Technology, Media, and Political Change

by

Tianyi Wang

B.A. in Economics and Mathematics, Colgate University, 2015

M.A. in Economics, University of Pittsburgh, 2018

Submitted to the Graduate Faculty of

the Dietrich School of Arts and Sciences in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy

University of Pittsburgh

2020

UNIVERSITY OF PITTSBURGH

DIETRICH SCHOOL OF ARTS AND SCIENCES

This dissertation was presented

by

Tianyi Wang

It was defended on

August 4, 2020

and approved by

Randall Walsh, Professor of Economics, University of Pittsburgh

Osea Giuntella, Assistant Professor of Economics, University of Pittsburgh

Allison Shertzer, Associate Professor of Economics, University of Pittsburgh

Douglas Hanley, Assistant Professor of Economics, University of Pittsburgh

Daniel I. Rees, Professor of Economics, University of Colorado Denver

Dissertation Advisors: Randall Walsh, Professor of Economics, University of Pittsburgh,

Osea Giuntella, Assistant Professor of Economics, University of Pittsburgh

Technology, Media, and Political Change

Tianyi Wang, PhD

University of Pittsburgh, 2020

My dissertation studies the political impacts of media and information technologies in American history. The first chapter employs novel data to examine the electric telegraph's impacts on political participation and news coverage in the mid-19th century America. I use proximity to daily newspapers with telegraphic connection to Washington to generate plausibly exogenous variation in access to telegraphed news from Washington. I find that access to Washington news with less delay increased presidential election turnout. Text analysis on historical newspapers shows that the improved access to news from Washington led newspapers to cover more national political news, including coverage of Congress, the presidency, and sectional divisions involving slavery. The results suggest that the telegraph made newspapers less parochial, facilitated a national conversation and increased political participation.

The second chapter investigates the political impacts of the first populist radio personality in American history. Father Charles Coughlin blended populist demagoguery, anti-Semitism, and fascist sympathies to create a hugely popular radio program that attracted tens of millions of listeners throughout the 1930s. I digitized unique data on Father Coughlin's radio network. Exploiting topography to generate plausibly exogenous variation in radio signal strength as well as another difference-in-differences strategy, I find strong evidence that Coughlin's anti-Roosevelt broadcast reduced the support for Franklin D. Roosevelt in presidential elections. Moreover, Coughlin's broadcast appeared to influence public sentiment concerning WWII and anti-Semitism.

The third chapter studies whether media and information technologies can empower minorities in the resistance to oppression. Specifically, I assemble a novel dataset to study the effects of black radio on black political activism and participation during the civil rights movement. Exploiting plausibly exogenous variation in signal reception resulting from topographic factors, I find strong evidence that black radio increased black voter registration and

the presence of NAACP chapters in the South during the early 1960s. I explore potential mechanisms and also provide evidence that black radio led to greater political power and economic benefits for Southern blacks, as measured by state aid transfers and legislative support for civil rights bills in Congress.

Table of Contents

List of Tables

List of Figures

Preface

Reflecting on my journey at Pitt over the past few years, I realized that I am indebted to so many people for their guidance, help, and support.

I am deeply indebted to my late advisor, Werner Troesken. Werner introduced me the world of economic history. I still remember fondly and vividly all the fun moments we spent together discussing economic history. His passion for economics and deep care for me never fail to encourage and inspire me till today. This dissertation would not have been possible without Werner.

I am also extremely grateful to my dissertation committee co-chairs, Osea Giuntella and Randall Walsh, for their constant guidance, support, and encouragement throughout my journey at Pitt. Osea and Randy's mentorship and tireless support inspired me to be the best I could be. I am deeply indebted to them and could not have asked for better mentors. In addition, I would also like to express my sincere gratitude and appreciation to Allison Shertzer, Daniel I. Rees, Douglas Hanley, Richard Van Weelden, Andreas Ferrara, Daniel B. Jones, Graham Beattie, D. Mark Anderson, and Tom Rawski for their generous advice, help, and support for me throughout my time at Pitt. I also would like to thank the rest of the faculty members and administrators in the Economics Department for their kind help and support.

Special thanks go out to Prottoy Akbar, Marta Boczoń, Hieu M. Nguyen, Mallory Avery, Jessica LaVoice, Hengrui Liu, along with my officemates, the rest of the graduate students in the Economics Department, and the friends I met through PRISM for their friendship and encouragement. They cheered me up whenever I felt low and made this journey so much more enjoyable. I will cherish the memories of the time we spent together.

Finally, I would like to thank my beloved parents, Yanjie and Qingwei, for their unconditional love and support for me. They have been my biggest supporters since day one. I will never be able to repay their care and love.

This dissertation is dedicated to Werner and my parents.

1.0 The Electric Telegraph, News Coverage and Political Participation

How does timely access to national news shape political outcomes? Using newly digitized data on the growth of the telegraph network, the chapter studies the impact of the electric telegraph on political participation in the mid-19th century America. I use proximity to daily newspapers with telegraphic connection to Washington to generate plausibly exogenous variation in access to telegraphed news from Washington. I find that access to Washington news with less delay increased presidential election turnout. Effects were concentrated in regions least connected to Washington prior to the telegraph. For mechanisms, I provide evidence that newspapers facilitated the dissemination of national news to local areas. Text analysis on historic newspapers shows that the improved access to news from Washington led newspapers to cover more national political news, including coverage of Congress, the presidency, and sectional divisions involving slavery. The results suggest that the telegraph made newspapers less parochial, facilitated a national conversation and increased political participation.

1.1 Introduction

Newspapers are essential to democracy, and timely access to national news is of utmost importance in informing and engaging citizens. The most consequential improvement in timeliness of national news was due to the electric telegraph, which reduced typical lag of Washington news for American families in the Midwest by seven days during the 1840s. Yet the telegraph has gone largely unstudied in economics, particularly with regard to potential impacts on the political realm. This paper assembles a novel dataset to study the political impact of the telegraph. Specifically, I study the impact of timely access to national news brought by the telegraph on political participation, focusing on voter turnout in the mid-19th century America.

The invention of the telegraph was a watershed in the history of newspapers. While

newspapers contribute to civic engagement and political participation (Gentzkow et al., 2011; Drago et al., 2014; Schulhofer-Wohl and Garrido, 2013), up until the early 1840s the speed of transportation dictated the speed of news; days and even weeks would pass before newspapers reported on distant events (Schwarzlose, 1989). For instance, the death of President William Harrison in 1841 was reported five days later in Cleveland and nine days later in St. Louis. Introduced in 1844, the telegraph allowed news to travel instantly over vast distances for the first time, revolutionizing the news industry and speeding up the dissemination of news throughout the nation. As a result, the public received unprecedented access to timely national news. At a time when close to 90 percent of the American population still lived in rural areas, the improved access to national news could have important political implications by informing and engaging citizens.

To study the impact of the telegraph on political participation, one ideally would need data measuring both spatial and temporary variation in access to the telegraph. A challenge, however, is the shortage of data on the telegraph network in general. As a result, previous studies involving the telegraph mostly relied on cross-sectional data (Garcia-Jimeno et al., 2018) or one-off event such as the establishment of the transatlantic telegraph cable (Steinwender, 2018; Hoag, 2006) to provide variation in access to the telegraph. In this paper, I collect new data on the growth of the telegraph network in the U.S. from its inception in 1844 to 1852, when telegraph lines had reached all major and most minor cities. The data set provides precise information on when and where a telegraph line opened for operation. From this data set I obtain variation in access to the telegraph across the country in each election year between 1840 and 1852. To my knowledge, this data set is the first in the literature to provide systematic and detailed information on the expansion of the U.S. telegraph network.

My empirical work relates access to telegraphed national news to voter turnout. In particular, I focus on telegraphed news from Washington, because Washington was the primary source of national political news in the mid-19$^{\text{th}}$ century (Kernell and Jacobson, 1987). To measure access to telegraphed news from Washington, I first obtain data on the spatial distribution of newspapers across U.S. counties from the 1840 *Census of Manufactures*. The high cost of using the telegraph, however, means that only daily newspapers during the period could afford to gather news with the telegraph (Thompson, 1947; Kielbowicz, 1989).

Once connected to the telegraph, daily newspapers received instant Washington news, which then diffused from the daily newspapers to the rest of the nation. I therefore use a county's distance to the nearest daily newspaper with telegraphic connection to Washington to measure the county's access to telegraphed Washington news in each election year. I call this distance the "effective distance to Washington," which I use as my explanatory variable. My empirical specification follows a generalized difference-in-difference approach, in which I regress county-level voter turnout from the period 1840-1852 on effective distance to Washington, while controlling for time-invariant differences among counties and statewide shocks to all counties. Prior evidence suggests that here any bias from omitted variables is likely to work against finding a positive effect of access to the telegraph, because local area population and income growth tend to be associated with decreases in voter turnout (Gentzkow et al., 2011).

I find that access to telegraphed news from Washington increased voter turnout in presidential elections. Specifically, my estimate suggests that a reduction in effective distance to Washington by 100 miles increased presidential election turnout by approximately 1.2 percentage points (about 1.7 percent relative to the mean of the period). The estimated effect increases monotonically as effective distance to Washington decreases. In terms of heterogeneity, I find that the effects were concentrated in the Midwest and the South Central regions, which were areas least well connected to Washington prior to the telegraph.

To provide further evidence that the effect is not driven by unobserved confounding factors which might have systematically increased people's political participation, I run the same regression with congressional election turnout as the outcome. Congressional elections in the 19$^{\text{th}}$ century were only to elect representatives to the House at the congressional district level, where candidates came from the local area. Telegraphed news from Washington should have little impact on access to information concerning the local congressional district and House candidates. Moreover, House elections in the mid-19$^{\text{th}}$ century were frequently held on different days as presidential elections (Dubin, 1998). I therefore expect the impact of access to telegraphed news from Washington to be limited for House election turnout. Consistent with the expectation, I find that the estimated effect of access to telegraphed news from Washington on House election turnout is small in magnitude and statistically insignificant.

The contrast in the estimated effects for presidential and House election turnout suggests that access to telegraphed news from Washington was unlikely correlated with unobserved variables that systematically increased people's interest or ability to participate in politics.

Moreover, I provide evidence that counties with improved access to telegraphed news from Washington were not already on an upward trend in voter turnout before the introduction of the telegraph. The results also hold under a series of robustness checks, including controlling for railroad access and restricting my sample to counties whose access to telegraphed news was more exogenous, such as counties with only rural population and counties that never received the telegraph. These various checks increase my confidence that the results can be interpreted as causal.

Turning to examine the mechanisms, I find that the effect on presidential turnout was larger in counties with a newspaper in 1840, whereas whether a county had a non-news periodical did not matter for turnout. This finding suggests that the newspapers played a key role in facilitating the diffusion of more timely national news to local areas, potentially contributing to participation in national elections.

By providing timely access to national news, the telegraph could also have altered the content of newspapers. I find evidence supporting this hypothesis. Text analysis on a sample of 99 newspapers published during the 1840s suggests that access to telegraphed news from Washington led newspapers to cover more national political news, including coverage of Congress, the presidency, and sectional divisions involving slavery. A reduction in effective distance to Washington by 100 miles is estimated to increase the coverage of national news topics by approximately 5-10%. The results suggest that the telegraph made newspapers less parochial and facilitated a national conversation on major issues, which possibly contributed to turnout in presidential elections.

The paper is closely related to the literature on the political impacts of newspapers (Gentzkow et al., 2011; Perlman and Sprick Schuster, 2016; Drago et al., 2014; Schulhofer-Wohl and Garrido, 2013; Snyder and Strömberg, 2010; Bruns and Himmler, 2011; Gerber et al., 2009; George and Waldfogel, 2006; Boix et al., 2003). While previous studies have focused on the impacts of newspapers on some political outcomes, this paper examines the impact of a revolutionary technology on newspapers themselves, which has received little

attention in the literature. By disseminating news throughout the nation with unprecedented speed, the telegraph greatly improved the ability of newspapers to inform and engage the people, contributing to the health of democracy.

The paper also contributes to the literature on the impacts of information technologies on electoral politics and participation. Previous studies have examined the impacts of information technologies such as the internet (Campante et al., 2018; Falck et al., 2014), television (Gentzkow, 2006), and radio (Strömberg, 2004) on electoral participation. The telegraph was a watershed in the history of information technologies, signaling the beginning of electronic communication. In addition, unlike modern forms of information technology that frequently mix information and entertainment, the telegraph transmitted only information and provides an opportunity to study the impacts of information technology in its "purest" form. Despite its revolutionary nature and far-reaching influence, the telegraph remains one of the least studied information technologies in the literature. The paper provides new insight on the impact of the telegraph on political outcomes.

Finally, the paper contributes to the literature on the impact of the telegraph, widely considered as one of the most important inventions in history. Previous work on the telegraph have examined its impacts on financial and commodity markets (Hoag, 2006; Field, 1998; Garbade and Silber, 1977; Langdale, 1979), international trade (Steinwender, 2018; Steinwender and Juhász, 2019; Lew and Cater, 2006), collective action in protests (Garcia-Jimeno et al., 2018) and firm management (Field, 1992; Yates, 1986; DuBoff, 1980, 1983). The findings of this paper underscore the importance of timely access to information for voters.

1.2 Historical Background

The electric telegraph was a hallmark of the Industrial Revolution. Before the introduction of the telegraph in 1844, how fast information flew largely depended on transportation technologies, be it foot, horse, or rail. Invented by Samuel F.B. Morse, the telegraph transmitted electrical signals encoded as lines and dots over a wire laid between stations, where

different combinations of the lines and dots represented different English alphabets and punctuations. The telegraph enabled instant transmission of information over vast distances, at last freeing communication from transportation (Carey, 1992).[1]

At the beginning of the 1840s, almost 90 percent of Americans were still living in rural areas (US Census, 1840), where access to external information was limited. States had extended suffrage to almost all adult white males by 1840 and citizens demonstrated a strong interest in politics (Silbey, 2014; Altschuler and Blumin, 1997). The primary source of political information during this era were newspapers, and newspaper content was predominantly political in nature. For the most part, newspapers discussed political issues and printed summaries or transcripts of legislative proceedings as well as presidential and gubernatorial messages (Altschuler and Blumin, 1997). Washington was the primary source of national political news, which mainly consisted of coverage of Congress and the presidency (Kernell and Jacobson, 1987). The federal government had long recognized the importance of newspapers to an informed electorate. To encourage the circulation of news, the federal government had passed the Postal Service Act of 1792, which allowed newspaper editors to exchange newspapers with one another by the postal system for free. Yet, news was slow-moving. Up until the early 1840s, a typical newspaper in the Midwest or the South reported Washington news with a lag of one to two weeks. Some newspapers occasionally even ran out of news to report and had to use non-news items, such as poems and anecdotal stories, to fill the space (Blondheim, 1994). The slowness and meagerness of news were much to the dissatisfaction of newspaper editors and readers (Standage, 2009).

On May 24$^{\text{th}}$, 1844, the first telegraph line opened between Washington and Baltimore, a length of 40 miles. Realizing the commercial potential of the telegraph, several private companies were soon formed to build telegraph lines across the country. By 1848, there were 2,311 miles of telegraph in operation, and the mileage further increased to 12,000 miles by 1850 (Highton, 1852). The relatively low cost of building telegraph lines facilitated the

[1] A precursor of the electric telegraph was the semaphore telegraph, which conveyed information through visual signals, using towers with pivoting shutters that could form into different positions to encode messages. Because the semaphore system operated through line-of-sight, the system was constrained by geography, daylight, and weather conditions for clear visibility. The semaphore telegraph, briefly used in the U.S. to transmit shipping news at several locations since the early 1800s, was never widely adopted in the U.S.

rapid spread of the telegraph across the nation (Thompson, 1947).[2] To maximize profits, telegraph companies primarily built lines to connect places of commercial importance, with major cities targeted in particular (Thompson, 1947; Reid, 1886). By 1850, the telegraph had grown into a national network, connecting all major cities and most minor cities in the nation.[3]

The telegraph revolutionized news gathering by greatly accelerating the flow of news. The high expenses of using the telegraph to gather news, however, made the telegraph out of reach for almost all but daily newspapers, which were predominantly located in big cities (Thompson, 1947; Kielbowicz, 1989).[4] With larger readerships to spread the costs, big-city dailies were able to adopt the telegraph almost immediately after the city received the telegraph (Thompson, 1947). For instance, the telegraph connected Pittsburgh to Washington on December 26$^{\text{th}}$, 1846, and three days later daily newspapers in Pittsburgh started to report telegraphed news from Washington. Operating with smaller budgets, other newspapers, most of which were weeklies and located in smaller cities or towns, hardly used the telegraph (Kielbowicz, 1989). Instead, small newspapers frequently copied national news from big-city dailies that they received by the postal system for free and therefore obtained, albeit with a lag, news that had originally been telegraphed to the dailies. For example, a small-town weekly 120 miles outside of St. Louis, *The Boon's Lick Times*, frequently copied its news from St. Louis's dailies and saw the delay of its latest Washington news going down by ten days between 1847 and 1848 as the telegraph expanded westward and reached St. Louis. Thus, the telegraph reduced the delay of news across the nation, directly for daily newspapers and indirectly for other smaller newspapers.

[2]The cost of building telegraph lines, including wire, posts, and labor, was about 150 dollars per mile (US Census Office, 1852), which was much lower than the cost of building a railroad and even lower than the cost of building a good road (Calvert, 2008).

[3]Based on my data on the telegraph network, 48 out of the 50 most populous urban places in 1850 had received the telegraph by that year.

[4]The usual charge for telegraphic transmission in its early days was 25 cents for ten words or less per one hundred miles, with additional charges for each additional word beyond the first ten words (Thompson, 1947). Based on a telegraph rate schedule published in 1853, sending a ten-word message from Pittsburgh, PA to Washington, D.C. cost 50 cents (Barr, 1853). In comparison, in 1845 the postal rate for a *one-sheet* letter mailed anywhere within 300 miles (which is greater than the distance between Pittsburgh and Washington) was 5 cents (USPS, 2008). In fact, even big-city daily newspapers had to find ways to cut telegraph expenses — sometimes by gaming the telegraph system. For instance, to cut telegraph expenses, several big-city dailies used code words to convert long messages into shorter ones (Thompson, 1947).

Newspapers in general were confident about the role of the telegraph in engaging the public. For instance, the newspaper *Philadelphia North American* predicted in late 1845 that the telegraph would increase "the appetite for news" by "feeding public curiosity." Likewise, James Gordon Bennett, the founder and editor of the *New York Herald*, asserted that the faster flow of news brought by the telegraph would increase people's interest in public affairs (Blondheim, 1994).

1.3 Data

1.3.1 Growth of the Telegraph Network

In this section I describe the data on the telegraph network. Data on the telegraph are surprisingly scarce in the literature. Previous studies on the telegraph have mostly relied on cross-sectional data (Garcia-Jimeno et al., 2018) or one-off event such as the establishment of the transatlantic telegraph cable (Steinwender, 2018; Hoag, 2006).[5] For this study I collect new data on the continuous development of the U.S. telegraph network for the period 1844-1852.

The data come from several sources. For the pre-1850 period, I obtain data primarily from the books *Wiring a Continent: The History of the Telegraph Industry in the United States, 1832-1866* (Thompson, 1947) and *The Telegraph in America and Morse Memorial* (Reid, 1886). Thompson (1947)'s seminal historical work on the telegraph traces the history of the development of the telegraph network in the U.S. and provides detailed information on when and where a telegraph line opened for operation. For each telegraph line, the book provides the line's opening date as well as the terminal and the intermediary stations on the line.[6] Reid (1886), a detailed history on the early days of the telegraph industry, supplements Thompson (1947) with more detailed information on some lines and adds several smaller

[5] An exception is Steinwender and Juhász (2019), who use the timing of connection to the global telegraph network by countries to study the effect of a reduction in communication time on international trade in 19$^{\text{th}}$ century cotton textile.

[6] In most cases the book provides an exact date or at least the month for when a line opened. In the few cases where only a vague date is offered, such as the season, I look up historic newspapers from cities or towns on the line to identify a more precise date.

stations and feeder lines omitted by Thompson (1947). While it is possible that some small stations might have been omitted by both sources, it should be noted that my subsequent empirical work exploits connection to the telegraph by major cities (i.e. cities with daily newspapers), which are well documented in these sources.[7] Using the information from Thompson (1947) and Reid (1886), I digitize the continuous development of the telegraph network from its infancy in 1844 to the beginning of 1850.

Partly because the telegraph network sprouted more rapidly after 1850, information on the telegraph network since 1850 is not systematically accounted for by either Thompson (1947) or Reid (1886). To overcome this challenge, I find data from several additional sources published in the early 1850s, which allow me to digitize the telegraph network in 1852. The primary source for the 1852 lines is *Report of the Superintendent of the Census* (US Census Office, 1852), which lists all the telegraph lines in operation in the US in 1852. I supplement this source with the book *Historical Sketch of the Electric Telegraph: Including Its Rise and Progress in the United States* (Jones, 1852) and the January 1st issue of *Appleton's Mechanics' Magazine and Engineers' Journal* (Adams, 1853), which contain more details for some lines. These primary sources provide me with a cross section of the telegraph network in 1852, including the location of the lines and the cities and towns connected. I combine the 1852 data with the pre-1850 data from Thompson (1947) and Reid (1886). Based on these data, Figure 1 shows the telegraph lines in operation in the U.S. every other year for the period 1844-1852.

Data on the telegraph network after 1852 are more sporadic. I therefore focus my study on the period up to 1852. Although a seemingly short span of time, the period 1844-1852 saw rapid growth of the telegraph network from a single line to a national network. To my knowledge, the data set created for this study is the first in the literature to provide systematic and detailed information on the expansion of the U.S. telegraph network across space and time.

[7] I also check and confirm that Thompson (1947) and Reid (1886) account for all the chief telegraph lines before 1850 as listed in the book *Historical Sketch of the Electric Telegraph: Including Its Rise and Progress in the United States* (Jones, 1852), which I use to digitize the 1852 lines.

1.3.2 Voter Turnout and Other County Characteristics

To measure political participation, I obtain county-level data on voter turnout in presidential and congressional elections for the period 1840-1852 from ICPSR Study 8611 (Clubb et al., 2006). I focus on data from presidential election years to make the results on presidential and congressional elections more directly comparable. To improve precision, I exclude outlier observations with turnout per eligible voter greater than one. These observations constitute about 1 percent of the data, but the main results are not affected when I relax this sample restriction.

I obtain demographic characteristics of counties between 1840-1860 from Haines (2010), including county population and the shares of urban population, white population, white males above 20 years old, and slave population. To deal with changes in county boundaries over time, I harmonize county boundaries to the 1840 boundary following Hornbeck (2010) and linearly interpolate missing data on demographic characteristics for intercensal years.

I obtain the geographic distribution of newspapers across counties from the 1840 *Census of Manufactures*. The data provides the number of newspapers published in each county as of 1840, including the number of daily, weekly, and semi-/tri-weekly newspapers.[8] Using this data set, I can identify the location (county) of all daily newspapers published in 1840. Figure 16 shows the location of daily newspapers in 1840. Not surprisingly, daily newspapers appear to center around big cities. In addition, the 1840 *Census of Manufactures* also provides the number of periodicals published in each county as of 1840.

Lastly, I obtain data on the railroad network from Atack (2016), which allows me to measure each county's access to the railroad for the period 1840-1852. Table 1 provides summary statistics for all the variables used in the main analysis.

[8]Based on the data, there were 1,404 newspapers in the U.S. in 1840, out of which about 81% were published weekly, 9% semi- or tri-weekly, and 10% daily. The 138 daily newspapers in 1840 were published in 67 different counties.

1.4 Empirical Strategy

In my empirical work, I aim to measure the impact of timely access to national news brought by the telegraph on voter turnout. In particular, I focus on access to the latest Washington news, because Washington was the primary source of national political news during the mid-19th century (Kernell and Jacobson, 1987). My empirical strategy is motivated by considerations for where the latest Washington news could be accessed before and after the introduction of the telegraph. Before the introduction of telegraph, only daily newspapers in Washington itself had the latest Washington news, and the news had to diffuse from Washington to the rest of the nation. As the telegraph connected Washington to other cities, daily newspapers in connected cities received instant news from Washington by the telegraph, and the news only had to diffuse from the locations of the daily newspapers to the rest of the nation.[9] I therefore construct my explanatory variable, which I call "the effective distance to Washington," in the following way to measure access to the latest Washington news: for election years before the introduction of the telegraph (i.e. up to 1844), I measure a county's effective distance to Washington using its actual distance to Washington; for election years after the introduction of the telegraph (i.e. 1848 and 1852), I measure a county's effective distance to Washington using its distance to the nearest daily newspaper that had telegraphic connection to Washington.[10]

As an illustration, Figure 2 maps the locations (shown as triangles) of daily newspapers that had the latest Washington news at the beginning of each year between 1844 and 1852. As seen from the figure, at the beginning of 1844 the telegraph was yet to be introduced, and therefore only daily newspapers in Washington had the latest Washington news.

[9] As detailed in Section 2, the high cost of using the telegraph during the period means that gathering news with the telegraph was a privilege exclusive to daily newspapers, almost all of which were in major cities (Thompson, 1947; Reid, 1886); other newspapers, most of which were small-town weeklies, frequently copied their news (including telegraphed Washington news) from major-city dailies (Kielbowicz, 1989; Schwarzlose, 1989).

[10] I consider the effective distance to Washington at the beginning of each year based on the extent of the telegraph network on Jan 1st of each year, but the results are similar and not sensitive if I instead use the effective distance at the middle (July 1st) of each year. In practice, I measure the straight-line distance between county centroids. A county's effective distance is therefore measured between the centroid of the county and the centroid of the nearest county with a daily newspaper and telegraphic connection to Washington.

Between 1844 and 1852, telegraph lines spread across the nation, providing access to the latest Washington news to more daily newspapers throughout the nation. The expansion of the telegraph network brought the latest Washington news to more locations and therefore lowered the average effective distance to Washington over time. Figure 15 plots the average effective distance to Washington across counties in each presidential election year during the period 1840-1852, showing a reduction from an average of about 473 miles in 1840 to an average of about 90 miles in 1852, a drop of 81%.

To support the validity of using the effective distance to Washington variable to measure access to the latest Washington news, I examine the relationship between the effective distance to Washington and the lag of Washington news in newspapers. Figure 3 plots the effective distance to Washington and the lag of the Washington news over time for *The Boon's Lick Times*, a small-town newspaper in Fayette, Missouri. The vertical axis on the left shows the minimum lag (in number of days) of Washington news over the first two months of each year, and the vertical axis on the right shows the effective distance to Washington. The figure shows that the lag of Washington news tracks the effective distance to Washington closely. Before 1846, the telegraph network was in its infancy and *The Boon's Lick Times's* effective distance to Washington was its actual distance to Washington, or about 840 miles; the lag of Washington news until 1846 was 14 days. The lag of Washington news dropped drastically from 14 days to 6 days over the next four years as the telegraph network expanded westward and reached cities closer to Fayette; the largest drop took place between 1847 and 1848, during which a telegraph line connected St. Louis to Washington and reduced the effective distance to about 120 miles, the distance between Fayette and St. Louis. The close co-movement of effective distance to Washington and lag of Washington news as seen in Figure 3 supports the use of effective distance to Washington to measure access to the latest Washington news. It is also worth mentioning that Fayette never received a telegraph line during the entire period. Thus, the drops in the effective distance to Washington and in the lag of Washington news resulted entirely from telegraphic connection to Washington by faraway major cities, which was arguably exogenous to Fayette's circumstances and demand for the telegraph.[11]

[11]It is evident from the figure that the lag of Washington news dropped from 14 days to 11 days between

My empirical specification follows a generalized difference-in-difference approach:

$$Turnout_{ct} = \alpha + \beta EffectiveDist_{ct} + X_{ct}\delta + \eta_c + \sigma_{st} + \epsilon_{ct} \tag{1.1}$$

where $Turnout_{ct}$ is the voter turnout (in percentage points) during the presidential or the congressional election in county c and year t. I focus my analysis on presidential election years to make the results from presidential and congressional elections more directly comparable. X_{ct} is a vector of socioeconomic controls of county c, including the county's natural log of population and the shares of urban population, white population, white males above 20 years old, and slave population. η_c are county fixed effects, which control for any time-invariant county characteristics such as geographic location. σ_{st} are state-by-year fixed effects, which control for statewide shocks common to all counties in the same state, such as changes in state electoral laws and procedures and other statewide policy or economic shocks.[12] I weight the regression using the population of white males above 20 years old in 1840, which proxies for the size of the voting-eligible population. Standard errors are corrected for clustering at the county level (Bertrand et al., 2004).

The variable of interest is the effective distance to Washington $EffectiveDist_{ct}$, which is measured in hundred miles. The *negative* of β captures the effect of a 100-mile *reduction* in the effective distance to Washington on voter turnout. A negative coefficient of β therefore would suggest that access to telegraphed news from Washington increased voter turnout. Prior evidence suggests that here any bias from omitted variables is likely to work against finding a positive effect of access to the telegraph, because local area population and income growth tend to be associated with decreases in voter turnout (Gentzkow et al., 2011). I also argue that the pattern of results for presidential and congressional elections makes it highly unlikely for the results to be driven by some omitted variables. Moreover, I test and provide support to the usual parallel trends assumption in the results section.

1846 and 1847, during which telegraph lines reached cities closer to Fayette but were still more than 600 miles away.

[12]Up until 1844, each state decided when to hold its elections, and presidential elections were held on different dates across states ranging from late October to early December. In 1845, Congress mandated presidential elections in all states to be held thenceforth on the Tuesday after the first Monday in November, but each state still chose when to hold its congressional elections, whose timing varied significantly over time within states (Dubin, 1998)

In an alternative specification, instead of using a continuous measure, I measure effective distance to Washington with a set of mutually exclusive dummies to allow the estimates to vary by distance flexibly. Specifically, I use the following specification:

$$Turnout_{ct} = \alpha + \sum_{k} \beta_k EffectiveDist_{ctk} + X_{ct}\delta + \eta_c + \sigma_{st} + \epsilon_{ct} \tag{1.2}$$

where everything else is the same as in equation (3.1), except here I measure effective distance to Washington with five dummy variables indicating whether the effective distance falls into one of the following five categories: within 100 miles, 100-200 miles, 200-300 miles, 300-400 miles, and 400-500 miles. By construction, the excluded category of effective distance to Washington is "more than 500 miles." Therefore, the coefficient on each distance category, β_k, is to be interpreted relative to the excluded category. For instance, one can interpret β_1 as the effect of cutting the effective distance to Washington from more than 500 miles to below 100 miles on voter turnout. The choice of five distance categories represents an effort to allow the data, rather than parametric assumptions, to determine the relationship between access to telegraphed news and voter turnout, while also obtaining estimates that are precise enough that they have empirical content.

1.5 Results

1.5.1 Baseline Results on Voter Turnout

This section presents the impacts of access to telegraphed news from Washington on voter turnout. I first provide visualization of the estimated effects based on equation (2.2), which allows the estimates to vary flexibly by distance. Panel A of Figure 4 presents these estimates for presidential election turnout. Based on the figure, the estimated effects on presidential election turnout increase monotonically as access to telegraphed news from Washington increases (or, equivalently, as effective distance to Washington decreases).[13] Column

[13]Results are similar and not sensitive to using alternative sets of distance dummies to measure the effective distance to Washington.

1 and 2 of Table 2 present the estimates based on equation (3.1) for presidential election turnout. Column 1 of Table 2 includes no county demographic control and shows that a reduction in the effective distance to Washington by 100 miles is associated with an increase presidential election turnout by about 1.2 percentage points. Column 2 controls for county demographic characteristics and the estimate changes little. Based on the estimate in column 2, a reduction in effective distance to Washington by a standard deviation (about 260 miles) would increase presidential election turnout by about 3.2 percentage points or about 4.5% relative to the mean during the period 1840-1852.

A potential concern is that some unobserved variables correlated with access to telegraphed news from Washington might have systematically increased people's participation in politics. To address the concern, I turn to House election turnout as an outcome. During the 19$^{\text{th}}$ century, congressional elections were to elect only members of the House of Representatives at the congressional district level, where candidates came from the local region.[14] Telegraphed news from Washington should affect access to information concerning the local congressional district and candidates little. Moreover, House elections in presidential election years during this period were frequently held on different dates from the presidential election day (Dubin, 1998), so the spillover effect from turning out for presidential elections on voting for House elections was much limited as compared to today.[15] I therefore expect access to telegraphed news from Washington to have limited impact on House election turnout. If, on the other hand, access to telegraphed news was correlated with unobserved variables that systematically increased people's interest or ability to participate in politics, one would expect to find a positive turnout effect for House elections as well.

Panel B of Figure 4 plots the estimates for House election turnout. Unlike Panel A which shows a positive and statistically significant relationship between access to telegraphed news from Washington and turnout in presidential elections, Panel B shows no significant relationship between access to telegraphed news from Washington and House election turnout. Columns 3 and 4 of Table 2 are consistent with the figure for House election turnout, showing

[14]U.S. Senators were not popularly elected until the Seventeenth Amendment to the United States Constitution in 1913. Before 1913, senators were chosen by state legislatures.

[15]Based on Dubin (1998), in 1852 only 6 (CA, IL, MI, NJ, NY, and WI) out of 31 states held their House elections on the same day as the presidential election; similarly, 4 (MI, NJ, NY, WI) out of 30 states held same-day elections in 1848.

the estimated turnout effects for House elections, with or without demographic controls, are close to zero and statistically insignificant. The contrast between the estimates for presidential and House election turnout suggests that access to telegraphed news from Washington was unlikely correlated with unobserved variables that systematically increased people's interest or ability to participate in politics. Thus, the results from both Figure 4 and Table 2 support the view that access to telegraphed news from Washington had a positive impact on participation in presidential elections.

Another potential threat to identification would be the possibility that counties receiving greater access to telegraphed news from Washington might have already been on an upward trend in turnout before the introduction of the telegraph, which would violate the usual parallel trends assumption. To address this concern, I test for the presence of pre-trends by running long-difference versions of equation (3.1) for different sub-periods during 1840-1852. In column 1 of Table 3, I first show that the baseline finding still holds when I run a long-difference version of equation (3.1) for the period 1844-1852, which was the period that saw rapid growth of the telegraph from a single line between Washington and Baltimore to a national network. Specifically, I regress the change in presidential election turnout between 1844 and 1852 on the change in effective distance to Washington during the same period, while controlling for state dummies and changes in demographic characteristics during the same period. Column 1 of Table 3 shows that, similar to what I find from the panel regressions for the whole period, access to telegraphed news from Washington had a positive effect on presidential election turnout. The estimate suggests that a 100-mile reduction in the effective distance to Washington during the period 1844-1852 increased presidential election turnout by about 1.5 percentage points.

In column 2 of Table 3, I run a placebo test regressing the change in presidential election turnout between 1840 and 1844, the period *before* the widespread of the telegraph, on the change in effective distance between 1844 and 1852.[16] A statistically significant estimate would suggest the presence of differential pre-trends. Based on column 2, the estimate from the placebo test is close to zero and statistically insignificant, suggesting that

[16]Following its completion in May, 1844, the line between Washington and Baltimore, about 40 miles in length, remained the only telegraph line in the U.S. through early 1846.

counties receiving greater access to telegraphed news from Washington were not already on a differential pre-trend in turnout and therefore supporting the parallel trends assumption.

To further validate that the result is not driven by differential pre-trends, in column 3 of Table 3 I include the change in presidential election turnout between 1840 and 1844 as a control variable in the regression from column 1. The estimate remains statistically significant and, if anything, increases slightly in magnitude. Table 3 therefore provides evidence that my results are not driven by pre-trends and supports my baseline findings.

1.5.2 Robustness Checks

I run several robustness checks on the baseline results on presidential election turnout in Table 4. A potential concern is that the results might be confounded by access to the railroad. In column 1 of Table 4, I control for distance to the nearest railroad. The result is similar to my baseline estimate.[17] In column 2, I show the result from an unweighted regression. The point estimate appears slightly smaller but remains statistically significant.

In columns 3-5, I restrict my sample to counties whose access to telegraphed news was increasingly more exogenous. In column 3 I drop counties that had a daily newspaper in 1840; the presence of daily newspapers generated demand for the telegraph and could have influenced where the telegraph went. I find the result robust to dropping these counties. In column 4, I restrict the sample to counties with only rural population. Rural counties were less commercially important from the perspective of telegraph companies and their access to telegraphed news was more likely exogenous. The result is again robust to this sample restriction. In column 5, I focus on counties that were more than 50 miles away from any telegraph line by 1852. Counties far away from any telegraph line in 1852, by which time telegraph lines had spread across the nation, were small and most likely not targeted by telegraph companies.[18] Instead, these remote counties gained better access to telegraphed news from Washington through distant cities' connection to the telegraph, which was more exogenous to their own circumstances and demands. As seen in column 5, the estimate is

[17] The estimate is also similar when I instead control for an indicator for having a railroad within 10 miles.

[18] Counties within 50 miles of a telegraph line by 1852 had an average population of 15,802 in 1840. In comparison, counties more than 50 miles away from any telegraph line by 1852 had an average population of 7,199 in 1840.

robust to using this subsample and becomes somewhat larger in magnitude than the baseline estimate.[19]

To show that the results are not driven by the method to harmonize county boundaries over time (Hornbeck, 2010), I report in column 6 the estimate only for counties with consistent boundaries between 1840 and 1850. As seen in column 6, the result is robust and slightly larger in magnitude than the baseline estimate. Taken together, the series of robustness checks increase the confidence that the baseline results on presidential election turnout can be interpreted as causal.

1.5.3 Heterogeneity of Effects Across Regions

In this subsection I explore heterogeneity of the effect on presidential election turnout across broad geographic regions. In the early 1840s before the introduction of the telegraph, access to information from Washington differed significantly across regions because of differences in geographical proximity to Washington and in the extent of transportation networks. Notably, the Northeast was particularly well connected to Washington because of its geographical proximity to Washington and more developed transportation networks such as the railroad. For instance, while St. Louis typically received news from Washington with a lag of 7-10 days in the early 1840s, Boston experienced a lag of only 3 days. Similarly, places along the Atlantic coast were also fairly well connected to Washington because of coastal steamships. *Ex ante* one would expect the telegraph to have the largest impact on access to Washington news for regions that were least well connected to Washington prior to the telegraph, such as the Midwest and other frontier regions further inland.

Table 5 reports the estimates for presidential election turnout by Census region. Consistent with my expectation, I find the estimated effects concentrated in the Midwest and the South Central regions, which were areas least well connected to Washington prior to the telegraph. Specifically, a 100-mile reduction in effective distance to Washington increased turnout by 1.6 percentage points in the Midwest and 1.8 percentage points in the South Central. Estimates for the Northeast and the South Atlantic are smaller in magnitude

[19]The results are also robust to using other distance cutoffs, such as restricting the sample to counties more than 10 miles, 20 miles, 30 miles or 40 miles away from any telegraph line by 1852.

and statistically indistinguishable from zero. Thus, the results suggest that the telegraph increased turnout in presidential elections primarily in the more inland and frontier regions.

1.6 Mechanisms

In this section I explore the mechanisms through which access to telegraphed news from Washington affected presidential voter turnout. I first provide evidence that a potential mechanism is the provision of information through newspapers. I then conduct text analysis on a sample of historic newspapers from the 1840s to show how access to telegraphed news from Washington altered news content.

1.6.1 Provision of Information by Local Newspapers

A natural mechanism linking the telegraph and voter turnout is information. By providing newspapers with more timely information on national politics, the telegraph increased the ability of newspapers to inform and engage the electorate; more informed voters are more likely to vote (Feddersen, 2004; Matsusaka, 1995; Lassen, 2005).

To further explore the provision of information through newspapers as a mechanism, I compare the estimated effects on turnout between counties with and without a newspaper. Because data on the availability of newspapers at the county level during this period are available only from the 1840 *Census of Manufactures*, I compare the turnout effects between counties with and without a newspaper as of 1840.[20] To do this, I augment the baseline regression from equation (3.1) with an interaction term, interacting the effective distance to Washington with an indicator variable that equals 1 if the county had a newspaper in 1840 and 0 otherwise. The coefficient on the interaction term therefore represents the additional turnout effect in counties with a newspaper in 1840 over counties without one.

Column 1 of Table 6 reports the results from the augmented regression. The estimated coefficient on the interaction term is -0.32 and statistically significant at the 5 percent level,

[20] Annual publications of newspaper directories did not start until 1869 (Gentzkow et al., 2011).

suggesting that a 100-mile reduction in effective distance to Washington increased presidential election turnout by an *additional* 0.32 percentage points in counties with a newspaper than in counties without one. The coefficient on effective distance to Washington itself is about -1 and statistically significant, suggesting that a 100-mile reduction in effective distance to Washington increased presidential election turnout by about 1 percentage points in counties without a newspaper as of 1840. The relatively large and statistically significant estimate in counties without a newspaper as of 1840 could be because a newspaper entered subsequently in many of these counties between 1840 and 1852, or because information from daily newspapers diffused through alternative channels to the local areas, such as word-of-mouth and direct subscriptions to daily newspapers by the local population. Nonetheless, this regression provides evidence that the estimated effects were larger in counties with a newspaper, supporting the provision of information by local newspapers as a mechanism.

To test whether the number of newspapers in a county mattered, I run a similar regression in column 2 of Table 6 with an interaction term between the effective distance to Washington and the number of newspapers in the county as of 1840. As seen from column 2, the estimated coefficient on the interaction term is small and statistically insignificant, suggesting that the number of newspapers in a county did not matter. The comparison between column 1 and 2 of Table 6 suggests that having a newspaper, and not necessarily the number of newspapers, mattered for the effect of access to telegraphed national news on voter turnout.

Newspapers, however, were not randomly assigned across counties. Having a printing publication such as a newspaper could be correlated with the literacy level and other demographic characteristics of the county. To provide some evidence that I did not just capture the effect of some unobserved county characteristics associated with having a printing publication, I use the publication of periodicals to perform a falsification test. Periodicals during the mid-19$^{\text{th}}$ century were typically published at a lower frequency than newspapers and focused on non-news topics such as trade, literature, and science, with some periodicals catering to the interests of specific audience such as women and children. Because periodicals provided predominantly non-news items, I would not expect the presence of a periodical in a county to have an interactive effect with access to telegraphed news from Washington.

Column 3 of Table 6 reports the regression with an interaction term between effective distance to Washington and an indicator that equals 1 if the county had a periodical in 1840 and 0 otherwise. Consistent with the expectation, the estimated coefficient on the interaction term is much closer to zero, statistically insignificant and of the opposite sign as compared to that in column 1 of the same table. The comparison between column 1 and 3 of the table suggests that the presence of newspapers in a county played a unique role in facilitating the diffusion of more timely national news to the local area. Taken together, results from Table 6 support the provision of information by local newspapers as a channel through which the telegraph increased presidential election turnout.

1.6.2 Impact of the Telegraph on News Content

By accelerating the dissemination of news throughout the nation and providing timely access to national news, the telegraph could have increased the coverage of national news in newspapers, which could then contribute to informing and turning out voters. To explore this channel, I collect text data from historic newspapers published during the 1840s and perform text analysis on news content.

1.6.2.1 Newspaper Text Data The newspaper text data come from the *Chronicling America* database. *Chronicling America* is produced by the National Digital Newspaper Program (NDNP), a partnership between the Library of Congress and the National Endowment for the Humanities (NEH). The NDNP describes itself as "a long-term effort to provide permanent access to a national digital resource of newspaper bibliographic information and historic newspapers, selected and digitized by NEH-funded institutions (awardees) from all U.S. states and territories." Since 2005, the NEH has been awarding grants annually to state institutions such as state libraries, historical societies, and universities to participate in the program. According to *Chronicling America*, newspapers to be digitized are primarily chosen based on technical considerations, such as the quality of the underlying microfilms; preference was also given to newspapers of high historical value for representing the"state's regional history, geographic coverage, and events of note," that have not been digitized else-

where, and that are at risk because of the absence of an active ownership. Newspaper pages are digitized with the Optical Character Recognition (OCR) technology and digitized pages are available as text documents on *Chronicling America*'s website.

I scraped *Chronicling America*'s website to obtain all digitized newspapers published between January 1, 1840 and December 31, 1849.[21] My analysis focuses on small-town newspapers, both because there are few big-city newspapers in the *Chronicling America* database for the period and because access to the telegraph by small-town newspapers was more likely to be exogenous.[22] After removing the few newspapers from big cities and atypical newspapers that did not focus on providing news, such as abolitionist newspapers that printed mostly anti-slavery materials, I arrive at a sample of 99 small-town newspapers from 17 states. All the newspapers in my sample are four pages in size and published weekly. Appendix Table 25 lists the newspapers in my sample, and Figure 17 maps the locations of the newspapers. A caveat of the data, however, is that a digitized newspaper is not available from every single state during this period and geographically the newspapers in my sample are more representative of the Midwest and the South.[23] Despite the limitation, to my knowledge *Chronicling America* holds the largest collection of digitized newspaper text data for my period of study, which are essential for my subsequent text analysis.

1.6.2.2 Measuring News Topics The goal of my newspaper text analysis is to study the impact of the telegraph on news coverage, focusing on the coverage of national news. This section describes how I measure coverage of national news and other news topics.

National news in the mid-19th century primarily consists of news on Congress and the

[21] I focus on the period 1840-1849 for my newspaper text analysis because for this period I have relatively precise information on the continuous *within-year* growth of telegraph lines, which is essential for analyzing high-frequency newspaper text data with substantial within-year variation; after 1849, I have a snapshot of telegraph lines in 1852, which is used for the voting analysis but less ideal for the newspaper text analysis because of the high-frequency nature of the text data.

[22] To restrict my newspaper sample to small-town newspapers, I removed from my sample the few newspapers published in any of the "100 largest urban places in 1840" based on the 1840 Census (`https://www.census.gov/population/www/documentation/twps0027/tab07.txt`). Since the 100th largest urban place in 1840 (New Albany, IN) had 4,226 people, the resulting sample consists of newspapers from places with a population of about 4,000 or below, which I consider as small towns in the paper.

[23] Out of the 30 states in the U.S. in 1850, my newspaper sample from *Chronicling America* contains newspapers from 17 states; other states so far have only digitized newspapers from the more recent past. Out of the 17 states, only 2 states (Pennsylvania and Vermont) are from the Northeast, and the rest of the newspapers are from the Midwest and the South.

presidency (Kernell and Jacobson, 1987). I therefore focus my analysis on the coverage of these topics. Because *Chronicling America* provides each newspaper's text data in bulk, which are separable only by date and page number, one cannot separate news by articles or count the number of articles on a certain topic. I therefore use the frequency of words that are typically associated with each news topic to measure coverage. For example, I use the frequency of the word "Congress" to measure the coverage of news on Congress. The assumption is that the more frequently the word "Congress" was mentioned on a date, the greater the coverage was for Congress-related news on that date. Similarly, I use the frequency of the last names of the U.S. presidents in the 1840s to measure the coverage of presidential news.[24]

To check whether frequencies of words provide a reasonable measure of news coverage, I plot the monthly average frequencies of words in my newspaper sample over time in Figure 5. Panel A of Figure 5 shows the average frequency of the presidents' last names as appeared in my newspaper sample over time. It is evident from this figure that the frequency of the presidents' last names spiked in presidential election years, consistent with what Kernell and Jacobson (1987) find that in the mid-19$^{\text{th}}$ century presidential news dominated national news during presidential election years. Panel B of Figure 5 shows the average frequency of the word "Congress." Although the frequency of "Congress" exhibits a less clear trend at first glance, a closer inspection of the figure using congressional calendar during the 1840s reveals that the frequency of the word "Congress" largely followed the calendar of congressional meetings during the 1840s. Lastly, Panel C plots the average frequency of the word "telegraph" over time and shows a drastic increase in the mentioning of the word since the introduction of the technology in May, 1844, consistent with the rise in the use of the telegraph for news gathering during the period. Taken as a whole, Figure 5 suggests that the frequency of words does provide a meaningful measure of news coverage.

It is worth noting that when counting the frequency of words associated with a news topic, I count the frequency of the root word wherever applicable. Therefore, the frequency of "Congress" represents the sum of the frequencies of all words with the root "Congress,"

[24]The presidents' last names consist of "Van Buren," "Harrison," "Tyler," "Polk," and "Taylor."

such as "Congress," "congressional," and "congressman" et cetera.[25] By considering the root word, I avoid omitting related variants of the words and measure news coverage more accurately.

Besides news coverage of Congress and the presidency, I have also measured coverage of local, state and European news using the mentioning of the newspaper town's name, the county's name, the state's name and European country names. Moreover, I have measured coverage of major national issues during the 1840s. The most prominent national issues of the 1840s were arguably sectional divisions involving slavery and various territorial disputes as a result of territorial expansionism and debates on whether slavery should be allowed in new territories. I use the frequency of the word "slavery" to measure coverage of slavery and the word "territor" to measure coverage related to territorial disputes.[26] Table 26 provides summary statistics of all the words used in the paper to measure news topics.

1.6.2.3 Evidence from Text Analysis This section presents results from my newspaper text analysis. To estimate the effect of the telegraph on news coverage, I run the following regression:

$$\ln(WordFreq_{it}) = \alpha + \beta EffectiveDist_{it} + X_{ct}\delta + \eta_i + \sigma_t + \epsilon_{it} \tag{1.3}$$

where $WordFreq_{it}$ is the frequency of a word, such as "Congress," in newspaper i and year-month t. For the ease of interpretation I use the natural log of the frequency as my outcome variable. X_{ct} is the same set of demographic controls of county c as in the baseline equation (3.1). η_i are newspaper fixed effects, which control for any time-invariant newspaper characteristics such as geographic location, local culture, and editor preferences for news topics. σ_t are month-by-year fixed effects, which control for common shocks to all newspapers, such as national elections and breakout of other national events.[27] In some specifications I also

[25]Similarly, the frequency of the word "telegraph" also includes words such as "telegraphed" and "telegraphic." All the words in the text data have also been converted to lower case before being analyzed, so letter case does not matter.

[26]The frequency of the root "territor" captures variants of the word "territory" such as "territory," "territories" and "territorial." I use the word "slavery" instead of the root word "slave" to avoid confusing the issue of slavery with advertisements involving slaves.

[27]I aggregate weekly newspaper data to the monthly level to reduce noise in the weekly data. The results based on the weekly data are similar.

include newspaper-specific linear time trends to account for the possibility that each newspaper's coverage may evolve at a different rate. Standard errors are corrected for clustering at the level of newspaper locations (i.e. towns) (Bertrand et al., 2004).

The variable of central interest is the effective distance to Washington $EffectiveDist_{it}$, which is my measure of access to telegraphed news from Washington and is defined similarly as in the equation (3.1). Specifically, for periods after the introduction of the telegraph $EffectiveDist_{it}$ is equal to newspaper i's distance (in hundred miles) to the nearest daily newspaper with telegraphic connection to Washington in year-month t.[28] For periods before the introduction of the telegraph, I define $EffectiveDist_{it}$ to be newspaper i's actual distance to Washington to proxy for access to the latest Washington news. For a given news topic, the *negative* of β captures the effect of a 100-mile *reduction* in the effective distance to Washington on coverage of the topic.

To provide evidence that the effective distance to Washington is associated with greater access to telegraphed news, I first run equation 1.3 with the frequency of the word "telegraph" as the outcome. The idea is that, during this era, newspapers would often mention the source of their news; when a small-town paper copied news that had originally been telegraphed to big-city dailies, the small-town paper would often mention that the news had been telegraphed, perhaps to highlight the recency of the news. Thus, I would expect the word "telegraph" to appear more frequently as effective distance to Washington decreases. Table 7 reports the estimates from this regression. Consistent with the expectation, the estimates are statistically significant across different specifications and suggest a 7-11% increase in the mentioning of the word "telegraph" for a 100-mile reduction in the effective distance to Washington.

Table 8 provides the estimates for the impact of access to telegraphed news from Washington on coverage of various news topics. Panel A presents the estimated effects on coverage of Congress and the presidency. Column 1 of Panel A shows that a 100-mile reduction in effective distance to Washington increased the mentioning of "Congress" by

[28] Again, this is because small-town newspapers in the mid-19$^{\text{th}}$ century frequently copied Washington news from big-city daily newspapers (Kielbowicz, 1989; Schwarzlose, 1989). Thus, a small-town newspaper's access to telegraphed news from Washington depended on its distance to the nearest daily newspaper with telegraphic connection to Washington.

about 5%. Column 2 shows that the estimated effect is slightly larger (at about 6%) for the mentioning of the presidents' last names. Kernell and Jacobson (1987) find that in the mid-19th century presidential news dominated national news coverage during presidential election years but was much less so during other years (i.e. off years). I therefore separate my analysis for presidential news by presidential election years and off years. Column 3 and 4 report these estimates. As seen from column 3, the estimated effect on presidential news are stronger in both magnitude and statistical significance during presidential election years. Based on column 3, a 100-mile reduction in effective distance to Washington increased the mentioning of the presidents' last names by about 12.5% in presidential election years. In comparison, column 4 shows that the estimate during off years halves in magnitude and is not statistically significant at the conventional level (p-value = 0.137), although the coefficient still has the same sign and suggests an economically meaningful effect. Taken as a whole, Panel A of Table 8 suggests that access to telegraphed news from Washington increased coverage of national political news in newspapers, which could have contributed to informing and engaging the public and increasing participation in national elections.

Panel B of 8 provides the estimates for local, state and European news coverage. In column 1 of Panel B, I find a 100-mile reduction in effective distance to Washington *decreased* the mentioning of the newspaper town's name by about 5%. During this era, coverage of a newspaper's locality (i.e. the town itself) primarily consisted of items such as local commercial advertisements, obituaries, marriage announcements, and legal notices (Blondheim, 1994). The decrease in the mentioning of the newspaper town's name therefore most likely reflects a decrease in the coverage of these items. In contrast, column 2 of Panel B suggests that the estimated effect on the mentioning of the county's name is close to zero and statistically insignificant. The contrast between column 1 and 2 of the panel suggests that access to telegraphed news from Washington crowded out information related to the newspaper town's immediate vicinity but did not affect coverage of the broader local region such as news related to the county. Column 3 of the panel reports the estimates for the mentioning of the newspaper's state. The estimated effect on the mentioning of the state's name is small and statistically insignificant, suggesting that access to telegraphed

news from Washington had little impact on news coverage of the state.[29] In column 4, I turn to the coverage of European news. European news was scarce during the mid-19th century and the first transatlantic telegraph communication was not achieved until 1858. Partly because of its scarcity, European news were always considered interesting and eagerly welcomed by newspaper readers regardless of the delay (Schwarzlose, 1989). I therefore expect access to telegraphed news from Washington to have little impact on the coverage of European news. Consistent with my expectation, I find in column 4 that the estimated effect on the mentioning of European country names is small in magnitude and statistically indistinguishable from zero.

Panel C of Table 8 provides the estimates for the mentioning of major national issues. Column 1 reports the estimate for the mentioning of the word "slavery." I find that a 100-mile reduction in effective distance to Washington increased the mentioning of "slavery" by approximately 10%. Column 2 reports the estimate for the word "territor," which I use to capture the coverage of various territorial disputes. The estimated effect for "territor" has the same sign as that of "slavery," but it is not statistically significant, perhaps because the word "territor" is not a precise enough measure of territorial issues. In column 3, I report the estimated effect on the sum of the frequencies of "slavery" and "territor." The estimate suggests a 4.7% increase in the combined mentioning of "slavery" and "territor" for a 100-mile reduction in effective distance to Washington, although the estimate is not precisely estimated (p-value=0.18). Lastly, in column 4 of the panel I use the frequency of the word "vote" as the outcome to examine whether access to telegraphed news from Washington affected the provision of voting-related information. The estimate shows a 3.6% increase in the mentioning of the word "vote" for a 100-mile reduction in effective distance to Washington, although the estimate is not statistically significant at the conventional level (p-vlaue=0.11). I interpret this result as suggestive evidence that access to telegraphed news from Washington was associated with greater provision of voting-related information, which might have contributed to voter turnout.

Overall, Table 8 suggests that access to telegraphed news from Washington led news-

[29] I find an estimate similar in magnitude and statistical significance when I instead use the mentioning of the governor's name as the outcome.

papers to cover more national politics, including coverage of Congress, the presidency, and sectional divisions involving slavery.[30] The greater access to national political news could have informed and engaged the public, contributing to turnout in national elections.

1.7 Conclusion

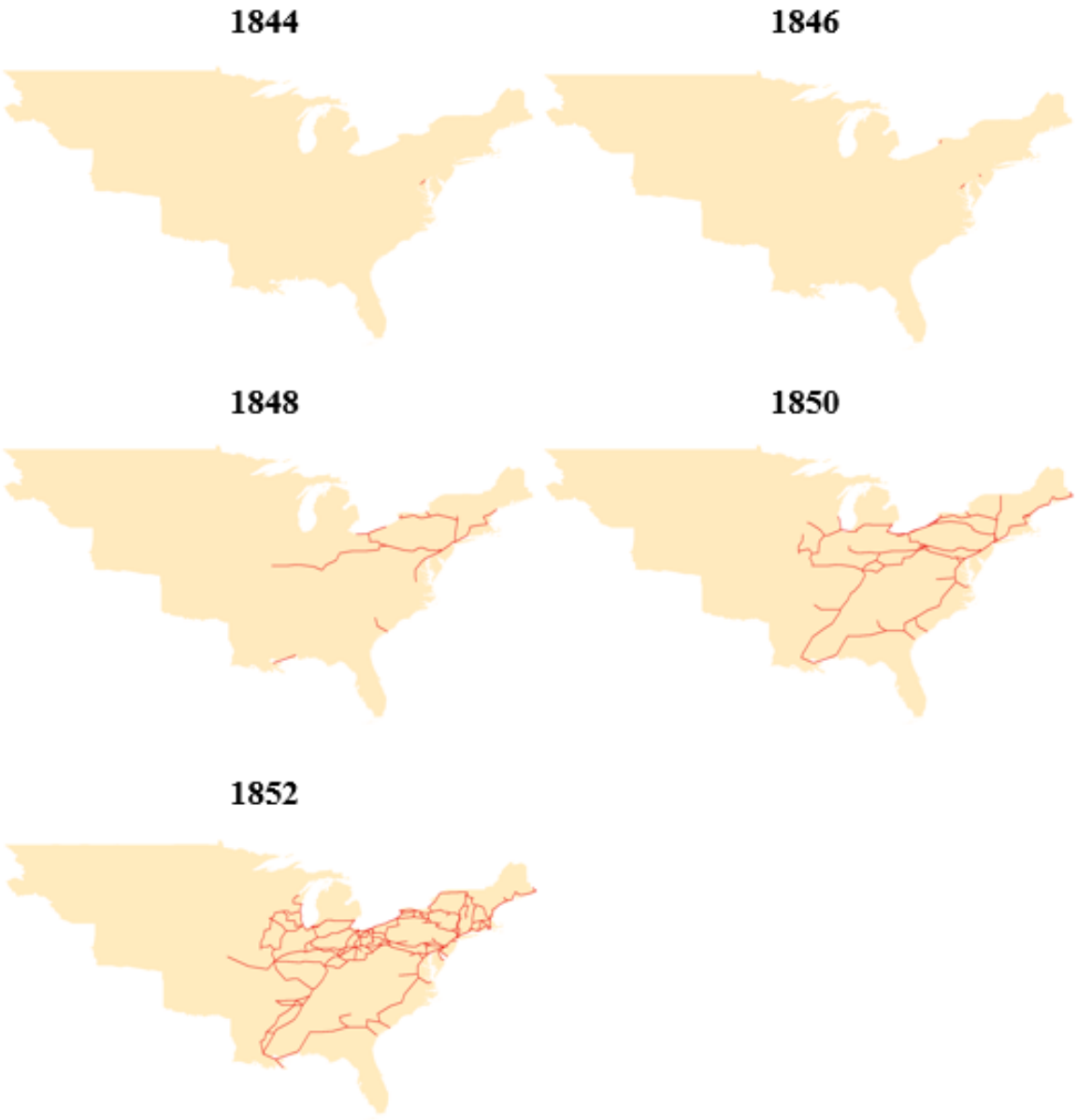
A revolutionary technology, the electric telegraph enabled instant communications over vast distances for the first time and greatly accelerated the dissemination of news throughout the nation. Yet the telegraph has gone largely unstudied in economics, particularly with regards to its impacts on the political realm. Using novel data on the growth of the telegraph network in the U.S. during 1840-1852, this paper studies the impact of the telegraph on political participation. I find that access to telegraphed news from Washington increased voter turnout in presidential elections. Effects were concentrated in regions least connected to Washington prior to the telegraph. Exploring the mechanisms, I find evidence that newspapers played a key role in facilitating the diffusion of more timely national news to local areas. Moreover, text analysis using historic newspapers suggests that access to telegraphed news from Washington led newspapers to cover more national politics, including coverage of Congress, the presidency, and sectional divisions involving slavery.

At a time when almost 90 percent of Americans were still living in rural areas and had limited access to national news, the telegraph connected the nation to an unprecedented degree and greatly improved access to timely national news. The results suggest that the telegraph made newspapers less parochial, facilitated a national conversation on important issues, and increased political participation in antebellum America.

[30] Table 27 presents the results from the same set of regressions as in Table 8 after controlling for newspaper-specific linear time trends. The results are broadly similar.

1.8 Figures and Tables

Figure 1: Growth of Telegraph Lines, 1844-1852

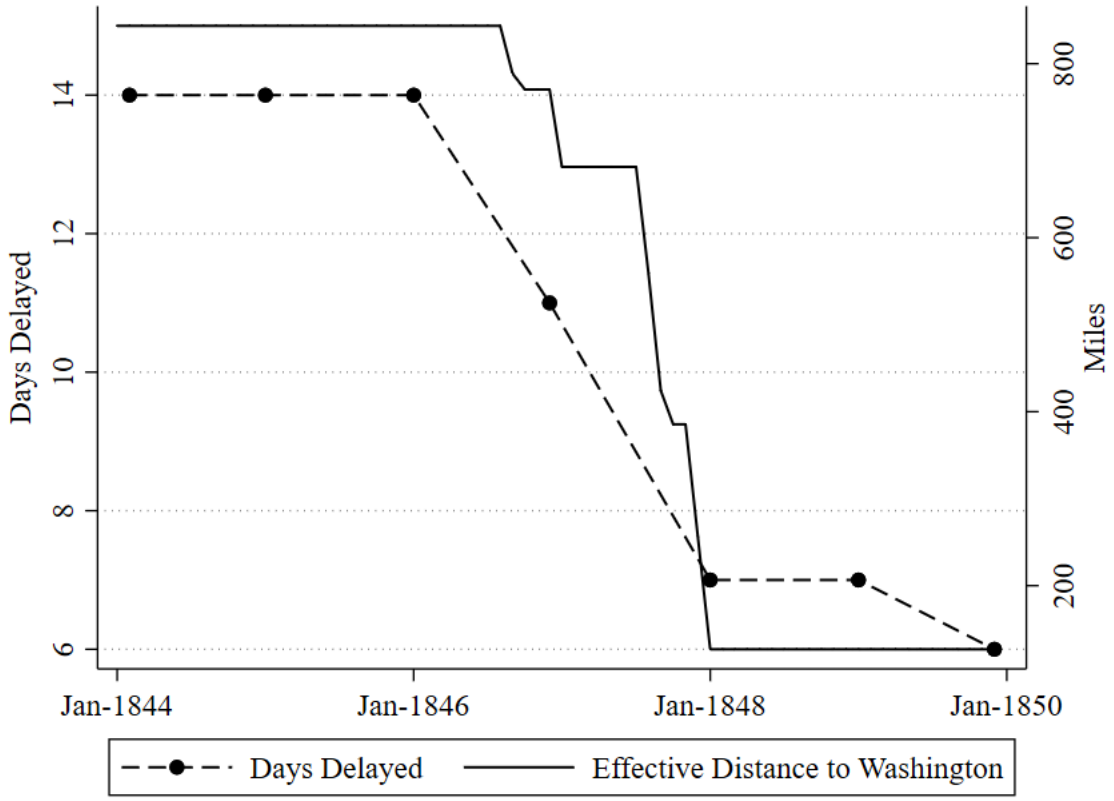


Notes - Telegraph lines in operation in the U.S. during 1844-1852. For the period 1844-1850, data are primarily from Thompson (1947) and Reid (1886), and lines at the beginning (January 1) of each year are shown. Data on the 1852 lines are primarily from *Report of the Superintendent of the Census* (US Census Office, 1852).

Figure 2: Daily Newspapers with the Latest News from Washington, 1840-1852

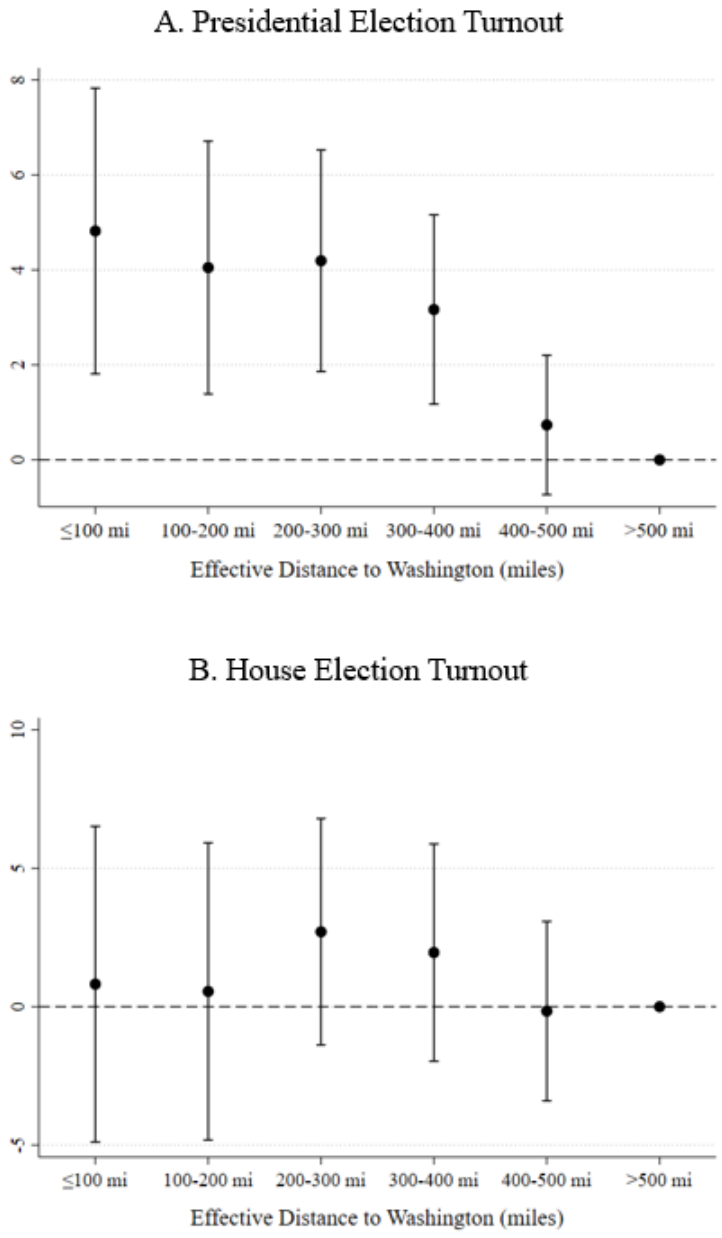
Notes - The figure shows the locations (county centroids) of daily newspapers with the latest Washington news in presidential election years during 1840-1852. Up to the beginning of 1844, only daily newspapers in Washington had the latest Washington news. After 1844, daily newspapers on the telegraph network connected to Washington had the latest Washington news. The locations of daily newspapers come from the 1840 *Census of Manufactures*. Data on the telegraph network are the same as in the footnote of Figure 1.

Figure 3: Delay of Washington News and Effective Distance to Washington — Evidence from the Newspaper *The Boon's Lick Times*



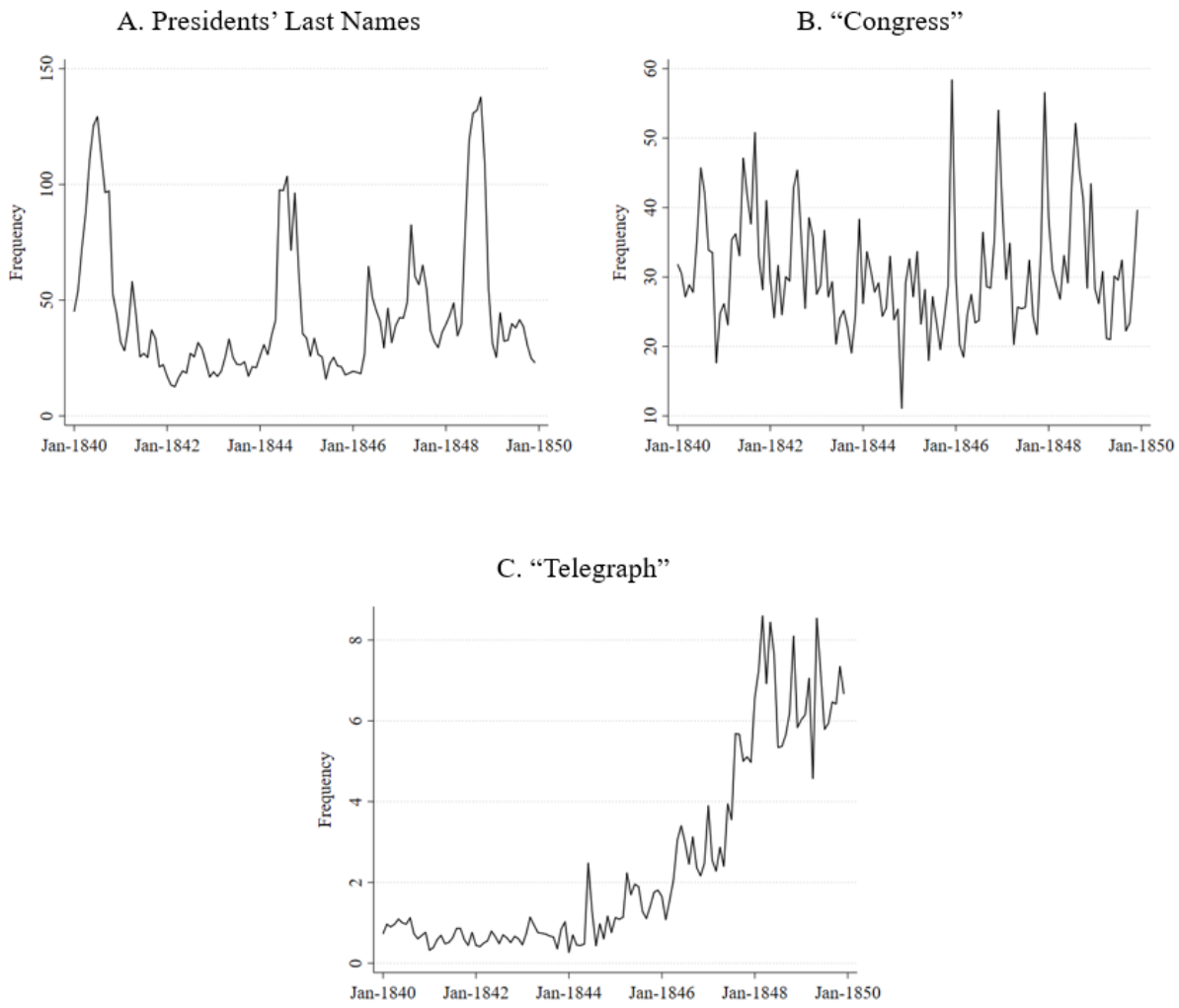
Notes - The figure shows the delay of Washington news and the effective distance to Washington during 1844-1850 for the newspaper *The Boon's Lick Times*, which was published in Fayette, Missouri, a small town 120 miles outside of St. Louis. The dashed line plots the minimum number of days delayed of Washington news in the first two months of each year, as appeared in *The Boon's Lick Times*. The solid line plots Fayette's effective distance (miles) to Washington during the same period.

Figure 4: The Effects of Telegraphed News from Washington on Voter Turnout



Notes - The figure shows the estimated effects of access to telegraphed news from Washington on voter turnout during 1840-1852. The dots are the estimated coefficients, and the vertical lines represent the 95% confidence intervals. The estimates in each panel come from a single OLS regression following equation (2.2), where each observation is a county-year. Each regression controls for county fixed effects, state-by-year fixed effects, and county demographic characteristics including the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Each regression is weighted by the voting eligible population as proxied by the population of white males above 20 years old in 1840. Standard errors are corrected for clustering at the county level.

Figure 5: Monthly Frequencies of Words, 1840-1849



Notes - The figure shows the monthly average frequencies of the following words based on my newspaper sample for the period 1840-1849. Panel A shows the frequency of the last names of the U.S. Presidents during the 1840s, which equals the sum of the frequencies of "Van Buren," "Harrison," "Tyler," "Polk," and "Taylor." Panel B shows the frequency of the word "Congress." Panel C shows the frequency of the word "telegraph." The monthly frequency of each word is averaged across the newspapers in my sample.

Table 1: Summary Statistics of Voting Analysis

	N	Mean	SD	Min	Max
Variables	(1)	(2)	(3)	(4)	(5)
Presidential election turnout	4,659	68.26	16.02	0	99.97
House election turnout	3,892	68.09	16.55	0	99.51
Effective dist. to Washington (100 miles)	4,659	2.199	2.131	0	10.74
Population	4,659	52,961	83,317	561	575,171
% Urban	4,659	15.62	27.48	0	100
% White	4,659	90.13	16.54	8.975	100
% White males above 20 years old	4,659	22.14	5.118	3.424	47.13
% Slaves	4,659	7.866	15.98	0	90.94

Notes - The table shows the summary statistics of the variables used in my baseline analysis. Each observation is a county-year. House election turnout has fewer observations because of missing values of some counties. Effective distance to Washington is defined as distance to the nearest daily newspaper with the latest Washington news. By construction, the effective distance to Washington before the introduction of the telegraph (i.e. in 1840 and 1844) is equal to the actual distance to Washington, and after the introduction of the telegraph (i.e. 1848 and 1852) it is equal to the distance to the nearest daily newspaper with telegraphic connection to Washington.

Table 2: Access to Telegraphed News from Washington and Voter Turnout, 1840-1852

	Outcome: Voter Turnout			
	Presidential Election		House Election	
	(1)	(2)	(3)	(4)
Eff. Dist. to Washington (100 miles)	-1.159***	-1.224***	0.0176	-0.104
	(0.421)	(0.345)	(0.614)	(0.548)
Observations	4,659	4,659	3,892	3,892
R-squared	0.918	0.925	0.826	0.834
County FE	Yes	Yes	Yes	Yes
State-by-Year FE	Yes	Yes	Yes	Yes
Demographic controls		Yes		Yes
Mean of Dep. Var.	69.78	69.78	68.09	68.09
Std. Dev. of Dep. Var.	15.71	15.71	16.55	16.55

Notes - The table shows the estimated effects of access to telegraphed news from Washington on voter turnout (in percentage points) for the period 1840-1852. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county-year. The outcome variables are presidential election turnout in column 1 and 2 and House election turnout in column 3 and 4. The explanatory variable is effective distance to Washington measured in hundred miles. Each regression controls for county fixed effects and state-by-year fixed effects. Column 2 and 4 further control for county demographics including the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Each regression is weighted by the voting eligible population as proxied by the population of white males above 20 years old in 1840. Standard errors are corrected for clustering at the county level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3: Testing and Controlling for Pre-trends

	Outcome: Change in Pres. Turnout		
	Δ Turnout, 1844-52	Δ Turnout, 1840-44	Δ Turnout, 1844-52
	(1)	(2)	(3)
Δ Eff. Dist. Washington, 1844-52	-1.539***	-0.0363	-1.658***
	(0.441)	(0.359)	(0.400)
Observations	1,153	1,147	1,133
R-squared	0.521	0.394	0.629
State dummies	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Controlling for the change in pres. turnout between 1840-1844			Yes

Notes - The table presents estimates from running long-difference versions of equation (3.1) for different sub-periods between 1840 and 1852. Each column represents the results from a separate OLS regression, where each observation is a county. The explanatory variable is the change in effective distance to Washington (in hundred miles) between 1844 and 1852. The outcome variables are the changes in presidential election turnout during 1844-1852 in column 1 and 3 and the change in presidential election turnout during 1840-1844 in column 2, all measured in percentage points. Each regression controls for state dummies and changes in county demographics between 1844 and 1852, including changes in the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Column 3 further controls for the change in presidential election turnout during 1840-1844. Each regression is weighted by the voting eligible population as proxied by the population of white males above 20 years old in 1840. Standard errors are corrected for clustering at the county level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Robustness Checks

	Outcome: Presidential Election Turnout					
	Control for railroad	Unweighted	Drop counties with dailies	Only rural counties	Counties far from telegraph	Consistent boundary
	(1)	(2)	(3)	(4)	(5)	(6)
Eff. Dist. to Washington (100 miles)	-1.222***	-0.754**	-0.946***	-0.925***	-1.880***	-1.388***
	(0.345)	(0.333)	(0.333)	(0.346)	(0.634)	(0.384)
Observations	4,659	4,659	4,458	4,271	1,006	3,158
R-squared	0.925	0.855	0.885	0.868	0.868	0.941
County FE	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes - The table provides robustness checks on the estimated effects of access to telegraphed news from Washington on presidential election turnout for the period 1840-1852. Each column represents the results from a separate OLS regression, where each observation is a county-year. The outcome variable is presidential election turnout measured in percentage points. The explanatory variable is effective distance to Washington measured in hundred miles. Column 1 controls for distance to the nearest railroad. Column 2 uses an unweighted regression. Column 3 drops counties with a daily newspaper in 1840. Column 4 restricts the sample to counties with only rural population. Column 5 restricts the sample to counties that were more than 50 miles away from any telegraph line by 1852. Column 6 restricts the sample to counties with the same boundary between 1840-1850. Each regression controls for county fixed effects, state-by-year fixed effects, and county demographic characteristics including the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Each regression, except that in column 3, is weighted by the voting eligible population proxied by the population of white males above 20 years old. Standard errors are corrected for clustering at the county level. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Heterogeneity of Effects by Region

	Outcome: Presidential Election Turnout			
	Northeast	Midwest	South Atlantic	South Central
	(1)	(2)	(3)	(4)
Eff. Dist. to Washington (100 miles)	0.115	-1.570***	0.630	-1.820***
	(0.628)	(0.558)	(1.761)	(0.495)
Observations	765	1,391	1,193	1,310
R-squared	0.943	0.860	0.931	0.913
County FE	Yes	Yes	Yes	Yes
State-by-Year FE	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes
Mean of Dep. Var.	68.35	73.86	65.38	70.31
Std. Dev. of Dep. Var.	13.56	13.60	17.92	15.66

Notes - The table shows the estimated effects of access to telegraphed news from Washington on presidential election turnout for the period 1840-1852 by Census region. The regions are the Northeast in column 1, the Midwest in column 2, the South Atlantic in column 3, and the South Central in column 4. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county-year. The outcome variable is presidential election turnout measured in percentage points. The explanatory variable is effective distance to Washington measured in hundred miles. Each regression controls for county fixed effects, state-by-year fixed effects, and county demographics including the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Each regression is weighted by the voting eligible population as proxied by the population of white males above 20 years old in 1840. Standard errors are corrected for clustering at the county level. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effects of the Presence of Local News and Non-News Publications

	Outcome: Presidential Election Turnout		
	(1)	(2)	(3)
Eff. Dist. to Washington (100 miles)	-0.995***	-1.219***	-1.250***
	(0.369)	(0.360)	(0.347)
Eff. Dist. to Washington × Had Newspapers in 1840	-0.321**		
	(0.155)		
Eff. Dist. to Washington × Number Newspapers 1840		-0.0169	
		(0.0155)	
Eff. Dist. to Washington × Had Periodicals 1840			0.0743
			(0.192)
Observations	4,659	4,595	4,659
R-squared	0.926	0.926	0.925
County FE	Yes	Yes	Yes
State-by-Year FE	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Mean of Dep. Var.	69.78	69.78	69.78
Std. Dev. of Dep. Var.	15.71	15.71	15.71

Notes - The table shows the estimated interactive effects between access to telegraphed news from Washington and county publishing characteristics on presidential election turnout for the period 1840-1852. Each column represents the results from a separate OLS regression, where each observation is a county-year. The outcome variable is presidential election turnout measured in percentage points. The explanatory variables are effective distance to Washington (in hundred miles) and its interaction with a county publishing characteristic in 1840. In column 1, I interact effective distance to Washington with an indicator for whether the county had a newspaper in 1840. In column 2, the interaction is between effective distance to Washington and the county's number of newspapers in 1840. In column 3, the interaction is between effective distance to Washington and an indicator for whether the county had a (non-news) periodical in 1840. Each regression controls for county fixed effects, state-by-year fixed effects, and county demographics including the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Each regression is weighted by the voting eligible population as proxied by the population of white males above 20 years old in 1840. Standard errors are corrected for clustering at the county level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7: Effects on the Mentioning of "Telegraph" in Newspapers

	Outcome: ln("telegraph")			
	(1)	(2)	(3)	(4)
Eff. Dist. Washington (100 miles)	-0.118***	-0.0737***	-0.0712***	-0.106***
	(0.0126)	(0.0228)	(0.0238)	(0.0294)
Observations	4,693	4,693	4,693	4,693
R-squared	0.160	0.556	0.557	0.612
Newspaper FE		Yes	Yes	Yes
Month-by-year FE		Yes	Yes	Yes
Demographic controls			Yes	Yes
Newspaper-specific linear time trend				Yes

Notes - The table shows the estimated effects of access to telegraphed news from Washington on the mentioning of the word "telegraph" in my sample of newspapers from the 1840s. Each column represents the results from a separate OLS regression following equation (1.3), where each observation is a newspaper-year-month. The outcome variable is the natural log of the frequency of the word "telegraph." The explanatory variable is effective distance to Washington measured in hundred miles. Column 1 includes no controls. Column 2 adds newspaper fixed effects and month-by-year fixed effects. Column 3 adds county demographics including the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Column 4 adds newspaper-specific linear time trends. Standard errors are corrected for clustering at the newspaper location (town) level. *** p<0.01, ** p<0.05, * p<0.1

Table 8: Access to Telegraphed News from Washington and News Coverage

	(1)	(2)	(3)	(4)
	Panel A. Mentioning of "Congress" and Presidents' Last Names			
		ln(President	ln(President Name)	
	ln("Congress")	Name)	Pres. Year	Off Year
Eff. Dist. to Washington (100 miles)	-0.0494*	-0.0601*	-0.125**	-0.0603
	(0.0290)	(0.0305)	(0.0476)	(0.0402)
Observations	4,693	4,693	1,371	3,318
R-squared	0.466	0.512	0.570	0.523
	Panel B. Mentioning of Local, State, and European Country Names			
	ln(Town Name)	ln(County Name)	ln(State Name)	ln(European Country Names)
Eff. Dist. to Washington (100 miles)	0.0537*	-0.00435	-0.0181	0.00957
	(0.0286)	(0.0295)	(0.0249)	(0.0327)
Observations	4,693	4,693	4,693	4,693
R-squared	0.776	0.709	0.621	0.487
	Panel C. Mentioning of Issues of National Importance			
	ln("Slavery")	ln("Territor")	ln("Slavery"+ "Territor")	ln("Vote")
Eff. Dist. to Washington (100 miles)	-0.0997***	-0.0286	-0.0474	-0.0363
	(0.0315)	(0.0351)	(0.0354)	(0.0225)
Observations	4,693	4,693	4,693	4,693
R-squared	0.531	0.567	0.560	0.484
Newspaper FE	Yes	Yes	Yes	Yes
Month-by-year FE	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes

Notes - The table shows the estimated effects of access to telegraphed news from Washington on the mentioning of words related to different news topics in my sample of newspapers from the 1840s. Each column of each panel represents the results from a separate OLS regression following equation (1.3), where each observation is a newspaper-year-month. The explanatory variable is effective distance to Washington measured in hundred miles. The outcome variables are the frequencies of words on news topics, all measured in natural logs. Panel A examines the mentioning of the word "Congress" and the presidents' last names, with the latter examined in both presidential election years and off-years. Panel B examines the mentioning of the newspaper's town, county, and state names, as well as European country names. Panel C examines the mentioning of the words "slavery," "territor," and "vote." Each regression controls for newspaper fixed effect, month-by-year fixed effects, and county demographics including the natural log of population, the population share of whites, share of urban population, share of white males above 20 years old, and share of slaves. Standard errors are corrected for clustering at the newspaper location (town) level. *** p<0.01, ** p<0.05, * p<0.1

2.0 Media, Pulpit, and Populist Persuasion: Evidence from Father Coughlin

New technologies make it easier for charismatic individuals to influence others. This chapter studies the political impact of the first populist radio personality in American history. Father Charles Coughlin blended populist demagoguery, anti-Semitism, and fascist sympathies to create a hugely popular radio program that attracted tens of millions of listeners throughout the 1930s. I evaluate the short- and long-term impacts of exposure to Father Coughlin's radio program. Exploiting variation in the radio signal strength as a result of topographic factors, I find that a one standard deviation increase in exposure to Coughlin's anti-FDR broadcast reduced FDR's vote share by about two percentage points in the 1936 presidential election. Effects were larger in counties with more Catholics and persisted after Father Coughlin left the air. An alternative difference-in-differences strategy exploiting Coughlin's switch in attitude towards FDR during 1932-1936 confirms the results. Moreover, I find that places more exposed to Coughlin's broadcast in the late 1930s were more likely to form a local branch of the pro-Nazi German-American Bund, sell fewer war bonds during WWII, and harbor more negative feelings towards Jews in the long run.

2.1 Introduction

New media and communication technologies make it easier for charismatic individuals to influence others. The 2016 U.S. presidential election and the rise of populist leaders across the world heighten the concern that individuals, through their charisma and media savviness, can manipulate public opinions for political gain. How and to what extent can charismatic individuals exploit the media to shape political outcomes? This paper studies the political impact of the first populist radio personality in American history. Father Charles Coughlin blended populist demagoguery, anti-Semitism, and fascist sympathies to create one of the first loyal mass audiences in broadcasting history, attracting tens of millions of listeners throughout the 1930s (Warren, 1996). This paper assembles a unique data set to evaluate

the short- and long-term impact of exposure to Father Coughlin's radio program.

Roman Catholic priest Charles Coughlin embraced radio broadcasting when radio was a new and rapidly exploding technology during the 1920s. For the first time one could broadcast to a mass audience over long distances. Initially airing religious sermons, Father Coughlin switched to broadcast almost exclusively his opinions on social and economic issues following the onset of the Great Depression. In a nation mired in its worst economic crisis, Coughlin became the voice of the people against the nation's economic and financial elites. A charismatic orator, Coughlin became seen as the champion of the common man and referred to as the "Radio Messiah" (Warren, 1996). By the mid-1930s, Coughlin had developed a weekly national audience of 30 million, making Father Coughlin the most listened to regular radio speaker in the world during the 1930s (Brinkley, 1982).

A supporter of Franklin D. Roosevelt and the New Deal during FDR's early presidency, Coughlin grew disillusioned with the Roosevelt administration over time and became its harsh denouncer by 1936, largely because FDR did not follow Coughlin's proposal to address the depression (Tull, 1965). Accusing FDR of being "anti-God" and a puppet controlled by both international bankers and communists, Coughlin co-founded a third political party, which proposed a populist alternative to challenge FDR in the 1936 presidential election. By the late 1930s, Father Coughlin had become more extreme in his broadcast and transformed into a major anti-Semitic icon, fascist sympathizer, and isolationist in pre-war America.

The episode of Father Coughlin provides a unique opportunity to study the impact of media manipulation by a charismatic individual. My baseline analysis examines the impact of exposure to Father Coughlin's radio program on voting outcomes in the presidential election of 1936, the year in which Coughlin harshly attacked the Roosevelt administration. I collect unique data on the location and technical information of Coughlin's transmitters in 1936, which allow me to predict the signal strength of Coughlin's radio program across space. Notably, Coughlin's transmitters changed little over time since 1933, when he was supporting FDR. It is therefore unlikely that the transmitter location in 1936 was directly functional to Coughlin's opposition to FDR.

Nonetheless, reception of Father Coughlin's broadcast could be correlated with other county characteristics that might influence voting outcomes. To address this concern, I

employ a strategy pioneered by Olken (2009) to exploit the variation in Coughlin's signal strength resulting from topographic factors. Specifically, I regress the outcomes on the signal strength of Coughlin's radio program, while controlling for the hypothetical signal strength when there is no geographic or topographic obstacles such as mountains and hills. Hence, identification comes from the residual variation in signal strength as a result of idiosyncratic topographic factors along the signal transmission route, which I find to be uncorrelated with past voting outcomes and a large set of pre-existing county socioeconomic variables.

I find that counties more exposed to Father Coughlin's radio program displayed lower support for FDR in the 1936 presidential election. Specifically, a one standard deviation increase in Coughlin signal strength reduced FDR's vote share by 2.4 percentage points, or about 4 percent relative to the mean. The effect was larger in counties with more Roman Catholics, consistent with Father Coughlin's greater influence on Catholics.

To show that the results did not reflect the effect of exposure to radio programs in general, I run a falsification test using exposure to national radio network stations that did not carry Coughlin's program. In a statistical horse race between Coughlin and non-Coughlin exposure, I find that what mattered was exposure to Coughlin's stations and not exposure to other stations, suggesting that the effect was unique to Coughlin's radio program.

Moreover, in another identification strategy, I exploit Coughlin's switch in attitude towards FDR during 1932-1936 and panel data during the period in a difference-in-differences framework. Exploiting within-county variation, the difference-in-differences strategy controls for any time-invariant differences across counties and for statewide shocks to counties. Findings from this strategy confirms the baseline results, which also hold under a series of additional robustness checks, further increasing the causal interpretation of the results.

Exploring persistence of the effects, I find that exposure to Father Coughlin's broadcast continued to dampen FDR's vote shares in 1940 and 1944, the last year in which FDR ran for reelection. Specifically, a one standard deviation increase in Coughlin signal strength reduced FDR's vote share by about 3 percentage points in both 1940 and 1944. To interpret the magnitude of the effects, I perform a back-of-the-envelope calculation and find that, if there were a one standard deviation higher exposure to Father Coughlin, FDR would have carried thirteen fewer states in 1944 and lost his reelection to a fourth term. In addition, I

investigate persistence of the effects in the longer term. I find that the negative effects on Democratic vote shares dropped sharply after FDR died in office in 1945 but persisted in the following two decades, although declining over time.

Because of Father Coughlin's more extreme stance in the late 1930s, I turn to examine the effects of Coughlin exposure in the late 1930s on anti-Semitism and civilian support for America's involvement in WWII. I collect unique data from FBI records, which allow me to identify all cities with a local branch of the pro-Nazi German-American Bund in 1940. I find that cities with a one standard deviation higher exposure to Father Coughlin's radio program in the late 1930s were about 9 percentage points more likely to have a local branch of the pro-Nazi German-American Bund.

Moreover, using county-level WWII war bond sales data, I find that higher exposure to Coughlin's radio program in the late 1930s was also associated with lower per capita purchase of war bonds. Specifically, a one standard deviation higher Coughlin exposure was associated with 17 percent lower per capita purchase of war bonds in 1944, suggesting that Father Coughlin's isolationist stance likely dampened public support for the war effort.

Lastly, using individual survey data from the American National Election Studies (ANES), I find that individuals in places with a one standard deviation higher exposure to Coughlin's broadcast in the late 1930s were associated with a 1.6 percent drop in warm feelings towards Jews even in the long run, although the estimate is not precise. In contrast, I do not find such an association between exposure to Father Coughlin and feelings towards other minorities whom Coughlin did not attack, such as blacks or Catholics, suggesting that the finding does not reflect a change in attitudes towards minorities in general.

This paper is closely related to the literature on the political persuasion of media (for surveys of this literature, see DellaVigna and Gentzkow (2010); DellaVigna and Ferrara (2015); Enikolopov and Petrova (2015); Zhuravskaya et al. (2019)). Previous work has studied media backed by large institutions, such as the state or major media organizations.[1] This

[1]For instance, Adena et al. (2015) finds that radio controlled by Nazi Germany contributed to the support for the Nazi Party and to anti-Semitism in Nazi Germany. DellaVigna and Kaplan (2007) finds that the entry of Fox News increased Republican vote shares in both U.S. presidential and senatorial elections. Besides, Durante et al. (2019) finds that exposure to the Italian entertainment TV network, Mediaset, increased support for Berlusconi's party and for populism in general. An exception, however, is Xiong (2018), who studies the political premium of TV celebrity and finds that Ronald Reagan's tenure as the host of a 1950s entertainment TV program translated into electoral support during his presidential campaign in 1980.

paper focuses on media used by a charismatic individual, and in particular, a charismatic leader. The political influence of charismatic individuals, such as politicians, opinion leaders, and media personalities across a variety of media platforms, has become increasingly evident in recent years, including during the 2016 U.S. presidential election (Marwick and Lewis, 2017). For instance, the use of Twitter by Donald Trump is widely considered (even by Trump himself) to have contributed to his election in 2016. Yet, there exists little empirical evidence on the political impact of media wielded by charismatic individuals.

I study the extent to which an individual charismatic leader can manipulate the media to influence voting behavior. Related to my work is that of Garthwaite and Moore (2013) who study the effects of political endorsements by celebrities. They show that Oprah Winfrey's endorsement of Barack Obama brought approximately 1 million additional votes to him during the 2008 U.S. Democratic Presidential Primary. In contrast, instead of examining political endorsements, I focus on the impact of a charismatic demagogue (O'Toole, 2019; Harris, 2009; Warren, 1996; Brinkley, 1982; Bennett, 1969; Lee and Lee, 1939) who uses the media to spread propaganda and misinformation. To my knowledge, this paper is the first in the literature to empirically document how a charismatic leader, as an individual, can manipulate the media to influence voting and political preferences. Moreover, this paper contributes to a broader literature by exploring the role of religion in political persuasion, which has gone largely unexplored. Finally, the historical context which I consider provides a novel opportunity to not only examine short-term effects of exposure to charismatic leaders, but to also consider the long-term effects of such exposure. While little studied, my results suggest that these long-term effects can be both statistically and economically significant.

By exploring arguably the darkest episode of anti-Semitism in American history, this paper also adds to the literature on media and inter-group animosity (Bursztyn et al., 2019; Müller and Schwarz, 2019a,b; Adena et al., 2015; DellaVigna et al., 2014; Yanagizawa-Drott, 2014), on religious extremism (Iannaccone and Berman, 2006), and more specifically, on anti-Semitism (Becker and Pascali, 2019; Johnson and Koyama, 2019; Finley and Koyama, 2018; Anderson et al., 2017; Voigtlaender and Voth, 2012). Previous work on anti-Semitism has almost exclusively focused on the European context. Organized anti-Semitism reached unprecedented levels in inter-war America, and Father Coughlin is widely considered its

foremost proponent (Strong, 1941; Lee and Lee, 1939). This paper studies an important episode of anti-Semitism in America, which has received little attention in the literature.

Furthermore, this paper contributes to the relatively new and growing literature studying populism. Existing work so far has largely focused on the determinants of populism, exploring its economic and cultural roots (Inglehart and Norris, 2019; Fukuyama, 2018; Colantone and Stanig, 2018a,b; Autor et al., 2017; Goodhart, 2017; Gidron and Hall, 2017). There is still little evidence on the extent to which media matter to populist leaders. The findings of this paper are particularly relevant to today's ongoing debate on the role of media in the rise of populism (Couttenier et al., 2019; Durante et al., 2019; Zhuravskaya et al., 2019). Lastly, this paper also contributes to the social science literature examining Father Coughlin (Warren, 1996; Brinkley, 1982; Bennett, 1969; Tull, 1965).

2.2 Historical Background: Radio and Father Coughlin

Radio entered American households in the 1920s as a groundbreaking communication technology. It was the first time in which one could directly speak to a mass audience over long distances. Providing a variety of entertainment and information, radio soon became a sought-after household item. Figure 18 shows that the share of American families owning a radio set rose from nothing to about 40 percent over the decade of the 1920s, and it further increased to about 80 percent by 1940; the number of radio stations also increased rapidly during 1920-1940. As a result, the period is often dubbed the Golden Age of Radio.

Radio was central to the rise of Father Coughlin from a local Roman Catholic priest to a national figure. In 1926, Coughlin started as a priest at the National Shrine of the Little Flower church in Royal Oak, Michigan, just outside of Detroit. He quickly embraced radio to broadcast his weekly theological teachings from the Detroit station WJR. A charismatic orator on the radio, Coughlin soon attracted a loyal audience in the Midwest and became known as the radio priest. Frequently described as "golden voiced" and "silver tongued," Father Coughlin possessed such a mesmerizing voice that, according to one of his listeners, "anyone turning past it almost automatically returned to hear it again" (Bennett, 1969).

The onset of the Great Depression and the ensuing human suffering, however, convinced Father Coughlin to switch to broadcast almost exclusively social and economic commentaries. He described American society as controlled by powerful "banksters," "plutocrats," "atheistic Marxists," and "international (commonly understood to mean Jewish) financiers," whom Coughlin blamed for the catastrophe of ordinary American citizens (Warren, 1996). Father Coughlin's outspokenness on the nation's economic plight brought him fame as a champion of the common man, but his controversial statements were often considered demagogic by others (Bennett, 1969; Tull, 1965; Brinkley, 1982).

The CBS national network picked up Coughlin's radio program in 1930, which made Father Coughlin a household name. Coughlin's increasingly controversial statements about the economic and financial elites as well as his refusal to tone down, however, led the CBS to drop his program a year later (Warren, 1996). In response, Father Coughlin purchased airtime from individual stations and formed his own radio network, and his weekly radio show was soon broadcast again every Sunday afternoon to a national audience. The Gallup Poll in April 1938 estimated retrospectively that 27.5% of Americans listened regularly to Father Coughlin's radio program before the 1936 presidential election.[2] This would put Coughlin's listenership at above 30 million in the mid-1930s, making Father Coughlin the most listened to regular radio speaker in the world then (Brinkley, 1982). During the same period, Coughlin also received on average more than 10,000 unsolicited letters a day from his listeners, often with a small donation enclosed; he even had to build a post office and hire over 100 clerks to just process those letters (Brinkley, 1982). The amount of letters Coughlin received daily in the mid-1930s even surpassed that of President Franklin D. Roosevelt (Brinkley, 1982). It is therefore not surprising that many contemporary observers regarded Father Coughlin as the second most influential public figure in the U.S., next only to FDR.

Initially a supporter during FDR's early presidency, Father Coughlin coined the phrase "Roosevelt or Ruin" in 1933 following FDR's election (Tull, 1965). Coughlin, however, grew disillusioned with the Roosevelt administration over time and deemed the New Deal administration unsuccessful at addressing the nation's problems. In November 1934 Coughlin

[2]The number is calculated by the author based on the April 1938 Gallup Poll data from the Roper Center for Public Opinion Research: `https://ropercenter.cornell.edu/`

founded his own organization, the National Union for Social Justice (NUSJ), to promote ideologies and policies which he believed would lead to greater prosperity and social justice.[3] The Roosevelt administration, however, did not follow Coughlin's proposals. By 1936, Coughlin had become a harsh denouncer of the Roosevelt administration (Tull, 1965). With the new slogan "Roosevelt and Ruin," Father Coughlin accused FDR of being "anti-God" and a "great betrayer and liar" controlled by both international bankers and communists.

In opposition to the Roosevelt administration, Father Coughlin co-founded a third political party, the Union Party, together with old-age pension advocate Francis Townsend and Gerald L. K. Smith, who replaced Huey Long as the head of the Share Our Wealth movement following Long's assassination in 1935. The Union Party selected Republican Senator William Lemke from North Dakota as the party's candidate and proposed a populist alternative to challenge FDR in the 1936 presidential election.

Father Coughlin had become more extreme by the late 1930s. Throughout 1938-1939, Coughlin's radio broadcast and weekly newspaper, *Social Justice*, were overtly anti-Semitic (Warren, 1996). He portrayed Jews as malicious aliens associated with communism and made bitter personal attacks on leading rabbis and Jewish organizations (O'Toole, 2019). He blamed Jews for inciting the European conflicts, supported pro-Nazi organizations in America such as the German-American Bund, and serialized in his weekly newspaper the *Protocols of the Elders of Zion*, the notorious fake document purporting Jewish plans for world domination (O'Toole, 2019). Some of Father Coughlin's writings in his newspaper even followed Joseph Goebbels' speeches verbatim (Warren, 1996). In 1938, Coughlin also played an instrumental role in forming a paramilitary and anti-Semitic organization, the Christian Front, which specialized in harassing and beating up Jews and vandalizing Jewish property across major U.S. cities (O'Toole, 2019). Besides, Father Coughlin was also a staunch supporter for American isolationism. Calling FDR "the world's chief warmonger," Coughlin vehemently opposed America's involvement with WWII and endorsed the leading U.S. isolationist organization, the American First Committee.

Father Coughlin's controversial activities eventually led to his downfall. In late 1939,

[3]Appendix B provides the 16 principles of the National Union Social Justice that Father Coughlin outlined at its founding in November 1934.

the National Association of Broadcasters (NAB) introduced a new self-regulation code that prohibited radio stations from discussing controversial issues in sponsored programs, a rule that many believe was introduced specifically to rein in Father Coughlin (Warren, 1996). Following this new rule, almost no station were willing to sell Coughlin airtime, which forced him off the air in 1940. Shortly following the Pearl Harbor attack, the federal government further invoked the Espionage Act of 1917 and banned postal circulation of Coughlin's weekly newspaper in 1942 because of its seditious content. Church superiors also ordered Coughlin to relinquish any political involvement or to give up his priesthood. Father Coughlin chose to return to his parish duties in 1942 and refrained from the public sphere thereafter.

2.3 Data

My baseline empirical work relates exposure to Father Coughlin's anti-FDR broadcast in 1936 to voting outcomes in the 1936 presidential election. In this section, I describe the data employed in the baseline analysis, including data used to measure exposure to Father Coughlin's radio program, electoral outcomes, and other county characteristics.

2.3.1 Exposure to Father Coughlin's Radio Program

A challenge to study Father Coughlin's impact on the 1936 presidential election is the lack of data measuring exposure to Coughlin's radio program in 1936 at a fine-grained geographic level. For this project, I assemble a unique data set from several sources that is particularly suited to measure the political impacts of Father Coughlin. To proceed, I identify all the radio stations that Father Coughlin used for his weekly broadcasts in 1936 from the historical magazine *Broadcasting*. Figure 6 displays the location of the stations, showing a total of 33 stations. For each of Coughlin's station, I collect technical characteristics from the 1936 *Broadcasting Yearbook*, which provide me with the transmitter frequency, power, and height. I then use this information to calculate the signal strength of Father Coughlin's radio program across U.S. counties in 1936.

Radio signal transmission obeys the laws of electromagnetic propagation. In the free space (i.e. assuming the earth is smooth and without any geographic or topographic obstacles), signal strength is inversely proportional to the square of the distance from the transmitter (Olken, 2009). In actual transmission, however, the presence of geographic or topographic obstacles, such as mountains or hills, would lead to diffraction and greater transmission loss in signal. I calculate the signal transmission loss with a professional radio propagation software based on the Irregular Terrain Model (ITM). The ITM was developed by the U.S. government in the 1960s and typically used by radio and TV engineers to predict signal strength of broadcasts.[4]

Following Olken (2009), I calculate the transmission loss for each transmitter-county pair using the ITM algorithm.[5] I then deduct the transmission loss from the power of the transmitter to get the predicted signal strength, where signal strength is measured in decibel-milliwatts (dBm). Finally, for each county I use the maximum predicted signal strength across all transmitters as the predicted signal strength in that county.

Panel A of Figure 11 shows the predicted signal strength of Father Coughlin's radio program across counties, where stronger signals are shown with darker colors.[6] Previous studies (Olken, 2009; Adena et al., 2015) have found that signal strength is a strong predictor for actual viewership or listenership of mass media. Because county-level listenership data of Coughlin's radio program are not available, I follow Durante et al. (2019) and use the continuous measure of signal strength as the explanatory variable.[7] Nonetheless, Figure 8 provides evidence that the share of population who regularly listened to Coughlin before

[4]Benjamin Olken has kindly shared the software with me. The ITM software has also been used to calculate radio signal strength in historical settings by Adena et al. (2015) in the context of Nazi Germany and by Gagliarducci et al. (Forthcoming) in the context of Italy during WWII.

[5]I use the centroid of each county as the receiving location.

[6]Evidently the Cincinnati station is the most powerful station, with its signal dominating a large number of counties. This is because the Cincinnati station WLW was chosen by the federal government to experiment with high power broadcasting and authorized to broadcast at 500 kW between 1935 and 1939, while all other stations were operating at 50 kW or less. WLW was one of Coughlin's stations in 1936. My results are robust to simply removing this station from Coughlin's radio network or using 50 kW as its power, which was its original power before 1935, to calculate the signal strength. Hence, my results are not driven by the Cincinnati station.

[7]The Gallup Poll in April 1938 asked retrospectively about Coughlin listenership before the 1936 election. The data unfortunately do not contain county identifiers for individual respondents. While I use the continuous measure of signal strength in most of my analysis, in a robustness check I use an indicator variable that equals 1 if a county's signal strength is above median and 0 otherwise.

the 1936 election was highly correlated with the location of his stations and with predicted signal strength across regions.

It is also evident from Figure 6 that Father Coughlin had no station in the geographic South. This has been attributed to the fact that Coughlin would have attracted few audience in the South as a Catholic priest of Irish descent (Tull, 1965). Indeed, Figure 20 maps the geographic distribution of Catholic population in 1926 and shows that the location of Father Coughlin's stations largely followed the the pre-existing geographical distribution of Catholics, which the South had few. In addition, the South also had a relatively lower radio ownership than the rest of the nation, as seen in Figure 19.

Because the South had much fewer potential listeners of Father Coughlin regardless of Coughlin's signal strength in the region, I focus my empirical analysis on states outside of the geographic South to improve precision.[8] The central results are qualitatively similar when I include all states in my analysis.

I use the ITM to also generate the hypothetical signal strength in the free space, assuming the earth is free of any geographic or topographic obstacles that may hinder signal transmission. This is important to my baseline identification strategy which exploits the varying topography along the signal transmission route to provide plausibly exogenous variation in signal strength, a point I will return to in Section 4.

2.3.2 Voting Data and County Characteristics

The main outcomes of interest of my baseline analysis consist of vote shares (in percentage points) of the Democratic Party (FDR), the Republican Party, and other parties in each county in the 1936 presidential election. Some of my analyses also use vote shares from past and later presidential elections. These data come from the ICPSR Study 8611 data set (Clubb et al., 2006). Figure 9 shows FDR's vote share across counties in the 1936 presidential election.

County-level socioeconomic variables are obtained from several sources. From the

[8]Indeed, Figure 8 shows that the South had the lowest Coughlin listenership among all regions before 1936 election. The 11 Southern states excluded are Oklahoma, Arkansas, Tennessee, North Carolina, Texas, Louisiana, Mississippi, Alabama, Georgia, Florida, and South Carolina. Including these states produces qualitatively similar results for my baseline estimates, which I will show in Table 30 as a robustness check.

ICPSR 2896 data set (Haines, 2010), I obtain a rich set of 1930 county demographics, measuring county population and population by gender, race, birth place, age, literacy, employment status, radio ownership, and farm characteristics. I use the 1930 Census IPUMS microdata to compute for each county its mean occupational income score and shares of employment in manufacturing and in agriculture. The 1926 *Census of Religious Bodies* provides me with the share of population belonging to each religious denomination at the county level in 1926, which allows me to measure the population share of Roman Catholics. I use ArcGIS to generate additional county-level geographic characteristics, including area, elevation, and terrain ruggedness.[9]

2.4 Empirical Strategy

The objective of my baseline empirical work is to study the impact of exposure to Father Coughlin's radio program on voting outcomes in the 1936 presidential election. Notably, the location of Father Coughlin's stations in 1936 were mostly the same as that in 1933, when Coughlin was supportive of FDR. Figure 6 maps Coughlin's stations in 1936, which shows that 25 out of the 33 (or about 76%) stations in 1936 were already in Coughlin's network in 1933, when Coughlin was still a strong supporter for FDR. It is therefore unlikely that station location in 1936 was intentionally driven by Coughlin's opposition to FDR.[10]

Nonetheless, reception of Coughlin's broadcast might have been correlated with other local characteristics (e.g. distance to major cities) that could have influenced voting behavior in 1936. To address this concern, I employ an empirical strategy pioneered by Olken (2009) and exploit plausibly exogenous variation in Coughlin's signal strength resulting from topographic factors.[11] Specifically, I regress the outcomes of interest on the actual signal strength (*Signal*), while controlling for the hypothetical signal strength in the free space

[9] I measure elevation and ruggedness at county centroids, consistent with what I did for signal strength.

[10] While Coughlin's radio network clearly expanded westward between 1933 and 1936, the results are robust to restricting the sample to counties only in the Northeast and the Midwest, where station location changed little over time.

[11] A similar strategy has also been used by Durante et al. (2019), DellaVigna et al. (2014), and Yanagizawa-Drott (2014).

($SignalFree$) where the earth is assumed to be free of any topographic obstacles, such as mountains or hills, that diffract and weaken radio signal transmission. Crucially, the variable $SignalFree$ controls for a county's proximity to a transmitter as well as the power of the transmitter. Therefore, once controlling for $SignalFree$, identification of the coefficient of $Signal$ comes from variation in diffraction patterns caused by topographic obstacles along the signal transmission route. Figure 11 shows the actual (ITM predicted) signal strength of Coughlin's radio program and the hypothetical signal strength in the free space.

Because a county's own topography could also potentially influence its political outcomes, I control for various local geographic characteristics of the county, including the county's surface area, altitude, and terrain ruggedness as well as the square terms of each of these geographic variables. Therefore, I only exploit residual variation in signal strength resulting from topography along the signal transmission route *outside* the county, which is arguably more exogenous.[12] Furthermore, I include state fixed effects to compare counties within the same state in all my analyses.

I run the following regression for my baseline analysis:

$$Vote_c = \beta Signal_c + \gamma SignalFree_c + \delta' X_c + \eta_s + \epsilon_c \tag{2.1}$$

where $Vote_c$ is the vote share (in percentage points) received by a party in county c in the 1936 presidential election. $Signal_c$ is the actual signal strength of Father Coughlin's radio program in county c in 1936. $SignalFree_c$ is the hypothetical signal strength in the free space. X_c is a vector of county baseline controls for local geographic characteristics, socioeconomic characteristics, and past voting outcomes. η_s are state fixed effects, controlling for any differences across states that might influence voting. ϵ_c is the error term. Standard errors are corrected for clustering at the state level. To ease the interpretation of the results, I standardize signal strength such that it has a mean of zero and a standard deviation of one.

The coefficient β provides the reduced-form estimate of the effect of exposure to Father Coughlin's radio program. The identification assumption is that, $Signal$ is not correlated

[12]The exceptions are the counties that contained Coughlin stations. I will provide robustness checks by dropping these counties as well as the areas surrounding them.

with unobserved factors that influence voting outcomes, conditional on all the covariates in equation (3.1). While the assumption is ultimately untestable, I support the conditional exogeneity assumption through balance and placebo tests by examining the correlation of *Signal* with pre-existing county socioeconomic characteristics and past voting outcomes.

In Table 9, I examine the correlation between Coughlin's signal strength in 1936 and 1930 county socioeconomic characteristics. As seen in column 2, *Signal* is significantly correlated with quite a few socioeconomic variables in the univariate regression. This is not surprising given that Father Coughlin's stations were mostly in large cities in the Northeast and the Midwest. *Signal*, however, becomes more balanced across the set of socioeconomic characteristics after I control in column 4 for the free-space signal, state fixed effects, and local geographic characteristics. In fact, $SignalFree$, state fixed effects, and local geographic characteristics explain about 30-60 percent of the overall variation of most of the socioeconomic variables. Conditional on the additional covariates, *Signal* is no longer correlated with most pre-existing demographic or industrial characteristics, although it is still correlated with the share of elderly, unemployment rate, and radio ownership. Therefore, to be conservative, I include all the socioeconomic characteristics in Table 9 as controls in equation (3.1).

In Table 10, I perform a series of placebo tests by examining the correlation between *Signal* and Democratic and Republican vote shares in past presidential elections before 1936. Conditional the full set of baseline controls, *Signal* is not significantly correlated with any of the past electoral outcomes during the period 1920-1932 (column 1-8) or with changes in electoral outcomes between 1928 and 1932 (column 9-10); the estimated coefficients are also generally small. The results suggest that exposure to Father Coughlin's radio program in 1936 is not systematically correlated with pre-existing political preferences in either levels or trends, providing support to the conditional exogeneity assumption of equation (3.1).

2.5 Father Coughlin and Presidential Elections

In this section, I present the results on the impact of exposure to Father Coughlin's radio program on presidential election voting outcomes. I focus on the presidential election of 1936, the year in which Father Coughlin harshly attacked FDR in his radio broadcasts and co-founded the Union Party to challenge FDR in the presidential race.

2.5.1 Baseline Results

Table 11 shows the estimated effects of exposure to Father Coughlin's broadcast on voting in the 1936 presidential election. I find that exposure to Father Coughlin's radio program had a large negative effect on the support for FDR in the 1936 presidential election. Based on column 1, without any control, a one standard deviation increase in exposure to Father Coughlin's radio program was associated with a reduction in FDR's vote share by about 3.8 percentage points. The results are robust and of similar magnitudes when adding in different controls in subsequent columns, including state fixed effects, the free-space signal, and county geographic and socioeconomic characteristics. In column 6, after further controlling for past electoral outcomes, the estimated coefficient changes little. Based on column 6, which is my preferred specification that includes all baseline controls, a one standard deviation increase in exposure to Coughlin's radio program reduced FDR's vote share by about 2.4 percentage points, which is about 4 percent relative to the mean of FDR's vote share.

Column 7 of the table, which uses the Republican Party's vote share as the outcome, shows that most of the reduction in FDR's vote share as a result of exposure to Coughlin went to the Republican Party. A one standard deviation increase in exposure to Coughlin's radio program increased the Rupublican vote share by about 2 percentage points. The voting data set unfortunately does not contain separate voting results for different third parties in 1936, even though the Union Party received most of the votes among third parties.[13] The data limitation makes it difficult to examine the effect on the Union Party specifically. I

[13] In 1936, votes for the Union Party represented 73.5% of all the votes that went to third parties.

therefore combine the vote shares of all other parties into one category and use it as the outcome in Column 8. Column 8 shows that exposure to Father Coughlin increased the support for other parties by about 0.4 percentage points, although the effect is not precisely estimated. Taken as a whole, Table 11 suggests that exposure to Father Coughlin's radio program reduced support for FDR in the 1936 presidential election.

Next, I turn to examine the role of religion in Father Coughlin's persuasion. As a Roman Catholic priest, Father Coughlin likely had greater influence among the Catholic population. Indeed, based on a Gallup Poll survey in December 1938, Panel B of Figure 21 shows that more than 60% of Catholics approved of what Father Coughlin said in general, much higher than other religious groups did. I therefore expect that exposure to Father Coughlin's radio program to have a larger effect in counties with more Catholics. To test this hypothesis, I include in my regression interaction terms between *Signal* and an indicator variable that equals 1 if a county's population share of Catholics was in the top quartile of the distribution among all counties and 0 otherwise.[14]

Table 12 reports the estimates based on this regression. Consistent with the expectation, the effects estimated are larger in highly Catholic counties. Here the effect of *Signal* in highly Catholic counties is equal to the sum of the coefficient on *Signal* and that on the interaction term $Signal \times Catholic$. Based on column 1, a one standard deviation increase in Coughlin exposure reduced FDR's votes by about 3.4 percentage points in highly Catholic counties. Column 2 shows that there was no differential effect on the support for the Republican Party in highly Catholic counties. In contrast, Coulumn 3 shows that a one standard deviation increase in Coughlin exposure increased the support for other parties by about 1.4 percentage points in highly Catholic counties, which most likely reflect an increase in support for Coughlin's Union Party since it was the dominant third party in 1936. Taken together, Table 12 is consistent with Father Coughlin having a greater influence on Catholic voters and suggests the possibility for religion to be exploited for political persuasion.

A potential concern remains that the baseline results may simply reflect exposure to radio programs in general instead of exposure to Father Coughlin. To address this concern,

[14]Results based on a continuous measure of the population share of Catholics are similar and shown in Table 28.

I collect data on NBC and CBS network radio stations that did not carry Coughlin's broadcast and run a falsification test. Specifically, I use the same method to predict the signal strengths from the non-Coughlin stations and then include the non-Coughlin signal strengths (including free-space signals) in my baseline regression to perform a statistical horse race. Table 13 reports these results. As seen in Table 13, the estimated effects of exposure to non-Coughlin stations are much smaller in magnitude and statistically insignificant, while the estimates for exposure to Coughlin's stations remain strong and similar as in the baseline. The statistical horse race between Coughlin and non-Coughlin stations suggests that it was exposure to Father Coughlin's radio program, instead of exposure to radio programs in general, that reduced support for FDR in 1936.

2.5.2 Evidence from a Difference-in-Differences Strategy

A unique feature of my empirical setting is Father Coughlin's switch in his attitude towards FDR between 1932 and 1936. Although Father Coughlin was pro-FDR in the 1932 presidential election, Coughlin did not explicitly broadcast his support for FDR in his radio program until FDR had won the election (Warren, 1996; Tull, 1965). In a private letter written to FDR during the 1932 presidential campaign, Father Coughlin expressed strong support for FDR but stated that he could not take a stand publicly or endorse a particular candidate because his priesthood forbade him to do so (Tull, 1965). Yet, by 1936, Coughlin had taken an explicit stand against FDR and made that public through his radio program. Therefore, I would expect places more exposed to Father Coughlin's radio program in 1936 to display a greater *reduction* in support for FDR between 1932 and 1936.

To exploit the change in Father Coughlin's attitude between 1932 and 1936, I turn to a difference-in-differences specification using the 1932-1936 panel and exploit only within-county variation over time. Specifically, I run the following regression:

$$Vote_{ct} = \beta Signal_c \times Post_t + X_c \times Post_t + \sigma_c + \eta_{st} + \epsilon_{ct} \tag{2.2}$$

where $Signal_c$ is the predicted signal strength of Father Coughlin's radio program in county c in 1936. $Post_t$ is an indicator for post-1932, which equals 1 in 1936 and 0 in 1932. σ_c

are county fixed effects, which control for any time-invariant county characteristics. η_{st} are state-by-year fixed effects, which control for statewide shocks to all counties in each state. In some specifications, I further control for the interactions between all my baseline county characteristics X_c and $Post_t$, which allow each baseline county characteristic to have a differential effect on voting over time. The standard errors are corrected for clustering at the county level.

Table 14 reports the results from the difference-in-differences specification, which substantially confirm the baseline results. Column 1 of Table 14 shows that, controlling for county fixed effects and year fixed effects, a one standard deviation increase in exposure to Father Coughlin's radio program decreased FDR's vote share by about 1.5 percentage points. The estimated effects remain robust after controlling for state-by-year fixed effects in column 2 and, if anything, become slightly larger when controlling for the interactions between baseline county characteristics and the post dummy in column 3. Column 4 and 5 of the table show that the estimated effects for the Republican party and for other parties remain similar in magnitudes as found in the baseline and become more precisely estimated.

The identifying assumption of the difference-in-differences specification is that vote shares in counties with different levels of exposure to Father Coughlin would have followed parallel trends absent of Father Coughlin's radio program. Results in columns 9 and 10 of Table 10 are consistent with the parallel trends assumption by showing that exposure to Coughlin's radio program in 1936 was not significantly correlated with changes in vote shares during 1928-1932. Here, I provide additional support for the parallel trends assumption using an event study on a relatively longer panel. Specifically, I run equation (2.2) on the panel of 1912-1944, replacing $Post_t$ with year dummies and using 1932 as the omitted category. The period of 1912-1944 covers all four presidential elections (1932-1944) involving FDR as well as five elections before.

Figure 10 presents the event study graph for Democratic vote shares. As seen from this figure, the estimates in the five pre-periods are relatively small in magnitudes and not significantly different from that in 1932; the lack of a clear trend before 1936 supports the parallel trends assumption. The estimates for the period 1936-1944 suggest that higher exposure to Father Coughlin's radio program in 1936 reduced support for FDR in each of

FDR's reelections since 1936. The negative effects appear to increase in magnitude over time. Based on the 1944 estimate, relative to FDR's vote share in 1932, a one standard deviation higher exposure to Father Coughlin's radio program lowered FDR's vote share by about 3.7 percentage points in the 1944 election. Overall, the event study exercise largely confirms the baseline findings.

2.5.3 Magnitude of the Effects

To understand the magnitude of the effects of exposure to Father Coughlin's radio program on national elections, I turn to a back-of-the-envelope calculation. The goal is to see whether FDR would have lost any national elections during 1936-1944, a period that saw FDR ran for and won all three reelections, if there were a higher exposure to Father Coughlin. To conduct this exercise, I look at how many states and electoral college votes FDR would have lost during 1936-1944 given a one standard deviation higher exposure to Father Coughlin.

I start with the presidential election in 1936. Columns 6 and 7 of Table 11 show that in 1936 a one standard deviation increase in exposure to Coughlin reduced FDR's vote share by approximately 2.4 percentage points and increased the Republican presidential candidate Alf Landon's vote share by about 1.98 percentage points. Suppose each state experienced a one standard deviation higher exposure to Father Coughlin, then the margin of victory between FDR and Landon would shrink by 4.38 (2.4+1.98=4.38) percentage points. A decrease in the vote margin by 4.38 percentage points, however, would not flip the electoral outcome in most states in 1936, a year in which FDR enjoyed a landslide victory and carried 46 out of 48 states with large margins across states. In fact, a reduction in the vote margin by 4.38 percentage points would only flip the electoral outcome in New Hampshire, a state in which FDR enjoyed a margin of victory of only 1.75 percentage points. Therefore, the election outcome was unlikely to have changed given higher exposure to Father Coughlin in 1936.

The picture starts to look different in 1940 and 1944. Table 29 provides the estimated effects of exposure to Father Coughlin's radio program in 1936 on FDR's as well as the Republican presidential nominees' vote shares in 1940 and 1944. The table shows that a one

standard deviation increase in Coughlin exposure would shrink the margin of victory between FDR and Republican nominee Wendell Willkie by 6.18 (columns 1-2, 2.99+3.19=6.18) percentage points in 1940 and the margin of victory between FDR and Republican nominee Thomas Dewey by 6.62 (columns 3-4, 3.36+3.26=6.62) percentage points in 1944. A reduction in the vote margin by 6.18 percentage points at the state-level would flip the election results of 8 states and transfer 159 electoral college votes from FDR to Willkie in 1940, although FDR would still emerge victorious by a margin of 49 electoral college votes.[15] In contrast, a shrinkage of the margin by 6.62 percentage points at the state-level would lead FDR to carry 13 fewer states and lose 217 electoral college votes in 1944, meaning FDR would only have obtained 215 electoral college votes as compared to Dewey's 316.[16]

Therefore, the back-of-the-envelope calculation suggests that a higher exposure to Father Coughlin could have deprived FDR of his reelection to a fourth term in 1944. This is a striking result but not implausible given Father Coughlin's influence and the dwindling support for FDR over time.

2.5.4 Additional Robustness Checks

I perform several additional robustness checks on my baseline results using FDR's 1936 vote share as the outcome variable and report them in Table 30. In column 1 of the table, I verify that the results are not driven by particular parametric assumptions by using a binary measure of signal that equals 1 if the signal strength was above the median and 0 otherwise. The results are robust to using the binary measure. In column 2, I drop counties within 100 miles from any Coughlin's stations in 1936 to verify that big cities or their surrounding regions do not drive the results.[17] Counties further away from a station were in general

[15]The 8 states that FDR would have lost in 1940 given a one standard deviation higher exposure to Coughlin are (with the actual margins of victory in percentage points given in parentheses): IL (2.43%), MN (3.83%), MO (4.77%), NJ (3.62%), NY (3.56%), OH (4.41%), WI (1.82%), and WY (5.93%). With these 8 states lost, FDR would have won 290 electoral college votes as compared to Willkie's 241 votes.

[16]The 13 states that FDR would have lost in 1944 given a one standard deviation higher exposure to Coughlin are (with the actual margins of victory in percentage points given in parentheses): CT (5.36%), ID (3.49%), IL (3.47%), MD (3.70%), MA (5.81%), MI (1.02%), MN (5.55%), MO (2.94%), NH (4.24%), NJ (1.35%), NY (5.01%), OR (4.85%), and PA (2.78%).

[17]The results are qualitatively similar when focusing on counties that were 150, 200, 250 or 300 miles away from any Coughlin's stations.

smaller and therefore more likely exposed to Coughlin's broadcast "by chance."

In column 3, I control for the free-space signal more flexibly, including the square and the cube of the the free-space signal in the baseline regression as additional controls. The baseline results still hold. Column 4 shows that the results are also robust to controlling for county-level New Deal expenditures using data from Fishback et al. (2003), including per capita New Deal grant, relief, and loans. In column 5, I examine the effect on the full sample of counties including the South. The coefficient becomes somewhat smaller and less precisely estimated (p-value = 0.104), but the result is qualitatively similar and indicates an overall negative effect of exposure to Father Coughlin on voting for FDR in 1936. In column 6, I weight the baseline regression using county population, and the estimate changes little. The robustness of the baseline results to this series of additional checks further increase the confidence in the results.

2.5.5 Persistence after 1936

Father Coughlin was forced off the air in the spring of 1940. Did exposure to Father Coughlin's radio program have persistent effects on presidential voting in the long run? To explore this question, I turn to examine the effects of exposure to Father Coughlin in 1936 on voting outcomes in later presidential elections.

While Figure 10 shows that exposure to Father Coughlin continued to negatively affect FDR when FDR ran for reelections in 1940 and 1944, it is less clear how early exposure to Father Coughlin would affect later presidential voting after FDR passed away in office in 1945, 5 years after Coughlin left the air. The negative effects on the Democratic Party could vanish after 1945 if voters associated Coughlin's attacks only with FDR himself, and the effects could persist if voters associated the attacks on the New Deal and on FDR's administration with the Democratic party.

Figure 22 plots the estimated coefficients on *Signal* from separate regressions, in which the outcomes are the Democratic vote shares in each presidential election from 1936 and 1972, the last year covered by the ICPSR Study 8611 dataset (Clubb et al., 2006). The figure shows that exposure to Father Coughlin continued to negatively affect the Democratic vote shares

in the long run. The effects, however, appear to decrease after FDR passed away in 1945 and decline over time until disappearing in 1972. The persistence of the effects suggests that Father Coughlin's attack on the Roosevelt administration possibly shaped many voters' attitudes towards the Democratic party and highlights the impact of influential opinion leaders like Father Coughlin.

2.6 Father Coughlin, Anti-Semitism, and Civilian Support for WWII

By the late 1930s, Father Coughlin had become a leading anti-Semitic icon, fascist sympathizer, and isolationist advocate in pre-war America (Tull, 1965; Brinkley, 1982; Warren, 1996). I now turn to examine the impact of Coughlin's radio broadcast on measures of anti-Semitism, fascist sympathies, and support for the war effort among Americans.

2.6.1 Civilian Support for America's War Effort

First, I examine whether exposure to Father Coughlin's radio program affected civilian support for America's war effort during WWII. To carry out this exercise, I use data on county-level WWII bond sales in 1944, which come from the 1947 *County and City Yearbooks*. I divide total bond sales by county population to obtain per capita sales of WWII bonds in each county. For the ease of interpretation, I use the natural log of per capita war bond sales as the outcome variable. To measure exposure to Father Coughlin's radio program, I collect data on Coughlin's stations in 1939 and use the ITM software to measure their signal strength across counties as I did in the baseline analysis. I then run a similar regression as in equation (3.1), regressing war bond sales in 1944 on the signal strength of Coughlin's radio program in 1939.

Table 15 reports the results from this exercise. To be consistent with my baseline results, I again focus on regions outside of the geographic South.[18] Across different specifications, exposure to Father Coughlin's radio program in 1939 is associated with lower per

[18]Results based on the full sample of counties are qualitatively similar and remain statistically significant at the 5 percent level.

capita war bond sales in 1944. Based on column 5, conditional on all the controls, a one standard deviation increase in Coughlin signal is associated with a 17% decrease in per capita WWII bond sales. The results suggests that exposure to Father Coughlin's radio program in the late 1930s lowered civilian support for America's war effort.

2.6.2 Evidence from the German-American Bund

In a broadcast following Nazi Germany's Kristallnacht in November 1938, Father Coughlin notoriously labeled the attacks on Jews as a defense against communism (Warren, 1996). Based on the December 1938 Gallap Poll, Figure 21 shows that while close to 60% of Catholics approved of what Coughlin said in general, less than 20% of Jews did. It is natural to wonder whether exposure to Father Coughlin's anti-Semitic broadcasts throughout the period of 1938-1939 affected anti-Semitism in America.

A challenge to study anti-Semitism or fascist sympathies in pre-war America, however, is the lack of data measuring these outcomes. To overcome the challenge, I collect new data from the FBI records on the German-American Bund, the leading anti-Semitic and pro-Nazi organization in pre-war America (Strong, 1941). The data allow me to identify all the cities with a local branch of the Bund in 1940, a total of 54 cities.

I conduct a similar exercise as in the baseline analysis at the city level. I define the outcome to be a binary variable that equals 1 if a city had a local branch of the Bund in 1940, and 0 otherwise. The explanatory variable is city-level signal strength of Coughlin's radio program in 1939. Since the smallest city with a local branch of the Bund had a population of 11,710, I define the sample to consist of all identifiable cities in the 1930 Census that had a population of 10,000 or above. I then regress whether the city had a branch of the Bund on Coughlin's signal strength in 1939, controlling for the free space signal, city characteristics, and state fixed effects.

Table 16 reports the results from this exercise. In column 1, I control for only the free space signal and state fixed effects. In column 2, I add controls for city geographic characteristics, including elevation and its square, as well as terrain ruggedness and its square. In column 3, I further control for city socioeconomic characteristics as observed in 1930, includ-

ing population, percent unemployed, average occupational income score, percent owning a radio, perccent of Jewish descent, percent of first- or second-generation German immigrants, percent native, and an indicator for large city (having a population above 100,000).[19] Based on column 3, a one standard deviation increase in Coughlin exposure was associated with about a 9 percentage points higher likelihood of having a local branch of the German American Bund. In column 4, I restrict my sample to only those cities more than 50 miles away from a Coughlin station, whose exposure to Coughlin's radio program was more likely to be exogenous, and the estimate changes little. Overall, Table 16 offers suggestive evidence that Father Coughlin's radio program possibly increased fascist sympathies and anti-Semitic sentiment in pre-war America.

2.6.3 Public Attitudes towards Jews in the Long Run

Lastly, to explore the impact of Father Coughlin's radio program on the public attitudes towards Jews in the long run, I turn to individual survey data from the nationally representative American National Election Studies (ANES). Since the 1960s, the ANES have asked about respondents' feelings towards Jews in several rounds of surveys using a feeling thermometer question.[20] Specifically, the question asked about the respondents' feelings of warmth towards Jews (and other groups of people) on a scale from 0 to 100, with 100 being the warmest. I use this feeling thermometer variable (ranging from 0 to 100) as the outcome and run a similar regression as in equation (3.1) at the individual level. To do that, I pool together all ANES surveys in which feeling thermometer measurements on Jews are available, including the years of 1964, 1966, 1968, 1972, 1976, 1988 and 1992. This provides me with more than 11,500 individuals from 228 counties. I measure exposure to Coughlin's anti-Semitic radio program using the predicted signal strength of Coughlin's radio program across counties in 1939. The county identifiers in the ANES data allow me to assign exposure to Father Coughlin's radio program to individuals based on the counties they lived in.

[19] I measure population of Jewish descent by counting individuals whose mother tongues were either Yiddish or Hebrew in the 1930 Census. I measure population of first- or second-generation German immigrants by counting individuals whose mother tongues were German or who had at least one parent born in Germany in the 1930 Census.

[20] The data come from the ANES Time Series Cumulative Data File (1948-2012) (ICPSR 8475).

Unfortunately, the ANES survey did not ask about the counties in which the respondents grew up, which would more likely capture exposure to Coughlin. Therefore, the results from this exercise should be interpreted with more caution.

Table 17 reports the results from this exercise. Columns 1 to 6 of the table show that individuals living in places more exposed to Father Coughlin's radio program in 1939 displayed more negative feelings towards Jews in the long run. Based on the estimates, in general a one standard deviation increase in Coughlin exposure is associated with an approximately 1 percentage point drop (out of a mean of 63 percentage points) in warm feelings towards Jews, or about a 1.6 percent decrease. The estimate becomes statistically insignificant in column 6 after controlling for state fixed effects, although the magnitude remains sizable and negative.

To verify that the results do not reflect a change in attitudes towards minorities in general, I redo the exercise using feelings towards blacks and towards Catholics as the outcomes in columns 7 and 8. Consistent with the fact that Father Coughlin did not speak against these other minority groups, I find that exposure to Coughlin did not negatively affect attitudes towards blacks or towards Catholics. Nonetheless, because of the long-run nature of the outcomes in this exercise, I cautiously interpret these results as suggestive evidence that exposure to Father Coughlin's radio program might have lasting effects on public attitudes towards Jews.

2.7 Conclusion

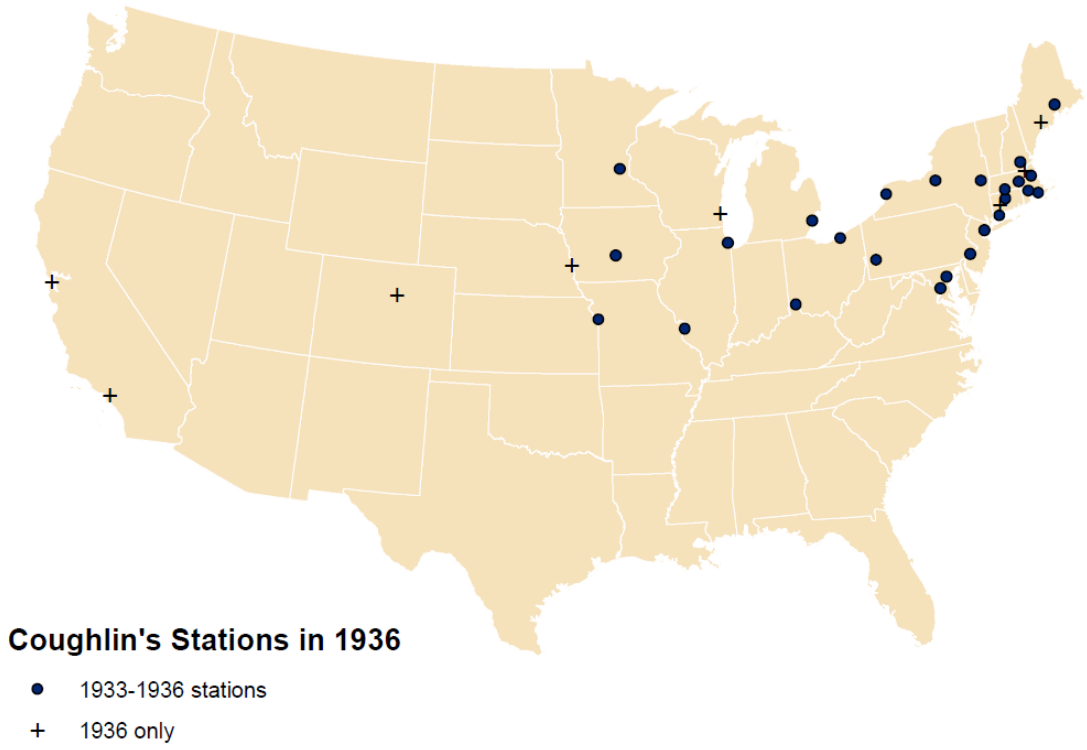
New media and information technologies make it easier for charismatic individuals to influence others. Yet, the possibility that a charismatic individual can shape political outcomes with the media remains largely unexplored. This paper assembles a unique data set to study the political impacts of the first populist radio personality in American history. I find that exposure to Father Coughlin's radio program in opposition to the New Deal administration decreased support for FDR in the 1936 presidential election. Specifically, a standard deviation increase in Coughlin exposure reduced FDR's vote share by about 2.4

percentage points. The effect was more pronounced in counties with a greater share of Catholics and persisted after Father Coughlin left the air. Moreover, I find evidence that places more exposed to Father Coughlin's anti-Semitic and isolationist radio program in the late 1930s were more likely to form a local branch of the pro-Nazi German-American Bund, sell fewer WWII war bonds, and harbor more negative feelings towards Jews in the long run.

My findings provide the first systematic evidence that a charismatic individual can manipulate the media to influence voting behavior and suggest the potential for religion to be exploited in political persuasion. Although specific to the episode of Father Coughlin, the results provide more general insights on the power of charismatic individuals armed with the media to influence political preferences.

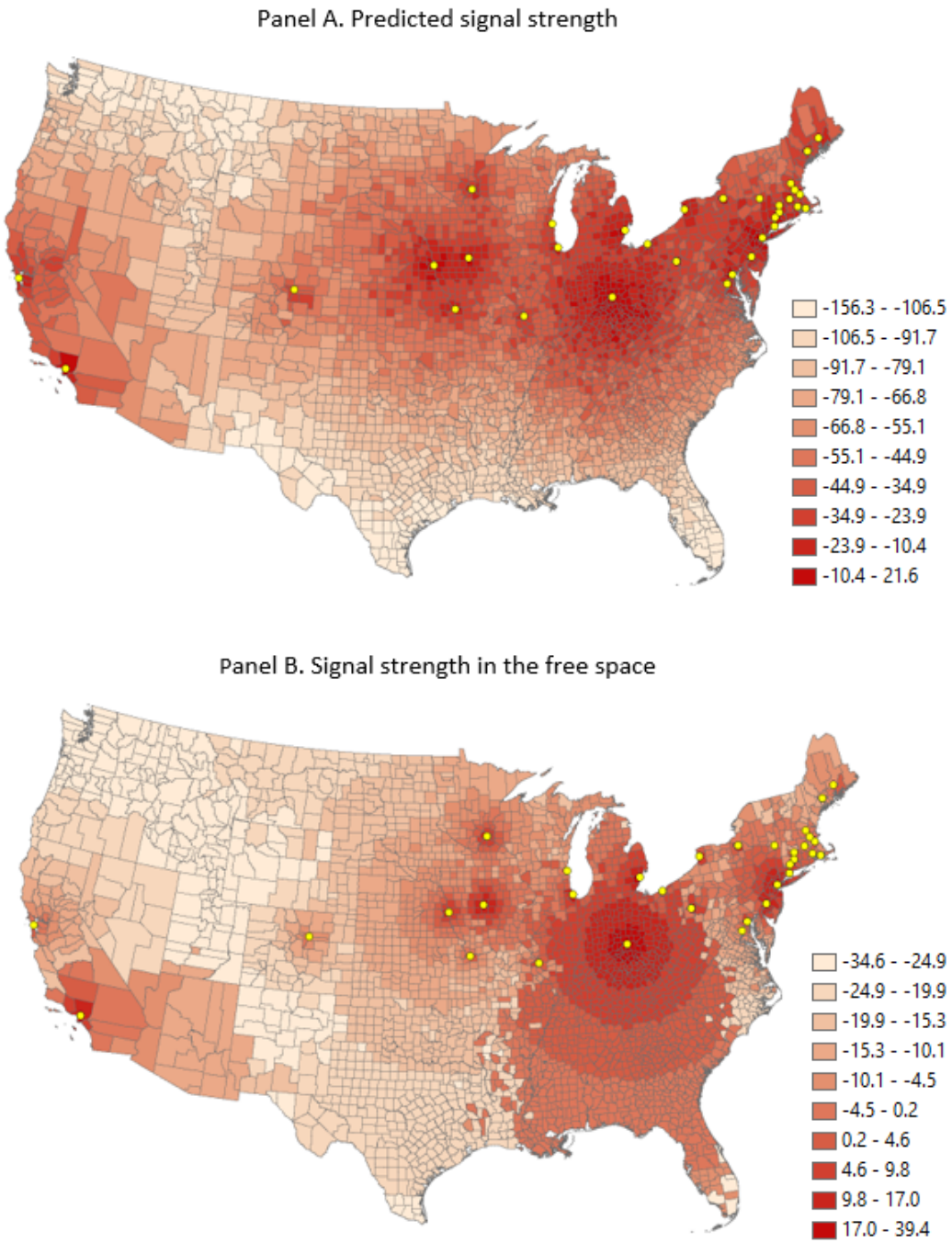
2.8 Figures and Tables

Figure 6: Father Coughlin's Radio Stations, 1936



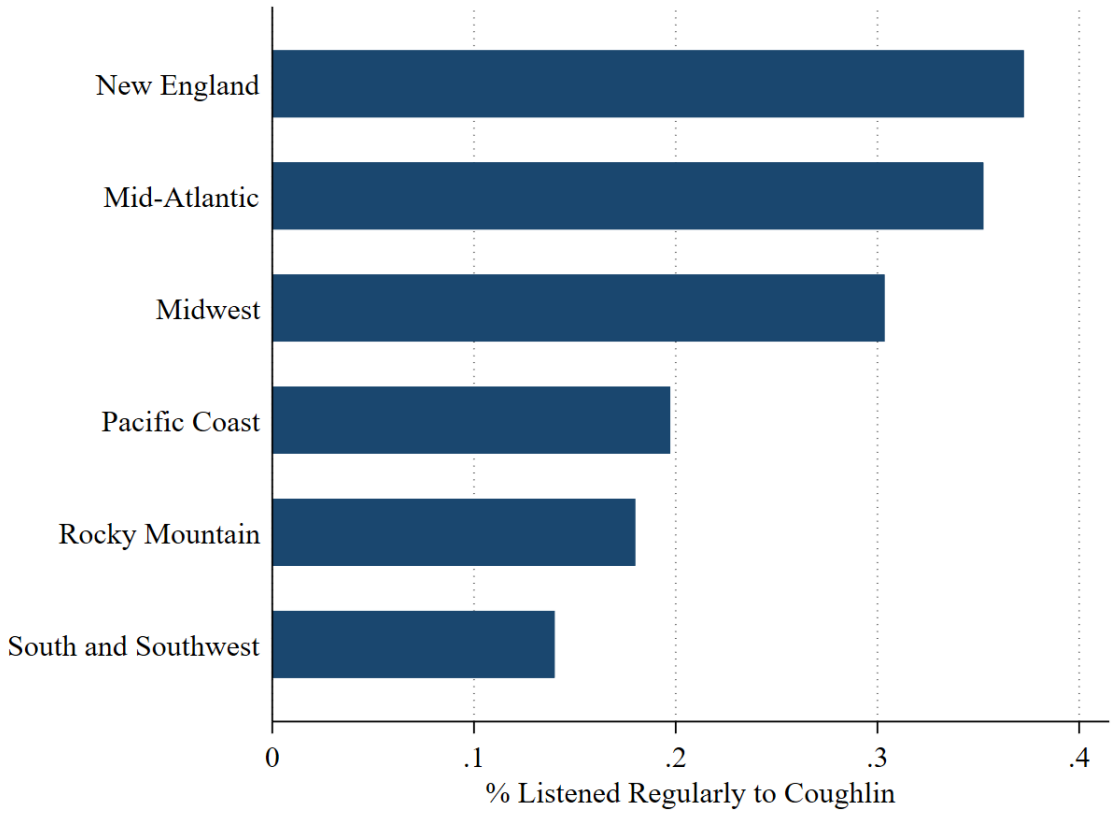
Notes - Data are drawn from the 1933 and 1936 *Broadcasting* magazines. The dots represent stations in Coughlin's network in both 1933 and 1936; the crosses represent stations that were new in 1936.

Figure 7: Signal Strength of Father Coughlin's Radio Program, 1936



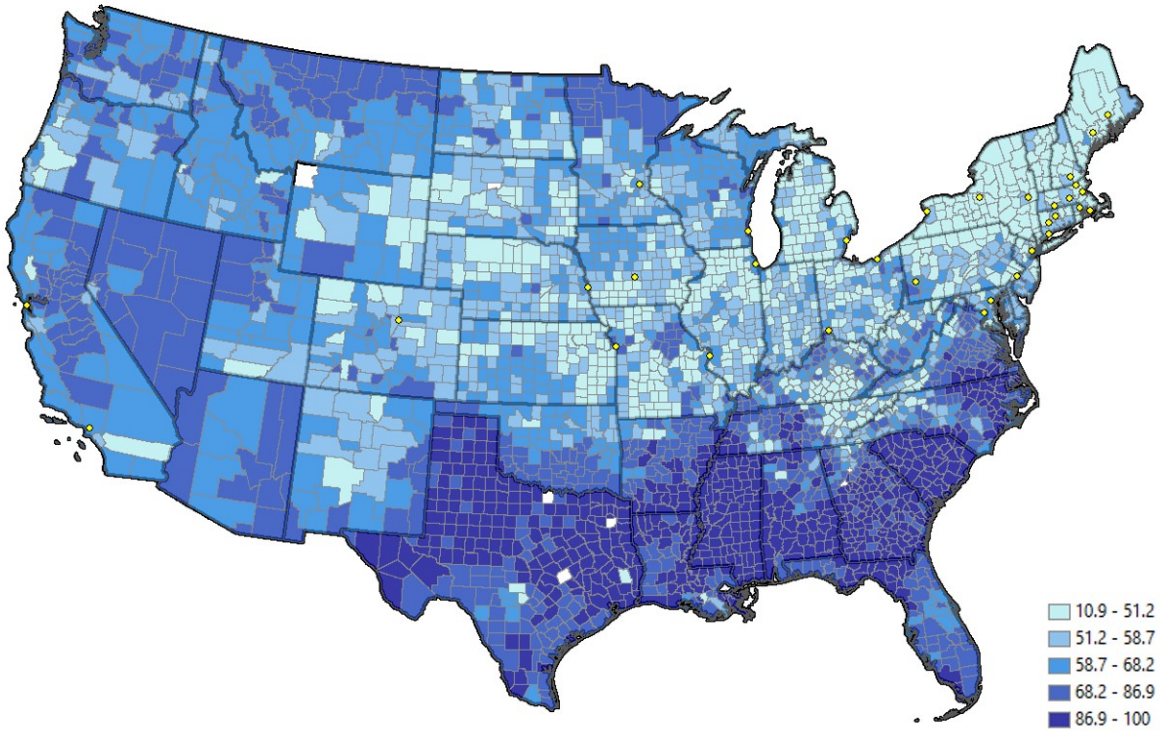
Notes - This figure shows the signal strength of Father Coughlin's radio program in 1936. The dots are the location of Coughlin's radio stations, and darker colors represent stronger signals. Panel A shows the predicted (actual) signal strength, and Panel B shows the signal strength in the free space. Data on Coughlin's radio network are drawn from the newspaper *Broadcasting* (1936) and the 1936 *Broadcasting Yearbook*. Signal strength is calculated using the Irregular Terrain Model (ITM) and measured in decibel-milliwatts (dBm).

Figure 8: Regular Listeners of Coughlin's Radio Program by Region before the 1936 Election



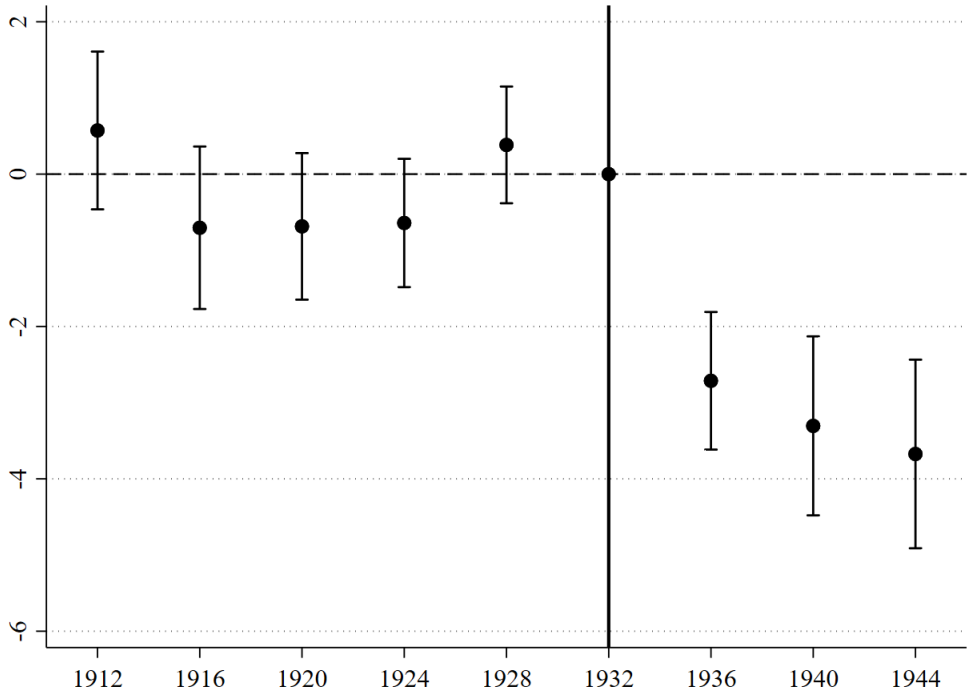
Notes - Data are drawn from the April 1938 Gallup Poll, accessed from the Roper Center for Public Opinion Research: `https://ropercenter.cornell.edu/`

Figure 9: FDR's Vote Shares (Percentage Points) in the 1936 Presidential Election



Notes - Data are drawn from the ICPSR 8611 data set (Clubb et al., 2006).

Figure 10: Impact of Coughlin Exposure on Democratic Vote Shares (Event Study)



Notes - This figure plots the event study estimates of exposure to Father Coughlin's radio program in 1936 on Democratic vote shares in presidential elections during 1912-1944. The estimates come from a single OLS regression following an alternative version of equation (2.2), in which $Post_t$ is replaced with year dummies, with the year of 1932 as the omitted category. The explanatory variable is the Democratic vote share in each presidential election. The explanatory variables are the signal strength of Coughlin's radio program in 1936 interacted with year dummies. Each regression controls for county fixed effects, state-by-year fixed effects, and baseline county characteristics ($SignalFree$, geographic, socioeconomic, and past voting controls) interacted with year dummies. Standard errors are corrected for clustering at the state level. The dots are the estimated coefficients and the vertical lines represent the 95% confidence intervals.

Table 9: Exposure to Coughlin and County Characteristics (Balance Test)

	Mean	Univariate		SignalFree, State FE & Geographic controls	
	(S.D.)	Coefficient	R^2	Coefficient	R^2
	(1)	(2)	(3)	(4)	(5)
ln(Population)	9.829	0.509***	0.168	0.133	0.479
	(1.137)	(0.101)		(0.123)	
% Male	52.13	-1.268***	0.257	-0.0896	0.568
	(2.287)	(0.114)		(0.205)	
% Native whites	87.54	2.339**	0.035	1.775	0.509
	(11.42)	(0.928)		(1.257)	
% Foreign-born whites	6.935	-1.331*	0.037	-0.478	0.629
	(6.328)	(0.705)		(0.675)	
% Blacks	3.413	1.302***	0.018	0.292	0.685
	(8.953)	(0.365)		(0.676)	
% Urban	24.34	5.786***	0.037	-0.858	0.227
	(27.53)	(1.995)		(2.844)	
% Age $\geq$ 65	6.647	0.834***	0.128	0.585**	0.450
	(2.139)	(0.199)		(0.227)	
% Catholics (1926)	10.82	-0.411	0.001	1.065	0.361
	(12.05)	(1.144)		(1.313)	
% Illiterate	2.417	0.158	0.003	0.0117	0.576
	(2.806)	(0.339)		(0.322)	
% Unemployed	6.686	0.0543	0.000	-1.364***	0.223
	(4.929)	(0.299)		(0.368)	
Occupational income score	7.344	0.0963	0.002	0.0880	0.402
	(1.825)	(0.186)		(0.207)	
% Radio owners	34.72	3.027	0.034	5.505***	0.651
	(15.00)	(2.045)		(1.837)	
% Manufacturing workers	12.04	2.416*	0.033	-0.432	0.411
	(12.12)	(1.245)		(1.293)	
% Agricultural workers	42.08	-3.636*	0.023	1.683	0.381
	(21.73)	(2.132)		(2.011)	
ln(Average farm size)	7.457	-0.560***	0.303	0.0249	0.693
	(0.931)	(0.0979)		(0.0865)	
ln(Land value per acre)	3.530	0.396***	0.158	0.134	0.540
	(0.909)	(0.107)		(0.0997)	
% Tenant acres	27.56	3.844***	0.052	-0.722	0.573
	(15.49)	(1.177)		(1.232)	

Notes - This table shows the mean of 1930 county characteristics (column 1) and their correlation with exposure to Father Coughlin's radio program in 1936 (columns 2 and 3). Specifically, columns 2 and 3 report the coefficient and R^2 of the univariate OLS regression of each variable on Coughlin signal strength in 1936 ($Signal$). In columns 4 and 5, I include controls for the hypothetical signal strength in the free space ($SignalFree$), state fixed effects, and county geographic characteristics (area and its square, elevation and its square, and terrain ruggedness and its square). The sample consists of all counties outside of the geographic South. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 10: Exposure to Father Coughlin and Past Voting Outcomes (Placebo Test)

	Outcome: Vote Shares in Past Presidential Elections									
	1932		1928		1924		1920		change 1928-1932	
	Dem.	Rep.	Dem.	Rep.	Dem.	Rep.	Dem.	Rep.	Dem.	Rep.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Signal	0.315	-0.310	0.698	-0.670	-0.327	0.0143	-0.371	0.656	-0.384	0.360
	(0.471)	(0.439)	(0.620)	(0.605)	(0.262)	(0.264)	(0.551)	(0.597)	(0.548)	(0.599)
Observations	1,978	1,978	1,978	1,978	1,978	1,978	1,978	1,978	1,978	1,978
Full baseline controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.882	0.890	0.886	0.889	0.980	0.957	0.955	0.929	0.665	0.682
Mean of Dep. Var.	58.37	39.35	37.29	61.94	28.66	51.80	33.77	61.74	21.07	-22.60
Std. Dev. of Dep. Var.	11.23	11.19	11.22	11.13	18.20	13.70	14.94	13.59	7.736	8.104

Notes - This table shows the correlation between exposure to Father Coughlin's radio program in 1936 and voting outcomes in past presidential elections. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county. The sample consists of all counties outside of the geographic South. The outcome variables are the vote shares of the Democratic party and the Republic party in each presidential election during 1920-1932 (columns 1-8) as well as the changes in vote shares during 1928-1932 (columns 9 and 10). The explanatory variable is the signal strength of Coughlin's radio program in 1936. Each regression controls for all the baseline controls as in column 6 of Table 11. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 11: Exposure to Father Coughlin and 1936 Voting Outcomes

	Outcome: Vote Shares (%) in the 1936 Presidential Election for							
	FDR (Democrat)						Landon (Republican)	Others
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Signal	-3.799***	-2.120*	-3.018**	-4.023***	-2.779***	-2.399***	1.976***	0.424
	(0.540)	(1.144)	(1.301)	(0.971)	(0.835)	(0.581)	(0.609)	(0.353)
Observations	2,007	2,007	2,007	2,007	1,996	1,978	1,978	1,978
State FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes
SignalFree			Yes	Yes	Yes	Yes	Yes	Yes
Geographic controls				Yes	Yes	Yes	Yes	Yes
Socioeconomic controls					Yes	Yes	Yes	Yes
Past electoral controls						Yes	Yes	Yes
R-squared	0.091	0.391	0.393	0.417	0.548	0.818	0.854	0.656
Mean of Dep. Var.	57.11	57.11	57.11	57.11	57.03	56.95	40.34	2.701
Std. Dev. of Dep. Var.	11.51	11.51	11.51	11.51	11.46	11.45	11.77	3.583

Notes - This table shows the estimated effects of exposure to Father Coughlin's radio program in 1936 on voting in the 1936 presidential election. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county. The sample consists of all counties outside of the geographic South. The outcome variables are FDR's vote shares in columns 1-6, the Republican party's vote share in column 7, and other parties' vote share in column 8, all measured in percentage points. The explanatory variable is the signal strength of Coughlin's radio program in 1936. *SignalFree* is the hypothetical signal strength in the free space. Geographic controls include the county's area and its square, elevation and its square, and terrain ruggedness and its square. Socioeconomic controls are listed in Table 18 and include the natural log of the population, the population shares of males, blacks, native whites, foreign-born whites, urban population, population aged 65 or above, Catholics, illiterate, unemployed, families with a radio, mean occupational income score, share of employment in manufacturing, share of employment in agriculture, natural log of average farm size, natural log of farm land value per acre, and share of farm land by tenant farmers. Past electoral controls include average vote shares of the Democratic party and of the Republican party as well as average voter turnout during 1920-1928. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 12: Effects in Counties with a Large Share of Catholics

	Outcome: Vote Shares in 1936		
	Dem.	Rep.	Others
	(1)	(2)	(3)
Signal × Catholic	-1.341***	-0.0963	1.440***
	(0.460)	(0.352)	(0.349)
Signal	-2.051***	2.014***	0.0373
	(0.607)	(0.625)	(0.386)
Catholic	-0.708	0.756	-0.0442
	(0.696)	(0.579)	(0.352)
Observations	1,978	1,978	1,978
Full baseline controls	Yes	Yes	Yes
R-squared	0.820	0.854	0.672
Mean of Dep. Var.	56.95	40.34	2.701
Std. Dev. of Dep. Var.	11.45	11.77	3.583

Notes - This table shows the estimated effects of Coughlin exposure on voting in the 1936 presidential elections in counties with high and low shares of Catholic population. Each column represents the results from a separate OLS regression where each observation is a county. The sample consists of all counties outside of the geographic South. The outcome variables are FDR's vote share in column 1, the Republican vote share in column 2, and other parties' vote share in column 3. *Catholic* is a dummy variable that equals 1 if the county's population share of Roman Catholics was in the top quartile of the distribution and 0 otherwise. Each regression controls for all the baseline controls as in column 6 of Table 11. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 13: Exposure to Coughlin and Non-Coughlin Stations on 1936 Voting

	Outcome: Vote Shares in 1936		
	Dem.	Rep.	Others
	(1)	(2)	(3)
Signal	-2.280***	1.773***	0.507
	(0.546)	(0.559)	(0.422)
Non-Coughlin Signal	-0.143	0.270	-0.126
	(0.378)	(0.267)	(0.224)
Observations	1,978	1,978	1,978
Full baseline controls	Yes	Yes	Yes
R-squared	0.818	0.854	0.657
Mean of Dep. Var.	56.95	40.34	2.701
Std. Dev. of Dep. Var.	11.45	11.77	3.583

Notes - This table shows the estimated effects of exposure to Coughlin and non-Coughlin stations on voting in the 1936 presidential election. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county. The sample consists of all counties outside of the geographic South. The outcome variables are the 1936 vote shares of FDR in column 1, the Republican party in column 2, and other parties in column 3. The explanatory variables are the signal strength of Coughlin and non-Coughlin stations in 1936. Each regression controls for all the baseline controls as in column 6 of Table 11. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 14: Exposure to Father Coughlin and Voting Outcomes, 1932-1936 Panel

	Outcome: Vote Shares in Presidential Elections				
	FDR (Dem.)			Rep.	Others
	(1)	(2)	(3)	(4)	(5)
Signal × Post	-1.548***	-1.967***	-2.713***	2.286***	0.423**
	(0.206)	(0.439)	(0.457)	(0.385)	(0.216)
Observations	4,012	4,012	3,956	3,956	3,956
County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes				
State-by-Year FE		Yes	Yes	Yes	Yes
Baseline controls × Post			Yes	Yes	Yes
R-squared	0.867	0.919	0.948	0.965	0.829
Mean of Dep. Var.	57.79	57.79	57.66	39.85	2.489
Std. Dev. of Dep. Var.	11.39	11.39	11.36	11.49	3.040

Notes - This table shows the estimated effects of exposure to Coughlin on voting in presidential elections during 1932-1936. Each column represents the results from a separate OLS regression following the difference-in-difference specification in equation (2.2), where each observation is a county-year. The sample consists of all counties outside of the geographic South. The outcome variables are FDR's vote share in columns 1-3, the Republican vote share in column 4, and other parties' vote share in column 5. The explanatory variable is the interaction between Coughlin signal strength in 1936 and a dummy variable *Post* that equals 1 for the year of 1936 and 0 for the year of 1932. Each regression controls for county fixed effects. Column 1 controls for year fixed effects; columns 2 controls for state-by-year fixed effects; and column 3 further controls for the interactions between each of the baseline county characterstics ($SignalFree$, geographic, socioeconomic, and past electoral outcomes) and *Post*. Columns 4-5 follow the same specification as in column 3. Standard errors, shown in parentheses, are corrected for clustering at the county level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 15: Exposure to Father Coughlin and WWII Bond Sales Per Capita in 1944

	Outcome: ln(WWII Bond Sales Per Capita in 1944)				
	(1)	(2)	(3)	(4)	(5)
Signal	-0.395***	-0.378***	-0.195***	-0.185***	-0.169**
	(0.107)	(0.0731)	(0.0601)	(0.0561)	(0.0649)
Observations	1,993	1,993	1,979	1,961	1,961
SignalFree	Yes	Yes	Yes	Yes	Yes
Geographic controls		Yes	Yes	Yes	Yes
Socioeconomic controls			Yes	Yes	Yes
Past electoral outcomes				Yes	Yes
State FE					Yes
R-squared	0.128	0.180	0.516	0.522	0.558

Notes - This table shows the estimated effects of exposure to Coughlin's radio program in 1939 on per capita WWII bond purchase in 1944. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county. The sample consists of all counties outside of the geographic South. The outcome variable is the natural log of per capita purchase of WWII bonds in 1944. The explanatory variable is the signal strength of Coughlin's radio program in 1939. Each regression controls for the hypothetical signal strength in the free space ($SignalFree$) in 1939. Additional county controls included in columns 2-5 are the same as in column 6 of Table 11. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 16: Exposure to Coughlin and Presence of the German-American Bund

	Outcome: Having a Local Branch of the Bund			
	(1)	(2)	(3)	(4)
Signal	0.164**	0.147**	0.0978*	0.0830*
	(0.0788)	(0.0608)	(0.0492)	(0.0489)
Observations	764	763	690	473
SignalFree	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Geographic controls		Yes	Yes	Yes
Socioeconomic controls			Yes	Yes
Sample	Full	Full	Full	50 miles away from stations
R-squared	0.131	0.147	0.371	0.377
Mean of Dep. Var.	0.0694	0.0682	0.0667	0.0486
Std. Dev. of Dep. Var.	0.254	0.252	0.250	0.215

Notes - This table shows the estimated effects of exposure to Coughlin's radio program in 1939 on having a local branch of the German-American Bund in 1940. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a city. The sample consists of all identifiable cities in the 1930 Census that were outside of the geographic South and had a population above 10,000. The outcome is a binary variable that equals 1 if a city had a branch of the German-American Bund in 1940 and 0 otherwise. The explanatory variable is the signal strength of Coughlin's radio program in 1939. Each regression controls for the hypothetical signal strength in the free space ($SignalFree$) in 1939 and state fixed effects. City geographic controls include elevation and its square as well as terrain ruggedness and its square. City socioeconomic controls include population, percent unemployed, average occupational income score, percent owning a radio, perccent of Jewish descent, percent of first- or second-generation German immigrants, percent native, and an indicator for large city (having a population above 100,000). Column 4 further restricts the sample to cities more than 50 miles away from any Coughlin station in 1939. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 17: Exposure to Father Coughlin and Feeling Towards Jews in the Long Run

	Outcome: Feeling Thermometer Values for							
	Jews						Blacks	Catholics
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Signal	-1.360**	-1.445**	-1.052*	-1.810**	-1.600*	-1.116	1.962	0.341
	(0.589)	(0.592)	(0.550)	(0.902)	(0.965)	(1.890)	(1.840)	(1.981)
Observations	11,749	11,749	11,749	11,749	11,501	11,501	11,873	11,547
SignalFree	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort and Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls			Yes	Yes	Yes	Yes	Yes	Yes
Region FE				Yes	Yes			
County baseline controls					Yes	Yes	Yes	Yes
State FE						Yes	Yes	Yes
R-squared	0.007	0.039	0.054	0.062	0.068	0.077	0.191	0.208
Mean of Dep. Var.	63.11	63.11	63.11	63.11	63.02	63.02	62.96	65.03
Std. Dev. of Dep. Var.	19.64	19.64	19.64	19.64	19.57	19.57	20.71	20.79

Notes - This table shows the estimated effects of exposure to Coughlin's radio program in 1939 on feelings towards Jews in the long run. Each column represents the results from a separate OLS regression, where each observation is an individual. The sample consists of all individuals in survey years of the American National Election Studies (ANES) that had a feeling thermometer question about Jews. The outcomes are each individual's feeling thermometer scores for Jews (columns 1-6), for blacks (column 7), and for Catholics (column 8). The explanatory variable is the signal strength of Coughlin's radio program in 1939. Each regression controls for the hypothetical signal strength in the free space ($SignalFree$) in 1939. Column 2 adds cohort fixed effects (measured in 10-year bins based on birth year) and survey year fixed effects. Column 3 adds individual controls, including gender, race (dummies for white and for black), a dummy for college educated, religion (dummies for Catholic and for Protestant), and a dummy for native-born. Column 4 adds region fixed effects (dummies for Northeast, Midwest, South, and West). Column 5 includes the same baseline county geographic, socioeconomic, and past electoral controls as in column 6 of Table 11. Column 6 adds state fixed effects. Columns 7 and 8 follow the same specification as in column 6. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

3.0 Waves of Empowerment: Black Radio and the Civil Rights Movement

In the early 1960s, as the civil rights movement was gaining momentum, black-oriented radio stations were broadcasting across large swaths of the South. This chapter uses newly digitized data to provide the first empirical evidence on the effects of black radio on the civil rights movement. Exploiting plausibly exogenous variation in signal reception resulting from topographic factors, I find strong evidence that black radio increased black political participation and activism in the South during the early 1960s, as measured by black voter registration and the presence of a local chapter of the NAACP. For mechanisms, I provide evidence from individual survey data that black radio increased the support for civil rights groups such as the NAACP, decreased TV consumption, and reduced racial stereotyping among blacks. Moreover, consistent with black radio increasing Southern blacks' political power, results suggest that places with higher exposure to black radio and higher proportions of black residents saw greater state aid as well as greater legislative support for civil rights bills after the passage of the Voting Rights Act.

3.1 Introduction

Can media and information technologies empower minority groups in the resistance to oppression? I study this question in the context of the civil rights movement during the 1950s and 1960s, a period that ushered in arguably the most important breakthrough in racial equality and justice in America since the Reconstruction era (1865-1877). Through political participation such as voter registration and mass protests, African Americans strived for changes against legalized racial segregation and discrimination in the Jim Crow South. This paper examines the impacts of an important and yet little studied institution during the civil rights movement, black-oriented radio, which was then a new media format and aimed specifically at a black audience. Black-oriented radio stations were broadcasting across the South with widespread popularity as the movement was gaining momentum. In this paper, I

assemble a unique dataset to study the impacts of black radio on black political participation during the civil rights movement.

During the civil rights era in the South, black radio was the only broadcast medium that appealed to the interests of black Americans (Ward, 2004; Barlow, 1999). It is therefore not surprising that, according to a 1972 survey by *Ebony* magazine, blacks ranked black radio highest among all mass media in such categories as empathy, honesty, objectivity, and entertainment (Walsh, 2001). The political impacts of black radio, however, are not immediately clear. On the one hand, black radio stations in the South were almost all owned and controlled by whites, whose primary motive was profits instead of political activism (Walsh, 2001); the programs also focused heavily on music and entertainment, which could potentially lower political participation, similar to what Gentzkow (2006) finds for television during the same period.[1]

On the other hand, however, out of the pressure to appeal to their black audience, black-oriented stations often granted air time to civil rights activists, who disseminated the latest news and information pertaining to the civil rights movement to a mass audience. For instance, a 1964 NAACP survey revealed that 95 percent of the Association's branches that sought air time on their local stations were accommodated (Walsh, 2001). In addition, there is also anecdotal evidence that black DJs, much venerated by the black community during the civil rights era, would sometimes embed in their speeches political code words on civil rights-related activities (such as meetings and protests) that were only understood by blacks (Ward, 2004; Barlow, 1999). The news and political messages on the civil rights movement, although not the main content of the broadcast most of the time, could still inform and engage blacks politically during the movement, increasing blacks' political activism and participation.

My baseline analysis examines the impact of exposure to black radio on black voter registration in the South in 1960, the year in which I have good measures of both the left- and the right-hand-side variables. In particular, I collected and digitized novel data on the location and technical details of black radio stations in 1960, which allow me to predict the

[1]Previous studies also find that exposure to entertainment-focused media, such as radio and television, tend to lower social engagement and civic-mindedness today (Olken, 2009; Durante et al., 2019)

signal strength of black radio stations across the South. As mentioned earlier, black radio stations in the South during this period were almost all owned by whites whose main motive was profits instead of politics. It is therefore unlikely that the station location was directly functional to black political activism.

Nonetheless, reception of black radio could be correlated with other local characteristics that might influence black political participation. To address this concern, I employ a strategy pioneered by Olken (2009) to exploit the variation in black radio signal strength resulting from topographic factors. Specifically, I regress the outcomes on the black radio signal strength, while controlling for the hypothetical signal strength when there are no geographic or topographic obstacles such as mountains and hills. Hence, identification comes from the residual variation in signal strength as a result of idiosyncratic topographic factors along the signal transmission route, which I find to be uncorrelated with past racial attitudes, black political activism, and a large set of pre-existing local socioeconomic characteristics.

The baseline results suggest that counties more exposed to black radio in 1960 experienced higher black voter registration rates. Specifically, a one standard deviation increase in black radio signal strength increased black voter registration by about 4 percentage points, or about 14 percent relative to the mean. The estimate is robust to controlling for a rich set of pre-existing county characteristics, including proxies for past local racial attitudes and black political activism. As a falsification test, I show that exposure to black radio, whose audience were predominantly blacks, had little effect on white voter registration.

To show that the results did not reflect the effect of exposure to radio programs in general, I run a falsification test using exposure to national radio network (ABC, CBS, and NBC) stations that did not have a black-oriented format. In a statistical horse race between black and non-black radio exposure, I find that what mattered to black voter registration was exposure to black radio stations and not exposure to other radio stations. Similarly, I find that the baseline results are robust to controlling for access to other competing media, such as television and black newspapers, suggesting that black radio had a unique and independent effect on black voter registration. The baseline results also hold under a series of additional robustness checks. Together, the evidence suggests that the effects of black radio on black voter registration can be interpreted as causal.

Moreover, I find consistent evidence using an alternative measure of black political activism, namely the presence of a local chapter of the NAACP. Specifically, I find that a one standard deviation increase in exposure to black radio increased the probability of having an NAACP chapter in 1964 by about 13 percentage points (relative to a mean of 32.5 percentage points). As a placebo test, I show that black radio had no effect on the presence of NAACP in 1942, prior to the rise of black radio in the post-WWII period.

Having shown that black radio increased black political participation and activism, I turn to the potential mechanisms. Using individual survey data on African Americans in the early 1960s, I find that blacks living in counties more exposed to black radio displayed greater knowledge of and support for civil rights groups such as the NAACP. Besides, I find that exposure to black radio led African Americans to watch less television but did not affect their consumption of newspapers; the substitution away from television could also have boosted political participation, consistent with the negative effects of television on electoral participation found by Gentzkow (2006). Moreover, I find that higher exposure to black radio was also associated with a lower tendency for blacks to engage in racial stereotyping, which has been shown to affect black political participation (Craemer and Orey, 2017). The finding is consistent with the tendency of black radio to portray blacks on the air, such as DJs, artists, and political activists, in a positive way — an opportunity largely denied to Southern blacks in an otherwise white-dominated media landscape that frequently presented a distorted image of blacks (Barlow, 1999; Torres, 2003; Acham, 2005; Boroghkozy, 2012).

I then explore whether black radio brought actual political power and economic gains to African Americans. In the spirit of Strömberg (2004) and Cascio and Washington (2014), I examine black radio's impacts on the distribution of state aid and find that counties with higher exposure to black radio and higher proportions of black residents saw greater state-to-county transfers in 1962. Moreover, I find that Southern congressmen from districts more exposed to black radio were also more likely to support civil rights legislation after the passage of the Voting Rights Act in 1965. Overall, the results suggest that black radio not only increased black political activism and participation but also led to substantive political and economic gains for blacks during the civil rights era.

This paper is closely related to the literature on media and politics (for surveys of this

literature, see DellaVigna and Gentzkow (2010); Prat and Strömberg (2013); Enikolopov and Petrova (2015); Zhuravskaya et al. (2019)). Previous studies have examined the effects of media on voting behaviors, with evidence from newspapers (Gentzkow et al., 2011), radio (Strömberg, 2004), television (Gentzkow, 2006; DellaVigna and Kaplan, 2007; Durante et al., 2019), and the Internet (Falck et al., 2014; Campante et al., 2018). Few, however, have studied media targeting ethnic minorities.[2] This paper provides new insights on the political impacts of media targeting ethnic minorities, focusing on African Americans during the civil rights era. In addition, while previous studies find that media can be exploited to generate animosity and violence against ethnic minority groups (Yanagizawa-Drott, 2014; Adena et al., 2015; Bursztyn et al., 2019; Müller and Schwarz, 2019b; Wang, 2020), this paper to my knowledge is the first to show empirically that under certain circumstances media can also *empower* minorities both politically and economically.

This paper also adds to previous research on how disruptive information technologies can unleash resistance to oppressive regimes. Existing evidence mostly comes from developing countries or authoritarian settings, such as Russia (Enikolopov and Petrova, Forthcoming), China (Chen and Yang, 2019), Malaysia (Miner, 2015), Nazi-fascist occupied Italy (Gagliarducci et al., Forthcoming), Egypt (Acemoglu et al., 2018), across Africa (Manacorda and Tesei, 2020), and Venezuela (Knight and Tribin, 2020).[3] My paper complements the existing studies by focusing on a different setting, the Jim Crow South, where the oppressed minority group was subjected to the tyranny of the majority in a section of a developed democracy.

Lastly, this paper also contributes to the literature on race and politics in American history (e.g. Kuziemko and Washington (2018); Cascio and Washington (2014); Jones et al. (2017); Aneja and Avenancio-Leon (2019); Feigenbaum et al. (2020) as well as the economic history of the civil rights movement (e.g. Wright (2013)). The paper is distinct in its focus on the mobilization and empowerment of racial minorities through media, and in particular, black radio, an important and yet little studied institution during the civil rights era. The

[2]An exception is Oberholzer-Gee and Waldfogel (2009), who find that local Spanish-language TV news boosted Hispanic voter turnout in the U.S. during the period 1994-2002.

[3]There is also evidence at the global level on the effects of mobile phones (Christensen and Garfias, 2018) and Facebook (Fergusson and Molina, 2019) on protests across countries.

findings of this paper underscore the benefits and importance to racial minorities of having media that serve their interests.

3.2 Historical Background

For the most part of the first half of the 20th century, broadcast media in the United States primarily targeted a white audience and made little effort to appeal to black Americans. The lack of interest in the black audience, however, started to change in the late-1940s. With the rise of television in the post-WWII period, a large number of advertisers left the radio to advertise with television, leading many radio station owners to start to appeal to the black population, a group with rising income, to generate new sources of advertising revenue (Ward, 2004). As a result, starting in the late-1940s, black-oriented radio flourished as a new format that appealed specifically to a black audience through a combination of black DJs, music, religion, news, and other programs of specific interest to blacks (Barlow, 1999; Walsh, 2001; Ward, 2004). With few exceptions, black radio during this era were virtually all owned by whites (Walsh, 2001; Ward, 2004). By 1960, radio ownership was almost universal among blacks and there were at least 65 completely black-oriented radio stations across the U.S., with most broadcasting in the South.

As black radio stations were broadcasting across large swaths of the South, the civil rights movement was also gaining momentum. In the face of entrenched racial discrimination and segregation in the Jim Crow South, black Americans struggled for greater equality and justice through collective political actions, such as mass protests, voter registration drives, and legislative lobbying. By the mid-1960s, with the passage of the Civil Rights Act in 1964 and the Voting Rights Act in 1965, the civil rights movement has achieved the most important breakthrough in equal-rights legislation for African Americans since the Reconstruction period (Wright, 2020).

Black radio was a unique and important institution in the black community during the civil rights era. For instance, Martin Luther King Jr. once remarked that African Americans "are almost totally dependent on radio as their means of relating to the society

at large. They do not read newspapers, though they may occasionally thumb through *Jet*." While many Southern blacks also owned television during this era, television programs in South either ignored blacks or presented a distorted image of blacks (Torres, 2003; Acham, 2005; Boroghkozy, 2012). In comparison with black radio, black newspapers and magazines during the period also had much limited reach because of relatively low circulations and were also published less frequently.[4] It is therefore not surprising that black radio enjoyed widespread popularity among blacks during the civil rights era, with a 1968 study on black residents in Pittsburgh finding that the average household listened to radio for 5.5 hours a day (Walsh, 2001).

Based on *Sponsor* magazine, black radio stations in 1960 broadcast an average of 16 hours per day. In terms of program type and the average proportion of time being allocated, black radio programs mainly consisted of DJ program (54.8%), religion (23.4%), public service (8.4%), news (6%), homemaking (2.7%), and other music (2.1%). The fact that black DJs on average took up more than half of the air time on black radio should not be taken as trivial. Black DJs were much venerated by and exercised considerable influence over black communities during the civil rights era. For instance, they held interviews with civil rights activists on their programs. In particular, Martin Luther King Jr. was known to have cultivated connections with a wide network of black DJs across the nation, so that whenever he traveled to a new city he could get on the local black radio station easily to make his speeches (Barlow, 1999).

Besides directly providing air time to civil rights activists and groups, black radio stations also helped disseminate important information pertaining to the movement, such as voter registration campaigns. Figure 23 presents a clipping of a 1960 article from *The Chicago Defender*, which shows that black radio stations were part of the national black voter registration campaign, "Non-Partisan Crusade to Register One Million New Negro Voters," in 1960. In short, while black radio stations rarely stirred up protests or led the fight against racial injustice and discrimination, by disseminating news on the movement and supplying air time to civil rights activists, black radio frequently supported those who did (Walsh, 2001).

[4]Black newspapers during this era were typically published weekly and black magazines monthly.

3.3 Data

My baseline empirical work relates exposure to black radio to measures of black political participation during the civil rights movement. In particular, I focus on black radio's impacts on black voter registration in 1960, the year in which I have good measures of both black radio exposure and black voter registration rates. For my empirical work, I have assembled a unique data set that is particularly suited to measure the political impacts of black radio. In this section, I describe the data employed in the empirical analysis, including data used to measure exposure to black radio, black political participation, as well as other political, socioeconomic, and geographic characteristics from a variety of sources.

3.3.1 Exposure to Black Radio

A challenge to study the impacts of black radio is the scarcity of data on exposure to black radio. To overcome the challenge, I have collected and digitized novel data from primary sources on black radio stations that were broadcasting during the civil rights era. Data on black radio stations are collected from *Sponsor*, which was a major trade journal for radio and TV advertisers and broadcasters in the mid-20$^{\text{th}}$ century America.[5] In the special "Negro Radio Issue" published on September 26, 1960, *Sponsor* provides information on all radio stations across the U.S. that were reported to broadcast some black-oriented programs in 1960, a total of 187 stations. For my empirical work, I restrict the stations to those with at least 50 percent of their programming devoted to black-oriented programs, which narrows the list of stations down to a total of 79 stations, with most of the stations (55 out of 79) located in the former confederate South.[6] Importantly, for each station *Sponsor* also provides detailed information on its location and technical characteristics (e.g. transmitter frequency and power), which I need to calculate the signal strength of black radio stations across counties in 1960.

Radio signal transmission obeys the laws of electromagnetic propagation. In the free

[5] *Sponsor* magazine was accessed from `worldradiohistory.com`

[6] On average, the share of air time devoted to black-oriented programs at these 79 stations was approximately 95%.

space (i.e. assuming the earth is smooth and without any geographic or topographic obstacles), signal strength is inversely proportional to the square of the distance from the transmitter (Olken, 2009). In actual transmission, however, the presence of geographic or topographic obstacles, such as mountains or hills, would lead to diffraction and greater transmission loss in signal. I calculate the signal transmission loss with a professional radio propagation software based on the Irregular Terrain Model (ITM). The ITM was developed by the U.S. government in the 1960s and typically used by radio and TV engineers to predict signal strength of broadcasts.[7]

Following Olken (2009), I calculate the transmission loss for each transmitter-county pair using the ITM algorithm.[8] I then deduct the transmission loss from the power of the transmitter to get the predicted signal strength, where signal strength is measured in decibel-milliwatts (dBm). Finally, following Olken (2009), I use the maximum predicted signal strength in each county across all transmitters as the predicted signal strength in that county.

Figure 11 shows the predicted signal strength of black radio across counties in the former confederate South, where stronger signals are shown with darker colors. Previous studies (Adena et al., 2015; Olken, 2009) have found that signal strength is a strong predictor for actual listenership or viewership of mass media. Because data on black radio listenership are not available systematically across counties during the civil rights era, following Durante et al. (2019) and Enikolopov et al. (2011), I use the continuous measure of signal strength as the explanatory variable and estimate the "intent-to-treat" effect of potential exposure to black radio.[9] Nonetheless, using data on individual blacks from 18 counties across the South in the early 1960s, I provide suggestive evidence that black radio signal strength predicted blacks' radio listening. Specifically, I obtain data from the Negro Political Political Study of 1961-1962 (Matthews and Prothro, 2006), which allow me to identify individuals by county and observe their radio listening habits. As shown in Table 31, I find that blacks living in

[7]Benjamin Olken has kindly shared the software with me. The ITM software has also been used to calculate radio signal strength in historical settings by Adena et al. (2015) in the context of Nazi Germany and by Gagliarducci et al. (Forthcoming) in the context of Italy during WWII.

[8]I use the centroid of each county as the receiving location.

[9]While I use the continuous measure of signal strength in most of my analysis, in a robustness check I use an indicator variable that equals 1 if a county's signal strengthis above median and 0 otherwise.

counties with stronger black radio signal strengths were more likely to listen to radio, which supports the use of black radio signal strength as my explanatory variable.

Moreover, I use the ITM to also generate the hypothetical signal strength in the free space, assuming the earth is free of any geographic or topographic obstacles that may hinder signal transmission. This is important to my identification strategy which exploits the varying topography along the signal transmission route to provide plausibly exogenous variation in signal strength, a point I will return to in Section 4.

3.3.2 Black Political Participation and Activism

The main outcome of interest of my baseline analysis is black voter registration rate. Data on voter registration by race at the county level in 1960 come from Matthews and Prothro (1966).[10] The data covers counties across the 11 former confederate states. Figure 12 shows black voter registration rates (measured in percentage points) across counties in 1960, where darker colors represents higher registration rates.

Besides voter registration, I also use the presence of a local chapter of the NAACP to measure black political activism. Data on NAACP chapters are obtained from the Mapping American Social Movements project, which provides me with the precise location (geographic coordinates) of each chapter in multiple years over several decades leading up to 1964. The 1942 NAACP data are particularly comprehensive and provide the size of the membership for all NAACP local chapters.[11]

3.3.3 County Characteristics

County characteristics are obtained from several sources. From the ICPSR 2896 data set (Haines, 2010), I obtain a rich set of 1950 county variables, including median income, population, and population by race, gender, literacy, education, industry, urban status, employment status, house ownership, and church membership. In addition, from the 1940 Census I construct measures of black characteristics at the county level, including black

[10]Professor James Alt has kindly shared the data with me.

[11]The NAACP data are accessed from `https://depts.washington.edu/moves/NAACP_intro.shtml`

educational levels, wage income, homeownership, and farm status. Besides, I use the 1936 Census of Religious Bodies to measure black church membership. To measure past racial attitudes, I use the presidential vote share for the Dixiecrat candidate Strom Thurmond in 1948 from Clubb et al. (2006) as well as data on lynching during the period 1882-1930 from Project HAL.[12] Moreover, I use ArcGIS to generate county geographic characteristics, including elevation, terrain ruggedness, and distance to the nearest city with more than 50,000 people.[13]

3.3.4 Other Data

For my analysis in later sections of the paper, I have also obtained data from several additional sources. To explore potential mechanisms, I use individual survey data from the Negro Political Participation Study of 1961-1962 (Matthews and Prothro, 2006). The data cover more than 600 black adults from 18 counties across the former confederate South and provide very detailed measures of individual characteristics, attitudes, and behaviors (such as media consumption habits). The data contain county identifiers, which allow me to measure individual exposure to black radio at the county level.

To investigate black radio's impacts on the distribution of state aid, I follow Cascio and Washington (2014) and measure state-to-county transfers using the Census of Governments. In particular, I focus on the transfers as reported in the 1962 Census of Governments data. Moreover, to evaluate black radio's impacts on legislative voting in Congress, I use the second dimension of the DW-NOMINATE score, which allows me to measure the conservativeness of Southern congressman's votes on civil rights bills (Aneja and Avenancio-Leon, 2019).

3.4 Empirical Strategy

The objective of my baseline empirical work is to study the impact of exposure to black radio on black voter registration in the 1960 general election. Notably, black radio stations

[12]The lynching data are accessed from `http://people.uncw.edu/hinese/HAL/HAL%20Web%20Page.htm`

[13]I measure elevation and ruggedness at county centroids, consistent with what I did for signal strength.

in the South during this period were almost all owned by whites whose main motive was profits and not politics (Walsh, 2001). It is therefore unlikely that the station location was intentionally driven by black political activism.

Nonetheless, reception of black radio might have been correlated with other local characteristics (e.g. distance to major cities) that could have influenced black political activism and participation. To address this concern, I employ an empirical strategy pioneered by Olken (2009) and exploit plausibly exogenous variation in black radio signal strength resulting from topographic factors.[14] Specifically, I regress the outcomes of interest on the actual signal strength ($Signal$), while controlling for the hypothetical signal strength in the free space ($SignalFree$) where the earth is assumed to be free of any topographic obstacles, such as mountains or hills, that diffract and weaken radio signal transmission. Crucially, the variable $SignalFree$ controls for a county's proximity to a transmitter as well as the power of the transmitter. Therefore, once controlling for $SignalFree$, identification of the coefficient of $Signal$ comes from variation in diffraction patterns caused by topographic obstacles along the signal transmission route.

Because a county's own topography (such as terrain ruggedness) could also potentially affect local political participation, I control for the mean elevation and ruggedness of the county. Therefore, I only exploit residual variation in signal strength resulting from the topography along the signal transmission route *outside* the county, which is arguably more exogenous.[15] Furthermore, I restrict the analysis to variation within State Economic Areas (SEA). First used in the 1950 census, State Economic Areas are typically groups of contiguous counties within the same state that had similar economic characteristics (Bogue, 1951). Therefore, I will compare counties in relatively small substate geographical areas characterized by similar economic and political conditions.

I run the following regression for my baseline analysis:

$$Y_c = \beta Signal_c + \gamma SignalFree_c + \delta' X_c + \eta_s + \epsilon_c \tag{3.1}$$

[14] A similar strategy has also been used by Durante et al. (2019), DellaVigna et al. (2014), and Yanagizawa-Drott (2014).

[15] The exceptions are the counties that contained black radio stations. I will provide robustness checks by dropping these counties as well as the areas surrounding them.

where Y_c is the share (in percentage points) of black voting-age population registered to vote in the 1960 election in county c. $Signal_c$ is the actual signal strength of black radio received in county c in 1960. $SignalFree_c$ is the hypothetical signal strength in the free space. X_c is a vector of county baseline controls for local geographic characteristics, socioeconomic characteristics, and proxies for past racial attitudes (i.e. the vote share for the Dixiecrat candidate Strom Thurmond in the 1948 presidential election and historical lynching measures) and black political activism (measured by the presence of a local chapter of the NAACP in 1942 and its membership). η_s are State Economic Area fixed effects, controlling for any differences across State Economic Areas that might influence voting. ϵ_c is the error term. Standard errors are corrected for clustering at the radio station level in the baseline, but in robustness checks I also use Conley (1999)'s approach with different distance cutoffs to address concerns about spatial correlation in error terms. To ease the interpretation of the results, I standardize signal strength such that it has a mean of zero and a standard deviation of one.

The coefficient β provides the reduced-form estimate of the effect of exposure to black radio. The identification assumption is that *Signal* is not correlated with unobserved factors that influence black voter registration, conditional on all the covariates in equation (3.1). While the assumption is ultimately untestable, I support the conditional exogeneity assumption through balance and placebo tests by examining the correlation of *Signal* with pre-existing county socioeconomic characteristics, racial attitudes, and black political activism.

In Table 18, I examine the correlation between black radio signal strength in 1960 and pre-existing county socioeconomic characteristics in a balance test. Specifically, in column 1, I regress black radio signal strength on the set of county characteristics, while controlling for SEA fixed effects and local geography (elevation and ruggedness). The estimates in column 1 suggest that, conditional on the controls, *Signal* is still significantly correlated with several pre-existing county characteristics, including urbanization, gender, median family income, and distance to the nearest city with more than 50,000 people. This is not surprising given that black radio stations were mostly located in the largest cities. After I further control for the free-space signal strength in column 2, however, *Signal* is no longer significantly correlated with any of the more than 20 pre-existing socioeconomic characteristics. The

estimates from column 2 support the view that the residual variation in signal strength resulting from topographic factors is largely idiosyncratic. Nonetheless, to be conservative, I will include all the socioeconomic characteristics in Table 18 as controls in my subsequent analysis.

In Table 19, I perform a series of placebo tests by examining the correlation between *Signal* and past county racial attitudes and black political activism measured before the rise of black radio. Specifically, I measure past racial attitudes using the vote share for Strom Thurmond in the 1948 presidential election (column 1) and historical lynching measures (whether the county had any lynching during the period 1882-1930 in column 2 and the number of lynchings in column 3). I proxy for pre-existing black political activism using the presence of a local chapter of the NAACP in 1942 (column 4) and the natural logarithm of NAACP membership per 10,000 blacks (column 5). Conditional on the full set of controls in Table 18, *Signal* is not significantly correlated with the measures of past racial attitudes or black political activism. The results from the placebo tests, together with the balance test in Table 18, provide support to the conditional exogeneity assumption of equation (3.1).

3.5 Results

In this section, I present the results on the impact of exposure to black radio on black political participation. I focus on black voter registration in 1960, the year in which I have good measures of both black radio exposure and black voter registration rates, but I also explore other outcomes of black political activism and participation. In addition, I discuss potential mechanisms and examine whether black radio led to changes in political power and economic gains for blacks.

3.5.1 Baseline Results on Black Voter Registration

Table 20 shows the estimated effects of exposure to black radio on voter registration in 1960. I find that exposure to black radio had a large positive effect on black voter registration.

Based on column 1, controlling for only State Economic Area (SEA) fixed effects, a one standard deviation increase in exposure to black radio program was associated with an increase in black voter registration by about 3 percentage points. The estimates are robust and generally stable when including additional controls in subsequent columns, including the free-space signal strength (column 2), county geographic and socioeconomic characteristics (columns 3 and 4), and controls for past racial attitudes and black activism (columns 5 and 6). Because black voter registration rates may suffer from greater measurement errors in counties with fewer blacks, in column 7 I weight the regression by county black population to improve the precision of my estimates. The estimated coefficient after weighting becomes slightly smaller but is still statistically significant at the 1 percent level. Based on column 7, which is my preferred specification that includes all baseline controls and is weighted by black population, a one standard deviation increase in exposure to black radio increased black voter registration by about 4 percentage points, which is about 14 percent relative to the mean of black registration rates.

As a falsification test, I turn to examine the effects of black radio on white voter registration. Because the audience of black radio were predominantly blacks and whites did not listen to black stations on a systematic or large scale (Walsh, 2001), black radio should have limited effect on the registration of whites. Indeed, as shown in columns 8 and 9 of Table 20, the estimated effects of black radio exposure on white voter registration, with or without using white population as weights, are small and statistically indistinguishable from zero. The results support the view that black radio had a unique effect on blacks and that counties more exposed to black radio did not differ systematically in political activism overall.

A potential concern remains that the baseline results may simply reflect exposure to radio programs or to mass media in general, instead of exposure to black radio per se. To address this concern, I collect data on ABC, CBS, and NBC network radio stations, which did not have a black-oriented format, and run a falsification test. Specifically, I use the same method to predict the signal strengths from the non-black national network radio stations (more than 200 stations in total) and then include the non-black radio signal strengths (including free-space signals) in my baseline regression to perform a statistical horse race.

The results are reported in Table 21, which for the purpose of comparison shows again in the first column the baseline estimate. As seen in column 2 of Table 21, the estimated effect of exposure to (non-black) national network radio stations is negative, much smaller in magnitude, and statistically insignificant, while the estimate for exposure to black radio stations remains strong and similar as in the baseline. Therefore, the result from column 2 suggests that it was black radio, instead of exposure to radio programs in general, that increased black voter registration.

I conduct analogous exercises in columns 3 and 4 of Table 21 to compare the effect of black radio with those of television and black newspapers. Specifically, I collect data on the national network television stations (about 140 stations in total) that were operating in the South during the same period and predict TV signal strengths across the South. During this period, national network TV programs had a predominantly white-centered format, and any programs featuring blacks or race issues were frequently censored by Southern station owners (Torres, 2003; Acham, 2005; Boroghkozy, 2012). Therefore, I would not expect TV to have a substantial positive effect on black political participation. Indeed, column 3 of Table 21 shows that TV exposure had a relatively small, negative, and statistically insignificant effect on black registration, while the estimate for black radio remains virtually unchanged.

Similarly, in column 4 I include the natural logarithm of distance to the nearest black newspaper as a measure of access to black newspapers. Not surprisingly, greater access to black newspapers (i.e. a decrease in distance) is significantly correlated with higher black voter registration, while the estimated effect of black radio still holds. Finally, in the last column, I control for exposure to all three competing media and the estimated effect of black radio remains similar and robust. Together, the series of falsification tests suggest that black radio had a unique and independent effect on black voter registration.

3.5.2 Other Robustness Checks

I perform several additional robustness checks on my baseline results and report them in Table 32. In column 1, I drop counties within 50 miles from any black radio stations in 1960 to verify that big cities and their surrounding regions do not drive the results. Counties

further away from black radio stations in general had smaller black populations and therefore were more likely exposed to black radio "by chance."

As a further robustness check to address any remaining concern of potentially omitted variables (although this is unlikely given the balance and placebo tests performed in the Empirical Strategy section), I redo the baseline exercise only for counties in Mississippi. I would expect the effects, if any, to be limited in Mississippi, because Mississippi during the period had arguably the most stringent policies against black voter registration.[16] If the baseline finding was driven by the correlation between black radio exposure and some unobserved variables that also affected black voter registration, I would expect to find a similar effect of black radio in Mississippi as well. As seen in column 2 of Table 32, I find that black radio had little effect on black voter registration in Mississippi, suggesting that the baseline findings are unlikely driven by omitted variables.

Besides, in column 3 of Table 32, I control for the free-space signal more flexibly, including the square and the cube of the the free-space signal in the baseline regression as additional controls. The baseline results remain robust. Moreover, in column 4 of the table, I verify that the results are not driven by particular parametric assumptions by using a binary measure of signal that equals 1 if the signal strength was above the median and 0 otherwise. The result based on the binary measure is marginally significant (p-value=0.11) and qualitatively similar.

In addition, in Table 33 I test the robustness of clustering the standard errors at alternative levels. While in the baseline I cluster the standard errors at the black radio station level, I show in the first two columns of Table 33 that the baseline result is also robust to clustering at the state or the State Economic Area levels. Moreover, in columns 3-8 of the table, I apply Conley (1999)'s approach with different distance cutoffs to further address concerns about spatial correlation in error terms, and the result remains robust.[17] Together, the series of robustness checks in this section further increase my confidence in the baseline results.

[16]Indeed, Mississippi was the state with the lowest black voter registration (about 3 percent) in 1960, as compared to an average of 28 percent across the South.

[17]To implement the exercise, I use the Stata package acreg.

3.5.3 Evidence from NAACP Chapters

Having shown that black radio increased black voter registration, I now turn to examine an alternative measure of black political activism, namely the presence of a local chapter of the NAACP in a county.

In Panel A of Table 22, I examine whether exposure to black radio affected the likelihood of having a local chapter of the NAACP in 1964. The outcome is an indicator variable that equals 1 if the county had an NAACP chapter in 1964 and 0 otherwise. Column 1 of the panel suggests that a one standard deviation increase in exposure to black radio increased the probability of having a local chapter of the NAACP by about 13 percentage points (relative to a mean of 32.6 percentage points). The estimated effect remains robust in column 2 after controlling for the presence and membership of the NAACP in 1942, suggesting that black radio increased the number of the NAACP chapters between 1942 and 1964. As a comparison and a placebo test, I again show that, conditional on all other baseline controls (except the 1942 NAACP controls), exposure to black radio was not correlated with having a local chapter of the NAACP in 1942, prior to the rise of black radio in the late 1940s.

As a further check, I plot the estimated effects on the presence of NAACP chapters over time in Figure 13, which also includes data on NAACP chapters from earlier years. As seen in the figure, the estimated effects of black radio were small in magnitude and statistically indistinguishable from zero in the pre-WWII period. The findings suggest that black radio exposure was not correlated with black political activism in either level or trend before the rise of black radio.

Overall, together with the baseline results, the results so far provide consistent evidence that black radio increased black political activism and participation during the early 1960s. Next, I turn to potential mechanisms through which black radio might have mattered.

3.5.4 Potential Mechanisms

A natural question is how exposure to black radio affected black political participation. In this section, I exploit individual survey data from the Negro Political Participation Study (Matthews and Prothro, 2006) to explore potential mechanisms that may explain the effects

of black radio on black political participation. Specifically, the survey data contain county identifier for each respondent, which allows me to measure individual exposure to black radio and relate black radio exposure to a rich set of attitudes and behaviors of individual blacks in the early 1960s. A caveat, however, is that the survey only contains individual data from 18 counties in the South, although all 11 states in the former confederate South are included. I therefore would treat the findings in this section more cautiously and interpret them mostly as suggestive evidence.

One potential channel that may explain the political effects of black radio is that, by speaking on the radio, civil rights groups and activists might have gained greater exposure and been able to garner greater support from the black population. To test this hypothesis, I exploit information on blacks' attitudes towards the NAACP, namely one's familiarity with and approval of the NAACP, which I use as the outcome variables. I present the findings in the first two columns of Table 23. I find that, conditional on state fixed effects, the free-space signal, individual characteristics (gender, age and its square, and education level) and county characteristics (population, share of blacks, and average wage of blacks), blacks living in counties more exposed to black radio were more familiar with the NAACP (column 1) and more likely to agree with its actions (column 2). The results are consistent with the view that black radio provided greater exposure and support for civil rights groups and activists, which likely made blacks more responsive to the political mobilization of civil rights groups.

In addition, listening to black radio could lead blacks to substitute away from consuming other media. Previous work find that the entry of television in the 1950s coincided with sharp drops in consumption of newspapers and radio, and consequently reduced voter turnout (Gentzkow, 2006). To test the effects of black radio on the consumption of other media, I use data on blacks' media consumption behaviors in the survey and focus on individual consumption of television and black newspapers. As seen in columns 3 and 4 of Table 23, I find that blacks in counties more exposed to black radio were substantially less likely to watch television, while black radio did not affect individual consumption of black newspapers in a statistically significant way. The results suggest that black radio led blacks to substitute away from watching television; the substitution away from television to black radio likely increased blacks' exposure to information and political messages on the civil

rights movement, which then translated into greater political activism and participation.

Moreover, an intriguing question is how might exposure to black radio affect blacks' perception of themselves and others. In the Jim Crow South, black radio was the only broadcast media that featured blacks in a positive light; television programs in the South either ignored blacks or presented them in a undignified image, with Southern TV station owners frequently censoring any positive coverage of blacks that came from national network television programs (Torres, 2003; Acham, 2005; Boroghkozy, 2012). Therefore, access to black radio, and the simultaneous substitution away from television, could expose blacks to a less biased or stereotyped view of blacks and whites. Changes in one's view on racial stereotypes matters because lower racial stereotyping among blacks has been found to be associated with higher political participation today (Craemer and Orey (2017)). To explore potential changes in racial stereotyping among blacks, I use indices measuring one's tendency to engage in racial stereotyping as provided by the survey data, which I use as the outcome variables. The results are reported in the last two columns of of Table 23. As seen in column 5, I find that exposure to black radio was associated with a lower tendency for blacks to engage in racial stereotyping in general. Moreover, column 6 suggests that black radio exposure was also associated with lower stereotyping of blacks by blacks themselves. By exposing blacks to a less distorted and more dignified view of themselves, black radio could have inspired blacks to struggle for greater freedom and equality in the face of oppression.

3.5.5 Impacts on State Aid and Legislative Voting

The results so far suggest that exposure to black radio increased black political activism and participation, and potential mechanisms have also been explored. A remaining question is whether black radio allowed blacks to reap any substantive political or economic benefits. By keeping blacks more informed, black radio could have benefited blacks economically as government policies tend to be more favorable towards groups of citizens that are more informed (Strömberg, 2004). For instance, Strömberg (2004) show that U.S. counties with greater radio penetration during the 1930s received more New Deal relief funds. In addition, the greater electoral participation brought about by black radio could also increase African

Americans' bargaining power in politics. In this respect, Cascio and Washington (2014) have shown that enfranchisement of Southern blacks following the Voting Rights Act (VRA) was accompanied with a shift in state aid towards counties with higher proportions of blacks. In the spirit of Strömberg (2004) and Cascio and Washington (2014), I turn to examine black radio's impacts on the distribution of state aid. Moreover, to further evaluate the political gains of Southern blacks, I explore black radio's impacts on Southern congressman's votes on civil rights bills.

Panel A of Table 24 presents the results on black radio's impacts on state aid. In the first two columns, the outcome variables are the natural logarithm of per capita state-to-county transfers in 1962. Similar to Cascio and Washington (2014), I interact black radio exposure with *Black*, which is an indicator variable for counties with a large share of black population. Specifically, *Black* equals 1 if the county's black population share in 1950 was above the 75^{th} percentile of the distribution and 0 otherwise. I use the interaction term as my main explanatory variable of interest. As shown in column 1 of the table, conditional on State Economic Area fixed effects and free-space signal strength, I find a positive and statistically significant interactive effect between black radio exposure and the population share of blacks, suggesting that counties with higher exposure to black radio and higher proportions of black residents saw greater state aid. Column 2 shows that the estimated effect is robust to controlling for the full set of baseline county characteristics. Moreover, column 3 suggests that the result is also robust to measuring state aid in levels. The results from this exercise suggest that black radio led to concrete economic benefits for African Americans in the form of greater state transfers.

Panel B of Table 24 shows the results on Southern congressman's votes on civil rights bills. The outcome is the second dimension of the DW-NOMINATE score, which measures the conservativeness of congressman's votes on civil rights bills during this era. The panel presents the results for the 89th Congress (1965-1967), which saw the passage of the Voting Rights Act (VRA) in 1965 that prohibited racial discrimination in voting. Each observation is a congressional district in the South. To measure exposure to black radio in each congressional district, I use the highest black radio signal strength predicted at the centroid of each district. I again focus on the interaction between black radio exposure and *Black*,

the indicator variable for a high share of black population, because black radio's effects on Southern congressman's support for civil rights likely depended on the share of blacks in the congressman's constituency. As shown in column 1 of the panel, conditional on state fixed effects and free-space signal strength, I find a negative and statistically significant coefficient on the interaction term, which suggests that Southern congressmen voted less conservatively on civil rights issues in districts with higher exposure to black radio and higher proportions of blacks. In column 2 of the panel, I further control for congressional district characteristics (log population, log population density, log median income, share of blue-collar employment, and whether the district contained a major city), and the result is robust.

Moreover, I explore dynamic effects of black radio on Southern congressman's ideology in Figure **??** by plotting the estimated coefficients on the interaction term (Black Radio Signal $\times$ Black) in years before and after the passage of the VRA. It is evident from Figure **??** that, in the period before Southern blacks gained enfranchisement in 1965, black radio exposure in districts with greater proportions of blacks had no effect on Southern congressman's ideology concerning civil rights. Southern congressmen in these districts, however, started to vote less conservatively on civil rights bills immediately after Southern blacks gained enfranchisement in 1965. The results are consistent with the view that the greater political activism and participation brought about by black radio translated into substantive political power for Southern blacks after they gained the rights to vote. Together, evidence from this section suggests that black radio not only increased black political participation but also led to actual political and economic gains for African Americans during the civil rights movement.

3.6 Conclusion

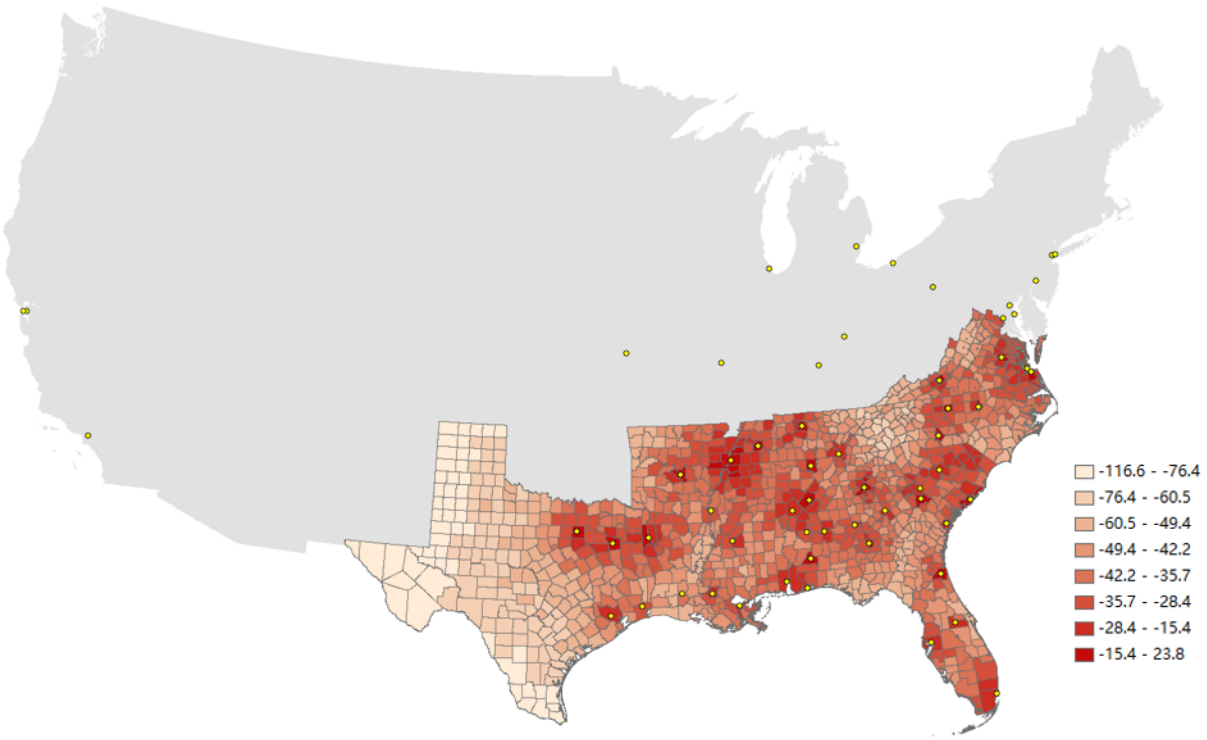
While media and information technologies can influence important political outcomes, the possibility that they can empower minorities in the resistance to oppression and injustice remains largely unexplored. This paper assembles a unique data set to study the political impacts of black radio during the civil rights movement. I find that exposure to black radio increased black political activism and participation, as measured by black voter registration

and the presence of a local chapter of the NAACP. I explore potential mechanisms and find that black radio increased blacks' knowledge of and support for civil rights groups, decreased TV consumption, and reduced racial stereotyping among blacks. Moreover, I provide evidence that black radio also brought substantive political and economic gains to blacks during the civil rights era.

My findings provide the first systematic evidence that media and information technologies can empower ethnic minority groups in the face of injustice and oppression. Although specific to the episode of black radio during the civil rights movement, the results provide more general insights on the importance to minority groups of having media serving their interests.

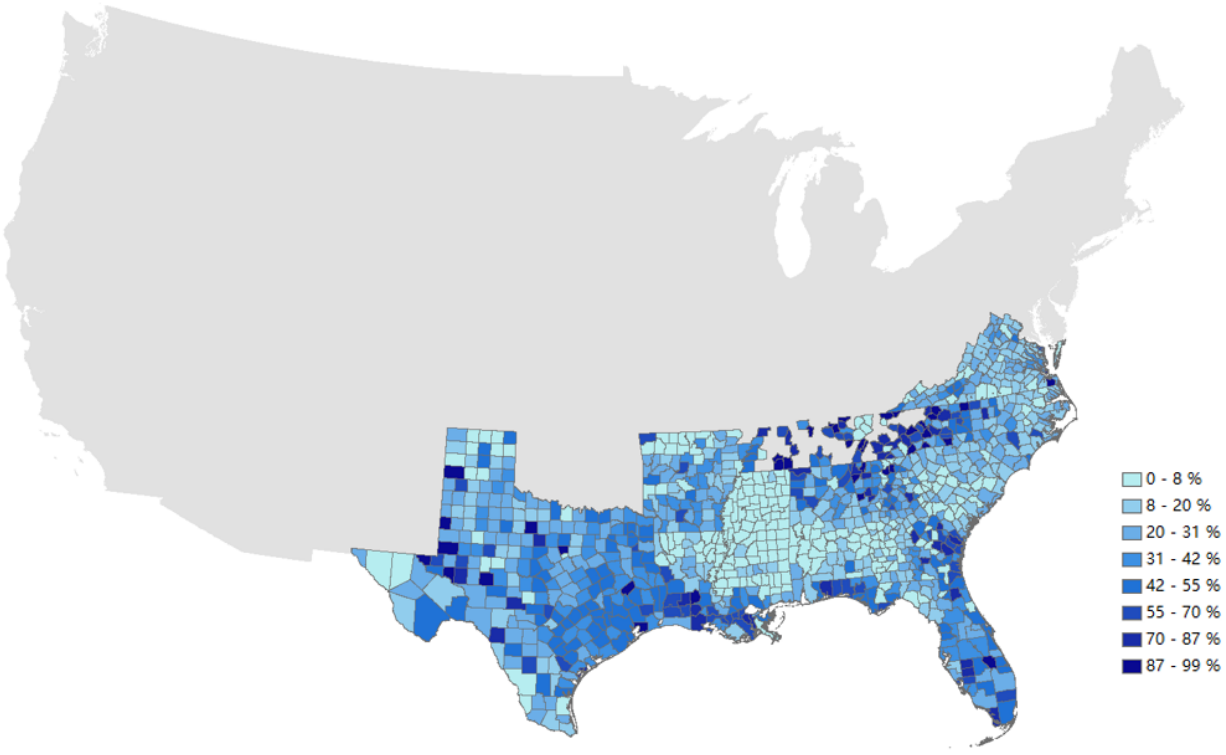
3.7 Figures and Tables

Figure 11: Location and Signal Strength of Black Radio Stations, 1960



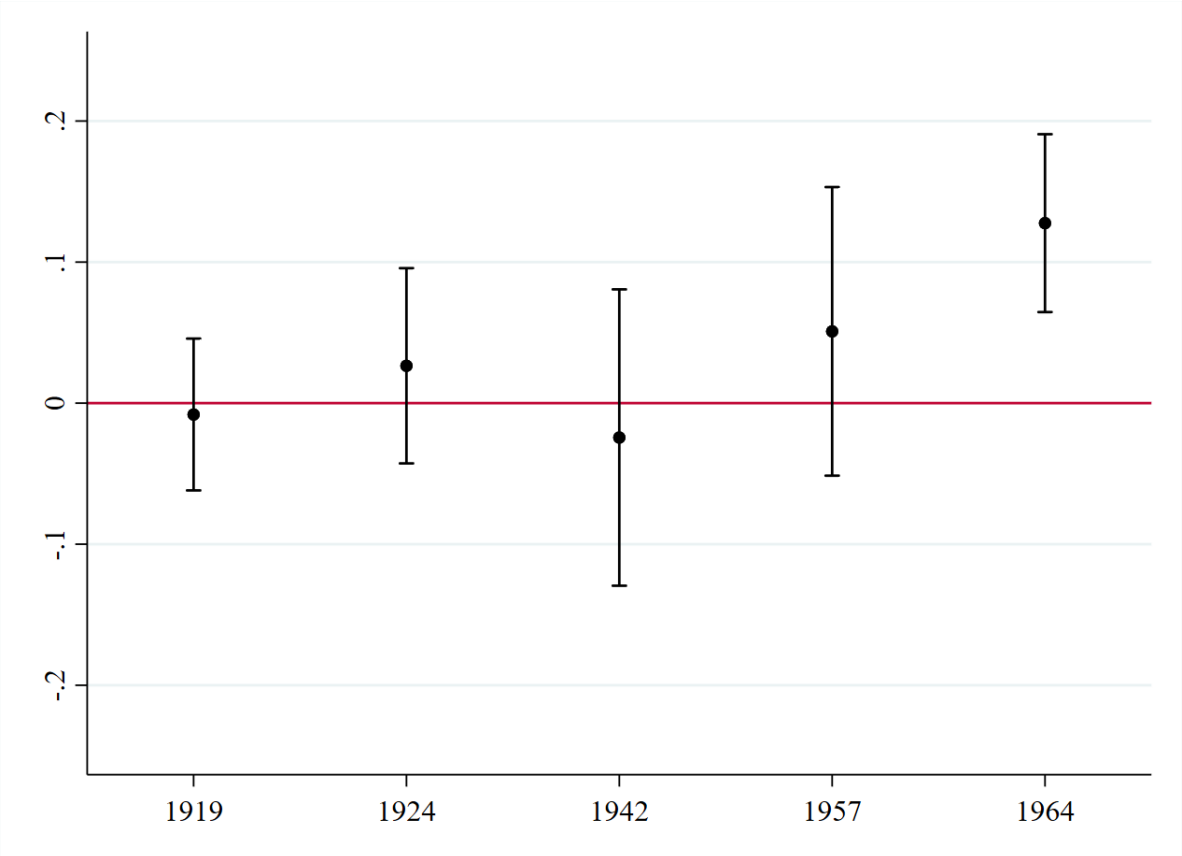
Notes - This figure shows the location and signal strength of black radio in 1960. The dots are the location of black radio stations, and darker colors represent stronger signals. Data on black radio stations are drawn from the broadcasting trade journal *Sponsor* (1960). Signal strength is calculated using the Irregular Terrain Model (ITM) and measured in decibel-milliwatts (dBm).

Figure 12: Black Voter Registration Rate, 1960



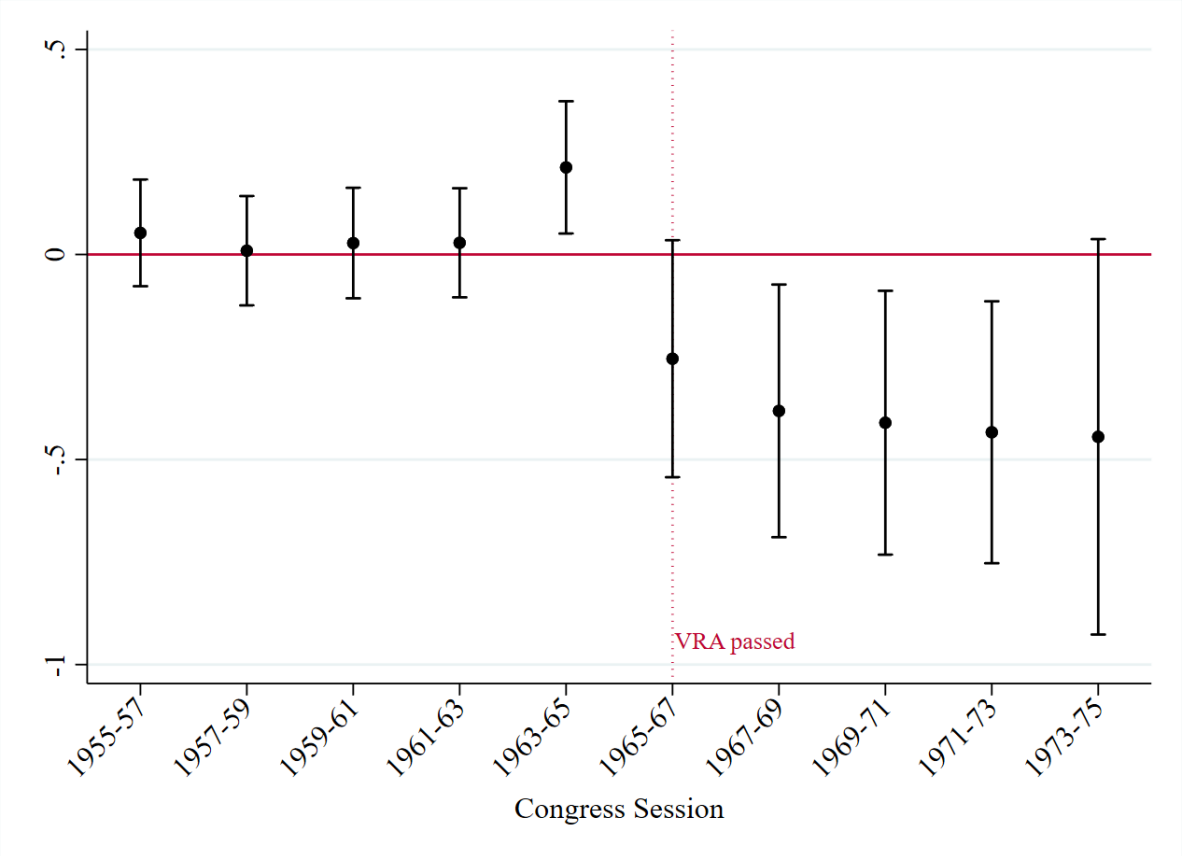
Notes - Data are drawn from Matthews and Prothro (1966).

Figure 13: Effects on Having a Local Chapter of the NAACP



Notes - This figure shows the estimated effects of exposure to black radio on the presence of a local chapter of the NAACP. The estimates come from separate OLS regressions, where each observation is a county in the former confederate South and the outcome variable is an indicator variable that equals 1 if an NAACP chapter was present in the county in that year and 0 otherwise. The explanatory variable is the the black radio signal strength in 1960. Each regression includes all the baseline controls as in column 7 of Table 20 and is weighted by county black population. Standard errors are corrected for clustering at the black radio station level. The dots are the estimated coefficients and the vertical lines represent the 90% confidence intervals.

Figure 14: Effects on Southern Congressman's Votes on Civil Rights Bills



Notes - This figure shows the interactive effects between black radio exposure and black population share on the conservativeness of Southern congressman's votes on civil rights bills, before and after the passage of the Voting Rights Act. The estimates come from separate OLS regressions, where each observation is a congressional district and the outcome variable is the second dimension of the DW-NOMINATE score of the congressman in the district. The explanatory variable is the interaction between black radio signal strength and an indicator variable that equals 1 if the black population share was above the 75^{th} percentile of the distribution and 0 otherwise. Each regression includes controls for the free-space signal strength, state fixed effects, and district characteristics (natural log of population, natural log of population density, natural log of median income, share of blue-collar employment, and whether the district contained a major city). Standard errors are corrected for clustering at the black radio station level. The dots are the estimated coefficients and the vertical lines represent the 90% confidence intervals. The dashed vertical line in 1965 indicates the year in which the Voting Rights Act was passed.

Table 18: Exposure to Black Radio and County Characteristics (Balance Test)

	Outcome: Black Radio Signal Strength, 1960	
	SEA Fixed Effects and Geographic Controls (1)	+ Free-space Signal Strength (2)
ln(Population), 1950	0.048	0.021
	(0.046)	(0.028)
% Blacks, 1950	0.031	-0.001
	(0.071)	(0.047)
% Blacks completed high school, 1940	-0.020	-0.024
	(0.039)	(0.019)
% Blacks with no school, 1940	-0.012	-0.014
	(0.029)	(0.023)
ln(Average Wage of Blacks), 1940	-0.001	0.009
	(0.041)	(0.035)
% Blacks owned home, 1940	-0.023	0.013
	(0.034)	(0.019)
% Blacks on farm, 1940	0.024	0.065
	(0.059)	(0.043)
% Black church member, 1936	0.050	0.036
	(0.031)	(0.024)
% Urban, 1950	-0.089*	-0.035
	(0.052)	(0.029)
% Male, 1950	-0.056*	-0.011
	(0.031)	(0.016)
% Illiterate, 1950	0.013	0.001
	(0.050)	(0.036)
% Unemployed, 1950	-0.006	0.000
	(0.032)	(0.025)
% Church members, 1950	-0.014	-0.025
	(0.029)	(0.024)
% Population growth, 1940-50	0.034	-0.011
	(0.052)	(0.032)
ln(Median family income), 1950	0.143**	0.051
	(0.069)	(0.044)
% With <5 years of school, 1950	0.072	0.088
	(0.077)	(0.064)
% Completed high school, 1950	0.042	0.031
	(0.059)	(0.037)
% Workers in agriculture, 1950	-0.018	-0.027
	(0.078)	(0.042)
% Workers in manufacturing, 1950	-0.038	0.001
	(0.058)	(0.038)
% Home owners, 1950	-0.032	0.020
	(0.059)	(0.028)
ln(Dist. to city > 50k people), 1950	-0.246***	-0.044
	(0.052)	(0.027)
Observations	899	899
R^2	0.701	0.860

Notes - This table shows the correlation between pre-existing county characteristics and the black radio signal strength in 1960. Column 1 controls for State Economic Area fixed effects and county geography (elevation and ruggedness). Column 2 further controls for the free-space signal strength ($SignalFree$). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 19: Placebo Tests on Past Racial Attitudes and Black Activism

	Placebo Outcomes:				
	% Voted Strom Thurmond, 1948	Any Lynching, 1882-1930	Lynch Count, 1882-1930	NAACP, 1942	ln(NAACP Member per 10,000 Blacks)
	(1)	(2)	(3)	(4)	(5)
Black Radio Signal	1.151	-0.072	-0.660	-0.031	-0.020
	(1.811)	(0.044)	(0.574)	(0.060)	(0.225)
Observations	881	899	899	899	891
R^2	0.937	0.648	0.536	0.503	0.506
State Econ Area FE	Yes	Yes	Yes	Yes	Yes
Free-space Signal	Yes	Yes	Yes	Yes	Yes
County Characteristics	Yes	Yes	Yes	Yes	Yes
Mean of Dep. Var.	29.78	0.545	2.378	0.117	0.491
Std. Dev. of Dep. Var.	27.86	0.498	3.596	0.321	1.439

Notes - This table shows the correlation between exposure to black radio in 1960 and past racial attitudes and black political activism. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county. The sample consists of counties in the former Confederate South. The placebo outcomes are the vote share for Strom Thurmond in the 1948 presidential election (column 1), whether the county had any lynching during the period 1882-1930 (column 2), the number of lynchings during 1882-1930 (column 3), whether the county had a local chapter of the NAACP in 1942 (column 4), and the natural log of NAACP membership per 10,000 blacks in 1942 (column 5). The explanatory variable is the signal strength of black radio in 1960. Each regression includes the full set of controls in Table 18, including State Economic Area fixed effects, free-space signal strength, pre-existing county socioeconomic characteristics, and county geography (elevation and ruggedness). Regressions are weighted by county black population. Standard errors, shown in parentheses, are corrected for clustering at the black radio station level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 20: Exposure to Black Radio and Voter Registration, 1960

	% Black Voting-Age Population Registered							% White Registered	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Black Radio Signal	2.921*	4.921**	4.878*	5.451*	5.507***	6.797***	4.075***	-0.031	-0.271
	(1.630)	(2.379)	(2.697)	(2.738)	(1.709)	(1.664)	(1.432)	(2.177)	(2.792)
Observations	1,037	1,037	1,037	1,000	860	835	835	699	699
R^2	0.469	0.471	0.471	0.526	0.608	0.624	0.702	0.713	0.742
State Economic Area FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Free-space Signal		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Local Geography			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Socioeconomics				Yes	Yes	Yes	Yes	Yes	Yes
Black Characteristics					Yes	Yes	Yes	Yes	Yes
Racial Attitudes & Activism						Yes	Yes	Yes	Yes
Population Weighted							Yes		Yes
Mean of Dep. Var.	28.88	28.88	28.88	28.87	28.47	28.32	28.32	73.85	73.85
Std. Dev. of Dep. Var.	24.28	24.28	24.28	24.26	23.33	23.47	23.47	21.66	21.66

Notes - This table shows the estimated effects of exposure to black radio on voter registration in 1960. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county in the former confederate South. The outcome variables are black voter registration rates in columns 1-7 and white voter registration rates in columns 8-9, all measured in percentage points. The explanatory variable is the black radio signal strength in 1960. Free-space signal is the hypothetical signal strength in the free-space (i.e. assuming no topography). Local geographic controls include the county's elevation and terrain ruggedness. Socioeconomic controls are measured at county level in 1950 and include the natural log of population, population growth during 1940-1950, the population shares of blacks, males, urban residents, the illiterate, the unemployed, home owners, church members, share with less than five years of schooling, share with high school degrees, employment share in manufacturing, employment share in agriculture, natural log of median family income, and natural log of distance to the nearest city with more than 50,000 people. Black characteristics are measured at county level in 1940 and include the share of blacks without schooling, share with high school degrees, natural log of average wage, share owned home, share on farm, and share of black church members in 1936. Past racial attitudes and activism controls include all five placebo outcomes shown in Table 19. The regression in column 7 is weighted by county black population, and that in column 9 is weighted by county white population. Standard errors, shown in parentheses, are corrected for clustering at the black radio station level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 21: Horse Race between Black Radio and Other Media

	% Black Registered to Vote, 1960				
	(1)	(2)	(3)	(4)	(5)
Black Radio Signal	4.075***	4.610***	4.152***	4.002***	4.539***
	(1.432)	(1.533)	(1.385)	(1.403)	(1.500)
Non-Black Radio Signal		-0.897			-0.762
		(1.332)			(1.330)
TV Signal			-0.992		-1.259
			(1.027)		(1.063)
Black Newspaper in 50 miles				1.736	2.270
				(1.455)	(1.456)
Observations	835	835	835	835	835
R-squared	0.702	0.704	0.703	0.703	0.706
Full Baseline Controls	Yes	Yes	Yes	Yes	Yes
Mean of Dep. Var.	28.32	28.32	28.32	28.32	28.32
Std. Dev. of Dep. Var.	23.47	23.47	23.47	23.47	23.47

Notes - This table compares the estimated effects of exposure to black radio on black voter registration in 1960 with those of exposure to other types of media. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county from the former confederate South. The outcome variable is the 1960 black voter registration rate. The explanatory variable is the black radio signal strength in 1960 in column 1. Column 2 controls for the signal strength of other national network (ABC, CBS, NBC) radio stations that did not have a black-oriented format. Column 3 controls for the signal strength of national network (ABC, CBS, NBC) television. Column 4 controls for the presence of any black newspapers in 50 miles. Column 5 controls for access to all of the aforementioned media. Each regression controls for all the baseline controls as in column 7 of Table 20 and is weighted by county black population. Standard errors, shown in parentheses, are corrected for clustering at the black radio station level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 22: Effects On the Presence of NAACP Local Chapters

	(1)	(2)	(3)
	Had an NAACP Chapter in		
	1964	1964	1942
Black Radio Signal	0.128***	0.136***	-0.024
	(0.038)	(0.041)	(0.063)
Observations	881	873	881
R^2	0.669	0.674	0.509
1942 NAACP Controls	No	Yes	No
Other Baseline Controls	Yes	Yes	Yes
Mean of Dep. Var.	0.326	0.325	0.118
Std. Dev. of Dep. Var.	0.469	0.469	0.323

Notes - This table shows the estimated effects of exposure to black radio on the presence of NAACP local chapters. Each column represents the results from a separate OLS regression, where each observation is a county from the former confederate South. The outcome variables are indicator variables for whether the county had a local chapter of the NAACP in 1964 (columns 1-2) and in 1942 (column 3). The explanatory variable is the black radio signal strength in 1960. Columns 1 and 3 control for the full set of baseline controls (column 7 of Table 20) except for the 1942 NAACP controls (i.e. an indicator for the presence of a NAACP chapter as well as the natural log of NAACP membership per 10,000 blacks, both observed in 1942). Column 2 includes the full baseline controls. Each regression controls for all the baseline controls as in column 7 of Table 20. Regressions are weighted by county black population. Standard errors, shown in parentheses, are corrected for clustering at the black radio station level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 23: Potential Mechanisms

	(1) Familiar w/ NAACP	(2) Agree w/ NAACP	(3) Watch TV	(4) Read News	(5) Racial Stereotypes	(6) Stereotypes about Blacks
Black Radio Signal	0.473***	0.566***	-0.812***	0.151	-0.466***	-0.105*
	(0.128)	(0.105)	(0.061)	(0.158)	(0.035)	(0.058)
Observations	616	616	616	616	570	616
R-squared	0.152	0.125	0.201	0.305	0.049	0.051
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Free-space Signal	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dep. Var.	0.784	0.713	0.705	0.690	0.688	0.177
Std. Dev. of Dep. Var.	0.412	0.453	0.457	0.463	0.464	0.382

Notes - This table shows the estimated effects of exposure to black radio on individual blacks' attitudes and behaviors. Data are drawn from the Negro Political Participation Study (Matthews and Prothro 1962). Each column represents the results from a separate OLS regression, where each observation is an individual. The outcome variables are indicator variables for whether the individual was familiar with the NAACP (column 1), agreed with the actions of the NAACP (column 2), watched TV (column 3), read newspapers (column 4), an index for the tendency to hold racial stereotypes in general (column 5), and an index for the tendency to stereotype blacks (column 5). The explanatory variable is the black radio signal strength in 1960. Each regression controls for state fixed effects, the free-space signal strength, individual characteristics including gender, age and its square, and education level (no schooling, completed grade school, and completed high school), and county characteristics (natural log of population, share of blacks, and natural log of blacks' average wage). Standard errors, shown in parentheses, are corrected for clustering at the black radio station level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

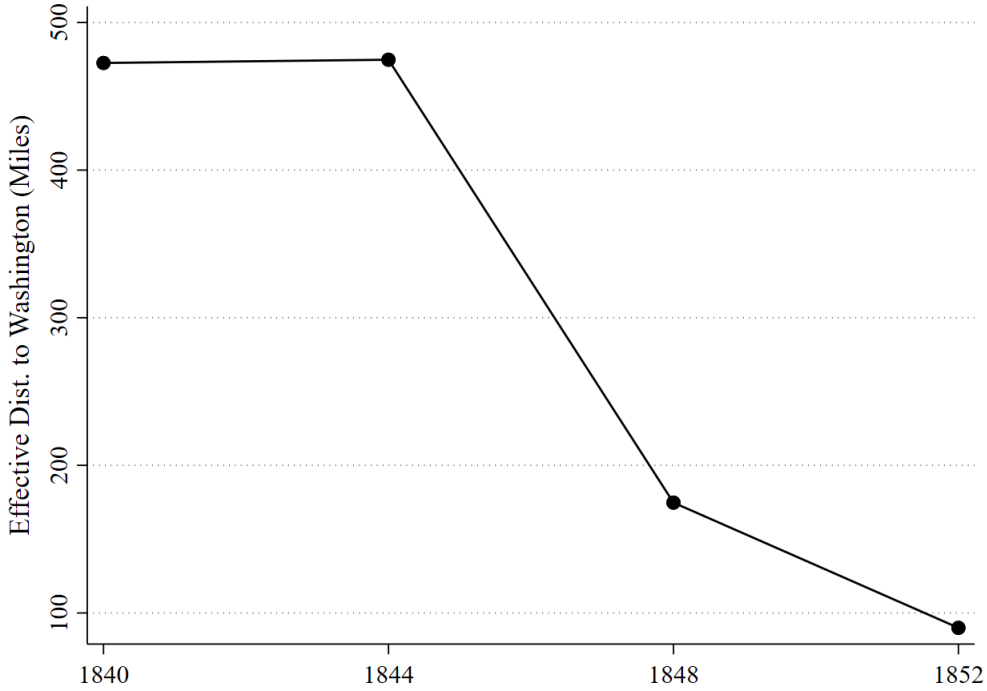
Table 24: Effects of Black Radio on State Aid and Roll Call Votes in Congress

	(1)	(2)	(3)
Panel A. State-to-County Transfers Per Capita, 1962	ln(Transfer)	ln(Transfer)	Transfer
Black Signal x Black	0.076**	0.060**	338.205*
	(0.037)	(0.028)	(174.200)
Black Signal	-0.011	-0.005	-46.372
	(0.034)	(0.027)	(173.310)
Black	0.022	-0.051**	-318.932**
	(0.022)	(0.024)	(154.821)
Observations	1,083	873	873
R-squared	0.674	0.779	0.761
Free-space Signal	Yes	Yes	Yes
State Econ Area FE	Yes	Yes	Yes
County Characteristics	No	Yes	Yes
Mean of Dep. Var.	8.719	8.743	6563
Std. Dev. of Dep. Var.	0.313	0.304	2069
Panel B. Ideology of Representatives in the 89th Congress (1965-1967)	DW-NOMINATE Score (second dimension)		
Black Radio Signal x Black	-0.282*	-0.254	
	(0.152)	(0.171)	
Black Radio Signal	-0.160	-0.105	
	(0.163)	(0.139)	
Black	0.148	0.065	
	(0.108)	(0.101)	
Observations	101	101	
R-squared	0.439	0.543	
Free-space Signal	Yes	Yes	
State FE	Yes	Yes	
District Characteristics	No	Yes	
Mean of Dep. Var.	0.752	0.752	
Std. Dev. of Dep. Var.	0.301	0.301	

Notes - This table shows the estimated effects of exposure to black radio on state aid and the conservativeness of roll call votes on civil rights bills. Each column represents the results from a separate OLS regression. In Panel A, each observation is a county from the former confederate South. The outcome variables are the natural log of state-to-county transfers per capita in 1962 (columns 1-2) and state-to-county transfers per capita measured in levels (column 3). Each regression controls for State Economic Area fixed effects and the free-space signal strength. Full baseline controls are those used in column 7 of Table 20. In Panel B, each observation is a congressional district from the former confederate South. The outcome variable is the second dimension of the DW-NOMINATE score assigned to the congressman in the district. Each regression controls for state fixed effects and the free-space signal strength. District characteristics include natural log of population, natural log of population density, natural log of median income, share of blue-collar employment, and whether the district contained a major city. The explanatory variables of interest in both panels are the interaction terms between black radio signal strength and an indicator variable that equals 1 if the black population share was above the 75^{th} percentile of the distribution and 0 otherwise. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

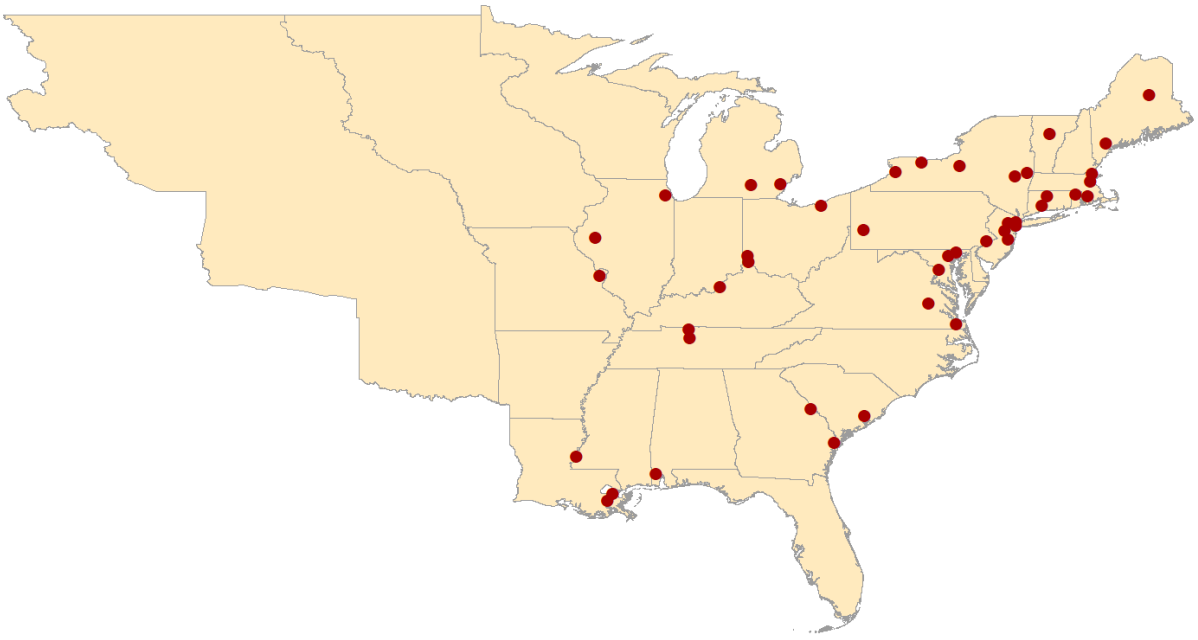
Appendix A The Electric Telegraph, News Coverage, and Political Participation

Figure 15: Average Effective Distance to Washington, 1840-1852



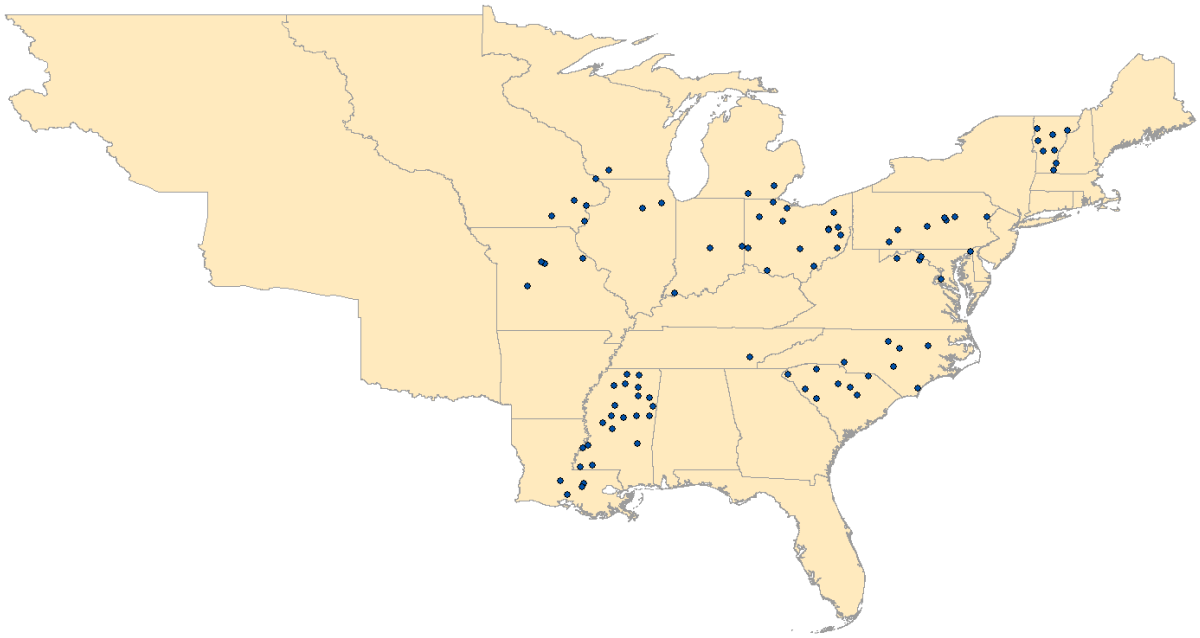
Notes - The figure shows the average effective distance to Washington (in miles) across counties in each presidential election year during the period 1840-1852.

Figure 16: Locations of Daily Newspapers in 1840



Notes - This figure maps the locations (county centroids) of daily newspapers in 1840. The locations of daily newspapers come from the 1840 *Census of Manufactures*.

Figure 17: Locations of the Small-Town Newspapers in My Sample



Notes - This figure maps the locations (towns) of the small-town newspapers in my sample. The newspapers are obtained from the *Chronicling America* database.

Table 25: List of the Small-Town Newspapers in My Sample and Their Locations

Title	Place	State	Title	Place	State
The IL free trader.	Ottawa	IL	Louisville messenger.	Louisville	MS
Juliet signal.	Juliet	IL	The Yazoo Democrat.	Yazoo	MS
IN State sentinel.	INpolis	IN	The Yazoo City Whig.	Yazoo	MS
The Evansville journal.	Evansville	IN	Saturday morning visitor.	Warsaw	MO
Richmond palladium.	Richmond	IN	Boon's Lick times.	Glasgow	MO
Burlington hawk-eye.	Burlington	IA	Salt River journal.	Bowling Green	MO
IA territorial gazette	Burlington	IA	The N.-Carolinian.	Fayetteville	NC
and advertiser.			Tarboro' press.	Tarboro	NC
Weekly miners' express.	Dubuque	IA	The Charlotte journal.	Charlotte	NC
IA capitol reporter.	IA City	IA	Wilmington journal.	Wilmington	NC
Bloomington herald.	Bloomington	IA	The Hillsborough recorder.	Hillsboro	NC
Baton-Rouge gazette.	Baton Rouge	LA	The N.-Carolina standard.	Raleigh	NC
The Planters' banner.	New Iberia	LA	Democratic standard.	Georgetown	OH
S.ern sentinel.	Plaquemine	LA	Carroll free press.	Carrollton	OH
The St. Landry whig.	Opelousas	LA	The Lancaster gazette.	Lancaster	OH
The Cecil Whig.	Elkton	MD	The Cadiz sentinel.	Cadiz	OH
Port Tobacco Times	Port Tobacco	MD	Maumee City express.	Maumee	OH
Hillsdale Whig standard.	Hillsdale	MI	Meigs County times.	Pomeroy	OH
Ypsilanti sentinel.	Ypsilanti	MI	The spirit of democracy.	Woodsfield	OH
Piney Woods planter.	Liberty	MS	Portage sentinel.	Ravenna	OH
Liberty advocate.	Liberty	MS	The Kalida venture.	Kalida	OH
Jeffersonian Democrat.	Kosciusko	MS	Lower Sandusky freeman.	Lower Sandusky	OH
Kosciusko chronicle.	Kosciusko	MS	The OH Democrat.	Dover	OH
Central register.	Kosciusko	MS	The Democratic pioneer.	Upper Sandusky	OH
Attala register.	Kosciusko	MS	The mountain sentinel.	Ebensburg	PA
MS Democrat.	Carrollton	MS	The Columbia Democrat.	Bloomsburg	PA
The Whig creed.	Carrollton	MS	Lewistown gazette.	Lewistown	PA
The S.ern Pioneer	Carrollton	MS	Jeffersonian Republican.	East Stroudsburg	PA
The hornet.	Carrollton	MS	Sunbury American.	Sunbury	PA
Western statesman.	Carrollton	MS	The Somerset herald.	Somerset	PA
S.ern patriot.	Houston	MS	Lewisburg chronicle.	Lewisburg	PA
Port-Gibson herald.	Port Gibson	MS	The Abbeville banner.	Abbeville	SC
The Port-Gibson correspondent.	Port Gibson	MS	Farmers' gazette.	Cheraw	SC
Whig Republican.	Lexington	MS	Edgefield advertiser.	Edgefield	SC
Lexington union.	Lexington	MS	The Camden journal.	Camden	SC
True Democrat.	Paulding	MS	Keowee courier.	Walhalla	SC
The Rodney telegraph.	Rodney	MS	The Spartan.	Spartanburg	SC
The organizer.	Oxford	MS	The Sumter banner.	Sumter	SC
The Democratic Whig.	Columbus	MS	S. Branch intelligencer.	Romney	VA
Columbus Democrat.	Columbus	MS	Spirit of Jefferson.	Charles Town	VA
S.ern Argus.	Columbus	MS	The Middlebury galaxy.	Middlebury	VT
The MS Creole.	Canton	MS	The Caledonian.	St Johnsbury	VT
Holly Springs banner.	Holly Springs	MS	Burlington free press.	Burlington	VT
The guard.	Holly Springs	MS	Rutland herald.	Rutland	VT
Holly Springs gazette.	Holly Springs	MS	VT watchman	Montpelier	VT
The weekly independent.	Aberdeen	MS	and State journal.		
S.ern tribune.	Aberdeen	MS	VT phœnix.	Bellows Falls	VT
Macon intelligencer.	Macon	MS	Windham County Democrat.	Brattleboro	VT
The Weekly register.	Panola	MS	The spirit of the age.	Woodstock	VT
The Ripley advertiser.	Ripley	MS	WI tribune.	Mineral Point	WI
Woodville Republican.	Woodville	MS			

Table 26: Summary Statistics of Words Used for the Newspaper Text Analysis

		Frequency of Word			
	N	Mean	SD	Min	Max
Words	(1)	(2)	(3)	(4)	(5)
"Congress"	4,693	30.58	27.96	0	242
Presidents' Last Names	4,693	14.65	18.60	0	191
Town Name	4,693	82.18	75.14	0	520
County Name	4,693	59.20	72.29	0	748
State Name	4,693	61.68	58.53	0	475
European Country Names	4,693	28.45	28.10	0	349
"slavery"	4,693	7.891	15.79	0	300
"territor"	4,693	14.26	23.32	0	360
"vote"	4,693	36.96	33.71	0	354
"telegraph"	4,693	2.595	4.275	0	57

Notes - The table presents summary statistics of the words used in the newspaper text analysis. The newspapers are obtained from the *Chronicling America* database. The frequency of each word is based on my newspaper sample for the period 1840-1849. Presidents' Last Names consist of the last names of the U.S. presidents that were in office in each year. European country names consist of the following: "Britain," "United Kingdom," "France," "Austria," "Prussia," "Russia," "Italy," "Portugal," "Greece," "Belgium," "Switzerland," "Netherland," "Sweden," "Poland," and the word "Europe."

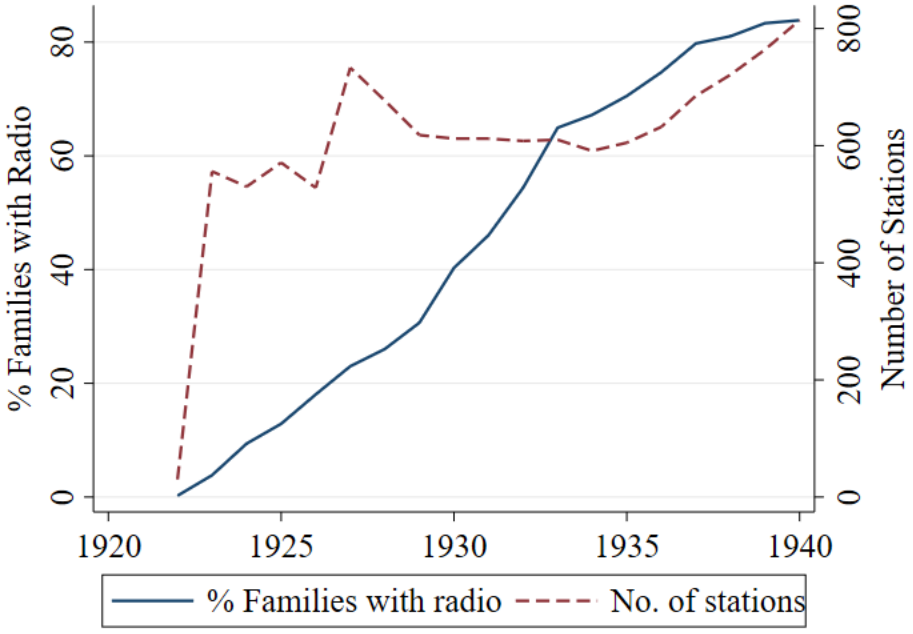
Table 27: Effects on News Coverage Controlling for Newspaper-Specific Linear Time Trends

	(1)	(2)	(3)	(4)
	Panel A. Mentioning of "Congress" and the Presidents' Last Names			
		ln(President	ln(President Name)	
	ln("Congress")	Name)	Pres. Year	Off Year
Eff. Dist. to Washington (100 miles)	-0.0883***	-0.0521	-0.170	-0.0796
	(0.0298)	(0.0494)	(0.119)	(0.0626)
Observations	4,693	4,693	1,371	3,318
R-squared	0.558	0.572	0.674	0.586
	Panel B. Mentioning of Local, State, and European Country Names			
	ln(Town	ln(County	ln(State	ln(European
	Name)	Name)	Name)	Country Names)
Eff. Dist. to Washington (100 miles)	0.0516	-0.0210	-0.0152	0.0114
	(0.0458)	(0.0405)	(0.0401)	(0.0335)
Observations	4,693	4,693	4,693	4,693
R-squared	0.829	0.766	0.678	0.584
	Panel C. Mentioning of Issues of National Importance			
			ln("Slavery"+	
	ln("Slavery")	ln("Territor")	"Territor")	ln("Vote")
Eff. Dist. to Washington (100 miles)	-0.0907**	-0.103***	-0.100**	-0.0697***
	(0.0454)	(0.0358)	(0.0418)	(0.0258)
Observations	4,693	4,693	4,693	4,693
R-squared	0.573	0.633	0.625	0.559
Newspaper FE	Yes	Yes	Yes	Yes
Month-by-year FE	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes
Newspaper-specific linear trends	Yes	Yes	Yes	Yes

Notes - The table shows the estimates from Table 8 after controlling for newspaper-specific linear time trends in each regression. *** p<0.01, ** p<0.05, * p<0.1

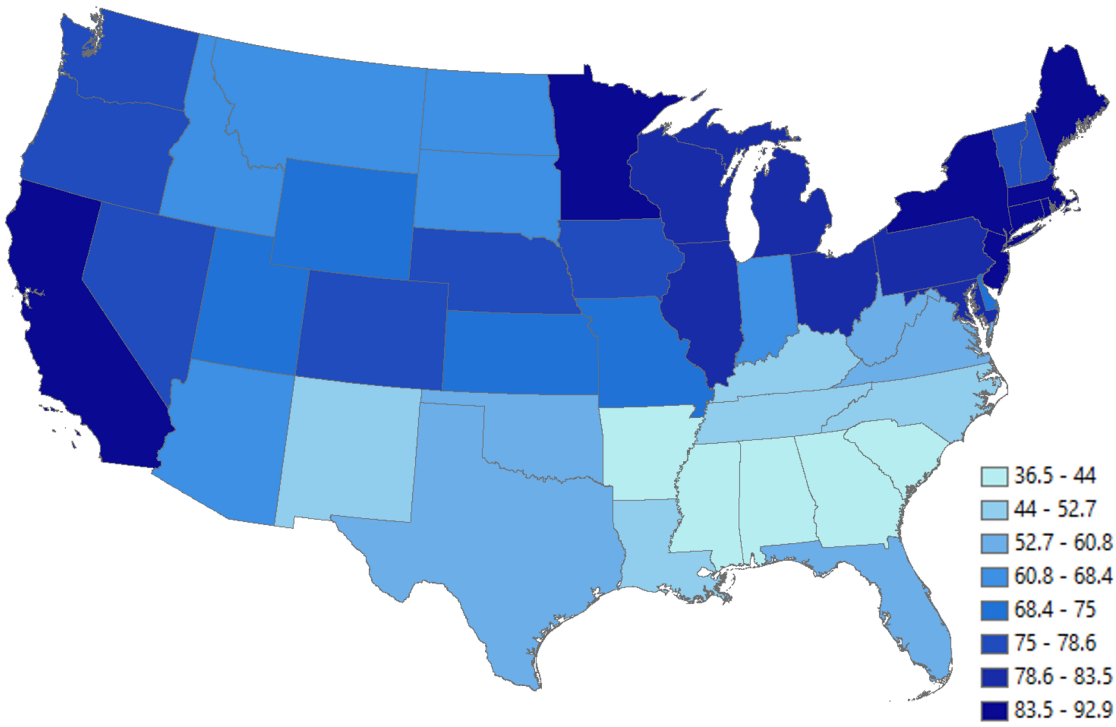
Appendix B Media, Pulpit, and Populist Persuasion: Evidence from Father Coughlin

Figure 18: Radio in America, 1920-1940



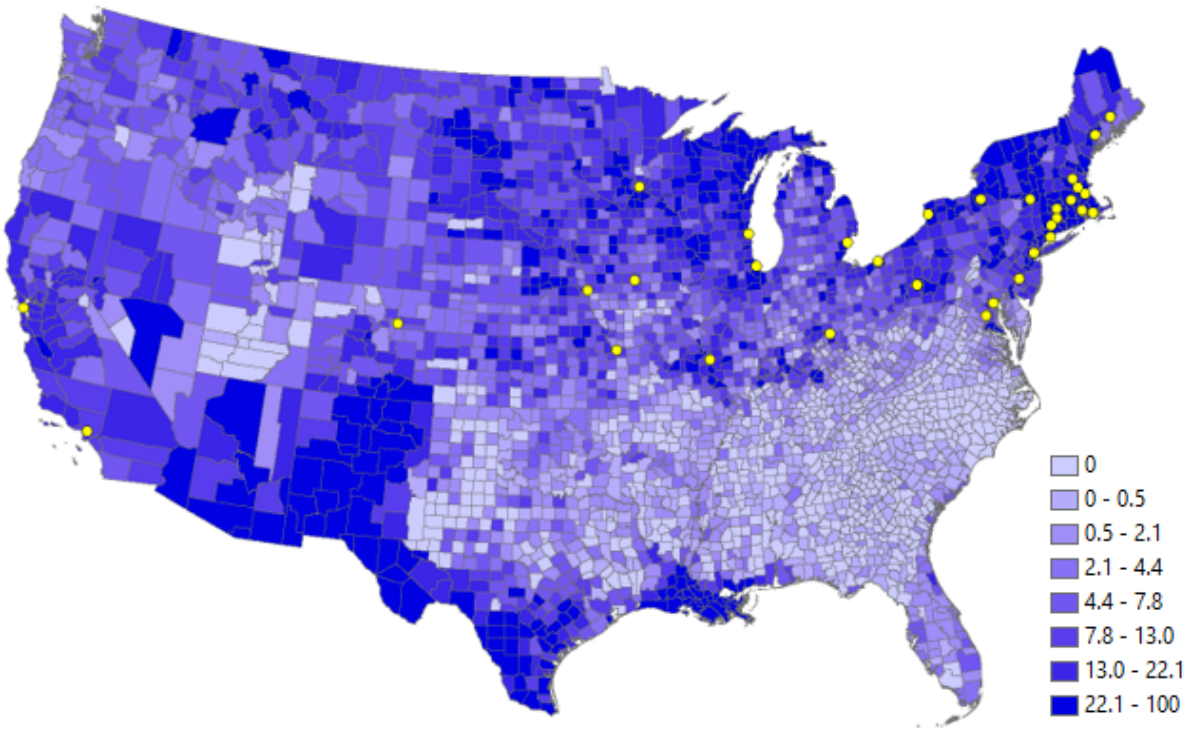
Notes - Data are drawn from the 1940 *Broadcasting Yearbook*.

Figure 19: Percent of Families with a Radio, 1936



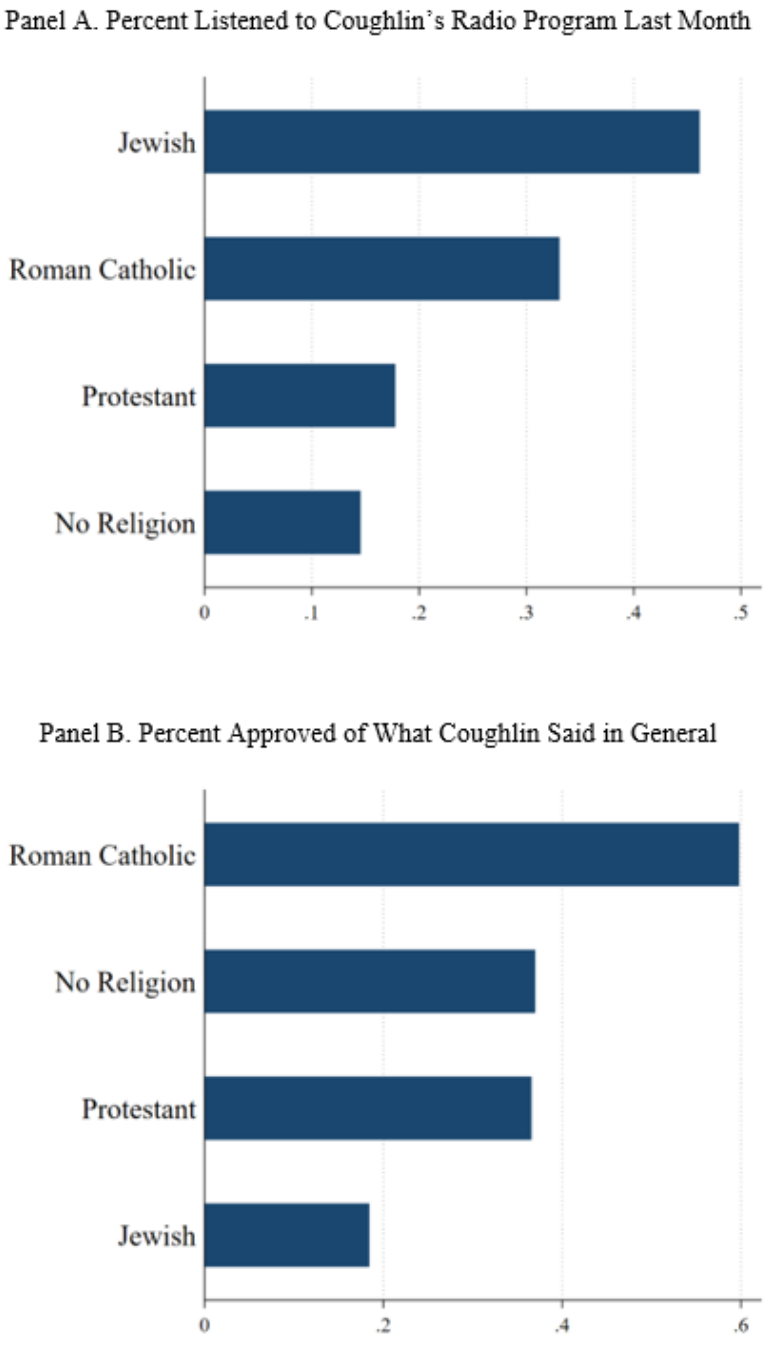
Notes - Data are drawn from the 1936 *Broadcasting Yearbook*.

Figure 20: Percent of Catholics in Population, 1926



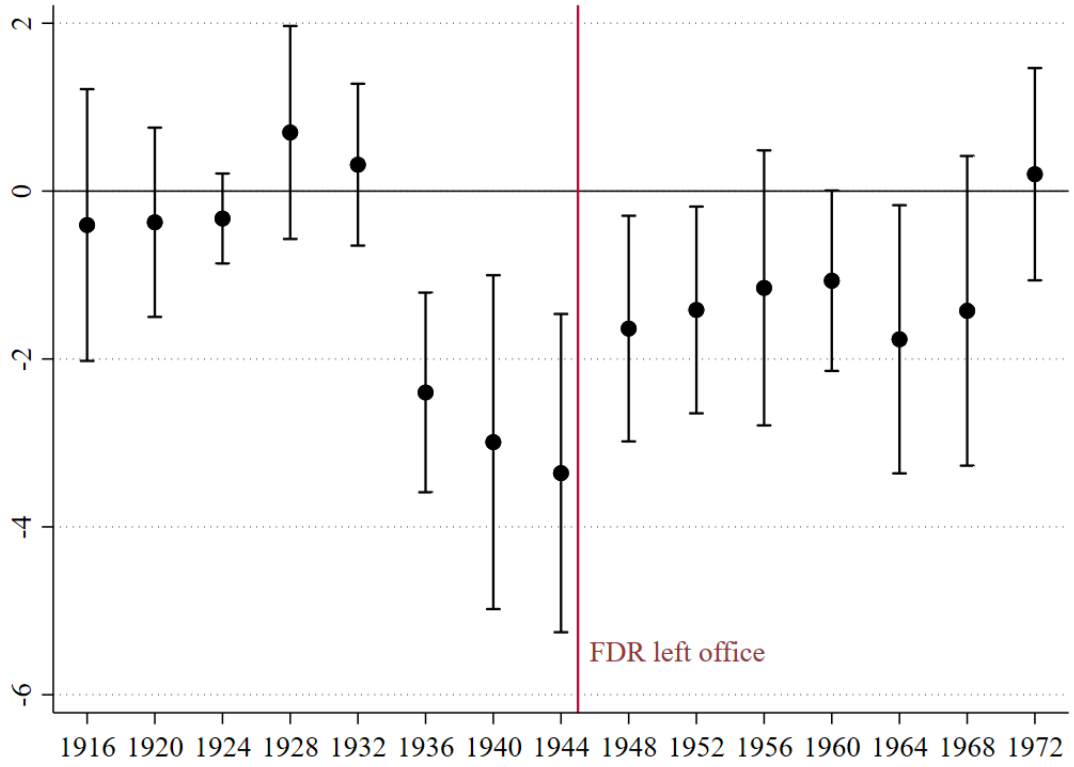
Notes - Data are drawn from the 1926 *Census of Religious Bodies*. Darker colors represent higher shares of Catholics.

Figure 21: Coughlin's Listenership and Approval Rate by Religion, December 1938



Notes - Data are drawn from the December 1938 Gallup Poll, accessed from the Roper Center for Public Opinion Research: `https://ropercenter.cornell.edu/`.

Figure 22: Persistence of Effects of Coughlin Exposure on Democratic Vote Shares



Notes - This figure shows the persistence of the effects of exposure to Father Coughlin's broadcast in 1936 on Democratic vote shares in each presidential elections until 1972. The estimates come from separate OLS regressions following equation (3.1) with the Democratic vote share in each presidential election as the outcome variable. The explanatory variable is the signal strength of Coughlin's radio program in 1936. Each regression includes all baseline controls as in column 6 of Table 11. Standard errors are corrected for clustering at the state level. The dots are the estimated coefficients and the vertical lines represent the 95% confidence intervals. The vertical line in 1945 indicates the year in which FDR died during his last term in office.

Table 28: Coughlin Exposure Interacted with a Continuous Measure of Catholic Population

	Outcome: Vote Shares in 1936		
	Dem.	Rep.	Others
	(1)	(2)	(3)
Signal × Catholic	-0.0665***	-0.00379	0.0704***
	(0.0168)	(0.0134)	(0.0157)
Signal	-1.666**	2.017***	-0.352
	(0.615)	(0.619)	(0.402)
Catholic	-0.0677***	0.0228	0.0452**
	(0.0239)	(0.0141)	(0.0185)
Observations	1,978	1,978	1,978
Full baseline controls	Yes	Yes	Yes
R-squared	0.820	0.854	0.672
Mean of Dep. Var.	56.95	40.34	2.701
Std. Dev. of Dep. Var.	11.45	11.77	3.583

Notes - This table shows the estimated effects of Coughlin exposure on voting in the 1936 presidential elections interacted with the population share of Catholics. Each column represents the results from a separate OLS regression where each observation is a county. The sample consists of all counties outside of the geographic South. The outcome variables are FDR's vote share in column 1, the Republican vote share in column 2, and other parties' vote share in column 3. *Catholic* is the share of Roman Catholics (in percentage points) in the county population. Each regression controls for all the baseline controls as in column 6 of Table 11. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 29: Coughlin Exposure and Voting in the 1940 and 1944 Presidential Elections

	Outcome: Vote Shares in			
	1940		1944	
	FDR (Dem.)	Willkie (Rep.)	FDR (Dem.)	Dewey (Rep.)
	(1)	(2)	(3)	(4)
Signal	-2.991***	3.186***	-3.359***	3.255***
	(0.971)	(0.993)	(0.926)	(0.936)
Observations	1,978	1,978	1,978	1,978
Full baseline controls	Yes	Yes	Yes	Yes
R-squared	0.791	0.850	0.766	0.766
Mean of Dep. Var.	49.02	49.22	46.35	53.09
Std. Dev. of Dep. Var.	12.54	14.99	12.30	12.24

Notes - This table shows the estimated effects of Coughlin exposure in 1936 on Democratic and Republican vote shares in the 1940 (columns 1-2) and 1944 (columns 3-4) presidential elections. Each column represents the results from a separate OLS regression where each observation is a county. The sample consists of all counties outside of the geographic South. The outcome variables are FDR's 1940 vote share in column 1, Republican nominee Wendell Willkie's 1940 vote share in column 2, FDR's 1944 vote share in column 3, and Republican nominee Thomas Dewey's 1944 vote share in column 4. Each regression controls for all the baseline controls as in column 6 of Table 11. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 30: Robustness Checks on Baseline Results

	Outcome: FDR's Vote Share in the 1936 Election					
	Binary variable	Drop counties near stations	Control SignalFree flexibly	Control New Deal spendings	Whole country	Population weighted
	(1)	(2)	(3)	(4)	(5)	(6)
Signal		-2.360***	-2.578***	-2.122***	-1.443	-2.156***
		(0.704)	(0.605)	(0.516)	(0.869)	(0.772)
I(Signal $\geq$ median)	-1.428***					
	(0.431)					
Observations	1,978	1,198	1,978	1,977	3,024	1,978
R-squared	0.816	0.812	0.819	0.826	0.908	0.833
Full baseline controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dep. Var.	56.95	58.88	56.95	56.95	66.15	56.95
Std. Dev. of Dep. Var.	11.45	11.53	11.45	11.45	17.97	11.45

Notes - This table shows the robustness checks on the baseline results. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county. The sample consists of all counties outside of the geographic South, except in column 5. The outcome variable is FDR's vote share in the 1936 presidential election. The explanatory variable is the signal strength of Coughlin's radio program in 1936. In column 1, I measure signal strength using a binary variable, which equals 1 if the signal strength is above median and 0 otherwise. In column 2, I drop counties within 100 miles of any of Coughlin's stations in 1936. In column 3, I also control for the square and the cube of the hypothetical signal strength in the free space ($SignalFree$). In column 4, I add controls for county-level per capita New Deal grant, relief, and loans, all measured in natural logs. In column 5, I include counties from the geographic South in the sample. In column 6, I weight the baseline regression with county population. Each regression controls for the hypothetical signal strength in the free space, state fixed effects, and baseline geographic and socioeconomic controls detailed in the footnote of Table 11. Standard errors, shown in parentheses, are corrected for clustering at the state level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

16 Principles of the National Union of Social Justice

Excerpted from Father Coughlin's broadcast on Sunday, November 11, 1934.

Source: `https://www.ssa.gov/history/fcspeech.html`

Establishing my principles upon this preamble, namely, that we are all creatures of a beneficent God, made to love and serve Him in this world and to enjoy Him forever in the next; and that all this world's wealth of field and forest, of mine and river has been bestowed upon us by a kind Father, therefore, I believe that wealth as we know it originates from the natural resources and from the labor which the sons of God expend upon these resources. It is all ours except for the harsh, cruel and grasping ways of wicked men who first concentrated wealth into the hands of a few, then dominated states and finally commenced to pit state against state in the frightful catastrophes of commercial warfare.

With this as a preamble, then, these following shall be the principles of social justice towards whose realization we must strive.

1. I believe in the right of liberty of conscience and liberty of education, not permitting the state to dictate either my worship to my God or my chosen avocation in life.

2. I believe that every citizen willing to work and capable of working shall receive a just and living annual wage which will enable him to maintain and educate his family according to the standards of American decency.

3. I believe in nationalizing those public necessities which by their very nature are too important to be held in the control of private individuals. By these I mean banking, credit and currency, power, light, oil and natural gas and our God-given natural resources.

4. I believe in private ownership of all other property.

5. I believe in upholding the right to private property yet in controlling it for the public good.

6. I believe in the abolition of the privately owned Federal Reserve Banking system and in the establishment of a Government-owned Central Bank.

7. I believe in rescuing from the hands of private owners the right to coin and regulate the value of money, which right must be restored to Congress where it belongs.

8. I believe that one of the chief duties of this Government-owned Central Bank is to maintain the cost of living on an even keel and the repayment of dollar debts with equal

value dollars.

9. I believe in the cost of production plus a fair profit for the farmer.

10. I believe not only in the right of the laboring man to organize in unions but also in the duty of the Government which that laboring man supports to facilitate and to protect these organizations against the vested interests of wealth and of intellect.

11 . I believe in the recall of all non-productive bonds and thereby in the alleviation of taxation.

12. I believe in the abolition of tax-exempt bonds.

13. I believe in the broadening of the base of taxation founded upon the ownership of wealth and the capacity to pay.

14. I believe in the simplification of government, and the further lifting of crushing taxation from the slender revenues of the laboring class.

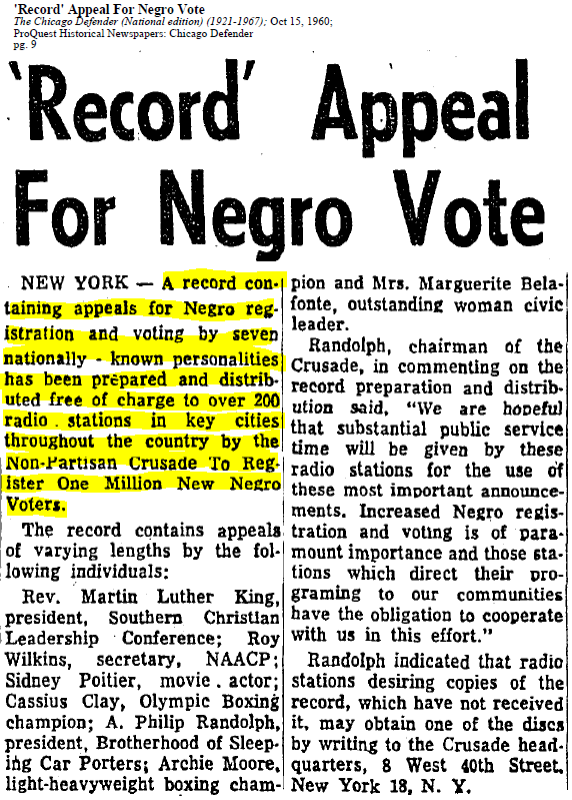
15. I believe that in the event of a war for the defense of our nation and its liberties, there shall be a conscription of wealth as well as a conscription of men.

16. I believe in preferring the sanctity of human rights to the sanctity of property rights. I believe that the chief concern of government shall be for the poor because, as it is witnessed, the rich have ample means of their own to care for themselves.

These are my beliefs. These are the fundamentals of the organization which I present to you under the name of the National Union for Social Justice. It is your privilege to reject or accept my beliefs; to follow me or repudiate me.

Appendix C Waves of Empowerment: Black Radio and the Civil Rights Movement

Figure 23: Clipping from a 1960 News Article on Black Radio and Voter Registration



'Record' Appeal For Negro Vote
The Chicago Defender (National edition) (1921-1967); Oct 15, 1960;
ProQuest Historical Newspapers: Chicago Defender
pg. 9

'Record' Appeal For Negro Vote

NEW YORK — A record containing appeals for Negro registration and voting by seven nationally - known personalities has been prepared and distributed free of charge to over 200 radio stations in key cities throughout the country by the Non-Partisan Crusade To Register One Million New Negro Voters.

The record contains appeals of varying lengths by the following individuals:

Rev. Martin Luther King, president, Southern Christian Leadership Conference; Roy Wilkins, secretary, NAACP; Sidney Poitier, movie actor; Cassius Clay, Olympic Boxing champion; A. Philip Randolph, president, Brotherhood of Sleeping Car Porters; Archie Moore, light-heavyweight boxing champion and Mrs. Marguerite Belafonte, outstanding woman civic leader.

Randolph, chairman of the Crusade, in commenting on the record preparation and distribution said, "We are hopeful that substantial public service time will be given by these radio stations for the use of these most important announcements. Increased Negro registration and voting is of paramount importance and those stations which direct their programing to our communities have the obligation to cooperate with us in this effort."

Randolph indicated that radio stations desiring copies of the record, which have not received it, may obtain one of the discs by writing to the Crusade headquarters, 8 West 40th Street, New York 18, N. Y.

Notes - The clipping is from an article published in *The Chicago Defender* on October 15, 1960.

Table 31: Exposure to Black Radio and Radio Listening by Blacks

	(1)	(2)	(3)
	Listened to Radio		
Black Radio Signal	0.251**	0.252**	0.263
	(0.093)	(0.105)	(0.154)
Observations	618	616	616
R-squared	0.036	0.048	0.049
State FE	Yes	Yes	Yes
Free-space Signal	Yes	Yes	Yes
Individual Controls	No	Yes	Yes
County Controls	No	No	Yes
Mean of Dep. Var.	0.782	0.781	0.781
Std. Dev. of Dep. Var.	0.414	0.414	0.414

Notes - This table shows the estimated effects of exposure to black radio on individual blacks' radio listening. Data are drawn from the Negro Political Participation Study (Matthews and Prothro 1962). Each column represents the results from a separate OLS regression, where each observation is an individual. The outcome variables is an indicator variable for whether the individual was reported to listen to the radio. The explanatory variable is the black radio signal strength in 1960. Each regression controls for state fixed effects and the free-space signal strength. Individual controls include gender, age and its square, and education level (no schooling, completed grade school, and completed high school), and county controls include natural log of population, share of blacks, and natural log of blacks' average wage. Standard errors, shown in parentheses, are corrected for clustering at the black radio station level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 32: Robustness Checks on Baseline Results

	% Black Voting-Age Population Registered to Vote, 1960			
	Drop counties near stations	Mississippi only	Control SignalFree flexibly	Binary signal
	(1)	(2)	(3)	(4)
Black Radio Signal	5.607***	0.574	5.056***	
	(1.746)	(1.564)	(1.473)	
I(Black Radio Signal≥Median)				3.010
				(1.891)
Observations	519	81	835	835
R-squared	0.724	0.759	0.704	0.702
Full Baseline Controls	Yes	Yes	Yes	Yes
Mean of Dep. Var.	27.73	3.358	28.32	28.32
Std. Dev. of Dep. Var.	22.41	6.611	23.47	23.47

Notes - This table shows the robustness checks on the baseline results. Each column represents the results from a separate OLS regression following equation (3.1), where each observation is a county in the former confederate South. The outcome variable is the 1960 black voter registration rate. The explanatory variable is the black radio signal strength in 1960. In column 1, drop counties within 50 miles of any black radio stations in 1960. In column 2, I restrict the sample to only counties in Mississippi. In column 3, I add controls for the square and the cube of the free-space signal strength ($SignalFree$). In column 4, I measure signal strength using a binary variable, which equals 1 if the signal strength was above the median and 0 otherwise. Each regression includes all the baseline controls as in column 7 of Table 20 and is weighted by county black population. Standard errors, shown in parentheses, are corrected for clustering at the black radio station level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 33: Full Baseline Specification Adjusting for Spatial Correlation in Error Terms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Clustering Level		Spatially-Corrected Standard Errors (Conley 1999)					
	State	SEA	10km	20km	50km	100km	200km	300km
Black Radio Signal	4.075***	4.075**	4.075***	4.075***	4.075**	4.075**	4.075**	4.075***
	(0.946)	(1.630)	(1.490)	(1.491)	(1.686)	(1.674)	(1.858)	(1.476)
Observations	835	835	835	835	835	835	835	835

Notes - This table shows the baseline results under alternative ways of adjusting for spatial correlation in error terms. Each column follows the same baseline specification as in column 7 of Table 20. I cluster the standard errors at the state level in column 1 and at the State Economic Area level in column 2. In columns 3-8, I apply Conley's (1999) approach with different distance cutoffs to further address concerns about spatial correlation in error terms. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Bibliography

Acemoglu, D., Hassan, T.A., Tahoun, A., 2018. The Power of the Street: Evidence from Egypt's Arab Spring. The Review of Financial Studies 31, 1–42.

Acham, C., 2005. Revolution Televised: Prime Time and the Struggle for Black Power. University of Minnesota Press. Minneapolis.

Adams, J.W., 1853. Appleton's Mechanics' Magazine and Engineers' Journal. D. Appleton Co. New York, NY.

Adena, M., Enikolopov, R., Petrova, M., Santarosa, V., Zhuravskaya, E., 2015. Radio and the rise of the nazis in prewar germany. Quarterly Journal of Economics 130, 1885–1939.

Altschuler, G.C., Blumin, S.M., 1997. Limits of Political Engagement in Antebellum America: A New Look at the Golden Age of Participatory Democracy. The Journal of American History 84, 855–885.

Anderson, R.W., Johnson, N., Koyama, M., 2017. Jewish Persecutions and Weather Shocks, 1100-1800. Economic Journal 127, 924–958.

Aneja, A.P., Avenancio-Leon, C.F., 2019. The Effect of Political Power on Labor Market Inequality: Evidence from the 1965 Voting Rights Act. Working Paper .

Atack, J., 2016. Historical Geographic Information Systems (GIS) database of U.S. Railroads for 1830-1852. URL: `https://my.vanderbilt.edu/jeremyatack/data-downloads/`.

Autor, D., Dorn, D., Hanson, G., Majlesi, K., 2017. Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure. MIT Working Paper .

Barlow, W., 1999. Voice Over: The Making of Black Radio. Temple University Press. Philadelphia.

Barr, C.B., 1853. Telegraph Stations in the United States, the Canadas and Nova Scotia. [Map]. URL: `www.loc.gov/item/97683602/`.

Becker, S.O., Pascali, L., 2019. Religion, Division of Labor, and Conflict: Anti-semitism in Germany over 600 Years. American Economic Review 109, 1764–1804.

Bennett, D.H., 1969. Demagogues in the Depression: American Radicals and the Union Party, 1932-1936. Rutgers University Press. New Brunswick.

Bertrand, M., Duflo, E., Mullainathan, S., 2004. How Much Should We Trust Differences-In-Differences Estimates. Quarterly Journal of Economics 119, 249–275.

Blondheim, M., 1994. News Over the Wires: The Telegraph and the Flow of Public Information in America, 1844-1897. Harvard University Press. Cambridge, MA.

Bogue, D.J., 1951. State Economic Areas: A Description of the Procedure Used in Making a Functional Grouping of the Counties of the United States. U.S. Government Printing Office. Washington, D.C.

Boix, C., Adsera, A., Payne, M., 2003. Are You Being Served? Political Accountability and Quality of Government. The Journal of Law, Economics, and Organization 19, 445–490.

Boroghkozy, A., 2012. Equal Time: Television and the Civil Rights Movement. University of Illinois Press. Champaign.

Brinkley, A., 1982. Voices of Protest: Huey Long, Father Coughlin and the Great Depression. Alfred A. Knopf. New York.

Bruns, C., Himmler, O., 2011. Newspaper Circulation and Local Government Efficiency. The Scandinavian Journal of Economics 113, 470–492.

Bursztyn, L., Egorov, G., Enikolopov, R., Petrova, M., 2019. Social Media and Xenophobia: Evidence from Russia. NBER Working Paper No. 26567. .

Calvert, J.B., 2008. The Electromagnetic Telegraph: A Technical History of the 19th-Century Electromagnetic Telegraph, With Special Reference to the Origin and Variety of the Alphabets, or Codes, that Were Used. URL: `https://mysite.du.edu/~jcalvert/tel/morse/morse.htm#J`.

Campante, F., Durante, R., Sobbrio, F., 2018. Politics 2.0: The Multifaceted Effect of Broadband Internet on Political Participation. Journal of the European Economic Association 16, 1094–1136.

Carey, J., 1992. Communication as Culture: Essays on Media and Society. Routledge. New York and London.

Cascio, E.U., Washington, E., 2014. Valuing the Vote: The Redistribution of Voting Rights and State Funds following the Voting Rights Act of 1965. The Quarterly Journal of Economics 129, 379–433.

Chen, Y., Yang, D.Y., 2019. The Impact of Media Censorship: 1984 or Brave New World? American Economic Review 109, 2294–2332.

Christensen, D., Garfias, F., 2018. Can You Hear Me Now? How Communication Technology Affects Protest and Repression. Quarterly Journal of Political Science 13, 89–117.

Clubb, J.M., Flanigan, W.H., Zingale, N.H., 2006. Electoral Data for Counties in the United States: Presidential and Congressional Races, 1840–1972 (ICPSR 8611). URL: `https://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/8611`.

Colantone, I., Stanig, P., 2018a. The Economic Determinants of the "Cultural Backlash": Globalization and Attitudes in Western Europe. mimeo .

Colantone, I., Stanig, P., 2018b. The Trade Origins of Economic Nationalism: Import Competition and Voting Behavior in Western Europe. American Journal of Political Science 62, 936–953.

Conley, T.G., 1999. GMM Estimation with Cross Sectional Dependence. Journal of Econometrics 92, 1–45.

Couttenier, M., Hatte, S., Thoenig, M., Vlachos, S., 2019. The Logic of Fear - Populism and Media Coverage of Immigrant Crimes. CEPR Discussion Paper No. DP13496. .

Craemer, T., Orey, D., 2017. Implicit Black Identification and Stereotype Threat Among African American Students. Social Science Research 65, 163–180.

DellaVigna, S., Enikolopov, R., Mironova, V., Petrova, M., Zhuravskaya, E., 2014. Cross-border effects of foreign media: Serbian radio and nationalism in croatia. American Economic Journal: Applied Economics 6, 103—132.

DellaVigna, S., Ferrara, E.L., 2015. Economic and Social Impacts of the Media. Handbook of Media Economics 1, 723–768.

DellaVigna, S., Gentzkow, M., 2010. Persuasion: Empirical Evidence. Annual Review of Economics 2, 643–669.

DellaVigna, S., Kaplan, E., 2007. The fox news effect: Media bias and voting. Quarterly Journal of Economics 122, 1187–1234.

Drago, F., Nannicini, T., Sobbrio, F., 2014. Meet the Press: How Voters and Politicians Respond to Newspaper Entry and Exit. American Economic Journal: Applied Economics 6, 159–88.

Dubin, M.J., 1998. United States Congressional Elections, 1788-1997: The Official Results of the Elections of the 1st Through 105th Congresses. McFarland Publishing. Jefferson, NC.

DuBoff, R.B., 1980. Business Demand and the Development of the Telegraph in the United States, 1844-1860. Business History Review 54, 459–79.

DuBoff, R.B., 1983. The Telegraph and the Structure of Markets in the United States, 1845-1890. Research in Economic History 8, 253–77.

Durante, R., Pinotti, P., Tesei, A., 2019. The political legacy of entertainment tv. American Economic Review 109, 2497–2530.

Enikolopov, Ruben, A.M., Petrova, M., Forthcoming. Social Media and Protest Participation: Evidence from Russia. Econometrica .

Enikolopov, R., Petrova, M., 2015. Media Capture. Handbook of Media Economics 1, 687–700.

Enikolopov, R., Petrova, M., Zhuravskaya, E., 2011. Media and political persuasion: Evidence from russia. American Economic Review 111, 3253—3285.

Falck, O., Gold, R., Heblich, S., 2014. E-lections: Voting Behavior and the Internet. American Economic Review 104, 2238–65.

Feddersen, T.J., 2004. Rational Choice Theory and the Paradox of Not Voting. Journal of Economic Perspectives 18, 99–112.

Feigenbaum, J.J., Mazumder, S., Smith, C.B., 2020. When Coercive Economies Fail: The Political Economy of the US South After the Boll Weevil. NBER Working Paper No. 27161 .

Fergusson, L., Molina, C., 2019. Facebook Causes Protests. Working Paper. Available at SSRN: https://ssrn.com/abstract=3553514 .

Field, A.J., 1992. The Magnetic Telegraph, Price and Quantity Data, and the New Management of Capital. The Journal of Economic History 52, 401–413.

Field, A.J., 1998. The Telegraphic Transmission of Financial Asset Prices and Orders to Trade: Implications for Economic Growth, Trading Volume, and Securities Market Regulation. Research in Economic History 18, 145–184.

Finley, T., Koyama, M., 2018. Plague, Politics, and Pogroms: The Black Death, the Rule of Law, and the Persecution of Jews in the Holy Roman Empire. The Journal of Law and Economics 61, 253–277.

Fishback, P.V., Kantor, S., Wallis, J.J., 2003. Can the New Deal's three Rs be rehabilitated? A program-by-program, county-by-county analysis. Explorations in Economic History 40, 278–307.

Fukuyama, F., 2018. Identity - The Demand for Dignity and the Politics of Resentment. Farrar, Strauss and Giroux. New York.

Gagliarducci, S., Onorato, M.G., Sobbrio, F., Tabellini, G., Forthcoming. War of the Waves: Radio and Resistance during World War II. American Economic Journal: Applied Economics .

Garbade, K.D., Silber, W.L., 1977. Technology, Communication and the Performance of Financial Markets: 1840-1975. The Journal of Finance 33, 819–832.

Garcia-Jimeno, C., Iglesias, A., Yildirim, P., 2018. Women, Rails and Telegraphs: An Empirical Study of Information Diffusion and Collective Action. NBER Working Paper No. 24495 April.

Garthwaite, C., Moore, T.J., 2013. Can Celebrity Endorsements Affect Political Outcomes? Evidence from the 2008 US Democratic Presidential Primary. Journal of Law, Economics, Organization 29, 355–384.

Gentzkow, M., 2006. Television and Voter Turnout. The Quarterly Journal of Economics 121, 931–972.

Gentzkow, M., Shapiro, J.M., Sinkinson, M., 2011. The Effect of Newspaper Entry and Exit on Electoral Politics. American Economic Review 101, 2980–3018.

George, L.M., Waldfogel, J., 2006. The "New York Times" and the Market for Local Newspapers. The American Economic Review 96, 435—447.

Gerber, A., Karlan, D., Bergan, D., 2009. Does the Media Matter? A Field Experiment Measuring the Effect of Newspapers on Voting Behavior and Political Opinions. American Economic Journal: Applied Economics 1, 35—-52.

Gidron, N., Hall, P.A., 2017. The politics of social status: economic and cultural roots of the populist right. British Journal of Sociology 68, S57–S84.

Goodhart, D., 2017. The Road to Somwhere - The New Tribes Shaping British Politics. Penguin Books.

Haines, M., 2010. Historical, Demographic, Economic, and Social Data: The United States, 1790–2002 (ICPSR 2896). URL: https://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/02896.

Harris, P., 2009. Glenn Beck and the Echoes of Charles Coughlin. The Guardian URL: https://www.theguardian.com/commentisfree/cifamerica/2011/feb/02/far-right-glenn-beck.

Highton, E., 1852. The Electric Telegraph: Its History and Progress. John Weale. London, United Kingdom.

Hoag, C., 2006. The Atlantic Cable and Capital Market Information Flows. Journal of Economic History 66, 342–53.

Hornbeck, R., 2010. Barbed Wire: Property Rights and Agricultural Development. Quarterly Journal of Economics 125, 767–810.

Iannaccone, L.R., Berman, E., 2006. Religious Extremism: The Good, the Bad, and the Deadly. Public Choice 128, 109–129.

Inglehart, R., Norris, P., 2019. Cultural Backlash: Trump, Brexit and Authoritarian-Populism. Cambridge University Press. New York.

Johnson, N.D., Koyama, M., 2019. Persecution and Toleration: The Long Road to Religious Freedom. Cambridge University Press. Cambridge.

Jones, A., 1852. Historical Sketch of the Electric Telegraph: Including Its Rise and Progress in the United States. G.P. Putnam. New York, NY.

Jones, D.B., Troesken, W., Walsh, R., 2017. Political participation in a violent society: The impact of lynching on voter turnout in the post-Reconstruction South. Journal of Development Economics 129, 29–46.

Kernell, S., Jacobson, G.C., 1987. Congress and the Presidency as News in the Nineteenth Century. Journal of Politics 49, 1016–35.

Kielbowicz, R.B., 1989. News in the Mail: The Press, Post Office, and Public Information, 1700–1860s. Greenwood Press. Westport, CT.

Knight, B.G., Tribin, A., 2020. Opposition Media, State Censorship, and Political Accountability: Evidence from Chavez's Venezuela. NBER Working Paper No. w25916 .

Kuziemko, I., Washington, E., 2018. Why Did the Democrats Lose the South? Bringing New Data to an Old Debate. American Economic Review 108, 2830–67.

Langdale, J., 1979. Impact of the Telegraph on the Buffalo Agricultural Commodity Market: 1846–1848. The Professional Geographer 31, 165–169.

Lassen, D.D., 2005. The Effect of Information on Voter Turnout: Evidence from a Natural Experiment. American Journal of Political Science 49, 103–18.

Lee, A.M., Lee, E.B., 1939. The Fine Art of Propaganda: A Study of Father Coughlin's Speeches. The Institute for Propaganda Analysis. Harcourt, Brace and Company. New York.

Lew, B., Cater, B., 2006. The telegraph, co-ordination of tramp shipping, and growth in world trade, 1870–1910. European Review of Economic History 10, 147–173v.

Manacorda, M., Tesei, A., 2020. Liberation Technology: Mobile Phones and Political Mobilization in Africa. Econometrica 88, 533–567.

Marwick, A., Lewis, R., 2017. Media Manipulation and Disinformation Online. Technical Report. Data and Society.

Matsusaka, J.G., 1995. Explaining Voter Turnout Patterns: An Information Theory. Public Choice 84, 91–117.

Matthews, D.R., Prothro, J.W., 1966. Negroes and the New Southern Politics. Harcourt, Brace World. New York.

Matthews, D.R., Prothro, J.W., 2006. Negro Political Participation Study, 1961-1962 (ICPSR 7255). URL: `https://doi.org/10.3886/ICPSR07255.v3`.

Miner, L., 2015. The unintended consequences of internet diffusion: Evidence from Malaysia. Journal of Public Economics 132, 66–78.

Müller, K., Schwarz, C., 2019a. Fanning the Flames of Hate: Social Media and Hate Crime. Working Paper. URL: https://ssrn.com/abstract=3082972.

Müller, K., Schwarz, C., 2019b. From Hashtag to Hate Crime: Twitter and Anti-Minority Sentiment. Working Paper. URL: https://ssrn.com/abstract=3149103.

Oberholzer-Gee, F., Waldfogel, J., 2009. Media Markets and Localism: Does Local News en Español Boost Hispanic Voter Turnout? American Economic Review 99, 2120–28.

Olken, B., 2009. Do television and radio destroy social capital? evidence from indonesian villages. American Economic Journal: Applied Economics 1, 1–33.

O'Toole, F., 2019. The Irish Priest Who Paved Way for Donald Trump. The Irish Times .

Perlman, E., Sprick Schuster, S., 2016. Delivering the Vote: The Political Effect of Free Mail Delivery in Early Twentieth Century America. The Journal of Economic History 76, 769–802.

Prat, A., Strömberg, D., 2013. The Political Economy of Mass Media, in: Acemoglu, D., Arellano, M., Dekel, E. (Eds.), Advances in Economics and Econometrics: Tenth World Congress. Cambridge University Press. Cambridge.

Reid, J.D., 1886. The Telegraph in America and Morse Memorial. BJ. Polhemus. New York, NY.

Schulhofer-Wohl, S., Garrido, M., 2013. Do Newspapers Matter? Short-Run and Long-Run Evidence From the Closure of *The Cincinnati Post*. Journal of Media Economics 26.

Schwarzlose, R.A., 1989. The Nation's Newsbrokers. Northwestern University Press. Evanston, IL.

Silbey, J.H., 2014. The Political World of the Antebellum Presidents. In A Companion to the Antebellum Presidents 1837–1861, J. H. Silbey (Ed.). Wiley-Blackwell. Hoboken, NJ.

Snyder, J.M., Strömberg, D., 2010. Press Coverage and Political Accountability. Journal of Political Economy 118, 355–408.

Standage, T., 2009. The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-Line Pioneers. Bloomsbury Publishing. London, United Kingdom.

Steinwender, C., 2018. The Real Effects of Information Frictions: When the States and the Kingdom Became United. American Economic Review 108, 657–696.

Steinwender, C., Juhász, R., 2019. Spinning the Web: Codifiability, Information Frictions and Trade. NBER Working Paper No. 24590 .

Strong, D.S., 1941. Organized Anti-Semitism in America: The Rise of Group Prejudice During the Decade 1930-1940. American Council on Public Affairs. Washington, D.C.

Strömberg, D., 2004. Radio's Impact on Public Spending. Quarterly Journal of Economics 119, 189–221.

Thompson, R.L., 1947. Wiring a Continent: the History of the Telegraph Industry in the United States, 1832-1866. Princeton University Press. Princeton, NJ.

Torres, S., 2003. Black, White, and in Color: Television and Black Civil Rights. Princeton University Press. Princeton.

Tull, C.J., 1965. Father Coughlin and the New Deal. Syracuse University Press. Syracuse.

US Census, 1840. Population: 1790 to 1990. URL: https://www.census.gov/population/censusdata/table-4.pdf.

US Census Office, 1852. Report of the Superintendent of the Census for December 1, 1852: to which is Appended the Report for December 1, 1851. Technical Report.

USPS, 2008. Rates for Domestic Letters, 1792-1863. URL: https://about.usps.com/who-we-are/postal-history/https://about.usps.com/who-we-are/postal-history/rates-historical-statistics.htm/.

Voigtlaender, N., Voth, H.J., 2012. Persecution Perpetuated: The Medieval Origins of Anti-Semitic Violence in Nazi Germany. The Quarterly Journal of Economics 127, 1339–1392.

Walsh, S., 2001. Black-Oriented Radio and the Civil Rights Movement, in: Ward, B. (Ed.), Media, Culture, and the Modern African American Freedome Struggle. University Press of Florida, Gainesville. chapter 3, pp. 67–81.

Wang, T., 2020. Media, Pulpit, and Populist Persuasion: Evidence from Father Coughlin. Working Paper. Available at SSRN: https://ssrn.com/abstract=3583114 .

Ward, B., 2004. Radio and the Struggle for Civil Rights in the South. University Press of Florida. Gainesville.

Warren, D., 1996. Radio Priest: Charles Coughlin, the Father of Hate Radio. The Free Press. New York.

Wright, G., 2013. Sharing the Prize: The Economics of the Civil Rights Revolution in the American South. Harvard University Press. Cambridge.

Wright, G., 2020. voting Rights and Economics in the American South. Working Paper .

Xiong, H., 2018. The Political Premium of Television Stardom. Working Paper. .

Yanagizawa-Drott, D., 2014. Propaganda and conflict: Theory and evidence from the rwandan genocide. Quarterly Journal of Economics 129, 1947—-1994.

Yates, J., 1986. The Telegraph's Effect on Nineteenth Century Markets and Firms. Business and Economic History 15, 149–163.

Zhuravskaya, E., Petrova, M., Enikolopov, R., 2019. Political Effects of the Internet and Social Media. Annual Review of Economics doi:https://doi.org/10.1146/annurev-economics-081919-050239.