Political Talk Radio and Rural Conservatism

Heyu Xiong*

December, 2024

Abstract

This paper studies the impact of conservative talk radio on electoral outcomes in the United States. I focus on the rise of conservative radio over the airwaves following the national syndication of the Rush Limbaugh Show in 1988. To identify the effect of conservative radio programs, I identify two plausibly exogenous factors that could, theoretically, affect exposure to political talk radio: 1) competition for attention based on the choice of non-talk radio programming available and 2) the amount of time people spend driving in vehicles as a captive audience to car radio. First, using the American National Election Studies, I provide empirical evidence that these two factors jointly affected individual consumption of political talk radio. Next, utilizing a triple-difference specification, I show that following 1988, Republican vote share disproportionately increased in counties with fewer radio programming choices and where people average a longer commute. Finally, because rural areas are more likely to share those characteristics, I hypothesize that the resulting impact of conservative radio may have been disproportionately borne in such places. To make this connection directly, I show that the rural population became more conservative following 1988, only in areas with greater exposure to conservative radio. Rural regions with more robust radio offerings or where people averaged shorter commute times experienced no differential increase in conservatism.

*Xiong: Case Western Reserve University. Email: heyu.xiong@case.edu. I am grateful to Daniel Shoag, Susan Helper, Tianyi Wang, conference participants at the PEA Annual Conference and Midwest Association of Public Opinion Research Annual Conference for helpful comments and feedback.

1 Introduction

A defining feature of the American political landscape today is the sharp urban-rural divide: rural areas are increasingly dominated by the Republican Party and urban places by the Democratic Party. While elections across many industrialized democracies often pit economically conservative rural voters against economically liberal urban voters, the extent of urban-rural political division has become particularly acute in the United States.[1]

Historically, this geographic schism has not always been this stark (Dasgupta and Ramirez, 2020; Lipset, 1971; Luebbert, 1987). Throughout the majority of American history and until the early 1990s, each of the major political parties included both rural and urban constituencies. Americans living in rural and urban areas voted similarly in presidential elections (Brown and Mettler, 2023; Mettler and Brown, 2022). Even as recently as 1993, just over half of rural Americans were represented in Congress by a House Democrat according to the Wall Street Journal.[2] Since the 1990s, however, the United States has witnessed a notable escalation in rural-urban polarization and place-based politics. By the late 1990s, regional differences in party affiliation between rural dwellers across the country disappeared and rural voters converged uniformly toward the Republican party (Mettler and Brown, 2022).

So, what explains the transformation of rural America into Republican strongholds? While the growth of rural conservatism since the 1990s is widely acknowledged, the exact causes are subject to much debate. Undoubtedly, economic shifts and changing demographics have contributed to an increasing disparity between urban and rural locations. Beyond these structural factors, however, the growth of rural conservatism during this period also coincided with dramatic changes to the landscape of political media. In particular, following the Federal Communications Commission's (FCC) decision to abolish the Fairness Doctrine in 1987, political talk radio began to proliferate over the airwaves.[3]

Within the format of talk radio, conservative hosts and programs became immediately popular. Rush Limbaugh was a central figure and pioneer in this movement. His radio show, "The Rush Limbaugh Show", played a crucial role in popularizing conservative views and commentary. The show premiered in 1988 and quickly gained immense traction. By 1990, Limbaugh's show was nationally syndicated and aired on nearly 300 radio stations, with more than 5 million listeners tuning in weekly.[4] At its peak, syndication would reach over 600 stations with an estimated 14 million to over 30 million weekly listeners. The success of "The Rush Limbaugh Show" demonstrated a national appetite for hyper-partisan political programming and many similar talk radio shows

[1] See: How the Rural-Urban Divide Became America's Political Fault Line *The New York Times,* May 21, 2019.

[2] See: City vs. Country: How Where We Live Deepens the Nation's Political Divide *The Wall Street Journal,* March 21, 2014.

[3] The Fairness Doctrine had previously required radio stations to present contrasting views on controversial topics. Subsequent to its abolition, radio stations could choose to espouse partisan viewpoints and be solely conservative or liberal.

[4] See: The Rush Hours *The New York Times,* December 16, 1990.

quickly followed.

While the rise of talk radio was a national phenomenon, I hypothesize that the impact of conservative talk radio could have been disproportionately felt in rural communities for two particular reasons.

First, a recent paper, Amarasinghe and Raschky (2022), shows that competition for attention from other radio stations affected the listenership of conservative talk radio during the 2016 and 2020 Presidential election cycles. Specifically, the authors found that the extent to which listeners within a market were exposed to the Rush Limbaugh Show depended on the amount of alternative radio programming available. Competition from FM radio stations in particular reduced consumption of political talk radio programs. Extrapolating these findings to the earlier period, I speculate that similar forces could have been at work during the start of conservative talk radio. Specifically, locations with less robust radio offerings in terms of FM radio stations prior to the appearance of conservative talk radio would have been more easily dominated by the arrival of this new type of programming.

Second, a common venue where people listen to the radio is in their vehicles. Since the 1940s, nearly all cars in the United States have been equipped with AM radios — AM frequency stations being the majority of outlets in which talk radio was primarily broadcast. According to Edison Research, as of 2020, 81% of American drivers listened to terrestrial radio in their cars.[5] Moreover, in 2018, 54% of all radio listeners report listening to radio *only* while in the car and at no other locations.[6] While audience habits may have been different in the past, in-car listening has always constituted a significant way people consume radio in the United States. As a result, all else equal, people who drive more often and for a longer duration should be more exposed to talk radio.

Taken together, these two sets of observations suggest that, ceteris paribus, places where people are more reliant on cars and where there are fewer choices of radio programming should be most susceptible to the emergence of conservative talk radio. Importantly, these two factors can affect individuals' consumption of talk radio but should be otherwise plausibly orthogonal to their political preferences. Because media infrastructure is more developed in urban areas and people need to drive more in places with a lower density of economic activity, those characteristics are much more likely to be shared by people living in rural communities. Consequently, the nationwide rise of conservative talk radio may have a greater impact on rural locations relative to urban areas.

To test and provide empirical support for this idea, my analysis proceeds in several steps. I start by collecting data on radio infrastructure on the eve of conservative talk radio's rise. I use the number of FM radio stations operating in each county as a proxy for the variety of radio programming available locally. This information comes from the 1987 issue of the Broadcasting & Cablecasting Yearbook. I focus on 1987 as it is the year the FCC abolished the Fairness Doctrine and the Rush Limbaugh Show was nationally syndicated in

[5] See: `https://www.statista.com/chart/4638/radio-still-rules-the-road/`

[6] See: `https://edisonresearch.com/over-half-of-in-car-radio-listeners-only-listen-in-car/`

the subsequent year. I consider FM stations because talk radio was primarily broadcast on AM stations whereas the higher audio fidelity of FM stations lend themselves naturally to non-talk programming such as music or live events. As a result, the number of FM stations serves as a reasonable proxy for the amount of non-talk radio programming in a county. To create a measure for the amount of time people spend driving in cars, I utilize data on commuting from the U.S. decennial population censuses. This allows me to quantify the commute time and duration across U.S. counties.

Next, I assess the validity of the key assumptions underlying my hypothesis. Specifically, I attempt to show that the number of radio stations within a county and time spent driving jointly affect exposure to talk radio. For this purpose, I utilize the 1994 and 1996 waves of the American National Election Studies (ANES). By the mid-1990s, political talk radio was ubiquitous and the ANES surveys contained questions related to the consumption of political talk radio and daily driving habits. Using this data, I show that, conditional on a rich set of geographic and socioeconomic controls, respondents residing in counties served by few choices of FM radio stations who report greater mileage driven each day are more likely to listen to political talk radio. Furthermore, for individuals located in counties with few choices of radio stations, the frequency with which they listen to political talk radio is increasing in the miles driven per day. These results suggest that competition for listeners' attention in conjunction with time spent in cars jointly affects individual exposure to political talk radio.

These patterns form the basis of my main empirical strategy. I implement a triple-differences research design to estimate the effect of political talk radio on electoral outcomes. I consider elections across multiple levels of elected offices, namely presidential, congressional, and gubernatorial elections from 1978 to 2000. The electoral returns for each race, broken down by political parties, are retrieved from the Interuniversity Consortium for Political and Social Research (ICPSR) and David Leip's Election Atlas.

Motivated by the ANES results, I explore how Republican candidates' vote share for each county evolved over time as a function of that county's number of FM radio stations in 1987 as well as the average length of commute in that county. Among the sample of counties above the median in terms of commuting time, the difference in Republican electoral support between counties with fewer and more FM radio stations remained stable before 1988 and diverged thereafter, the timing of which coincides with that of the rise in popularity of talk radio format. This trend break is completely absent in counties where people average a shorter commute. These broad patterns are well-encapsulated in the triple-differences model. Specifically, I find that the vote share for Republican candidates in counties with fewer FM radio stations and longer commuting time significantly increased following the national syndication of The Rush Limbaugh Show in 1988.

The results are highly robust to alternative specifications that account for potential sources of selection bias. The baseline regressions contain a large set of fixed effects and controls. For instance, I include county and political office by year fixed effects to account for unobservable differences between locations,

across time, and by election type. I control for a rich set of time-varying demographic and socioeconomic characteristics correlated with political preferences such as total population, rural population, racial composition, poverty, household income, education, and unemployment rate. Notably, the empirical results are robust to controlling for manufacturing employment and union membership rate, suggesting manufacturing job losses or the decline of labor unions do not drive the results.

I also explicitly account for the non-random assignment by coarsely matching "treated" counties to the subset of less exposed counties that are comparable in terms of the joint distribution of baseline controls. Estimates on the matched sample show similarly sized and statistically significant effects despite substantially smaller sample sizes.

However, one may still be concerned that county characteristics correlated with the combination of high commuting time and lack of radio access may have become *more* predictive of Republican party allegiance over time. Such changes could contaminate the triple-differences estimate. To alleviate this concern, I interact all controls with a post-1988 indicator to allow the effect of any single variable (such as rural population share) to vary flexibly before and after the emergence of talk radio. The robustness of the results suggests that the effects cannot merely be explained by factors correlated with exposure to talk radio that, independent of talk radio, became more strongly associated with Republican party support from 1988 onward.

To further rule out potential competing explanations, I demonstrate several patterns in the data consistent with a causal interpretation of the results. First, I show that the estimates are chiefly driven by counties where the primary mode of transportation is via personal vehicles. Specifically, the triple-difference estimates are statistically insignificant in counties where less than 80% of households own a car (which is approximately the 25th percentile of car ownership rates across all U.S. counties in 1990). This is significant because the mechanism proposed in this article is only valid for individuals commuting in vehicles where they will be in the presence of car radios. The absence of an effect in counties where people are more likely to commute via public transit is reassuring and lends further credibility to the results.

Second, I conduct a falsification test using locations where radio broadcasting is severely restricted and prohibited. I show that while the average commuting time in a county is predictive of the post-1988 increase in Republican vote support among counties with few choices of FM programming, that empirical relationship completely breaks down in places where conservative talk radio is credibly known to be absent. Namely, within the United States National Radio Quiet Zone and similar "radio deserts", average commuting time has no bearing on the growth in Republican vote share. The interaction between commuting time and post indicator is not only statistically insignificant but also opposite in sign. This suggests that the estimated relationships reflect the effect of radio ratherthan that of potential confounders.

Finally, the results become stronger when I account for measurement errors in the main explanatory variable. The validity of my empirical strategy hinges

on the notion that the number of stations operating within the county is a reasonable proxy for the variety and choice of radio programming in that location.[7] An obvious limitation of this approach is that a station's radio transmission may be received by people living outside of the county that the station is located in. This can add considerable noise to the explanatory variable and could attenuate the estimated effect sizes. To address this issue, I construct an alternative measure of radio access based on the number of FM stations in the county and adjacent counties. Given that radio signals can cross administrative boundaries, the total number of FM stations operating in and around neighboring counties may be a better approximation for the choice of FM radio programming present. Consistent with this idea, I find the point estimates generally become larger in magnitude with this method.

Having shown that exposure to political talk radio varied along the dimensions of radio access and driving time, I explore how this idiosyncratic structure of demand for radio programming explains the subsequent increase of Republican party support among the rural population. To draw a direct connection between the prior analysis and the rise of rural conservatism, I show that while the rural population as a whole shifted further toward the Republican party following 1988, this increase was only positive and significant in counties with below-median number of FM radio stations and above-average driving time. On the other hand, rural people who were less exposed to political talk radio did not experience a shift toward the Republican party. These results are consistent with the notion that the post-1990s growth of rural conservatism is explained, at least in part, by the rise of political talk radio.

Altogether, these results suggest that because people in rural areas tend to have fewer choices of available radio programming and, on average, spend a longer time driving, they are disproportionately exposed to the presence of talk radio. Therefore, those voters are more susceptible to being persuaded and mobilized by partisan rhetoric over the airwaves. Conversely, in urban areas, the greater availability of program options and less time people spend as captive audiences in cars can mitigate the impact of conservative talk radio.

Interestingly, these findings resonate with the stated rationale and justification underlying the Fairness Doctrine, which was predicated on the notion that the "privilege of using scarce radio frequencies" obligated broadcast licensees to operate in the public interest (Geller, 1973). Under the principle of "public trustees", the Fairness Doctrine regulated the extent of political slant within radio broadcasts. The abolition of the Fairness Doctrine precipitated the appearance of stations that catered exclusively to one side of the political spectrum. As the results of this paper show, such development and change in the media environment, though national in scope, could have a disparate impact on rural communities because of the outsized influence a partisan station wields in a market absent of robust programming choices. As a result, the rise of conservative talk radio that followed the end of the Fairness Doctrine potentially

[7] I rely on this because I lack the information necessary to calculate the precise geographic coverage of each radio station.

widened the extent of the urban-rural electoral divide.

This paper contributes to two distinct strands of the literature. First, it relates to empirical research on the effects of media on political outcomes in the United States. Within this broad literature, research has explored a variety of media formats. For instance, DellaVigna and Kaplan (2005); Martin and Yurukoglu (2017); Simonov et al. (2022); Campante and Hojman (2013) study the political effects of television, with the first three papers focusing on the Fox News channel. In terms of print media, Gentzkow and Shapiro (2010) and Gerber, Karlan and Bergan (2009) explore the determinants and consequences of biased reporting in newspapers. Gentzkow and Shapiro (2011) and Guriev, Melnikov and Zhuravskaya (2021) examine the implications of the internet for ideological segregation and governance.

The specific impact of radio technology on U.S. politics has also received attention, with empirical work centering on both historical and contemporary perspectives. For instance, Strömberg (2004) and Wang (2021) study the political effect of radio during the 1920s and 1930s respectively.[8] Amarasinghe and Raschky (2022) demonstrates the continued relevance of talk radio and the Rush Limbaugh Show during the 2016 and 2020 Presidential elections as a source of support for Donald Trump.

While Barker (1999) and Lee and Cappella (2001) both explore the empirical association between exposure to conservative talk radio and voting outcomes during the exact period that I focus on, neither articles provide an empirical framework for disentangling the causal effect from potential confounding variables. Moreover, to the best of my knowledge, existing studies have not drawn an explicit connection between the rise of conservative talk radio and its role in accelerating the urban-rural political divide in the United States.

Conceptually, my identification strategy aligns with that of Amarasinghe and Raschky (2022). Amarasinghe and Raschky (2022) develops a novel method to estimate the effect of the Rush Limbaugh Show based on the competition for attention in radio markets. Namely, the basic premise is that people are less likely to listen to political talk radio when there are ample choices of other programming available. Motivated by this idea, I construct a similar approximation for the rough extent of radio competition in a historical context. But whereas Amarasinghe and Raschky (2022) relies exclusively on these spatial differences across counties, I combine cross-sectional variation in programming choices (along with another dimension of radio exposure) and the temporal variation in talk radio availability to identify the impact of talk radio during the time that I study. My estimates provide a distinct but complementary perspective on the political consequences of talk radio in totality, focusing on the initial period following its proliferation over the airwaves.

Second, this paper joins a growing body of work trying to understand the

[8] Strömberg (2004) show how radio expansion informed voters and influenced relief spending allocation during the New Deal program. Wang (2021) investigates how Father Coughlin's radio program spread populist ideology. The effect of radio has also been examined in other countries such as Nazi Germany (Adena et al., 2015), Rwanda (Yanagizawa-Drott, 2014), and Indonesia (Olken, 2009).

causes of increased place-based political polarization and urban-rural political divide. For instance, Gimpel et al. (2020) shows the urban-rural differences in partisan political loyalty in the United States cannot be solely attributed to compositional differences, but rather, are rooted in geography. Rodden (2019) explains the emergence of urban-rural political cleavage as a consequence of labor unions in cities. Dasgupta and Ramirez (2020) provides an explanation for rural conservatism in the Great Plains region based on post-WWII technological developments that favored the development of large-scale and capital-intensive agribusiness that benefit from conservative economic policies.

Serlin (2023) examines an earlier period that predates the rise of industrialized agriculture. In Serlin (2023)'s account, agglomeration effects and differences in the efficiency of public goods provision shape different voting behavior across rural and urban locations.

This paper offers a relatively novel explanation for the growth of the urban-rural electoral divide from the 1990s onward based on differential exposure to conservative talk radio. While political commentators have frequently pointed to conservative talk radio as a contributing factor to the overall increased political polarization nationwide, such discussions have not, to the best of my knowledge, explored the place-based consequences of these programs based on patterns of radio consumption that leave rural areas more exposed. The results of this paper are not incompatible with existing explanations of the causes of the urban-rural divide, rather, they provide an additional point of view on the acceleration of the divide in the past three decades.

The rest of this paper is organized as follows. Section 2 provides a brief background on the history and growth of political talk radio in the United States. In Section 3, I introduce the data and discuss the empirical strategy as well as first-stage results using the ANES. Section 4 presents the main electoral results and demonstrates implications for rural conservatism. Finally, Section 5 concludes.

2 Background

Talk radio refers to the type of radio program that consists primarily of original spoken word content and discussions of topical issues rather than outside music or acoustic performances. These shows, usually headlined by a prominent host, often serve as platforms for debating topics of public interest as well as commentary on news or current events. While expressing social and political opinions has been a staple of talk radio since the earliest days of the format, the extent of partisanship and bias in these programs has oscillated and evolved over time.

During the initial years of commercial radio broadcasting, the U.S. government took a relatively laissez-faire approach to broadcast policy and radio speech (Pickard, 2018). This libertarian ethos led to the proliferation of influential radio personalities who espoused controversial views over the airwaves, such as Charles Coughlin, Robert Shuler, and John Brinkley (Pickard, 2018).

In response, by the late 1930s, the FCC and its precursor FRC adopted a more active role in content regulation. They began prohibiting editorializing based on (Pickard, 2018).

Eventually, these regulations became clarified in what would be known as the Fairness Doctrine. Established in 1949, the Fairness Doctrine required the holders of broadcast licenses to "present controversial issues of public importance" and to do so in a manner that was, in the commission's view, "honest, equitable and balanced". The mandate of the Fairness Doctrine was to require that audiences were exposed to a diversity of viewpoints and to ensure equal air time for both sides of any given issue. In essence, the Fairness Doctrine moderated the extent of bias over the radio waves and gave citizens an outlet to report on perceived biases heard on the radio. Although the Fairness Doctrine's effectiveness is sometimes debated, the very existence of the doctrine certainly encouraged greater consideration of programming biases. The legislative doctrine also allowed local communities to hold broadcasters accountable for transgressions.[9]

In 1987, the FCC stopped enforcing and abolished the Fairness Doctrine. With the end of the Fairness Doctrine, station owners were no longer handcuffed to present balanced information and to expose the audience to multiple viewpoints. The repeal of the Fairness Doctrine provided the impetus for partisan political programming with commercial appeal that had not previously been commonplace. It ushered in the modern era of political talk radio where partisan opinions and voices are the norm.

Following the repeal of the Fairness Doctrine, the radio industry witnessed dramatic growth in the popularity of political talk programming. This development is readily evident in ratings and listenership data. The industry trade magazine *Radio & Records* published rating reports on a bi-annual basis where the national reaches of various genres of radio content were presented. I collected the rating information for the "Talk & News" format from all issues of *Radio & Records* from 1984 to 1998. A locally linear smooth plot based on the rating information for the "Talk & News" category is shown in Figure 1. As we observe, while the listenership and reach of "Talk & News" had held steady at approximately 6% before the repeal of the Fairness Doctrine, it began to climb steadily after and reached 15% by the mid-1990s. Much of the increase can naturally be attributed to the emergence of this new politically oriented talk content.

Another key contributing factor to the rise of political talk radio in the United States during this period was the competitive pressure faced by AM radio stations. Radio broadcasts using amplitude modulation (AM) transmissions were the first method developed for making audio radio transmissions and became widely adopted, in the United States, from the 1920s onward. However, the landscape shifted with the advent of frequency modulation (FM) radio. Tech-

[9]For instance, in 1973, the radio station WXUR in Philadelphia was forced off the air and denied renewal of broadcast license because members of the local community found speech expressed on the station by on-air talent Carl McIntire to be offensive.

nological advancements during the 1970s and 1980s improved the audio quality of FM radio, making it better suited for music and entertainment broadcasts. As a result, the listenership of AM radio, with its comparatively lower audio fidelity, began to decline. In response, AM radio station operators naturally transitioned away from music programming and became the perfect conduit for the talk radio format (Amarasinghe and Raschky, 2022).

From the very outset of the talk radio movement following the end of the Fairness Doctrine, conservative talk radio shows became immediately popular. One of the key figures that capitalized early on was the politically conservative commentator Rush Limbaugh. The Rush Limbaugh Show, hosted by Limbaugh himself, started as a local talk radio show in 1984 but expanded as a nationally syndicated radio program in 1988. The national syndication began with 56 stations on August 1 1988 and expanded three months later to 100 stations.[10] Radio syndication eventually would reach an unheard-of 600 stations, with 14 to 30 million weekly listeners[11]. The massive popularity of The Rush Limbaugh Show is widely accredited with reviving AM radio.

As a pioneer of this new type of political talk radio in the post-Fairness Doctrine environment, Limbaugh changed the nature of political discourse and how national politics was discussed over the airwaves. Since its inception, the Rush Limbaugh Show has been widely acknowledged to be a source of right-wing populism and often controversial political opinions. Unrestrained by the FCC, Limbaugh would regularly deliver pro-conservative rhetoric and actively promote partisan viewpoints. A central and recurring theme to Limbaugh's show is discussions of the merits of conservatism and the perceived liberal bias associated with "mainstream" media outlets (Amarasinghe and Raschky, 2022). According to The Washington Post, Limbaugh trafficked in conspiracy theories and divisive content from his earliest days on the air.[12] Limbaugh would also attempt to mobilize listeners and task his audience members to hold Republican leaders accountable.

Rush Limbaugh's singular importance to the Republican party was even recognized by the Republican party leadership. In 1995, then Newt Gingrich's press secretary credited Limbaugh with being the "second most important person", after Gingrich himself, in securing the Republican majority in the House of Representatives for the first time in 40 years (Jamieson and Cappella, 2008).

Limbaugh's success demonstrated the nationwide viability of right-wing partisan radio content and paved the way for other conservative talk radio programming to follow. In addition to Limbaugh, conservative hosts such as Sean Hannity, Glenn Beck, Laura Ingraham, Michael Savage, Bill O'Reilly etc. would come to dominate the talk radio space. Prior to 1987, such controversial figures would have been taken off the air as obvious violations of the Fairness Doctrine.

It is worth noting that this period of the emergence of political talk radio predates the creation of Fox News in 1996 and the widespread adoption of cable

[10] See: `https://en.wikipedia.org/wiki/Rush_Limbaugh`

[11] See: `https://www.thedailybeast.com/rushs-real-audience/`

[12] Paul Farhi (February 9, 2021). "Rush Limbaugh is ailing. And so is the conservative talk-radio industry". The Washington Post

television in general. So for a substantial part of the early 1990s, conservative talk radio represented the most partisan outlet in the American median diet. While contemporaneous commentators frequently attributed the rise of conservative talk radio to the electoral resurgence of the Republican party at the time[13], to the best of my knowledge, the impact of talk radio on electoral outcomes and mobilization of voters during the initial outgrowth of the medium has not yet been systematically explored.

3 Data & Empirical Strategy

The main hypothesis underlying this paper is that the rise of conservative talk radio over the airwaves following the end of the Fairness Doctrine affected the electoral success of the Republican party and that the effect was particularly pronounced in rural areas. This claim rests on two key observations regarding local demand for talk radio programming.

First, as shown in Amarasinghe and Raschky (2022), interest in talk radio depends on programming choices available elsewhere on the dial. Naturally, given the fixed quantity of audience attention, a larger number of competing stations can erode the listenership of any given type of radio broadcast. In other words, exposure to talk radio should be greater in locations with less robust offerings in terms of alternative radio stations and content.

Second, given the near ubiquity of radios in automobiles and the natural tendency for people to listen to the radio while driving, the amount of time people spend in private vehicles plays a significant role in determining the extent of exposure and consumption of radio programs. Importantly, the variation in radio exposure across individuals generated by differences in driving time is unlikely to be related to an individual's political affiliation or preferences.

Together, these two factors should determine the likelihood that people are exposed to conservative talk radio and how long they would listen to it on average. All else equal, the probability and amount of exposure to talk radio should be higher in locations with fewer radio stations and where people drive more. Because these characteristics are more likely shared by individuals residing in rural areas, if conservative talk radio does mobilize and persuade voters, its emergence could have greater implications for the growth of rural conservatism relative to urban areas. Consequently, this may contribute to the worsening urban-rural political divide.

3.1 Data

To test and provide empirical support for this overarching hypothesis, I utilize data from several distinct sources.

First, I retrieve county-level voting data for U.S. political elections from the Interuniversity Consortium for Political and Social Research (ICPSR) and Dave Leip's Atlas of U.S. Elections (Leip). The ICPSR data cover the period from

[13] See: The New York Times, "Talk radio is turning millions of Americans into conservatives"

1978 to 1990. It includes electoral returns for all presidential, gubernatorial, and congressional (Senate and House of Representatives) races as well as one additional statewide office (usually the secretary of state or the state attorney general). Leip's data provides presidential, gubernatorial, and congressional elections from 1990 to 2000. Combining these two data series, I create a county-election year panel dataset with Republican candidate voter turnout and vote-share before and after the rise of conservative talk radio. The data coverage by the political office and election year is detailed in Table A1. This data allows me to examine local support for the Republican Party over time.

Second, I collect information on the state of commercial radio broadcasting across the United States just before the abolition of the Fairness Doctrine. Specifically, I digitize the 1987 issue of the Broadcasting & Cablecasting Yearbook, which contains basic information on essentially all FCC-licensed radio stations operating in the U.S. that year. I geocode the location of each radio station (both AM and FM) and construct a proxy for radio access within each county in 1987 based on the number of stations that operate in the county.

Next, I use various data compiled from the U.S. decennial censuses (1970-2000). For instance, I utilize the average daily commute duration within the county to gauge the typical length of time individuals dedicate to driving in each county on a daily basis. To capture broad socio-economic and demographic differences between counties, I leverage information on population level, rural population share, race and ethnic composition, educational attainment, median household income, manufacturing employment, etc. Summary statistics for all county-level variables are provided in Table 1.

Finally, to help facilitate an investigation of the hypothesized "first-stage" relationship on consumption of political talk radio, I turn to the 1994 and 1996 waves of the American National Election Survey (ANES). In those two years, the ANES asked respondents questions regarding their daily mileage driven in vehicles and radio listening habits with respect to political talk radio.

3.2 Empirical Strategy & First-Stage Relationship

To isolate the effect of conservative radio on electoral outcomes, I implement a triple-difference identification strategy that exploits variation in exposure generated by: (i) the timing of the national emergence of talk radio format, (ii) differences between counties with more and less competition for audience attention, and (iii) varying lengths of average daily commute across counties.

Specifically, I estimate the following baseline regression model:

$$\begin{aligned} y_{cpst} = \beta_0 + \beta_1 \times Post_t \cdot Commute_{ct} \cdot Radio_c + \beta_2 \times Post_t \cdot Commute_{ct} + \\ \beta_3 \times Commute_{ct} \cdot Radio_c + \beta_4 \times Commute_{ct} \cdot Radio_c + \beta_5 \times Commute_{ct} \\ + \gamma X_{ct} + \delta_{pt} + \delta_c + \delta_{st} + \delta_{sp} + \epsilon_{cest} \end{aligned} \tag{1}$$

where y_{ecst} is the outcome of interest — Republican Party vote-share — in county c and state s during year t for political office p. *Post* is a binary

indicator equaling 1 if the election occurs after 1988. This choice of timing reflects the start of conservative talk radio over the airwaves as headlined by the national syndication of The Rush Limbaugh Show. $Commute_{ct}$ is an indicator variable for whether the daily commuting time in county c at year t is above the median. δ_c and $\delta_p t$ are county and political office-year fixed effects, respectively. Including office-specific time fixed effects, $\delta_p t$, helps to account for possible differences in voter turnout across election cycles. I also include state-year (δ_{st}) and office-year fixed effects (δ_{sp}) to allow for state-specific political trends flexibly.

X_{ct} is a vector of time-varying county characteristics constructed using the 1970, 1980, and 1990 decennial censuses. The baseline controls include total population, rural population share, median household income, racial composition, poverty rate, unemployment rate, and educational level. For non-decennial census years, the values are imputed based on the previous decennial census.

$Radio_c$ is a measure of the concentration of FM radio stations within the county in 1987. Specifically, I employ two distinct metrics: 1) a binary indicator for having below median number of FM stations; and 2) the log of 1 divided by one plus the total number of FM radio stations. I focus on FM stations because political talk radio was primarily broadcast on AM stations. In contrast, FM stations more often specialized in music and live events due to higher audio fidelity. As a result, access (or lack thereof) to FM stations may serve as a better approximation of competing non-talk programming available on the radio than the total number of (AM+FM) stations.

The sample includes presidential, gubernatorial, congressional (Senate and House of Representatives) and statewide (secretary of state or the state attorney general) elections from 1978 to 1989. From 1990 to 2000, the sample includes only presidential, gubernatorial, and congressional elections. I make two sample restrictions. First, I exclude counties with zero radio stations in 1987. By restricting my attention to only counties with some level of radio access, I hope to mitigate the issue of selection bias and endogenous entry of radio stations following the introduction of conservative talk radio.[14]

Second, I only consider contested races, i.e. those that involve both a Democratic and Republican candidate. This is because the vote share in these elections, which will mechanically be either 0% or 100%, may not be directly comparable to the vote share in standard contested elections. To accomplish this in practice, I remove elections where the total number of votes across all counties within the state for either the Republican or Democrat party was zero.

Crucial to my identification strategy is the idea that, while the emergence of conservative talk radio was a nationwide phenomenon, listenership and exposure to this new format should be higher in areas with fewer choices of radio programs and where people drive longer. I attempt to build empirical support

[14] Additionally, I avoid using direct information on individual stations' decisions to carry conservative radio shows in my analysis, because a local affiliate station's choice of conservative programming is endogenous and likely reflects underlying political disposition in the area. As a result, my estimates will likely be attenuated by the fact that some "treated" units will not have access to conservative talk radio while there may be listeners in "control" locations.

for this idea by using the 1994 and 1996 waves of the American National Election Studies. In those two particular years, the ANES asked respondents about their knowledge and consumption of political talk radio. Specifically, the survey contained questions on whether individuals listened to political talk radio as well as the frequency of their listening. Furthermore, the ANES also provide information about respondents driving habits, making it especially well-suited to test my hypothesis. Pooling responses from the two years, I estimate the following regression:

$$y_{ict} = \beta \times Station_c \cdot Miles_i + \alpha \cdot X_i + \delta_{ct} + u_{ict} \tag{2}$$

where y_{ict} measures individual i's familiarity with and exposure to political talk radio in year t. δ_{ct} is a county-year fixed effect. $Station_c$ is a dummy indicator equalling 1 if an individual i's county of residence c had a below-median number of FM radio stations in 1987.[15] $Miles_i$ is the self-reported daily miles driven. The coefficient of interest is on the interaction between $Station_c$ and $Miles_i$. The regressions control for individual characteristics and include county fixed effect. To maintain consistency with the county-level analysis, I apply the same sample restriction and exclude individuals residing in counties with zero radio stations.

The results are shown in Table 2. Reassuringly, I find that individuals residing in counties with fewer radio stations who drive longer are disproportionately more likely to listen to political talk radio and listen at a higher frequency. These results are robust to controlling for an individual's age, gender, race, and household income. This suggests that individuals who face more limited choices in radio programming and spend more time in vehicles as a captive audience to car radio are more susceptible to political talk radio exposure. This key finding motivates my empirical strategy and analysis in the subsequent section.

4 Main Results

In this section, I present the main results of the paper. First, motivated by the ANES findings above, I show how support for the Republican party diverged across counties with varying levels of exposure to conservative radio. Next, I explore the robustness and heterogeneity of those results. Finally, I demonstrate the impact of conservative talk radio can explain, in part, the growth of rural conservatism in the United States in the 1990s.

4.1 Effect of Conservative Talk Radio on Republican Vote-Share

To investigate the causal link between the rise of conservative talk radio over the airwaves and the electoral success of the Republican party, I employ a triple-differences framework.

[15] The median is defined based on the full population of counties in the election data as opposed to samples of counties represented in the ANES survey.

While the triple-differences estimator relies on a similar parallel trend assumption as the traditional difference-in-differences design (Olden and Møen, 2022), it is more challenging to assess the viability of this assumption through visualizing the pre-trends because there are three dimensions of comparison.

Nevertheless, I attempt to provide some intuition by plotting event-study figures for the differential evolution of Republican electoral support between counties with more and fewer radio stations, separately for counties above and below average in terms of commuting time. Specifically, I estimate dynamic difference-in-differences models where I interact the year-fixed effects with measures of radio concentration defined in the previous section.[16]

These coefficients are shown in Figure 2 and Figure 3 using two distinct measures of radio concentration. For both sets of figures, we observe that in counties above the median in terms of average commuting time, there is a sudden and differential increase in Republican vote share after 1988 for counties with fewer radio stations. The lack of any visible pre-trend lends support to the conditional parallel trends assumption and the timing of the increase mirrors the dynamics of the growth of talk radio as observed in Figure 1. These compelling visual patterns and abrupt trend breaks are completely absent in counties with lower average commuting times where the evolution of Republican party support remains stable before and after the introduction of talk radio. The unique combination of longer driving time, where presumably people spend more time in their vehicles and are more likely to be exposed to car radio, and few radio programming choices is associated with the rise of conservative electoral support.[17]

To illustrate the patterns in the data in a slightly different manner, I perform a separate exercise where I examine the relationship between changes in Republican vote share after 1988 and average commuting time conditional on the number of radio stations present in the county. These results are presented in Table 3. As shown in column 1, in counties with zero or only one FM radio station, the increase in Republic vote share following 1988 significantly correlates with the county having an above-average commuting time. Yet this association starts to weaken and disappear once we move to counties with more robust radio offerings in subsequent columns. The point estimate diminishes in a more or less monotonic fashion as the number of FM stations increases and becomes a precisely estimated zero once the number of FM stations exceeds five.

Combining these underlying sources of variation and incorporating them together, I turn to the main triple-differences specification to assess the magnitude of effect sizes. These estimates are reported in Table 4 with two different measures of radio competition, In columns 1-3, *Radio Concentration* is the logged

[16] I consider both an indicator variable for the county having a below-median number of radio stations and the logged inverse of the number of radio stations in the county.

[17] Because these event-study figures are derived from an unbalanced panel of elections, one might worry that the changes in estimates are driven by compositional changes in elections rather than within-electorate changes in Republican allegiances. To address this concern, I include political office by year fixed effect and state-specific year trends in the model. Figure 3 presents the figures with these additional fixed effects.

inverse of the number of radio stations in a county. Columns 4-6 replicate the analysis but use the dummy variable for having a below-median number of radio stations as the metric for radio competition. I probe the robustness of the results across specifications by progressively including more controls. The coefficient on the triple interaction term remains significant throughout all columns. Republican vote share increased disproportionately more after the national emergence of conservative talk radio in places that had the combination of high commuting time and a lack of competing radio offerings. The results are robust and consistent across different sets of controls and measures of radio concentration. This suggests that conservative talk radio increased electoral support for the Republican party.

4.1.1 Robustness

Selection Bias The main challenge to the causal interpretation of the electoral results is that of selection bias. Specifically, places with fewer radio stations and greater commuting time may have been on a political rightward trajectory during this period irrespective of the introduction of conservative talk radio. While I attempt to mitigate this concern in the main regressions by including a rich set of time-varying controls to account for compositional changes across counties over time, this issue remains a threat to identification if certain demographic groups became more conservative after 1988 for reasons completely orthogonal to political talk radio.

To address this possibility, my strategy is twofold. First, I expand the set of controls to include the interactions between all county characteristics and a post-1988 indicator variable. These interaction terms allow the effect of any individual control to change flexibly before and after 1988. Their inclusion in the regression helps us to disentangle whether the results are driven by exposure to political talk radio or extraneous factors correlated with commuting time or the number of radio stations which became more predictive of Republican electoral support following 1988.

Table 5 shows the results from this empirical specification. Comparing the baseline specification in columns 1 and 3 with the robustness checks in columns 2 and 4, we observe that the coefficient on the triple-interaction term remains statistically significant and qualitatively similar in magnitude. This suggests that our results are not merely driven by differential political developments associated with observable county characteristics correlated with the measure of political talk radio exposure used in the analysis.

Second, in a separate exercise, I pursue a coarsened exact matching (CEM) strategy to further overcome differences between counties more and less exposed to talk radio (Iacus, King and Porro, 2012, 2019). To implement the methodology, I define treatment at the county level as a county having an above-median average commute and a below-median number of FM radio stations in 1987. By matching on all of the baseline covariates, the CEM approach creates a counterfactual group comparable to that treated counties in terms of the joint distribution of observed characteristics. I then restrict my main triple-differences

regression to the set of matched counties within the common support to ensure a more credible comparison.

Given the stringent matching criteria, only approximately 13.24% of observations are matched. Despite this drastic reduction in sample size, as shown in Table 6, the estimates from the matched sample remain statistically significant and, if anything, are larger than their unmatched counterparts in terms of coefficient sizes. The totality of these results suggests that selection bias is unlikely to drive the findings.

Measurement Error Another key issue in the research design is measurement error in the main explanatory variable. Specifically, the number of FM radio stations in a county may not accurately represent the variety of FM radio programming available to the county residents. Since administrative boundaries have no bearing on radio signals, it may be perfectly feasible for people to listen to and receive radio broadcasts originating from neighboring counties. This type of cross-county transmission would generate measurement error and potentially induce attenuation bias in the resulting estimates.[18]

To account for these types of spillovers in signal transmission, I construct an alternative measure of radio access for a county based on the number of FM stations both within the county and in its adjacent counties. By including radio stations in its own and adjacent counties, I relax the assumption that radio broadcasts are only received in the counties they originate. I replicate the triple difference-in-differences model using this measure of radio access. Specifically, I define FM radio concentration as the log of one divided by the total number of FM stations in own and adjacent counties. As shown in 7, with the sole exception of the last column, the estimated coefficients are generally larger with this specification, consistent with the effect sizes being attenuated in the baseline model.[19]

Manufacturing Employment and Decline of Union Membership Historically, labor unions have been a traditional source of political support for the Democratic Party in the United States. The period this paper studies coincides with a general decline in unionization rates and the share of U.S. workers who belong to unions (Farber et al., 2021). One may be concerned this long-run trend could somehow confound my estimates.

Furthermore, the North American Free Trade Agreement (NAFTA) was signed and ratified in 1992. NAFTA had faced significant opposition from the public because of the perceived threat it posed to manufacturing workers. While the impetus for NAFTA had begun under Reagan, its ultimate ratification dur-

[18]This issue is partially mitigated by the fact that this study considers FM radio stations. Because FM signals tend to cover shorter distances than AM signals, spillovers may be less of a concern. However, the number of FM stations within the county may still understate actual FM programming availability.

[19]The smaller coefficient in the model with expanded fixed effect may be indicative of the fact that, in some instances, counting radio stations in adjacent counties may overstate the availability of radio programming available in the county.

ing Clinton's Presidency could have fueled switches in party allegiances and political preferences against the Democratic party by those affected. To the extent that the variation in manufacturing employment across U.S. counties may be correlated with my main explanatory variables, this may also violate the identifying assumptions.

To assuage these concerns, I gather additional controls for manufacturing employment and unionization rates. The manufacturing employment data for this period at the commuting zone level comes from Autor, Dorn and Hanson (2016). To generate a time-varying version of this control, I interact manufacturing employment with a post indicator. Estimates of union density by state and year are retrieved from Hirsch, Macpherson and Vroman (2001). I include these complex interaction terms in the triple-differences specifications separately and jointly. The resulting estimates along with the baseline results are shown in Table 8. The results remain robust to these additional controls.

4.1.2 Heterogeneous Effects

Car Ownership I implement my empirical strategy by utilizing the average commuting time as a proxy for the length of time people spend in vehicles in the presence of car radio. This could be invalid if people commute via public transit or other forms of transportation instead. To assess the validity of this concern and further pin down the causal channel, I explore heterogeneous effects with respect to car ownership.

In Table 9, I demonstrate that the triple-difference estimates presented in the previous section are statistically insignificant in counties where less than 80% of households own a car (approximately the 25th percentile of car ownership rates across all U.S. counties in 1980). Because the mechanism proposed in this article is only valid for individuals commuting by car, these patterns of heterogeneity further rule out competing explanations and illustrate the connection to the car radio.

United States National Radio Quiet Zone & Radio Deserts As shown in Table 3, in counties with a low number of FM radio stations, the average driving time is positively correlated with the extent of the post-1988 increase in Republican vote support. If this reflects the effect of political talk radio then we should expect the relationship to dissipate in locations where political talk radio is credibly known to be absent. Following this logic, I conducted a falsification test using areas where radio broadcasting was strictly prohibited and regulated.

Namely, the United States National Radio Quiet Zone (NRQZ) is a region in the United States that's protected from radio frequency interference (RFI) to facilitate scientific research and the gathering of military intelligence. The NRQZ is located near the border of Virginia, West Virginia, and Maryland, and includes a small portion of Maryland. I focus on counties fully enclosed within the quiet zone, where restrictions are the most strict. Because most broadcast transmitters in the central area of the NRQZ are required to operate at reduced power and use directional antennas, exposure to political talk radio should have

been negligible, serving as a reasonable placebo.

Accordingly, I conduct an empirical test to examine whether average commuting time is predictive of the increase in Republican party political support in locations where it is reasonable to infer that talk radio was largely absent. Adopting a difference-in-differences approach, I regress Republican vote share on the interaction between average commuting time and a post-1988 indicator using the different samples of county-election panels.

The results are provided in Table 10. In stark contrast to the effect in counties with a low number of FM stations, the average commuting time in the NRQZ is not significantly correlated with the post-1988 increase in Republican political support. This suggests that the relationship between commuting time and the growth of conservatism is, at the very least, predicated on the presence of radio programming.

Along similar lines, I also define radio "deserts" at the county level as places largely absent of radio stations in the county and surrounding counties.[20] When I expand the set of NRQZ counties to include radio deserts in column 3 of Table 10, the interaction between post indicator and commuting time remains insignificant. These findings are consistent with the causal interpretation of the findings.

National and Local Elections Because the Rush Limbaugh Show was a nationally syndicated program with synchronized content across all affiliates, it stands to reason that to maximize audience interest across the country, the show would be more national in its scope. In particular, the Rush Limbaugh Show was more likely to discuss national political topics than delve into the nuance of specific local issues or politics.

Following this logic, we should expect the persuasive effect of the Rush Limbaugh Show to be greater on elections of national importance such as the Presidency or during election cycles where the office of the President is being decided. To test this, I divide the sample into presidential versus non-presidential elections and also on-cycle versus off-cycle elections to account for possible down-ballot effects of presidential races.

This is corroborated in Table 11, which shows that the effect is greater for presidential elections and elections occurring during presidential election years. However, these differences may not be statistically significant.

4.2 Impact on the Growth of Rural Conservatism

What implications does the electoral impact of conservative talk radio have on the growth of rural conservatism? The results in the previous section suggest that because exposure to political talk radio depended on programming competition and the amount of time people spent driving, people residing in places

[20] I forego simply using counties without radio stations as a placebo because there is a high likelihood that residents can receive a radio transmission from neighboring counties. By imposing a stricter definition of radio 'deserts' I hope to minimize the incidence of such false negatives.

with fewer FM stations and longer commute times were disproportionately affected by its persuasive content. The main argument I put forth in this paper is that given rural areas are more likely to feature those characteristics, talk radio, in turn, plays a role in explaining the rise of Republican party allegiance in rural America. In this section, I attempt to provide evidence in support of this idea.

First, I check whether rural counties have less access to FM radio and longer commute times on average. Using data from U.S. population censuses across three different decades (1980, 1990, and 2000), Table A2 shows the county's rural population share is positively correlated with average commuting time in the county and negatively correlated with the number of FM radio stations within the county. Because these two factors influence exposure to talk radio, this suggests that rural counties may be disproportionately affected by the availability of this type of programming, all else being equal.

To draw a more direct connection between the expansion of political talk radio and the growth of rural conservatism, I demonstrate how the post-1988 rightward shift of the rural electorate can be explained or mediated by the exposure to right-wing talk radio. The analysis proceeds as follows.

I begin by regressing Republican vote support on the interaction between rural-population share and a post-1988 indicator while controlling for a robust set of fixed effects (county, year, electoral office). These results are shown in columns 1 and 2 of Table 12. The positive coefficient on the interaction term suggests that counties with a greater share of rural population became more Republican-leaning after 1988. This is consistent with the growth of rural conservatism following 1988.

Next, I divide the full sample of counties into those more or less exposed to conservative talk radio based on channels I identified earlier. Columns 2 and 3 of Table 12 focus on the subsample of counties which are both above-median in terms of commuting time and below-median in the number of radio stations. Logically, this is the set of counties that are most exposed to political talk radio. As shown in Table 12, within this subset, the magnitude of the post-1988 increase in rural conservatism is significantly larger than for the overall sample of counties.

By contrast, the growth of rural conservatism is much more muted in locations less exposed to political talk radio. Specifically, in columns 5 and 6, I restrict the regression to only counties that are either below-median in commuting time or above-median in terms of number of FM radio stations. In other words, these are locations where one of the conditions for exposure to political talk radio is not met. Within this sub-sample, the point estimate on the interaction between post-1988 dummy and rural population share is effectively zero. While the interaction between the post indicator and the rural-urban categorical variable is positive and significant, the coefficient size is roughly halved compared to the corresponding specification for counties where exposure criteria are satisfied.

Taken together, the totality of these results suggests that the growth of rural conservatism following 1988 is decreasing in the extent of political talk

radio exposure. This is consistent with the idea that exposure to conservative radio is responsible, at least in part, for the right-wing shift of rural communities following the emergence of political talk radio.

5 Conclusion

The repeal of the Fairness Doctrine enabled the rise of unfiltered and highly partisan political talk radio over the airwaves in the United States. A central figure in this movement is Rush Limbaugh, whose immediate success and popularity catalyzed the early expansion of right-wing talk radio. This paper investigates the effect of conservative talk radio on electoral support for the Republican Party and its implications for the growth of the urban-rural political divide.

The main hypothesis I develop in this article is that two features of rural communities made them especially susceptible to this new media development. First, rural communities have fewer choices in radio programming, so the emergence of a partisan news station could have an outsized influence due to the lack of alternative listening options. Second, people in rural communities generally rely more on cars, and as a result, spend more time as a captive radio audience in automobiles. These two factors, which are otherwise plausibly unrelated to individual political preferences, may lead to differential exposure to talk radio amongst the rural population.

Consequently, while the rise of political talk radio was a national phenomenon, it could have had a disproportionate impact on rural communities and contributed to the political division along the urban-rural cleavage. I provide empirical support for this idea by leveraging individual-level survey data and county-level voting data.

First, using the American National Election Studies, I validate the fundamental premise underlying this study by demonstrating that individuals residing in counties with fewer radio stations who drive more are significantly more likely to consume political talk radio and listen to those programs at a higher frequency.

Next, I show that U.S. counties that were more exposed to political talk radio due to the combination of having fewer radio stations and longer average commute times became more conservative-leaning after the emergence of political talk radio. I demonstrate the robustness of these results to varying sets of controls and specifications. This indicates that political talk radio mobilized and persuaded listeners toward the Republican party.

Finally, to draw a direct connection to the U.S. urban-rural political divide, I show that the rise in rural conservatism from the 1990s onward is affected by the extent of exposure to talk radio on account of the characteristics I identified, which are significantly correlated with rural population share. Specifically, while rural areas became more right-leaning after the rise of talk radio, this shift to the right was statistically significant only in places with fewer FM radio stations and longer average commuting times. In counties where those conditions were not met, rural population share does not predict greater Republican Party allegiance

following 1988.

As the issue of misinformation on social media has come to the forefront of public discourse in recent years, the role of government in moderating and regulating content on media platforms has gained a renewed sense of relevance. The results of this paper contribute to this discussion by showing that the rise of conservative talk radio associated with the repeal of the Fairness Doctrine had a real political impact that was disparate across rural and urban communities.

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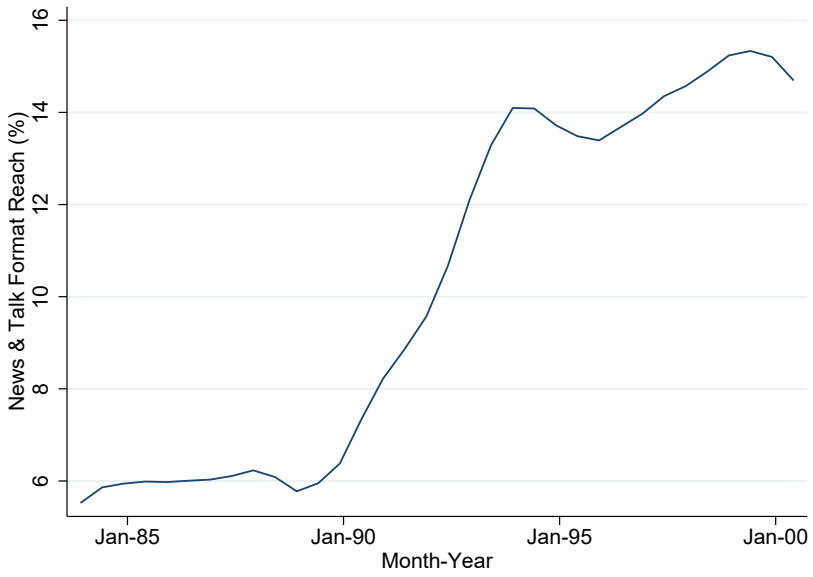
Tables & Figures

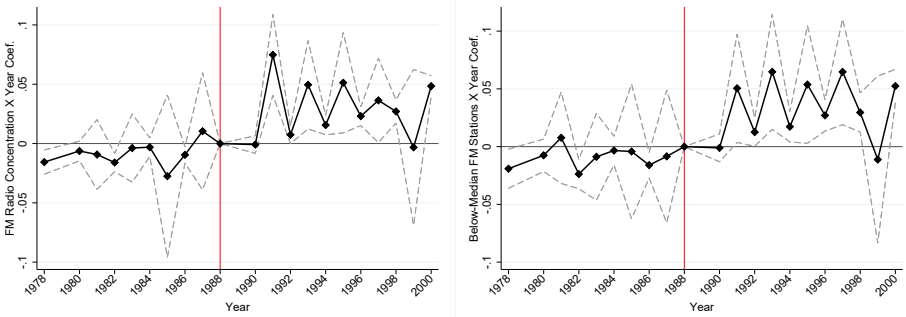
Figure 1: Popularity of the 'News & Talk' Format Over Time



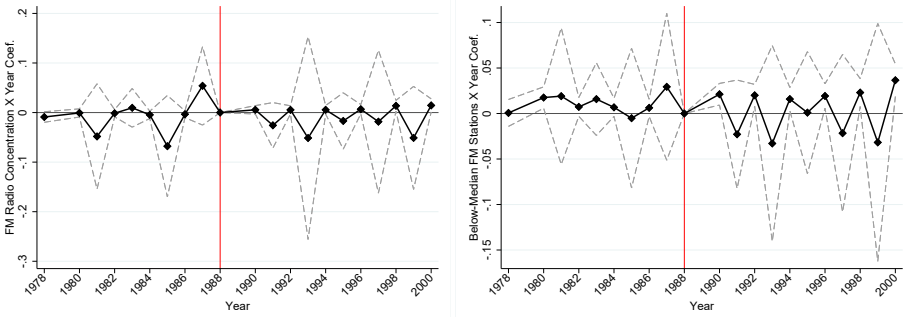
Notes: This figure shows the growth of 'News & Talk' radio format from 1984 to 2000. This information comes from bi-annual issues of the Radio & Records Ratings Report. The plot is a locally linear smooth plot.

Figure 2: Event-Study For Republican Vote-Share by Avg. Commuting Time

(a) Above Median Commuting Time

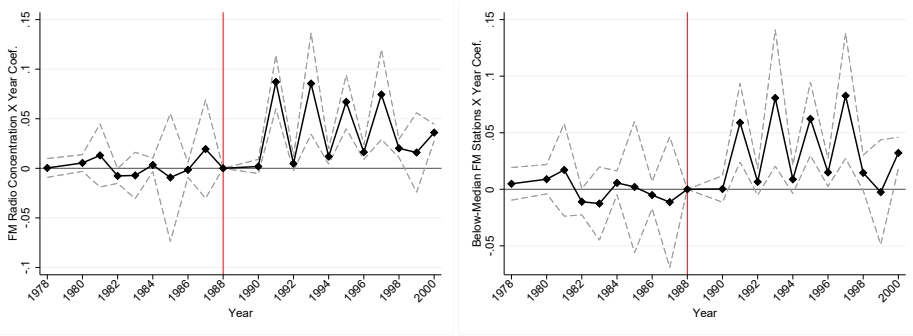


(b) Below Median Commuting Time



Notes: These figures plot regression coefficients of the radio concentration variable interacted with year dummies across electoral returns from 1978 to 2000. The sample includes all presidential, gubernatorial, and senatorial elections during that span. The outcome variable is the county-level Republican candidate vote share in each election. The top figure restricts the sample to only counties that are above the median in terms of average commuting time. The bottom figure shows the same event study for counties below the median. Regressions include county, year, and political office by year fixed effects.

Figure 3: Event-Study For Republican Vote-Share For High Commute Counties with Additional Fixed Effects



Notes: These figures plot regression coefficients of the radio concentration variable interacted with year dummies across electoral returns from 1978 to 2000. The sample includes all presidential, gubernatorial, and senatorial elections during that span. The outcome variable is the county-level Republican candidate vote share in each election. The sample includes counties that are above the median in terms of average commuting time. Regressions include county, year, and political office by year fixed effects. Specifications also include state-year trends and office-by-state fixed effects.

Table 1: Summary Statistics

	Mean	Std. dev.	25th percentile	Median	75th percentile	N. of Obs.
Republican Party Vote Share	0.48	0.19	0.37	0.49	0.61	85551.00
Number of Total (AM+FM) Radio Stations	4.31	5.02	2.00	3.00	5.00	85551.00
Number of FM Radio Stations	2.18	2.85	1.00	1.00	2.00	85551.00
Log. Avg. Commute Time	2.94	0.24	2.79	2.95	3.10	85428.00
Log Population	10.49	1.17	9.68	10.32	11.12	85428.00
Rural Pop. Share	0.55	0.27	0.37	0.57	0.74	85428.00
Log Median Household Income	10.10	0.27	9.93	10.08	10.26	85454.00
Poverty Share	8.52	1.08	7.81	8.42	9.09	85428.00
Log Non-White Population	7.45	2.12	5.85	7.56	8.95	85428.00
Unemployment Rate	0.07	0.03	0.05	0.06	0.08	85428.00
Log No HS Degree	8.19	1.11	7.52	8.14	8.79	85428.00

Notes: Descriptive statistics for key variables in the sample.

Table 2: Effect of Radio Competition & Driving Time on Talk Radio Exposure: American National Election Studies 1994 & 1996

Dep. Var:	$\mathbb{1}\{$ Talk Radio $\}$		Talk Radio Freq.	
	(1)	(2)	(3)	(4)
Below-Median FM Stations × Mileage Driven	0.041**	0.043**	0.112**	0.119**
	(0.020)	(0.021)	(0.050)	(0.049)
Has Controls		✓		✓
County-Year FE	✓	✓	✓	✓
Observations	1,657	1,657	1,657	1,657
R^2	0.145	0.169	0.149	0.178

Notes: Each observation is a respondent in the 1994 and 1996 ANES surveys. $\mathbb{1}\{Talk\ Radio\}$ is a binary indicator equaling 1 if an individual listens to political talk radio. $Talk\ Radio\ Freq.$ is a categorical variable indicating the frequencies with which individuals listen to talk radio. $Below_medianFMStations$ equals 1 if the county the individual resides in has a below-median number of FM radio stations. $Daily\ Mileage$ is the self-reported miles driven per day. Controls age, race, gender, income, and education. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 3: DiD Estimates of Effect of Talk Radio by # of FM Stations in County

Sample:	# of FM Stations = 0 or 1	# of FM Stations = 2 or 3	# of FM Stations = 3 or 4	# of FM Stations ≥ 5
Post × Log Avg. Commute	0.026***	0.017**	0.012	-0.007
	(0.005)	(0.007)	(0.010)	(0.008)
Observations	48,954	22,353	11,391	9,797
R^2	0.471	0.441	0.403	0.441

Notes: This table shows the difference-in-differences specification employing the interaction between Post and *Above Median Commute* for different subsamples of counties based on the number of radio stations in that county in 1987. Each observation is a county-election pair. The outcome in each column is the Republican candidate vote share for each county-election observation. The county sample is indicated in each column header. All regressions include county, year, and political office by year fixed effects. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 4: Triple-Differences Estimates of Effect of Talk Radio on Republican Vote-Share

Dep. Var.:	Republican Party Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
FM Station Concentration ×	0.019***	0.016***	0.012***			
Above-Median Commute × Post	(0.005)	(0.005)	(0.003)			
Below Median # FM Stations ×				0.023***	0.019**	0.010**
Above-Median Commute × Post				(0.008)	(0.007)	(0.005)
County FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Political Office by Year FE	✓	✓	✓	✓	✓	✓
Has Controls		✓	✓		✓	✓
State by Year FE			✓			✓
Political Office by State FE			✓			✓
Observations	72,493	72,457	72,454	85,551	85,427	85,424
R^2	0.454	0.460	0.626	0.454	0.460	0.622

Notes: Each observation is a county-election pair. The sample consists of races specified in Table A1 subject to sample restrictions discussed in the text. The outcome in each column is the Republican candidate vote share for each county-election observation. *FM Radio Concentration* is defined as the log of 1 divided by the total number of FM radio stations in each county in 1987. Post equals if 1 year is following 1988. *Below Median# of FM Stations* equals 1 if the number of FM radio stations in a county is below the median. *Above Median Commute* is the logged average commuting time in a county calculated based on the nearest decennial censuses. Baseline controls include population, rural population share, poverty rate, household income, non-White population share, unemployment rate, and education level. Additional controls and fixed effects are specified accordingly for each column. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 5: Robustness: Baseline Controls X Post-1988 Indicator

Dep. Var.:	Republican Party Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Post × Above Median Commute	0.019**	0.015**	0.017**			
× Below-Median FM Stations	(0.007)	(0.007)	(0.007)			
Post × Above Median Commute				0.016***	0.015***	0.015***
× FM Station Concentration				(0.005)	(0.004)	(0.005)
County FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Political Office FE	✓	✓	✓	✓	✓	✓
Baseline Controls	✓	✓	✓	✓	✓	✓
Baseline Controls × Post		✓			✓	
Rural-Urban Continuum × Post			✓			✓
Observations	85,427	85,427	85,427	72,457	72,457	72,457
R^2	0.460	0.470	0.459	0.460	0.470	0.459

Notes: Baseline controls include population, rural population share, poverty rate, household income, non-White population share, unemployment rate, and education level. In columns 3 and 4, these variables are interacted with a post-1988 binary indicator. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 6: Robustness: Coarsened Exact Matching

Dep. Var.:	Republican Party Vote Share			
	(1)	(2)	(3)	(4)
M Station Concentration ×	0.043**	0.045**		
Above-Median Commute × Post	(0.021)	(0.020)		
Below Median # FM Stations ×			0.056**	0.067***
Above-Median Commute × Post			(0.027)	(0.025)
County FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Political Office by Year FE	✓	✓	✓	✓
Has Controls		✓		✓
Observations	8,824	8,788	10,613	10,577
R^2	0.439	0.451	0.438	0.451

Notes: Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 7: Triple-Difference Estimates Using Own and Adjacent County Radios

Dep. Var.:	Republican Party Vote Share		
	(1)	(2)	(3)
FM Concentration in Own and Adjacent Counties	0.028***	0.023***	0.010***
× Below-Median Commute × Post	(0.005)	(0.005)	(0.004)
County FE	✓	✓	✓
Year FE	✓	✓	✓
Political Office by Year FE	✓	✓	✓
Has Controls		✓	✓
State by Year FE			✓
Political Office by State FE			✓
Observations	85,019	84,988	84,988
R^2	0.457	0.462	0.572

Notes: Each observation is a county-election pair. *FM Radio Concentration* is defined as the log of 1 divided by the total number of FM radio stations in each county in 1987. Post equals if 1 year is following 1988. *Below Median# of FM Stations* equals 1 if the number of FM radio stations in a county is below the median. *Above Median Commute* is the logged average commuting time in a county calculated based on the nearest decennial censuses. Baseline controls include population, rural population share, poverty rate, household income, non-White population share, unemployment rate, and education level. Additional controls and fixed effects are specified accordingly for each column. * p<0.1, ** p<0.05, *** p<0.01.

Table 8: Robustness: Manufacturing Employment & Union Membership

Dep. Var.:	Republican Party Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Post × Above Median Commute	0.027***	0.020***	0.023***			
× Below-Median Radio Stations	(0.008)	(0.007)	(0.008)			
Post × Above Median Commute				0.013***	0.008*	0.010**
× Radio Concentration				(0.004)	(0.004)	(0.004)
County FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Political Office FE	✓	✓	✓	✓	✓	✓
Baseline Controls	✓	✓	✓	✓	✓	✓
Manufacturing Employment Control			✓			✓
Union Membership Control		✓			✓	
Observations	90,120	80,842	82,893	90,120	80,842	82,893
R^2	0.474	0.479	0.475	0.475	0.479	0.476

Notes: Baseline models correspond to columns 2 and 5 of Table 4. Estimated union membership by state and year is retrieved from Hirsch, Macpherson and Vroman (2001). Manufacturing employment data comes from Autor, Dorn and Hanson (2016). Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 9: Heterogeneity With Respect to Household Car-Ownership Rates

Dep. Var.:	Republican Party Vote Share			
Sample:	Car Ownership ≥ 80%	Car Ownership < 80%	Car Ownership ≥ 80%	Car Ownership < 80%
	(1)	(2)	(3)	(4)
Above-Median Commute × Post	0.016**	-0.004		
× Below-Median FM Stations	(0.007)	(0.045)		
Above-Median Commute × Post			0.015***	0.009
× FM Station Concentration			(0.005)	(0.017)
County FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Political Office by Year FE	✓	✓	✓	✓
Has Controls	✓	✓	✓	✓
Observations	83,156	2,263	70,465	1,982
R^2	0.458	0.561	0.457	0.556

Notes: This table presents the triple-difference estimates for different subsamples of counties based on the car ownership rates in the county year. The sample is indicated in each column header. All regressions include county, year, and political office fixed effects. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 10: Relationship Between Commute and Republican Vote-Share by Radio Availability

Dep. Var.:	Republican Party Vote Share		
Sample:	Below-Median FM Stations	NRQZ	NRQZ & Radio 'Deserts'
	(1)	(2)	(3)
Log Avg. Commute × Post	0.062***	-0.487	-0.069
	(0.010)	(0.295)	(0.094)
County FE	✓	✓	✓
Year FE	✓	✓	✓
Political Office by Year FE	✓	✓	✓
Observations	48,615	340	608
R^2	0.441	0.486	0.349

Notes: This table presents the regression of Republican vote-share on the interaction between average commuting time and a post-1988 indicator for different subsamples of counties. The sample is indicated in each column header. All regressions include county, year, and political office fixed effects. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 11: Heterogeneous Effects by Political Office and Election Cycle

Dep. Var.:	Republican Party Vote Share							
Sample:	On-Cycle Years		Off-Cycle Years		Presidential Elections		Non-Pres. Elections	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Above-Median Commute × Post	0.021***		0.017**		0.026***		0.017**	
× Below-Median FM Stations	(0.008)		(0.008)		(0.004)		(0.008)	
Above-Median Commute × Post		0.021***		0.011*		0.023***		0.014***
× FM Station Concentration		(0.005)		(0.005)		(0.003)		(0.005)
County FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Political Office FE	✓	✓	✓	✓	✓	✓	✓	✓
Has Controls	✓	✓	✓	✓	✓	✓	✓	✓
Observations	43,805	36,972	41,621	35,484	14,387	12,165	71,040	60,292
R^2	0.489	0.489	0.455	0.456	0.886	0.889	0.449	0.449

Notes: This table presents the triple-difference estimates for different subsamples of counties based on the car ownership rates in the county year. The sample is indicated in each column header. All regressions include county, year, and political office fixed effects. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

Table 12: Growth of Rural Conservatism by Talk Radio Exposure

Sample:	All Counties	Above Median Commute AND Below Median FM Stations	Below Median Commute AND/OR Above Median FM Stations
	(1)	(2)	(3)
Rural Pop. Share X Post	0.039***	0.057***	0.004
	(0.006)	(0.014)	(0.008)
Observations	85,427	27,557	57,865
R^2	0.453	0.471	0.459

Notes: This table explores the differential increase in Republican party allegiance amongst the rural population following 1988. The first two columns show that for all counties the association between rural population share and Republican party support becomes greater after 1988. Columns 3 & 4 restrict the sample to only counties more exposed to talk radio based on having above-median commute time and below-median number of FM stations. Conversely, columns 5 and 6 exclude all counties where both conditions are satisfied. Standard errors are clustered at the county level. * p<0.1, ** p<0.05, *** p<0.01.

A Appendix Tables

Table A1: List of Elections in Sample

Years	President	Governor	Senate	U.S. House	State Office
1978		✓	✓	✓	✓
1979					
1980	✓	✓	✓	✓	✓
1981		✓		✓	✓
1982		✓	✓	✓	✓
1983		✓			✓
1984	✓	✓	✓	✓	✓
1985		✓		✓	✓
1986		✓	✓	✓	✓
1987		✓		✓	✓
1988	✓	✓	✓	✓	✓
1989					
1990		✓	✓	✓	✓
1991		✓			
1992	✓	✓	✓	✓	
1993		✓			
1994		✓	✓	✓	
1995		✓			
1996	✓	✓	✓	✓	
1997		✓			
1998		✓	✓	✓	
1999		✓			
2000	✓	✓	✓	✓	

Table A2: Association Between Rural Population Share and Commuting Time/Radio Infrastructure

Dep. Var:	Rural Population Share					
Year:	1980		1990		2000	
	(1)	(2)	(3)	(4)	(5)	(6)
Log Avg. Commute	0.254***		0.250***		0.509***	
	(0.094)		(0.092)		(0.083)	
Number of FM Stations		-0.058***		-0.058***		-0.057***
		(0.007)		(0.007)		(0.007)
Observations	3,149	3,149	3,151	3,151	3,149	3,149
R^2	0.146	0.339	0.147	0.338	0.247	0.345

Notes: Each column presents univariate OLS estimates using cross-sections of counties in the United States for the respective year indicated in header. All regressions include state-fixed effects. Standard errors are clustered at the state level. * p<0.1, ** p<0.05, *** p<0.01.