities over the 20th centuries—that obfuscate the causal impacts of the New Deal arts programs themselves. Figure A.9 and Figure A.11 Panels (a)-(c) replicate these results while including weighting for each city's year 1930, 2000, or contemporaneous population (with the added interpretation of more heavily considering areas where more people lived in 1930 or 2000), producing largely similar qualitative results.

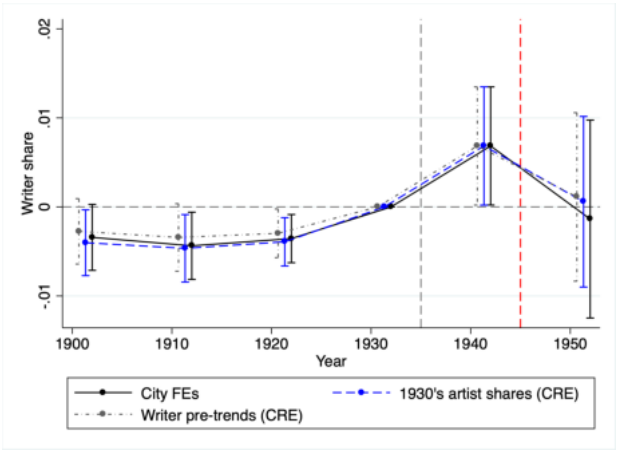
Table 6: Panel (a): OLS results: writers and theater practitioners

	(1) Author	(2) Pub. industry	(3) Actor	(4) Stage/film	(5) Dancer
FWP binary × Year 1940	0.0068**	0.030			
	(0.0034)	(0.022)			
FWP binary × Year 1950	0.0011	0.13**			
	(0.0049)	(0.055)			
FTP binary × Year 1940			-0.0046**	-0.0080	0.0046***
			(0.0021)	(0.0069)	(0.0012)
FTP binary × Year 1950			-0.0074	0.012	-0.0075
			(0.0048)	(0.022)	(0.0096)
Year 1940	0.0053***	0.21***	-0.0013	0.063***	0.0064***
	(0.00053)	(0.0056)	(0.00084)	(0.0028)	(0.00034)
Year 1950	0.0033	0.18***	-0.0060**	0.035**	0.016*
	(0.0032)	(0.038)	(0.0024)	(0.015)	(0.0089)
Constant	0.0041***	0.45***	0.012***	0.10***	0.0048***
	(0.00029)	(0.0032)	(0.00041)	(0.0014)	(0.00030)
Observations	1912	1912	1912	1912	1912
Adjusted R^2	0.685	0.851	0.855	0.814	0.065
City FEs	X	X	X	X	X

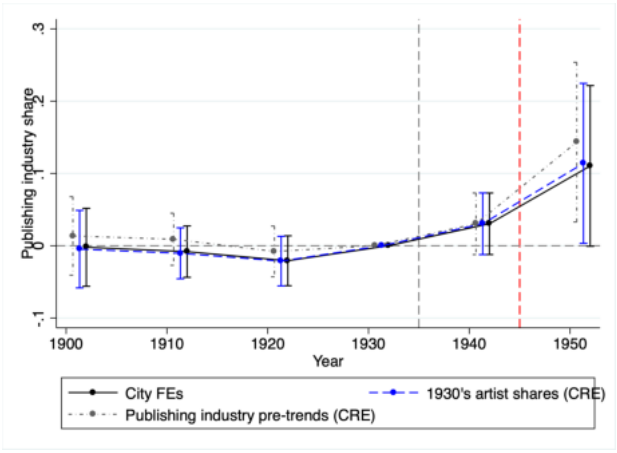
City-clustered standard errors in parentheses

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

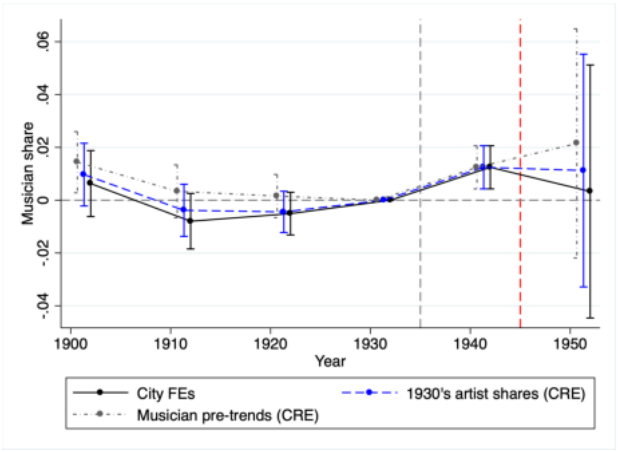
Figure 2: Panel (a): OLS results on writing and music professions



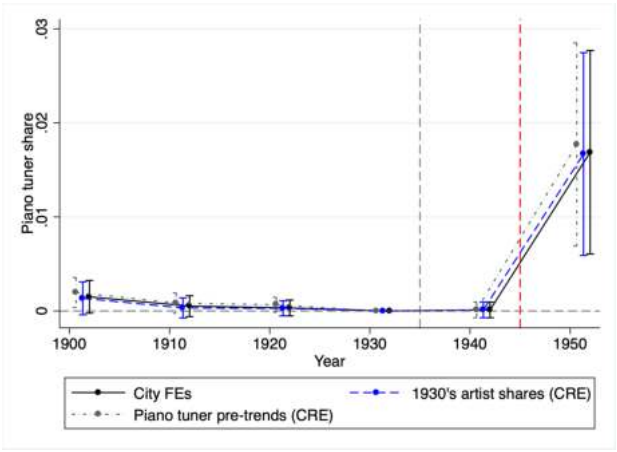
(a) Authors



(b) Publishing industry workers



(c) Musicians



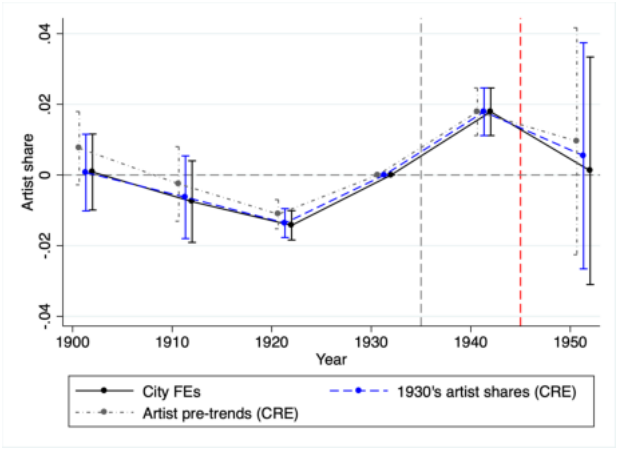
(d) Piano tuners

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

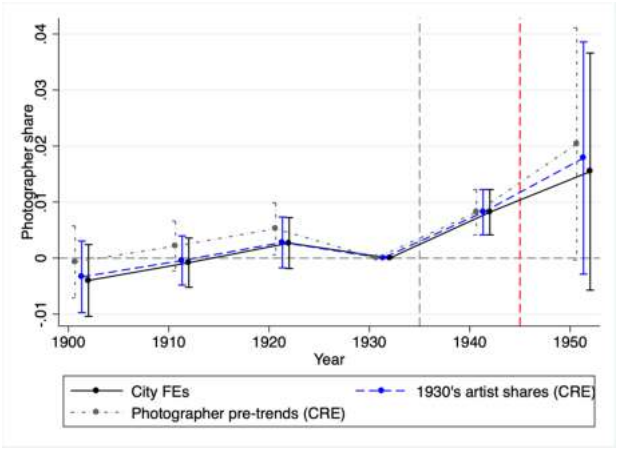
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

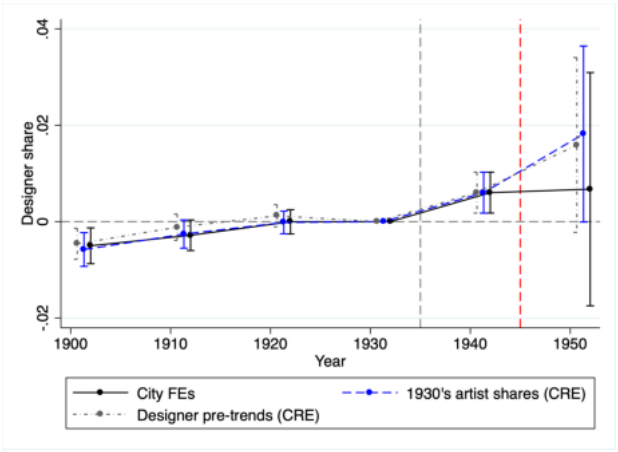
Figure 2: Panel (b): OLS results on visual artistic professionals



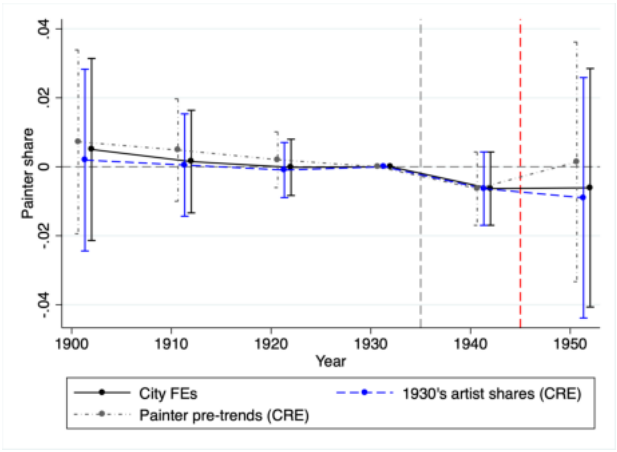
(a) Visual artists



(b) Photographers



(c) Designers



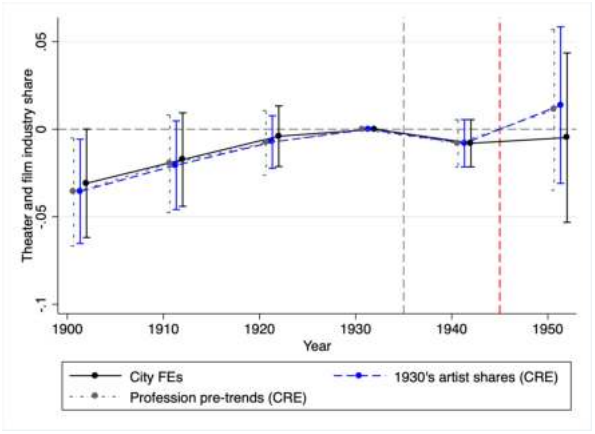
(d) Painters

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

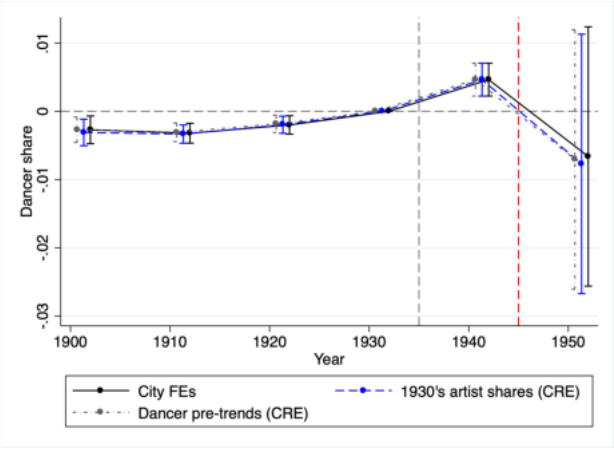
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

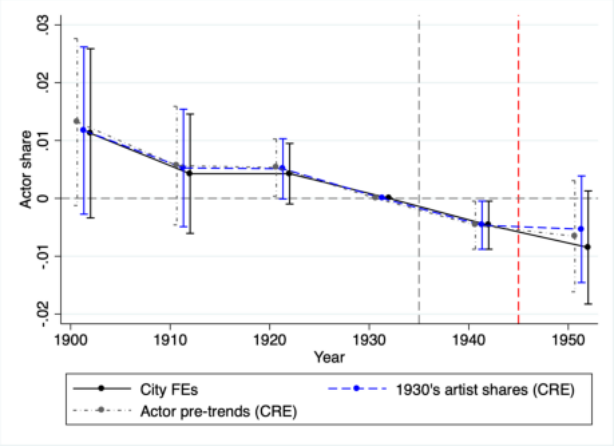
Figure 2: Panel (c): OLS results on theater and film professionals



(a) Theater/film industry



(b) Dancers



(c) Actors

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

Table 6: Panel (b): OLS results: musicians and visual artists

	(1) Musician	(2) Artist	(3) Painter	(4) Photographer	(5) Designer
FMP binary × Year 1940	0.012***				
	(0.0042)				
FMP binary × Year 1950	0.0068				
	(0.022)				
FAP binary × Year 1940		0.018***	-0.0063	0.0082***	0.0060***
		(0.0034)	(0.0054)	(0.0021)	(0.0022)
FAP binary × Year 1950		0.0060	-0.0039	0.018*	0.015
		(0.016)	(0.018)	(0.011)	(0.0092)
Year 1940	0.0050**	0.018***	0.042***	0.017***	0.0095***
	(0.0021)	(0.00094)	(0.0030)	(0.00067)	(0.00048)
Year 1950	-0.033*	0.033***	0.050***	0.014**	0.024***
	(0.019)	(0.0090)	(0.014)	(0.0063)	(0.0060)
Constant	0.14***	0.027***	0.063***	0.025***	0.0064***
	(0.0010)	(0.00060)	(0.0016)	(0.00042)	(0.00034)
Observations	1912	1912	1912	1912	1912
Adjusted R^2	0.589	0.670	0.657	0.398	0.451
City FEs	X	X	X	X	X

City-clustered standard errors in parentheses

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

This table displays the ordinary least squares difference-in-difference estimated impacts of binary measures of Federal One activity on various artistic occupation shares by city, using 1930 as the leave-out base-period. All of the specifications include fixed effects on the city-level.

6 Causal impacts: IV framework and results

6.1 Federal One New Deal spending instrument

To estimate the causal impacts of New Deal arts spending on local artist population shares, I employ an instrumental variables framework that uses locality levels of total New Deal spending less New Deal arts spending as an instrument for Federal One spending.[20] I construct the New Deal expense arts leave-out instrument for each city i as

$$NDEXP\ LO_i = NDEXP_{c(i)} - \sum_{l \in \mathcal{L}} Expense\ FPNo1_{i,l},$$

where "NDEXP" signifies "New Deal Expense" and $c(i)$ refers county c containing city i. Importantly, while Federal One represented an unprecedented instance of funding to the arts in the US, the program represented an insignificant portion—less than one percent—of of overall New Deal spending.

The mechanism behind this instrument is two-fold. First, a body of historical work emphasizes the targeted rollout of New Deal funds to localities for the simultaneous purposes of targeting relief and recovery and extending political patronage of the FDR Presidential Administration (P. V. Fishback, Kantor, and Wallis (2003)). The general flow of New Deal funding from the federal government to states within broader New Deal programming formed New Deal funding networks to localities in which benefiting from New Deal funds/activity for one program would increase the probability of benefiting from New Deal funds/activity for another unrelated program.

Second, many New Deal programs operated based on a funding-allocation process initiating at the federal government level, with funds moving between administrative bodies, eventually terminating with local demand for New Deal activity on the ground-level through applications and local interest. The role of local interest and programmatic activity increasing take-

[20] I use total New Deal spending variables by county as compiled by and used in P. V. Fishback, Haines, and Kantor (2007).

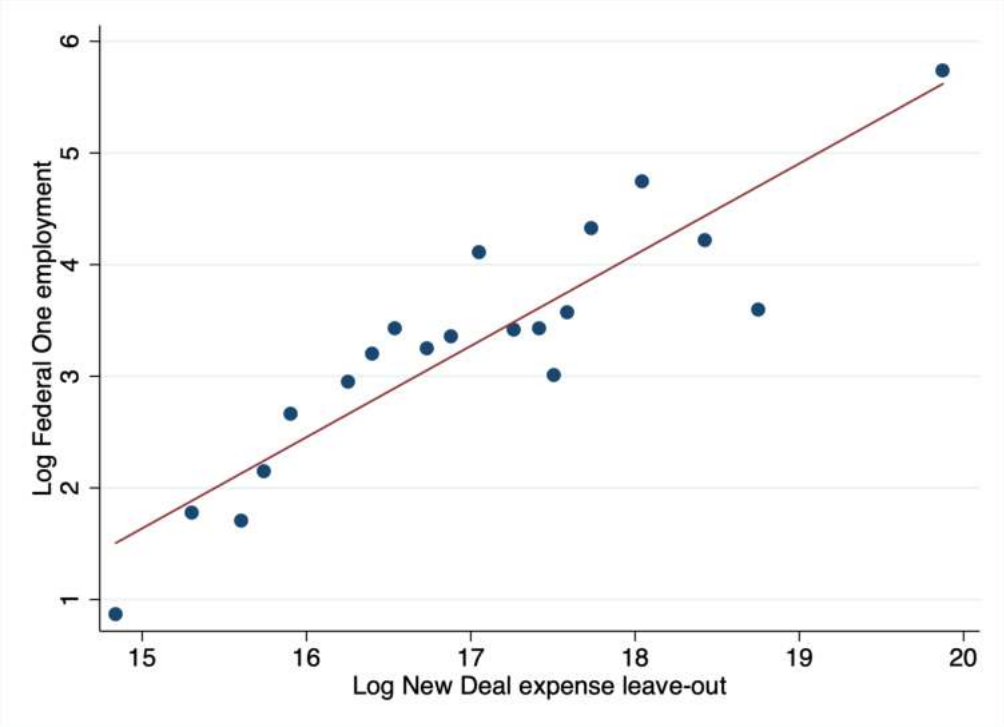
up of New Deal programming across the board further substantiates the New Deal network spending channel, where local recipiency of New Deal funds for one program would increase the probability of receiving additional New Deal funds for other programs—in this case in the form of employment of local artists through Federal Project Number One—unrelated to local artistic propensity that may influence selection into Federal One programmatic funding.

I use this New Deal expense arts leave-out variable as an instrument for Federal One activity for each sub-program, estimating the first stage:

$$FPNo1_{i,l} = \beta_{0,l} + \pi_l \cdot NDEXP\ LO_i + \Gamma_l X_{i,l} + \varepsilon_{i,l}.$$

Table 7 displays results from the cross-sectional regressions of log total Federal One activity by sub-project on the log New Deal expense leave-out instrument. In all cases, the predictive power of the instrument is considerable.

Figure 3: First stage: Log New Deal exp. leave-out on log Federal One employment



This graph displays the binned scatter plot of the log New Deal expense arts leave-out instrument on log total Federal One employment in the cross-section.

Table 7: Panel (a): First stage: Log New Deal exp. leave-out on log Federal One employment

	FAP			FMP		
	Log	Log 1+	Binary	Log	Log 1+	Binary
Log New Deal exp. leave-out	1.16***	0.12***	0.027***	0.69***	0.27***	0.055***
	(0.25)	(0.024)	(0.0050)	(0.12)	(0.062)	(0.020)
Constant	-17.7***	-1.87***	-0.43***	-8.61***	-3.88***	-0.70**
	(4.69)	(0.37)	(0.078)	(2.02)	(0.99)	(0.31)
Observations	23	891	891	181	891	891
Adjusted R^2	0.682	0.064	0.056	0.341	0.072	0.034
F	21.7	25.4	29.9	30.8	19.3	7.66

Table 7: Panel (b): First stage: Log New Deal exp. leave-out on log Federal One employment

	FTP			FWP			FPNo1		
	Log	Log 1+	Binary	Log	Log 1+	Binary	Log	Log 1+	Binary
Log NDEXP LO	0.93***	0.20***	0.044***	0.65***	0.11***	0.028***	0.82***	0.32***	0.055**
	(0.18)	(0.043)	(0.010)	(0.18)	(0.021)	(0.0048)	(0.16)	(0.074)	(0.022)
Constant	-12.8***	-3.06***	-0.65***	-8.40**	-1.74***	-0.43***	-10.6***	-4.59***	-0.69*
	(3.25)	(0.68)	(0.17)	(3.29)	(0.33)	(0.075)	(2.58)	(1.17)	(0.34)
Observations	69	891	891	23	891	891	190	891	891
Adjusted R^2	0.452	0.069	0.050	0.426	0.061	0.056	0.360	0.081	0.032
F	25.9	22.0	17.7	13.6	28.3	32.7	26.3	18.9	6.48

Standard errors in parentheses

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

This table displays the first stage results of cross-sectional regressions of Federal One employment by sub-program on the log New Deal spending arts-leave-out instrument.

$$FPNo1_{i,l} = \beta_{0,l} + \pi_l \cdot NDEXP\ LO_i + \varepsilon_{i,l}.$$

6.2 Instrument validation

Importantly, the New Deal arts leave-out spending instrument demonstrates little correlation with pre-existing artist populations. Table 8 displays a series of cross-sectional regressions of cities' 1930's artist shares on the New Deal arts leave-out instrument. Nearly all of the twelve artist occupations exhibit insignificant correlation between their pre-period population shares and the instrument, further compelling the validity of the instrument as unrelated to artistic outcomes within cities.

The validity of the New Deal arts leave-out spending instrument for studying the impacts of Federal One sub-project activity on the growth of local artist population share is also contingent on the exclusion restriction that total New Deal non-arts spending does not impact local arts scenes. While Federal One spending represents the overwhelming majority of ostensibly arts-related activity on part of New Deal programming, the threat remains that New Deal spending program outside the realm of the arts had impacts on urban environments that in turn affect the agglomerative behaviors of artists within cities. For instance, the case of non-arts related spending inducing significant populations in cities, and these population increases resulting in a greater than one-to-one increase in artist population (i.e. a one percent-increase in city population inducing a greater than one-percentage point increase in artist population share) would constitute an exclusion restriction violation.

While existing work has yet to conclusively and causally speak the magnitude of the relationship between city population size and artist share, I investigate to what extent the instrument induced adjacently-related changes to cities that may ostensibly have affected the arts environments. Namely, I study the relationship between the New Deal arts leave-out spending instrument and population levels as well as income and occupational demographic characteristics of cities in the post-New Deal era. I estimate a series of regressions with city-level fixed effect structure as follows:

$$\tilde{y}_{i,t} = \alpha_i + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \gamma_k \cdot \log NDEXP\ LO_i \cdot 1\{Year_t = k\} + \varepsilon_{i,t},$$

for alternate outcome $\tilde{y}_{it}$. I also estimate OLS and correlated random effect models (using pre-period artist levels and pre-period city demographic characteristics separately) as an alternate specification.

The results, illustrated in Table 9, detract from the possibility that alternate New Deal spending enacted an impact—either in the short-run or long-run—on city population. In all specifications, the New Deal arts leave-out spending instrument is associated with no short-run increase in city population—challenging both the presence of exclusion restriction violations through increases to city population as well as as SUTVA violations through significant migration from rural or New Deal-untreated localities to New Deal beneficiary cities. However, the longer-run impacts are less clear, demonstrating significant and positive impacts in OLS and CRE specifications, but negative and significant impacts in a city-level fixed effects specification.

As another exclusion restriction validation, I use regressions identical specification as above to study the decadal impacts of New Deal funding on city-level median income and occupational demographics. Unfortunately, socioeconomic demographic characteristics such as city racial composition, income/wages, education, and literacy are not available prior to 1940 in US Census data. For this reason, I employ more widely available, retroactively constructed indices of socioeconomic status based on occupation—termed Occupational Standing Variables by the US Census Bureau.[21] The most widely known of these indices is *OccScore* which measures income based on 1950's levels of income by occupation, but other indices include occupation-based scores of socioeconomic status, and prestige, earnings and education lev-

[21] See the IPUMS chapter on occupational standardization for a detailed discussion of the construction and use of these variables.

els.[22][23][24][25]

Thus, application of these indices to geographies reflect changes to those geographies based on differential composition of professions. *E.g.* an increase in a city i's OccScore from t_0 to t_1 reflects an average increase in the concentration of higher-earning occupational professionals (whose earnings are measured in 1950) city i—but not a directly measured increase in income.[26]

Table 10 displays the results city fixed effect regressions of the various Occupational Standing Variables on the New Deal arts leave-out spending instrument interacted with year dummies. In all cases, the instrument demonstrates no significantly positive impacts on median city-level outcomes in both the short- and long-run as measured by these occupational indices.

Table 8: IV validation: New Deal exp. leave out on pre-period artistic shares

	(1) Artist	(2) Musician	(3) Actor	(4) Author	(5) Dancer	(6) TV ind.
Log New Deal exp. leave-out	1.08***	0.27	0.58	0.12	0.047	0.070**
	(0.27)	(0.48)	(0.35)	(0.099)	(0.033)	(0.029)
Constant	-15.2***	9.85	-8.43	-1.66	-0.32	-0.76*
	(4.13)	(7.32)	(5.50)	(1.54)	(0.51)	(0.44)
Observations	891	891	891	891	891	891
Adjusted R^2	0.168	0.002	0.026	0.014	0.010	0.015

.

This table displays the results of cross-sectional regressions of cities' 1930-levels of artist population shares on the log New Deal spending arts-leave-out instrument. Dependent variable units are expressed in artists per 10,000 inhabitants.

[22]I omit Education Score and Status Score from this analysis, as they are nearly perfectly collinear with Earnings Score.

[23]Specifically, each profession in the 1950 Census was assigned a respective level of prestige, earnings, literacy, etc. in a geography-time invariant manner (e.g. an engineer in New York in 1960 has the same prestige designation as an engineer in Las Vegas in 1990). In my setting a city's score in time t refers to the mean (or median when indicated) score within that city at time t.

[24]Alternate constructions of these indices exist using the 1990 US Census.

[25]For example, the *Education Score* of a given profession consists of the percentage of each person in a said occupation in 1950 with at least one year of college education; *Prestige Score* uses averages of subjective valuations of different professions via survey.

[26]The construction of OccScore *does* account for some changes in occupational classification in the post-1950 era with the addition of new occupations to the US Census.

Table 9: IV exclusion restriction validation: city population

	(1)	(2)	(3)	(4)
Log New Deal exp. LO. × Year 1940	-0.0091***	-0.0091***	-0.0091***	-0.0091**
	(0.0030)	(0.0031)	(0.0031)	(0.0038)
Log New Deal exp. LO. × Post 1940	0.17**	0.14**	0.16**	-0.24***
	(0.070)	(0.058)	(0.065)	(0.060)
Log New Deal expense leave-out	0.26***	0.23***	0.29***	
	(0.030)	(0.029)	(0.029)	
Year 1940	0.22***	0.22***	0.22***	0.22***
	(0.050)	(0.050)	(0.050)	(0.062)
Post 1940	-1.16	-0.71	-1.21	4.76***
	(1.19)	(0.99)	(1.12)	(1.03)
Constant	5.82***	5.84***	10.9***	10.6***
	(0.48)	(0.47)	(3.75)	(0.021)
Observations	2606	2606	2604	2606
Adjusted R^2	0.561	0.600	0.611	0.885
Arts demographics 1930		X		
City demographics 1930			X	
City FEs				X

City-clustered errors in parentheses

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

This table displays results from the regressions of log city population on the log New Deal expense arts leave-out instrument by city, using 1930 as the leave-out base-period. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table 10: IV exclusion restriction validation: median occupational indices

	(1)	(2)	(3)	(4)
	OccScore	Occ. SES index	Occ. prestige	Earnings score
Log New Deal exp. LO. × Year 1940	-0.017	-0.013	-0.10*	5.72*
	-0.029	-0.021	-0.06	-3.25
Log New Deal exp. LO. × Post 1940	0.043	-0.34	-0.13	-7.09
	-0.4	-0.53	-0.6	-18.1
Year 1940	0.4	0.29	1.92*	-105.5*
	-0.47	-0.35	-1.03	-56.3
Post 1940	11.7*	16.8*	18.8*	-569.4*
	-6.97	-9.2	-10.5	-315.5
Constant	0.15	0.12	0.16	993.9***
	-0.14	-0.19	-0.22	-6.96
Observations	2606	2606	2606	2606
Adjusted R^2	0.624	0.581	0.616	0.627

City-clustered standard errors in parentheses

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

This table displays results from the regressions of socioeconomic occupational indices on the log New Deal expense arts leave-out instrument by city, using 1930 as the leave-out base-period. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts. All of the specifications include fixed effects on the city-level.

6.3 Reduced forms

The reduced forms demonstrate a strong relationship between the local artist shares and New Deal funding. Table 11 estimates these reduced forms for the instrumental variables difference-in-differences design. For eight of the twelve all dependent variable specifications of artistic discipline, the New Deal arts leave-out spending instrument exhibits a significantly positive correlation with artist population shares in the short-run. Among these, half of the fields of art that demonstrate a significant increase in the short run see maintained impacts beyond a decade. Namely, artistic occupations dealing with writing and visual arts demonstrate strong, positive short- and long-run responses, whereas responses are more mixed and less persistent for music and theater-related occupations.

Given the strong first stage of the spending leave-out instrument on Federal One sub-program activity and the exclusion restriction validation tests that demonstrate little impact of New Deal funds on the broader socioeconomic and occupational characteristics of recipient cities, the results of these reduced form specifications reflect the impact of arts funding on local shares of artists as channeled quasi-randomly through inertial New Deal funding flows to localities.

Table 11: IV reduced forms

	(1) Author	(2) Pub. industry	(3) Actor	(4) Theater/film	(5) Dancer
Log New Deal exp. LO. × Year 1940	0.0019**	0.019***	-0.00094	0.0044	0.00087***
	(0.00076)	(0.0046)	(0.00061)	(0.0035)	(0.00028)
Log New Deal exp. LO. × Post 1940	0.014***	0.029**	0.0019	0.0085	-0.00059
	(0.0043)	(0.014)	(0.0038)	(0.024)	(0.00096)
Constant	0.0043***	0.47***	0.014***	0.11***	0.0061***
	(0.0016)	(0.0065)	(0.00095)	(0.0062)	(0.00039)
Observations	2606	2606	2487	2606	2606
Adjusted R^2	0.512	0.750	0.745	0.764	-0.015
City FEs	X	X	X	X	X

	(1) Musician	(2) Artist	(3) Painter	(4) Photographer	(5) Designer
Log New Deal exp. LO. × Year 1940	0.0029**	0.0046***	0.0031	0.0021***	0.0025***
	(0.0013)	(0.00087)	(0.0022)	(0.00055)	(0.00041)
Log New Deal exp. LO. × Post 1940	-0.0061	0.0020	-0.014***	0.0074**	0.029***
	(0.013)	(0.0052)	(0.0034)	(0.0032)	(0.0098)
Constant	0.15***	0.029***	0.065***	0.026***	0.0060*
	(0.0045)	(0.0016)	(0.0022)	(0.0010)	(0.0034)
Observations	2606	2606	2606	2606	2606
Adjusted R^2	0.679	0.520	0.585	0.301	0.668
City FEs	X	X	X	X	X

City-clustered standard errors in parentheses

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

This table displays results from the regressions of local artistic professional shares on the log New Deal expense arts leave-out instrument by city, using 1930 as the leave-out base-period. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts. All of the specifications include fixed effects on the city-level. The table omits time coefficients.

6.4 IV results

I proceed to estimate the instrumental variables difference-in-differences design, generating estimates of the causal impacts of arts funding on local artist professional shares. Figure 4 Panels (a)-(c) display the difference-in-difference estimates of the decadal causal impacts on local artist shares of Federal One sub-program activity (as a binary indicator in the graphs) of their respective field. Each of the graphs combine estimates from three specifications. The first specification includes fixed effects on the city-level, and the second and third specifications estimates correlated random effects models that include pre-period artist shares (among all artistic occupations) and pre-period growth rates in the dependent variable artist share, respectively.

The results depict generally large short-run impacts of public arts investment through Federal One programming on local artistic shares, with variation across fields in the persistence of these effects over the following decades. Table Table 12 Panels (a) and (b) show the reduced form results from the IV difference-in-differences design with city-level fixed effects, aggregating longer-run impacts into a single bin.

Among the different artistic disciplines included in the set of dependent variables, writers and visual artists exhibit the largest, most persistent responses to arts funding via their respective Federal One sub-programs. Relative to their pre-period baseline in treated cities, the Federal Writer's project induced an increase within treated cities of nearly seven authors seventy publishing industry workers per ten thousand residents. Importantly, the impacts for authors has persisted to the present-day, and the impact for publishing industry workers endured several decades before mildly attenuating. Put most decisively, funding to authors generated lasting "cultural hotspots" of writers. Importantly, Table 12 Panel (a) demonstrates that these effects were not generated in tandem with decreases in artistic professionals shares in un-treated cities.

Visual artist shares also saw substantial increases in response to Federal Art Project Ac-

tivity, with all visual arts professions increasing substantially in the immediate post-period. Population shares of photographers and designers exhibited increases on the order of 8 and 17 visual artists per 10,000 residents within Federal Art Project-treated cities, although only the impacts on designers and photographers persisted significantly beyond two decades. Shares of "generalist" visual visual artists (those reporting reporting either "artists" or art teachers as their primary occupation) also saw a substantial short-run three-fold increase of 17 artists per 10,000 residents in treated cities, although this increase immediately dissipated after a single decade.

The Federal Music Project induced large increases in music professionals share of the population of its respective cities. The program caused a short run increase in musicians as a share of the population by 5 musicians per 10,000 residents (a 32% and 100% proportional increase). Notably, the impacts on musicians are less than for artists and writers relative to their pre-period baselines and both impacts dissipate after a single decade.

Lastly, the impacts on theater/film related industries are more mixed. Federal Theater Project activity induced steady and sustained positive impacts on the share of theater and film industry workers in treated cities, but the programs effects are not immediately significant on a 5% level. However, the coefficients gradually increase toward a longer-run increase upward of 50 additional theater industry workers per 10,000 individuals. The impacts on dancers are strongly positive and significant in the short-run, increasing by around 2 dancers per 10,000 individuals, but falling back to pre-period levels a decade after the end of program treatment. The impacts on actors is insignificant and ostensibly negative for actors, whose shares among treated cities saw positive pre-trends followed by a weak decline in the post-period, although actor shares are missing an additional decade due to absence from the 1970 US Census occupation question to respondees.[27]

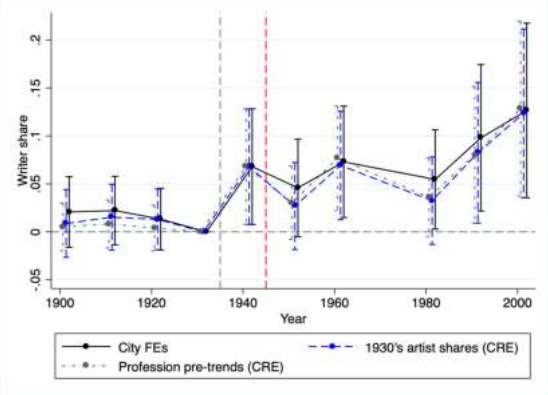
[27]Historical accounts of Federal One discuss the presence of substantial conflict between Federal One administrators and local actors and theater unions (McDonald (1968); Flanagan (1940)), where crowd-out and union conflict may have mitigated potentially positive effects of public theater spending or even induced a decrease in actor activity.

Finally, I generate more detailed results by outcome variable, reproduced in Table A.5-Table A.15 in the appendix for each respective artistic profession. In these tables, I re-parameterize the treatment variables to express impacts in terms of expense per artistic professional (1000s USD 1935), share of artistic professionals employed on part of the respective Federal One sub-program relative to the number of artistic professionals in 1930, and the log of Federal One program average monthly employment—in addition to the binary treatment as before. For each treatment variable, I also estimate two correlated random effect models with the same specifications as displayed in the long-run IV difference-in-difference graphs, in addition to the city-level fixed effects specifications.

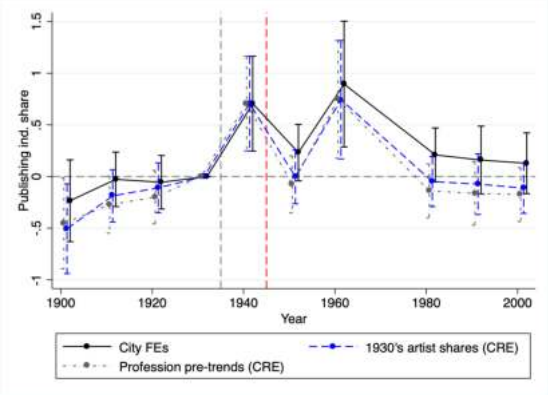
These tables yield useful interpretations of the results. Most notably, the results report that the share of writers increased by 74 writers in the short-run and 110 writers in the long-run per 1 million people in response to a $1000 investment per writer in 1935 (approximately $20,000 in 2020). Photographer designer shares increased by approximately 900 and 1100 professionals respectively per 1 million people for investments of the same proportional size. In the short run, dancer shares increase by 26 artists per 1 million people for an investment of present-day USD 20,000 per dancer. Results for these alternate parameterizations are not significant for musicians.

On a high level, these results demonstrate that Federal One demonstrated a strong positive impact on the share of individuals identifying with artistic professions in the short-run. Interestingly, while most of these increases did not endure beyond a single decade, several fields of artistic production demonstrated lasting impacts, very much akin to a "big-push" response in the context of the program's unsustained funding shock to artistic activity. Figure A.10 and Figure A.14 Panels (a)-(c) replicate these results while including weighting for each city's year 1930, 2000, or contemporaneous population (with the added interpretation of more heavily considering areas where more people lived in 1930 or 2000), producing largely similar qualitative results.

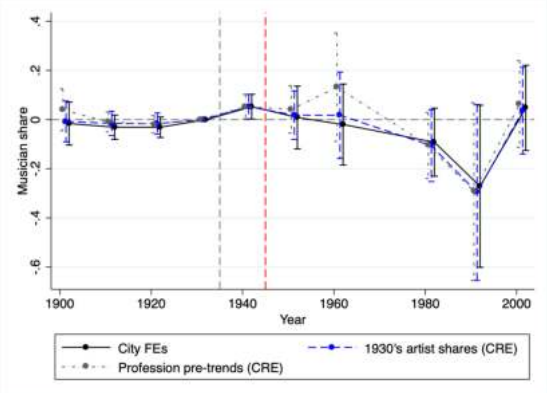
Figure 4: Panel (a): IV results on writing and music professions



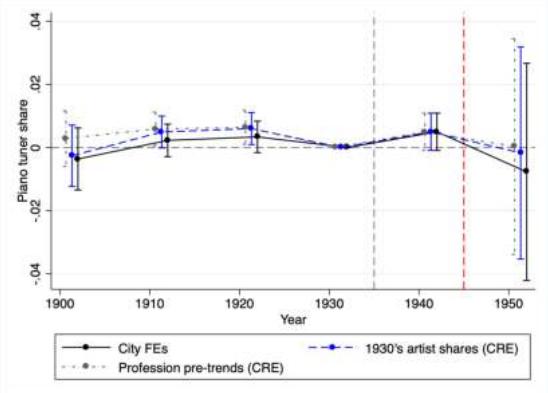
(a) Authors



(b) Publishing industry workers



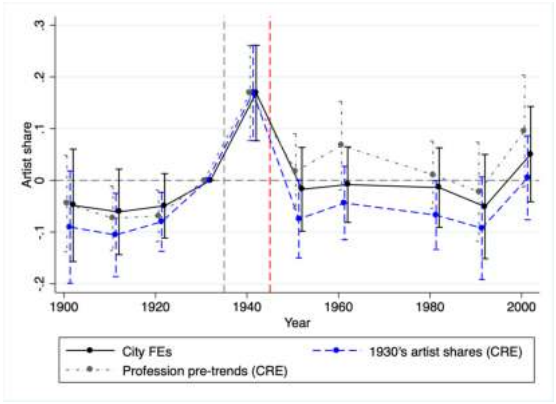
(c) Musicians



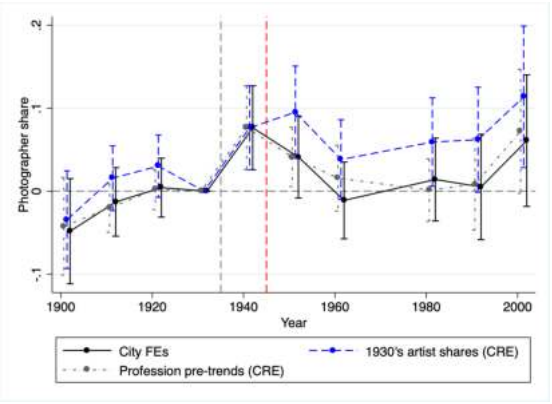
(d) Piano tuners

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends. Results for piano tuners stop at 1950, as OCC1950 ceases recording this occupational outcome.

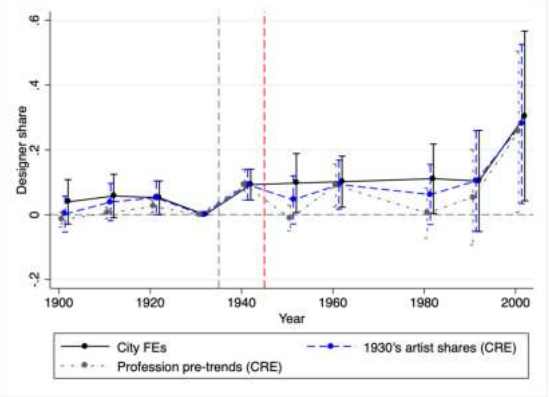
Figure 4: Panel (b): IV results on visual artistic professionals



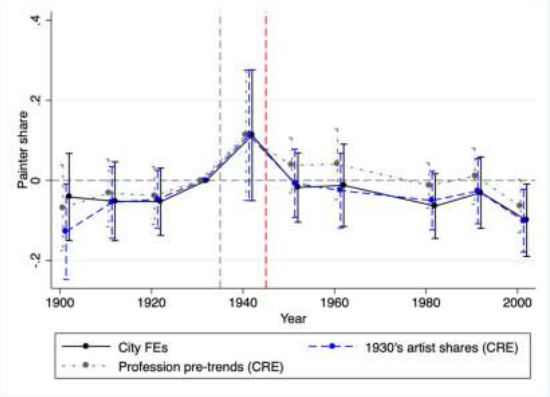
(a) Visual artists



(b) Photographers



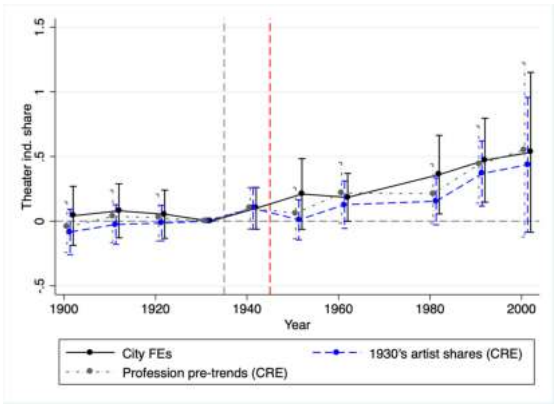
(c) Designers



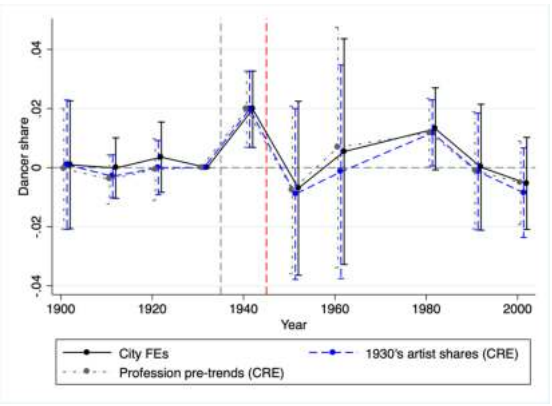
(d) Painters

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

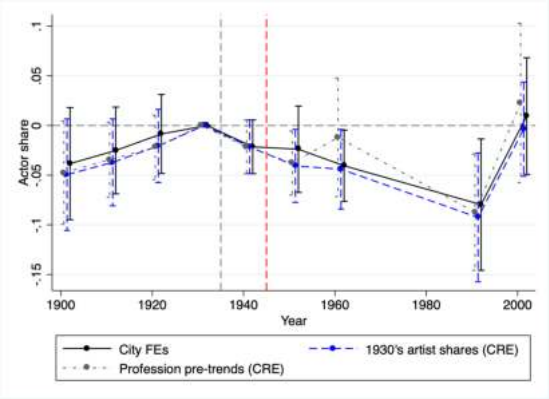
Figure 4: Panel (c): IV results on theater and film professionals



(a) Theater/film industry



(b) Dancers



(c) Actors

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

Table 12: Panel (a): IV results: writers and theater practitioners

	(1) Author	(2) Pub. industry	(3) Actor	(4) Theater and film ind.	(5) Dancer
FWP binary × Year 1940	0.068**	0.71***			
	(0.031)	(0.23)			
FWP binary × Post 1940	0.10**	0.57***			
	(0.039)	(0.21)			
FTP binary × Year 1940			-0.021	0.099	0.020***
			(0.014)	(0.082)	(0.0066)
FTP binary × Post 1940			0.0020	0.47**	0.0063
			(0.030)	(0.23)	(0.0076)
Year 1940	0.0037***	0.19***	-0.000073	0.054***	0.0052***
	(0.00045)	(0.0074)	(0.0012)	(0.0049)	(0.00057)
Post 1940	0.037***	0.28***	-0.0045	-0.051	0.0080***
	(0.0051)	(0.026)	(0.0071)	(0.055)	(0.0028)
Observations	2606	2606	2487	2606	2606
Adjusted R^2	0.106	0.208	-0.028	-0.276	0.026
City FEs	X	X	X	X	X

City-clustered standard errors in parentheses

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

Table 12: Panel (b): IV results: musicians and visual artists

	(1) Musician	(2) Artist	(3) Painter	(4) Photographer	(5) Designer
FMP binary × Year 1940	0.053**				
	(0.026)				
FMP binary × Post 1940	-0.17				
	(0.11)				
FAP binary × Year 1940		0.17***	0.11	0.076***	0.093***
		(0.047)	(0.083)	(0.026)	(0.024)
FAP binary × Post 1940		0.073	-0.044	0.066**	0.15*
		(0.047)	(0.047)	(0.029)	(0.090)
Year 1940	-0.0035	0.014***	0.039***	0.015***	0.0073***
	(0.0059)	(0.0011)	(0.0040)	(0.00082)	(0.00054)
Post 1940	0.33***	0.057***	0.038***	0.036***	0.19***
	(0.066)	(0.0056)	(0.0069)	(0.0042)	(0.013)
Observations	2606	2606	2606	2606	2606
Adjusted R^2	0.144	0.096	0.053	0.099	0.285
City FEs	X	X	X	X	X

City-clustered standard errors in parentheses

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

This table displays the ordinary least squares difference-in-difference estimated impacts of binary measures of Federal One activity on various artistic occupation shares by city, using 1930 as the leave-out base-period. All of the specifications include fixed effects on the city-level.

6.5 Variance decompositions: A horse race of history versus policy

The IV results in the previous section demonstrate significant, causal impacts of the various artistic Federal One sub-projects on the labor market share of their respective fields of art with varying degrees of persistence over time. In this section, I ask: to what extent can we attribute the subsequent evolution of cities' artistic environments to historic New Deal arts policies?

To evaluate the relative roles of Federal One versus path dependence on incumbent arts scenes in determining urban arts environments, I perform a series of decadal variance decompositions of local artist profession shares between the exogenous component of Federal One activity and artist population shares in 1900 for each respective field of art. First, Figure 5 Panels (a)-(c) display the variance shares from repeated cross-sectional regressions of the form

$$y_{i,l,\bar{t}} = \beta_1 y_{i,l,1900} + \beta_2 \widehat{FPNo1}_{i,l} + \varepsilon_{i,l,\bar{t}},$$

for decades $\bar{t}$ from 1910 to 2010 (excluding 1970, which lacks city-denominated census data), city i, and field-of-art l. Here, $\widehat{FPNo1}_{i,l}$ refers to the projection of the respective Federal One activity binary indicator on the log New Deal expense leave-out instrument. This design estimates the share of variation *across* cities in artistic profession shares attributable to initial artistic profession shares in 1900 and Federal One treatment.[28]

The results from the variance decompositions demonstrate some contrast with the difference-in-differences results. Namely, in the post-1940 era, both initial profession levels and Federal One treatment alone explain a relatively small portion of the variation across cities of artistic profession shares—nearly entirely under 20% for any given year. For most of the professions, the effect of initial levels gradually diminishes over time, as expected; however, Federal One demonstrates greater temporal persistence as an explanatory component of artist profession shares.

[28] These regressions follow from a simplification of the framework in Allen and Donaldson (2020) to decompose population growth within and across cities between initial populations (and resulting persistence/path dependence), evolution of productivity by geography, and evolution of trade access and migration.

For writers, the field with the largest and most significant recorded causal impact for its respective Federal One subfield, Federal Writer's Project activity tends to account for between 5% and 10% of variation across cities in any given decade after 1940, with even smaller explanatory power for writing and publishing industry shares. However, for both of these cases, 1900 levels of authors and writing/publishing industry workers demonstrates consistently greater predictive power of subsequent variation in their respective fields than does Federal Writer's Project activity.

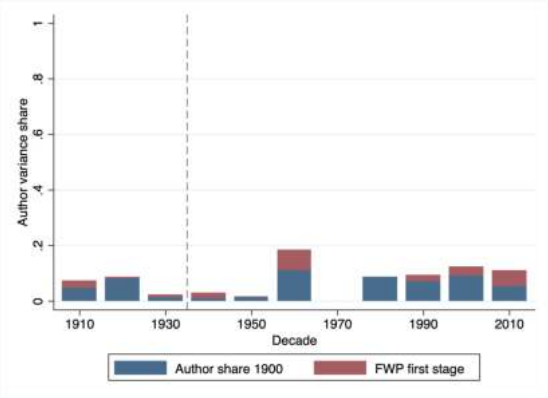
Federal One activity demonstrates stronger explanatory power for other fields. For visual artists, other than painters, which saw little-to-no response to the Federal Art Project as an occupational group, Federal One funding strongly dominates initial levels in explaining the evolution and variation of artistic professionals in the visual arts across cities. This tendency is even stronger for theater professionals, where the exogenous component of the binary Federal Theater Project activity indicator both accounts for far greater variation in theater and theater-adjacent profession shares than their respective initial levels and increases considerably over time in explanatory power.

The explanatory role of Federal Music Project activity in determining the subsequent variation of musician shares across cities is more mild. In the initial post periods, the overall explanatory power of the Federal Music Project appears negligible, in spite of the significant, short-run causal impact of the Federal Music Project on local musician shares. However, this effect does grow more pronounced relative to that of 1900 musician shares starting 1960.

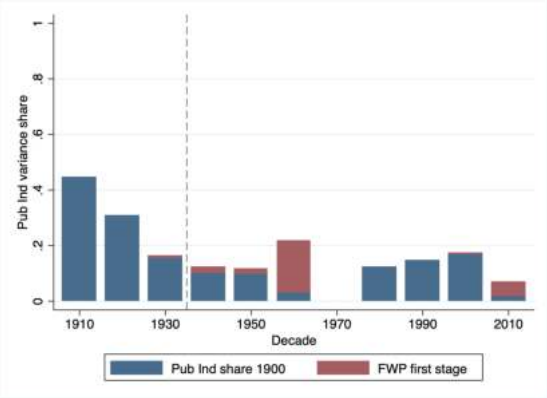
In the present day, Federal One activity accounts for modest, but non-negligible proportion of the cross-city variation in artistic profession shares. The exogenous component of historic New Deal funding to the arts explains between 5-15% of the post-1940 variation across cities in terms of their artistic profession shares, with theater/film industry workers, designers, and photographers exhibiting greater explanatory dependence on Federal One activity. I.e., for these industries, Federal One funding contributes modestly in explaining

which locations across the US are *cultural hotspots*.

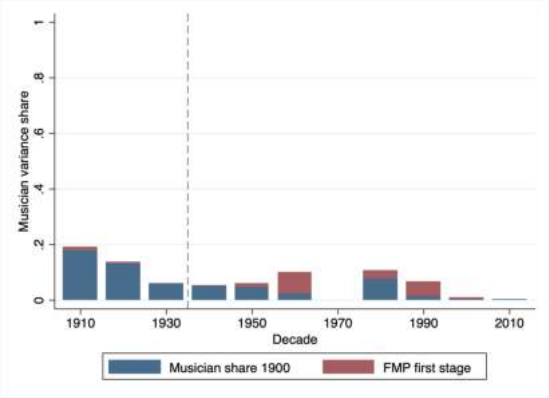
Figure 5: Panel (a):
Cross-city variance decomposition: Federal One versus 1900 artists
Writers and musicians



(a) Authors



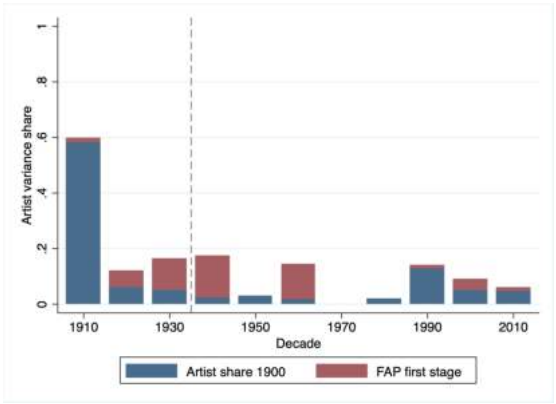
(b) Publishing industry workers



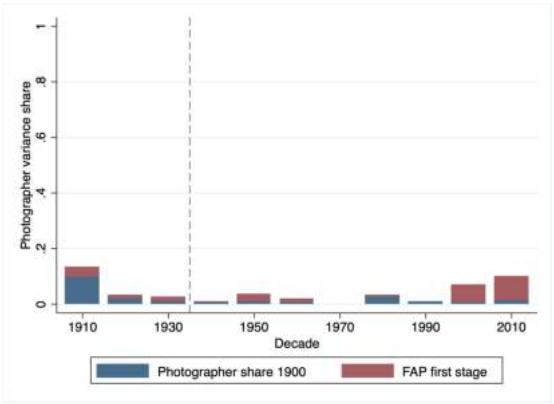
(c) Musicians

These figures display the repeated cross-sectional variance decomposition over decades of contemporaneous artist shares between the exogenous component of their Federal One activity and their respective 1900 population shares. The height of each individual bar in the above graphs corresponds with the R^2 value from a regression: $y_{i,l,\bar{t}} = \beta_1 y_{i,l,1900} + \beta_2 \widehat{FPNo1}_{i,l} + \varepsilon_{i,l,\bar{t}}$ for fixed time $\bar{t}$, outcome and program pair l, $y \in \mathcal{A}_l$, city i's artist population share in 1900 for outcome y, and exogenous component of Federal One activity (the projection of a binary indicator for city i's recipiency of Federal One subprogram l on the New Deal arts leave-out expense instrument). The decomposition is absent for 1970 due to unavailability of city-denominated US Census data.

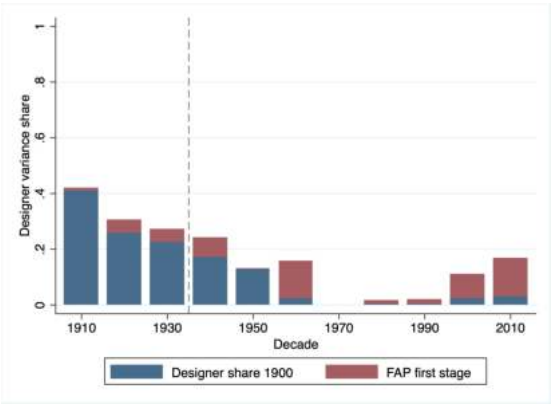
Figure 5: Panel (b):
Cross-city variance decomposition: Federal One versus 1900 artists
Visual artists



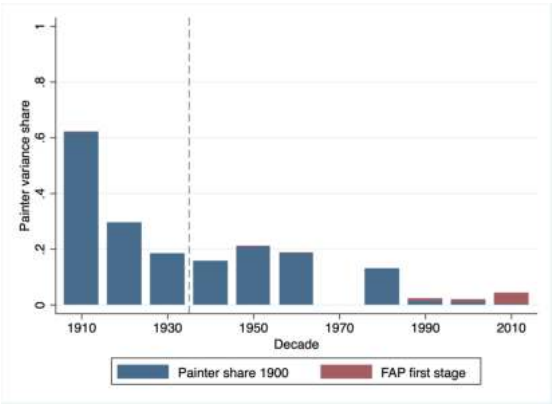
(a) Artists and art teachers



(b) Photographers



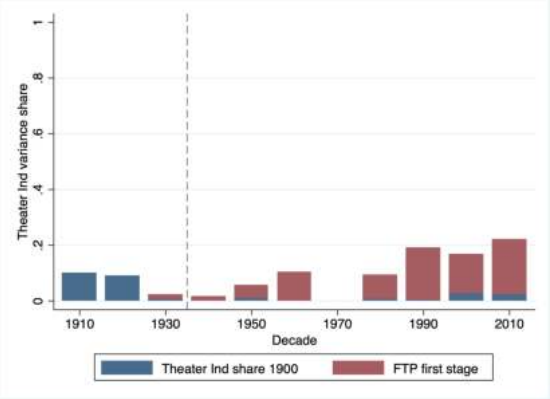
(c) Designers



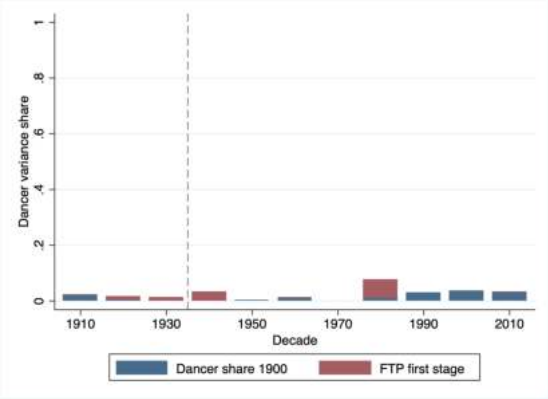
(d) Painters

These figures display the repeated cross-sectional variance decomposition over decades of contemporaneous artist shares between the exogenous component of their Federal One activity and their respective 1900 population shares. The height of each individual bar in the above graphs corresponds with the R^2 value from a regression: $y_{i,l,\bar{t}} = \beta_1 y_{i,l,1900} + \beta_2 \widehat{FPNo1}_{i,l} + \varepsilon_{i,l,\bar{t}}$ for fixed time $\bar{t}$, outcome and program pair l, $y \in \mathcal{A}_l$, city i's artist population share in 1900 for outcome y, and exogenous component of Federal One activity (the projection of a binary indicator for city i's recipiency of Federal One subprogram l on the New Deal arts leave-out expense instrument). The decomposition is absent for 1970 due to unavailability of city-denominated US Census data.

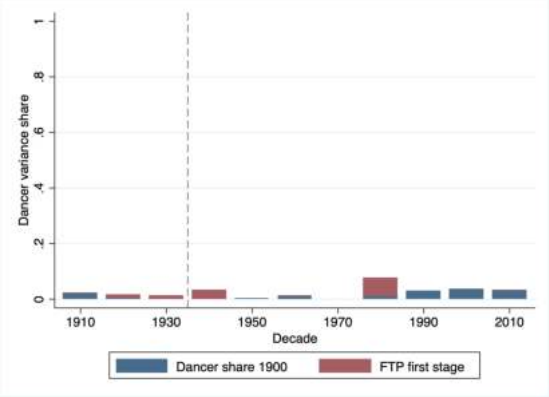
Figure 5: Panel (c):
Cross-city variance decomposition: Federal One versus 1900 artists
Theater and film



(a) Theater and film industry workers



(b) Dancers



(c) Actors

These figures display the repeated cross-sectional variance decomposition over decades of contemporaneous artist shares between the exogenous component of their Federal One activity and their respective 1900 population shares. The height of each individual bar in the above graphs corresponds with the R^2 value from a regression: $y_{i,l,\bar{t}} = \beta_1 y_{i,l,1900} + \beta_2 \widehat{FPNo1}_{i,l} + \varepsilon_{i,l,\bar{t}}$ for fixed time $\bar{t}$, outcome and program pair l, $y \in \mathcal{A}_l$, city i's artist population share in 1900 for outcome y, and exogenous component of Federal One activity (the projection of a binary indicator for city i's recipiency of Federal One subprogram l on the New Deal arts leave-out expense instrument). The decomposition is absent for 1970 due to unavailability of city-denominated US Census data.

7 Model and theoretical foundation

To illustrate the theoretical mechanisms underpinning the long-run responsiveness of the arts to unsustained funding shocks of funding, such as in the New Deal setting, I develop a simple model of supply and demand for artistic services that incorporates agglomerative gains to supply. The model features a coordination problem where atomistic producers take agglomeration benefits as exogenous. In the aggregate, the agglomeration benefits from the aggregate activity of atomisticly-behaving self-employed artists induce non-monotonicities in the aggregate supply curve and possibly generate multiple equilibria. In this case, at the lowest level of equilibrium production, the market can accommodate higher-equilibrium values of production, but individual producers cannot unilaterally deviate. A central planner can induce permanent movement to a greater Nash equilibrium level of equilibrium provision through setting aggregate production in excess of an unstable equilibrium for a single period, e.g. through an unsustained shock to supply.

The results of this model can be understood as similar to other "big-push" models (e.g. Murphy, Shleifer, and Vishny (1989), Matsuyama (1992)) however in a partial equilibrium setting. The model here relies on additively separable costs to producers that benefit from agglomeration monotonically, but where those benefits are relatively stronger at lower levels of production and are asymptotically overtaken by standard convexly increasing cost specifications. Rodrik (1996) and Rodríguez-Clare (1996) both develop similar environments that result in a coordination problem; however, their source of agglomeration originates from benefits of increased production of intermediate goods. Allen and Donaldson (2020) develop a model environment of spatial path dependence through a temporal dependence structure of previous period labor and amenities provision.[29] However, these other models do not feature any independence of agglomeration benefits from total production costs, resulting in agglomeration benefits operating through supply curve shifts. Independence of agglomeration benefits from standard variable production costs as in my environment generates non-monotonicities in marginal cost that characterize aggregate supply.

[29]See Duranton and Puga (2004) for an overview of other microfoundations of emergent agglomeration economies and spatial agglomeration.

Individuals artists produce arts and cultural goods/services atomistically, indexed on a set of measure one. They enter and exit the market at zero cost and share identical production technology. For simplicity, take their production costs as characterized by the difference of two additively separable pieces: $C(q_i) = f(q_i) - g(q_i, Q)$.[30]

First, a variable function $f(q_i)$ exhibits standard cost characteristics: i.e. $f'(q_i) > 0$ and $f''(q_i) > 0$.

The second piece represents agglomeration benefits, here reflected as decreases in costs that depend on the overall activity of other producers. The agglomerative component is defined on the same domain as the standard production component f. Individual production aggregates up linearly, i.e. that

$$Q = \int_0^1 q_i di$$

For simplicity, let $g(q_i, Q)$ be multiplicatively separable in q_i and Q, $g(q_i, Q) = a(q_i)b(Q)$ and linear in q_i: $g(q_i) = \gamma q_i b(Q)$. Artists produce atomistically and therefore observe aggregate production as exogenous. Importantly, these benefits are eventually dominated by individual variable costs encompassed by $f(q_i)$ asymptotically, but bring monotonic decreases to costs. Namely, $\frac{\partial g(q_i,Q)}{\partial Q} > 0$ and has second derivative such that $\lim_{q\to\infty} f(q_i) - g(q_i, Q) = \infty$; I.e. eventually, variable costs increase at a faster rate than are brought down by agglomeration benefits.

Individual producers are price takers, where prices are set according to aggregate production, as scaled up linearly from individual producers, and aggregate demand:

$$P = F'(Q) - G'(Q).$$

[30]Slightly less simple but yielding similar results, one can express production costs as the product of standard variable cost function $f(q_i)$ and a piece reflecting efficiency gains from agglomeration $(1 - g(Q))$ for a function $g(Q) \in [0, 1)$.

Similar to as on the individual level, aggregating of agglomeration benefits may induce non-monotonicities in the inverse supply curve.[31] For instance, assume functional forms such that $F(Q) - G'(Q) = 0$ for at least three distinct $Q \in \{Q_1, Q_2, Q_3\} \subset R_+$. For a continuous function $G(\cdot)$, it is necessarily the case that for at least one of these points, say Q_1, that $G''(Q_1) < 0$ and for at least one other, say Q_2, that $G''(Q_2) > 0$. The aggregate inverse supply curve features at least one local minimum and local maximum before diverging to infinity.

This specification of supply illustrates the how the competitive forces of standard production costs and agglomerative benefits vary at different scales of production. At low levels of aggregate production the agglomeration benefits are low and standard production costs dominate, but the cost benefits of agglomeration increase quickly enough to induce net decreases in marginal costs. However, the cost benefits of agglomeration are eventually drowned out by the convexly increasing production costs at large enough scale.

Assuming isoleastic demand, in general, there will exist at least one equilibrium where aggregate supply and demand intersect. However, the special case may exist where the demand curve and supply curve intersect at multiple equilibria. Namely, given a monotonically decreasing aggregate demand curve, there can exist at most $N + 1$ distinct equilibria for N unique local extrema of the aggregate supply curve.[32]

Figure 6 illustrates the different cases characterized by three unique equilibria and different respective "big-push"-style policies: At each of these points, because individual firms are price takers, they see no benefit by deviating from an equilibrium provision due to increases in their own costs at no change in price. For instance, take an aggregate equilibrium value where $Q_1^* = A_1^*$, with resulting price P_1^*. Individuals symmetrically produce q_1^*. Because

[31] The microfoundations of aggregate supply here depend on the linear aggregation of agglomeration benefits in individual production.

[32] Solutions will feature with up to $2K - 1$ possible unstable and stable equilibria combined, with $K \leq N/2 + 1, \in \mathcal{N}$ (except for tangential intersections).

$Q_1^* = \int_0^1 q_1^* d1$, we can see that

$$P_1^* q_1^* - f(q_1^*) + \gamma q_1^* g(Q_1^*) = 0,$$

and that unilaterally switching to a higher level of production results in no additional profit.

This model framework allows us to study how equilibrium provision evolves in response to a large, unsustained shocks. From this figure, we can observe that only two of the equilibria are stable, due to the zero profit condition. In particular, shocks located at a point of disequilibrium will see subsequent movement toward one of the stable equilibria as producers either enter or exit the market in response to the relationship between demand-determined prices and production costs.

7.1 Consistence of the model foundation and empirical results

The framework illustrates that there are three parameters that matter for determining the long run impacts of an unsustained positive shock to supply: the magnitude of the shock, the location of the initial equilibrium, and the location of the unstable equilibrium. In order for a shock (in either direction) to induce a permanent change in equilibrium provision, the shock must cause movement past the unstable equilibrium or move from the unstable equilibrium itself (itself, a knife-edge case). Shocks that do not cause net movement from the initial equilibrium past the unstable equilibrium result in a post-shock reversion back to the initial equilibrium.

Exploring the following shocks, assume only positive movements to some $\tilde{Q} > Q_0^*$, the initial equilibrium value.

For example, in Figure 6 Panel (a) government spending moves the initial provision of artistic goods and services to some $\tilde{Q}$ between A_1^* and A^*2. At this point, production cost in excess of willingness to pay induces producer exit through negative profits, and thus a

reduction in supply back toward initial equilibrium A_1^*.[33]

In the second case of Panel (b), government spending locates short-run supply at some $\tilde{Q}$ less than A_3^* and greater than A_2^*. At this point, demand dominates supply, and producers earn positive profits, inducing firm entry that increases production to close profits to zero toward higher equilibrium value A_3^*.

In the last case, depicted in Panel (c), government spending generates a supply to the right of A_3^*. Similarly to as in the first case, cost in excess of demand produces negative profits and induces firm exit. This causes a reduction in quantity provided toward the highest equilibrium value A_3^*.

This model illustrates the mechanisms that explain the empirical results. Artistic goods and services are characterized by agglomeration economies that introduce non-monotonicities into the supply curve. Under certain conditions, demand and supply can intersect at multiple equilibria. This setup can give rise to a coordination problem where all producers can cooperatively increase supply and move to a higher equilibrium, but cannot individually deviate, themselves.

In this case, a central planner can possibly coordinate movement to a higher equilibrium by inducing a large enough shock in order to adjust individual cost perception due to agglomeration benefits. The empirical results reflect the different possible outcomes; both large increases in artist shares in 1940 that were sustained into a permanently higher equilibrium into the long-run as well as large short run shocks that attenuated either in the decade immediately after or gradually in the subsequent decades.

Do these scenarios rationalize the empirical results? Table 2 illustrates that in relative terms the writers and theater projects saw the largest Federal One shocks in terms of New Deal employment relative to pre-existing artist population (over 150%). In contrast, musi-

[33] Alternatively, a case with a unique equilibrium also fails to generate movement to a new equilibrium.

cians and artists saw only modest increases relative to their pre-existing populations (under 30%).

The theoretical implications of the model generally supports the empirical findings. Writers and publishing industry workers simultaneously saw both a large funding shock and a short-run increase in employment shares that persisted into the long-run. This result would suggest that the New Deal shock located the field near its higher-equilibrium.[34]

Theater and film industry workers demonstrated a small short-run increase that continued to gradually increase throughout the 20th century. This response suggests that the New Deal shock induced production to a point in between a pair of unstable and higher stable equilibria to the left and right respectively. It is worth noting that actors demonstrated no such response.

Both visual artistic fields (visual artists, painters, and photographers) and musicians appear to have seen shocks that located them to a point short of the "big-push" unstable equilibrium, and therefore returned to their initial, lower equilibrium after the large initial shock to activity. This also appears to be the case for dancers. However, designers saw a slight, permanent increase in employment share following the shock.

The model is grounded in the caveat that, empirically, the location of the unstable equilibrium, i.e. the tipping point, may vary substantially between fields. The difference in response between two fields that saw similar shocks—for example, designers and visual artists, where the former saw a permanent increase in employment share and the latter did not—can be attributed to differences in the field-specific unstable equilibrium point(s) in a non-easily falsifiable manner.[35]

[34]Writers actually appear to increase in share toward the end of the 20th century after some stability-post shock, and publishing industry workers demonstrate greater variation, if not decreasing slightly starting 1980.

[35]Alternatively, one could argue that Federal One treatment itself was allocated hetereogeneously by subfield within each project. For example, the model implications would align with a scenario where the Federal Art Project allocated more funds/employment to design-like activities than to painting (which is actually unlikely to be the case in reality). However, the granularity of the Federal One archival data does not

Moreover, while the model can tractably rationalize the empirical results—the lack or presence of long-run persistence in a given artistic field—the model doesn't explain *why* such differences exist between fields. For instance, *why* is the unstable equilibrium located farther away from the lower equilibrium in artistic fields than in writing-related fields? (given that both fields saw large shocks). *Why* might the scale shifter of aggregate demand be too high or too low so as to only generate a single equilibrium in a specific industry? Moreover, this model does not explain the reasoning behind the location of the initial incumbent equilibrium.

Importantly, there no factors that preclude this agglomerative non-monotonic supply framework from application to other industries in a partial equilibrium setting. For this reason, we can rationalize other industries that are not typically associated with agglomerative tendencies as characterized by too high or low value of a scale demand shifter (i.e. so that the aggregate supply and demand intersect at only a single point). This setting thus features some flexibility in allowing for more general non-monotonicites in supply without generating multiple equilibria due to the specific interaction of supply and demand.

As another caveat, other model environments may incorporate the benefits of agglomeration in different ways that lead to fundamentally different interpretation of how these effects operate. Here, I ascribe the benefits of agglomeration entirely to producers and as strictly pecuniary—in the form of lower costs of operation. This interpretation of agglomeration differs from others, such as in Moretti (2019) that describes non-pecuniary agglomerative benefits to scientists as manifesting the form of higher quality production or productivity shifters. Similarly, an alternate model design might specify artists that maximize utility over discrete locations that depend positively on the presence/activity of other artists.

Lastly, the model here does not deeply engage with the possibility of demand-side effects. There are two possible implications for demand in particular that the model does not im-

permit decomposing city-program employment counts to sub-program activity in a comprehensive manner. The data *do* occasionally include such finer disaggregations, but this is not typical of the data.

mediately accommodate. First, demand may also feature agglomerative non-monotonicities, notably in the form of network effects. For example, individuals may be more willing-to-pay for artistic goods and services that others consume, which may indeed be the case for the consumption of status-conveying goods such as contemporary art). Such demand-side agglomeration (e.g. network benefits) could result in a similar multiple equilibria framework through non-monotonicities—as operating through aggregate demand.

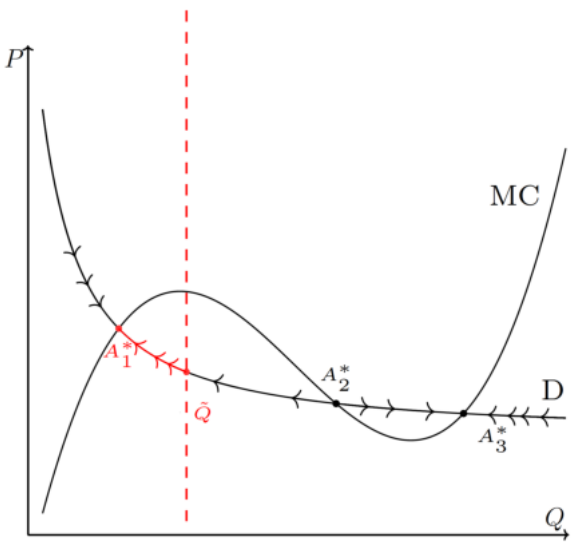
Second and relatedly, it may be the case that future demand of artistic goods and services depends on present equilibrium provision, and that an unsustained shock could induce a permanent or sustained shift in demand. As an example, McCain (2006) describes a process of learning-by-consuming that informs future consumption of the arts. Similarly, Murphy, Shleifer, and Vishny (1989) describe a simple model environment that combines demand and supply externalities where the positive profits of a single firm induce positive spillovers to other firms' demand and technological investment exhibit increasing returns to scale; they show that this setup (combined with other conditions) can also generate a "big-push" type industrial environment. In my case, the unsustained shock to the provision of artistic goods and services via Federal One may have influenced local tastes in a manner that could similarly induce a permanent shift in equilibrium production. However, this simpler story of path-dependent demand shifters does not readily accommodate the heterogeneity in persistence across subfields as does the supply-side agglomeration model.[36]

Importantly, while both of these alternate possibilities may undermine a supply-side agglomeration story, they do support the possibility of a "big-push" effect; that an unsustained shock may indeed continue propagate toward a permanent equilibrium shift. While I cannot empirically distinguish these channels, there is little empirical evidence or even anecdotal suggestion that the locations that received more Federal One activity indeed saw positive demand-side responses (e.g. people in San Francisco exhibiting greater willingness-to-pay for books than people in Cleveland in response to the increase in writing activity), suggesting

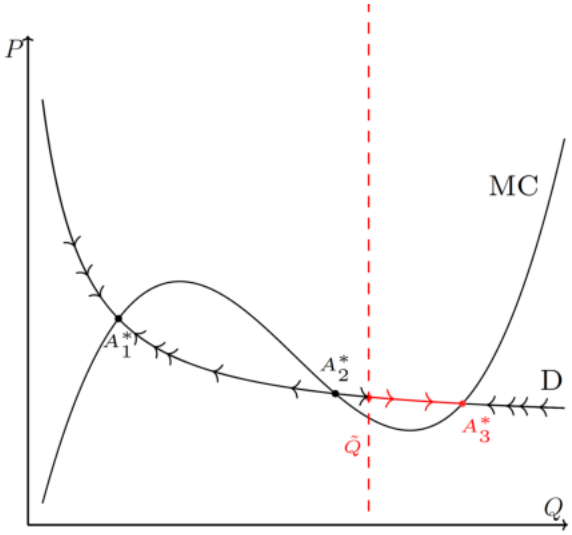
[36]One could explain the heterogeneity in persistence over artistic subfield by specifying on a more ad-hoc basis the quantitative nature of persistence in demand, but such an explanation would not generate a "big-push" tipping point that determines whether shocks result in a permanent equilibrium shift.

the plausibility of supply-side agglomeration.

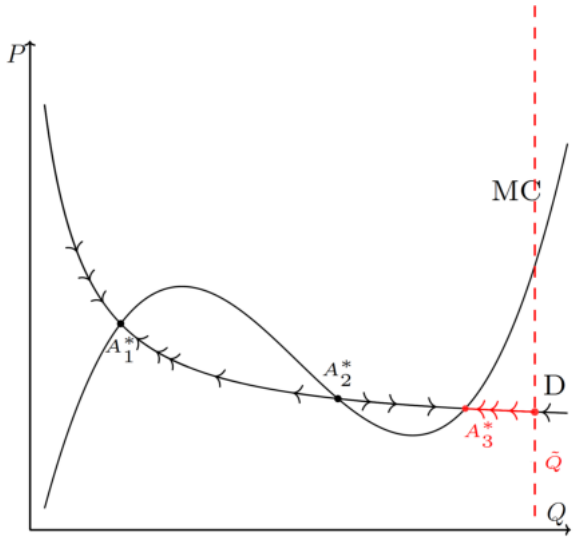
Figure 6: Special case of aggregate supply and demand
Shocks, equilibria, and convergence



(a) Case 1



(b) Case 2



(c) Case 3

These figures illustrate the effects of different unsustained positive shocks to provision of artistic services on long-run equilibria and their respective transitions in the context of a three-equilibrium special case of isoelastic demand and non-monotonic aggregate supply due to agglomeration economies. Panel (a) corresponds with a positive shock that places the provision of artistic goods and services below the unstable equilibrium; the figure depicts the large initial shock followed by convergence back down to the initial, stable equilibrium. Panel (b) corresponds with a shock that places short-run provision in disequilibrium slightly below the higher stable equilibrium provision; the figure depicts the large initial shock followed by convergence increasing to a higher, stable equilibrium. Panel (c) corresponds with a shock that places short-run provision in disequilibrium slightly above the higher stable equilibrium provision; the figure depicts the large initial shock followed by convergence down to the higher, stable equilibrium.

8 Discussion and conclusion

This work has produced the first causal estimates of the impact of large-scale public arts investment on the growth of artistic professions over time. In doing so, I have also constructed the most comprehensive data on Federal Project Number One arts spending across localities. I document large impacts of historical New Deal funding to the arts through Federal Project Number One on the artist population shares of beneficiary cities, with the increases to the population shares several fields of art—typically several fold relative to their respective pre-period baselines—enduring to the present-day. Namely, I find the largest and most temporally persistent impacts of arts funding (within its respective fields) on authors, certain disciplines of visual arts (namely photographers and designers), and theater/film industry professionals. The results of these estimates imply potentially large returns over time of public arts spending in terms of fostering local arts scenes. The historical government spending to the arts through the New Deal evidently has influenced the present-day location of such cultural hotspots.

I also find positive, albeit slightly smaller impacts of arts spending on musicians, general visual arts, and dancers whose impacts do not endure into the long run. Finally, I produce evidence of either null or inconclusive growth of the shares of actors and painters in response to New Deal arts funding.

The subsequent variance decompositions demonstrate the explanatory power of this early New Deal funding in determining the variation in artistic professionals across cities in the following decades, and how Federal One's variance account compares to that of 1900 levels of each respective field of art. This horse race of history versus policy illustrates that overall, both components together only explain a small portion of total variance in artistic professionals across cities—typically less than 20% in a given decade. However, for many of the professions, namely those within the visual and theater-performing arts, Federal One subprogram activity proves more important in accounting for the variation in artistic profession shares than do the 1900-levels of each respective field. In the present day, historic New Deal

spending on the arts explains between 5- and 10% of variation across *and* cities, and upward of 15- and 20% for designers and theater/film industry workers.

Overall, these results suggest that the arts are highly agglomerative industries. However, the substantial variation in the magnitude and temporal persistence of results across fields may reflect different premiums and propensities toward spatial clustering and path-dependence over time. This possibility is evidenced by the large short-and long-run impacts of funding to writers on the share of authors versus the relatively smaller effect on musician shares that did not persist beyond a single decade. It may be the case that the differences in impacts and temporal persistence of these fields reflect differences in start-up costs (i.e. human capital requirements) to occupational participation or in agglomerative propensities/benefits to clustering.

While these results indeed come with important implications for the positivistic impacts of arts funding on artists and their host cities, they come with several caveats. Namely, this work has not engaged with the normative implications of funding the arts or developing local arts scenes. To the extent that the elicited response to arts funding comes from occupational sorting, there are ambiguous welfare implications with respect to the social desirability of inducing individuals to sort between different career paths. For instance, individuals with high earning parents more frequently sort into lower-earning occupations such as the arts (Boar and Lashkari (2021)); public arts programming similar to Federal One may induce counterfactually high-earners into generally lower-earning artistic occupations. Finally, drastic changes in the arts funding and policy environment since the New Deal—namely through the rise of public school arts education, federal arts programming through the National Endowment for the Arts, and private philanthropy—potentially complicate the external validity of these results.

In terms of broader implications, this work informs the discussion surrounding public funding to the arts by providing large, positive, and temporally persistent causal estimates of the impacts of a large unsustained shock to public arts programming on local arts scenes as mea-

sured by local labor market concentration of artistic professionals. To this end, the results here in combination with other works studying the relationship between urban growth and amenity accumulation suggests the potential presence of lasting, positive spillovers to other urban outcomes from extending funding to the arts. Ultimately, the work here substantiates a policy lever through which governments (and non-government actors) can seek to influence this process. Evidently, governments can influence and have influenced the locations of cultural hotspots, even into the long-run.

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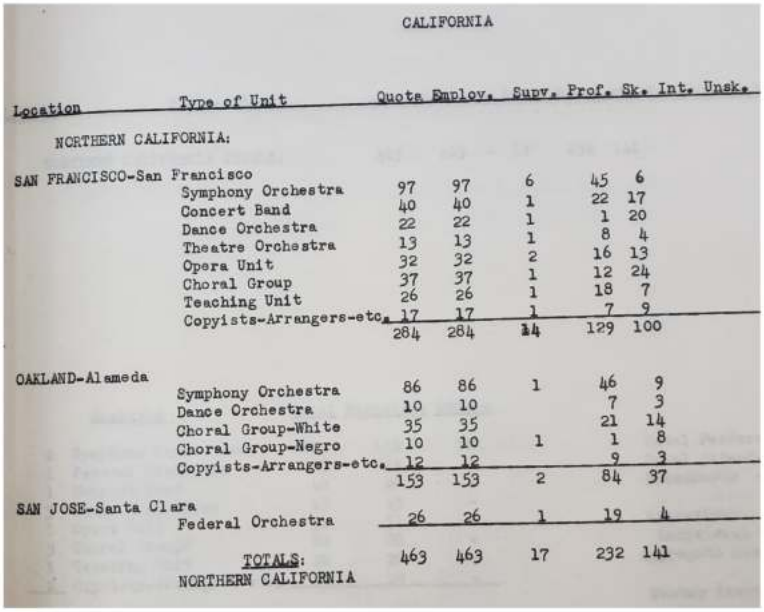
Appendix A Additional graphs, images and tables

Figure A.1: Excerpt from FMP employment tabulations: July 1939

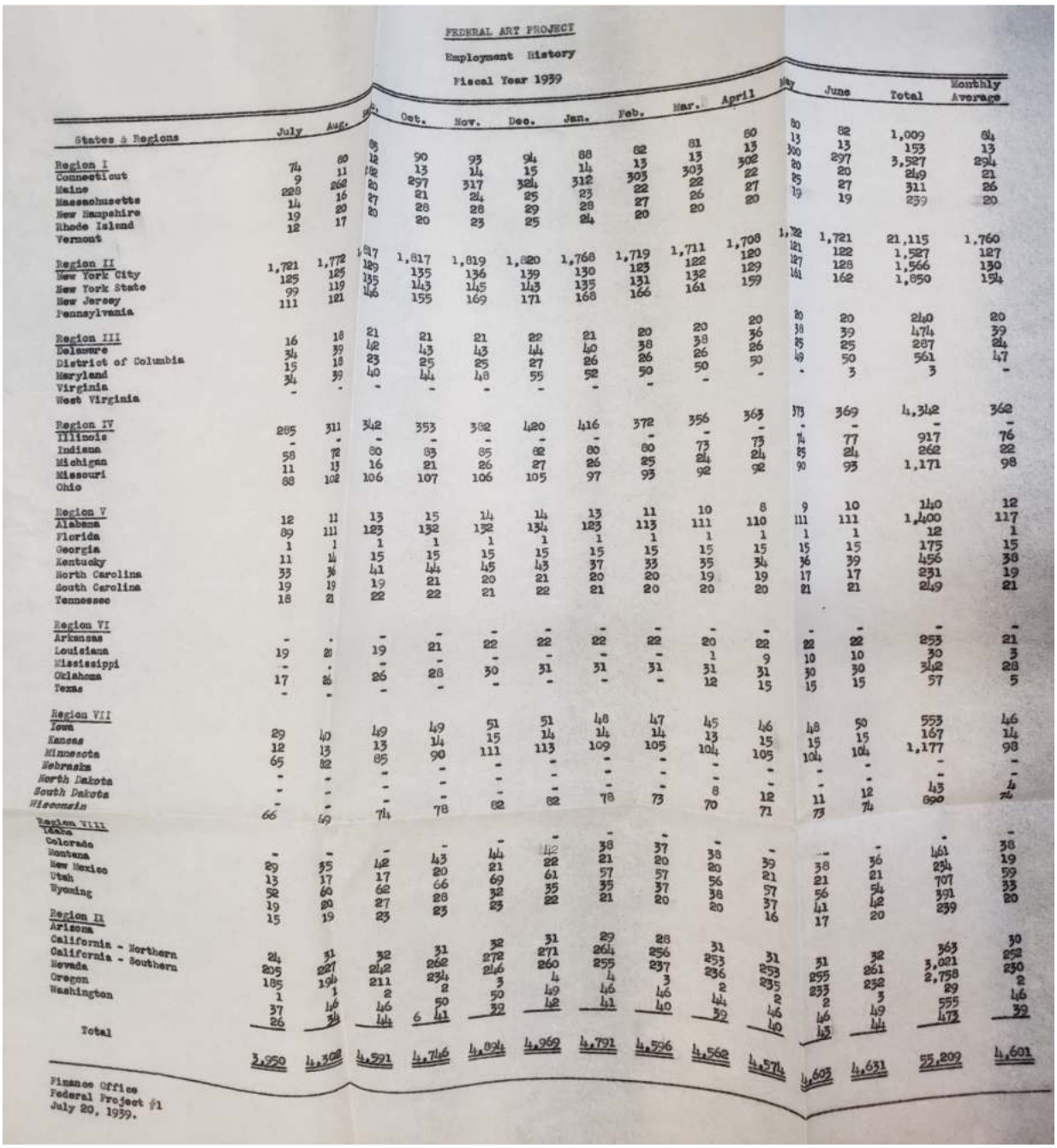


CALIFORNIA

Location	Type of Unit	Quota	Employ.	Supv.	Prof.	Sk.	Int.	Unsk.
NORTHERN CALIFORNIA:								
SAN FRANCISCO-San Francisco	Symphony Orchestra	97	97	6	45	6		
	Concert Band	40	40	1	22	17		
	Dance Orchestra	22	22	1	1	20		
	Theatre Orchestra	13	13	1	8	4		
	Opera Unit	32	32	2	16	13		
	Choral Group	37	37	1	12	24		
	Teaching Unit	26	26	1	18	7		
	Copyists-Arrangers-etc.	17	17	1	7	9		
		284	284	14	129	100		
OAKLAND-Alameda	Symphony Orchestra	86	86	1	46	9		
	Dance Orchestra	10	10		7	3		
	Choral Group-White	35	35		21	14		
	Choral Group-Negro	10	10	1	1	8		
	Copyists-Arrangers-etc.	12	12		9	3		
		153	153	2	84	37		
SAN JOSE-Santa Clara	Federal Orchestra	26	26	1	19	4		
	TOTALS: NORTHERN CALIFORNIA	463	463	17	232	141		

This image serves as an example of typical city-level employment counts by city. I do not distinguish between the different types of musical groups (e.g. Concert Band, Choral Group), but rather focuses on the employment totals for each city displayed below each horizontal line.

Figure A.2: Federal Art Project state employment aggregates, Fiscal Year 1939



FEDERAL ART PROJECT

Employment History

Fiscal Year 1939

States & Regions	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	Total	Monthly Average
Region I														
Connecticut	74	80	82	90	93	94	88	82	81	80	80	82	1,009	84
Maine	9	11	12	13	14	15	14	13	13	13	13	13	153	13
Massachusetts	228	262	282	297	317	324	312	303	303	302	300	297	3,527	294
New Hampshire	14	16	20	21	24	25	23	22	22	22	20	20	249	21
Rhode Island	19	20	27	28	28	29	28	27	26	27	25	27	311	26
Vermont	12	17	20	20	23	25	24	20	20	20	19	19	239	20
Region II														
New York City	1,721	1,772	1,817	1,817	1,819	1,820	1,768	1,719	1,711	1,708	1,782	1,721	21,115	1,760
New York State	125	125	129	135	136	139	130	123	122	120	121	122	1,527	127
New Jersey	99	119	135	143	145	143	135	131	132	129	127	128	1,566	130
Pennsylvania	111	121	146	155	169	171	168	166	161	159	161	162	1,850	154
Region III														
Delaware	16	18	21	21	21	22	21	20	20	20	20	20	240	20
District of Columbia	34	39	42	43	43	44	40	38	38	36	38	39	474	39
Maryland	15	18	23	25	25	27	26	26	26	26	25	25	287	24
Virginia	34	39	40	44	48	55	52	50	50	50	49	50	561	47
West Virginia	-	-	-	-	-	-	-	-	-	-	-	3	3	-
Region IV														
Illinois	285	311	342	353	382	420	416	372	356	363	373	369	4,342	362
Indiana	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan	58	72	80	83	85	82	80	80	73	73	74	77	917	76
Missouri	11	13	16	21	26	27	26	25	24	24	85	24	262	22
Ohio	88	102	106	107	106	105	97	93	92	92	90	93	1,171	98
Region V														
Alabama	12	11	13	15	14	14	13	11	10	8	9	10	140	12
Florida	89	111	123	132	132	134	123	113	111	110	111	111	1,400	117
Georgia	1	1	1	1	1	1	1	1	1	1	1	1	12	1
Kentucky	11	14	15	15	15	15	15	15	15	15	15	15	175	15
North Carolina	33	36	41	44	45	43	37	33	35	34	36	39	456	38
South Carolina	19	19	19	21	20	21	20	20	19	19	17	17	231	19
Tennessee	18	21	22	22	21	22	21	20	20	20	21	21	249	21
Region VI														
Arkansas	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Louisiana	19	21	19	21	22	22	22	22	20	22	22	22	253	21
Mississippi	-	-	-	-	-	-	-	-	1	9	10	10	30	3
Oklahoma	17	24	26	28	30	31	31	31	31	31	30	30	342	28
Texas	-	-	-	-	-	-	-	-	12	15	15	15	57	5
Region VII														
Iowa	29	40	49	49	51	51	48	47	45	46	48	50	553	46
Kansas	12	13	13	14	15	14	14	14	13	15	15	15	167	14
Minnesota	65	82	85	90	111	113	109	105	104	105	104	104	1,177	98
Nebraska	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North Dakota	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	-	-	-	-	8	12	11	12	43	4
Wisconsin	66	49	74	78	82	82	78	73	70	71	73	74	890	74
Region VIII														
Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana	29	35	42	43	44	42	38	37	38	39	38	36	461	38
New Mexico	13	17	17	20	21	22	21	20	20	21	21	21	234	19
Utah	52	60	62	66	69	61	57	57	56	57	56	54	707	59
Wyoming	19	20	27	28	32	35	35	37	38	37	41	42	391	33
Region IX	15	19	23	23	23	22	21	20	20	16	17	20	239	20
Arizona	24	31	32	31	32	31	29	28	31	31	31	32	363	30
California - Northern	225	227	242	262	272	271	264	256	253	253	255	261	3,021	252
California - Southern	185	194	211	234	246	260	255	237	236	235	233	232	2,758	230
Nevada	1	1	2	2	3	4	4	3	2	2	2	3	29	2
Oregon	37	46	46	50	50	49	46	46	44	44	46	49	555	46
Washington	26	34	44	41	32	42	41	40	39	40	43	44	473	39
Total	3,950	4,308	4,591	4,746	4,834	4,969	4,791	4,596	4,562	4,574	4,603	4,631	55,209	4,601

Finance Office
Federal Project #1
July 20, 1939.

This figure serves as a representative image of state-level employment counts. In this case, the archival table displays employment counts by each state-month for the 1939 fiscal year. Dashed entries refer to zero-employment (program inactivity), rather than missing data.

Figure A.3: FPNo1 total employment, thousands per month (excl. HRS)

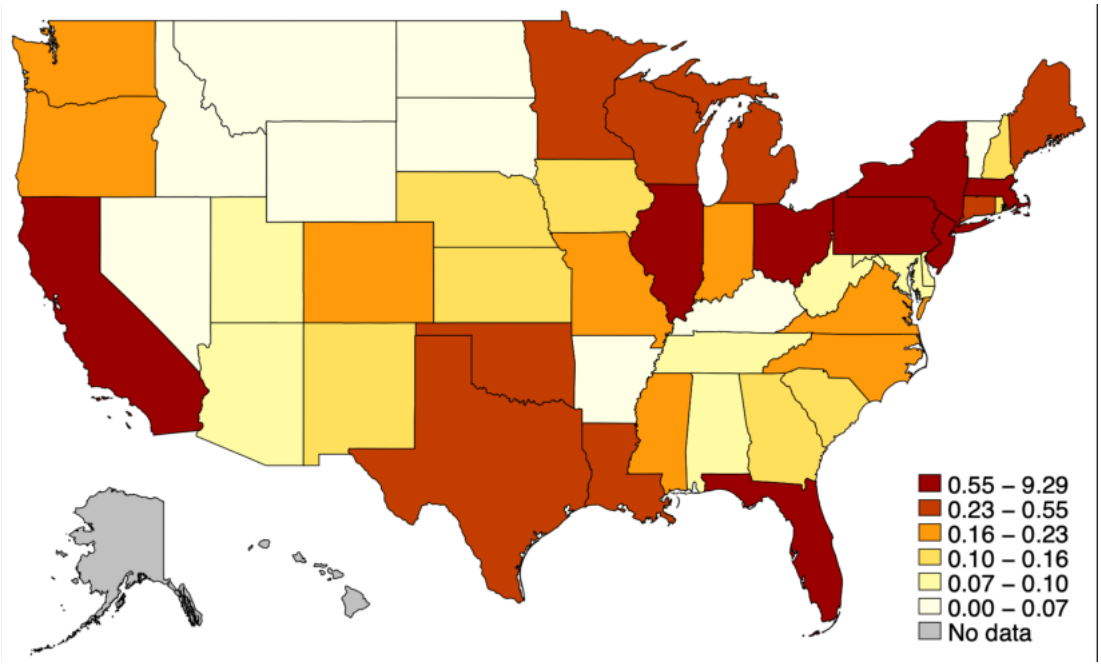


Figure A.4: FPNo1 total employment per 100000 people per month (excl. HRS)

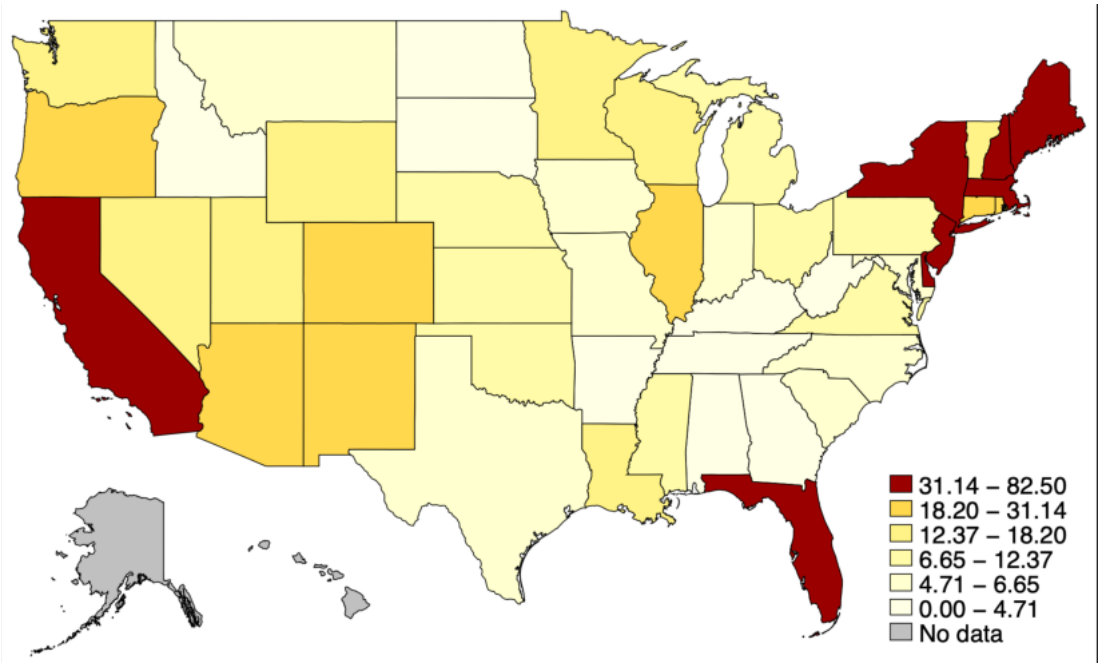


Figure A.5: FPNo1 total expense, millions 2020 USD (excl. HRS)

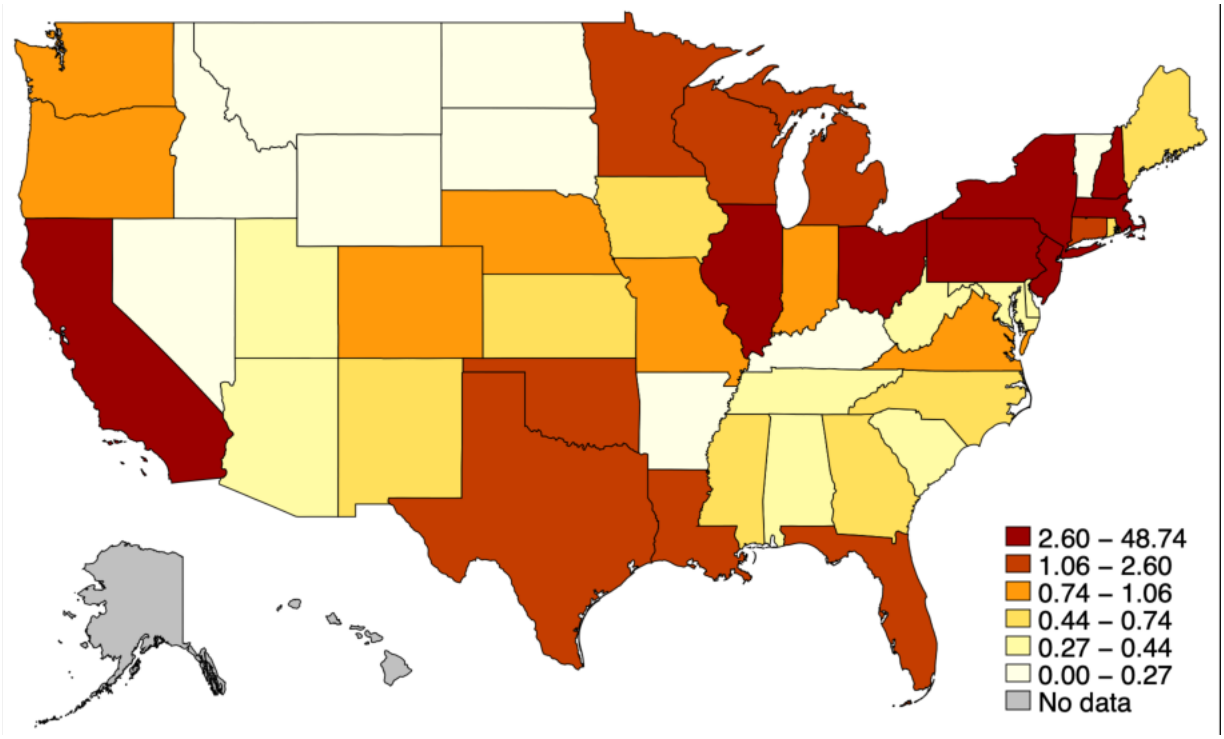


Figure A.6: FPNo1 total per capita expense (excl. HRS)

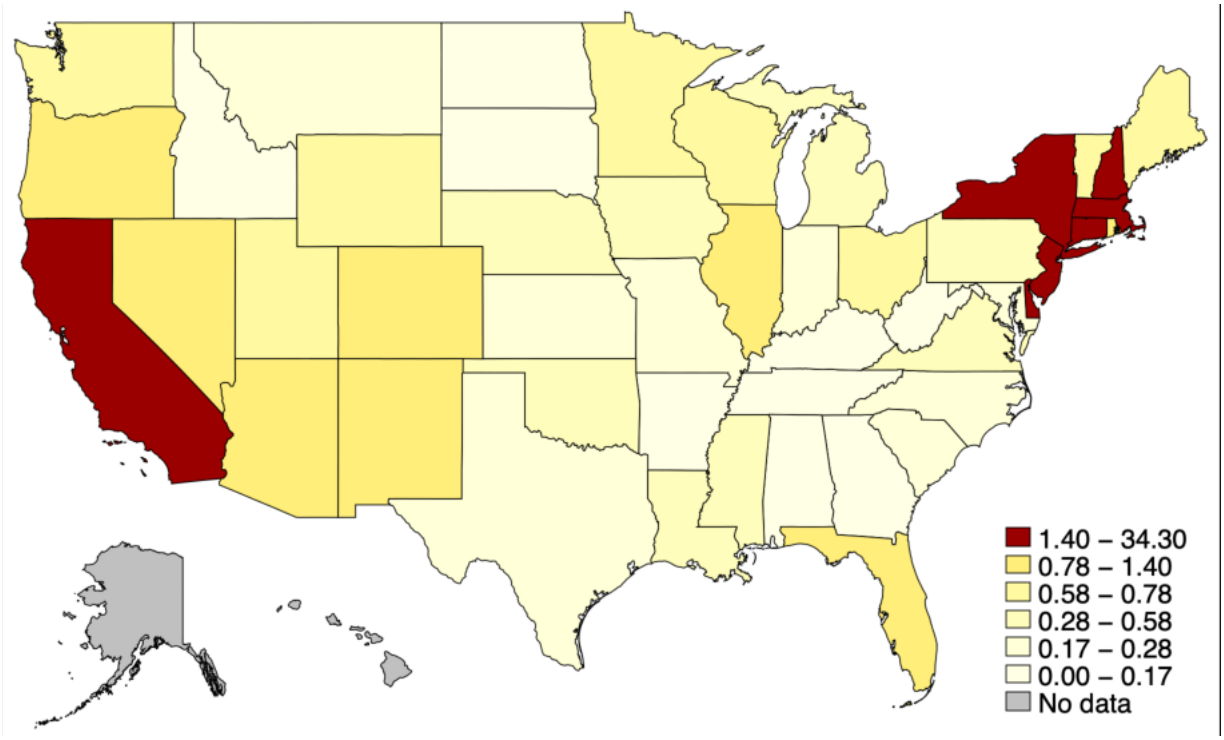
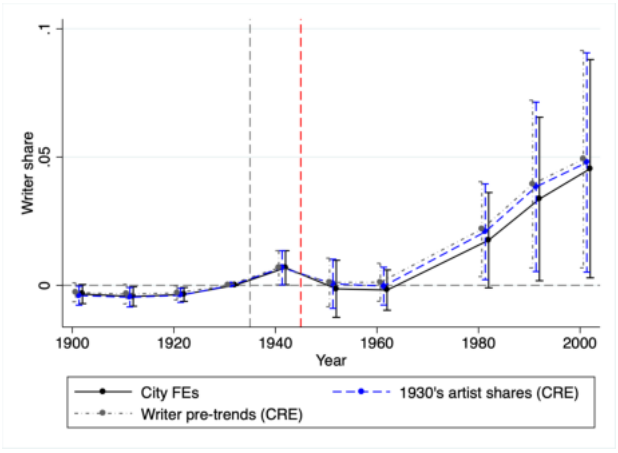
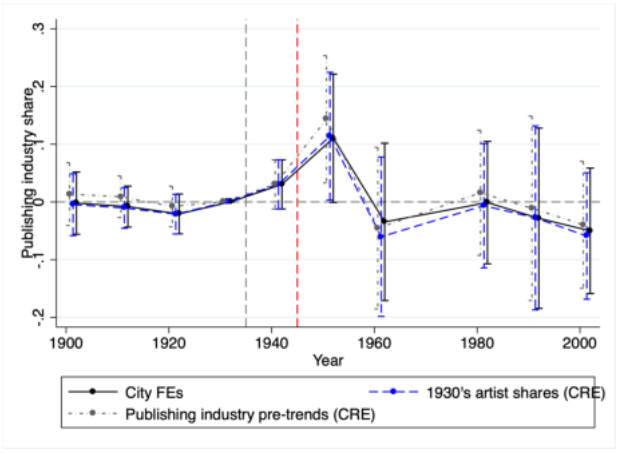


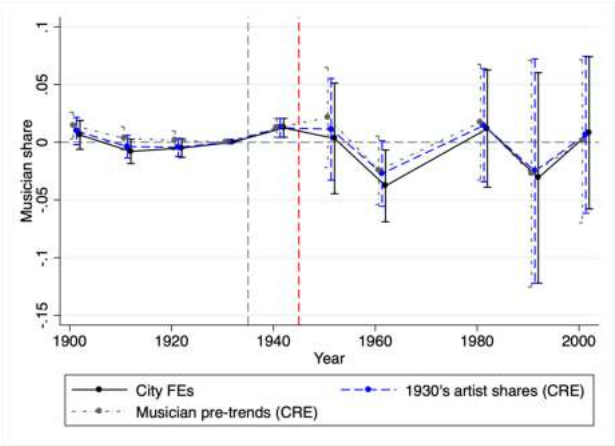
Figure A.7: Panel (a): OLS results on writing and music professions



(a) Authors



(b) Publishing industry workers



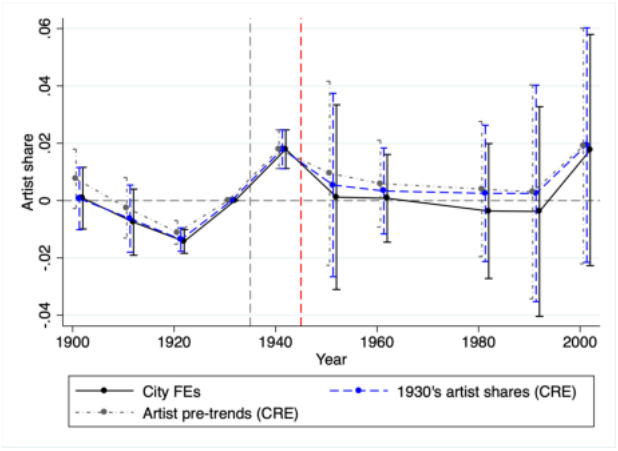
(c) Musicians

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

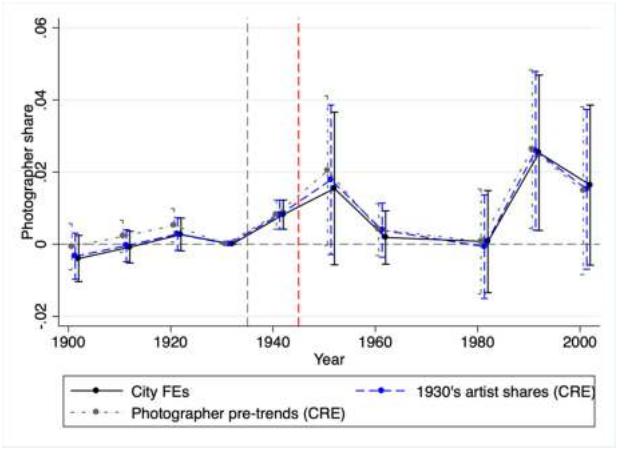
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

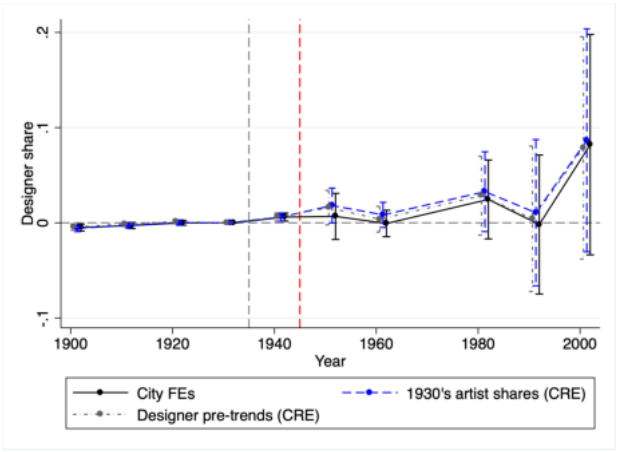
Figure A.7: Panel (b): OLS results on visual artistic professionals



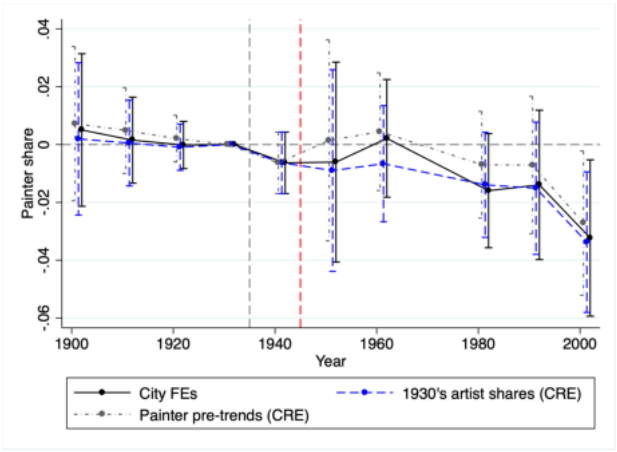
(a) Visual artists



(b) Photographers



(c) Designers



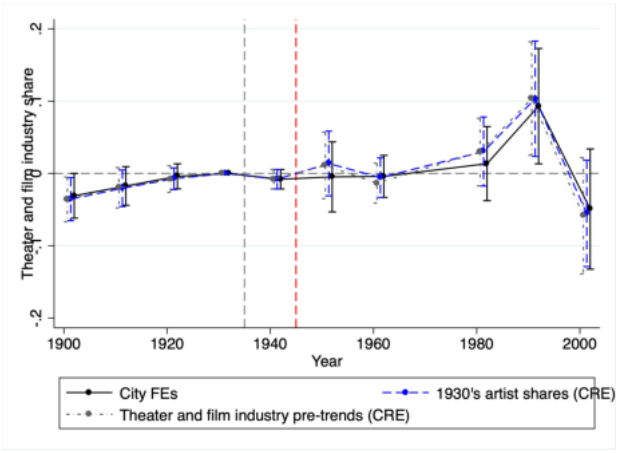
(d) Painters

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

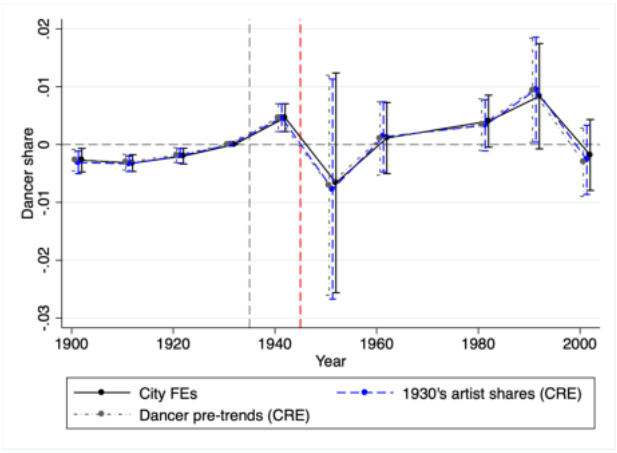
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

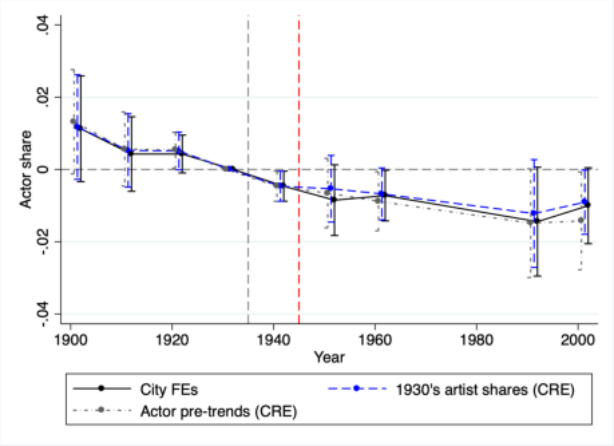
Figure A.7: Panel (c): Long-run OLS results on theater and film professionals



(a) Theater/film industry



(b) Dancers



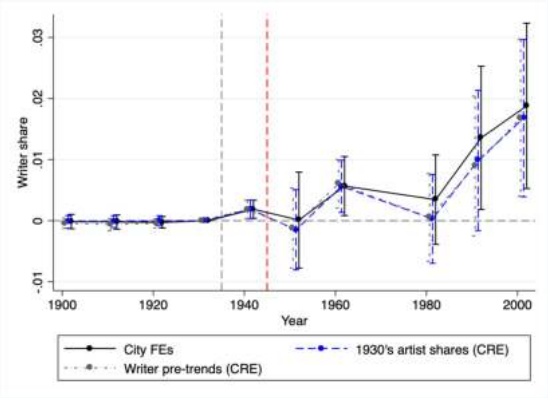
(c) Actors

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

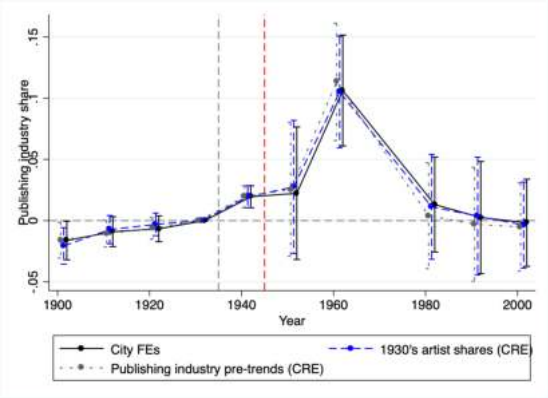
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

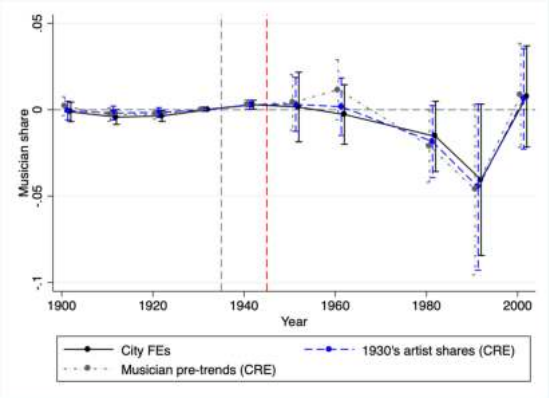
Figure A.8: Panel (a): Reduced form IV results on writing and music professions



(a) Authors



(b) Publishing industry workers



(c) Musicians

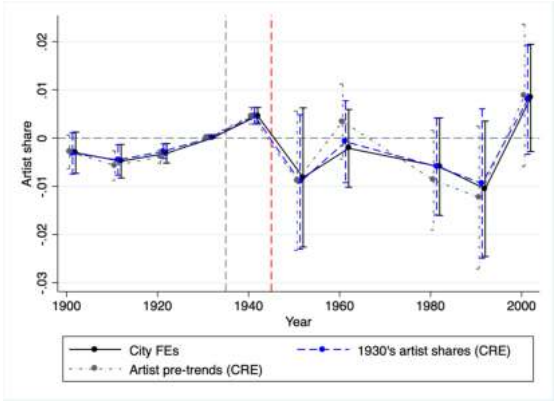
These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from the reduced form regression:

$$y_{ilt} = \alpha_i + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \gamma_{rf,lk} Log(NDEXP\ LO_{i,l}) \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

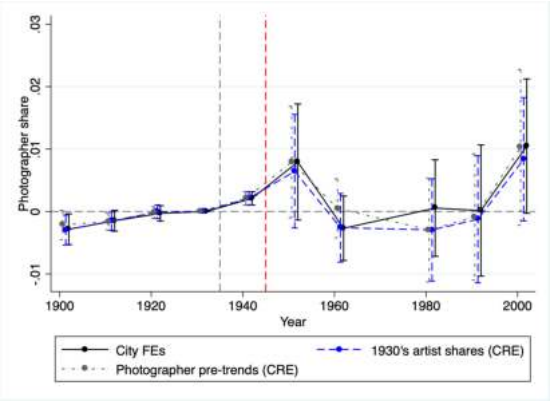
. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

[37]O'Connor (1973), p. 305
[38]Flanagan (1940), p. 435
[39]Mangione (1972), p. 369

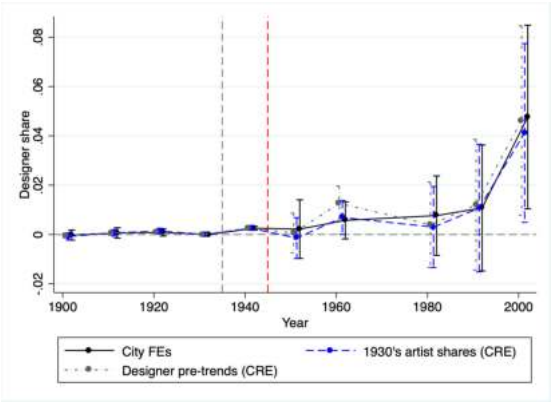
Figure A.8: Panel (b): Reduced form IV results on visual artistic professionals



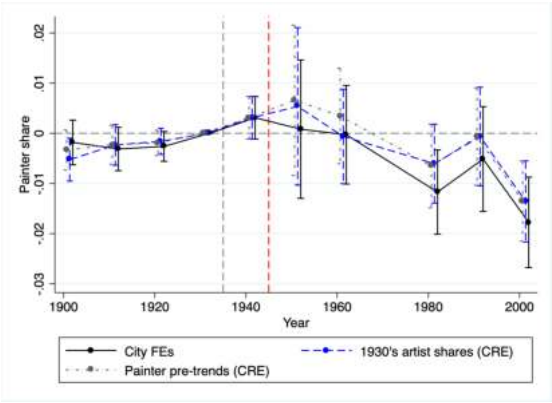
(a) Visual artists



(b) Photographers



(c) Designers



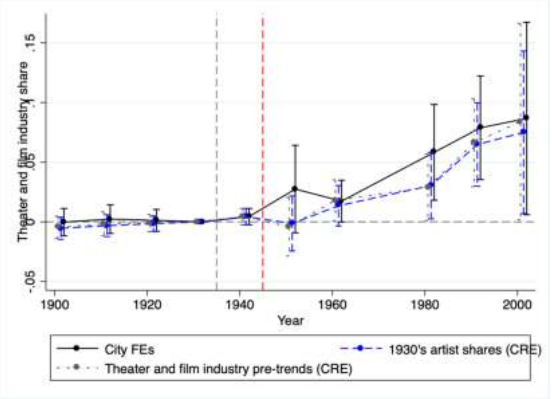
(d) Painters

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from the reduced form regression:

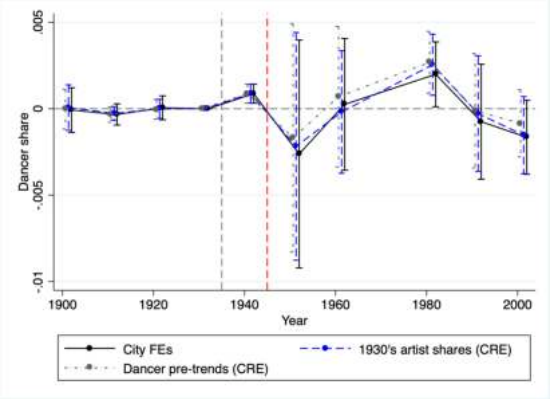
$$y_{ilt} = \alpha_i + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \gamma_{rf,lk} Log(NDEXP\ LO_{i,l}) \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

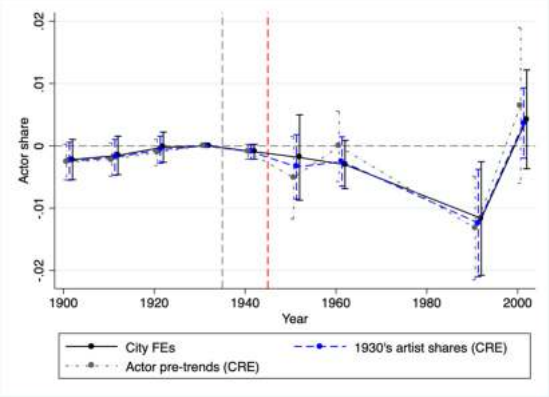
Figure A.8: Panel (c): Reduced form IV results on theater and film professionals



(a) Theater/film industry



(b) Dancers



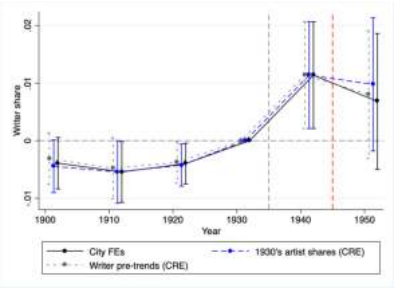
(c) Actors

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from the reduced form regression:

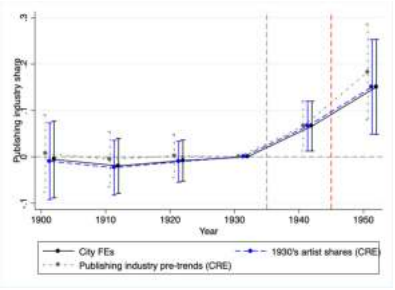
$$y_{ilt} = \alpha_i + \sum_{k=1900}^{2010} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{2010} \gamma_{rf,lk} Log(NDEXP\ LO_{i,l}) \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

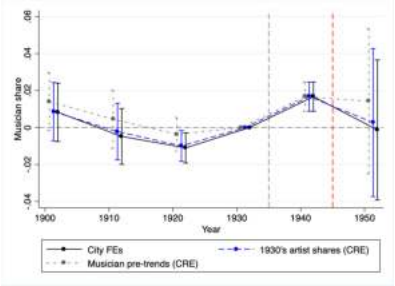
Figure A.9: Panel (a): OLS results on writing and music professions
Weighting on 1930 city population



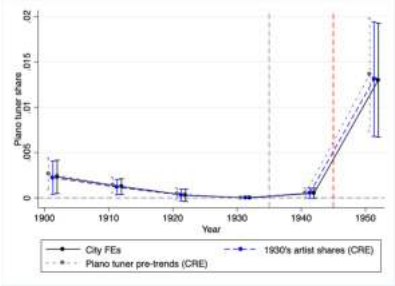
(a) Authors



(b) Publishing industry workers



(c) Musicians



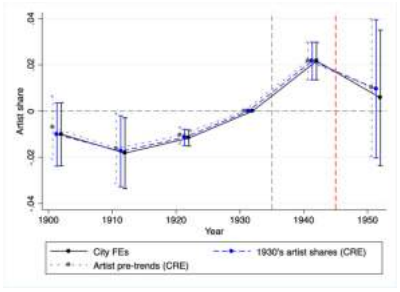
(d) Piano tuners

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

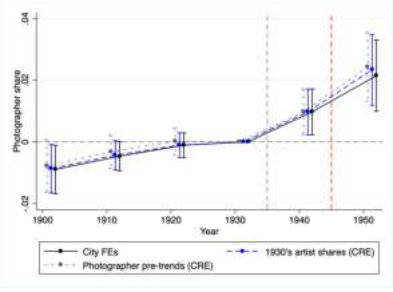
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

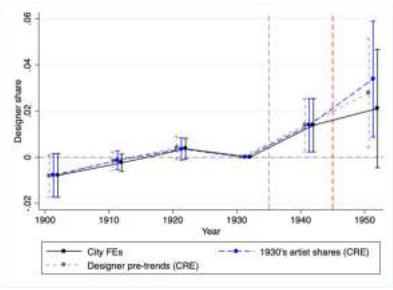
Figure A.9: Panel (b): OLS results on visual artistic professionals
Weighting on 1930 city population



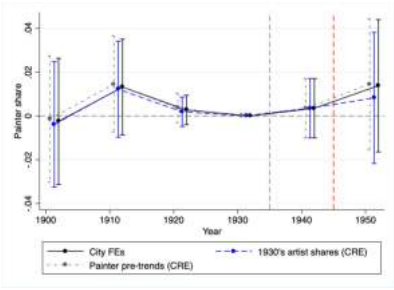
(a) Visual artists



(b) Photographers



(c) Designers



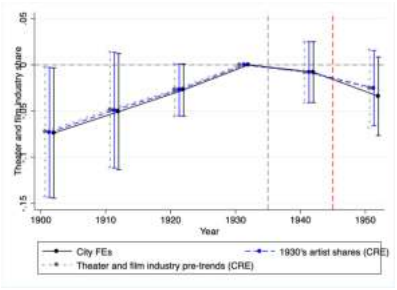
(d) Painters

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

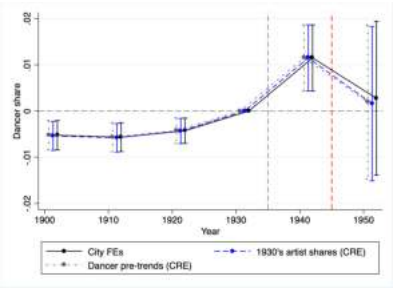
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

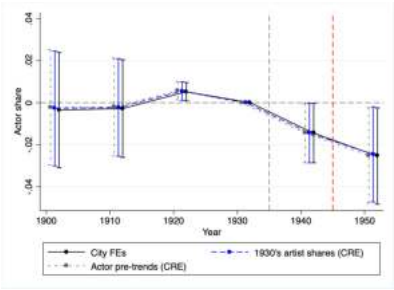
Figure A.9: Panel (c): OLS results on theater and film professionals
Weighting on 1930 city population



(a) Theater/film industry



(b) Dancers



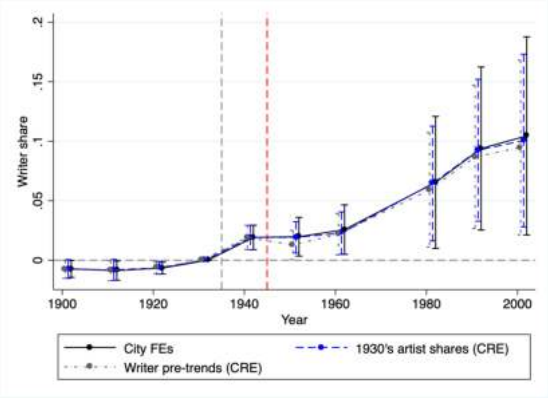
(c) Actors

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

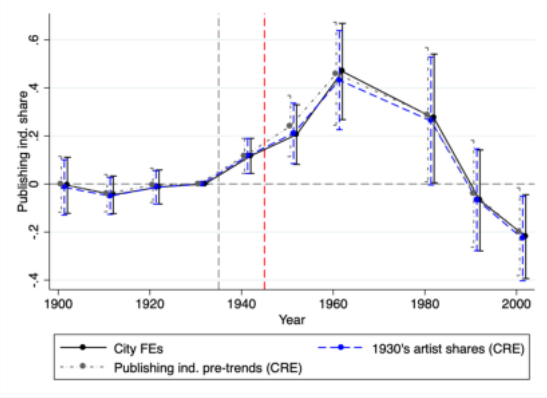
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

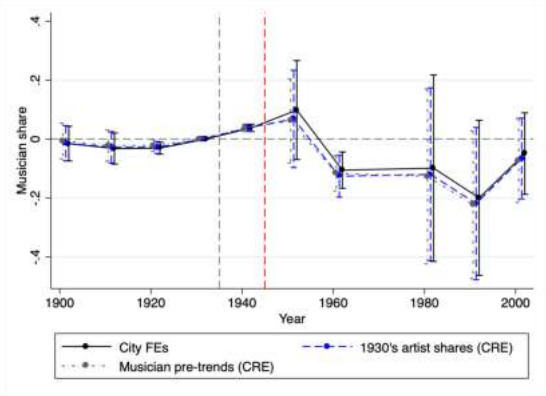
Figure A.10: Panel (a): IV results on writing and music professions
Weighting on 1930 city population



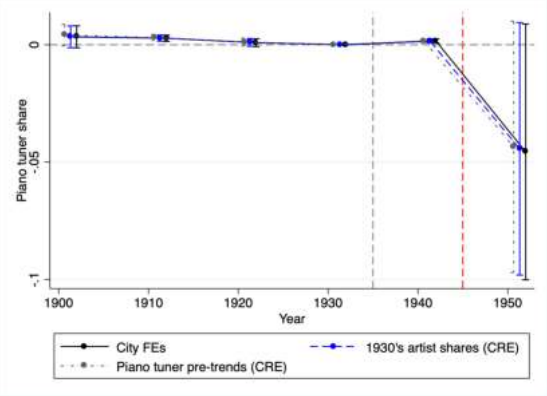
(a) Authors



(b) Publishing industry workers



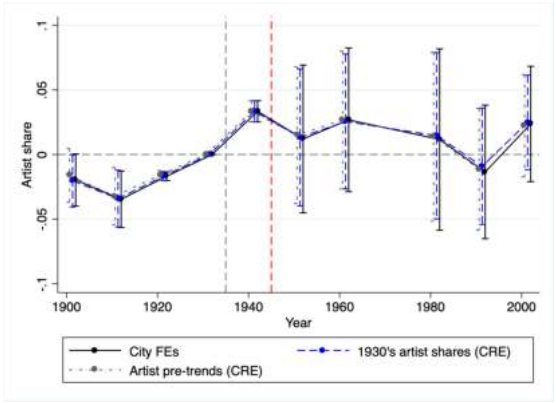
(c) Musicians



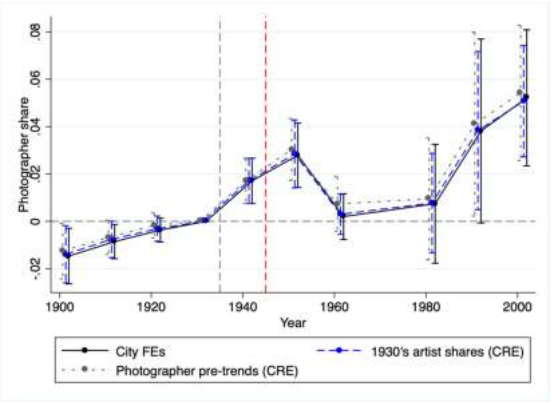
(d) Piano tuners

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends. Results for piano tuners stop at 1950, as OCC1950 ceases recording this occupational outcome.

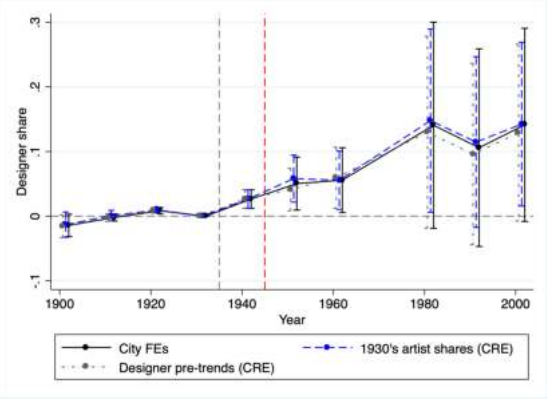
Figure A.10: Panel (b): IV results on visual artistic professionals
Weighting on 1930 city population



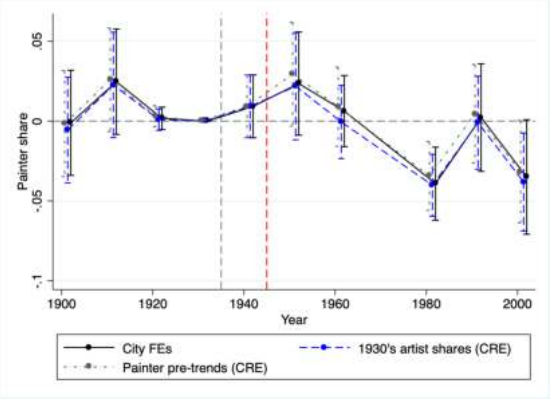
(a) Visual artists



(b) Photographers



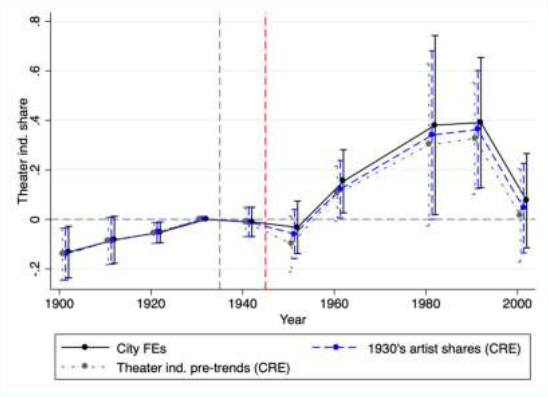
(c) Designers



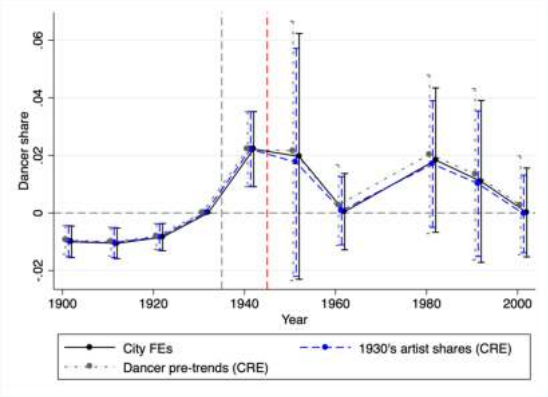
(d) Painters

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

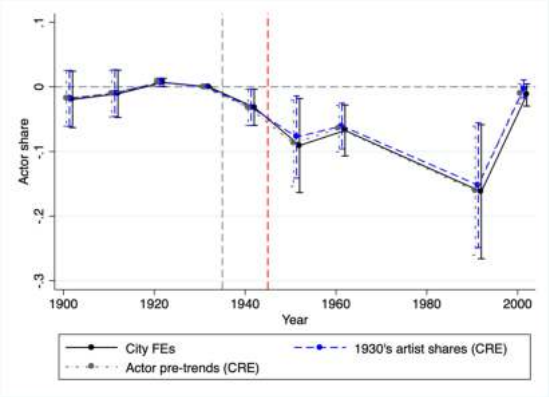
Figure A.10: Panel (c): IV results on theater and film professionals
Weighting on 1930 city population



(a) Theater/film industry



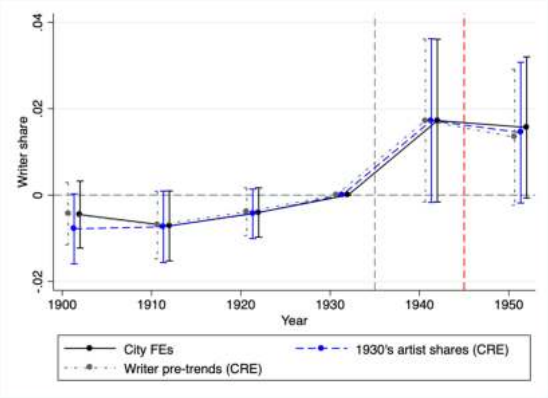
(b) Dancers



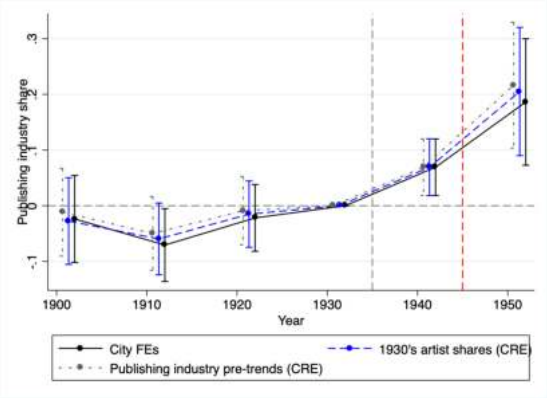
(c) Actors

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

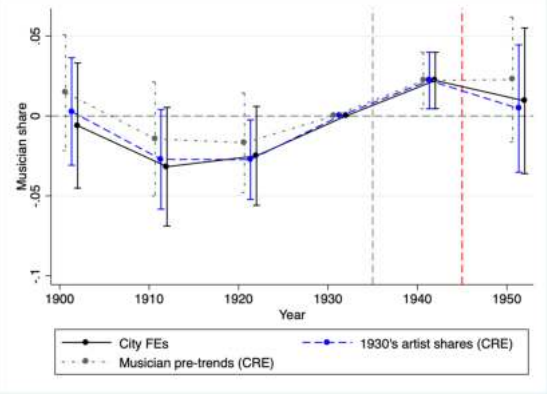
Figure A.11: Panel (a): OLS results on writing and music professions
Weighting on 2000 city population



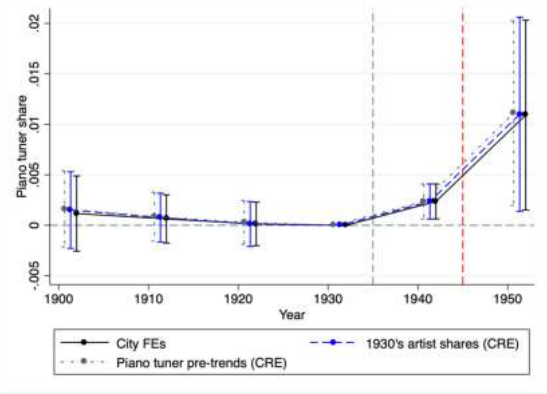
(a) Authors



(b) Publishing industry workers



(c) Musicians



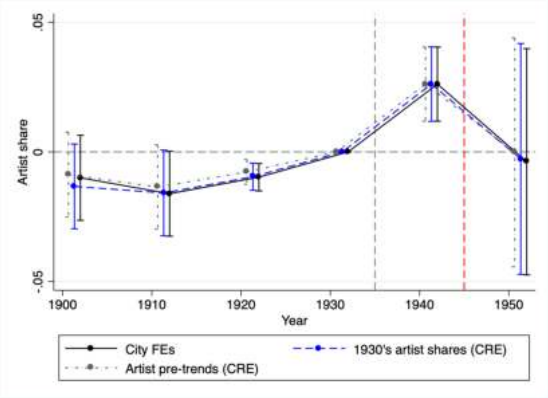
(d) Piano tuners

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

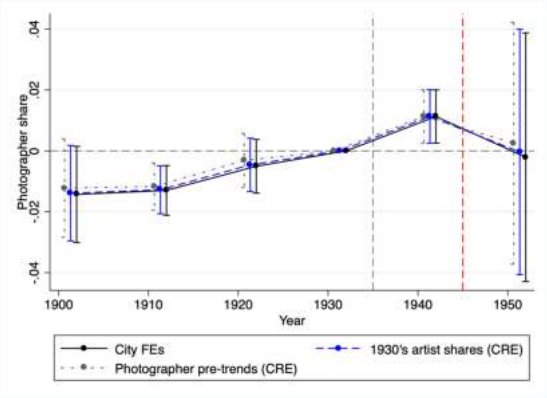
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

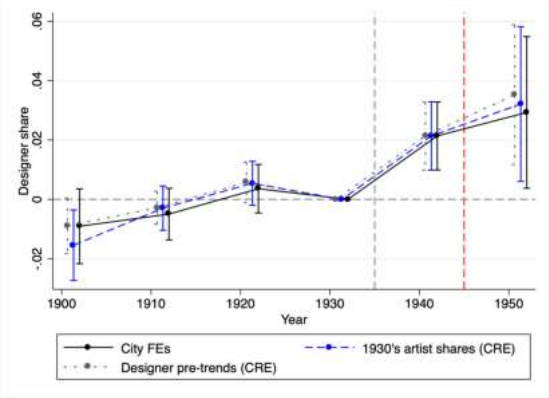
Figure A.11: Panel (b): OLS results on visual artistic professionals
Weighting on 2000 city population



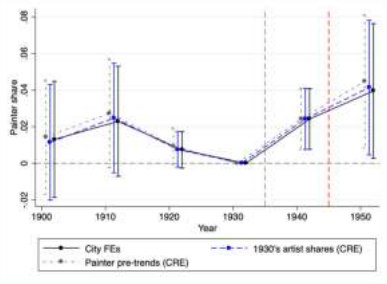
(a) Visual artists



(b) Photographers



(c) Designers



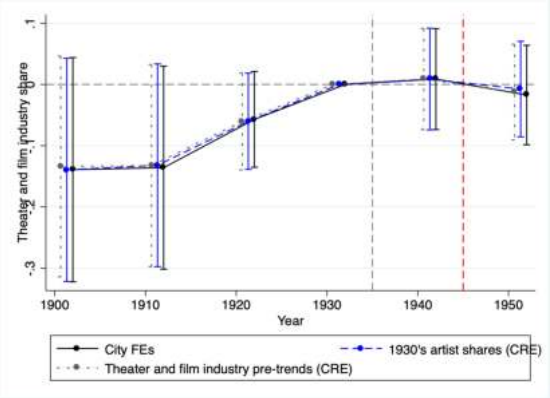
(d) Painters

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

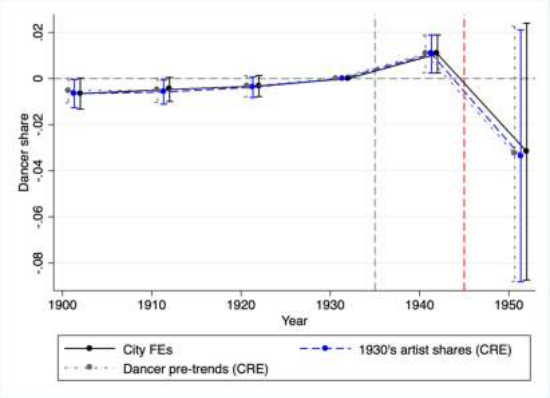
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

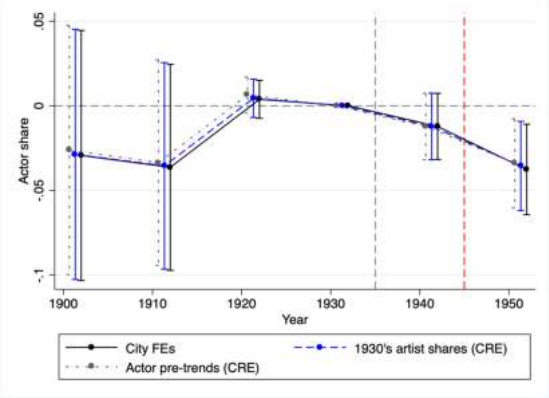
Figure A.11: Panel (c): OLS results on theater and film professionals
Weighting on 2000 city population



(a) Theater/film industry



(b) Dancers



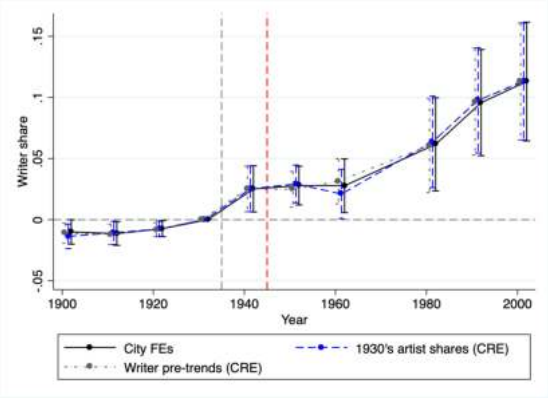
(c) Actors

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

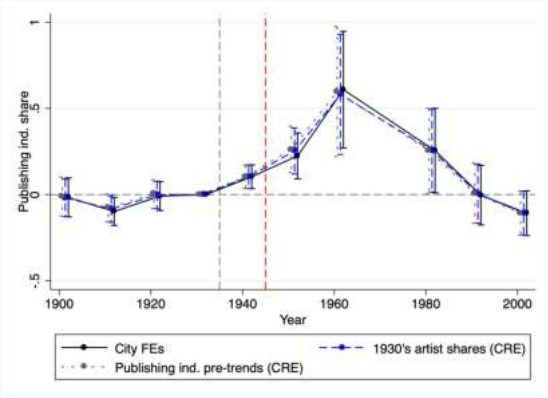
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

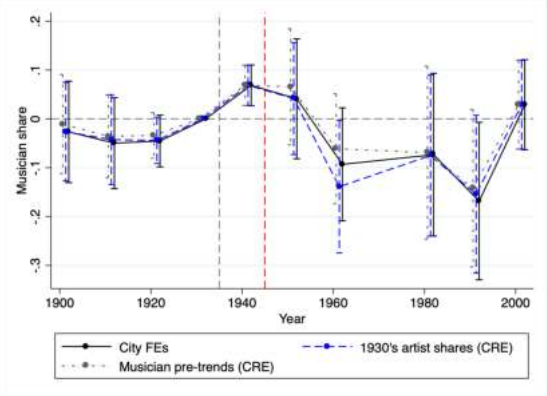
Figure A.12: Panel (a): IV results on writing and music professions
Weighting on 2000 city population



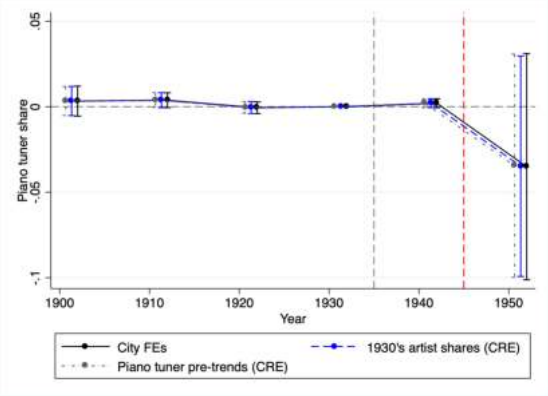
(a) Authors



(b) Publishing industry workers



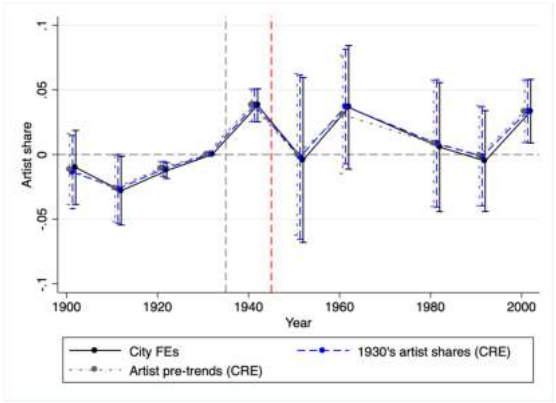
(c) Musicians



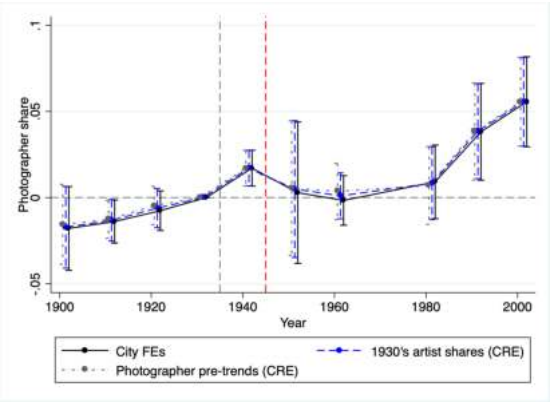
(d) Piano tuners

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends. Results for piano tuners stop at 1950, as OCC1950 ceases recording this occupational outcome.

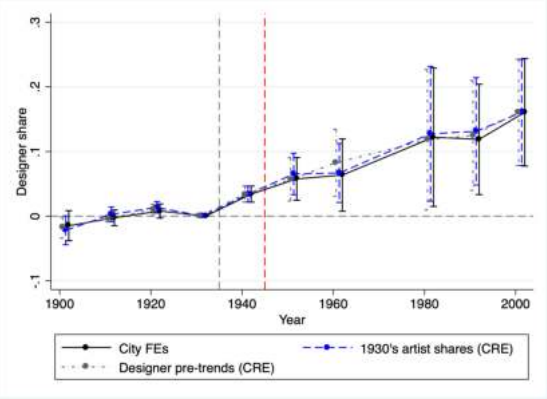
Figure A.12: Panel (b): IV results on visual artistic professionals
Weighting on 2000 city population



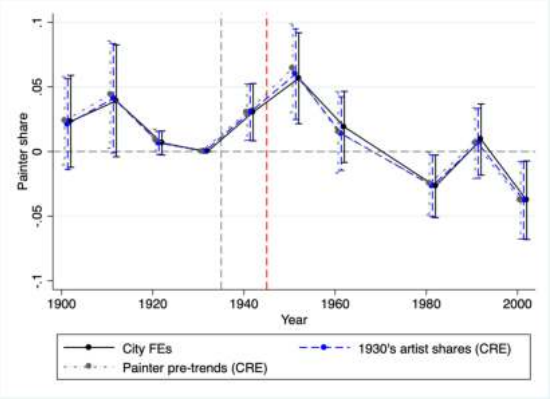
(a) Visual artists



(b) Photographers



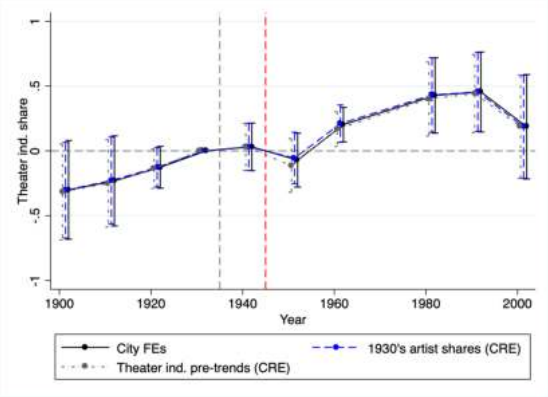
(c) Designers



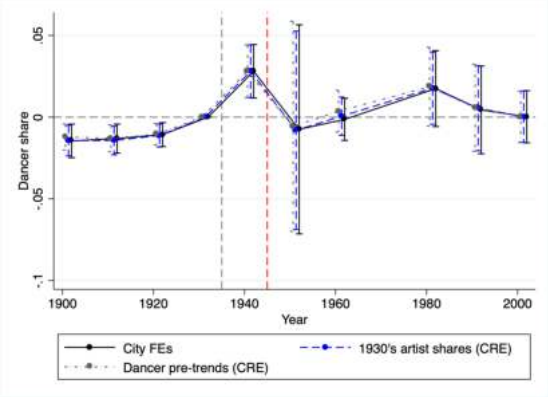
(d) Painters

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

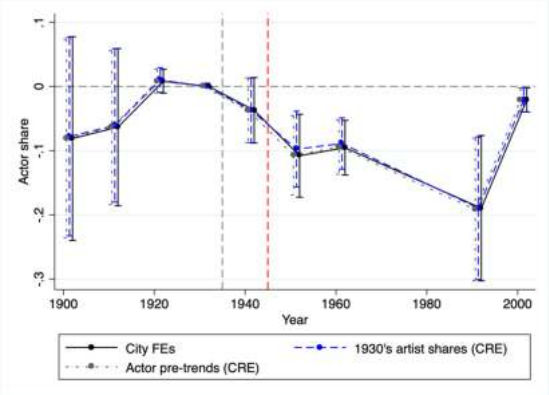
Figure A.12: Panel (c): IV results on theater and film professionals
Weighting on 2000 city population



(a) Theater/film industry



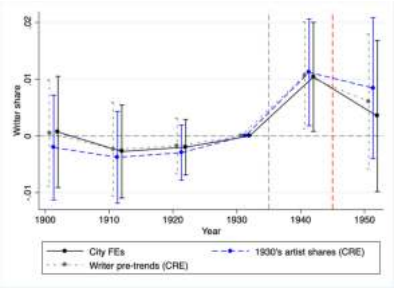
(b) Dancers



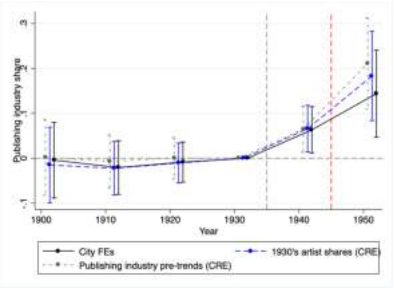
(c) Actors

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

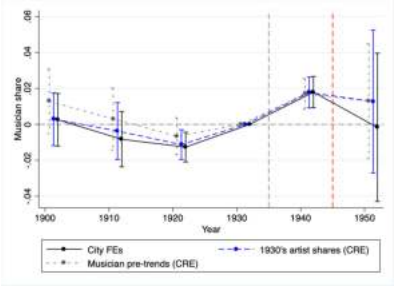
Figure A.13: Panel (a): OLS results on writing and music professions
Weighting on contemporaneous city population



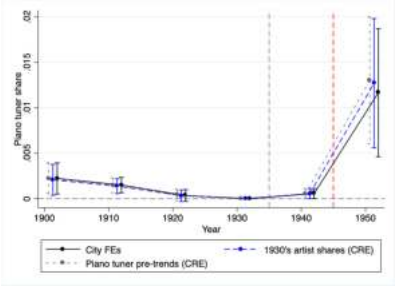
(a) Authors



(b) Publishing industry workers



(c) Musicians



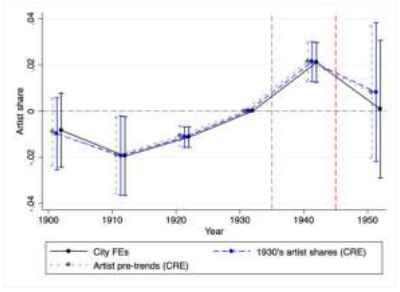
(d) Piano tuners

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

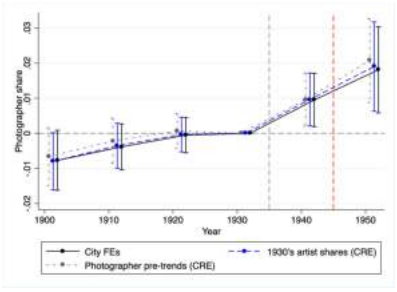
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

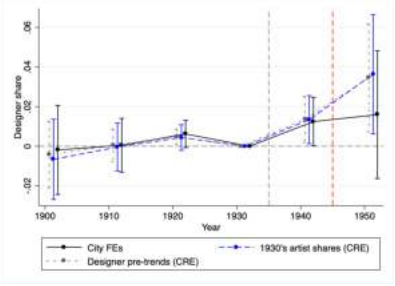
Figure A.13: Panel (b): OLS results on visual artistic professionals
Weighting on contemporaneous city population



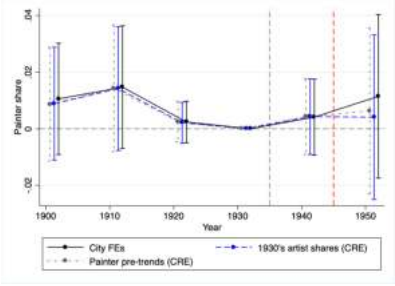
(a) Visual artists



(b) Photographers



(c) Designers



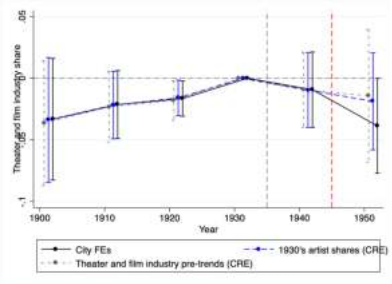
(d) Painters

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

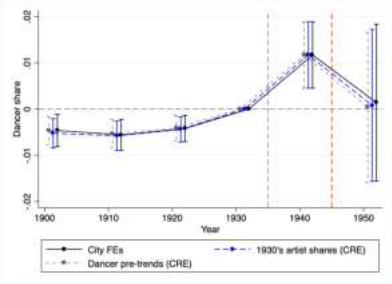
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

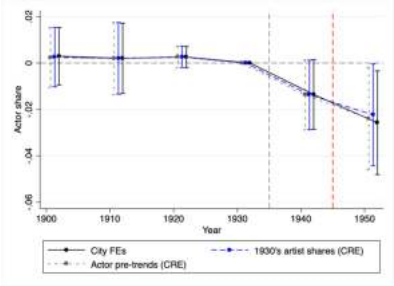
Figure A.13: Panel (c): OLS results on theater and film professionals
Weighting on contemporaneous city population



(a) Theater/film industry



(b) Dancers



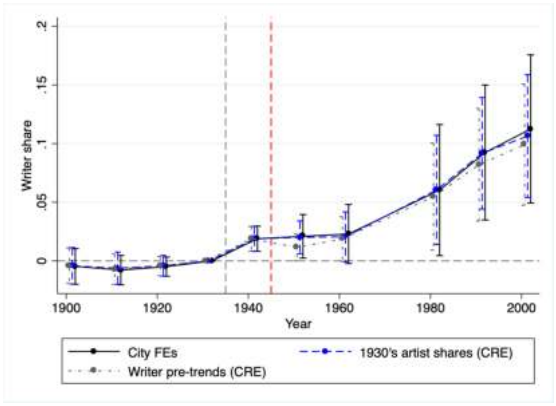
(c) Actors

These graphs display the difference-in-differences coefficients $\{\beta_{dd,k}\}$ from regressions of the form

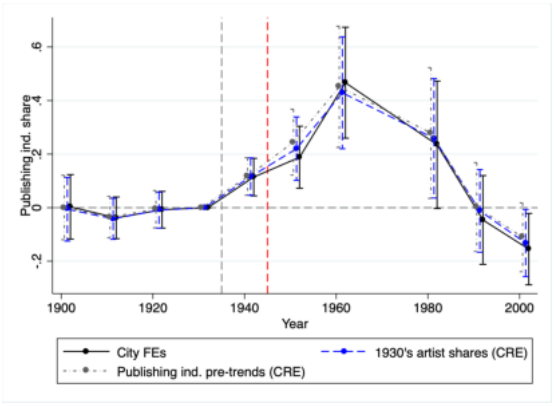
$$y_{ilt} = \beta_0 + \beta_1 \cdot 1\{FPNo1_{il} > 0\} + \sum_{k=1900}^{1950} \delta_k \cdot 1\{Year_t = k\} + \sum_{k=1900}^{1950} \beta_{dd,lk} \cdot 1\{FPNo1_{il} > 0\} \cdot 1\{Year_t = k\} + \varepsilon_{ilt}.$$

Each panel displays the coefficients from regressions of a given artistic profession on its respective Federal One subprogram. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

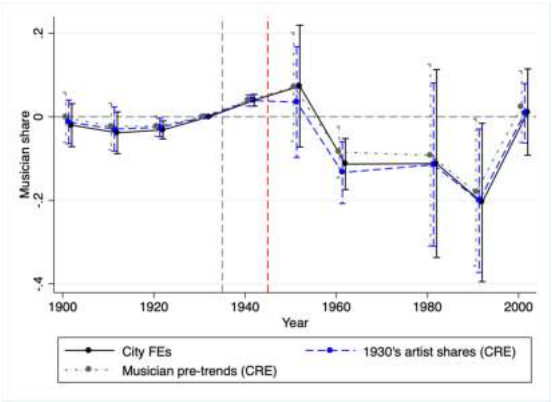
Figure A.14: Panel (a): IV results on writing and music professions
Weighting on contemporaneous city population



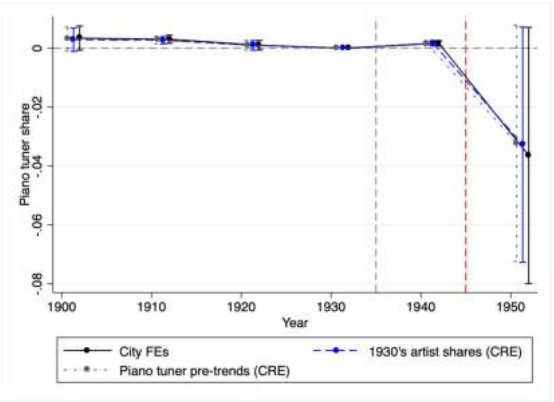
(a) Authors



(b) Publishing industry workers



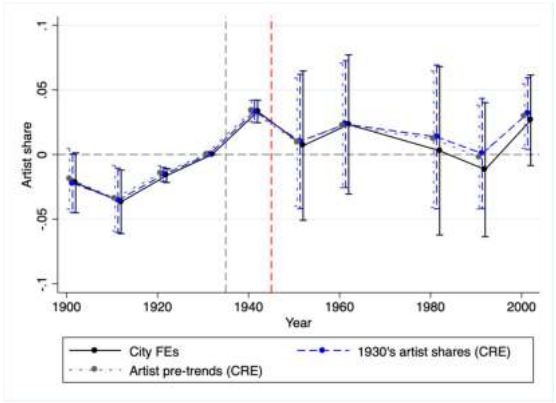
(c) Musicians



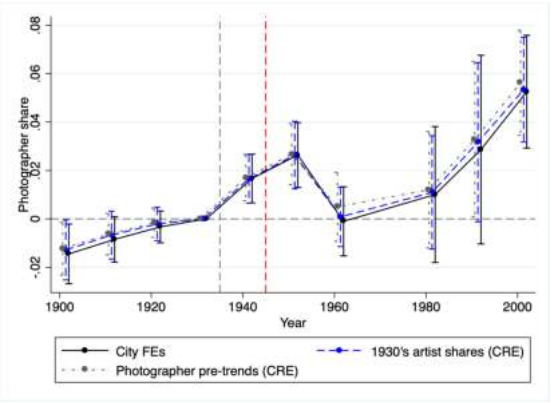
(d) Piano tuners

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends. Results for piano tuners stop at 1950, as OCC1950 ceases recording this occupational outcome.

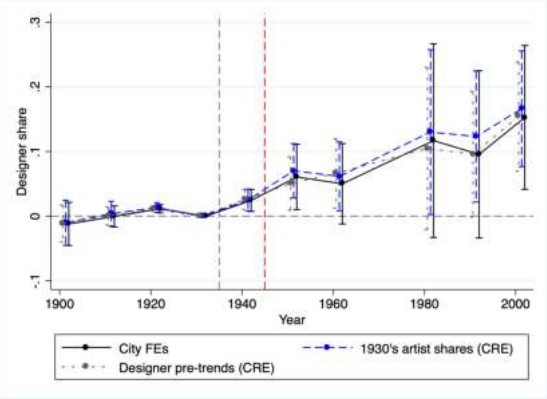
Figure A.14: Panel (b): IV results on visual artistic professionals
Weighting on contemporaneous city population



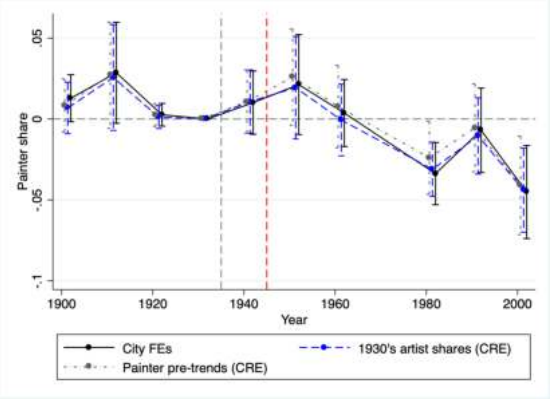
(a) Visual artists



(b) Photographers



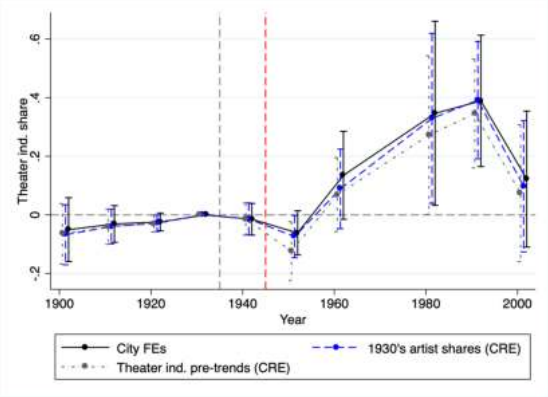
(c) Designers



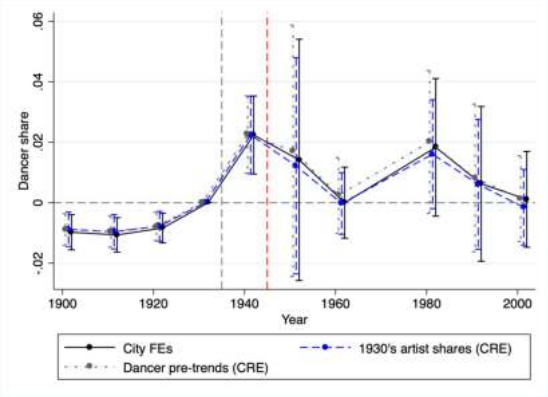
(d) Painters

These graphs display the instrumental variables difference-in-differences coefficients $\{\beta_{dd,k}\}$ from a two-stage least squares regression, where the first stage regresses an indicator for local Federal One subprogram recipiency on a local New Deal arts spending leave-out instrument, and the second stage regresses local artist shares on the fitted first stage. The decadal difference-in-difference coefficients are estimated relative to a 1930's baseline. These specificiations include weighting on each city's year 2000 population. The error bars of each plot display 95% confidence intervals around their respective point estimates using standard errors clustered on the city-level. The graphs includes three separate specifications of these regressions: one including city-level fixed-effects and two correlated random effect (CRE) models of pre-existing artist population shares (in 1930) and leading decadal local profession growth trends.

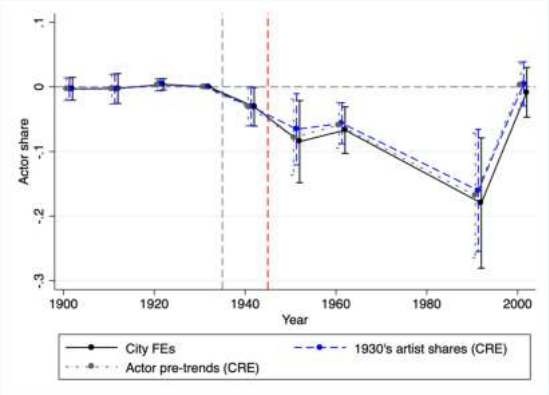
Figure A.14: Panel (c): IV results on theater and film professionals
Weighting on contemporaneous city population



(a) Theater/film industry



(b) Dancers



(c) Actors

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Table A.1: Number of observed cities by Census year

Year	All	Has 1930 + 1940	Has 1920-1960	Has 1900-2000	Top 100 pop. (1930)	Top 100 pop. (2000)
1900	656	618	104	91	97	68
1910	653	613	105	91	99	73
1920	796	737	106	91	100	77
1930	1032	955	106	91	100	81
1940	966	955	106	91	100	81
1950	146	146	106	91	74	55
1960	204	189	106	91	70	45
1970	0	0	0	0	0	0
1980	218	174	100	91	82	87
1990	213	167	96	91	72	83
2000	231	177	98	91	72	100
2010	230	176	97	90	71	99
2015	243	181	99	91	74	100
Unique cities	1177	955	106	91	100	100

This table displays count of the number of unique cities observable for each decadal US Census. Each column refers to a sample balance requirement. The "All" column imposes no restrictions on the sample-presence of cities and thereby reports the number of unique cities identifiable in each US Census year as a baseline. The "Top 100 pop." columns refer to the 100 most populous city in its respective year. Note the absence of city observations in 1970 and the drop-off starting in 1950 in the first two columns.

Table A.2: City observation frequency (of 12 census samples)

	(1)	(2)	(3)	(4)	(5)	(6)
Frequency	All	1930 + 1940	1920-1960	1900-2000	Top 100 pop. (1930)	Top 100 pop. (2000)
1	102	0	0	0	0	0
2	172	133	0	0	0	0
3	180	144	0	0	0	3
4	148	127	0	0	0	3
5	313	294	0	0	2	12
6	69	66	0	0	10	2
7	21	20	5	0	8	3
8	18	17	0	0	7	6
9	12	12	3	0	3	4
10	20	20	1	0	9	15
11	32	32	7	1	20	23
12	90	90	90	90	41	29
Total	1177	955	106	91	100	100

This table displays the city-balance for different specifications. With no restrictions on balance, the US Census data features 1177 distinct cities. The main specification that requires cities' presence in both 1930 and 1940 removes 200 cities. Imposing requirements for presence subsequent to the end of publicly available Census data removes a substantial number of cities (more than 90% relative to the unrestricted baseline), resulting in a city-state panel with substantial overlap with the largest US cities based both on 1930 and 2000 population.

Table A.3: Sample balance

	Main	Unrestricted		Has 1920-1960		Has 1900-2000	
			Diff.		Diff.		Diff.
Unique cities	907	1125	218	58	-849	43	-864
City pop. 1930	62822	59277	-3544.803**	491460	428638.1**	620194	557371.9**
	(282658.6)	(271644.8)	[*0.000*]	(1019226)	[*.0006*]	(1157948)	[*.0008*]
Occ. Score 1930	8.451	8.446	-0.00600	8.849	.398**	8.907	.456**
	(.7597)	(.7505)	[*.3504*]	(.4589)	[*0.000*]	(.4722)	[*0.000*]
Literate 1930	0.966	0.966	0.00	0.965	-0.00100	0.969	0.00300
	(.0434)	(.0423)	[*.6913*]	(.0216)	[*.7809*]	(.0177)	[*.2751*]
Artists (per 10k) 1930	2.638	2.746	.108**	3.943	1.305**	4.243	1.605**
	(3.6103)	(3.6779)	[*.0076*]	(2.5462)	[*.0001*]	(2.6644)	[*.0001*]
Musicians (per 10k) 1930	14.27	14.17	-0.102	17.00	2.733**	17.37	3.095**
	(6.6261)	(6.5749)	[*.0664*]	(5.608)	[*.0001*]	(5.8312)	[*.0003*]
Actors (per 10k) 1930	1.164	1.147	-0.0160	2.274	1.110	2.646	1.483
	(4.8196)	(4.6409)	[*.3313*]	(4.9523)	[*.0748*]	(5.7081)	[*.0756*]
Writers (per 10k) 1930	0.401	0.393	-0.00800	0.494	0.0920	0.558	0.156
	(1.3664)	(1.3214)	[*.1879*]	(.7144)	[*.3458*]	(.7954)	[*.2036*]
FAP binary	0.0260	0.0240	-.002**	0.328	.301**	0.419	.392**
	(.1606)	(.1543)	[*0.000*]	(.4734)	[*0.000*]	(.4992)	[*0.000*]
FMP binary	0.211	0.204	-0.00600	0.810	.6**	0.860	.65**
	(.4079)	(.4034)	[*.0524*]	(.3955)	[*0.000*]	(.3506)	[*0.000*]
FTP binary	0.0800	0.0740	-.006**	0.517	.437**	0.581	.501**
	(.2722)	(.2622)	[*0.000*]	(.5041)	[*0.000*]	(.4992)	[*0.000*]
FWP binary	0.0280	0.0250	-.002**	0.345	.317**	0.442	.414**
	(.1638)	(.1574)	[*0.000*]	(.4795)	[*0.000*]	(.5025)	[*0.000*]

This table displays the balance of observable characteristics of different city-sample specifications relative to the main sample. Distributional statistics of the main sample—the sample requiring the presence of cities in *both* 1930 and 1940 are displayed under the **main** column with standard deviations displayed under each sample mean in parentheses. The differences between different sample specifications and the main specification are displayed under the "Diff." sub-columns with p-values for the chi-squared test of equal distributions displayed below each sample difference in hard brackets and italicized text.
$*p < .05$, $**p < .01$

Table A.4: Comparisons of FPNo1 total expense by source (M. USD 1935)

	FAP	FMP	FTP	FWP	Total
City aggregations	18.74	51.06	78.15	9.247	157.2
State tabulations	18.90	46.80	59.30	12.70	137.7
Literature restrospectives	35[37]	.	46.20[38]	25.70[39]	.

This table combines expenditure estimates of the four main arts programs under Federal One from the different methods. The first row uses expenditure imputations from the city-level. The second row aggregates expenditures from the primary source tables of state-level programmatic outlays. The third row displays expenditure estimates from prominent historical retrospectives of the New Deal arts programs.

Table A.5: Detailed IV results by discipline: Authors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.068**	0.068**	0.068**	0.068**				
	(0.031)	(0.031)	(0.031)	(0.031)				
Binary × Post 1940	0.035	0.091**	0.10***	0.10**				
	(0.036)	(0.036)	(0.035)	(0.039)				
Exp. per author × Year 1940					0.0074**	0.0074**	0.0074**	0.0074**
					(0.0037)	(0.0037)	(0.0037)	(0.0037)
Exp. per author × Post 1940					0.0044	0.011**	0.011**	0.011**
					(0.0046)	(0.0053)	(0.0054)	(0.0054)
FWP binary	0.045*	-0.044	-0.062**					
	(0.026)	(0.029)	(0.025)					
Exp. per author					0.0049	-0.0059*		
					(0.0030)	(0.0036)		
Year 1940	0.0037***	0.0037***	0.0037***	0.0037***	0.0035***	0.0035***	0.0035***	0.0035***
	(0.00045)	(0.00045)	(0.00045)	(0.00045)	(0.00050)	(0.00050)	(0.00050)	(0.00050)
Post 1940	0.041***	0.041***	0.040***	0.037***	0.039***	0.039***	0.036***	0.036***
	(0.0058)	(0.0057)	(0.0050)	(0.0051)	(0.0070)	(0.0064)	(0.0057)	(0.0057)
Constant	0.0028***	-0.013***	-0.0046***		0.0027***	-0.015***		
	(0.00038)	(0.0031)	(0.0010)		(0.00043)	(0.0041)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	0.127	0.319	0.340	0.106	-0.140	0.250	0.027	0.027
Arts demographics 1930		X				X		
Writer trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FWP emp. share × Year 1940	0.038**	0.038**	0.038**	0.038**				
	(0.019)	(0.019)	(0.019)	(0.019)				
FWP emp. share × Post 1940	0.023	0.056**	0.058**	0.058**				
	(0.024)	(0.028)	(0.028)	(0.028)				
Log FWP emp. × Year 1940					0.0098	0.0098	0.0098	0.0098
					(0.0063)	(0.0063)	(0.0065)	(0.0065)
Log FWP emp. × Post 1940					0.021	0.019	0.020	0.020
					(0.013)	(0.013)	(0.014)	(0.014)
FWP emp. share	0.025	-0.030*						
	(0.015)	(0.018)						
Log FWP emp.					0.0037	0.0083		
					(0.0036)	(0.033)		
Year 1940	0.0035***	0.0035***	0.0035***	0.0035***	-0.024	-0.024	-0.024	-0.024
	(0.00051)	(0.00051)	(0.00051)	(0.00051)	(0.020)	(0.020)	(0.021)	(0.021)
Post 1940	0.038***	0.039***	0.036***	0.036***	-0.00068	0.0054	0.0010	0.0010
	(0.0072)	(0.0065)	(0.0058)	(0.0058)	(0.053)	(0.052)	(0.053)	(0.053)
Constant	0.0027***	-0.015***			-0.0052	-0.22*		
	(0.00044)	(0.0042)			(0.013)	(0.13)		
Observations	2606	2606	2606	2606	196	196	196	196
Adjusted R^2	-0.160	0.243	0.020	0.020	0.153	0.360	0.158	0.158
Arts demographics 1930		X				X		
Writer trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on author shares by city, using 1930 as the leave-out base-period. Writer city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.6: Detailed IV results by discipline: Publishing industry workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.71***	0.71***	0.71***	0.71***				
	(0.23)	(0.23)	(0.23)	(0.23)				
Binary × Post 1940	-1.07***	0.40***	0.099	0.57***				
	(0.38)	(0.15)	(0.083)	(0.21)				
Exp. per pub. worker × Year 1940					0.076***	0.076***	0.076***	0.076***
					(0.029)	(0.029)	(0.029)	(0.029)
Exp. per pub. worker × Post 1940					-0.11**	0.046**	0.063**	0.063**
					(0.046)	(0.018)	(0.025)	(0.025)
FWP binary	1.65***	-0.28**	0.11					
	(0.44)	(0.13)	(0.086)					
Exp. per pub. worker					0.18***	-0.034**		
					(0.059)	(0.015)		
Year 1940	0.19***	0.19***	0.19***	0.19***	0.19***	0.19***	0.19***	0.19***
	(0.0074)	(0.0074)	(0.0074)	(0.0074)	(0.0077)	(0.0077)	(0.0077)	(0.0077)
Post 1940	0.35***	0.28***	0.28***	0.28***	0.33***	0.27***	0.27***	0.27***
	(0.030)	(0.025)	(0.026)	(0.026)	(0.034)	(0.027)	(0.027)	(0.027)
Constant	0.40***	0.038**	0.020		0.40***	0.032*		
	(0.011)	(0.018)	(0.014)		(0.011)	(0.017)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	-0.191	0.657	0.620	0.208	-0.931	0.640	0.135	0.135
Arts demographics 1930		X				X		
Publishing industry trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FWP emp. share × Year 1940	0.39***	0.39***	0.39***	0.39***				
	(0.15)	(0.15)	(0.15)	(0.15)				
FWP emp. share × Post 1940	-0.57**	0.24**	0.32**	0.32**				
	(0.24)	(0.093)	(0.13)	(0.13)				
Log FWP emp. × Year 1940					0.051	0.051	0.051	0.051
					(0.034)	(0.034)	(0.035)	(0.035)
Log FWP emp. × Post 1940					0.0090	0.0098	0.0050	0.0050
					(0.049)	(0.049)	(0.052)	(0.052)
FWP emp. share	0.92***	-0.17**						
	(0.30)	(0.075)						
Log FWP emp.					0.065	0.0017		
					(0.058)	(0.094)		
Year 1940	0.19***	0.19***	0.19***	0.19***	0.043	0.043	0.043	0.043
	(0.0077)	(0.0077)	(0.0078)	(0.0078)	(0.13)	(0.13)	(0.13)	(0.13)
Post 1940	0.33***	0.27***	0.27***	0.27***	0.23	0.23	0.25	0.25
	(0.036)	(0.028)	(0.027)	(0.027)	(0.21)	(0.21)	(0.22)	(0.22)
Constant	0.40***	0.031*			0.48**	-0.39		
	(0.012)	(0.018)			(0.22)	(0.51)		
Observations	2606	2606	2606	2606	196	196	196	196
Adjusted R^2	-0.980	0.638	0.129	0.129	-0.000	0.529	0.103	0.103
Arts demographics 1930		X				X		
Publishing industry trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on publishing industry worker shares by city, using 1930 as the leave-out base-period. Publishing industry worker city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.7: Detailed IV results by discipline: Visual artists

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.17***	0.17***	0.17***	0.17***				
	(0.047)	(0.047)	(0.047)	(0.047)				
Binary × Post 1940	-0.28***	0.012	0.062	0.073				
	(0.087)	(0.035)	(0.040)	(0.047)				
Exp. per artist × Year 1940					0.20***	0.20***	0.20***	0.20***
					(0.062)	(0.062)	(0.062)	(0.062)
Exp. per artist × Post 1940					-0.34***	0.015	0.087	0.087
					(0.11)	(0.041)	(0.055)	(0.055)
FAP binary	0.39***	-0.0069	-0.049*					
	(0.094)	(0.030)	(0.027)					
Exp. per artist					0.47***	-0.011		
					(0.13)	(0.034)		
Year 1940	0.014***	0.014***	0.014***	0.014***	0.014***	0.014***	0.014***	0.014***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Post 1940	0.061***	0.056***	0.055***	0.057***	0.062***	0.056***	0.057***	0.057***
	(0.0059)	(0.0050)	(0.0052)	(0.0056)	(0.0053)	(0.0048)	(0.0053)	(0.0053)
Constant	0.016***	-0.016***	-0.0023		0.017***	-0.016***		
	(0.0014)	(0.0036)	(0.0014)		(0.0015)	(0.0036)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	-0.527	0.476	0.454	0.096	-0.695	0.469	0.085	0.085
Arts demographics 1930		X				X		
Artist trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FAP emp. share × Year 1940	1.06***	1.06***	1.06***	1.06***				
	(0.32)	(0.32)	(0.32)	(0.32)				
FAP emp. share × Post 1940	-1.78***	0.083	0.46	0.46				
	(0.59)	(0.22)	(0.29)	(0.29)				
Log FAP emp. × Year 1940					0.0064**	0.0064**	0.0064**	0.0064**
					(0.0028)	(0.0028)	(0.0029)	(0.0029)
Log FAP emp. × Post 1940					-0.0027	-0.0039	-0.0036	-0.0036
					(0.0080)	(0.0082)	(0.0084)	(0.0084)
FAP emp. share	2.46***	-0.059						
	(0.65)	(0.18)						
Log FAP emp.					0.0090***	0.0011		
					(0.0035)	(0.0075)		
Year 1940	0.014***	0.014***	0.014***	0.014***	0.013	0.013	0.013	0.013
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0099)	(0.0099)	(0.010)	(0.010)
Post 1940	0.062***	0.056***	0.057***	0.057***	0.075**	0.080**	0.079**	0.079**
	(0.0054)	(0.0048)	(0.0054)	(0.0054)	(0.035)	(0.035)	(0.035)	(0.035)
Constant	0.016***	-0.016***			0.028**	-0.14***		
	(0.0015)	(0.0036)			(0.013)	(0.036)		
Observations	2606	2606	2606	2606	196	196	196	196
Adjusted R^2	-0.717	0.469	0.083	0.083	0.091	0.487	0.112	0.112
Arts demographics 1930		X				X		
Artist trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on visual artist shares by city, using 1930 as the leave-out base-period. Visual artist city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.8: Detailed IV results by discipline: Designer

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.093***	0.093***	0.093***	0.093***				
	(0.024)	(0.024)	(0.024)	(0.024)				
Binary × Post 1940	0.059	0.16*	0.11	0.15*				
	(0.070)	(0.083)	(0.067)	(0.090)				
Exp. per designer × Year 1940					0.11***	0.11***	0.11***	0.11***
					(0.032)	(0.032)	(0.032)	(0.032)
Exp. per designer × Post 1940					0.065	0.19*	0.17*	0.17*
					(0.079)	(0.097)	(0.10)	(0.10)
FAP binary	0.092***	-0.078	0.035					
	(0.021)	(0.062)	(0.034)					
Exp. per designer					0.11***	-0.098		
					(0.028)	(0.071)		
Year 1940	0.0073***	0.0073***	0.0073***	0.0073***	0.0074***	0.0074***	0.0074***	0.0074***
	(0.00054)	(0.00054)	(0.00054)	(0.00054)	(0.00054)	(0.00054)	(0.00054)	(0.00054)
Post 1940	0.20***	0.20***	0.20***	0.19***	0.21***	0.20***	0.19***	0.19***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)	(0.013)	(0.013)
Constant	0.0038***	-0.045***	0.00057		0.0039***	-0.045***		
	(0.00044)	(0.0081)	(0.0011)		(0.00045)	(0.0083)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	0.396	0.450	0.412	0.285	0.395	0.451	0.284	0.284
Arts demographics 1930		X				X		
Designer trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FAP emp. share × Year 1940	0.58***	0.58***	0.58***	0.58***				
	(0.16)	(0.16)	(0.16)	(0.16)				
FAP emp. share × Post 1940	0.35	1.00*	0.92*	0.92*				
	(0.42)	(0.51)	(0.55)	(0.55)				
Log FAP emp. × Year 1940					0.0057***	0.0057***	0.0057***	0.0057***
					(0.0014)	(0.0014)	(0.0015)	(0.0015)
Log FAP emp. × Post 1940					0.0058	0.0057	0.0068	0.0068
					(0.021)	(0.021)	(0.021)	(0.021)
FAP emp. share	0.58***	-0.52						
	(0.14)	(0.37)						
Log FAP emp.					0.0054**	-0.00054		
					(0.0022)	(0.023)		
Year 1940	0.0074***	0.0074***	0.0074***	0.0074***	-0.0056	-0.0056	-0.0056	-0.0056
	(0.00054)	(0.00054)	(0.00054)	(0.00054)	(0.0048)	(0.0048)	(0.0050)	(0.0050)
Post 1940	0.21***	0.20***	0.19***	0.19***	0.26***	0.26***	0.25**	0.25**
	(0.012)	(0.012)	(0.013)	(0.013)	(0.093)	(0.092)	(0.093)	(0.093)
Constant	0.0038***	-0.045***			-0.0059	-0.57***		
	(0.00044)	(0.0082)			(0.0080)	(0.083)		
Observations	2606	2606	2606	2606	196	196	196	196
Adjusted R^2	0.394	0.451	0.284	0.284	0.181	0.330	0.221	0.221
Arts demographics 1930		X				X		
Designer trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on designer shares by city, using 1930 as the leave-out base-period. Designer city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.9: Detailed IV results by discipline: Photographer

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.076***	0.076***	0.076***	0.076***				
	(0.026)	(0.026)	(0.026)	(0.026)				
Binary × Post 1940	0.082***	0.091***	0.027	0.066**				
	(0.027)	(0.029)	(0.018)	(0.029)				
Exp. per photographer × Year 1940					0.091***	0.091***	0.091***	0.091***
					(0.033)	(0.033)	(0.033)	(0.033)
Exp. per photographer × Post 1940					0.096***	0.11***	0.078**	0.078**
					(0.034)	(0.036)	(0.036)	(0.036)
FAP binary	-0.042**	-0.085***	0.0046					
	(0.018)	(0.026)	(0.0078)					
Exp. per photographer					-0.050**	-0.10***		
					(0.022)	(0.032)		
Year 1940	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***
	(0.00082)	(0.00082)	(0.00082)	(0.00082)	(0.00081)	(0.00081)	(0.00081)	(0.00081)
Post 1940	0.041***	0.039***	0.041***	0.036***	0.042***	0.039***	0.037***	0.037***
	(0.0044)	(0.0041)	(0.0044)	(0.0042)	(0.0041)	(0.0039)	(0.0040)	(0.0040)
Constant	0.026***	-0.0073***	-0.00062		0.026***	-0.0074***		
	(0.00064)	(0.0022)	(0.0023)		(0.00063)	(0.0023)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	0.166	0.307	0.258	0.099	0.156	0.301	0.093	0.093
Arts demographics 1930		X				X		
Photographer trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FAP emp. share × Year 1940	0.48***	0.48***	0.48***	0.48***				
	(0.17)	(0.17)	(0.17)	(0.17)				
FAP emp. share × Post 1940	0.51***	0.56***	0.41**	0.41**				
	(0.18)	(0.19)	(0.19)	(0.19)				
Log FAP emp. × Year 1940					0.0015	0.0015	0.0015	0.0015
					(0.0017)	(0.0017)	(0.0018)	(0.0018)
Log FAP emp. × Post 1940					0.0024	0.0020	0.0023	0.0023
					(0.0044)	(0.0045)	(0.0046)	(0.0046)
FAP emp. share	-0.26**	-0.53***						
	(0.12)	(0.17)						
Log FAP emp.					0.0018	-0.0016		
					(0.0022)	(0.0046)		
Year 1940	0.015***	0.015***	0.015***	0.015***	0.019***	0.019***	0.019**	0.019**
	(0.00081)	(0.00081)	(0.00081)	(0.00081)	(0.0065)	(0.0065)	(0.0067)	(0.0067)
Post 1940	0.042***	0.039***	0.036***	0.036***	0.050***	0.052***	0.051**	0.051**
	(0.0042)	(0.0039)	(0.0041)	(0.0041)	(0.019)	(0.019)	(0.019)	(0.019)
Constant	0.026***	-0.0073***			0.024***	-0.087***		
	(0.00064)	(0.0023)			(0.0080)	(0.019)		
Observations	2606	2606	2606	2606	196	196	196	196
Adjusted R^2	0.156	0.301	0.092	0.092	0.106	0.371	0.142	0.142
Arts demographics 1930		X				X		
Photographer trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on photographer shares by city, using 1930 as the leave-out base-period. Photographer city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.10: Detailed IV results by discipline: Painter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.11	0.11	0.11	0.11				
	(0.083)	(0.083)	(0.083)	(0.083)				
Binary × Post 1940	-0.045	-0.10**	-0.040*	-0.044				
	(0.060)	(0.046)	(0.023)	(0.047)				
Exp. per painter × Year 1940					0.13	0.13	0.13	0.13
					(0.10)	(0.10)	(0.10)	(0.10)
Exp. per painter × Post 1940					-0.053	-0.12**	-0.050	-0.050
					(0.072)	(0.056)	(0.056)	(0.056)
FAP binary	0.035	0.078	-0.0044					
	(0.059)	(0.054)	(0.016)					
Exp. per painter					0.042	0.091		
					(0.071)	(0.062)		
Year 1940	0.039***	0.039***	0.039***	0.039***	0.039***	0.039***	0.039***	0.039***
	(0.0040)	(0.0040)	(0.0040)	(0.0040)	(0.0039)	(0.0039)	(0.0039)	(0.0039)
Post 1940	0.034***	0.030***	0.025***	0.038***	0.034***	0.030***	0.037***	0.037***
	(0.0058)	(0.0055)	(0.0059)	(0.0069)	(0.0056)	(0.0054)	(0.0068)	(0.0068)
Constant	0.061***	0.029***	0.012		0.061***	0.029***		
	(0.0032)	(0.011)	(0.0084)		(0.0031)	(0.010)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	0.015	0.424	0.440	0.053	0.011	0.417	0.042	0.042
Arts demographics 1930		X				X		
Painter trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FAP emp. share × Year 1940	0.70	0.70	0.70	0.70				
	(0.53)	(0.53)	(0.53)	(0.53)				
FAP emp. share × Post 1940	-0.28	-0.64**	-0.27	-0.27				
	(0.38)	(0.29)	(0.29)	(0.29)				
Log FAP emp. × Year 1940					0.0065*	0.0065*	0.0065	0.0065
					(0.0039)	(0.0039)	(0.0040)	(0.0040)
Log FAP emp. × Post 1940					0.0018	0.0022	0.0020	0.0020
					(0.0043)	(0.0042)	(0.0043)	(0.0043)
FAP emp. share	0.22	0.48						
	(0.37)	(0.32)						
Log FAP emp.					0.0023	-0.0020		
					(0.0060)	(0.0045)		
Year 1940	0.039***	0.039***	0.039***	0.039***	0.012	0.012	0.012	0.012
	(0.0040)	(0.0040)	(0.0040)	(0.0040)	(0.014)	(0.014)	(0.014)	(0.014)
Post 1940	0.034***	0.030***	0.037***	0.037***	-0.0036	-0.0059	-0.0047	-0.0047
	(0.0057)	(0.0054)	(0.0068)	(0.0068)	(0.016)	(0.015)	(0.016)	(0.016)
Constant	0.061***	0.029***			0.072***	0.12***		
	(0.0032)	(0.010)			(0.020)	(0.031)		
Observations	2606	2606	2606	2606	196	196	196	196
Adjusted R^2	0.010	0.416	0.040	0.040	0.006	0.214	0.035	0.035
Arts demographics 1930		X				X		
Painter trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on painter shares by city, using 1930 as the leave-out base-period. Painter city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.11: Detailed IV results by discipline: Musician

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.053**	0.053**	0.053**	0.053**				
	(0.025)	(0.025)	(0.025)	(0.026)				
Binary × Post 1940	-0.11	-0.18*	-0.13	-0.17				
	(0.088)	(0.097)	(0.083)	(0.11)				
Exp. per musician × Year 1940					0.034	0.034	0.034	0.034
					(0.023)	(0.023)	(0.023)	(0.023)
Exp. per musician × Post 1940					-0.13	-0.24	-0.22	-0.22
					(0.13)	(0.15)	(0.13)	(0.13)
FMP binary	0.049	0.039	-0.00044					
	(0.036)	(0.046)	(0.024)					
Exp. per musician					0.032	0.017		
					(0.029)	(0.032)		
Year 1940	-0.0035	-0.0035	-0.0035	-0.0035	-0.0033	-0.0033	-0.0033	-0.0033
	(0.0059)	(0.0059)	(0.0059)	(0.0059)	(0.0071)	(0.0071)	(0.0071)	(0.0071)
Post 1940	0.33***	0.35***	0.33***	0.33***	0.35***	0.39***	0.35***	0.35***
	(0.058)	(0.058)	(0.058)	(0.066)	(0.082)	(0.091)	(0.077)	(0.077)
Constant	0.13***	-0.0100	0.0082		0.13***	-0.017		
	(0.0070)	(0.011)	(0.0096)		(0.0084)	(0.016)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	0.312	0.365	0.366	0.144	0.255	0.212	0.074	0.074
Arts demographics 1930		X				X		
Musician trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FMP emp. share × Year 1940	0.19	0.19	0.19	0.19				
	(0.14)	(0.14)	(0.14)	(0.14)				
FMP emp. share × Post 1940	-0.83	-1.61	-1.41	-1.41				
	(0.94)	(1.16)	(0.93)	(0.93)				
Log FMP emp. × Year 1940					-0.00018	-0.00018	-0.00018	-0.00018
					(0.0048)	(0.0048)	(0.0048)	(0.0048)
Log FMP emp. × Post 1940					-0.0049	-0.0086	-0.0068	-0.0068
					(0.022)	(0.024)	(0.025)	(0.025)
FMP emp. share	0.18	0.064						
	(0.17)	(0.22)						
Log FMP emp.					0.0090	0.027		
					(0.0060)	(0.022)		
Year 1940	-0.0059	-0.0059	-0.0059	-0.0059	0.018	0.018	0.018	0.018
	(0.0095)	(0.0095)	(0.0095)	(0.0095)	(0.017)	(0.017)	(0.017)	(0.017)
Post 1940	0.37***	0.45***	0.39***	0.39***	0.28***	0.28***	0.26***	0.26***
	(0.12)	(0.15)	(0.11)	(0.11)	(0.094)	(0.096)	(0.098)	(0.098)
Constant	0.13***	-0.017			0.14***	-0.14**		
	(0.011)	(0.020)			(0.019)	(0.066)		
Observations	2606	2606	2606	2606	875	875	875	875
Adjusted R^2	0.205	0.021	-0.013	-0.013	0.201	0.269	0.159	0.159
Arts demographics 1930		X				X		
Musician trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on musician shares by city, using 1930 as the leave-out base-period. Musician city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.12: Detailed IV results by discipline: Piano tuner

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.0050*	0.0050*	0.0050*	0.0050*				
	(0.0030)	(0.0030)	(0.0030)	(0.0030)				
Binary × Post 1940	0.0075**	0.0041	0.0034	0.0013				
	(0.0033)	(0.0027)	(0.0026)	(0.0035)				
Exp. per pianotuner × Year 1940					0.0032	0.0032	0.0032	0.0032
					(0.0022)	(0.0022)	(0.0022)	(0.0022)
Exp. per pianotuner × Post 1940					0.0053	0.0020	0.00022	0.00022
					(0.0039)	(0.0039)	(0.0040)	(0.0040)
FMP binary	-0.0070**	-0.0050***	-0.0036***					
	(0.0027)	(0.0018)	(0.0013)					
Exp. per pianotuner					-0.0046	-0.0032*		
					(0.0028)	(0.0018)		
Year 1940	0.00067	0.00067	0.00067	0.00067	0.00069	0.00069	0.00069	0.00069
	(0.00071)	(0.00071)	(0.00071)	(0.00071)	(0.00076)	(0.00076)	(0.00076)	(0.00076)
Post 1940	-0.0035**	-0.0026	-0.0026	-0.0018	-0.0036*	-0.0023	-0.0017	-0.0017
	(0.0015)	(0.0016)	(0.0016)	(0.0021)	(0.0020)	(0.0023)	(0.0023)	(0.0023)
Constant	0.0057***	0.0016***	0.0025***		0.0057***	0.0019***		
	(0.00061)	(0.00048)	(0.00033)		(0.00086)	(0.00063)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	-0.013	0.073	0.084	0.004	-0.105	0.030	-0.018	-0.018
Arts demographics 1930		X				X		
Piano tuner trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FMP emp. share × Year 1940	0.018	0.018	0.018	0.018				
	(0.013)	(0.013)	(0.013)	(0.013)				
FMP emp. share × Post 1940	0.031	0.0100	0.00024	0.00024				
	(0.026)	(0.027)	(0.026)	(0.026)				
Log FMP emp. × Year 1940					0.00092	0.00092	0.00092	0.00092
					(0.00057)	(0.00057)	(0.00057)	(0.00057)
Log FMP emp. × Post 1940					-0.00021	-0.00032	-0.00027	-0.00027
					(0.00077)	(0.00066)	(0.00093)	(0.00093)
FMP emp. share	-0.026	-0.019						
	(0.018)	(0.012)						
Log FMP emp.					-0.00036	-0.00070		
					(0.00037)	(0.00064)		
Year 1940	0.00044	0.00044	0.00044	0.00044	-0.00095	-0.00095	-0.00095	-0.00095
	(0.00098)	(0.00098)	(0.00098)	(0.00098)	(0.0019)	(0.0019)	(0.0019)	(0.0019)
Post 1940	-0.0042	-0.0022	-0.0015	-0.0015	0.00016	0.00076	0.00059	0.00059
	(0.0028)	(0.0034)	(0.0031)	(0.0031)	(0.0034)	(0.0030)	(0.0040)	(0.0040)
Constant	0.0061***	0.0022**			0.0054***	0.0050***		
	(0.0012)	(0.00087)			(0.0013)	(0.0017)		
Observations	2606	2606	2606	2606	875	875	875	875
Adjusted R^2	-0.172	-0.011	-0.039	-0.039	0.001	-0.004	0.000	0.000
Arts demographics 1930		X				X		
Piano tuner trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on piano tuner shares by city, using 1930 as the leave-out base-period. Piano tuner city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.13: Detailed IV results by discipline: Actor

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	-0.021	-0.021	-0.021	-0.021				
	(0.014)	(0.014)	(0.014)	(0.014)				
Binary × Post 1940	-0.041	-0.027	0.0024	0.0020				
	(0.062)	(0.021)	(0.031)	(0.030)				
Exp. per actor × Year 1940					-0.0028	-0.0028	-0.0028	-0.0028
					(0.0018)	(0.0018)	(0.0018)	(0.0018)
Exp. per actor × Post 1940					0.0091	-0.0028	0.0017	0.0017
					(0.018)	(0.0042)	(0.0069)	(0.0069)
FTP binary	0.13**	0.032**	0.030***					
	(0.056)	(0.015)	(0.010)					
Exp. per actor					0.017**	0.0040**		
					(0.0078)	(0.0020)		
Year 1940	-0.000073	-0.000073	-0.000073	-0.000073	0.00067	0.00067	0.00067	0.00067
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0016)	(0.0016)	(0.0016)	(0.0016)
Post 1940	-0.018	-0.00075	-0.0067	-0.0045	-0.054	-0.0014	-0.0079	-0.0079
	(0.013)	(0.0042)	(0.0086)	(0.0071)	(0.052)	(0.0094)	(0.015)	(0.015)
Constant	0.0014	-0.0057***	0.0020**		-0.0031	-0.0065**		
	(0.0030)	(0.0020)	(0.0010)		(0.0057)	(0.0026)		
Observations	2487	2487	2487	2487	2487	2487	2487	2487
Adjusted R^2	-0.469	0.748	0.631	-0.028	-5.841	0.664	-0.207	-0.207
Arts demographics 1930		X				X		
Actor trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTP emp. share × Year 1940	-0.013	-0.013	-0.013	-0.013				
	(0.0087)	(0.0087)	(0.0087)	(0.0087)				
FTP emp. share × Post 1940	0.073	-0.012	0.011	0.011				
	(0.12)	(0.023)	(0.039)	(0.039)				
Log FTP emp. × Year 1940					-0.0028	-0.0028	-0.0028	-0.0028
					(0.0023)	(0.0023)	(0.0023)	(0.0023)
Log FTP emp. × Post 1940					-0.0028	-0.0064**	-0.0073**	-0.0073**
					(0.0034)	(0.0031)	(0.0033)	(0.0033)
FTP emp. share	0.081**	0.019**						
	(0.037)	(0.0095)						
Log FTP emp.					0.018**	0.010***		
					(0.0080)	(0.0036)		
Year 1940	0.00099	0.00099	0.00099	0.00099	0.0037	0.0037	0.0037	0.0037
	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0087)	(0.0087)	(0.0088)	(0.0088)
Post 1940	-0.072	-0.0018	-0.0097	-0.0097	0.00064	0.015	0.018	0.018
	(0.079)	(0.012)	(0.020)	(0.020)	(0.014)	(0.012)	(0.012)	(0.012)
Constant	-0.0051	-0.0070**			-0.039	-0.038***		
	(0.0067)	(0.0030)			(0.026)	(0.013)		
Observations	2487	2487	2487	2487	405	405	405	405
Adjusted R^2	-9.110	0.619	-0.316	-0.316	0.147	0.687	0.032	0.032
Arts demographics 1930		X				X		
Actor trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on actor shares by city, using 1930 as the leave-out base-period. Actor city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.14: Detailed IV results by discipline: Theater and film industry workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.099	0.099	0.099	0.099				
	(0.082)	(0.082)	(0.082)	(0.082)				
Binary × Post 1940	0.40	0.30**	0.40**	0.47**				
	(0.24)	(0.15)	(0.20)	(0.23)				
Exp. per theater/film worker × Year 1940					0.013	0.013	0.013	0.013
					(0.011)	(0.011)	(0.011)	(0.011)
Exp. per theater/film worker × Post 1940					0.15	0.074*	0.10*	0.10*
					(0.12)	(0.043)	(0.060)	(0.060)
FTP binary	0.25**	-0.049	-0.10					
	(0.12)	(0.090)	(0.11)					
Exp. per theater/film worker					0.032**	-0.0090		
					(0.016)	(0.015)		
Year 1940	0.054***	0.054***	0.054***	0.054***	0.051***	0.051***	0.051***	0.051***
	(0.0049)	(0.0049)	(0.0049)	(0.0049)	(0.0079)	(0.0079)	(0.0079)	(0.0079)
Post 1940	-0.10	-0.023	-0.033	-0.051	-0.38	-0.12	-0.16	-0.16
	(0.089)	(0.036)	(0.041)	(0.055)	(0.35)	(0.12)	(0.14)	(0.14)
Constant	0.081***	-0.047***	-0.038**		0.072***	-0.069**		
	(0.0064)	(0.014)	(0.015)		(0.012)	(0.027)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	-0.525	0.623	0.553	-0.276	-8.034	-0.247	-3.245	-3.245
Arts demographics 1930		X				X		
Theater and film industry trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTP emp. share × Year 1940	0.061	0.061	0.061	0.061				
	(0.051)	(0.051)	(0.051)	(0.051)				
FTP emp. share × Post 1940	0.91	0.42	0.58	0.58				
	(0.78)	(0.27)	(0.37)	(0.37)				
Log FTP emp. × Year 1940					0.0053	0.0053	0.0053	0.0053
					(0.0095)	(0.0095)	(0.0096)	(0.0096)
Log FTP emp. × Post 1940					0.045	0.029	0.034	0.034
					(0.030)	(0.019)	(0.021)	(0.021)
FTP emp. share	0.15**	-0.032						
	(0.077)	(0.080)						
Log FTP emp.					0.039*	-0.013		
					(0.020)	(0.021)		
Year 1940	0.049***	0.049***	0.049***	0.049***	0.034	0.034	0.034	0.034
	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.030)	(0.030)	(0.031)	(0.031)
Post 1940	-0.51	-0.17	-0.23	-0.23	-0.087	-0.023	-0.043	-0.043
	(0.53)	(0.18)	(0.21)	(0.21)	(0.11)	(0.065)	(0.071)	(0.071)
Constant	0.069***	-0.078**			0.0073	0.0097		
	(0.014)	(0.038)			(0.063)	(0.062)		
Observations	2606	2606	2606	2606	460	460	460	460
Adjusted R^2	-13.353	-0.939	-5.822	-5.822	0.186	0.753	0.085	0.085
Arts demographics 1930		X				X		
Theater and film industry trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on theater and film industry worker shares by city, using 1930 as the leave-out base-period. Theater and film industry worker city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.

Table A.15: Detailed IV results by discipline: Dancer

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Binary × Year 1940	0.020***	0.020***	0.020***	0.020***				
	(0.0066)	(0.0066)	(0.0066)	(0.0066)				
Binary × Post 1940	0.00039	0.0055	0.0030	0.0063				
	(0.0064)	(0.0060)	(0.0055)	(0.0076)				
Exp. per dancer × Year 1940					0.0026***	0.0026***	0.0026***	0.0026***
					(0.00095)	(0.00095)	(0.00095)	(0.00095)
Exp. per dancer × Post 1940					0.0017	0.00078	0.00046	0.00046
					(0.0022)	(0.0013)	(0.0017)	(0.0017)
FTP binary	0.011***	-0.0049	0.0033*					
	(0.0039)	(0.0044)	(0.0019)					
Exp. per dancer					0.0014**	-0.00068		
					(0.00055)	(0.00056)		
Year 1940	0.0052***	0.0052***	0.0052***	0.0052***	0.0045***	0.0045***	0.0045***	0.0045***
	(0.00057)	(0.00057)	(0.00057)	(0.00057)	(0.00088)	(0.00088)	(0.00089)	(0.00089)
Post 1940	0.0084***	0.0089***	0.0080***	0.0080***	0.0040	0.0086**	0.0086*	0.0086*
	(0.0026)	(0.0024)	(0.0025)	(0.0028)	(0.0070)	(0.0042)	(0.0046)	(0.0046)
Constant	0.0038***	-0.0018*	0.0014***		0.0034***	-0.0015		
	(0.00037)	(0.00093)	(0.00029)		(0.00055)	(0.0012)		
Observations	2606	2606	2606	2606	2606	2606	2606	2606
Adjusted R^2	0.021	0.134	0.098	0.026	-0.914	0.004	-0.130	-0.130
Arts demographics 1930		X				X		
Dancer trends			X				X	
City FEs				X				X

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTP emp. share × Year 1940	0.012***	0.012***	0.012***	0.012***				
	(0.0046)	(0.0046)	(0.0046)	(0.0046)				
FTP emp. share × Post 1940	0.012	0.0038	0.0014	0.0014				
	(0.014)	(0.0075)	(0.0095)	(0.0095)				
Log FTP emp. × Year 1940					0.0032***	0.0032***	0.0032***	0.0032***
					(0.00074)	(0.00074)	(0.00075)	(0.00075)
Log FTP emp. × Post 1940					0.00069	0.00092	0.00077	0.00077
					(0.0012)	(0.0013)	(0.0012)	(0.0012)
FTP emp. share	0.0066**	-0.0032						
	(0.0026)	(0.0027)						
Log FTP emp.					0.0016**	-0.0025		
					(0.00064)	(0.0020)		
Year 1940	0.0042***	0.0042***	0.0042***	0.0042***	-0.00045	-0.00045	-0.00045	-0.00045
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0030)	(0.0030)	(0.0030)	(0.0030)
Post 1940	0.0018	0.0084*	0.0090	0.0090	0.0077	0.0061	0.0071	0.0071
	(0.010)	(0.0051)	(0.0057)	(0.0057)	(0.0053)	(0.0058)	(0.0055)	(0.0055)
Constant	0.0032***	-0.0014			0.0019	-0.0018		
	(0.00062)	(0.0013)			(0.0022)	(0.0053)		
Observations	2606	2606	2606	2606	460	460	460	460
Adjusted R^2	-1.373	-0.049	-0.201	-0.201	0.084	0.125	0.034	0.034
Arts demographics 1930		X				X		
Dancer trends			X				X	
City FEs				X				X

Standard errors in parentheses

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

These tables displays the instrumental variables difference-in-difference estimated impacts of various parameterizations of Federal One activity on dancer shares by city, using 1930 as the leave-out base-period. Dancer city population share is the dependent variable in all of the specifications. The independent variables compress dynamic effects into short-run (1940) and long-run (1950-2015) impacts.