

FRONTIER CULTURE: THE ROOTS AND PERSISTENCE OF “RUGGED INDIVIDUALISM” IN THE UNITED STATES

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The presence of a westward-moving frontier of settlement shaped early U.S. history. In 1893, the historian Frederick Jackson Turner famously argued that the American frontier fostered individualism. We investigate the “frontier thesis” and identify its long-run implications for culture and politics. We track the frontier throughout the 1790–1890 period and construct a novel, county-level measure of total frontier experience (TFE). Historically, frontier locations had distinctive demographics and greater individualism. Long after the closing of the frontier, counties with greater TFE exhibit more pervasive individualism and opposition to redistribution. This pattern cuts across known divides in the United States, including urban–rural and north–south. We provide evidence on the roots of frontier culture, identifying both selective migration and a causal effect of frontier exposure on individualism. Overall, our findings shed new light on the frontier’s persistent legacy of rugged individualism.

KEYWORDS: Culture, individualism, preferences for redistribution, American frontier, persistence.

1. INTRODUCTION

RAPID WESTWARD EXPANSION marked the early history of the United States. According to the influential historian Frederick Jackson Turner, the presence of “a continually advancing frontier line” at the “edge of free land” profoundly shaped American culture (Turner (1893)). The frontier cultivated individualism and antipathy to government intervention. These two traits are encapsulated in the notion of “rugged individualism,” popularized by Republican Herbert Hoover in his 1928 presidential campaign.

This paper shows that the American frontier gave rise to a persistent culture of rugged individualism. We combine Census data spanning 150 years with survey and electoral outcomes to identify this indelible legacy of westward expansion. In the 18th and 19th century, frontier populations were not only distinctive demographically but also more individualistic. Across America today, counties with longer historical exposure to frontier conditions exhibit greater individualism and opposition to redistribution and regulation.

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This anti-statist culture has its roots in both selective migration to the frontier and a causal effect of frontier life on its residents. Both forces were arguably responses to the differential returns to individualism on the frontier.

We track the frontier over time using historical population data and modern Geographic Information System (GIS) methods. Following Turner's classic essay and the 1890 *Progress of the Nation* report by the Census Bureau, we define the frontier line as the boundary at which population density falls below two people per square mile. The frontier is comprised of counties with low population density in close proximity to the frontier line. This time-varying measure of frontier status, detailed in Section 2, is consistent with Turner's (1896) view of the frontier as "a form of society" rather than a fixed area. We calculate total frontier experience (TFE) as the time spent on the frontier between 1790 and 1890, providing the first granular and comprehensive measure of frontier history.

We provide systematic evidence on the demographic and cultural distinctiveness of frontier locations. In line with historical narratives, Section 3 shows that frontier settlers were disproportionately male, prime age, and foreign born. These traits are strongly correlated with the two defining features of isolation on the frontier: low density and remoteness. Moreover, we identify structural breaks in these demographics near the density cutoff defining the frontier line, thus validating a seemingly arbitrary historical definition. Individualism also sharply increases along the frontier, as seen through children's name choices—a primordial act of cultural transmission. We measure individualism through the prevalence of infrequent names, which are more pervasive on the frontier even after accounting for the greater prevalence of immigrants.

A rich social science literature motivates our names-based measure of individualism. The informational content of names has been emphasized in economics (e.g., Abramitzky, Boustan, and Eriksson (2020), Bertrand and Mullainathan (2004)) as well as psychology and sociology (e.g., Gerrit and Onland (2011), Lieberson and Bell (1992)). The measure we use comes from social psychology, a field that portrays individualism as the key dimension of cultural variation across countries (Heine (2010)). The foundational contributions of Hofstede (1991) and Triandis (1995) associate individualism with several related traits: a view of the self as independent rather than interdependent, emphasis on self-reliance, primacy of self-interest, and regulation of behavior by personal attitudes rather than social norms. Consistent with these traits, infrequent names reflect a desire to stand out, as opposed to common names, which reflect a desire to fit in (Twenge, Abebe, and Campbell (2010)).

In Section 4, we use our novel measure of TFE to uncover a persistent culture of rugged individualism. In the mid-20th century, several decades after the closing of the frontier, individualistic children's names are more pervasive in counties with greater TFE. Moreover, such individualism goes hand in hand with opposition to big government. In the late 20th century and beyond, residents of high-TFE counties prefer less redistribution and lower public spending, and they pay lower property tax rates. These findings hold across counties within the same state, even after accounting for geoclimatic features, including weather, distance to waterways, and potential agricultural productivity.

These deep-rooted preferences have important political ramifications. High-TFE counties exhibit stronger and, in fact, increasing support for the Republican party between 2000 and 2016—a period in which attitudes toward taxation and regulation animate a growing partisan divide. We show that voters in high-TFE counties report greater opposition not only to redistribution but also to social protection, minimum wages, gun control, and environmental protection. Republican political discourse on these issues increasingly resonates with frontier culture, embracing opposition to the welfare state, a strong belief

in effort versus luck in reward, the right to self-defense, and “manifest destiny.” Throughout the 20th century, the partisan divide did not align so clearly with the anti-statist principles of rugged individualism. However, in the few elections when it did, high-TFE counties offered greater support to the candidate who, like Hoover, directly appealed to frontier culture.

The persistent effects of TFE are not merely a reflection of persistently low population density. Rather, they capture a legacy of frontier settlement that cuts across the urban-rural cultural divide. We rule out confounding effects of density in several ways, the most demanding of which identifies the effects of TFE across matched counties with nearly identical contemporary density. We also account for other cultural confounds related to mining, rainfall risk, railroad access, slavery, and diversity. An instrumental variables strategy further isolates exogenous variation in TFE due to national immigration shocks.

Additional results support the proposed link between frontier experience to contemporary culture. First, African American preferences are unrelated to TFE, consistent with the fact that several mechanisms fostering rugged individualism on the frontier (e.g., selective migration, prospects for upward mobility) were of limited historical relevance for blacks, especially in the antebellum period. Second, preferences over policies tangential to frontier culture exhibit little relation to TFE. Third, TFE has similar long-run effects within different regions of the country, including the West Coast, which experienced its own frontier expansion eastward in the mid-1800s. These results point to a shared culture of rugged individualism despite large regional differences in preferences.

Various mechanisms might explain the persistence of frontier culture long after the abatement of frontier conditions. Culture can be sticky and converge at very slow speeds or not at all. With path dependence, initial conditions affect long-run outcomes. In this sense, the earliest stages of development on the frontier were likely a critical juncture in the formation of local culture. [Turner \(1893\)](#) alluded to this possibility, noting that “traits [of frontier society] have, while softening down, still persisted as survivals in the place of their origin, even when a higher social organization succeeded.”¹

Section 5 shows how the culture of rugged individualism took root historically. The frontier attracted individualistic migrants, and frontier life caused people to become even more individualistic over time. Cultural change in response to frontier conditions is consistent with theories of utilitarian intergenerational transmission (e.g., [Doepke and Zilibotti \(2008\)](#)) and with [Turner’s \(1901\)](#) suggestion that frontier life fostered “a modification of the original stock.” These two forces—selection and exposure effects—may be explained by the unique threats and opportunities of frontier life, which rewarded individualism.

Selective migration can be identified using complete-count Census data from the 1800s. Families that moved from settled areas to the frontier were more individualistic—based on pre-move children’s names—than families remaining in settled areas. Similarly, families moving from the frontier to settled areas were less individualistic than those staying on the frontier. In other words, individualists selectively move to the frontier, and non-individualists selectively move away from the frontier. These patterns resonate with the view of frontier migrants as individualists willing and able to give up their social environment to settle in remote and isolated contexts (see [Kitayama, Ishii, Imada, Takemura, and Ramaswamy \(2006\)](#)).

¹[Zelinsky’s \(1973\)](#) “doctrine of first effective settlement” makes a related point: when “an empty territory undergoes settlement [...] the specific characteristics of the first group able to effect a viable, self-perpetuating society are of crucial significance for the later social and cultural geography of the area, no matter how tiny the initial band of settlers may have been.”

The frontier not only attracted individualists but also deepened individualistic culture among those living there. We identify this causal exposure effect using two complementary sources of variation among migrants to the frontier: (i) within-household changes in children's names pre- and postmove, and (ii) cross-sibling variation in frontier experience based on age at move. These strategies capture different exposure across the life cycle, and both identify a significant effect on individualism that is distinct from selective migration. In approach (i), individualistic name choices increase only after arrival, as evidenced by the lack of pre-trends among kids born prior to moving. In approach (ii), we link Census records from 1850 to 1880 and find that, among brothers brought by their parents to the frontier at different ages, those who spent more of their childhood on the frontier give their own children more individualistic names. Both approaches, like our long-run analysis of TFE, emphasize that the length of frontier exposure determines the scope for cultural change.

These cultural dynamics are consistent with differential returns to individualism on the frontier. We provide suggestive evidence using occupational scores to proxy for economic status. Conditional on county fixed effects, fathers whose children have more individualistic names exhibit higher occupational standing in frontier counties relative to settled counties. These patterns are consistent with historical narratives emphasizing that independence and self-reliance were key to survival and success on the frontier. Frontier settlers faced many challenges with little social infrastructure to turn to [Edwards, Friefeld, and Wingo \(2017\)](#). As [Overmeyer \(1944\)](#) put it, "life was rough, crude, hard, and dangerous." On the other hand, the abundance of land offered profit opportunities ([Stewart \(2006\)](#)), and in an uncharted environment, individualists' non-conformism and inventiveness made them more resourceful ([Shannon \(1977\)](#)).

While individualists may generally oppose interference in the pursuit of self-interest, frontier conditions likely amplified their opposition to redistribution. Land abundance created expectations of upward mobility through effort. Theory suggests that prospects for upward mobility and the importance of effort (versus luck) in income generation make tax-based redistribution unfair and inefficient ([Alesina and Angeletos \(2005\)](#), [Piketty \(1995\)](#)). Foreshadowing this view, [Turner \(1893\)](#) observed that on the frontier the "tax-gatherer is viewed as a representative of oppression," since the environment "produces antipathy to control." [Billington \(1974\)](#), a noted follower of Turner, wrote that on the frontier "every man was a self-dependent individual, capable of caring for himself without the fostering care of society," which "seemed just in a land that provided equal opportunity for all to ascend the social ladder."

Our paper contributes to the economics literature on individualism (e.g., [Beck-Knudsen \(2019\)](#), [Gorodnichenko and Roland \(2016\)](#), [Greif \(1994\)](#), [Olsson and Paik \(2016\)](#)) and preferences for redistribution (see [Alesina and Giuliano \(2011\)](#)). We provide the first empirical study of America's culture of rugged individualism. Previous work in economic history examines Turner's ideas, but with a different focus ([Ferrie \(1997\)](#), [García-Jimeno and Robinson \(2011\)](#)). We also contribute to a growing literature on the roots and persistence of cultural traits. Using a wealth of data and new methods, we identify the striking persistence of frontier culture and also provide causal evidence on how it took root historically.

Differences in rugged individualism across the United States have suggestive implications for cultural differences with Europe. The forces we emphasize—selective migration, cultural change, an advantage of individualism, and prospects for upward mobility—were arguably important in differentiating American culture. According to [Turner \(1893\)](#), "the Atlantic coast ... was the frontier of Europe." Comparing the United States and Europe,

Alesina, Glaeser, and Sacerdote (2001) conjecture that “American anti-statism” may be linked to the frontier, which “strengthened individualistic feelings and beliefs in equality of opportunities rather than equality of outcomes.” Our findings support this hypothesis. Moreover, the deeply rooted culture that we identify may shed new light on a puzzle in American political economy: the stability of preferences for redistribution over the last 40 years despite significant increases in inequality (Ashok, Kuziemko, and Washington (2015)).

Finally, we advance a large literature in the social sciences inspired by Turner. Historians have produced many case studies of frontier populations and rich descriptions of life on the frontier. We provide systematic evidence on the distinctive features of frontier society and measure the historical prevalence of individualism for the first time. Social psychologists have used state-level data to study variation in contemporary individualism, comparing demographic features (Vandello and Cohen (1999)) or infrequent names (Varnum and Kitayama (2011)) between western and non-western states. We go beyond these broad geographic correlations by (i) tracking the frontier historically and introducing a county-level measure of total frontier experience, (ii) accounting for potential confounders, and (iii) disentangling the effects of selective migration and place-based exposure in shaping frontier culture.

Turner’s work has attracted immense attention and vast criticism.² His narratives contain departures from the historical record, overblown statements, and ethnocentric biases. They paint an idealized portrait of frontiersmen and leave women and minorities out of the picture. The term “free land” appears often when, in fact, land was violently taken from Native Americans, and, in many areas, westward expansion was more about “conquest” than “settlement” (Limerick (1988)). These features of Turner’s work may explain why his influence, while still pervasive in history textbooks and classic narratives, has waned in recent historical research. Our study provides empirical support for some important elements of the frontier thesis, but it is not a general assessment of Turner’s work nor an endorsement of its ideological overtones.

2. MAPPING THE HISTORY OF THE FRONTIER

We reconstruct the history of the frontier using Census data and GIS methods. This section explains how we track the frontier over time and create a county-level measure of total frontier experience.

From colonial times until the late 19th century, America underwent rapid population growth and westward expansion. The Census Bureau report on the *Progress of the Nation* from 1890, a source of inspiration for Turner’s classic 1893 essay, noted that the thirteen colonies were “the sources of supply for a great westward migration,” as people “swarmed from the Atlantic coast to the prairies, plains, mountains, and deserts by millions during the last century.” The report by Porter, Gannett, and Hunt (1890) details the decade-by-decade push westward and includes vivid maps of population density (see Appendix Figure A.1).³ From 1790 to 1890, as the country’s population increased from 3.9 to 62.6 million, its settled area grew from under 240,000 square miles to nearly 2,000,000, and its mean center of population moved from Washington, D.C. to Decatur, Indiana—a westward shift of over 500 miles.

²For summaries and references, see, for example, Cronon (1987) and Larson (1993).

³Appendices A–E can be found in the Supplemental Material (Bazzi, Fiszbein, and Gebresilasse (2020)). Appendices F–K can be found in additional supplemental material available with the replication files (Bazzi, Fiszbein, and Gebresilasse (2020)) and on the authors’ websites.

The *Progress of the Nation* also deemed the frontier closed by 1890. In a passage quoted in Turner's essay, it stated that "up to and including 1890 the country had a frontier of settlement, but at present the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line." As one of the authors put it elsewhere, "the frontier line has disappeared ... the settled area has become the rule and the unoccupied places the exception" (Gannett (1893)).

2.1. Locating the Frontier and Tracking Its Movements

Prior research adopted simplifying definitions of the frontier. In a study of westward migrants in 1850 and 1860, Steckel (1989) identifies the frontier as the states of Minnesota, Iowa, Kansas, Texas, and those farther west. Ferrie (1997) studies migration between 1850 and 1870 and defines 90° west longitude as the frontier's eastern boundary. Kitayama, Conway III, Pietromonaco, Park, and Plaut (2010) simply associate the frontier with western states.

We take a different approach. Following Porter, Gannett, and Hunt (1890) and Turner, we define the frontier as the line dividing settlements with population density of two or more per square mile from those with less.⁴ We then define frontier counties as those meeting two criteria: (i) close proximity to the frontier line (100 km in our baseline) so as to capture Turner's notion of the "frontier belt", and (ii) with population density below six people per square mile, a cutoff stipulated by Porter, Gannett, and Hunt as the beginning of established, post-frontier settlement.

These steps produce a geographically precise, time-varying measure of frontier status. As Turner noted, the frontier was "a form of society rather than an area." Life in such a society was isolating in two ways. Low density meant isolation from other people within a given location. Proximity to the frontier line meant isolation from population centers to the east, and in most cases limited interaction with the federal government. With such isolation came a lack of social infrastructure, making frontier life rough and dangerous. However, isolation also implied relative resource abundance and thus favorable prospects for upward mobility. This attracted pioneering settlers in search of opportunity. It also distinguished low density locations on the frontier. Low density locations in the settled eastern regions were not so isolated from urban centers and were unlikely to be resource-rich.

For each Census year beginning in 1790, we calculate county-level population density per square mile. For intercensal years, we interpolate population density by assuming a constant annual population growth rate that matches the decadal growth rate. We maintain consistent units of observation over time by harmonizing to 2010 county boundaries, but the location of the frontier is very similar when using contemporaneous historical boundaries (see Appendix Figure A.2). The population counts exclude most Native Americans, who were generally not enumerated by the Census prior to 1900.⁵

⁴Turner (1893) notes, "The most significant thing about the American frontier is, that it lies at the hither edge of free land. In the census reports it is treated as the margin of that settlement which has a density of two or more to the square mile. ... We shall consider the whole frontier belt including the Indian country and the outer margin of the "settled area" of the census reports."

⁵The Census was not conducted in "Indian Territory" until 1900, and before that time, there were very few individuals enumerated as "Indian," even when some reservations were included in 1870 and 1880. This explains why the frontier remains stuck at the boundary of Oklahoma, which was not fully enumerated until 1900 (see Figure 2). Unfortunately, we did not find a way to circumvent this data limitation. In Section 4.4, we account for exposure to conflict with Native Americans, which was an important part of the frontier history in some regions.

Using annual county-level population densities, we locate the frontier through contour lines that divide counties with population densities above and below two people per square mile. Figure 1 plots these lines for 1790, 1820, 1850, and 1890. Full details on the underlying GIS procedure can be found in Appendix A. In order to closely approximate historical notions of the frontier described above, we discard all line segments less than 500 km as well as isolated pockets of low density counties within the main area of settled territory (to the east of the main frontier line).⁶ Figure 2 shows the evolution of the resulting, main frontier lines for 1790–1890.

A second major frontier emerged on the West Coast, starting in California, in the mid-19th century. Spurred by the Gold Rush, this was a large, discontinuous leap in east-to-west expansion. Compared to frontier locations in the heartland, the West Coast frontier had a different type of isolation. It was much farther away from Eastern cities, but proximity to the ocean reduced transportation costs, facilitating flows of goods, people, and ideas. We omit this secondary frontier from the baseline analysis but later show that frontier experience has similar long-run effects in the West as in the heartland.

2.2. Total Frontier Experience

The westward movement of the frontier was fast at times, slow at others. Thus, some locations spent little time under frontier conditions, while others remained on the frontier for decades. This variation is central to identifying the long-run effects of frontier exposure.

To measure the duration of frontier experience for each county, we calculate the number of years spent in the frontier belt from 1790 to 1890. For each year, a binary indicator takes value 1 if a county is on the frontier as defined by the proximity and low density criteria explained above. The total frontier experience (TFE) for each county is the sum of indicators of frontier status from 1790 to 1890.

We set 1890 as the endpoint for measuring TFE following the *Progress of the Nation* report and Turner. While many places remained sparsely populated long after 1890, the effective isolation of the frontier did not persist with the same intensity. By 1890, transcontinental railroads connected both coasts, and armed conflict with Native Americans had faded. Federal irrigation efforts started soon after. For robustness, we consider a longer time frame for the measurement of TFE, changing the endpoint to 1950.

Figure 3 shows the spatial distribution of TFE for counties in our baseline analysis. Counties to the east of the 1790 frontier line are excluded since it is not possible to measure their TFE without detailed population data before the 1790 Census. TFE ranges from 0 to 63 years with a mean of 18 years and a standard deviation of 11. TFE varies widely both across and within states, and is distinct from contemporary population density (see Appendix Figure J.1). For instance, Cass County, Illinois has TFE of 10 years and Johnson County, Illinois has TFE of 32 years, but the two counties have nearly identical population density today (see Appendix H for this case study).

⁶Our results are qualitatively similar when discarding isolated pockets of high density settlement to the west of the main frontier line. The 500 km cutoff discards some contour lines but retains other, large unconnected lines off of the main east-to-west frontier line, for example, those spanning Maine in 1820 and Michigan in 1850. Results are robust to adopting other cutoffs or having no cutoff at all (Appendix J.2). Appendices F–K can be found in additional supplemental material available with the replication files and on the authors' websites.

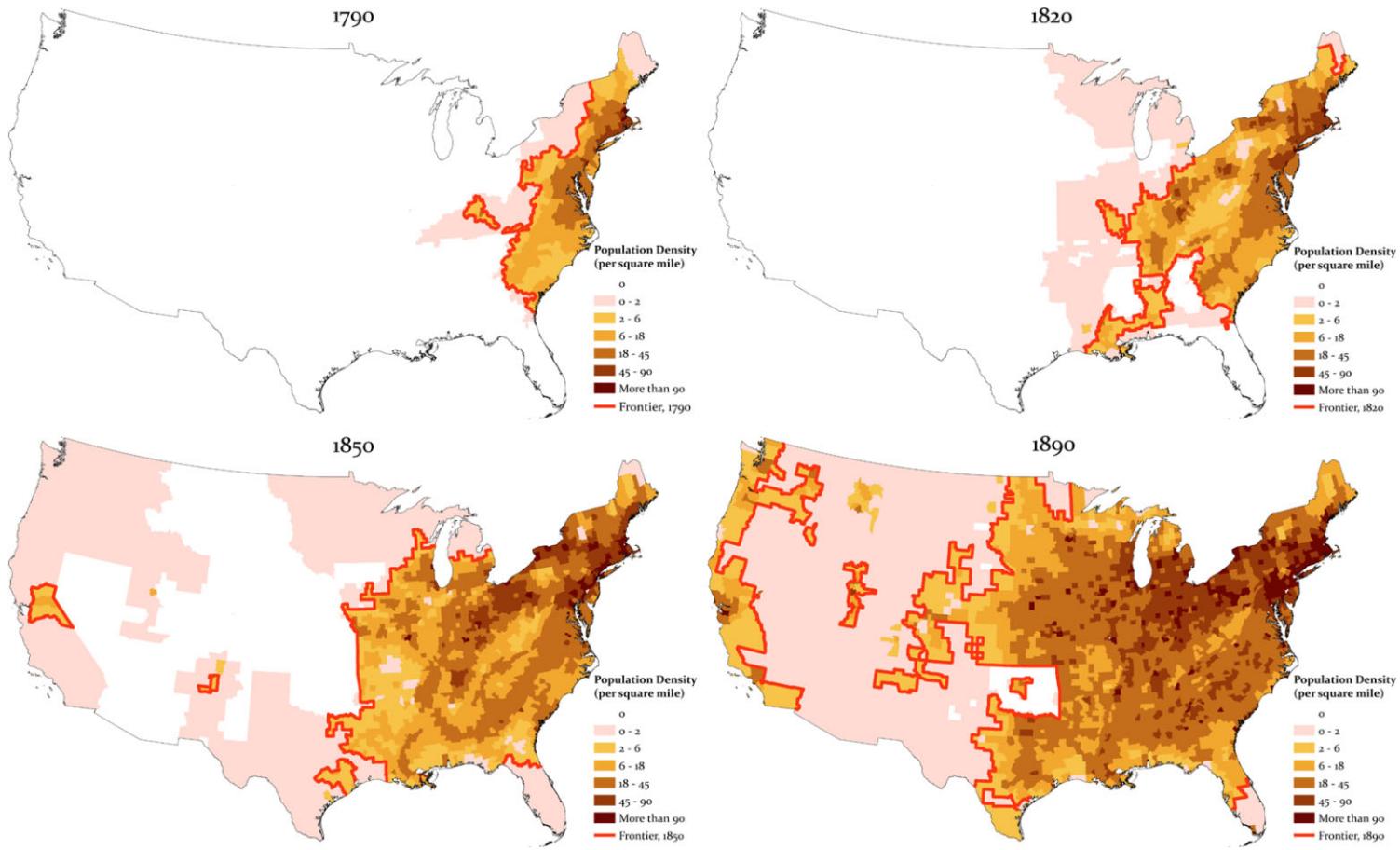


FIGURE 1.—Population density and the frontier for selected years. Based on county-level data from the National Historical Geographical Information System (NHGGS) (Manson et al. (2019)). Population is allocated across years and counties based on the harmonization procedure described in Appendix K. The frontier line is based on the algorithm described in Section 2.1 and Appendix A. The population density figures exclude most Native Americans, who were generally not enumerated by the Census throughout the frontier era (see footnote 5).

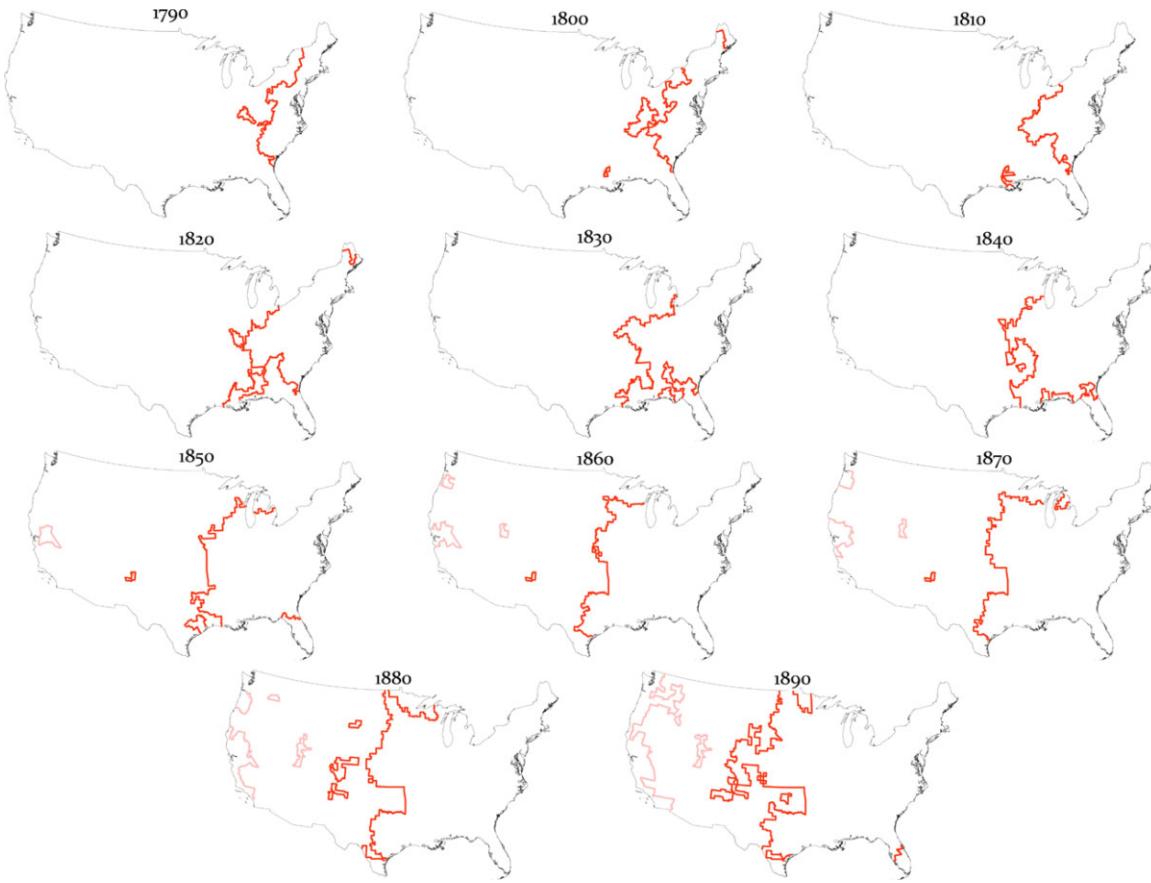


FIGURE 2.—The evolution of the frontier, 1790–1890. Based on county-level data from NHGIS (Manson et al. (2019)). The frontier lines demarcate the contour of counties with population density below and above 2 people per square mile. The dark lines correspond to the main frontier lines emerging from east-to-west expansions (our baseline analysis). The light lines correspond to the frontiers resulting from west-to-east expansions from the West Coast, which we examine for robustness. In both cases, we exclude smaller “island frontiers” in the interior and contour line segments less than 500 km. Full details on the frontier line algorithm can be found in Appendix A.

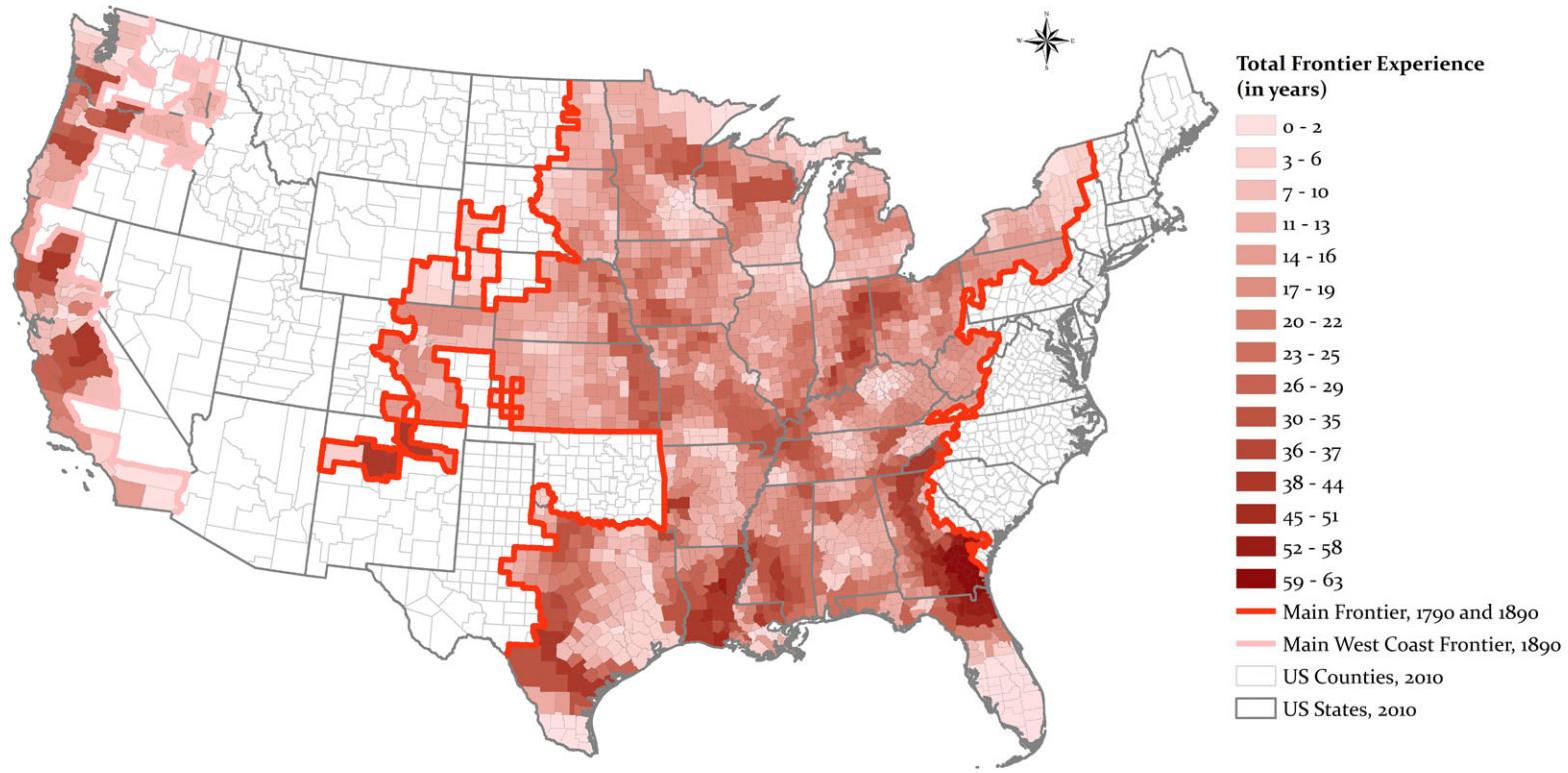


FIGURE 3.—Total frontier experience, 1790–1890. Based on county-level data from NHGIS (Manson et al. (2019)). Total frontier experience is the total number of years the county was within 100 km of the frontier line and its population density was below 6 people per square mile, between 1790 and 1890. The white areas to the east of the 1790 main frontier line are counties for which we do not know frontier history given the lack of Population Census data before 1790. The white areas to the west are beyond the 1890 frontier line and hence not included in our baseline sample, which is restricted to the frontier era as defined by Porter, Gannett, and Hunt (1890) in the *Census Progress of the Nation* report. We include many of those counties to the west when extending the frontier era through 1950 for robustness.

3. DISTINCTIVE FRONTIER SOCIETY: DEMOGRAPHICS AND INDIVIDUALISM

This section offers new insight on the distinctive populations living on the frontier. Historians and sociologists have studied frontier demographics (e.g., [Eblen \(1965\)](#)). However, they typically focused on a specific place at a particular time, making it difficult to establish empirical regularities. We offer the systematic look at frontier populations across all censuses from 1790 to 1890.

Historical narratives suggest that frontier settlers were different from those living in settled areas. These accounts often portray young men, immigrants, and the less educated. We [explore these traits using historical Census data compiled by the Integrated Public Use Microdata Series \(IPUMS\) National Historical Geographic Information System \(Manson, Schroeder, Van Riper, and Ruggles \(2019\)\)](#).⁷ Historical narratives also emphasize the individualistic culture of frontier populations. This cultural trait is difficult to measure historically. However, infrequent children's names provide a compelling proxy.⁸

We interpret infrequent names as individualistic. Infrequent names correlate strongly with other proxies for individualism.⁹ We define as infrequent those names outside the top 10 within one's Census division; for robustness, we vary both the rank cutoff and the reference group.¹⁰ Appendix K provides a list of common names for selected years (e.g., John and Sarah) as well as a random sample of infrequent names (e.g., Luke and Lucinda).

We take two additional steps to ensure that infrequent names effectively capture individualism. First, we remove variation associated with foreign names, which may be more common on the frontier due to the greater prevalence of immigrants. We restrict attention to children with native-born parents and also compare locations with similarly sized immigrant populations. The latter accounts for the possibility that native-born adults may choose infrequent names used by immigrants in their community. Second, we exclude spelling variation by first adjusting enumerated names using a phonetic algorithm and then determining whether that name group is infrequent. This ensures that infrequent names are not confounded by misspellings, which may be more common on the frontier but unrelated to individualism.

⁷With the exception of immigrant shares, we measure these traits only for the white population. This maintains consistency across time periods given that non-white populations were not systematically enumerated prior to 1900.

⁸We use Census data with names from the U.S. 100% samples ([Ruggles et al. \(2019\)](#)) of the North Atlantic Population Project (NAPP) from the [Minnesota Population Center \(2019\)](#) for 1850 and 1880, and complete-count restricted-access data from the IPUMS ([Ruggles et al. \(2019\)](#)) for other years.

⁹[Varnum and Kitayama \(2011\)](#) show a positive cross-country correlation between infrequent names and Hofstede's widely used index of individualism. [Beck-Knudsen \(2019\)](#) shows that the names-based measure is strongly correlated with Hofstede's index as well as with the use of first- and second-person singular pronouns across 44 countries (and across regions within five countries). In Japan, [Ogihara et al. \(2015\)](#) shows a strong time-series correlation between the share of common name pronunciations and an index of individualism similar to that proposed by [Vandello and Cohen \(1999\)](#).

¹⁰We choose the top 10 cutoff as a baseline following the social psychology literature ([Varnum and Kitayama \(2011\)](#)). With this measure, the majority of children have infrequent names (e.g., 57 percent of boys and 60 percent of girls in 1850). Hence, an "infrequent name" may not be a very unusual name but simply one that is not very common. In any case, the measures for different cutoffs are highly correlated, and results are qualitatively similar across all of them (see Appendix B.3).

3.1. Basic Patterns

We estimate the frontier differential in demographic trait x for county c in Census division d at time t ,

$$x_{cdt} = \alpha + \beta \text{frontier}_{ct} + \theta_d + \theta_t + \varepsilon_{cdt}, \quad (1)$$

where frontier_{ct} is frontier status, and θ_d and θ_t are Census division and year fixed effects, respectively. Panel (a) of Table I reports estimates of β , the frontier differential, for each of six outcomes.

Frontier populations have significantly more males, prime-age adults, and foreign-born. Frontier counties have 0.19 additional males for every female relative to non-frontier counties where the average sex ratio is 1.09 (column 1). The population share of prime-age adults (15–49 years old) in the population is 2.6 percentage points (p.p.) higher than in non-frontier counties, for which that share is around 46 percent (column 2). These patterns are consistent with historical accounts of hostile frontier conditions leading to the selective migration of young men. Additionally, frontier counties have 6.3 p.p. higher foreign-born population shares than the average non-frontier county where 7 percent of residents are immigrants (column 3). Meanwhile, literacy rates are not significantly different on the frontier (column 4). While this runs counter to the “safety valve” theory

TABLE I
DEMOGRAPHICS AND INDIVIDUALISM ON THE FRONTIER^a

Dependent Variable:	Male/Female	Prime-Age	Foreign-Born	Illiterate	Infrequent Child Names	
	Ratio (1)	Adult Share (2)	Share (3)	Share (4)	Raw (5)	Metaphone (6)
Panel (a): Baseline Frontier Definition: Low Density and Proximity to Frontier Line						
Frontier County	0.190 (0.021)	0.026 (0.004)	0.063 (0.008)	-0.007 (0.011)	0.022 (0.007)	0.018 (0.006)
Mean Dep. Var. in Non-Frontier Counties	1.09	0.46	0.07	0.18	0.63	0.60
Number of County-Years	11,594	5508	11,062	2779	6907	6907
R^2	0.09	0.20	0.33	0.17	0.32	0.33
Panel (b): Distinguishing Low Density and Proximity to Frontier Line						
Near Frontier Line	0.103 (0.012)	0.022 (0.003)	0.058 (0.009)	-0.058 (0.013)	0.022 (0.007)	0.018 (0.006)
Low Population Density	0.127 (0.014)	0.005 (0.003)	0.033 (0.008)	0.055 (0.011)	0.004 (0.006)	0.006 (0.005)
Mean Dep. Var. in Non-Frontier Counties	1.09	0.46	0.07	0.18	0.63	0.60
Number of County-Years	11,594	5508	11,062	2779	6907	6907
R^2	0.10	0.19	0.35	0.19	0.32	0.34

^aThis table reports OLS estimates of equations (1) and (2) in panels (a) and (b), respectively. The dependent variables are the same as in Figures 4(a)–(f). The sample size varies across columns depending on availability in the given Census round. All variables, except foreign-born share, are defined over the white population. Infrequent names capture the share of children with names outside of the top 10 most popular names in their Census division. The measure in column 5 is based on the raw enumerated name and in column 6 on the metaphone-adjusted name. In both cases, the means are restricted to white children aged 0–10 with native-born parents. Low population density equals 1 if the county has density less than 6 people per square mile, and Near frontier line equals 1 if the county is within 100 km of the frontier line in the given year. The sample excludes counties to the east of the 1790 frontier line and west of the main 1890 frontier line in keeping with our baseline long-run sample restrictions. All regressions include year and Census division FE. Standard errors are clustered using the grid cell approach of Bester, Conley, and Hansen (2011) as described in Section 4.1.

of selective low-skilled migration (see Ferrie (1997), Turner (1893)), literacy may simply be a noisy measure of skill.

Furthermore, individualistic names are more prevalent on the frontier. In frontier counties, 2.2 p.p. more children age 0–10 have infrequent names relative to the average of 63 percent in non-frontier counties (column 5). This finding is robust to adjusting reported names for their phonetic sound using the Philips (1990) metaphone algorithm (column 6).¹¹ It is also robust to accounting for the differential presence of immigrants on the frontier using a matching-type exercise that compares frontier and non-frontier counties with nearly identical foreign-born population shares in the given Census year (see even-numbered columns in Appendix Table B.I).¹²

We further characterize the frontier differential by unbundling the two dimensions of isolation: (i) proximity to the frontier line and (ii) low population density. Panel (b) of Table I estimates

$$x_{cdt} = \alpha + \beta_1 \text{near frontier line}_{ct} + \beta_2 \text{low population density}_{ct} + \theta_d + \theta_t + \varepsilon_{cdt}, \quad (2)$$

where $\text{near frontier line}_{ct}$ is an indicator for having a centroid within 100 km of the frontier line at time t , and $\text{low population density}_{ct}$ is an indicator for population density below six people per square mile. The results suggest that both features of the frontier contribute to its distinctive demographics and individualism.¹³ As counties transition from frontier conditions to more established settlement, these distinctive traits subside (see Appendix Figure G.1). Yet, as we show later, the duration of exposure to the frontier has persistent implications for culture.

3.2. Validating the Population Density Cutoffs

This section further corroborates the distinctiveness of frontier society. The population density cutoffs defining the frontier may seem arbitrary. However, with modern econometric tools, we are able, for the first time, to validate the definition put forward in the landmark *Progress of the Nation* report in 1890.

Each panel in Figure 4 shows a local linear regression function, $g(\cdot)$ and 95 percent confidence band based on the partially linear Robinson (1988) estimator:

$$x_{cdt} = \alpha + g(\text{population density}_{ct}) + \theta_d + \theta_t + \varepsilon_{cdt}. \quad (3)$$

In panel (a), the sex ratio approaches 1.6 in the most sparsely populated counties and declines sharply until population density reaches 3–4 people/mile². The slope of $g(\cdot)$ then abruptly flattens out as the sex ratio stabilizes at around 1.05–1.1 males for every female.

¹¹To get a sense of how this algorithm works, consider the common name of John. This metaphone adjustment groups the following variants on “John”—some misspellings and others nicknames—into a single metaphone “JN”: Jon, Jno, Johhn, Johnnie, Johnie, Johny, Johnny, Jonnie, Johney, Jone, Johne, and Jonny, among others.

¹²The greater prevalence of infrequent names resonates with a celebrated trilogy about frontier life. *The Awakening Land*, by Pulitzer Prize-winning novelist Conrad Richter, follows the native-born Luckett family who moved from Pennsylvania to the Ohio Valley frontier in the late 1700s. Noted for his painstaking historical research, Richter chose infrequent names for family members: the boys were named Chancy, Worth, and Wyitt, and the girls were named Ascha, Sayward, and Sulie.

¹³Column 4 shows that the null for illiteracy in panel (a) is due to offsetting positive effects of low density and negative effects of proximity. This pattern does not arise for other outcomes and suggests scope for further work on the safety valve hypothesis.

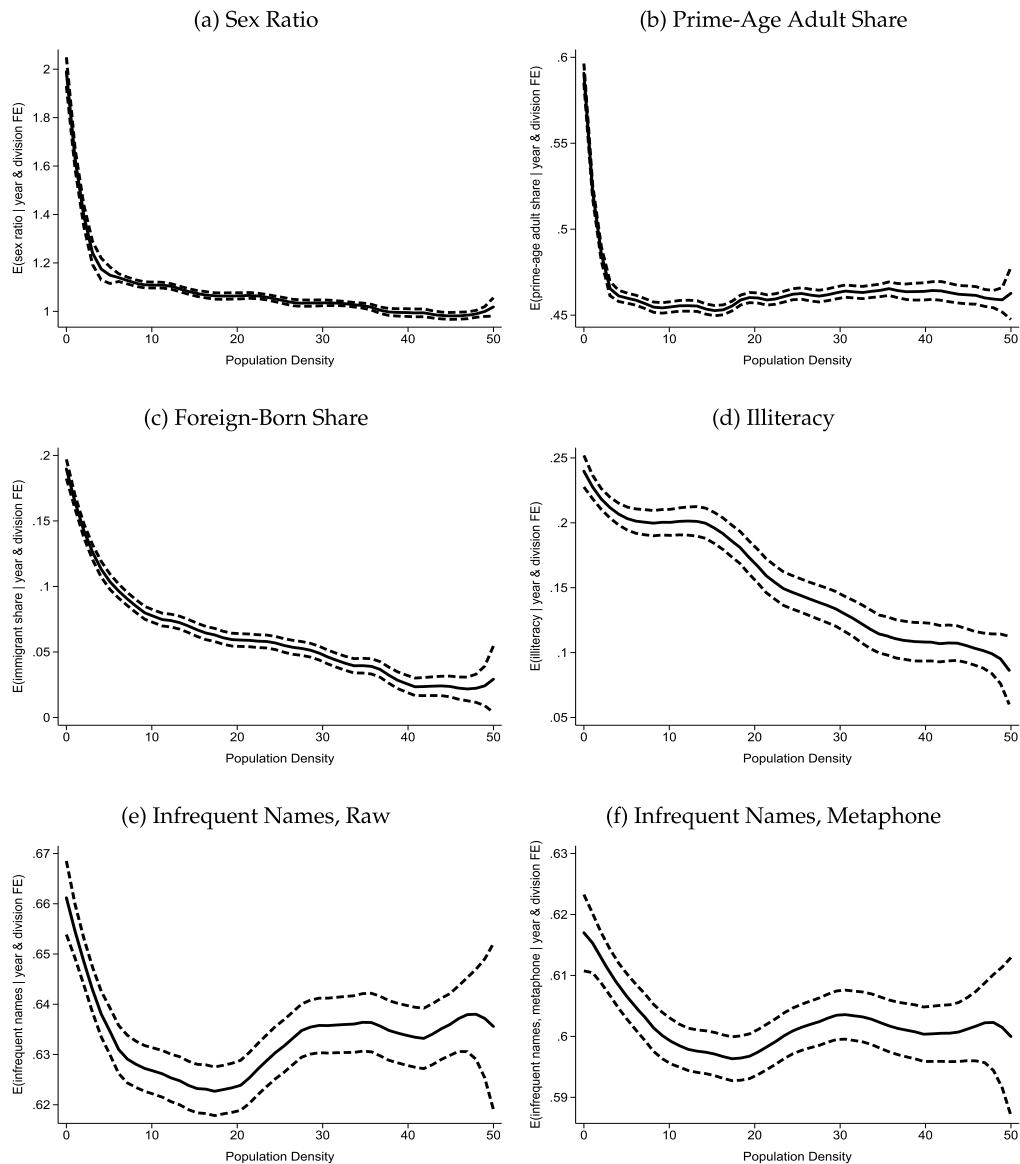


FIGURE 4.—Demographics and individualism by population density, 1790–1890. These figures plot semi-parametric estimates of equation (3) relating population density to demographic characteristics prominent in historical accounts of the frontier (a)–(d) and proxies for individualism (e) and (f). We estimate these curves $g(\cdot)$ based on the Robinson (1988) partially linear approach, pooling across all available years 1790–1890 for each county c . The specification includes Census division and year fixed effects, which are partialled out before estimating these shapes, and are based on an Epanechnikov kernel and rule-of-thumb bandwidth. The dashed lines are 95 percent confidence intervals. The estimates are recovered over all counties, but the figure zooms in on those with less than 50 people/mile² for presentational purposes. (a) Sex Ratio for whites is the ratio of the number of white males over white females. (b) Prime-Age Adult Share is the fraction of whites aged 15–49 over the total number of whites. (c) Foreign-Born Share is the ratio of foreign-born persons over total population. (d) Illiteracy is the illiteracy rate for whites aged 20 or older. (e) Infrequent Names is the share of children with names outside of the top 10 most popular names in their Census division with the sample restricted to children aged 0–10 with native-born parents. Part (f) adjusts the measure in (e) by applying the metaphone procedure to enumerated names prior to computing the infrequency indicator.

In panel (b), the prime-age adult share declines sharply as we move toward densities of 2–3 people/mile² and levels off thereafter. The foreign-born share (c) and illiteracy rates (d) exhibit more linear, downward-sloping curves. However, panels (e) and (f) show stark nonlinear shapes for both measures of individualistic names.

Together, the graphs in Figure 4 point to structural breaks at population density levels consistent with the frontier definition in the 1890 Census report.¹⁴ Chow (1960) tests soundly reject the null hypothesis of a constant effect of population density above and below 6 people/mile² (the upper bound of frontier settlement according to Porter, Gannett, and Hunt (1890)). Zivot and Andrews (2002) tests identify structural breaks in the 2–6 range. In 1850, for example, the sex ratio breaks at 2.7 people/mile² and the adult share at 2.0.

Another distinctive feature of frontier society was its limited government presence (see Appendix G.3). Frontier counties had lower taxation and public spending per capita, both of which exhibit sharp structural breaks around 2–6 people/mile². This suggests that the institutions of local government structurally change once counties surpass the low levels of frontier population density. There were also fewer post offices, railroads, and canals on the frontier, but these state- and federally-provided public goods vary smoothly with population density.

4. LONG-RUN EFFECTS OF FRONTIER EXPERIENCE ON CULTURE

Exposure to frontier conditions laid the foundation for a persistent culture of rugged individualism. This section identifies long-run effects of TFE on individualistic names, policy preferences, and voting behavior. Our analysis is motivated by theories of cultural persistence. While individualism on the historical frontier could have dissipated, the frontier experience may well have shaped the subsequent evolution of culture. With longer exposure to frontier conditions came greater scope for rugged individualism to take root through a set of mechanisms we explore in Section 5. With multiple equilibria and path dependence, the early stages of cultural formation could leave a lasting imprint.

4.1. *Estimating Equation*

Our estimating equation relates total frontier experience to modern proxies for rugged individualism,

$$y_c = \alpha + \beta \text{total frontier experience}_c + \mathbf{x}'_c \boldsymbol{\gamma} + \theta_{s(c)} + \varepsilon_c, \quad (4)$$

where y_c is some cultural trait in county c (e.g., individualism or preferences for redistribution). Total frontier experience (TFE) is the amount of time, scaled *in decades*, that a given county remained on the frontier. Our sample, seen in Figure 3, includes all counties for which the 1790–1890 period contains their entire frontier experience as discussed in Section 2.2. In baseline specifications, $\theta_{s(c)}$ is a state fixed effect, and \mathbf{x}_c includes pre-determined or fixed county-level covariates, including latitude, longitude, county area, average rainfall and temperature, elevation, potential agricultural yield, and distance to rivers, lakes, and the coast. The coefficient β therefore identifies a local effect of TFE after accounting for geoclimatic factors that may correlate with both TFE and modern

¹⁴Appendix Figure G.2 provides similar evidence, though with less stark nonlinearities, for proximity to the frontier line.

culture. Following [Bester, Conley, and Hansen \(2011\)](#), standard errors are clustered on 60-square-mile grid cells that cover counties in our sample.¹⁵

We measure contemporary culture and policy outcomes using numerous data sources, including three nationally representative surveys: the Cooperative Congressional Election Study (CCES), the General Social Survey (GSS), and the American National Election Study (ANES). These surveys are staples in the social science literature, often asking different questions about similar underlying preferences. See Appendix K for details, including a discussion of geographic coverage.

The main threat to causal identification of β lies in omitted variables correlated with both contemporary culture and TFE. We address this concern in four ways. First, we rule out confounding effects of modern population density. Second, we augment \mathbf{x}_c to remove cultural variation highlighted in prior work. Third, we show that unobservables are unlikely to drive our results. Finally, we use an IV strategy that isolates exogenous variation in TFE due to changes in national immigration flows over time.

4.2. Persistent Individualism

Nearly five decades after the closing of the frontier, individualistic children's names are more pervasive in counties with greater TFE. Table II reports the effect of TFE on the share of children age 0–10 in 1940 with infrequent names (panel (a)) after the metaphone adjustment (panel (b)).¹⁶ We normalize these outcome variables so that standard deviation effect sizes can be read directly from the coefficients.

Each additional decade of TFE is associated with a significantly higher share of individualistic names by 1940. The baseline specification with geoclimatic controls in column 2 of panel (a) implies 1 p.p. more children with infrequent names when moving across the interquartile range of TFE (11 vs. 24 years). We find similar effect sizes for the metaphone-adjusted measure in panel (b). In both panels, relative to column 1, the geoclimatic controls leave the coefficient unchanged despite a large increase in the R^2 . This pattern is consistent with limited selection on unobservables according to the parameter δ reported in the table; [Oster \(2019\)](#) suggests $|\delta| > 1$ leaves limited scope for unobservables to explain the results.

Importantly, the greater prevalence of individualistic names in high-TFE counties is not due to differences in contemporary population density or the prevalence of foreign-born. Columns 3 and 4 of Table II bear this out using a matching-type exercise. For each county c within state s , we find the county c' with the most similar population density (column 3) or foreign-born share (column 4) and create matched pairs in ascending order. We then create an indicator for this county pair (c, c') . Finally, we add these 1018 fixed effects to our baseline specification from column 2. Even in this very demanding specification, the estimated effects of TFE remain statistically and economically significant, with $|\delta|$ well above 1. In other words, the effects of TFE on individualism in the mid-20th century are not merely a reflection of differences in density or immigrant populations that may have persisted from the frontier era.

Furthermore, the results in Table II are robust to many alternative measures of individualism inherent in children's names. We demonstrate this in Appendix Table B.III,

¹⁵As detailed in Appendix F, inference is robust to several alternative approaches to adjusting for spatial correlation, including the [Conley \(1999\)](#) spatial HAC estimator with bandwidths from 100 to 1000 km.

¹⁶Unfortunately, the 1940 Census is the latest round that provides information on names. Although the Social Security Administration releases baby name counts by state, it does not do so at the county level.

TABLE II

TOTAL FRONTIER EXPERIENCE AND 20TH CENTURY INDIVIDUALISM^a

	Dependent Variable			
	(1)	(2)	(3)	(4)
Panel (a): Infrequent Names (Standardized Share)				
Total Frontier Experience	0.138 (0.024)	0.141 (0.021)	0.096 (0.022)	0.086 (0.018)
Oster δ for $\beta = 0$		-13.80	2.63	1.96
Number of Counties	2036	2036	2036	2036
R^2	0.55	0.60	0.85	0.87
Panel (b): Infrequent Names, Metaphone (Standardized Share)				
Total Frontier Experience	0.138 (0.025)	0.141 (0.021)	0.088 (0.022)	0.089 (0.019)
Oster δ for $\beta = 0$		-16.20	2.32	2.41
Number of Counties	2036	2036	2036	2036
R^2	0.52	0.58	0.85	0.85
State Fixed Effects	✓	✓	✓	✓
Geographic/Agroclimatic Controls		✓	✓	✓
Within-State Nearest Neighbor Matching:				
On Population Density (1018 FE)			✓	
On Foreign-Born Share (1018 FE)				✓

^aThis table reports estimates of equation (4) for our infrequent names as defined in Table I. Both are defined over white children age 0–10 with native-born parents in the 1940 Census. In the average county, 76.6 percent of children have infrequent names and 72.7 percent have infrequent names after metaphone adjustment with standard deviations of 5.6 and 5.3 percentage points, respectively. Total frontier experience is expressed in decades. The dependent variables are standardized so that the coefficient indicates the standard deviation effect of each additional decade of frontier exposure historically. This baseline sample is based only on counties inside the 1790–1890 east–west frontier. Alternative definitions of the dependent variables names are considered in Appendix Table B.III. Column 1 simply includes state fixed effects, and column 2 adds the following controls: county area; county centroid latitude and longitude; distance to oceans, lakes, and rivers from county centroid; mean county temperature and rainfall; elevation; and average potential agricultural yield. Column 3 includes fixed effects for within-state pairs of counties that have the most similar population density in 1940. Column 4 includes fixed effects for within-state pairs of counties that have the most similar foreign-born population shares in 1940. Standard errors are clustered based on the grid-cell approach of Bester, Conley, and Hansen (2011) as detailed in Section 4.1. Columns 3 and 4 additionally cluster (two-way) on the county pair. Alternative approaches to inference can be found in Appendix Table F.I. The Oster (2019) tests in columns 2–4 are each with reference to the baseline specification in column 1 with only state fixed effects.

considering infrequent names with (i) different geographic reference groups (columns 1–4), (ii) a cutoff at the top 100 rather than 10 (column 5), and (iii) the metaphone-adjusted analogues of (i) and (ii) (columns 6–10). We also find similar results using an alternative names-based proxy for individualism that does not depend on the reference group: the absence of inherited names. Patronymic (father-to-son) and matronymic (mother-to-daughter) names may reflect a non-individualistic emphasis on interdependence within the family.¹⁷ High-TFE counties record lower use of patronymic/matronymic names (column 11), and this holds when restricting the outcome to first-born sons and daughters (column 12). The findings across these 12 alternative outcomes are additionally robust

¹⁷Brown, Carvallo, and Imura (2014) show that the prevalence of patronymic/matronymic names correlates strongly with collectivism across U.S. states. We focus on parental forebears as we only observe a small subset of children with co-resident grandparents.

to the matching-type exercises with contemporary population density and foreign-born shares (panels (b) and (c)).

Moreover, these findings are not artifacts of aggregation bias. Appendix Table B.IV reports individual-level regressions with fixed effects for children's age, birth order, and gender. The effect sizes are similar to county-level regressions. At the individual level, we can also control for family surname with nearly 400,000 fixed effects. This recovers the effects of TFE across all households with a given surname, for example, comparing Smiths in high- versus low-TFE counties. This powerful test leaves our main findings unchanged (panel (d)) even when coupled with the population density matching-type exercise (panel (e)).

Together with the findings in Section 3, these results suggest that individualistic names were not only more pervasive in frontier areas historically, but are also more prevalent in the long run in areas with greater TFE. Indeed, the effect of TFE on infrequent name choices can be seen in the early 1900s with little change thereafter (Appendix Table B.V). This points to the persistence of the early frontier culture of individualism long after frontier conditions abated.

This individualistic culture can be seen in later survey data as well. The 1990 ANES asks whether respondents identify more strongly with self-reliant or cooperative behaviors. Those in high-TFE counties are significantly more likely to favor self-reliance (see Appendix Table B.II). As we show next, frontier culture further manifests in preferences for redistribution and government intervention more broadly.

4.3. Opposition to Redistribution and Regulation

Rugged individualism has profound implications for contemporary politics. This section shows that TFE is associated with preferences for small government and also with lower tax rates in practice. Opposition to specific regulations can be linked to salient aspects of frontier culture historically. We connect these anti-statist preferences to the partisan divide and show that TFE helps explain the growing strength of the Republican party in the American heartland.

Our analysis spans a wide set of measures that reflect a similar underlying opposition to government intervention. For all outcomes, we report estimates of equation (4) controlling for the geoclimatic characteristics used in column 2 of Table II as well as individual demographics (age, age squared, gender, and race dummies) and survey-wave fixed effects where relevant.

Redistribution and Limited Government

Table III shows that greater TFE is associated with stronger contemporary opposition to income redistribution. In column 1, we use ANES data from 1992 and 1996, which ask whether respondents would like to see "federal spending on poor people be increased, decreased (or cut entirely) or kept about the same." Around nine percent of individuals would like to see such redistributive spending decreased. Each additional decade of TFE is associated with one additional p.p. increase in support of cuts. Column 2 provides complementary evidence from the CCES measure of support for cutting state spending on welfare. Following Alesina and La Ferrara (2005), column 3 uses the GSS to measure support for redistribution on a scale from 1 to 7 (with 1 being that the government should not be engaged in redistribution and 7 being that the government should reduce income differences through redistribution). Each additional decade of TFE is associated with around 0.02 standard deviations lower support for redistribution. These effect sizes are

akin to a 5–10 year age gap in preferences among respondents (with older respondents more in favor of welfare spending cuts).

Areas with greater TFE also display stronger fiscal conservatism. Column 4 uses a CCES question on whether individuals would prefer to cut domestic spending or to raise taxes to balance the federal budget. Column 5 uses an index constructed from several GSS questions about whether the government spends too much on an array of public goods and social transfers. Across both outcomes, individuals are significantly more opposed to high levels of government spending in areas with greater TFE.

Importantly, these reported preferences line up with contemporaneous policy outcomes. In particular, each decade of TFE is associated with a reduction in property tax rates from 2010 to 2014 by 3.3 percent of the mean (column 6).¹⁸ This is an economically meaningful effect given that much of the variation in tax rates lies across rather than within states. It equals roughly the within-state difference in tax rates between counties that are 10 percent more versus less aligned with the Republican party, a policy outcome we consider next.

Such strong opposition to redistribution in high-TFE counties also translates into greater support for the Republican party between 2000 and 2016. While people vote Republican for many reasons, self-reliance and small government have been dominant party themes since the late 1990s (Gentzkow, Shapiro, and Taddy (2019)). Column 7 of Table III shows that each decade of TFE is associated with a 2 p.p. higher Republican vote share relative to the mean of 60 percent over the five presidential elections from 2000 through 2016.¹⁹ For perspective, the 2 p.p. effect is roughly the difference in population-weighted, average county-level vote shares in Iowa (48.4 percent) and Wisconsin (46.3 percent) over these five elections.

Voting and Partisan Issues

Several results further elucidate the connection between frontier culture, voting, and partisanship. First, we examine earlier elections when the liberal–conservative divide did not cleanly map into a partisan divide. TFE exhibits little relationship with Republican party support until around 2000 (see Figure 5). This sharp break coincides with growing polarization after the mid-1990s when Republican leaders launched the “Contract with America” platform for political change, which emphasized tax cuts, balanced budgets, and welfare reform (Gentzkow, Shapiro, and Taddy (2019)). After 2000, the effects of TFE trend upward, with significant increases from each election to the next.²⁰

¹⁸These rates are estimated by the National Association of Home Builders based on the American Community Survey (ACS) in 2010–2014.

¹⁹This effect size is in line with individual-level regressions using degree of stated support for the Republican party in the CCES. Using the CCES 2007, 2012, and 2014 survey rounds, we construct an indicator equal to 1 if the respondent identifies as a “strong Republican” on a seven point scale ranging from “strong Democrat” to “strong Republican” with around 17 percent of individual-years reporting the latter. The estimates imply that an additional decade of TFE is associated with around 4.5 percent greater intensity of strong Republican support.

²⁰Taking a long difference from 2000 to 2016, the average county in our sample exhibits a 9 p.p. shift toward Republican candidates, and each decade of TFE is associated with an additional 1.6 p.p. increase. Alternatively, an interquartile shift in TFE implies an additional 2.2 p.p. Republican party shift. As a benchmark, Autor, Dorn, Hanson, and Majlesi (2017) find that an interquartile shift in exposure to import competition from China induces a 1.7 p.p. Republican shift over the same period. Using the original data from Autor, Dorn, and Hanson (2013), a single regression with both measures puts the TFE effect at around one-quarter as large as the effect of the China shock, with both effects statistically and economically significant.

TABLE III
TOTAL FRONTIER EXPERIENCE AND OPPOSITION TO GOVERNMENT INTERVENTION AND REDISTRIBUTION^a

	Prefers Cut Public Spending on Poor	Prefers Cut Public Spending on Welfare	Believes Gov't Should Redistribute	Prefers Reduce Debt by Spending Cuts	Index of Preferences for Spending Cuts	County Property Tax Rate, 2010–14	Republican Presidential Vote Shr., 2000–16
Dependent Variable:							
Scale:	Binary	Binary	Standardized	Binary	Standardized	[0, 100]	[0, 100]
Data Source:	ANES	CCES	GSS	CCES	GSS	ACS	Leip
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Frontier Experience	0.010 (0.004)	0.007 (0.003)	-0.022 (0.012)	0.014 (0.002)	0.028 (0.011)	-0.034 (0.007)	2.055 (0.349)
Oster δ for $\beta = 0$	16.01	3.10	97.95	5.89	3.53	-27.45	-8.55
Mean of Dependent Variable	0.09	0.40	0.00	0.41	0.00	1.02	60.04
Number of Individuals	2322	53,472	9085	111,853	5739	2029	2036
Number of Counties	95	1,863	255	1963	253	2029	2036
R^2	0.04	0.04	0.06	0.04	0.07	0.82	0.33
Survey Wave Fixed Effects	✓	✓	✓	✓	✓	—	—
Individual Demographic Controls	✓	✓	✓	✓	✓	—	—
State Fixed Effects	✓	✓	✓	✓	✓	✓	✓
Geographic/Agroclimatic Controls	✓	✓	✓	✓	✓	✓	✓

^aThis table reports estimates of equation (4) for several measures capturing preferences for redistribution and state spending as well as actual property tax rates and the Republican vote share. Total frontier experience is expressed in decades. Full details on the outcomes can be found in Appendix K. We use all available survey rounds with the given outcome, and in all cases, we restrict to those counties in our baseline sample as described in the notes to Table II. All columns are based on the specification in column 2 of Table II with additional individual-level controls for age, age squared, gender, and race in columns 1–5. The ANES measure in column 1 equals 1 if the respondent prefers that federal government spending on poor people be cut. The CCES measure in column 2 equals 1 if the respondent would prefer to cut public spending on welfare programs. The GSS measure in column 3 is a standardized measure of intensity of support on a 7 point scale of the statement that the government should reduce income differences in society through redistribution. The CCES question in column 4 equals 1 if the household would prefer that the state budget be balanced through spending cuts rather than tax increases. The GSS measure in column 5 is a standardized first principal component analysis (PCA) index based on a series of questions about whether the government spends too much on different public goods and transfer programs. The measure of county-level property tax rates in column 6 is estimated by the National Association of Home Builders using the American Community Survey data from 2010–2014. Column 7 captures the mean county-level Republican vote share in the last five presidential elections with data from the Leip Atlas. Standard errors are clustered based on the grid-cell approach of Bester, Conley, and Hansen (2011) as detailed in Section 4.1. The Oster (2019) tests are with reference to a baseline specification that only includes state fixed effects.

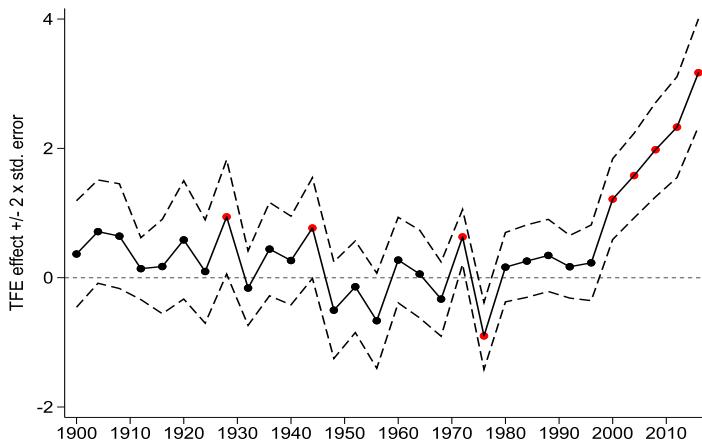


FIGURE 5.—TFE and the Republican presidential vote share, 1900–2016. This figure reports point estimates and $\pm 2 \times$ standard error confidence bands on the effects of TFE on the Republican presidential vote share in each election from 1900 to 2016. The red circles indicate statistical significance at the 95% level.

The growing electoral imprint of TFE may reflect both supply- and demand-side drivers of political change. Congressional speeches compiled by Gentzkow, Shapiro, and Taddy (2019) point to an increased influence of frontier culture. From the mid-1990s onward, Republican legislators from congressional districts with greater TFE are more likely to discuss topics associated with the Contract with America (see Appendix Table C.I). This may be due to an increase in the likelihood of such candidates winning elections or to a change in speech among candidates who would have won otherwise. Either way, this shift against big government among Republican representatives is consistent with strong voter support for such positions in high-TFE regions as seen in Table III.

During this period of growing partisanship, the Republican party has increasingly opposed not only tax redistribution but also government intervention more broadly. Many salient partisan issues, in fact, resonate with anti-statist principles of rugged individualism. We explore four such issues using the CCES. Beliefs in self-reliance might increase opposition to (i) the Affordable Care Act (ACA) and (ii) increases in the minimum wage. Meanwhile, opposition to (iii) the ban on assault rifles is connected to views about the right to self-defense, and opposition to (iv) Environmental Protection Agency (EPA) regulations on pollution is connected to views about manifest destiny and the pursuit of self-interest. The results in Appendix Table C.II show that places with greater TFE display significantly stronger opposition to these four hot-button regulations.

Finally, despite limited electoral effects of TFE before 2000, there were four notable exceptions, each with clear links to frontier culture (see Figure 5). The first was in 1928 when Republican Herbert Hoover, who popularized the notion of rugged individualism, performed relatively better in high-TFE counties. The second was in 1944 when Republican Thomas Dewey campaigned against the inefficiencies and excesses of Democrat Franklin Roosevelt's New Deal programs. The third was in 1972 when Republican Richard Nixon faced Democrat George McGovern, an anomalously progressive liberal candidate who campaigned for a time on giving every American citizen \$1000 per year (akin to a universal basic income). The fourth was in 1976 when high TFE favored the Democratic candidate, Jimmy Carter, who came from a farming family in Georgia descended from the original settlers of Virginia.

Interpretation

Overall, the findings in this section paint a rich picture of how frontier settlement left an indelible mark on America's cultural landscape. As a summary takeaway, we estimate a mean TFE effect of 0.15 standard deviations on the combined index of infrequent names, Republican vote shares, and property tax rates (using the Kling, Liebman, and Katz (2007), approach). In combining these outcomes to define a culture of rugged individualism, we note that individualistic names are strongly associated with higher Republican vote shares and lower property tax rates.²¹ In other words, the effects in Table II are identified from essentially the same cross-county variation in Table III, pointing to the close connection between individualism and opposition to redistribution.

There are of course policy preferences for which the individualistic frontier culture does not have clear implications. For illustration, we consider a few foreign policy issues as placebo outcomes: support for U.S. military intervention abroad in the case of genocide or civil war (35 percent in the CCES), opposition to the Iran sanctions regime (20 percent), and opposition to the United States–Korea Free Trade Agreement (45 percent). Estimating our baseline specification, we find relatively precise null effects of TFE on these three measures (−0.004, −0.003, and 0.003, respectively).

Importantly, the long-run effects on rugged individualism only materialize for groups able to capitalize on the opportunities afforded by the frontier historically. In Table IV, we find precise null effects of TFE for African American respondents across the six measures of opposition to redistribution and regulation in the CCES. These results support our interpretation of the origins and persistence of frontier culture. A large share of today's black population in the United States trace their familial roots to slavery. Slaves of course faced extreme barriers to geographic and socioeconomic mobility, and many of these barriers persisted for blacks in the postbellum period. As a result, the mechanisms linking frontier experience to rugged individualism (e.g., selective migration, upward mobility through effort) would have been irrelevant to blacks living in many high-TFE regions, especially in the South.²²

The black–white gap in the effects of TFE raises the possibility that racial resentment may explain white opposition to redistribution in high-TFE counties. For example, opposition to affirmative action for African Americans is often linked to beliefs about the role of effort in generating income. Using the CCES, we find a significant association between this type of racial resentment and TFE. However, controlling for contemporary population density undoes this correlation, thus pointing to an urban–rural divide rather than a high–low-TFE divide.²³ In contrast, our key findings in Table III cut across the urban–rural divide as we show next.

²¹Conditional on state fixed effects and our baseline controls, a 1 standard deviation (s.d.) increase in infrequent names is associated with a 0.42 s.d. increase in Republican votes (0.24 s.d. decrease in property tax rates).

²²The results in Table IV are driven largely by counties in the South (Census region). Outside of the South, blacks and whites display similar effects of TFE. This may be due in part to the selective migration of blacks out of the South and into frontier areas in the late 1800s. While still subject to greater restrictions on upward mobility than whites, these self-selected black migrants were arguably more exposed to the influence of frontier conditions than those remaining in the postbellum South. See Billington and Hardaway (1998) for a rich exploration of the history of African Americans on the frontier.

²³The 2010, 2012, and 2014 rounds of the CCES make two statements about racial resentment and ask respondents their degree of agreement on a scale from strongly agree to strongly disagree: (i) "The Irish, Italians, Jews and many other minorities overcame prejudice and worked their way up. Blacks should do the same without any special favors" (64 percent somewhat or strongly agree), and (ii) "[g]enerations of slavery and discrimination have created conditions that make it difficult for Blacks to work their way out of the lower

TABLE IV
RACIAL DIFFERENCES IN THE LONG-RUN EFFECTS OF FRONTIER EXPERIENCE^a

Dependent Variable:	Prefers Cut Public Spending on Welfare	Prefers Reduce Debt by Spending Cuts	Opposes Affordable Care Act	Opposes Increasing Minimum Wage	Opposes Banning Assault Rifles	Opposes Regulation of CO ₂ Emissions
	(1)	(2)	(3)	(4)	(5)	(6)
Total Frontier Experience × White	0.009 (0.003)	0.016 (0.003)	0.027 (0.004)	0.025 (0.008)	0.018 (0.004)	0.018 (0.004)
Total Frontier Experience × Black	-0.008 (0.006)	-0.002 (0.005)	-0.000 (0.007)	0.005 (0.014)	-0.002 (0.008)	-0.008 (0.007)
Total Frontier Experience × Other	0.010 (0.007)	0.015 (0.007)	0.014 (0.009)	0.009 (0.019)	0.019 (0.008)	0.029 (0.008)
White	0.044 (0.012)	0.065 (0.012)	0.047 (0.015)	-0.064 (0.032)	0.006 (0.012)	0.046 (0.015)
Black	-0.177 (0.014)	-0.065 (0.011)	-0.215 (0.021)	-0.285 (0.038)	-0.148 (0.021)	-0.067 (0.025)
Number of Individuals	53,472	111,853	29,446	5134	29,404	29,215
Number of Counties	1863	1963	1728	1066	1723	1718
TFE(Black) = TFE(White), <i>p</i> -value	0.010	0.000	0.000	0.125	0.022	0.000
Mean of Dependent Variable, Whites	0.43	0.44	0.58	0.32	0.39	0.35
Share White Respondents	0.79	0.77	0.76	0.86	0.76	0.76
Share Black Respondents	0.11	0.13	0.11	0.09	0.11	0.11
Share Other Respondents	0.10	0.11	0.13	0.05	0.13	0.13
State Fixed Effects	✓	✓	✓	✓	✓	✓
Geographic/Agroclimatic Controls	✓	✓	✓	✓	✓	✓

^aThis table allows the effects of TFE to vary by (self-identified) race of respondents for the six CCEs outcomes used in Tables III and C.II. Standard errors are clustered based on the grid-cell approach of Bester, Conley, and Hansen (2011) as detailed in Section 4.1.

4.4. Robustness

This section bolsters our interpretation of the causal pathway from historical frontier experience to contemporary culture. We focus on four outcomes: individualistic names, a simple mean index of preferences over six CCES outcomes, property taxes, and the Republican vote share.

Disentangling Population Density

Differences in population density across locations can be very persistent. Given the well known cultural divide across rural and urban areas, there is a natural concern that contemporary population density may confound the effects of TFE. Here we disentangle the effects of historical frontier settlement from those of present-day density, showing the robustness of our results.

Table V controls for contemporary density in several ways: linearly (column 2), deciles within state (column 3), and county-pair fixed effects (column 4). The latter specification—used in column 3 of Table II—is very demanding and leaves limited identifying variation. Yet TFE has a statistically and economically significant effect on individualistic names and Republican vote shares. The effects on mean government preferences in CCES and county-level property taxes are no longer significant, which is not surprising given that these measures exhibit less variation within state.

The remaining columns of Table V further establish that the effects of TFE are driven by the history of frontier settlement rather than simply the long-run persistence of low density. TFE has similar effects in urban and rural areas, splitting the sample into counties above and below the 90th percentile of urban population shares (columns 5 and 6). Finally, column 7 separates the history of low density—the number of decades with density below 6 people/mile²—from TFE. Recall that low density was one of two defining features of frontier locations, proximity to the frontier line being the other. The coefficient on TFE remains significant, indicating that both dimensions of frontier history are important.

Additional Controls

Beyond population density and our baseline geoclimatic controls, there are of course other factors that may be correlated with both TFE and rugged individualism. Appendix Table B.VI incorporates many such factors: ruggedness (Nunn and Puga (2012)), rainfall risk (Davis (2016)), portage sites (Bleakley and Lin (2012)), mineral resources (Coutenier and Sangnier (2015)), conflict with Native Americans, the prevalence of slavery, the sex ratio (Grosjean and Khattar (2019)), immigrant share, Scotch-Irish settlement (Grosjean (2014)), birthplace diversity, the timing of railroad access, and the employment share in manufacturing. These controls add substantial explanatory power but leave the estimated effects of TFE largely unchanged.

Instrumental Variables Strategy

It is of course impossible to control for all plausible correlates of culture that might also have shaped TFE. With the goal of ruling out unobservable location-specific confounders,

class” (51 percent somewhat or strongly disagree). While TFE exhibits a significant positive association with both measures in our baseline regression (0.010** and 0.012***, respectively), a simple linear control for 2010 population density renders the estimates null and insignificant (0.001 and 0.004, respectively).

TABLE V
DISENTANGLING THE EFFECTS OF POPULATION DENSITY^a

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Contemporaneous Population Density		✓					
Contemporaneous Population Density Decile			✓				
Within State							
Contemporaneous Population Density—Neighbor				✓			
Matching Within State							
Sample Restriction	None	None	None	None	> 90th Percentile Urban	≤ 90th Pop. Share, 1940/2010	None
Panel (a): Infrequent Children's Name Share in 1940 (Standardized)							
Total Frontier Experience	0.141 (0.021)	0.130 (0.020)	0.086 (0.019)	0.096 (0.022)	0.139 (0.034)	0.100 (0.022)	0.081 (0.024)
Total Low Density Experience							0.095 (0.019)
Number of Counties	2036	2036	2021	2036	242	1794	2036
R ²	0.60	0.62	0.68	0.85	0.83	0.60	0.61
Panel (b): Infrequent Children's Name Share in 1940, Metaphone (Standardized)							
Total Frontier Experience	0.141 (0.021)	0.129 (0.021)	0.083 (0.020)	0.088 (0.022)	0.122 (0.033)	0.100 (0.023)	0.080 (0.024)
Total Low Density Experience							0.095 (0.019)
Number of Counties	2036	2036	2021	2036	242	1794	2036
R ²	0.58	0.59	0.66	0.85	0.82	0.58	0.59
Panel (c): Mean Government Preferences Outcomes (CCES), 2006–2016							
Total Frontier Experience	0.014 (0.002)	0.008 (0.002)	0.009 (0.003)	0.008 (0.004)	0.013 (0.003)	0.004 (0.003)	0.011 (0.002)
Total Low Density Experience							0.006 (0.002)
Number of Individuals	112,759	112,759	111,704	112,759	68,436	44,323	112,759
Mean of Dependent Variable	0.41	0.41	0.41	0.41	0.38	0.46	0.41
R ²	0.05	0.05	0.05	0.07	0.05	0.05	0.05
Panel (d): County Property Tax Rate in 2010							
Total Frontier Experience	-0.034 (0.007)	-0.020 (0.006)	-0.010 (0.005)	-0.001 (0.005)	-0.022 (0.012)	-0.014 (0.005)	-0.028 (0.008)
Total Low Density Experience							-0.008 (0.005)
Number of Counties	2029	2029	2014	2020	223	1806	2029
Mean of Dependent Variable	1.02	1.02	1.02	1.02	1.34	0.98	1.02
R ²	0.82	0.85	0.87	0.95	0.90	0.86	0.82
Panel (e): Republican Vote Share, Average 2000–2016							
Total Frontier Experience	2.055 (0.349)	1.532 (0.346)	1.535 (0.357)	1.655 (0.356)	1.280 (0.886)	1.489 (0.347)	1.255 (0.404)
Total Low Density Experience							1.256 (0.290)

(Continues)

TABLE V—Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Contemporaneous Population Density		✓					
Contemporaneous Population Density Decile				✓			
Within State							
Contemporaneous Population Density—Neighbor					✓		
Matching Within State							
Sample Restriction	None	None	None	None	> 90th Percentile Urban Pop. Share, 1940/2010	≤ 90th	None
Number of Counties	2036	2036	2021	2034	223	1813	2036
Mean of Dependent Variable	60.04	60.04	60.11	60.04	49.29	61.36	60.04
R ²	0.33	0.40	0.38	0.73	0.27	0.38	0.35
State fixed effects	✓	✓	✓	✓	✓	✓	✓
Geographic/agroclimatic controls	✓	✓	✓	✓	✓	✓	✓

^aThis table disentangles the effects of TFE from the effects of historical and contemporary population density. Those in panel (a), (b), (d) and (e) are from prior tables, with the baseline estimates reproduced in column 1. The outcome in panel (c) is the mean of the six binary indicators from the CCES survey from Tables III and C.II. Column 2 and control for contemporaneous population density (i.e., 1940 in panels (a) and (b), 2006 in panel (c), 2000 in panel (d), and 2010 in panel (e)). Column 3 includes indicators for the decile of within-state population density. Column 4 implements the nearest-neighbor matching specification from column 3 of Table II. Columns 5 and 6 split the sample into counties above and below the 90th percentile of contemporaneous urban population shares. Column 7 controls for the total number of years that the country had population density less than 6 people/mi² from 1790–1890. This is one of the aspects of total frontier experience, the other being the total number of years that the county was within 100 km of the frontier line during that period. Standard errors are clustered based on the grid-cell approach of [Bester, Conley, and Hansen \(2011\)](#) as detailed in Section 4.1. Column 4 additionally clusters (two-way) on the county-pair. The [Oster \(2019\)](#) tests are with reference to a baseline specification that only includes state fixed effects.

we introduce an instrumental variable (IV) strategy that isolates plausibly exogenous variation in TFE.

Our IV is based on historical shocks to the settlement process driven by immigrant inflows to the United States. Immigrants contributed to westward expansion by exerting population pressure on the eastern seaboard and by going west themselves. The ebb and flow of immigrant arrivals thus determined the time it took for frontier locations in different periods to become established settlements. We can also isolate push factors by predicting migrant outflows from Europe based on climate shocks (following [Sequeira, Nunn, and Qian \(2020\)](#)). For each county, the IV captures weather-induced emigration flows to the United States starting just before the onset of local frontier settlement. These time-varying, national population shocks are unrelated to local conditions of frontier counties and help move us closer to a causal interpretation.²⁴ These national immigration shocks explain considerable variation in TFE, and, when used as an IV, deliver significant effects of TFE that are slightly larger but statistically indistinguishable from the ordinary least squares (OLS) estimates for our core outcomes. Appendix D describes the IV and the results in full detail.

²⁴To construct the instrument, we determine the first year in which each county is within 110 km of the frontier line. At this time, the county's local conditions do not affect the contemporaneous process of westward expansion, but the moving frontier is getting close. We then consider the average annual immigrant inflow in the next 30 years. Nearly 85 percent of counties exit the frontier within that time frame. Results are similar for other windows.

Regional Variation and the 20th Century Frontier

The effects of TFE on rugged individualism cut across well known cultural divides in the United States. Appendix Table B.VII shows that our findings are consistent across three distinct cultural regions of the country: the Midwest, the South, and the West. Even within the West Coast, high-TFE counties exhibit greater rugged individualism. Such stability across regions is reassuring and points to a specific cultural legacy of settlement history that is shared across an otherwise remarkable diverse country.

When we extend the measurement of TFE to 1950, we find somewhat smaller long-run effects on culture.²⁵ This extension incorporates counties first settled in the early 20th century by which time frontier conditions had changed. Transcontinental railroads and improved communications meant that frontier locations were effectively less isolated than they were historically. According to Lang, Popper, and Popper (1995), “the modern-day [post-1890] frontier is not the nineteenth-century one. It is smaller, more law-abiding and regulated, less isolated, less rugged, and less dangerous,” and, moreover, “the frontier has not for generations been the dream of those who seek a fortune or a new life.” In other words, the 20th century offered relatively less scope for selective migration and treatment effects of frontier life to engender a culture of rugged individualism.

5. THE ROOTS OF FRONTIER CULTURE

This section explores how rugged individualism took root on the American frontier. We use historical Census data to analyze two leading explanations: Section 5.1 examines selective migration, and Section 5.2 identifies causal effects of frontier exposure.²⁶ Put simply, the frontier attracted individualistic people, and life on the frontier made its residents even more individualistic over time. Both findings are consistent with an advantage of individualism on the frontier, and Section 5.3 provides evidence of differential returns to individualism.²⁷

Our analysis below requires individual-level migration data, which we construct in two ways. First, we use information on children’s state of birth to infer migration patterns of their parents as in Collins and Zimran (2019). Second, we track individuals over time by linking across Census rounds using an algorithm developed by Feigenbaum (2016) and detailed in Appendix K.

5.1. Selective Migration

Selective migration increased the prevalence of individualism on the frontier. Using complete-count Census data from 1850–1880, we show here that households moving to the frontier had children with more individualistic names than households that remained in settled areas. The opposite holds when looking at movers from the frontier to settled areas.

We estimate the time at which a household moves to the frontier based on the contemporaneous county of residence and differences in the reported birth state of children.

²⁵See Appendix J.2 for alternative measures of TFE and results excluding 40 counties with zero TFE.

²⁶See footnote 8 and Appendix K for details on the data sources used in this section.

²⁷Appendix J.4 examines a competing, disease-based explanation for the origins of individualism rooted in biology and known as the parasite-stress theory of values (Fincher and Thornhill (2012)). Using data on disease and illness in the 1880 Census, we do not find evidence in support of this explanation for the frontier differential in individualism.

TABLE VI
SELECTIVE MIGRATION AND INDIVIDUALISM ON THE FRONTIER^a

Omitted Reference Group:	Dependent Variable: Child Has an Infrequent Name (Children Named Prior to Moving)			
	(1)	(2)	(3)	(4)
	Stayers in Settled Counties	Stayers in Frontier Counties		
Household Migrated From Settled to Frontier	0.032 (0.006)	0.028 (0.006)		
Household Migrated From Frontier to Settled			−0.049 (0.011)	−0.029 (0.006)
Observations	8,734,740	8,734,740	370,999	370,999
Mean of dep. var., stayers	0.65	0.65	0.64	0.64
R ²	0.02	0.03	0.04	0.07
Birth state fixed effects		✓		✓

^aThis table estimates equation (5) in columns 1 and 2, and an analogous specification for movers from frontier areas to settled areas in columns 3 and 4. All columns include fixed effects for birth year×gender as well as birth order. The sample pools across Censuses from 1850–1880 and restricts to white children age 0–10 with native-born parents. The dependent variable is an indicator for whether the child has a non-top-10 name in the Census division and decade in which s/he was born. In columns 1 and 2, the sample includes all children living in non-frontier counties as well as children who were born in non-frontier counties and are currently living in frontier counties as a result of a family move. In columns 3 and 4, the sample includes all children currently living in frontier counties as well as all children who were born in frontier areas and are currently living in non-frontier counties as a result of a family move away from the frontier. The non-movers (i.e., stayers) are the omitted group to which the estimate differential refers, with the dependent variable means at the bottom of the table computed over these stayers. These mover households and children are identified using variation across reported child birth states and current county of residence (see Section 5.1 for details). Standard errors are clustered by county.

Consider a household living in frontier county c in Iowa in 1850 whose first child was born in Virginia in 1842 (a non-frontier state at the time), and their second child was born in Iowa in 1848. We date this household's arrival to the frontier in 1845. If this household did not have a second child, we would date their time at move to 1846.²⁸ An analogous procedure can be used to identify movers from frontier to settled areas.

Table VI compares the prevalence of infrequent names among children who moved to the frontier relative to children who remain in settled counties. The estimating equation is

$$\text{infrequent name}_{ict} = \alpha + \beta \text{frontier migrant}_{ict} + \mathbf{FE} + \varepsilon_{ict}, \quad (5)$$

where the binary dependent variable equals 1 if child i residing in county c in Census year t has a name that falls outside the top 10 nationally in that decade. We consider all children age 0–10 with native-born parents in keeping with the restrictions earlier in the paper. The *frontier migrant* indicator equals 1 if c is on the frontier in t and i was born in a state with no frontier counties at his/her time of birth. This indicator equals 0 for all children of households living in settled, non-frontier counties. Standard errors are clustered by county. The **FE** vector includes fixed effects (FE) for birth year×gender, birth order, and, in even-numbered columns, child birth state.

Columns 1 and 2 of Table VI show that individualists are more likely to move to the frontier. The estimate of β in column 1 is around 3.2 p.p. while the mean for stayers in

²⁸This approach misses moves between counties within the same state. In Appendix I, we present complementary results based on a smaller, linked sample of households where we can identify origin and destination counties in 1870 and 1880.

settled areas is 65 percent. This result holds conditional on child birth state FE (column 2), which captures heterogeneity in individualism across migrants' previous states of residence.

Meanwhile, columns 3 and 4 show that non-individualists are more likely to leave the frontier. The specification here replaces the indicator for frontier immigrant in equation (5) with an indicator for *frontier out-migrant*, which equals 1 if child i lives in county c that is not on the frontier in t and i was born in a state with at least one frontier county at his/her time of birth. This indicator equals 0 for all children of households living in frontier counties. The column 4 estimate of -2.9 p.p. demonstrates significant selective outmigration of non-individualists. Together, the results in Table VI suggest that selective migration contributed to the greater prevalence of individualism on the frontier historically.

5.2. Frontier Exposure and Cultural Change

The frontier not only attracted individualistic settlers, but also made its residents more individualistic. We develop two strategies to identify such a causal effect of frontier exposure on cultural change. Both exploit variation in the length of exposure to frontier conditions, one in adulthood and the other in childhood. With longer exposure comes greater scope for the frontier environment to affect cultural traits. This is the same notion underlying the long-run effects of total frontier experience on culture at the county level. Here we identify short-run effects of exposure at the individual level.

First, we use an *event-study* approach that exploits within-household variation to show that parents give their children increasingly individualistic names after arrival to the frontier. Second, we use an *age-at-move* approach that exploits cross-sibling variation in the time at which their parents chose to move the family to the frontier. Tracking siblings 30 years later, we find that people with longer childhood exposure to the frontier give their children more individualistic names. Both approaches account for household-specific, time-invariant individualism.

(i) Event Study: Adulthood Exposure

Our first strategy identifies changes in how parents name children born after versus before moving to the frontier. Specifically, we estimate the following equation that relates the name given to child i , born in year $t + j$, to the year \tilde{t} in which his/her household h moved to frontier county c at some time prior to Census year t :

$$\text{infrequent name}_{iht} = \alpha + \sum_{j=-20}^{20} \beta_j \mathbf{1}(\text{born in } \tilde{t} + j)_{ih} + \theta_h + \mathbf{x}'_i \boldsymbol{\eta} + \varepsilon_{iht}. \quad (6)$$

The household fixed effects, θ_h , absorb all time-invariant characteristics that affect h 's choice to migrate to the frontier and its individualism. The \mathbf{x}_i vector includes child gender, birth order, and birth cohort trends. We pool across Census years 1850–1880 and consider all kids ages 0–20 in 1850 and ages 0–10 in 1860, 1870, and 1880 to avoid double counting. The dependent variable here and in the age-at-move approach below is again based on the top 10 gender- and decade-specific names for white children with native-born parents. Standard errors are clustered by county.

The β_j coefficients in equation (6) identify differential individualism across siblings' names with respect to the year \tilde{t} at which h moved to the frontier. The estimates are normalized with respect to children named in the year before arrival on the frontier, such that

β_5 , for example, identifies how much more likely it is to observe an infrequent name for a child born to family h five years after arrival on the frontier relative to their child born one year before leaving a settled area. The controls \mathbf{x}_i help rule out general trends in infrequent names across time and birth order, thereby isolating within-household variation that is most plausibly related to changes in frontier exposure.²⁹

We also estimate an equation with continuous measures of birth years relative to move:

$$\begin{aligned} \text{infrequent name}_{iht} = & \alpha + \beta_{\text{pre}}(\text{years until move})_{ih} + \beta_{\text{post}}(\text{years after move})_{ih} \\ & + \theta_h + \mathbf{x}'_i \boldsymbol{\eta} + \varepsilon_{iht}. \end{aligned} \quad (7)$$

This specification identifies pre- and post-move trends but is less flexible than (6).

To estimate equations (6) and (7), we require households with at least two children and at least one of them born before the household moved to the frontier. Our sample consists of 57,097 children living in 16,901 households.³⁰ Consider, for example, a household on the Iowa frontier in 1850 with four children: John born in 1840, Mary in 1843, Lisa in 1847, and Ruben in 1850. We see John and Mary are born in Virginia and Lisa and Ruben in Iowa. Hence, we impute $\tilde{t} = 1845$ and $j = -5$ for John, -2 for Mary, $+2$ for Lisa, and $+5$ for Ruben.

The key identifying assumption is that the trend in individualistic names in household h would not have changed had the household not moved to the frontier. While this counterfactual is of course unobservable, the lack of pre-trends in Figure 6 and precise 0 on β_{pre} in Table VII are reassuring. This goes against the concern that parents had already started becoming more individualistic prior to moving and hence for reasons unrelated to frontier exposure. Although frontier migrants are self-selected on prior *level* differences in individualism (see Section 5.1), such migrants are not self-selected on prior *growth* in individualism.

As migrant families reside on the frontier for longer periods of time, their children's names become increasingly individualistic. Figure 6(a) reveals a stark trend break in individualistic names within households after moving to the frontier. Children born one decade after their parents moved to the frontier are nearly 8 p.p. more likely to have an infrequent name than their siblings born one year prior to moving. Assuming linearity in Table VII, each additional year of exposure to the frontier increases the likelihood of giving their next child an infrequent name by 0.7 p.p. (column 1).

These estimates suggest that frontier conditions increased parents' own individualism or increased their preferences over their children's future individualism. In either case, the prevalence of individualism increased over time within families. Further results below support a causal interpretation.

Robustness. These baseline results are robust to accounting for time trends in individualistic names in several ways: five-yearly birth cohort FE (column 2 of Table VII), three-yearly cohort FE (column 3), child birth order (column 4), and birth order with

²⁹This specification is similar to that in Abramitzky, Boustan, and Eriksson (2020), who relate time spent in the United States to the Americanization of names given to native-born children by foreign-born mothers. Whereas their study estimates separate equations for children born pre- and post-move to the United States, we combine the two in an event-study design centered on the time of move.

³⁰The sample is relatively small because the frontier comprised a small share of the entire U.S. population at any given time in the 1800s, and the restriction to frontier migrants with children born prior to moving further reduces the sample size.

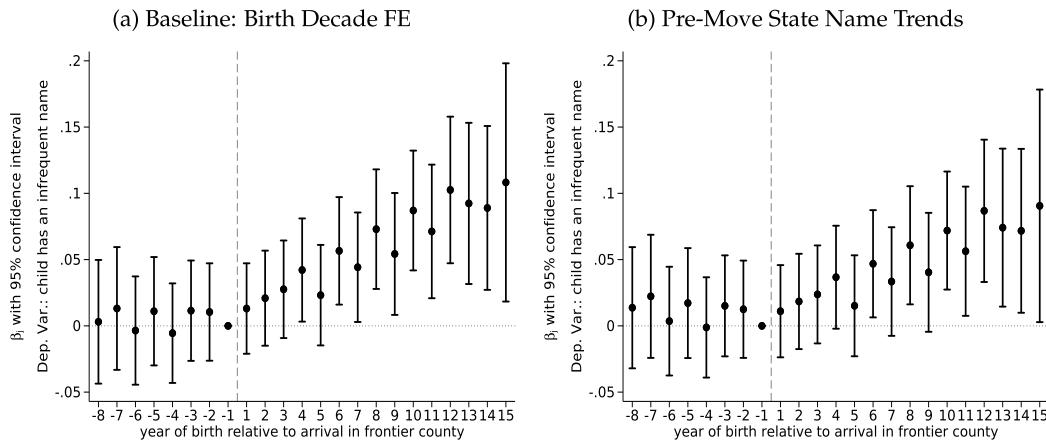


FIGURE 6.—Identifying exposure effects: Adulthood exposure (I). This figure isolates within-household, cross-child variation in parental exposure to the frontier. Each graph reports estimates of β_j and 95 percent confidence intervals in equation (6) for $j = -8, \dots, 15$ (with other j included but suppressed for presentational purposes). Each β_j can be interpreted as the differential likelihood of an infrequent name being given to a child born j years before/after their parents moved to the frontier, relative to the child born 1 year prior to moving. The sample includes 57,097 children born to 16,901 families headed by white, native-born parents who moved with at least one child to a frontier county as we observe them in the Census records in 1850, 1860, 1870, or 1880. All estimates control for household fixed effects and child gender. Graph (a) additionally includes child birth decade FE, and (b) includes controls for the mean gender-specific infrequent name share in each child birth year in the state from which each family migrated before arriving on the frontier. Standard errors are clustered by contemporaneous county.

TABLE VII
IDENTIFYING EXPOSURE EFFECTS: ADULTHOOD EXPOSURE (I)^a

	Dependent Variable: Child Has an Infrequent Name					
	(1)	(2)	(3)	(4)	(5)	(6)
Year of Birth Relative to Move, Pre-Move	0.002 (0.002)	0.001 (0.002)	0.003 (0.003)	-0.001 (0.002)	0.001 (0.004)	0.001 (0.002)
Year of Birth Relative to Move, Post-Move	0.007 (0.001)	0.005 (0.002)	0.007 (0.003)	0.004 (0.002)	0.005 (0.003)	0.005 (0.001)
Pre-Move = Post-Move, <i>p</i> -value	[0.005]	[0.018]	[0.023]	[0.007]	[0.03]	[0.009]
Observations	57,097	57,097	57,097	57,097	57,097	57,097
Number of Families	16,901	16,901	16,901	16,901	16,901	16,901
Mean of Dependent Variable	0.65	0.65	0.65	0.65	0.65	0.65
<i>R</i> ²	0.36	0.36	0.36	0.36	0.36	0.36
Household Fixed Effect	✓	✓	✓	✓	✓	✓
Birth Year Fixed Effect	Decade	5-Yearly	3-Yearly		3-Yearly	
Child Birth Order				✓	✓	
Pre-Move Birth State Yearly Name Trend						✓

^aThis table reports estimates of equation (7), which estimates a continuous version of the event study specifications in Figure 6. That is, the *year of birth relative to move, pre-move* measures the number of years until the household moves to the frontier, and *year of birth relative to move, post-move* measures years since arrival to the frontier. We also report the *p*-value for equality across the two. See the notes to Figure 6 for further details on the sample and specification. Standard errors are clustered by county.

five-yearly cohort FE (column 5).³¹ Additionally, we control for pre-move-state trends in infrequent children's names (Figure 6(b) and column 6 of Table VII). These gender-and cohort-year-specific means account for trends in individualism had the family not left their origin state. Across these checks, we continue to find both a lack of pre-trends and a significant increase in individualistic names as parents spend more time on the frontier.

Moreover, the patterns in Figure 6 help to address a remaining concern about endogeneity. Suppose a household experienced a shock that simultaneously led them to move to the frontier and increased their future individualism irrespective of frontier exposure. For example, they suddenly reap large returns to prior investments with little help from neighbors and local government, inducing them to embrace individualism and also enabling them to move to the frontier in search of opportunities. While such unobservable shocks are impossible to rule out, they seem inconsistent with our findings. In particular, shocks like these would lead to a jump in individualism right around the time of moving to the frontier, whereas Figure 6 points to growing individualism with each additional year of frontier exposure.

While the patterns in Figure 6 are consistent with causal exposure effects, they are identified on a select sample. Households that experience greater returns to individualism early after arrival may be more likely to have more children and also to survive longer on the frontier. With differential fertility, we would see more children born to individualistic households in the later years post-arrival in Figure 6. Differential outmigration (or death) further implies that we are less likely to see households for whom individualism did not increase after arrival to the frontier. Our second approach to causal identification is not subject to these sample selectivity concerns.

(ii) Age at Move: Childhood Exposure

Our second strategy exploits variation in age at move to the frontier among siblings. We follow these siblings 30 years later to examine differences in individualism revealed in adulthood. In particular, we link brothers aged 0–20 in the 1850 Census to the 1880 Census by which time they were 30–50 year old household heads with children of their own. With this linked sample of nearly 42,000 individuals spanning 30 years, we ask whether being exposed to frontier conditions from an earlier age makes fathers more likely to give individualistic names to their children.³² This approach has the advantage of relying on variation in frontier exposure that is not due to the migrants' own choices but rather to their parents' choices.³³

For child i in the 1880 Census with father f from household h in 1850, we estimate

$$\text{infrequent name}_{ifh} = \alpha + \sum_{j=1}^{17} \beta_j \mathbf{1}(f\text{'s age at move to frontier}_h = j) + \mathbf{x}'_{if} \boldsymbol{\eta} + \theta_h + \varepsilon_{ifh}. \quad (8)$$

As a baseline, we restrict to children whose fathers moved to the frontier with their parents as children. The key regressors are indicators for those ages $j = 1, \dots, 17$; we also

³¹ Corresponding graphical results for each specification can be found in Appendix Figure E.1.

³² Like other studies based on historical linked records, we focus on men as women changed their names upon marriage, making it impossible to match them across censuses. The linking generates a sample of 41,975 fathers with 146,845 children in 1880.

³³ This approach is similar to Chetty and Hendren (2018), who study childhood exposure to neighborhoods of varying quality. While neighborhood quality varies along a continuum in their setting, county-level frontier status is a binary measure in ours.

consider a continuous age-at-move specification. The \mathbf{x} vector includes child i gender and birth order as well as father f birth order fixed effects to absorb variation in individualism unrelated to frontier exposure. Standard errors are two-way clustered on 1850 household and 1880 county.

Given the 1850 household fixed effects (θ_h), the β_j identify differences in the likelihood of individualistic names across cousins in 1880 due to the migration decisions of their paternal grandparents prior to 1850. We normalize age 1 to zero so that each β_j identifies how much less likely we are to observe an infrequent name for cousin i whose father f moved to the frontier at age j compared to cousin i' whose father f' moved to the frontier at age 1.³⁴

Differences across β_j identify causal exposure effects under the assumption that the potential individualism of children is orthogonal to the timing of the family's move. This would be violated if families moved to the frontier on the basis of pre-trends in or unobservable shocks to individualism. The earlier, event-study results suggest both are unlikely. Moreover, post-move growth in individualism among parents would not be a source of bias, but rather a channel for the frontier's treatment effect on children.

The core results point to significant effects of frontier exposure. In Figure 7, for example, the likelihood of being given an individualistic name is 10 p.p. higher for children whose fathers moved to the frontier at age 1 compared to their cousins whose father was 10 years old when the family moved to the frontier. Assuming that these age-at-move effects are linear, which seems reasonable given the patterns in Figure 7, column 1 of Table VIII implies that with each additional year of frontier experience as a child, one is 0.7 p.p. more likely as an adult to give his own children individualistic names. This estimate is very similar to the effect of frontier exposure in adulthood seen in Table VII.

Robustness. These results survive key robustness checks. Column 2 of Table VIII includes contemporary state fixed effects, accounting for the possibility that the brothers might reside in different locations in 1880 for reasons unobservable to us but perhaps confounded with their changes in individualism since 1850. We also account for age differences across cousins in 1880 using increasingly stringent fixed effects for birth cohort: decade (column 3), five-yearly (column 4), and three-yearly (column 5). These are in addition to the baseline control for child birth order and help rule out trends in individualistic names that might be correlated with fathers' age at move. Like the event-study results in Table VII, these added controls reduce precision, but leave significant effect sizes that are statistically indistinguishable from the baseline. Appendix E.2 reports further checks, including robustness to nonclassical measurement error in the linking procedure.

Summary: Selection versus Exposure

Together, these two distinct identification strategies yield evidence consistent with a treatment effect of frontier conditions on individualism. While migrants to the frontier self-select on prior levels of individualism, our findings suggest a causal amplification of this cultural trait after arrival.

³⁴To fix ideas, consider brothers John (age 10) and Paul (6), born in Virginia, who we observe on the Iowa frontier in the 1850 Census. Using the procedure above based on children's birth states, we infer that the parents moved the boys to the frontier in 1847 when Paul was 3 and John was 7. Regardless of the precise moving date, Paul could ultimately have as many as four more years of childhood frontier exposure than John. Equation (8) then identifies whether Paul's children observed in the 1880 Census have more individualistic names than John's children.

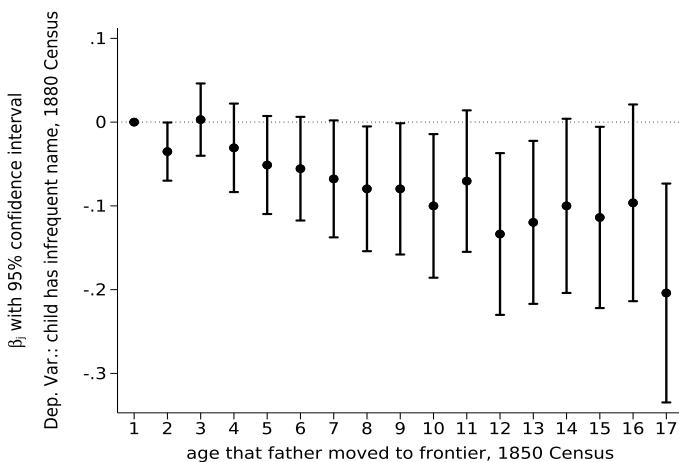


FIGURE 7.—Identifying exposure effects: Childhood exposure (II). This figure reports estimates of β_j and 95 percent confidence intervals in equation (8). Each β_j can be interpreted as the differential likelihood of an infrequent name being given to a child whose father's family moved to the frontier at age j compared to a child born to that father's younger brother who was 1 when the family moved to the frontier. The sample consists of 81,823 children age 0–20 in the 1880 Census with fathers hailing from 17,778 families observed in the 1850 Census and where at least two brothers (one brother) were born before the family moved to the frontier. We link the fathers from 1850 to 1880 using a procedure detailed in Appendix K. There are 16,776 children with fathers who moved at age 1, 8463 at age 2, ..., 3164 at age 10, ..., and 487 at age 17. These estimates control for 1850 family fixed effects, father birth order, child gender, child birth order, and an indicator for duplicate matches in the linking process.

To understand the relative magnitude of selection and treatment effects, we ask how many years of frontier exposure it takes to double the differential levels of individualism that self-selected migrants bring with them to the frontier. Comparing estimates of selection from Table VI with those of exposure effects from Table VII, it takes around

TABLE VIII
IDENTIFYING EXPOSURE EFFECTS: CHILDHOOD EXPOSURE (II)^a

	Dep. Var.: Child Has an Infrequent Name				
	(1)	(2)	(3)	(4)	(5)
Age-at-Move to Frontier	-0.008 (0.003)	-0.008 (0.003)	-0.007 (0.003)	-0.006 (0.003)	-0.005 (0.003)
Observations	81,823	81,823	81,823	81,823	81,823
Number of Families	17,778	17,778	17,778	17,778	17,778
Mean of Dependent Variable	0.69	0.69	0.69	0.69	0.69
R ²	0.26	0.27	0.26	0.27	0.27
Extended Family (1850 household) FE	✓	✓	✓	✓	✓
State of Residence FE in 1880	-	✓	-	-	-
Child Birth Cohort FE	-	-	Decade	5-Yearly	3-Yearly

^aThis table reports the continuous analogue to the age-at-move-specific estimates in Figure 7. All estimates control for 1850 family fixed effects, father birth order, child gender, child birth order, and an indicator for duplicate matches in the linking process. Column 1 is the specification used in Figure 7. Column 2 here additionally includes 1880 state fixed effects to allow for the possibility that brothers from 1850 may live in different locations today. Columns 3–5 control increasing flexibility for child birth cohort. See the notes to that figure for details on the sample and specifications. Standard errors are two-way clustered by 1850 family and 1880 county.

4–8 years, depending on which specification one uses. At the upper end, the estimate in column 5 of Table VII suggests that an additional 8 years of frontier exposure increases the likelihood of giving one's child an individualistic name by 3.2 p.p., which is exactly the differential among frontier migrants compared to those remaining in settled areas as seen in column 1 of Table VI.

Both selective migration and causal exposure effects were arguably responses to an advantage of individualism on the frontier, which we document in the next section. In other words, differential returns attracted individualists to the frontier and also created strong incentives to deepen individualism once they settled there. In addition, the increased prevalence of individualists may have amplified the differential returns to individualism by making it harder for non-individualists to adapt. This would create a feedback loop between selective migration, exposure effects, and the advantage of individualism, amplifying the overall effects of frontier experience.³⁵

5.3. Returns to Individualism

This section provides descriptive evidence of an advantage to individualism on the frontier, created by the specific opportunities and threats in this environment. Because people on the frontier primarily had to rely on themselves for protection and material progress, the independent, self-reliant types were likely to fare better (Kitayama et al. (2010)).³⁶ Moreover, frontier settlers often faced unfamiliar agroclimatic conditions in which non-conformism and innovation—two traits associated with individualism—may have been beneficial (see Shannon (1977)).³⁷

We estimate the returns to individualism using the difference-in-difference specification, which relates father i 's economic status in county c in Census year t , y_{ict} , to predetermined infrequent names within the household,

$$\begin{aligned} y_{ict} = & \alpha + \beta \text{own infrequent name}_{ic} + \eta (\text{own infrequent name}_{ic} \times \text{frontier}_{ct}) \\ & + \delta \text{children infrequent names}_{ic} + \zeta (\text{children infrequent names}_{ic} \times \text{frontier}_{ct}) \\ & + \theta_{ct} + \varepsilon_{ict}, \end{aligned} \quad (9)$$

where β captures the return to the father's own infrequent name outside the frontier and η captures the differential return on the frontier. At the same time, δ captures the association of father's economic status and infrequent children's names outside the frontier, and ζ captures the frontier differential. We restrict attention to white, native-born fathers with at least one child and define infrequent names as those outside the top 10 nationally. The county \times year fixed effects, θ_{ct} , account for all differences in outcomes

³⁵To the extent that more successful settlers also had more children, differential fertility may also have increased the prevalence of individualism on the frontier.

³⁶Critics of Turner emphasize the importance of cooperation on the frontier (e.g., Boatright (1941)), but his supporters have argued that cooperation was not inconsistent with individualism. For instance, according to Billington (1974), the frontiersman “spoke for individualism … even though he was equally willing to find haven in cooperation when danger threatened or need decreed.” While returns to cooperation may have been high at times, maintaining extended reciprocity arrangements would have been difficult in frontier settings with such high population mobility.

³⁷The connection between innovation and individualism is discussed at length in Gorodnichenko and Roland (2012). In characterizing the traits of frontier populations, Turner (1893) himself mentions individualism along with the “coarseness and strength combined with acuteness and inquisitiveness” and the “practical, inventive turn of mind, quick to find expedients.”

TABLE IX
RETURNS TO INDIVIDUALISM ON THE FRONTIER: 1850–1880^a

	Dep. Var.: Father's Occupation Score			
	(1)	(2)	(3)	(4)
Infrequent Children's Names, Mean	0.834 (0.033)		0.820 (0.032)	1.452 (0.053)
Frontier × Infrequent Children's Names, Mean	0.304 (0.065)		0.303 (0.064)	0.560 (0.156)
Father Has Infrequent Name		0.209 (0.016)	0.173 (0.015)	0.466 (0.027)
Frontier × Father Has Infrequent Name		0.014 (0.041)	−0.003 (0.040)	−0.086 (0.106)
Observations	5,673,688	5,673,688	5,673,688	1,993,201
Mean dep. var.	18.1	18.1	18.1	26.1
R ²	0.07	0.07	0.07	0.10
County × Year Fixed Effects	✓	✓	✓	✓
Excluding farmers				✓

^aThis table reports estimates of equation (9). The sample includes all white native-born men with a nonmissing occupational score and at least one child age 0–10 in the 1850–1880 Censuses. The dependent variables, occupational score, range from 0 to 100 and are provided by Ruggles et al. (2019) for 1850 and 1880. We construct the scores directly for 1860 and 1870 using a cross-walk of occupational descriptions to codes for available years. Column 4 omits all fathers with an occupational description that includes the string “farm.” The infrequent children’s names are computed over all of the children aged 0–10. The infrequent father’s name is defined with respect to all other native-born white men born in the same decade as the father. The frontier indicator equals 1 if the county is within 100 km of the frontier. Standard errors are clustered by county.

common across individuals within the same local economy. Standard errors are clustered by county.

We pool data across Census rounds 1850–1880 and measure y_{ict} using the occupational score (occscore), a widely used proxy for economic status in the historical literature. This index ranges from 0 to 100 and captures the income returns associated with occupations in the 1950 Census. We use the occscore from Ruggles et al. (2019) for 1850 and 1880, and construct the scores directly for 1860 and 1870 using a cross-walk from occupational strings to codes for available years.

Table IX suggests differential returns to individualistic behavior on the frontier. Focusing on the full specification in column 3, fathers in non-frontier counties who give their children individualistic names exhibit higher occupational scores than those that give their children more common names, and this differential is more than one-third larger on the frontier. The estimate of η around 0.3 is economically meaningful, capturing around one-third the mean difference between the occscore for a farmer and a blacksmith. These results are even stronger when restricting the analysis to fathers who are not in farming occupations (column 4). The estimate of $\eta = 0.56$ is around one-half the mean difference between the occscore for a blacksmith and a carpenter. Meanwhile, although fathers with own infrequent names perform better in non-frontier counties, there is no significant differential on the frontier.

Beyond greater returns to individualism, the frontier was viewed as a place with favorable prospects for upward mobility and where effort was key to income generation. These views would hone opposition to redistribution. They would also hasten the process of cultural change toward individualism. For example, the greater the returns to individualism on the frontier, the more favorable the mobility prospects. Such an environment could

lead to lower tax redistribution and, in turn, reinforce the selective migration of individualists. Appendix G.4 provides further background on this complementary mechanism.

6. CONCLUSION

This paper shows how frontier settlement shaped culture across the United States. For over a century, the westward-moving frontier attracted sizable swathes of America's young, mobile, and ever-growing population. These settlers created new communities in a context with unique challenges and opportunities. Frederick Jackson Turner famously argued that the frontier fostered a culture of rugged individualism. We provide the first systematic empirical evidence on this prominent theme in American history. The frontier attracted individualistic migrants, and then made them more individualistic over time. This culture persisted over the long run: counties with longer historical frontier experience exhibit more individualistic cultural practices and stronger opposition to government intervention.

Our findings have suggestive implications for the sharp contrast between the United States and Europe in terms of redistribution preferences and policies, a recurring topic in the political economy literature. According to [Turner \(1893\)](#), “the advance of the frontier ... meant a steady movement away from the influence of Europe,” as “moving westward, the frontier became more and more American.” As settlers of European origin shed their former culture and embraced rugged individualism across the United States, America as a whole became more and more different from Europe. The frontier roots of opposition to redistribution in the United States may explain why these preferences remain stable despite rising inequality.

In closing, we note that frontier settlement may have had different effects in other countries. For instance, Argentina and Russia also underwent massive territorial expansion in their early history, but were ruled by elites who built more extractive institutions. In their work on the Americas, [García-Jimeno and Robinson \(2011\)](#) argue that frontier settlement hastened the advance of democracy, but only in countries with initially equitable institutions. The national institutions of the United States, which favored relatively high levels of geographic mobility, access to land, and security of property rights, undoubtedly shaped the effects of frontier settlement that we identify. The methods developed in this paper may prove useful in future work to understand the legacy of frontier settlement in the United States and elsewhere.

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