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BIAS IN CABLE NEWS:
PERSUASION AND POLARIZATION

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Bias in Cable News: Persuasion and Polarization

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Abstract

We measure the persuasive effects of slanted news and tastes for like-minded news, exploiting cable channel positions as exogenous shifters of cable news viewership. Channel positions do not correlate with demographics that predict viewership and voting, nor with local satellite viewership. We estimate that Fox News increases Republican vote shares by 0.3 points among viewers induced into watching 2.5 additional minutes per week by variation in position. We then estimate a model of voters who select into watching slanted news, and whose ideologies evolve as a result. We quantitatively assess media-driven polarization, and simulate alternative ideological slanting of news channels.

1 Introduction

The 24-hour cable news channels - CNN, the Fox News Channel, and MSNBC - are frequent targets of allegations of media bias. In this paper, we address two questions about cable news. First, how much does consuming slanted news, like the Fox News Channel, alter the propensity of an individual to vote Republican in Presidential elections, if at all? Second, how

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intense are consumer preferences for cable news that is slanted towards their own ideology? After measuring these forces, we ask: how much could slanted news contribute to increases in polarization? And, what do these forces imply for the optimal positioning of channels that wish to maximize viewership, or alternatively to maximize influence?

The answers to these questions are key inputs for designing optimal public policy, such as merger policy, for the media sector which has attracted blame for the rise in polarization in the US (Gentzkow, 2016). If consumers simply prefer news that resonates with their pre-existing ideology, as in Mullainathan and Shleifer (2005) and Gentzkow and Shapiro (2010), then the news media sector should be treated like any other consumer product. However, if consuming news with a slant also alters the consumer’s political behavior, as in DellaVigna and Kaplan (2007), then the existence of slanted news could lead to a polarizing feedback loop: an “echo chamber” where partisans can reinforce and strengthen their initial biases.¹ Furthermore, an interested party could influence the political process by controlling media outlets as in Prat (2014).² Such concerns led the Federal Communications Commission (FCC) to condition approval of the merger of Comcast Corporation and NBC Universal in 2010 on the requirement that Comcast take steps to promote independent news services.³

We propose a new instrument for exposure to media bias to complement estimates based on availability such as DellaVigna and Kaplan (2007): the channel positions of news channels in cable television lineups. We estimate that watching the Fox News Channel for 2.5 additional minutes per week⁴ increases the vote share of the Republican presidential candidate by 0.3 percentage points among voters induced into watching by variation in channel position. The corresponding effect of watching MSNBC for 2.5 additional minutes per week is an imprecise zero.

As with any instrumental variables design, it is critical that the channel positions for Fox News and MSNBC are not chosen to accord with local political tastes. Empirically, we show that Fox News channel position does not predict pre-Fox News political outcomes,

¹Gentzkow and Shapiro (2008) detail the complexities in designing optimal regulatory policy for media markets. Gentzkow and Shapiro (2011) indicate that media consumption tends to be balanced across slanted sources.

²Existing evidence from Gentzkow and Shapiro (2010) shows that owner partisanship is not an important determinant of newspaper slant. The sample size is too small to test this hypothesis in the cable news case.

³The condition required that Comcast move “independent” news channels such as Bloomberg Television into “news neighborhoods.” This effectively required Comcast to move Bloomberg next to channels such as MSNBC and CNN in their channel lineups. The FCC justified the condition “in accordance with the special importance of news programming to the public interest,” and did not place any such conditions on non-news programming. See https://apps.fcc.gov/edocs_public/attachmatch/FCC-11-4A1.pdf, paragraph 122.

⁴2.5 minutes per week is the approximate additional time spent watching Fox News associated with a one-standard-deviation decrease in Fox News channel position.

including 1996 county level Republican voting and 1996 political contributions to Republican candidates. Fox News cable positions are also not negatively correlated with the predictable-from-demographics component of either Republican voting or Fox News viewership. In other words, in areas where demographics would predict the Republican vote share to be high, Fox News is not systematically in lower channel positions. And in areas where demographics would predict Fox News viewership to be high, Fox News is not systematically in lower channel positions. Furthermore, Fox News cable channel position does not predict local viewership of Fox News by satellite subscribers in the same zip code who see a different, nationwide channel lineup.

Our approach to quantifying the preference for like-minded news adapts the method of Gentzkow and Shapiro (2010), who estimate this quantity in the context of newspapers. We measure the relationship between changes in a text-based slant measure over time and the characteristics of viewers of these channels. A key source of variation in this exercise is MSNBC's change in business strategy towards offering more liberal content. Our ideology estimates pick up this format switch - MSNBC closely tracks CNN in the early 2000s, but then moves left following the format switch in 2006. We estimate that Fox News' ideology has been moving further to the right in the most recent years.

We combine the analysis of the influence of slanted news with the demand for slanted news in a structural model that enables the quantification of polarization dynamics and media power. The model features consumer-voters who choose how much time to spend watching the cable news channels; whether to subscribe to cable, satellite or no pay television service; and for whom to vote in presidential elections. Consumers' allocation of time to television channels is governed by their preferences for the channels (which are a function of their ideology, the channels' ideologies, and their demographics), and the availability of the channels (whether the cable operator carries them and, if so, the positions they occupy on the channel lineup). Consumers' ideologies evolve from their initial position depending on how much time they allocate to watching channels of different ideologies. This process culminates in a presidential election in which consumers choose for whom to vote.

We estimate the parameters of the model by simulated indirect inference. The criterion function is the distance between two-stage least squares estimates of voting on demographics and minutes watched of each channel, using channel positions as instrumental variables, in the actual data and in data simulated from the model. In addition to matching the second stage regression coefficients, we also match the first stage (viewership equation) regression coefficients and the OLS regression coefficients.

We use the estimated model to quantitatively assess the degree of ideological polarization induced by cable news, the effect of the entry of Fox News prior to the year 2000 election, and the level of “media power” (Prat, 2014) possessed by each of the news channels individually as well as a hypothetical conglomerate under unified ownership. We find that cable news does increase polarization among the viewing public, although the magnitude of this increase is modest. Furthermore, the increase in polarization depends critically on the existence of both a persuasive effect and a taste for like-minded news. We estimate that removing Fox News from cable television during the 2000 election cycle would have reduced the overall Republican presidential vote share by 0.46 percentage points. Finally, we find that the cable news channels’ potential for influence on election outcomes is large, and would be substantially larger were ownership to become more concentrated.

This paper contributes to the empirical literature on the relationship of news media to political outcomes.⁵ The closest papers to this study are by DellaVigna and Kaplan (2007) and Gentzkow and Shapiro (2010).

DellaVigna and Kaplan (2007) study the effects of Fox News by comparing vote shares in locations with and without cable access to Fox News by November 2000. Our contributions to this strand of the literature are to introduce a new identification strategy based on channel positions, and to update their availability based estimates using more accurate data from Nielsen on Fox News availability.⁶ Channel position variation allows a researcher to examine the effects of cable news in later years where there is negligible variation in availability of these channels, and could be useful for studying the effects of media consumption in other contexts. In terms of results, we estimate a Fox News effect that is statistically positive and quantitatively large as in the DellaVigna and Kaplan (2007) analysis. Indeed, our estimated counterfactual effect of removing Fox News on the change in year 2000 election Republican vote share is 0.46 percentage points, which resonates well with the DellaVigna and Kaplan (2007), updated with more accurate availability data, estimated range of 0.26 to 0.36 percentage points.

⁵A number of papers have demonstrated that media usage or availability affects behavior. Amongst others, Chiang and Knight (2011) find positive effects of unexpected newspaper endorsements on vote shares for the endorsed candidate, Gentzkow (2006) finds decreased voter turnout from television access, Gerber et al. (2009) find positive effects of newspaper exposure, regardless of slant, on Democratic vote shares in the 2005 Virginia gubernatorial elections. Enikolopov et al. (2011) find that viewing an independent news channel in Russia increased vote shares for the opposition parties and decreased overall turnout in 1999. Lim et al. (2014) find that media coverage can affect criminal sentencing decisions for judges.

⁶In Appendix C, we document that Fox News availability in DellaVigna and Kaplan (2007) is measured with error. Nearly 40% of the “control group,” the locations that they consider as not having cable access to Fox News in 2000, did in fact have cable access to Fox News. 25% of the control group had Fox News availability since 1998.

Our approach follows Gentzkow and Shapiro (2010) in several dimensions, including the use of text analysis to measure media outlets' slant. Like Gentzkow and Shapiro (2010), we treat ideological slant as a characteristic over which consumers have heterogeneous tastes when choosing media consumption levels. Our contribution is to model media consumption together with voting, to separately measure tastes for like-minded news and the influence of slanted media consumption on consumer ideology. The influence effect also interacts with the existence of tastes for like-minded news. Consumers for whom both effects are present can be induced into a feedback loop in which they consume slanted media, their ideologies then evolve in the direction of the slant, their taste for that slanted media increases, and so on. In this sense, this paper combines the literature on the persuasive effects of the media with the literature on self-selection into consumption of slanted media to explore media-driven polarization and to counterfactually simulate alternative ideological slant strategies by the cable news outlets.

2 Institutional Overview

During our study period of 1998-2008, most households had three options for television service: a wire-based cable package, a satellite package, or over-the-air broadcast signals.⁷ In 2000, most pay television subscribers were cable subscribers, but by 2008, satellite providers had a market share of about 30%. The set of channels on cable varies both across providers and within providers across locations. Each of the two nationwide satellite providers, DirecTV and the Dish Network, has their own packages and lineups that are common to all locations. Cable content is produced by media conglomerates such as Viacom, News Corporation, ABC-Disney, or NBC Universal. The cable and satellite providers contract with these firms to offer their content to subscribers.

The foci of this study are the cable news channels. CNN began broadcasting in 1980 as one of the earliest cable channels of any genre. The Fox News Channel (FNC) and MSNBC both entered the market in the mid 1990's. FNC's business strategy from conception was to provide news with a more conservative slant. FNC is now one of the most highly rated cable channels across all genres. MSNBC began as a joint venture between NBC and Microsoft. At the outset, MSNBC did not have any explicit slant. MSNBC changed its business strategy in

⁷Some households, for example households in remote rural areas, did not have a cable option. Some households which did not have a direct line of sight due to physical obstructions like tall buildings, trees, or steep slopes, did not have a satellite option. And some households, mostly in urban areas, had two wire-based cable operators. In 2004 about 85% of US zip codes, accounting for about 67% of the total population, were served by a single monopolist wire-based cable operator.

the mid-2000's to provide news with a more liberal slant, as detailed in Sanneh (2013).

The channel lineup, or the numerical ordering of channels, that cable subscribers encounter varies by local cable system. The first channel positions are generally allocated to over-the-air broadcast affiliates: for example, NBC4 occupies position four in the Washington D.C. area. After the over-the-air channels, the cable channels begin. We assert in this paper that the ordering of a channel in the lineup can have significant effects on the viewership of news channels (though the significant relationship between channel position and viewership holds for all genres, not just news).

Figure 1 plots the relationship between the residual component of ratings - the portion that is not explained by viewer demographics and channel-specific state-year fixed effects - and channel position for a set of 34 channels, including both the news channels and other channels that tend to occupy similar positions in cable lineups. There is a clear negative, and very nearly linear, relationship between position and ratings over the range of positions which the news channels typically occupy. Table A28 in Appendix G documents the own-position coefficients on ratings for each of these channels; all are negative and almost all are statistically significant.

The obvious empirical concern is that a channel might be placed in lower positions in localities with high tastes for the channel. We later examine and reject that concern empirically in a variety of ways. Describing the process by which channel positions were determined provides additional support for the claim that channel positions are valid instruments.

The mid-1990's, during which FNC and MSNBC were rolling out, was a tumultuous time for the cable industry. This period saw many systems upgrade from analog to digital equipment, expanding the number of channels cable operators were able to offer. Coincident with this technical advance, a wave of new channels entered cable lineups alongside first-generation channels like CNN, ESPN, and HBO. New channels were often allocated positions sequentially, in the order in which they joined a system.⁸ As a result, the channel positioning of FNC or MSNBC on a given local system depended on the timing of that system's bilateral negotiations with multiple new channels as well as its decision of when to upgrade. On capacity constrained systems owned by the multiple-system operator TCI in 1996, FNC was reported to have replaced one of as many as twelve different channels (Dempsey (1996)). Combined with the desire to limit changes in positions so as to not confuse customers, these chaotic

⁸In Appendix G, we show that channel positions correlate with the best available position in the year before a channel was added.

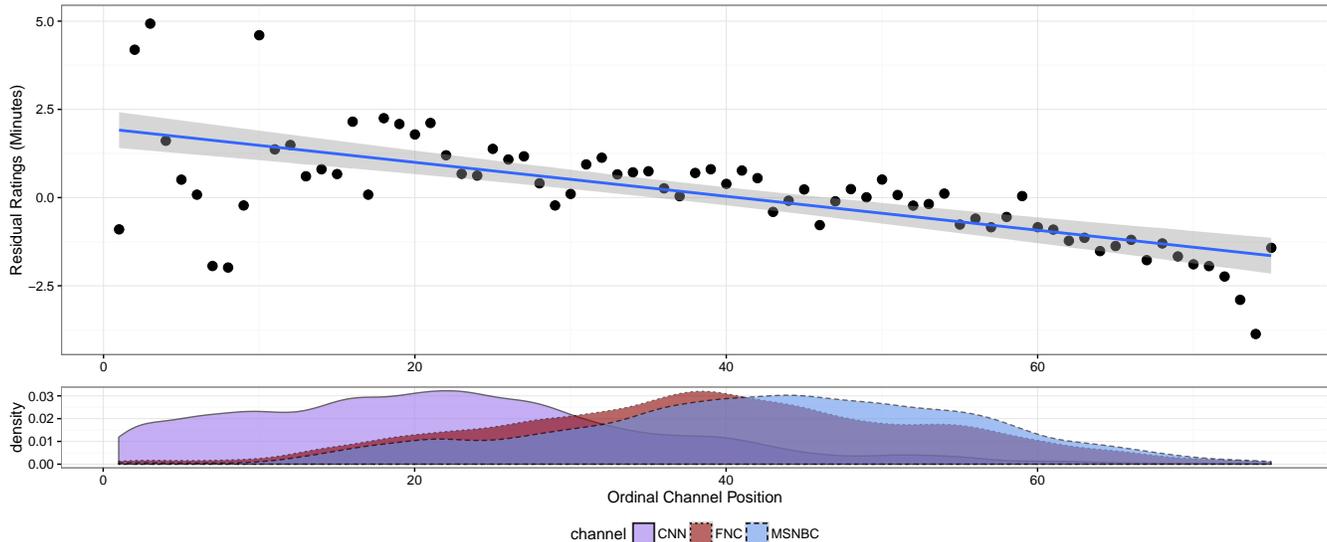


Figure 1: The top panel shows the relationship between the residual component of minutes watched and channel position, in a set of 34 comparable cable channels whose median positions across cable system-years are between 30 and 60 and thus typically occupy similar positions to FNC and MSNBC. Residuals are constructed by regressing minutes watched per week (in the MediaMark individual-level dataset) on the full set of individual demographics plus state-year fixed effects. The predicting regressions are estimated separately for each channel, such that demographic effects and state-specific time trends are allowed to vary by channel. The points in the figure are averages of these residual minutes across all channels located at a given ordinal position. The blue line is the least-squares fit. The bottom panel shows the density of the three news channels’ ordinal positions across system-years for comparison.

factors generated persistent cross-system variation in the positioning of FNC and MSNBC.⁹

3 Data

We use nine categories of data sets: (1) Nielsen FOCUS data on cable channel lineups by zip code by year, (2) precinct-level voting data from the 2008 Presidential election, (3) individual survey data on intent to vote Republican in 2000, 2004, and 2008 U.S. Presidential elections, (4) Nielsen viewership data at the zip code level for the cable news channels from 2005 to 2008, (5) individual survey data on cable news viewership for 2000 to 2008, (6) County level

⁹Some systems have shuffled positions over time as channels went out of business, as channel capacity expanded and as new channels came online. Some local managers pursued a strategy of moving channels with similar content or in the same genre together into “neighborhoods,” when possible. In general, however, the ordering of cable channels is highly persistent from year to year: the autoregressive coefficient in a regression of channel position in year t on channel position on the same system in year $t - 1$ ranges from 0.94 (MSNBC) to 0.97 (CNN).

presidential election vote share data, (7) U.S. Census demographics by zip code, 1996 political donation data by zip code from the Federal Elections Commissions, and the 2010 religious adherence data by county from the Religious Congregations and Membership Study (RCMS), (8) Broadcast transcripts of cable news from Lexis-Nexis, and (9) the Congressional Record. In Appendix A, we provide details on how we cleaned and joined the data sets.

Cable Lineups: Nielsen FOCUS The Nielsen FOCUS database consists of yearly observations of cable systems. The key variables in this data set are, for each system and year, the availability of CNN, FNC, and MSNBC, the channel positions of CNN, FNC, and MSNBC, when available, and the zip codes served by the system. In Figure 2, we document the availability of each of these news channels by year. CNN was already near-universal by 1998; FNC and MSNBC expanded over the early part of the sample period, reaching the vast majority of cable subscribers by 2002.

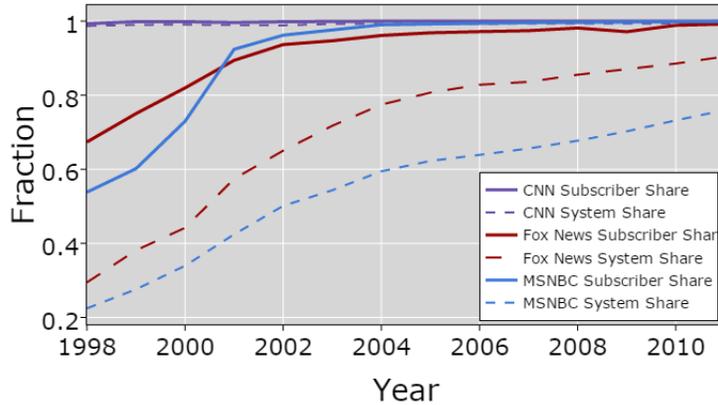


Figure 2: Availability of cable news channels by year. The solid lines represent the fraction of cable subscribers for whom the news channel was carried on their system. The dashed lines represent the fraction of cable systems which carry the news channels. By 2002, nearly all cable subscribers had access to FNC and MSNBC.

Zip Code Level Voting Data and Demographics We use the “Precinct-Level Election Data” from Ansolabehere et al. (2014) which provides votes cast in the 2008 Presidential election for each party, by voting precinct. We aggregate these precinct-level totals up to the zip code level, and compute the two party vote share for each zip code. We combine these with demographic data from the US Census for 2010. These data are summarized in Appendix B, Table A1.

Individual Voting Data: NAES and CCES The National Annenberg Election Study (NAES) is a large-scale phone survey conducted each presidential election cycle. We use data from the 2000, 2004, and 2008 election cycles, including the confidential zip code field. The key variables are demographic variables such as race, age, and income; zip code; and actual or intent to vote in the current presidential election. These data are summarized in Appendix B, Table A2. For 2008, we add data from the Cooperative Congressional Election Study (CCES) on the same variables that we use from the NAES. In all years, NAES / CCES individuals were matched to their corresponding news channel availability and positioning using their zip code of residence to identify their local cable provider in the Nielsen FOCUS data.

Zip Level Viewership Data: Nielsen Nielsen measures television viewership from a rotating panel of households. We acquired zip code level ratings for CNN, FNC, and MSNBC from the Nielsen Local TV (NLTV) database for the years 2005 through 2008. The Nielsen data also report viewership conditional on being a cable subscriber and conditional on being a satellite subscriber. The measurements come in the units of rating points which indicate what fraction of persons were tuned in to each channel in a given time period. We convert to average hours per week by multiplying the rating by 168. These data are summarized in Appendix B, Table A3.

Individual Viewership Data: Mediamark and Simmons Mediamark and Simmons are two commercial data vendors who survey individuals on their usage of different brands, including media usage. We use Mediamark for 2000 to 2007, and Simmons for 2008. The key variables for our study are year, zip code, individual demographics, whether the respondent subscribes to cable, satellite, or neither, and the reported number of hours watched per week of CNN, FNC, and MSNBC. These data are summarized in Appendix B, Table A4.

County Level Vote Shares and Demographics We use county level presidential vote shares for the Presidential election in 1996 from the Voting and Elections Collection Database maintained by *Congressional Quarterly*. We also use zip code level demographic statistics from the 2000 US Census. We construct county-level distributions of household income, age, race, education, and initial ideology, for use in the model in section 5. We also use this data to condition on the pre-Fox News county level Republican vote share in some of our regression specifications.

Broadcast Transcripts and Congressional Record To quantify the slant of each news channel in each year, we follow Groseclose and Milyo (2005) and Gentzkow and Shapiro (2010) in comparing the language that the channels use to language that Congresspeople use. This procedure does not recognize satire, sub-text, nor tone, and thus likely underestimates the dispersion in slant among the slanted outlets.¹⁰ We obtained broadcast transcripts for CNN, FNC, and MSNBC from the Lexis-Nexis database for the sample period 1998-2012 by downloading all transcripts per year for each identifiable cable news program from each of the three channels. Appendix E details the procedure we employ.

Each Congressperson has a measure of their ideology, derived from roll-call votes: the DW-NOMINATE score of McCarty et al. (1997), which places each Congressperson on the interval $[-1, 1]$. More positive scores correspond to more conservative legislators. There are many more two word phrases than Congresspeople, and an ordinary least squares criterion is therefore useless. For each year, we run an Elastic Net (Zou and Hastie, 2005) regularized regression of DW-NOMINATE score of frequency of phrase usage where an observation is a Congressperson. Table 1 shows the most partisan phrases selected by the Elastic Net regression.

We use the estimated coefficients to predict the DW-NOMINATE score for each cable news channel in each year. We then apply a three period moving average smoothing filter. The results are in Figure 3. FNC is consistently more conservative than the other two channels. However, these differences are small compared to differences between Congressmen during the early years. Groseclose and Milyo (2005) find that the difference between CNN and FNC in their sample is about 20% of the difference between the average Democrat and average Republican. MSNBC closely tracks CNN initially, and then becomes consistently more liberal - though by much less than the gap between CNN and FNC - in the mid-2000's. The estimates also reveal increased polarization of cable news over time. The text based measures produce estimated ideologies for the channels that are more moderate than the median members of each party. In the modelling to come, we allow for consumers to perceive these news channels to be more or less ideologically differentiated, in proportion to these estimates. Indeed, our estimates for this scale factor put FNC very close to the median Republican Congress member.

¹⁰This is one reason why we exclude Comedy Central, which featured two prominent slanted cable news programs, *The Daily Show with Jon Stewart* and *The Colbert Report*, from the analysis. Their slant relies heavily on satire and is not as reasonably quantified based on phrase usage. As a separate matter, Comedy Central has other highly viewed shows which are not explicitly political such as *South Park*, and our data are aggregated to the channel level.

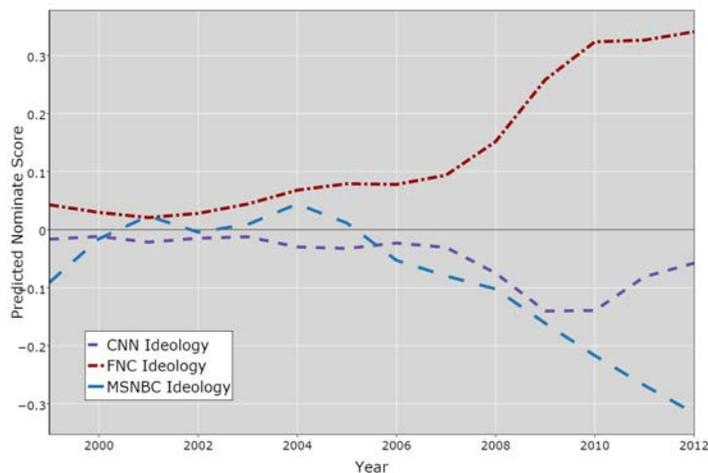


Figure 3: Estimated Ideology by Channel-Year: Each point corresponds to the estimated ideology of the news channels based on phrase usage as described in the text. As we use an elastic net variable selection scheme, standard errors are not available.

2000	Party	2004	Party	2008	Party
republican leadership	D	mai 5	R	bush administr	D
clinton gore	R	ronald reagan	R	strong support	D
feder govern	R	social justic	D	african american	D
african american	D	war iraq	D	cost energi	R
civil right	D	african american	D	pass bill	D
gore administr	R	reagan said	R	will us	R
death tax	R	fail provid	D	new refinari	R
pass bill	R	illeg alien	R	civil right	D
support democrat	D	marriag licens	R	work famili	D
peopl color	D	limit govern	R	full time	D

Table 1: Top 10 Partisan Phrases for Years 2000, 2004, and 2008. These are the ten phrases which have the largest absolute magnitude coefficient among those selected by the Elastic Net for the corresponding year. Word variants are stemmed to their roots.

4 Regression Analysis

This section presents the relationship between cable channel positions, watching FNC, and voting for Republican presidential candidates. These results underlie the model estimation and simulation in later sections. However, the results here do not depend on that model, and can be read as a stand-alone instrumental variables regression analysis.

First Stage: Viewership and Channel Position The first stage describes how cable news viewers' time watched vary with channel position. The idea is that lower channel positions induce more viewership for channels such as FNC because the more popular channels tend to be in lower positions, for historical reasons.¹¹ Consider a viewer who just finished watching a television program, and begins to search for a new program. Their search will begin from the channel they were watching, which is likely to be in a low position. They are more likely to stop nearer to the original channel than further away.¹²

Table 2 presents first stage estimates of Nielsen-measured FNC viewership on the position of FNC. This set of viewership data spans all states and the years 2005 to 2008. The estimating equations for a news channel c take the form:

$$h_{zt}^c = \delta_{ct} + a_{zct} + \alpha_c x_{zt} + \zeta_{c,FNC} p_{zt}^{FNC} + \zeta_{c,MSNBC} p_{zt}^{MSNBC} + \epsilon_{zct}^H \quad (1)$$

where h_{zt}^c is the average minutes watched per week of all Nielsen households¹³ in zip code z in year t ; δ_{ct} are channel fixed effects, which are allowed to vary by year, state-year, or county-year depending on the specification; p_{zt}^j is the cable channel position of channel j in zip code z in year t ; x_{zt} are average demographic characteristics of zip code z ; and a_{zct} are dummy variables for cable availability of the cable news channels in zip code z in year t . We weight the observations by the number of Nielsen respondents in the zip code-year. This weighting improves efficiency as the variance of the left hand side ratings estimate is decreasing in the

¹¹In addition to the broadcast networks ABC, CBS, Fox, and NBC, the lower channel positions are generally occupied by the earliest cable entrants (eg ESPN, MTV, TNT, and USA), which also have high viewership.

¹²Bias to the top of a list or default option in search is documented in eye tracking studies for yellow pages (Lohse (1997)) and survey response (Galesic et al. (2008)). There is a theoretical literature in economics modelling such behavior (see Rubinstein and Salant (2006), Horan (2010), Masatlioglu and Nakajima (2013), and the literature on status-quo bias more generally.)

¹³We use time among *all* households, and not only wired cable subscribers, even though the instrument can only affect cable subscribers. The reason for this is that the second stage dataset - vote totals - does not allow us to discriminate between cable and satellite subscribers. The first stage is substantially stronger when estimated on cable subscribers alone, which can be seen in table 7.

zip code-year sample size. In particular, a handful of zip codes have sample sizes of one and ratings measurements that are six or more standard deviations from the mean whose relative importance is reduced when weighting by sample size.

Table 2 reports specifications with year fixed effects, state-year fixed effects, and county-year fixed effects and different sets of conditioning variables. The primary covariate of interest in these regressions - FNC channel position - varies at the level of the cable system, which may span multiple zip codes. We therefore present cluster-robust standard errors in all specifications, using cable system as the cluster variable. Our preferred specification is column (4), which includes state-year fixed effects and an extensive set of demographic covariates that correlate with Republican voting and residential sorting, including measures of Republican voting and donations from 1996, effectively before FNC.

In Column (4), cable positions of both FNC and MSNBC significantly predict viewership of FNC, in the expected directions. A one standard deviation increase in FNC channel position predicts a decrease in average viewership of about two and one-half minutes per week. In Column (6), we use county-year fixed effects and the extensive demographic set. Here, the coefficient falls in magnitude by about 40%, however it remains significantly different from zero. The more limited variation induced by the instrument within a county-year is one limitation of this specification. The cluster-robust F statistic for the ordinal FNC position is 39.02 in the specification with state-year fixed effects and extensive demographics. The effect of cable access to FNC, as used in DellaVigna and Kaplan (2007), is a large and statistically precise predictor of FNC viewership.

Columns (5) and (7) of the table add the minutes per week of FNC viewership among *satellite* subscribers in the same zip code. To the extent that satellite and cable subscribers in the same zip code have similar tastes for the news channels, conditioning on satellite viewership controls for unobserved variation in taste for FNC which, if it were correlated with channel position, would bias the estimates of the position effects. Comparing columns (4) with (5) and (6) with (7) reveals that the position coefficients are essentially unchanged with the addition of conditioning on same-zip code satellite minutes.

First stage results with MSNBC viewership on the left-hand side of equation (1) are very similar, though the direction of coefficients on FNC and MSNBC positions are reversed. The power of channel positions for predicting MSNBC viewership is also similar. For brevity, we relegate these results to Appendix F, Table A16. Appendix D, Tables A11 and A17 document that the same first-stage relationships are also evident in the independently sampled individual-level viewership dataset.

Table 2: First Stage Regressions: Nielsen Data

	FNC Minutes Per Week						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FNC Position	-0.146*** (0.043)	-0.075* (0.039)	-0.155*** (0.029)	-0.174*** (0.028)	-0.167*** (0.025)	-0.097*** (0.033)	-0.111*** (0.030)
MSNBC Position	0.078** (0.036)	0.073** (0.032)	0.074*** (0.027)	0.064*** (0.025)	0.070*** (0.022)	0.019 (0.034)	0.020 (0.035)
Has MSNBC Only	1.904 (3.697)	1.137 (3.713)	-1.428 (3.559)	-3.954 (4.255)	-2.804 (3.416)	-1.220 (6.180)	-1.562 (5.397)
Has FNC Only	31.423*** (2.677)	26.526*** (2.546)	22.111*** (2.033)	23.460*** (2.278)	22.011*** (1.864)	15.141*** (2.697)	15.069*** (2.314)
Has Both	24.859*** (2.919)	23.118*** (2.687)	16.242*** (2.128)	18.338*** (2.361)	16.168*** (1.991)	15.159*** (3.216)	14.486*** (2.842)
Sat. FNC Minutes					0.197*** (0.013)		0.173*** (0.015)
Fixed Effects:	Year	State-Year	State-Year	State-Year	State-Year	County-Year	County-Year
Cable Controls:	Y	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Basic	Extended	Extended	Extended	Extended
Robust F-Stat	11.39	3.72	29.34	39.02	44.7	8.86	13.43
Number of Clusters	5789	5789	5788	4830	4761	4839	4770
N	71,150	71,150	71,102	59,541	52,053	59,684	52,165
R ²	0.030	0.074	0.191	0.213	0.377	0.428	0.544

*p < .1; **p < .05; ***p < .01

Notes: Cluster-robust standard errors in parentheses (clustered by cable system). Instrument is the ordinal position of FNC on the local system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. In Columns (5) and (7), the specification conditions on the average FNC ratings among satellite subscribers in the same zip code. Cable system controls include the total number of channels on the system and the number of broadcast channels on the system, as well as an indicator for Nielsen collection mode (diary vs. set-top). “Basic” demographics include the racial, gender, age, income, educational, and urban/rural makeup of the zip code. “Extended” demographics adds information on the percentage of homeowners; median housing values, sizes, ages, and property tax rates; the fraction of the population receiving food stamps; median social security income; the fraction of veterans; the fractions of married, unmarried, and same-sex couples; the share of federal campaign contributions that went to Republican candidates in 1996; the Republican presidential share of the county in 1996; and the religious composition of the county. Observations are weighted by the number of survey individuals in the zipcode according to Nielsen.

Second Stage: Voting and Viewership We begin in Table 3 with the reduced form for the zip level data. The regressions take the form:

$$y_z = \gamma_g + a_z + \beta x_z + \zeta_{FNC} p_z^{FNC} + \zeta_{MSNBC} p_z^{MSNBC} + \epsilon_z^R \quad (2)$$

Where y_z is Republican vote share in zip code z , γ_g are either state or county fixed effects, a_z are indicators for availability of the channels, β are coefficients on zip code demographics and cable system characteristics x_z , and p_z^C are the ordinal cable channel positions of channel C in zip code z .

FNC position is significantly negatively correlated with zip code 2008 Republican vote share in all specifications which include demographic covariates, although the relationship is significant only at the 90% level in the specification with both county-year fixed effects and the extensive demographics.

The MSNBC position coefficient in the reduced form tables is generally positive but, unsurprisingly given MSNBC’s substantially lower viewership, much less precise and less robust across specifications compared to the FNC reduced form. In addition, the ideological estimates in Figure 3 put MSNBC, even in 2008, at a relatively centrist position compared to FNC. Prior to 2006, MSNBC is generally to the right of CNN.

Table 3: Reduced Form Regressions: Precinct Voting Data

	2008 McCain Vote Percentage					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Cable Position	-0.011 (0.023)	0.004 (0.020)	-0.024** (0.011)	-0.027*** (0.008)	-0.015** (0.007)	-0.015* (0.008)
MSNBC Cable Position	0.054*** (0.019)	0.041*** (0.016)	0.009 (0.008)	0.008 (0.005)	0.003 (0.005)	0.003 (0.006)
Fixed Effects:	None	State	State	State	County	County
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Basic	Extended	Basic	Extended
Number of Clusters	6035	6035	6029	4814	6029	4814
N	22,584	22,584	22,509	17,400	22,509	17,400
R ²	0.148	0.294	0.730	0.833	0.880	0.907

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). See first stage tables for description of instruments and control variables.

Next, we present zip code-level second stage regression results in Table 4. The regressions

take the form:

$$y_z = \gamma_g + a_z + \beta x_z + \zeta_{MSNBC} P_z^{MSNBC} + \rho_f h_z^f + \epsilon_z^V \quad (3)$$

Where y_z is Republican vote share in zip code z , γ_g are either state or county fixed effects, a_z are indicators for availability of the channels, and β are coefficients on zip code demographics and cable system characteristics x_z . We are interested in the coefficient ρ_f on the zip code's predicted average hours watched per week of FNC, h_z^f , produced by the first stage from Table 2.

We compute standard errors by a bootstrap, as deemed appropriate in two-sample IV settings by Inoue and Solon (2010). We use a cluster-robust block bootstrap at the level of cable systems to allow for correlation across zip codes and over time within cable systems.¹⁴ Our estimates imply that being induced to watch an additional hour per week of FNC by the channel position instrument would lead to an approximately 7.2 point increase in the probability of voting Republican in presidential elections for those induced into watching by the instrument. However, the magnitude of the variation induced by the instrument is typically much less than one hour: a one standard deviation increase in channel position induces a roughly 2.5-minute-per-week increase in FNC viewing. The implied change in probability of voting for the Republican candidate from a one standard deviation increase in channel position is thus -0.3 points. With county fixed effects, the precision of the estimates goes down as the confidence intervals widen; however, the point estimates are of a similar magnitude as when using state fixed effects. Appendix D, Table A12 reports the second-stage results for the individual-level data, which are also very comparable in magnitude though somewhat less precise than the zip-level version.

Within Table 4, the second-stage coefficient is essentially unaffected by the inclusion of the extensive demographic set. It declines slightly, but remains positive and significantly different from zero, when FNC hours among satellite subscribers in the same zip code are included as a covariate. Both of these facts lend some credence to the idea that channel position is not simply picking up local variation in unobserved political tastes.¹⁵

The OLS coefficient on FNC hours in Table 5 is significant and positive, as expected, but

¹⁴We resample with replacement from the set of cable systems in the data, with independent resamples drawn for the viewership and the voting data.

¹⁵In the specification with satellite hours, the coefficient on satellite hours is negative, a result that may seem counter-intuitive. The reason for this is that predicted hours are predicted *total* hours, across both cable and satellite subscribers. The negative coefficient on satellite hours implies that, *holding total FNC hours watched constant*, the effect on vote shares is smaller, the more of those hours that come from satellite.

Table 4: Second Stage Regressions: Precinct Voting Data

	2008 McCain Vote Percentage					
	(1)	(2)	(3)	(4)	(5)	(6)
Pred. FNC Mins.	0.167** (0.013, 0.346)	0.158*** (0.056, 0.277)	0.120** (0.005, 0.248)	0.180 (-0.114, 1.084)	0.158 (-0.126, 0.938)	0.098 (-0.121, 0.429)
Satellite FNC Mins.			-0.021 (-0.047, 0.001)			-0.015 (-0.073, 0.022)
Fixed Effects:	State	State	State	County	County	County
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	Basic	Extended	Extended	Basic	Extended	Extended
Number of Clusters	6029	4814	3993	5919	4729	4001
N	22,509	17,400	12,417	22,290	17,283	12,443
R ²	0.730	0.833	0.841	0.879	0.907	0.919

*p < .1; **p < .05; ***p < .01

The first stage is estimated using viewership data for all Nielsen TV households. See first stage tables for description of instruments and control variables. Observations in the first stage are weighted by the number of survey individuals in the zipcode according to Nielsen. Confidence intervals are generated from 1000 independent STID-block-bootstraps of the first and second stage datasets. Reported lower and upper bounds give the central 95 percent interval of the relevant bootstrapped statistic.

it is much smaller in magnitude than the corresponding IV coefficients. This is due to at least two factors: first, the zip code level viewership levels are estimates based on samples leading to attenuated OLS coefficients. Second, as the behavioral model makes clear, we are estimating a single coefficient in a world of heterogeneous treatment effects. The IV coefficient measures the local average treatment effect on zip codes whose viewership levels are affected by channel position. The OLS estimate averages across all zip codes in the sample, weighting most heavily those with unusually high or low Republican vote share. It is reasonable to suspect that the complier zip codes are more centrist relative to the outlier zip codes, and thus subject to larger persuasion effects: those whose choice among ideological news channels is most susceptible to influence by channel position are also likely to be those whose pre-existing ideological attachments are relatively weak.

In Appendix F, we include an analogous specification to Table 4 where MSNBC viewership is the endogenous variable, as well as a dual-instrument version where FNC and MSNBC viewership are both instrumented by FNC and MSNBC positions. The point estimate of the second-stage MSNBC hours coefficient is negative, though smaller in magnitude than the analogous FNC coefficient, in the single-instrument specification. However, the confidence intervals do not allow us to reject a zero effect of MSNBC in the analogue to our preferred FNC specification. We conclude that while there is some suggestive evidence of a MSNBC persuasive effect, it is weaker and less robust than the evidence for FNC. Accordingly, we fit the behavioral model in section 5 using only the information from the single-instrument second stage results for FNC.

Table 5: OLS Regressions: Precinct Voting Data

	2008 McCain Vote Percentage					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Minutes	0.081*** (0.006)	0.073*** (0.005)	0.022*** (0.002)	0.017*** (0.002)	0.011*** (0.001)	0.011*** (0.001)
MSNBC Cable Position	0.035 (0.023)	0.026 (0.020)	0.022** (0.010)	0.010* (0.006)	-0.009* (0.005)	-0.006 (0.005)
Fixed Effects:	None	State	State	State	County	County
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Basic	Extended	Basic	Extended
Number of Clusters	4913	4913	4913	4162	4913	4162
N	16,948	16,948	16,946	14,281	16,946	14,281
R ²	0.155	0.288	0.766	0.856	0.914	0.929

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). See first stage tables for description of instruments and control variables.

Instrument Validity Support In this section, we defend the quasi-experimental nature of the channel position. We ask: (1) In zip codes whose demographics predict that the Republican vote share should be high, is FNC systematically in lower channel positions? (2) In zip codes whose demographics predict that the viewership of FNC should be high, is FNC systematically in lower channel positions? (3) Is FNC in lower positions in zip codes which had higher measures of Republican-ness in 1996, before FNC? (4) Does the FNC position in the cable lineup predict viewership for satellite subscribers in the same zip code, who do not interface with the cable lineup? and (5) Do the coefficients on FNC position in both the first stage and the reduced form change appreciably when we add or remove covariates?¹⁶ The answers to questions (1)-(5) are all negative.

The first two columns of Table 6 show the relationship of FNC cable position with *observable* variation in local taste for FNC. The left hand side here is predicted minutes watched of FNC per week, using only demographic information as covariates; predicted minutes per week are then regressed on FNC cable position. The relationship is positive and significant. For assessing the identifying assumption, positive estimates are re-assuring as they indicate that FNC positions are higher in locations with observable demographics which would predict more FNC viewing.

¹⁶In Appendix G.3, we show additionally that FNC viewership does not correlate with FNC channel positions on nearby systems, nor future FNC channel positions on the same system. Furthermore, the 2008 McCain vote share does not correlate with FNC channel position on nearby systems.

Table 6: FNC cable position coefficients on predicted viewing / voting, and 1996 Republican voting and contributions.

	Predicted Viewing		Predicted Voting		1996 Contributions		1996 Vote	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FNC Position	0.078** (0.030)	0.100*** (0.034)	0.036** (0.016)	0.027 (0.022)	0.0004 (0.0002)	0.0002 (0.0002)	0.0002 (0.0001)	-0.0001 (0.0001)
Fixed Effects:	State-Year	State-Year	State-Year	State-Year	State-Year	State-Year	State-Year	State-Year
Demographics:	Basic	Extended	Basic	Extended	Basic	Extended	Basic	Extended
Number of Clusters	5788	4830	6029	4814	4844	4830	5779	4830
N	71,129	59,551	22,509	17,400	59,843	59,551	70,971	59,551
R ²	0.389	0.380	0.402	0.339	0.146	0.176	0.464	0.571

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Columns 1-4 regress predicted hours of FNC and predicted Republican vote share, respectively, on FNC cable position. The predicting regressions exclude FNC position but include the indicated set of demographic controls. Columns 5-8 regress indicators of pre-treatment political attitudes (1996 county-level Republican presidential vote share and 1996 zipcode-level Republican campaign contribution share) on FNC cable position.

The next two columns of Table 6 regress the predicted voting outcome from a regression of vote preference that excludes position, on the FNC cable position. This predictable component of variation in political preference has a correlation with FNC position that is again positive, though not always significantly different from zero. I.e., FNC’s position in cable territories that are expected to be more Republican given observables is, if anything, slightly worse than average. These results together say that areas which are predicted, based on demographics, to be highly Republican or to have high FNC viewership do not have lower FNC channel positions.

Columns (5) through (8) check whether FNC position is correlated with political variables that predate FNC’s arrival: the share of federal campaign contributions from the zip code that went to Republican candidates in 1996, and the (county-level) Republican presidential vote share in 1996. The idea is to test the conjecture that cable position proxies for pre-treatment variation in political tastes. Again, the majority of the correlations are positive (the opposite direction from the reduced form), and none differs significantly from zero.

We next introduce a placebo test using satellite viewership in the same zip code. Satellite subscribers in the same zip code provide a useful placebo group because they do not interface with the local cable lineup; they see a different lineup which is set by the satellite provider at the national level, yet they look similar on observable demographic dimensions. To carry out the satellite placebo test in the zip code level data, we create a data set which has two observations for each zip code and year: the mean viewership amongst cable subscribers and the mean viewership amongst satellite subscribers. We then run the first stage regression, but

interacting the channel positions on their local cable system with an indicator for whether the observation represents viewership for cable or for satellite. If the channel positions on the local cable system are chosen in response to unobservable local characteristics, then these positions should also predict satellite subscribers' viewership.

Table 7 presents the results of the satellite placebo test. The Chow test p-value tests for equality between the FNC cable position coefficients. In all columns, we cannot reject that the FNC cable position interacted with satellite subscription is zero, while we reject zero strongly for FNC position interacted with cable subscription. Furthermore, we can always reject the hypothesis that these two coefficients are equal to each other.

Table 7: First Stage Regressions: Nielsen Data, Satellite and Cable Subscribers

	FNC Minutes Per Week					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Position \times cable	-0.155*** (0.043)	-0.237*** (0.036)	-0.264*** (0.035)	-0.151*** (0.048)	-0.178*** (0.047)	-0.219*** (0.051)
FNC Position \times sat	0.031 (0.049)	-0.044 (0.039)	-0.050 (0.041)	0.037 (0.063)	0.032 (0.058)	0.045 (0.067)
MSNBC Position \times cable	0.102*** (0.036)	0.099*** (0.036)	0.092*** (0.032)	0.035 (0.049)	0.026 (0.046)	0.046 (0.048)
MSNBC Position \times sat	-0.004 (0.040)	-0.019 (0.033)	-0.029 (0.033)	-0.029 (0.072)	-0.037 (0.066)	-0.033 (0.074)
Fixed Effects:	State-Year	State-Year	State-Year	County-Year	County-Year	County-Year
Cable Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	Basic	Extensive	None	Basic	Extensive
Chow Test p-value	0	0	0	0.011	0.004	0.001
Number of Clusters	5786	5785	4830	5786	5785	4830
N	127,072	127,016	107,829	127,072	127,016	107,829
R ²	0.032	0.070	0.077	0.232	0.255	0.278

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Positions are the ordinal position of FNC/MSNBC on the local cable system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. Cable system controls include the total number of channels on the system and the number of broadcast channels on the system. All controls (including fixed effects) are interacted with a dummy for the observation corresponding to satellite viewership. Observations are weighted by the number of survey individuals in the zipcode according to Nielsen.

Finally, in Table 8, we show that the coefficients on FNC position in both the first stage viewership regression and the reduced form do not change substantially as we add or remove subsets of variables that are highly predictive of both voting Republican and watching FNC. For example, consider the zip code fraction of campaign contributions going to Republicans in

Table 8: Comparison of covariate groups' influence on viewing equation, voting equation, and the first stage coefficient estimate: Nielsen Data.

	R ² Change (Viewing)	R ² Change (Voting)	First Stage	Reduced Form
Race	0.0001	0.075	-0.172*** (0.034)	-0.019** (0.009)
Density / Urban	0.00004	0.001	-0.170*** (0.034)	-0.026*** (0.008)
Age	0.0004	0.003	-0.139*** (0.035)	-0.025*** (0.008)
Education	0.0001	0.007	-0.178*** (0.034)	-0.030*** (0.008)
Marital Status	0.0001	0.012	-0.170*** (0.034)	-0.034*** (0.009)
1996 Voting / Contribs.	0.010	0.056	-0.163*** (0.033)	-0.023** (0.009)
Religion	0.00001	0.005	-0.175*** (0.034)	-0.022** (0.008)
(No Demographics)	0.013	0.540	-0.075* (0.039)	0.004 (0.020)
Number of Clusters	4830	4814	4830	4814
N	59,541	17,400	59,541	17,400

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). The first two columns are the decrease in R^2 resulting from excluding all variables in the listed group from the viewership and the voting regressions, respectively, relative to the value for the model with the complete (extended) set of controls. The third column shows the estimated first stage coefficient on FNC position when the corresponding group of demographic variables is excluded from the equation. The final column is the same exercise, for the reduced form equation. All regressions include the "Extended" demographic set, with the exception of the indicated group of variables, plus state-year fixed effects.

1996, before the arrival of FNC. This variable is an extremely strong predictor of Republican voting, with t-statistics exceeding 8. It is also a significant predictor of FNC viewership in 2008. However, including this variable on the right-hand side does not appreciably change the coefficients on FNC position in either the first stage or the reduced form.

5 Model

We now specify a behavioral model of viewership and voting. The purpose of the model is two-fold: first, we can run counterfactual predictions, such as predicting the effect of removing FNC or quantifying the role of cable news in polarization. Second, the model helps to interpret the meaning of the IV results. Specifically, the heterogeneity in the model draws attention to the role of the IV as measuring local average treatment effects among agents who are heterogeneous in both their ideological malleability and in their viewership responsiveness to channel position. These benefits come at the cost of functional forms assumptions on exactly how consumers allocate their time watching cable news and how they change their ideology after watching slanted news.

The model has two stages. In the first stage, consumer-voters choose a television package, and how much time to spend watching the cable news channels. In the second stage, consumer-voters vote in the Presidential election. Between the first and second stage, consumer-voters' ideologies evolve as a function of the ideologies of and time spent watching the news channels.

Voter Ideology and Presidential Vote Decision Consumer-voters have a latent unidimensional political ideology which determines their vote choice in presidential elections. We denote the left-right ideology of consumer-voter i in year t by r_{it} .

We specify voters' initial ideologies as a function of their county of residence and demographic attributes. Specifically, we estimate a logit model of vote choice with county dummies as explanatory variables, which matches county level vote shares from 1996. The county-level intercepts from this model then determine the simulated consumers' initial ideologies, along with demographic effects and an iid logit error term:

$$r_{ij0} = \delta_j + \beta_V' d_i + \epsilon_{ij} \tag{4}$$

Where δ_j is the estimated county intercept for county j , consumer i 's county of residence, d_i is a vector of demographic characteristics associated with consumer i , and β_V is a parameter

vector to be estimated. From this starting point, the consumer’s ideology evolves in response to both random shocks and the influence of the news channels he watches, according to a process described in detail later in this section.

Each voter votes for the party whose candidate’s announced position is closest to her own. Each presidential election has a cutpoint parameter P_t , for $t \in \{2000, 2004, 2008\}$. All voters to the left of the cutpoint (with $r_{it} < P_t$) vote for the Democratic candidate, and those to the right vote for the Republican. We do not model the turnout decision.¹⁷

Viewership and Subscription The viewership time allocation and subscription portion of the model follows Crawford and Yurukoglu (2012). Given access to the news channels C_{jt} in package j in year t , consumer-voter i allocates their time amongst watching those channels and other activities to maximize:

$$v_{ij} = \sum_{c \in C_{jt}} \gamma_{ict} \log(1 + T_{ijc}) \quad (5)$$

where γ_{ict} is consumer-voter i ’s preference parameter for news channel c in year t , subject to a budget constraint that the total time available to allocate is 168 hours per week. We normalize the outside option (doing anything other than watching cable news) such that $\gamma_{i0t} = 1$ for all i, t , and parameterize the remaining vector of γ_{ict} as

$$\begin{aligned} \gamma_{it} &= \chi_{it} \circ \nu_{it} \\ \chi_{ict} &\sim \text{Bernoulli}(\alpha_{0ct} + \Pi_0 d_i + \zeta_0 pos_{ict} - \eta((a + br_{ct}) - r_{it})^2) \end{aligned} \quad (6)$$

$$\nu_{ict} \sim \text{Exp}(\alpha_{ct} + \Pi_c d_i + \zeta pos_{ict}) \quad (7)$$

χ_{ict} determines whether consumer-voter i has a non-zero preference for channel c . It is a random function of demographics d_i according to parameters Π_0 , a channel-year specific fixed effect α_{0ct} , the position of the channel in the lineup according to ζ_0 , and the distance of consumer-voter i ’s one dimensional political ideology r_{it} from the channel’s text based estimated ideology r_{ct} according to η . This last term represents taste for like-minded news as in Gentzkow and Shapiro (2010). The parameters a and b scale the text based ideology measures to allow for consumers to perceive slant as a linear function of the text based slant measure. If η is positive, then increasing the ideological distance between consumer-voter i and channel c reduces the probability i watches c .

¹⁷In Table A27 of the Appendix, we are not able to pin down a precise effect of cable news on turnout.

If the consumer-voter has a non-zero preference for a channel, the intensity of her preference is drawn from an exponential distribution whose parameter depends on α_{ct} , a channel-year specific fixed effect, demographics d_i according to parameters Π , and the channel position according to ζ . The exponential mixed with a mass at zero is inspired by the individual viewership data, which features a mass at zero and monotonically decreasing density.

The constrained maximization problem defined by (5) has an analytic solution described in Appendix H. The indirect utility from solving this problem enters into the consumer-voter's decision of whether to subscribe to cable, satellite, or no television package at all. The conditional indirect utility from subscribing to package j is

$$u_{ij} = v_{ij}^* + \tilde{\delta}_j + \tilde{\epsilon}_{ij}$$

where $\tilde{\delta}_j$ is the mean utility of package j , $\tilde{\epsilon}_{ij}$ is an idiosyncratic logit error term and j corresponds to cable or satellite. We also allow consumers to subscribe to no package at all which yields corresponding $u_{i0} = \log(1 + B) + \tilde{\epsilon}_{i0}$.

Ideological Influence After watching cable news, consumer-voter i 's one-dimensional political ideology evolves as a function of how much time i spends watching the news channels and the ideology of the news channels.¹⁸ We assume that i is attracted towards the ideologies of the news channels she watches, the more so the more time i spends watching. Specifically

$$r_{it} = \frac{r_{i,t-1} + \rho \sum_c T_{ic,t-1}(a + br_{c,t-1})}{1 + \rho \sum_c T_{ic,t-1}} + \xi_{it} \quad (8)$$

where $r_{i,t-1}$ is i 's ideology in the previous year, r_{it} is i 's new ideology, and ρ is a parameter to be estimated which controls the magnitude of news channels' influence on viewers' ideology. The ξ_{it} 's are mean-zero, normally distributed random shocks.¹⁹ This formulation implies that in the absence of watching cable news, viewers' ideologies evolve according to a random walk with zero drift.

¹⁸The channel's ideology measure is the same function of the text based slant measure that enters the viewership decision problem.

¹⁹We calibrate the variance of the ideology shocks to match the yearly rate of party switching found in the American National Election Study's (ANES) 2008-2009 Panel Study. This study tracked and repeatedly interviewed the same group of respondents over the course of a presidential campaign, allowing an estimate of the within-individual propensity to change support from the Republican to the Democratic presidential candidate over time. Specifically, we calibrated the standard deviation to 0.4654. This magnitude implies that, when such a shock is added to standard logistic distribution, the mass which changes sign matches the observed fraction of switchers in ANES.

One interpretation of ρ is as a (per-hour) rate at which viewers receive ideological signals while watching cable news. If voters treat signals from slanted outlets as true draws on the state of the world, and further, if they do not account for the correlation between repeated signals from the same source as in the model of DeMarzo et al. (2003),²⁰ then equation (8) arises as the inverse-variance-weighted average of signals observed by viewer i in period t .²¹

The functional form here implies that a consumer-voter’s attraction is governed by the same parameter (ρ), whether coming from the left or the right. This rules out that a voter might watch a slanted channel, become disgusted, and move in the opposite direction of the channel as in Arceneaux et al. (2012). Furthermore, consumer-voters are naive about the influence effect when choosing time watched.

6 Estimation and Results

We estimate the parameters of the model by indirect inference (Smith (1990); Gourieroux et al. (1993)). This implies choosing the model’s parameters to generate predictions for an auxiliary model which match the auxiliary model estimated from the data. In essence, we are choosing model parameters so that they generate regression results as close as possible to those in Section 4. The auxiliary model consists of thirteen linear regressions that fall into four categories, plus a set of unconditional moments: (1) regressions of individual-level and zipcode-level viewership of each cable news channel on demographics and channel positions, (six regressions), (2) a linear probability model of watching any positive amount of each cable news channel at the individual level on demographics and channel positions (three regressions), (3) regressions of individual level intent to vote Republican and zipcode level Republican vote share on demographics and predicted time spent watching FNC from (1) (two regressions), and (4) OLS regressions of intent to vote Republican and zipcode level Republican vote share on hours of FNC, MSNBC, or CNN watched (two regressions).²² (1) and (3) correspond to the two-stage least squares estimate of the effects of watching FNC on voting Republican, with the addition of analogous first-stage regressions for the other two channels. We introduce (2) to

²⁰Gentzkow and Shapiro (2006) explore media consumption and endogenous slant with fully Bayesian consumers.

²¹For this interpretation to hold over a series of periods, we require that at the beginning of each period the consumer gets an ideology shock which returns the variance of his ideology to 1.

²²The individual-level OLS regression uses, rather than hours watched, an indicator for whether FNC, MSNBC, or CNN is an individual’s “most-watched” news source as the right-hand-side variable. The reason for this substitution is, as described in Section 3, that we lack an individual-level data set with information on both hours watched and voting preferences. The NAES survey asked respondents only to list which of the news channels, if any, they watched the most.

identify the Bernoulli and exponential components of our utility specification. (4) corresponds to the OLS regression of intent to vote Republican on viewership presented in Table 5. All regressions include state-year fixed effects. Finally, we also match (5) the actual vote shares in each presidential election, the year by year average hours watched for each channel, and the year by year fraction of non-zero viewership for each channel. We choose the model's parameters so that estimating (1)-(5) on data simulated from the model produce coefficient estimates with minimum distance to those in the data. We weight the distance metric in proportion to the inverse of the variance in the estimated relationships in the real data.

Discussion of Variation in Data and Model Parameters An intuitive description of what in the data helps drive estimates of the model's parameters is relatively straightforward. ρ , the parameter which determines the degree of influence, is sensitive to the coefficients on projected time in the second stage regression. η , the parameter governing the degree of tastes for like-minded news, is sensitive to coefficients in OLS regression relative to the coefficients on viewership in the second stage regressions. The OLS coefficient estimates on FNC viewership conflates tastes for like-minded news with any influence effect. We isolate the influence effect by using channel positions as instrumental variables, and choose the level of tastes for like minded news to explain the OLS coefficient conditional on the influence effect.

ζ , the parameters determining the strength of channel positions in the time allocation problem, are sensitive to the first stage coefficients on channel positions. A similar straightforward relationship applies to the demographic factors influencing time watched and the coefficients on demographics in the first stage regressions.

P_t , the parameters characterizing the three presidential elections in our sample period, are sensitive to the unconditional aggregate vote share moments. These parameters allow the model to capture national trends in party preference. β_V are sensitive to the OLS and second stage IV coefficients on demographics. They allow consumers with different demographics to have different mean preferences over party.

Separate identification of a and b , from ρ and η is possible because there are three channels and thus seven moments to work with- the IV coefficient and three from each of the OLS regressions. The asymmetries in the channels' estimated effects relative to their text-based ideological positioning provide variation to distinguish the scaling parameters from ρ and η . The FNC OLS coefficient is more positive than the MSNBC coefficient is negative. Increasing η intensifies the magnitude of both OLS coefficients in similar proportions. Increasing b at a fixed η increases the magnitude of the FNC coefficient at a faster rate than the MSNBC

coefficient, because the text-based FNC ideology is more conservative than the text-based MSNBC ideology is liberal.

Model Estimates Table 9 shows the main parameter estimates from the model.²³ We estimate positive values for both ρ , the influence parameter, and η , the taste for like-minded news, implying a positive feedback process where voters watch slanted news, are influenced to move closer to the news' channel's ideology, and subsequently have even stronger preference for that channel, due to the decreased ideological distance.

Parameter	Estimate	Bootstrapped Standard Error
Slant Preference (η)	0.02473	0.00628
Ideological Influence (ρ)	0.05244	0.01439
Position Effect - Ratings	-0.00020	0.00008
Position Effect - Viewership	-0.00039	0.00092
2000 R/D Threshold	-0.31354	0.02623
2004 R/D Threshold	0.06380	0.01265
2008 R/D Threshold	0.12089	0.01914
Channel Ideology Intercept (a)	0.32259	0.08810
Channel Ideology Slope (b)	17.27089	0.05509

Table 9: Key parameter estimates with standard errors clustered by cable system and computed by block bootstrap.

The magnitude of the estimate of the taste for like minded news parameter η implies that an ideological distance of one unit between viewer and channel reduces that viewer's probability of watching by about 2.5%. For reference, at our estimated scaling parameters, the ideological distance between FNC and MSNBC in 2008 is 4.3 units. Given the quadratic-loss specification of ideological tastes, this distance implies that an average demographic voter located at the ideological position of FNC in 2008 is about 45% more likely to watch FNC than she is to watch MSNBC.

The magnitude of ρ implies that a voter watching an hour per week of a news channel for a year would be influenced to a new ideological position just over 5% of the distance to the channel's ideology. Estimates of the channel position parameters, consistent with the data, imply that increasing channel position decreases both the probability of watching any of a channel, as well as the number of hours watched conditional on watching any. The effect on

²³The full set of parameters additionally contains channel-year fixed effects and demographic terms, separately for the amount watched and the probability of watching any. These are omitted here for brevity. The estimated model's fit on regression coefficients is available in Appendix I.

the probability of watching any - row 4 in the table - implies increasing channel position by 20 positions decreases the probability of a typical voter watching a channel by about 1%.

The channel position effect on the number of hours watched is harder to interpret directly, as the hours-watched model is nonlinear and hence effects of changing these quantities depend on the values of all the other covariates. Tables 10 and 11 therefore show some interpretable quantities generated by the model for viewers with various demographic and ideological profiles.

Age	Income (\$000s)	Ethnicity	College	Gender	Ideology	Channel position semi-elasticity		
						CNN	FNC	MSNBC
65	25	White	No	Man	Centrist	8.3	10.7	5.1
65	25	White	No	Man	Median Republican	7.4	10.9	0.0
65	25	White	No	Man	Median Democrat	8.5	5.4	11.2
30	85	Black	Yes	Man	Centrist	10.1	0.0	0.0
30	85	Black	Yes	Man	Median Republican	10.2	0.0	0.0
30	85	Black	Yes	Man	Median Democrat	12.1	0.0	0.0
65	85	Hispanic	No	Man	Centrist	11.4	0.0	0.0
65	85	Hispanic	No	Man	Median Republican	8.3	0.0	0.0
65	85	Hispanic	No	Man	Median Democrat	9.0	0.0	5.4
30	25	White	Yes	Woman	Centrist	6.2	0.0	3.8
30	25	White	Yes	Woman	Median Republican	4.9	0.0	0.0
30	25	White	Yes	Woman	Median Democrat	6.9	0.0	5.9
65	25	Black	No	Woman	Centrist	9.6	15.0	10.4
65	25	Black	No	Woman	Median Republican	11.0	15.1	9.1
65	25	Black	No	Woman	Median Democrat	10.1	13.8	10.7
30	85	Hispanic	Yes	Woman	Centrist	7.1	3.1	0.0
30	85	Hispanic	Yes	Woman	Median Republican	4.6	6.7	0.0
30	85	Hispanic	Yes	Woman	Median Democrat	5.5	6.0	6.6

Table 10: The semi-elasticity is the change in mean ratings (in minutes watched per week) following a one-standard-deviation decrease in channel position, for selected demographic and ideological profiles.

Table 10 shows computed elasticities of viewers' expected minutes watched with respect to channel position. We compute the change in ratings (measured in minutes per week) resulting from a one-standard-deviation decrease in channel position. All are weakly positive, as expected, although some are exactly zero because the average viewer of the given demographic and ideological profile does not watch any of the channel, regardless of position.

Table 11 shows a different look at the relationship of viewer preference for channels to demographics and channel position. For the same ideological and demographic profiles as in the previous table, Table 11 lists that type of viewer's average hours watched over each of the three cable channels, on a hypothetical system where all three are available and positioned at their median position in the data in 2008. The last column shows the modal "most-watched" channel among viewers of that type. Demographic effects play a large role in determining the average hours watched, particularly for FNC and MSNBC. Within demographic profiles, ideology drives differences in preferences: all Republican types watch more FNC than they do

Age	Income (\$000s)	Ethnicity	College	Gender	Ideology	Mean minutes watched			Modal
						CNN	FNC	MSNBC	Fav. Chan.
65	25	White	No	Man	Centrist	130.84	172.86	46.32	CNN
65	25	White	No	Man	Median Republican	110.37	249.00	0.00	FNC
65	25	White	No	Man	Median Democrat	137.79	61.51	71.54	CNN
30	85	Black	Yes	Man	Centrist	132.47	0.37	0.37	CNN
30	85	Black	Yes	Man	Median Republican	116.65	0.42	0.38	CNN
30	85	Black	Yes	Man	Median Democrat	140.12	0.32	0.35	CNN
65	85	Hispanic	No	Man	Centrist	139.92	0.31	0.00	CNN
65	85	Hispanic	No	Man	Median Republican	121.20	0.41	0.00	CNN
65	85	Hispanic	No	Man	Median Democrat	146.87	0.22	27.69	CNN
30	25	White	Yes	Woman	Centrist	88.24	0.00	39.58	CNN
30	25	White	Yes	Woman	Median Republican	62.61	0.00	0.00	CNN
30	25	White	Yes	Woman	Median Democrat	94.45	0.00	75.20	CNN
65	25	Black	No	Woman	Centrist	152.04	137.52	153.49	FNC
65	25	Black	No	Woman	Median Republican	132.91	138.72	111.94	FNC
65	25	Black	No	Woman	Median Democrat	159.88	124.34	169.89	CNN
30	85	Hispanic	Yes	Woman	Centrist	86.36	87.79	0.00	CNN
30	85	Hispanic	Yes	Woman	Median Republican	65.15	125.73	0.00	FNC
30	85	Hispanic	Yes	Woman	Median Democrat	93.91	28.36	21.05	CNN

Table 11: Preference orderings of channels, in terms of average minutes per week watched, for selected demographic and ideological profiles. The final column is the channel which is most commonly the most watched for that profile.

MSNBC, and most Democratic types watch more MSNBC than they do FNC.

In both our raw data and in the simulations, cable news programs are consumed by agents who do not necessarily share the same ideology as the channel. This result is consistent with the analysis in Gentzkow and Shapiro (2011) who find that much of FNC’s audience is composed of people who do not self-identify as conservative, and related, that self-identified conservatives watch other cable news besides FNC. The model estimates match these facts. Furthermore, such a lack of ideological segregation is a necessary precursor in this model for cable news consumption to change voter intentions.

We find that the perception of slant for the channels is a multiple of about 17 times the text based slant measure. The text based slant measures place FNC and MSNBC in 2008 closer to the center than the median Republican or median Democratic congressman, respectively. The scaled ideology estimates place FNC to the right of the median Republican voter in 2008. MSNBC’s position falls to the left of the median Democratic voter in 2008, although only slightly.

Table 12 shows the change in the probability of voting Republican with respect to watching one hour per week of each of the cable channels, again for viewers with different ideological types. For initially centrist voters, watching CNN has an influence on the probability of voting Republican that ranges from slightly positive to slightly negative depending on the election. The effect of MSNBC is small but positive (meaning watching MSNBC increases the

Election	Voter Ideology	1 Hour CNN	1 Hour FNC	1 Hour MSNBC
2000	Centrist	0.019	0.053	0.012
	Median Republican	-0.025	-0.001	-0.031
	Median Democrat	0.053	0.083	0.047
2004	Centrist	-0.013	0.061	0.039
	Median Republican	-0.049	0.009	-0.008
	Median Democrat	0.029	0.090	0.071
2008	Centrist	-0.050	0.122	-0.070
	Median Republican	-0.080	0.052	-0.098
	Median Democrat	0.001	0.148	-0.013

Table 12: Effects of watching an additional 1 hour per week on the probability of voting Republican.

Election	All voters		Only attached voters	
	FNC (D to R)	MSNBC (R to D)	FNC (D to R)	MSNBC (R to D)
2000	58%	16%	53%	12%
2004	27%	0%	6%	0%
2008	28%	8%	11%	1%

Table 13: Persuasion rates of Fox News and MSNBC. “All voters” counts as a Democrat any voter initially to the left of the election cutoff, and counts as a Republican any voter initially to the right. “Only attached voters” includes only voters in the leftmost 33% and rightmost 33% of the voter ideology distribution. Percentages are conditional on watching the channel.

likelihood of Republican voting) in 2000 and 2004, but becomes substantially negative (at 6.6 percentage points) in 2008 after MSNBC’s format switch. The effect of Fox on centrist viewers is consistently positive, ranging from 5.3 points in 2000 to 12.6 points in 2008.

The largest elasticity magnitudes are on individuals from the opposite ideology of the channel. Were a viewer initially at the ideology of the median Democratic voter in 2008 to watch an hour of Fox per week, her likelihood of voting Republican would increase by just over 15 percentage points. Another pattern that emerges from the table is that Fox is substantially better at influencing Democrats than MSNBC is at influencing Republicans. This last feature is consistent with the regression result that the IV effect of Fox is greater and more consistent than the corresponding effect for MSNBC.

Finally, Table 13 shows an estimate of DellaVigna and Kaplan (2007)’s concept of *persuasion rates*: the success rate of the channels at converting votes from one party to the other.²⁴

²⁴DellaVigna and Kaplan (2007) use a measure of FNC cable availability in 2000 to generate variation in self-reported viewership. In their case, the viewership measure is an indicator for whether the respondent reports watching thirty minutes or more in a given week. Here, we use a continuous measure, condition on demographics,

The numerator here is the number of, for example, FNC viewers who are initially Democrats but by the end of an election cycle change to supporting the Republican party. The denominator is the number of FNC viewers who are initially Democrats.²⁵ Again, Fox is consistently more effective at converting viewers than is MSNBC.

7 Polarization and Media Power

In this section, we perform several exercises to quantify the effects of cable news on election outcomes. First, we simulate the evolution of ideology for a group of voters over time to ask whether cable news can contribute to polarization. Second, we estimate the effect of the entry of FNC on the 2000 presidential election, as well as the effects of the post-2004 MSNBC format switch on the 2008 presidential election. Finally, we measure the “media power” (Prat, 2014) of the individual channels as well as a hypothetical combination of the three under unified ownership.

Polarization A positive ρ and a positive η together create the potential for a polarizing feedback loop, as watching a channel attracts a viewer towards that channel’s ideology, which makes watching the channel more attractive, and so on. Figure 4 shows the results of a simulation of viewing and voting behavior to assess the degree of polarization that cable news viewing can generate.

A sample of 10,000 viewers in an average cable system²⁶ in a county with average demographic characteristics are assigned ideologies from the initial ideology distribution, conditional on their simulated demographics. We run these simulated individuals through the model over ten years.

The resulting distribution of ideologies becomes visibly more polarized as the process continues, with new right and left modes emerging from the initially approximately unimodal distribution. In addition to plotting the distribution, we show the value of the axiomatic measure of polarization of Esteban and Ray (1994) and Duclos et al. (2004) in each year.²⁷ This

and account for satellite viewership.

²⁵As our model has no inherent notion of partisanship, only an ideological cutpoint between the parties, in Table 13 we consider two definitions of what constitutes a Democratic or Republican partisan.

²⁶For purposes of this simulation, all viewers are given access to all three cable channels, at the channels’ mean positions in 2008. We hold channel positioning, channel fixed-effects, and each channel’s ideological slant constant at their 2008 values.

²⁷There are four axioms which imply this measure. For example, the first axiom is “If a distribution is composed of a single basic density, then a squeeze of that density cannot increase polarization.” We refer the reader to the

value increases as time goes on, by a total of about 2.5% by the end of the 10-year period. The locations of the local maxima in the distribution correspond to FNC’ ideological location and an intermediate location between that of MSNBC and CNN.

This increase in polarization requires a taste for like-minded news. Figure 4(b) shows the evolution of the ideology distribution when the taste for like-minded news is set to zero. Here, the distribution remains roughly unimodal throughout. Furthermore, the tails of the distribution thin out, as viewers from across the political spectrum are exposed to and persuaded by news from the other side. Additionally, the distribution shifts on the whole to the right, as FNC’s relatively more extreme location allows it to out-persuade its relatively moderate competition. Normally, this greater potential for influence is counterbalanced by the fact that the more extreme location dissuades many left-leaning viewers from watching. But with the taste for slant disabled, viewers from across the political spectrum are exposed to Fox.

As a benchmark, we computed the polarization measure after an extreme “hollowing out” of the ideology distribution.²⁸ The polarization measure in this scenario more than doubles to 0.591. We conclude that while cable news can generate modest increases in polarization, the audiences are neither large nor selected enough to generate a dramatic polarization.

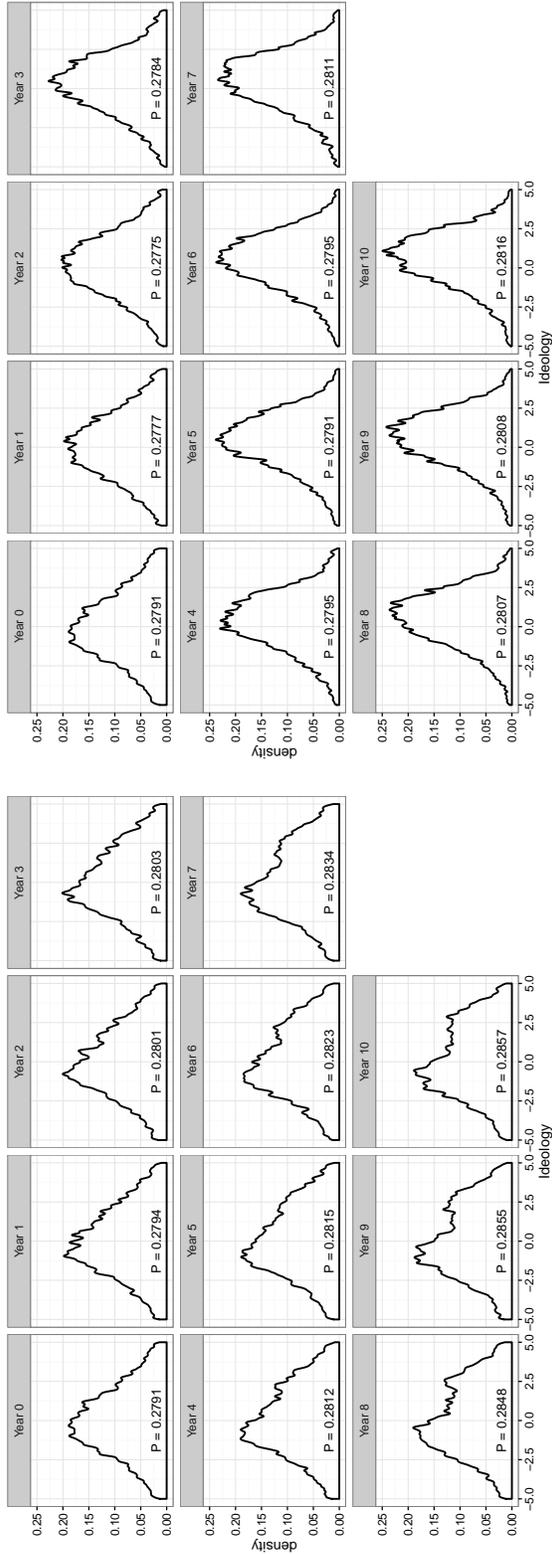
Fox Entry in 2000, and MSNBC Format Switch Next, we estimate the effect of two counterfactual scenarios aimed at measuring the aggregate influence of the cable news channels on election outcomes. First, we estimate the effect of the entry of FNC on the 2000 presidential election. We compare a base case where Fox was available to cable subscribers in the 1997-2000 period according to the observed rollout pattern to a scenario where Fox was available exclusively to satellite subscribers and not on any local cable system.

The first column of Table 14 shows the effects of eliminating Fox from cable lineups prior to the 2000 election, as well as the effect on subsequent election cycles. The population-weighted average Republican vote share falls by .46 percentage points under the no-Fox scenario relative to the baseline. This prediction is in line with the estimate of 0.26 to 0.36 of DellaVigna and Kaplan (2007), when updated to use more accurate data.

In subsequent cycles, the implied FNC effect increases due to two forces. First and most importantly, overall FNC viewership approximately doubles during the period from 2000 to 2008, meaning nearly twice as many viewers are exposed to FNC in later cycles. Second,

original articles for full definitions and examples. We compute the measure with the parameter α set to 1.

²⁸Specifically, we transformed the initial distribution of ideology by assigning all Democratic simulated voters to the right of the median Democrat the median Democratic ideology, and assigning all Republican simulated voters to the left of the median Republican the median Republican ideology.



(a) $\eta = 0.025$

(b) $\eta = 0$

Figure 4: Voters are initially drawn from the unconditional ideology distribution in 2008. The remaining 10 plots show the change in the ideology distribution over years. The numbers in the center of the plots are the Esteban-Ray polarization measure of the distribution.

Election	R Vote Share Change	
	No Fox News	MSNBC Tracks CNN
2000	-0.0046	0.0006
2004	-0.0359	-0.0124
2008	-0.0634	-0.0009

Table 14: Effects of two counterfactual scenarios. In the first, Fox News is eliminated from cable lineups. Column 2 shows the change in the Republican vote share of the presidential popular vote in the no-Fox scenario relative to the baseline. In the second, MSNBC’s ideological positioning matches that of CNN throughout the 2000-2008 period. Column 3 shows the change in the Republican vote share of the presidential popular vote in the MSNBC-matching-CNN scenario relative to the baseline.

according to our ideological estimates, FNC moves well to the right over this period, increasing its persuasive effect enough to outweigh any loss in viewership due to the ideological drift.

The second column of Table 14 estimates the effects of MSNBC’s switch to liberal slant. We simulated a condition where MSNBC’s ideology matched that of CNN. The estimated effect in the 2008 election cycle is to decrease the Republican share by just 0.09 percentage points, an effect two orders of magnitude smaller than the estimated effect of eliminating FNC in 2008. This minimal effect derives from two sources. One, MSNBC’s viewership is substantially smaller than that of FNC. Second, MSNBC’s estimated ideological position in the 2008 cycle is not all that far to the left of CNN, whereas FNC is well to the right.

Media Power and Optimal Positioning Prat’s (2014) notion of *media power* refers to the minimal quality candidate for whom a media owner could engineer an election victory through persuasive efforts. While our election model has no quality dimension, we can ask a similar question: how many presidential votes could the cable news channels swing from one party to the other, by changing the ideological orientation of their content? Table 15 shows the results of an exercise where we allow each channel to choose its ideological location in each year in order to maximize the vote share of the Republican candidate, and then do the same for the Democratic candidate, holding the positions of the other channels fixed. The table shows the difference in Republican aggregate vote share between these two scenarios. In the last column of the table, we show the potential influence of a combined cable news monopolist controlling all three channels.

In this time period, CNN has the highest power to swing election outcomes, due to its relatively large viewership, favorable channel positioning, and broad demographic appeal. The potential to change election outcomes are large - the achievable vote share swing of a cable

Election	Potential Vote Share Swing			
	CNN	FNC	MSNBC	Monopolist
2000	0.0316	0.0126	0.0082	0.0465
2004	0.1456	0.0955	0.0409	0.2123
2008	0.1862	0.1568	0.0563	0.2893

Table 15: The maximum potential vote share swing that the channel could engineer, by election. The “monopolist” column is the maximum vote share

news monopolist exceeds 25% by 2008 - and increasing over time. The time trend is a result of the accumulation of influence over time, as the cumulative reach of the channels grow with each passing year.

The preceding is a “worst-case” scenario, in the sense that it assumes cable news operators seek only to maximize the vote share of a favored party. In reality, the cable channels are businesses whose revenue derives from advertising and affiliate fees from cable providers,²⁹ which are generally increasing in audience size. The profit motive presumably provides some disincentive from choosing extreme ideological locations that would reduce ratings by turning off too many moderate viewers.

We examined the extent to which this tradeoff constrains the channels’ persuasive power, by comparing the power-maximizing ideological position to the ratings-maximizing ideological position. Figure 7 compares each of the three channels’ actual, ratings-maximizing, and influence-maximizing³⁰ ideological positioning in the 2000-2008 period.

The optimal ideological location from a ratings perspective is quite centrist, and similar for all three of the channels. Comparison of the channel’s actual location with the vote-share maximizing choice, however, reveals an asymmetry: the two relatively liberal channels, and CNN in particular, are far from the location that would maximize the vote share of Democratic candidates. FNC, on the other hand, is close to, and by 2008 actually exceeds, the position that maximizes Republican vote share. Were Fox to move even further to the right, the loss of liberal viewers turned off by Fox’s extreme location would outweigh the gain in persuasive potential among liberal viewers who continued to watch, reducing FNC’s overall influence on election outcomes.

Relatedly, the power figures presented in Table 15 do not represent symmetric swings around the actual vote share totals: FNC is already close to achieving the maximal Republican

²⁹According to SNL, the FNC received 64% of its revenue from affiliate fees in 2015.

³⁰For MSNBC and CNN, we plot the choice that maximizes Democratic vote share; for FNC we plot the choice that maximizes Republican vote share.

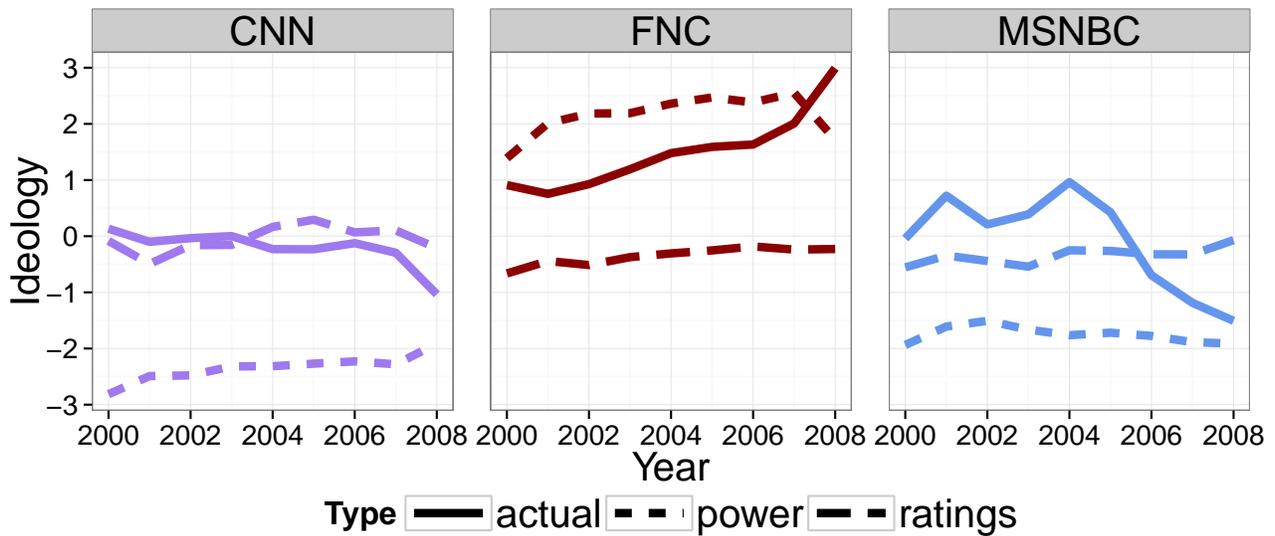


Figure 5: Channels' ideological positioning from 2000-2008. The three lines are the observed position from the text-based measure, the position that would maximize the channel's ratings, and the position that maximizes the vote share for a favored party. For FNC, we show the position that maximizes Republican vote share; for the other two channels we show the position that maximizes Democratic vote share.

vote share it can attain on its own, and its power consists almost entirely of the damage it could do to Republican candidates by moving to the left.

Several caveats to this exercise are in order. First, these are partial-equilibrium results holding the locations of the other channels fixed at their actual locations. Although an interesting question in its own right, modeling the strategic interaction between channels in this complex dynamic game is beyond the scope of this paper. Second, although ratings are related to profitability, they are not the same thing. Advertising rates vary with the demographics of the audience, and it is possible that a smaller audience is more valuable than a larger one if its composition is skewed in ways - towards higher income households, for example - that are attractive to advertisers. And cable providers' willingness to pay affiliate fees is likely to be higher for differentiated news channels than for homogeneous ones. Hence, though FNC's strategy appears to cost it some viewers relative to a more centrist positioning, we cannot conclude from this observation that the FNC ownership must therefore be willing to sacrifice profits for Republican votes.

8 Conclusion

This paper provides estimates of both the influence of slanted news on voting behavior and the taste for like-minded news in the context of cable television news in the U.S. The key ingredient in the analysis is the use of channel positions as instrumental variables to estimate a model of viewership, voting, and ideology evolution. We show instrumental variables estimates that watching FNC increases the probability of voting Republican in presidential elections. We probe the instrumental variables assumption by correlating channel positions with observables: demographics which predict FNC viewership, demographics which predict partisan vote shares, pre-FNC partisan vote shares, pre-FNC partisan donations, and local satellite viewership of FNC.

We estimate a model of consumer-viewer-voters who choose cable subscriptions, allocate time to watching news channels, and vote in elections. The tastes for news channels are partly determined by the closeness of the news channels' estimated ideology to the individuals. Individual ideology evolves towards the estimated ideologies of the news channels that a consumer watches. We use the estimated model to characterize the degree of polarization that one can attribute to slanted cable news consumption, to measure effects of cable news on elections, and to assess the positioning strategies of the cable news channels. Our estimates imply large effects of FNC on presidential elections. Furthermore, we estimate that cable news can increase polarization, and that this increase depends on both a persuasive effect of cable news and the existence of tastes for like-minded news. Finally, we find that an influence-maximizing owner of the cable news channels could have large effects on vote shares, but would have to sacrifice some levels of viewership to maximize influence.

Future research could go in a number of directions. The use of channel positions as instrumental variable could be useful in other studies of how media consumption affects behavior. One could also use channel position variation to study the cable news channels in more detail by examining specific programs, e.g. "The O'Reilly Factor," and specific issues like abortion, gay marriage, or government spending. In a different direction, studying the causes and consequences of the divergence in estimated ideologies seems fruitful.³¹ It would also be useful to test, refine, or expand the specific model we employ for belief updating after media consumption. For example, one could allow for a joint distribution of influence parameters and tastes for like-minded news in the population.

³¹This includes improving these text based procedures to allow for sentiment analysis or other partisan indicators.

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A Data Construction

A.1 Nielsen FOCUS Lineups

The Nielsen FOCUS data set were provided in two formats. For the largest 55 DMA's, we were given yearly spreadsheets for each DMA. For the DMA's ranked 56 to 210, we were given a CSV file with all systems and years. We stacked all the 1-55 DMA spreadsheets with the 56-210 CSV file. An observation in the main combined file is a cable system-year-channel. A separate file links cable system-years to zip codes. We dropped any cable system labeled "-ADS" or "APTS". These system correspond to alternative delivery systems for single apartment buildings. We synchronized cable channel names across years and system by manual inspection.

The three main challenges with these data are that some zip codes have more than one cable system which serve it, and some cable systems have multiple "devices" whose lineups sometimes, but not always, differ, and some cable system devices have multiple channels listed in a channel position. To deal with the first issue, we first kept the cable system which reports the highest number of total subscribers (across all zip codes). To break ties, we then considered which cable system had the highest number of county subscribers, the most homes passed, and the highest number of channels, and at random, in that order. 124252 ties are broken by total subscribers, and a total of 222 further ties broken by the other criteria. In the case where a device listed two channels in the same position, we kept the channel if it was a news channel, and at random if no news channel was involved. If a channel showed up in two different positions, we used the minimum channel position.

We first dropped any device labeled "COMMUNITY SPECIFIC" or "UNIQUE SITUATION." These were always in systems which had other devices that were labelled "DIGITAL" or "REGULAR." In cases where two devices did not have any overlapping channel numbers, we combined the two devices into one. For systems with multiple devices, we kept the device with the most number of channels. This is often innocuous as the devices would be nested and have the same channel positions for most of the basic channels. If multiple devices had the same number of channels, we kept the device that was labelled "DIGITAL," if possible. If not, we kept the device labelled "REGULAR." These conditions broke all ties.

We dropped any system which did not report carrying any of the top 60 cable channels by Mediamark viewership after the cleaning. These are likely due to error in the cleaning process and correspond to 587 zip code-years out of 522,139 zip code-years (0.11%).

The number of channels variable corresponds to the total number of non-empty channel

positions in the cleaned cable lineup. We dropped any pay-per-view channels, channels labeled “BLACKOUT,” program guide channels, split-channels (e.g. “Nick at Nite” which is the evening version of Nickelodeon), and HD channels. The number of broadcast channels variable corresponds to the total number of channels that have an associated over-the-air channel number.

A.2 Nielsen Viewership Data

We use zip code-level viewership data from Nielsen Local Television View (NLTV) for the years 2005 through 2008.

Sample selection We downloaded reports from the NLTV interface for zip code level ratings aggregated for each year separately in any zip code where the estimated sample size in the report interface was positive. We used the 5am-5am daypart, and all persons 18 and over. Each zip code year had 9 observations: three for each of CNN, Fox News Channel, and MSNBC. Within each channel, we had a rating for all television households, a rating for households who subscribed to cable television, and a rating for households who subscribed to Alternative Delivery Systems (ADS) which are defined as “Satellite (C-band), DBS (KU-band), SMATV (master antenna), MDS (includes multi-channel, multi-point and multi-point distribution service) and Broadband Only.” (<http://en-us.nielsen.com/sitelets/cls/documents/nltv/NLTV-CharacteristicDefinitions-Diary.pdf>). DirecTV and Dish Network are DBS providers.

Matching to lineup and availability data We match this data set to the Nielsen FOCUS lineups by the zip code and year.

A.3 MRI-Simmons Viewership Data

We use individual-level viewership data from two sources: Mediamark Research’s Survey of the American Consumer and Experian Simmons’ National Consumer Study. We use Mediamark data from 2000 to 2007, and Experian Simmons data for 2008. In this section, we detail the steps we took in cleaning and combining these data sets.

Sample selection We included in our sample any respondent who responded to all relevant demographic characteristics: race, income, education, age, and gender. We also required the respondent to have a valid zip code.

Demographics We make some simplifications to the demographic questions, as follows. First, racial categories are simplified to three dummy variables, for white, black, and hispanic respectively. The excluded category is all other racial categories. Education variables are reduced to a single dummy variable for having completed at least a bachelor’s degree.

Household income comes in binned indicator form in the raw data. For example, there is an indicator for household income of “\$15,000 to less than \$25,000.” We convert these indicators to a continuous variable by computing the expected value of a log-normally-distributed random variable, conditional on the variable falling within the bin boundaries.³² The parameters of this distribution are calibrated to match the shares of the national population falling into each of the income bins collected by the US Census Bureau. All respondents in the same income bin are, therefore, assigned the same level of income.

Viewership of Cable Channels Both surveys ask about the number of hours viewed in a given week for a variety of television channels. This study uses responses to CNN, the Fox News Channel, and MSNBC. Mediamark asks whether the respondent watched any amount, as well as a multiple choice question for each channel with the following options: 1 hour, 2 hours, 3 hours, 4 hours, 5 hours, 6-9 hours, 10 hours, 11-15 hours, 16-20 hours, and 21+ hours. Experian Simmons also asks whether the respondent watched any amount, and a multiple choice question for each channel with the following options: Less than 1 hour, 1 hour to less than 3, 3 hours to less than 5, 5 hours to less than 7, 7 hours to less than 10, and 10 hours or more. We assigned the midpoint of each interval as the hours watched for that respondent when possible.³³

Cable or Satellite Subscription We also use whether the respondent subscribes to Cable, DirecTV, Dish Network, or none of the above. For the 5,386 respondents (2.5%) who indicate that they subscribe to both cable and one of the satellite providers, we assume they only subscribe to the satellite provider.

Matching to lineup and availability data We match both data sets to the Nielsen FOCUS lineups by the respondent’s zip code and year.

³²For the top-coded categories, we compute the expected value conditional on being above the top-coding threshold.

³³For the highest bin, we used 25 hours for Mediamark and 12.84 hours for Simmons.

A.4 Construction of 2008 zip-level vote

Precinct-level voting data for the 2008 presidential election come from the Harvard Election Data Archive (HEDA, Ansolabehere and Rodden, 2011). We matched each precinct to a ZIP code (the level at which our cable position data is defined) using a spatial matching procedure. For each precinct in the HEDA shapefile, we computed the coordinates of the precinct’s centroid. We then overlaid the precinct centroids onto the polygon files defining zip code tabulation area boundaries provided by the US Census Bureau’s TIGER/Line series, generating a corresponding ZIP code for each precinct.

There are a minority of cases for which the precinct centroid does not fall within the boundaries of any ZIP code. This can happen, for instance, if the precinct centroid falls in a lake or other body of water, which are excluded from the ZIP polygon boundaries. In these cases, we match to ZIPs by computing the centroids for each ZIP, and finding the nearest neighbor ZIP centroid (by geographic distance) for each precinct centroid.

Once a ZIP code match for every precinct has been constructed in this fashion, we aggregate voting totals across precincts up to the ZIP level. This ZIP level dataset is then used in our reduced-form regression of 2008 Republican presidential vote share on position.

A.5 Construction of CCES and NAES datasets

For the 2000, 2004 and 2008 election cycles, we use individual-level political preference data from the National Annenberg Election Survey (NAES). The NAES is a nationally representative telephone survey, conducted as a rolling cross-section between the December of the preceding year and the January following the election year. Survey waves were timed roughly to correspond with major campaign events such as the televised debates. Those interviewed after the election date were asked for whom they actually had cast a ballot; those interviewed before were asked for whom they intended to cast a ballot. The bulk of the interviews occur in the three months prior to the election; 10-15% occur after the election.

Sample selection We included in our sample any respondent in the rolling cross-section who indicated a preference for one of the two major-party presidential candidates, either in the form of intention to vote or of actual vote, pooling together all survey waves. NAES also asked pre-election voters to state how certain they were of their choice, on a scale ranging from “Definitely will vote for candidate” to “Good chance will change mind.” We pool all of these responses together as votes for the stated candidate. Voters who did not answer the

presidential preference question, or said they “Don’t know” or are “Uncertain” of their choice are excluded from the sample.

Demographics We make some simplifications to the demographic questions in NAES, as follows. First, racial categories are simplified to three dummy variables, for white, black, and hispanic respectively. The excluded category is all other racial categories. Education variables are reduced to a single dummy variable for having completed at least a bachelor’s degree, which includes the NAES’ “Four-year college degree” and “Graduate or professional degree” categories.

Household income comes in binned indicator form in the raw NAES data. For example, there is an indicator for household income of “\$15,000 to less than \$25,000.” We convert these indicators to a continuous variable by computing the expected value of a lognormally-distributed random variable, conditional on the variable falling within the bin boundaries.³⁴ The parameters of this distribution are calibrated to match the shares of the national population falling into each of the income bins collected by the US Census Bureau. All respondents in the same income bin are, therefore, assigned the same level of income.

Most-watched cable channel The 2004 and 2008 editions of the NAES ask respondents to state the TV news source which they watch most. In 2004 this question is phrased in terms of channels (i.e. respondents can select CNN, MSNBC, FNC, or one of the networks) whereas in 2008 it is phrased in terms of programs (i.e. respondents can select *The O’Reilly Factor*, *Anderson Cooper 360*, and so forth.) We convert the 2008 response to channel level by aggregating across all responses that indicate a show affiliated with a particular channel, as well as responses that state the channel name but not a specific program. We then create three mutually exclusive dummy variables for selecting each of the three channels. It is possible (and, in fact, likely) that a respondent may have a 0 for all three of these variables, indicating either that the respondent does not consume any TV news or that she prefers a non-cable source.

Matching to lineup and availability data NAES data is matched to the Nielsen FOCUS lineups by the respondent’s zip code and year. Because Nielsen’s lineups data are released at the end of December each year, we apply the following rule for temporal matching: any respondent interviewed in the first six months of a year is matched to his zip code’s lineup

³⁴For the top-coded categories, we compute the expected value conditional on being above the top-coding threshold.

from the previous December 31. Any respondent interviewed in the last six months is matched to his zip code's lineup from the following December 31.

CCES For 2008, we supplement the NAES data with additional respondents from the Cooperative Congressional Election Study (CCES), an online cross-section survey which began operation in 2006. Our construction of the CCES data exactly parallels the discussion of NAES data above. The only differences are that the CCES does not include the most-watched news source question, and that the income bins differ from those used by NAES. The conversion of income to a continuous variable discussed above allows the CCES data to be appended cleanly to the NAES sample.

B Summary Statistics for Voting and Viewership Datasets

Tables A1 through A4 present summary statistics for the primary datasets employed in the 2SLS analysis and behavioral model: voting and viewership data, at the zip code and individual levels.

Table A1: Summary Statistics for 2008 Zip Code Level Voting

Statistic	N	Mean	St.Dev.	Min	Max
Year	22984.00	2008.00	0.00	2008.00	2008.00
Republican Two Party Vote Share	22984.00	52.24	17.49	0.35	94.05
Has FNC	22584.00	0.94	0.24	0.00	1.00
Has MSNBC	22584.00	0.85	0.36	0.00	1.00
FNC Position	22584.00	39.08	16.93	0.00	140.00
CNN Position	22584.00	30.28	13.69	0.00	123.00
MSNBC Position	22584.00	38.99	24.57	0.00	164.00
Number Channels	22584.00	161.58	51.48	8.00	249.00
Number Broadcast Channels	22584.00	13.55	8.40	2.00	45.00
Nielsen Diary Market	22984.00	0.48	0.50	0.00	1.00
FNC Minutes	17742.00	49.39	97.04	0.00	4233.60
CNN Minutes	17374.00	31.60	62.55	0.00	2046.24
MSNBC Minutes	17374.00	16.30	46.13	0.00	1673.28
FNC Minutes (Cable)	15616.00	58.94	137.80	0.00	4233.60
CNN Minutes (Cable)	15277.00	41.86	103.93	0.00	3487.68
MSNBC Minutes (Cable)	15277.00	22.20	72.49	0.00	3276.00
FNC Minutes (Satellite)	14947.00	56.03	143.19	0.00	4163.04
CNN Minutes (Satellite)	14598.00	34.22	96.40	0.00	4082.40
MSNBC Minutes (Satellite)	14598.00	14.00	59.80	0.00	1703.52
Population	22984.00	12828.07	14841.96	0.00	113916.00
Pct Black	22979.00	0.09	0.16	0.00	0.98
Pct Asian	22979.00	0.02	0.05	0.00	0.72
Pct Other	22979.00	0.07	0.09	0.00	1.00
Pct Hispanic	22979.00	0.09	0.15	0.00	1.00
Pct Male	22979.00	0.50	0.03	0.10	1.00
Pct Age 10-20	22979.00	0.15	0.04	0.00	0.88
Pct Age 20-30	22979.00	0.12	0.06	0.00	0.89
Pct Age 30-40	22979.00	0.12	0.03	0.00	0.42
Pct Age 40-50	22979.00	0.14	0.02	0.00	0.33
Pct Age 50-60	22979.00	0.15	0.03	0.00	0.50
Pct Age 60-70	22979.00	0.11	0.03	0.00	0.50
Pct Age 70-80	22979.00	0.06	0.03	0.00	0.34
Pct Age 80+	22979.00	0.04	0.02	0.00	0.61
Median HH Income	22909.00	53204.33	22090.18	2499.00	250001.00
Pct HS Graduate	22964.00	0.34	0.11	0.00	1.00
Pct Some College	22964.00	0.29	0.07	0.00	1.00
Pct Bachelors Degree	22964.00	0.15	0.09	0.00	1.00
Pct Post Graduate Degree	22964.00	0.08	0.08	0.00	1.00
Pct Own Home	22953.00	0.73	0.16	0.00	1.00
Median Home Value	22815.00	187870.02	155380.38	9999.00	1000001.00
Aggregate Tax Rate	22590.00	0.01	0.01	0.00	0.04
Median Number of Rooms	22911.00	5.70	0.80	1.30	9.00
Pct Homes Built After 2005	22937.00	0.03	0.05	0.00	1.00
Pct Food Stamps	22931.00	0.11	0.08	0.00	1.00
Median Social Security Income	22843.00	16085.78	2479.94	275.00	46761.00
Pct Veteran	22931.00	0.69	0.11	0.00	1.00
Pct Married	22971.00	0.55	0.11	0.00	1.00
Pct Same Sex HH	22953.00	0.00	0.00	0.00	0.12
Pct Unmarried HH	22953.00	0.06	0.02	0.00	0.50
Pct Family HH	22966.00	0.11	0.05	0.00	1.00
Fraction of 1996 Contributions to Republican	17944.00	0.70	0.30	0.00	1.00
Pct Evangelical (County)	22979.00	169.76	146.91	0.00	1113.76
Pct Catholic (County)	22979.00	189.47	154.32	0.00	946.82
Pct Jewish (County)	22979.00	11.81	26.76	0.00	313.86
Pct Mormon (County)	22979.00	13.66	65.55	0.00	915.70
Pct Southern Baptist Convention (County)	22979.00	84.30	126.84	0.00	961.39
Pct Suburban	22955.00	0.10	0.24	0.00	1.00
Pct Urban	22955.00	0.38	0.46	0.00	1.00
1996 County Republican Vote Share	22924.00	0.47	0.11	0.11	0.88

Table A2: Summary Statistics for NAES/CCES Voting Survey

Statistic	N	Mean	St. Dev.	Min	Max
Year	135574	2003.79	3.20	2000	2008
Has FNC	135574	0.88	0.32	0	1
Has MSNBC	135574	0.87	0.34	0	1
FNC Position	135574	37.84	18.99	0	125
CNN Position	135574	29.75	12.95	0	123
MSNBC Position	135574	39.54	21.61	0	164
Number Channels	135574	141.02	51.55	1	249
Number Broadcast Channels	135574	14.03	7.48	2	45
Intent to vote Republican	135574	0.50	0.50	0	1
Age	134608	48.21	16.42	18	99
White	135574	0.84	0.37	0	1
Black	135574	0.08	0.27	0	1
Hispanic	135574	0.07	0.25	0	1
Bachelors	135574	0.36	0.48	0	1
HH Income	123679	0.66	0.52	0.07	2.17
Male	135574	0.45	0.50	0	1
Most Watched FNC	48695	0.30	0.46	0	1
Most Watched CNN	48695	0.38	0.49	0	1
Most Watched MSNBC	48695	0.10	0.30	0	1
Population	135386	28864.83	18292.89	1	113916
Pct Black	135386	0.11	0.17	0.00	1.00
Pct Asian	135386	0.04	0.06	0.00	0.72
Pct Other	135386	0.09	0.09	0.00	0.98
Pct Hispanic	135386	0.13	0.17	0.00	0.99
Pct Male	135386	0.49	0.02	0.28	1.00
Pct Age 10-20	135386	0.14	0.03	0.00	0.95
Pct Age 20-30	135386	0.14	0.06	0.00	0.93
Pct Age 30-40	135386	0.13	0.03	0.00	0.35
Pct Age 40-50	135386	0.14	0.02	0.00	0.30
Pct Age 50-60	135386	0.14	0.02	0.00	0.29
Pct Age 60-70	135386	0.10	0.03	0.00	1.00
Pct Age 70-80	135386	0.06	0.02	0.00	0.34
Pct Age 80+	135386	0.04	0.02	0.00	0.33
Median HH Income	135359	56307.44	21572.15	2499	240441
Pct HS Graduate	135382	0.29	0.10	0.00	1.00
Pct Some College	135382	0.29	0.06	0.00	1.00
Pct Bachelors Degree	135382	0.18	0.09	0.00	1.00
Pct Post Graduate Degree	135382	0.11	0.08	0.00	1.00
Pct Own Home	135377	0.67	0.16	0.00	1.00
Median Home Value	135273	230027.60	166599.70	9999	1000001
Aggregate Tax Rate	135159	0.01	0.01	0.0001	0.04
Median Number of Rooms	135357	5.60	0.82	1.40	9.00
Pct Homes Built After 2005	135363	0.01	0.01	0.001	0.88
Pct Food Stamps	135363	0.11	0.07	0.00	0.72
Median Social Security Income	135324	16279.69	2071.40	610	31735
Pct Veteran	135363	0.66	0.11	0.00	1.00
Pct Married	135383	0.52	0.10	0.00	1.00
Pct Same Sex HH	135377	0.005	0.004	0.00	0.12
Pct Unmarried HH	135377	0.07	0.02	0.00	0.20
Pct Family HH	135383	0.10	0.04	0.00	1.00
Fraction of 1996 Contributions to Republican	128791	0.69	0.23	0.00	1.00
Pct Evangelical (County)	135341	147.62	127.82	0.00	1113.76
Pct Catholic (County)	135341	207.80	148.39	0.00	946.82
Pct Jewish (County)	135341	18.76	32.10	0.00	313.86
Pct Mormon (County)	135341	15.56	66.89	0.00	915.70
Pct Southern Baptist Convention (County)	135341	72.79	108.71	0.00	961.39
Pct Suburban	135377	0.11	0.25	0.00	1.00
Pct Urban	135377	0.68	0.43	0.00	1.00
1996 County Republican Vote Share	135009	0.46	0.11	0.11	0.88

An observation is an individual. Zip Code demographic data comes from the US Census Bureau. Religious adherence data is from 2010 U.S. Religion Census: Religious Congregations and Membership Study (RCMS).

Table A3: Summary Statistics for Nielsen Viewership Sample

Statistic	N	Mean	St. Dev.	Min	Max
Year	71177	2006.50	1.12	2005	2008
Has FNC	71177	0.94	0.23	0	1
Has MSNBC	71177	0.86	0.35	0	1
FNC Position	71177	39.89	16.69	0	140
CNN Position	71177	29.94	13.23	0	123
MSNBC Position	71177	38.84	21.65	0	164
Number Channels	71177	157.03	46.62	7	249
Number Broadcast Channels	71177	12.50	7.76	2	45
Nielsen Sample Size	71177	57.05	73.58	0.50	1028.00
Nielsen Cable Sample Size	71071	34.69	53.75	0.00	948.00
Nielsen Satellite Sample Size	71072	15.30	19.11	0.00	371.00
Nielsen Diary Market	71177	0.51	0.50	0	1
FNC Minutes	71150	43.27	84.14	0.00	4233.60
CNN Minutes	69731	24.23	50.92	0.00	2388.96
MSNBC Minutes	69731	10.06	34.51	0.00	2076.48
FNC Minutes (Cable)	64894	51.03	124.35	0.00	7388.64
CNN Minutes (Cable)	63602	32.48	85.81	0.00	4122.72
MSNBC Minutes (Cable)	63602	13.01	48.14	0.00	3276.00
FNC Minutes (Satellite)	62178	48.81	133.41	0.00	7953.12
CNN Minutes (Satellite)	60840	24.13	72.40	0.00	4082.40
MSNBC Minutes (Satellite)	60840	8.66	43.94	0.00	3185.28
Population	71137	15485.43	15591.85	6	113916
Pct Black	71137	0.10	0.17	0.00	0.98
Pct Asian	71137	0.03	0.06	0.00	0.72
Pct Other	71137	0.07	0.09	0.00	0.98
Pct Hispanic	71137	0.10	0.16	0.00	0.99
Pct Male	71137	0.50	0.03	0.34	0.84
Pct Age 10-20	71137	0.15	0.03	0.00	0.60
Pct Age 20-30	71137	0.12	0.05	0.00	0.66
Pct Age 30-40	71137	0.12	0.03	0.004	0.30
Pct Age 40-50	71137	0.14	0.02	0.00	0.29
Pct Age 50-60	71137	0.15	0.03	0.001	0.32
Pct Age 60-70	71137	0.11	0.03	0.00	0.50
Pct Age 70-80	71137	0.06	0.02	0.00	0.34
Pct Age 80+	71137	0.04	0.02	0.00	0.31
Median HH Income	71129	52689.98	20622.01	2499	228726
Pct HS Graduate	71136	0.33	0.10	0.00	1.00
Pct Some College	71136	0.29	0.07	0.00	1.00
Pct Bachelors Degree	71136	0.15	0.09	0.00	0.61
Pct Post Graduate Degree	71136	0.09	0.07	0.00	0.92
Pct Own Home	71136	0.72	0.15	0.003	1.00
Median Home Value	71002	187049.60	145519.30	9999	1000001
Aggregate Tax Rate	70780	0.01	0.01	0.0001	0.04
Median Number of Rooms	71132	5.66	0.77	1.50	9.00
Pct Homes Built After 2005	71135	0.02	0.02	0.001	0.62
Pct Food Stamps	71135	0.11	0.08	0.00	0.78
Median Social Security Income	71057	16050.84	2249.87	610	30336
Pct Veteran	71135	0.68	0.10	0.00	1.00
Pct Married	71136	0.55	0.10	0.00	1.00
Pct Same Sex HH	71136	0.004	0.003	0.00	0.11
Pct Unmarried HH	71136	0.06	0.02	0.00	0.20
Pct Family HH	71136	0.11	0.04	0.00	0.55
Fraction of 1996 Contributions to Republican	59864	0.71	0.28	0.00	1.00
Pct Evangelical (County)	71167	170.35	144.60	0.00	978.98
Pct Catholic (County)	71167	185.96	150.07	0.00	946.82
Pct Jewish (County)	71167	11.50	24.97	0.00	313.86
Pct Mormon (County)	71167	13.40	60.77	0.00	915.70
Pct Southern Baptist Convention (County)	71167	85.79	126.23	0.00	852.45
Pct Suburban	71136	0.12	0.25	0.00	1.00
Pct Urban	71136	0.43	0.47	0.00	1.00
1996 County Republican Vote Share	71019	0.47	0.11	0.11	0.85

An observation is a zip code-year. Demographic data comes from the US Census Bureau. Religious adherence data is from 2010 U.S. Religion Census: Religious Congregations and Membership Study (RCMS).

Table A4: Summary Statistics for Mediamark/Simmons Viewership Survey

Statistic	N	Mean	St. Dev.	Min	Max
Year	207950	2003.72	2.47	2000	2008
Has FNC	207950	0.94	0.24	0	1
Has MSNBC	207950	0.93	0.25	0	1
FNC Position	207950	40.79	17.29	0	140
CNN Position	207950	31.34	13.32	0	109
MSNBC Position	207950	42.48	18.56	0	164
Number Channels	207950	153.14	42.38	14	249
Number Broadcast Channels	207950	16.61	7.32	2	45
Age	207950	46.31	15.75	21	70
White	207950	0.81	0.39	0	1
Black	207950	0.10	0.31	0	1
Hispanic	207950	0.11	0.31	0	1
Bachelors	207950	0.32	0.47	0	1
HH Income	207860	0.74	0.63	0.04	6.33
Male	207950	0.51	0.50	0	1
FNC Minutes	207950	61.52	162.22	0.00	1500.00
CNN Minutes	207950	71.21	163.34	0.00	1500.00
MSNBC Minutes	207950	30.59	97.87	0.00	1500.00
Cable Subscriber	207950	0.65	0.48	0	1
Satellite Subscriber	207950	0.18	0.38	0	1
Population	207630	31101.55	18279.02	0	113916
Pct Black	207628	0.12	0.18	0.00	1.00
Pct Asian	207628	0.06	0.08	0.00	0.72
Pct Other	207628	0.09	0.09	0.00	1.00
Pct Hispanic	207628	0.15	0.18	0.00	0.98
Pct Male	207628	0.49	0.02	0.37	1.00
Pct Age 10-20	207628	0.15	0.03	0.00	0.47
Pct Age 20-30	207628	0.13	0.05	0.00	0.66
Pct Age 30-40	207628	0.13	0.03	0.00	0.35
Pct Age 40-50	207628	0.15	0.02	0.00	0.24
Pct Age 50-60	207628	0.14	0.02	0.00	0.26
Pct Age 60-70	207628	0.10	0.03	0.001	1.00
Pct Age 70-80	207628	0.05	0.02	0.00	0.34
Pct Age 80+	207628	0.04	0.02	0.00	0.35
Median HH Income	207614	65344.72	25327.25	9100	228726
Pct HS Graduate	207614	0.26	0.10	0.00	0.90
Pct Some College	207614	0.28	0.06	0.00	0.60
Pct Bachelors Degree	207614	0.21	0.09	0.00	0.54
Pct Post Graduate Degree	207614	0.13	0.09	0.00	0.63
Pct Own Home	207627	0.69	0.17	0.00	0.99
Median Home Value	207562	288273.00	193230.30	9999	1000001
Aggregate Tax Rate	207426	0.01	0.01	0.0002	0.03
Median Number of Rooms	207612	5.75	0.97	1.50	9.00
Pct Homes Built After 2005	207620	0.01	0.01	0.001	0.75
Pct Food Stamps	207614	0.09	0.07	0.00	0.78
Median Social Security Income	207552	16695.29	2219.52	7122	37418
Pct Veteran	207614	0.68	0.11	0.00	1.00
Pct Married	207614	0.53	0.10	0.00	0.88
Pct Same Sex HH	207627	0.01	0.004	0.00	0.11
Pct Unmarried HH	207627	0.06	0.02	0.00	0.20
Pct Family HH	207614	0.09	0.04	0.00	0.33
Fraction of 1996 Contributions to Republican	198700	0.68	0.23	0.00	1.00
Pct Evangelical (County)	207745	118.08	108.77	0.00	809.59
Pct Catholic (County)	207745	249.19	146.38	0.00	946.82
Pct Jewish (County)	207745	28.12	37.96	0.00	313.86
Pct Mormon (County)	207745	13.06	57.96	0.00	915.70
Pct Southern Baptist Convention (County)	207745	54.61	90.84	0.00	736.46
Pct Suburban	207627	0.05	0.18	0.00	1.00
Pct Urban	207627	0.82	0.34	0.00	1.00
1996 County Republican Vote Share	207053	0.45	0.12	0.11	0.82

An observation is an individual. Zip Code demographic data comes from the US Census Bureau. Religious adherence data is from 2010 U.S. Religion Census: Religious Congregations and Membership Study (RCMS).

C Update of DellaVigna and Kaplan (2007)

DellaVigna and Kaplan (2007) (henceforth DVK) compare changes in presidential vote shares in towns which had access to the Fox News Channel by the year 2000 compared to towns that did not conditional on a rich set of co-variates. In this section, we update the estimates from DVK using Nielsen data on availability of Fox News.

C.1 Data Sources

The data source in DVK is the Warren’s Cable and Television Factbook (henceforth Factbook). The Factbook updates only a minority of cable systems every year. The extent of non-updating has been documented by Crawford and Yurukoglu (2012). We reproduce the relevant years from their Appendix table below in Table A5. Updating is especially poor around DVK sample year. Between 1999 and 2000, only 22% of observations were updated. Between 1998 and 1999, only 37% of observations were updated. Since Fox News was expanding across the country rapidly during these years, this infrequent updating is consequential: many towns in the Factbook were listed as not having cable access to Fox News, when in fact they did but the Factbook simply wasn’t updated yet. Nearly all systems in the Nielsen FOCUS data are updated every year.

To audit the Factbook data against the Nielsen FOCUS data, we consulted a third data source: cable conversion charts that appeared in weekly TV Week additions of local newspapers. These tables listed channel numbers for local cable systems. Figure C.1 provides an example capture from the microfilms of such a chart. To conduct the audit, we sorted the set of communities where FOCUS and Factbook disagreed on Fox News availability in 2000 by population size. We tried to find cable conversion charts for the largest two hundred communities. We were able to readily find conversion charts which reference the community name in the system name and provide information on Fox News Channel for 45 communities.³⁵ For these 45 communities, the Nielsen FOCUS data was correct on 42 (93.33%) whereas the Factbook was correct on 3. Second, we investigated the systems with a particular large discrepancy: those where Nielsen FOCUS indicated had Fox News availability in 1998 while the Factbook

³⁵The exact requirement is that the newspaper explicitly names the community in question. For example, we did not match Greenwich, CT to Cablevision Southern Connecticut as the newspaper did not explicitly mention that Greenwich was covered by this system. Furthermore, some conversion grids did not list all channels. For example, the Boston Globe only provided numbers for 31 basic cable channels, omitting Fox News, even though it had listings for 50 systems. The microfilm scans and spreadsheet with details on the audit are available on request from the authors.

Table A5: Data Quality of Factbook

<i>Year</i>	<i>Variable</i>	<i>Number of Bundles</i>	<i>Fraction of Bundles</i>
1998	Total bundles	15,743	100.0%
	Full information	10,872	69.0%
	Updated	4,714	30.0%
	Full information and updated	3,461	22.0%
1999	Total bundles	15,497	100.0%
	Full information	10,444	67.0%
	Updated	5,663	37.0%
	Full information and updated	3,595	23.0%
2000	Total bundles	15,453	100.0%
	Full information	10,312	67.0%
	Updated	3,358	22.0%
	Full information and updated	2,478	16.0%
2001	Total bundles	15,391	100.0%
	Full information	9,793	64.0%
	Updated	4,173	27.0%
	Full information and updated	2,663	17.0%
2002	Total bundles	15,287	100.0%
	Full information	7,776	51.0%
	Updated	5,086	33.0%
	Full information and updated	1,484	10.0%
1997-2007	Total bundles	166,619	100.0%
	Full information	91,100	55.0%
	Updated	62,299	37.0%
	Full information and updated	31,493	19.0%

Notes: This table is a reproduction from Crawford and Yurukoglu (2012) indicating the degree of non-updating in Factbook data.

indicated no availability by 2000. 353 of these systems were operated by Tele-Communications Inc. (TCI) in 1998. Press reports from the time period indicate that Fox News would be available to over 90% of TCI customers by 1998 (Colman (1996)).

Finally, the number of subscribers for Fox News implied by the Factbook data conflict with the amount of viewership Fox News had in 2000, including the viewership data used in DVK. According to DVK, “About half of the Fox News audience, therefore, watches Fox News in ways other than via cable, possibly via satellite. This finding could also be due to measurement error in our measure of availability via cable.” According to their data, 17% of households were watching Fox News in 2000. Therefore, 8.5% of all households must have been simultaneously satellite subscribers and watching Fox News. However, the market share of satellite in the year 2000 was 11.4%³⁶ Therefore, a vast majority of satellite subscribers must have been watching Fox News in 2000 to be consistent with the Factbook availability measures. Our Mediamark data indicate that the fraction of satellite subscribers watching Fox News in 2000 is only 19%.³⁷

To correct this issue, we matched the voting and demographic data in DVK to Nielsen FOCUS. The identification numbers in the Factbook and Nielsen FOCUS do not match. We employed a matching procedure based on community names and firm names, using manual inspection when matches weren’t obvious. We were able to reliably match 8,013 observations out of 9,256 to Nielsen FOCUS. Tables A6 and A7 compare the availability of Fox News according to the two data sources.

	Factbook Fox News (Year 2000)		Total
	0	1	
Nielsen Fox News (Year 2000)	0 3,527	51	3,578
	1 3,076	1,520	4,435
Total	6,478	1,535	8,013

Table A6: Year 2000: Nielsen Fox News Availability and Factbook non-updated Fox News Availability.

About 40 percent of the control group in DVK is mis-classified as not having cable access to Fox News. About 25 percent already had access in 1998 and hadn’t been updated for at

³⁶The cable market share was 70.2% implying a 81.6% total market share. Thus, about 14% of cable or satellite subscribers were satellite subscribers.

³⁷Their viewership data and our Mediamark data agree on the aggregate 17% number. Our Mediamark data indicate the conditional probability of watching Fox News conditional on satellite is only marginally higher at 19%.

CONVERSION GRID/LOCAL CABLE SYSTEMS/RADIO STATIONS 67

Conversion grid

Stations may appear on different channels in each cable system. This chart lists stations and channels in the major local cable systems. * Grid listing.

Local systems	Anoka	Apple V.	Blaine	Bloom.	Col Hgts.	Eag/Burn	Fridley	Hastings	L. Mtns.	Mpls.	Northwest	Roseville	St. L. Park	St. Paul	Shakopee	S. Wash.	Southw.	Wash. Co.	W. Bear
Below is a listing of cable systems and communities serviced.																			
Anoka: Burnside, Chubbuck, Andover	58	48	66	26	36	66	26	36	29	29	36	58	26	16	29	36	26	36	58
Apple Valley: Farmington, Lakeville, Rosemount	38	46	3	65	40	3	65	40	45	30	40	65	30	40	65	30	40	65	40
Blaine: Centerville, Circle Pines, Coon Rapids, Ham Lake, Lexington, Lino Lakes, Spring Lake Park, Oak Grove	27	66	29	29	56	29	29	34	3068	34	56	29	67	47	34	29	34	56	
Columbia Heights: Hilltop	56	65	36	33	66	36	33	54	55	54	66	33	40	60	54	33	54	66	
Lake Minnesota: Deephaven, Long Lake, Minnetonka, Shorewood, Victoria, Excelsior, Medina, Orchard View, Spring Park, Woodland, Greenwood, Minnetonka Beach, St. Bonifacius, Tonka Bay, Champlin, Maple Plain, Mount, Welyzda, Waconia, Lonseno	26	43	37	30	21	37	30	66	34	27	42	96	30	48	27	66	30	66	21
Lake Superior: Brooklyns Park, Brooklyn Center, Robbinsdale, Golden Valley, New Hope, Richfield, Maple Grove, Plymouth, Crystal Lake, Maple Grove, Plymouth, Crystal Lake	71	8	35	21	58	35	21	19	12	23	33	23	21	62	23	19	23	19	23
Northwest: Brooklyn Park, Brooklyn Center, Robbinsdale, Golden Valley, New Hope, Richfield, Maple Grove, Plymouth, Crystal Lake, Maple Grove, Plymouth, Crystal Lake	3	7	39	59	20	39	59	20	6	968	96	25	59	63	45	20	59	20	25
Southwest: Brooklyn Park, Brooklyn Center, Robbinsdale, Golden Valley, New Hope, Richfield, Maple Grove, Plymouth, Crystal Lake, Maple Grove, Plymouth, Crystal Lake	52	38	52	60	53	52	60	29	24	24	29	38	60	28	24	29	60	29	38
Shakopee: Eden Prairie, Eden, Hopkins, Minnetonka, Richfield	50	31	50	3	31	50	3	31	46	3	31	36	3	3	3	31	3	31	36
South Washington County: Washington County, St. Paul Park, Cottage Grove, Woodbury, Gray Cloud Island, Newport, Shiloh, Bayport, Oak Park Heights, Alton, Baytown Township, Denmark Township, Lakeland, Lakeland Shores, St. Croix Beach, St. Mary's Point, Stillwater Township, West Lakeland	51	28	51	61	32	51	61	32	30	15	32	37	61	15	15	32	61	32	37
White Bear Lake: Maitland, Wilmette, Delwood, Grant Township, Birchwood Village, Lake Elmo, Vadnais Heights, White Bear Township, Gem Lake, Hugo	26	78	26	78	71	26	78	71	22	52	71	71	78	51	52	71	78	71	71
	79													54					
Classic Sports (CS):	51	29	51	64	188	64	34	51	71	64	51	64	34	51	64	51	64	34	51
Comedy Cen (COM):	42	56	42	31	50	42	31	50	50	31	50	50	31	45	31	50	31	50	50
Court TV (CRT):	62	50	14	60	14	60	14	22	168	55	29	95	57	22	22	22	22	22	29
Discovery (DSD):	59	47	67	28	37	67	28	37	43	22	37	59	28	22	22	37	28	37	59
Discovery (DIS):	7	27	7	76	53	7	76	44	51	50	44	53	76	58	50	44	76	44	53
E!:	34	54	34	49	51	34	49	51	54	59	51	51	49	43	59	51	51	51	51
ESPN:	46	29	46	52	25	46	52	25	32	16	25	30	52	7	16	25	52	25	30
ESPN2:	47	57	47	53	26	47	53	63	268	26	31	53	65	48	63	53	63	63	31
External Word:	74	38	46	98	38	46	21	23	98	56	24	46	61	36	21	46	21	46	21
Family St. (FAM):	35	35	27	45	57	27	45	46	16	36	46	57	45	27	38	46	45	46	57
Food Network (FOOD):	53	53	63	34	53	63	30	218	30	39	63	69	96	30	63	30	63	30	39
Fox News (FNC):	51	58	31	48	31	50	48	30	48	48	48	48	50	64	48	31	48	48	48
FX:																			
FX Movies (FXM):																			

Figure A1: Cable conversion chart from Minneapolis Star-Tribune in October 2000. The rows correspond to cable channels. The columns correspond to local cable systems. According to the Factbook data used in DVK, Minneapolis did not have access to the Fox News Channel by November 2000. The Nielsen FOCUS data indicate that Minneapolis did have access to Fox News Channel in 1999, and also correctly indicates the channel number of 21B.

	Factbook Fox News (Year 2000)			Total
	0	1		
Nielsen Fox News (Year 1998)	0	4,687	355	5,042
	1	1,791	1,180	2,971
Total		6,478	1,535	8,013

Table A7: Nielsen Fox News Availability in 1998 and Factbook non-updated Fox News Availability in 2000.

least two years in the Factbook.

C.2 Estimates with Nielsen Data

We now re-run the two benchmark specifications from DVK: the county level fixed effects regression and the US House district level fixed effects regression. These correspond to equation (2) in DVK. Table A8 compares the resulting estimates.

The estimate in the county level fixed effects regression drops from a statistically significant at 1% 0.00694 (Column 7) to a significant at 10% 0.00256 (Column 9). The difference cannot be attributed to not matching all of DVK’s observations. Their estimated effect is stronger when using their Fox variable, but only on the subset of matching observations (Column 8). The estimate in the Congressional district fixed effects regression remains stable with the Nielsen data. The change in results could possibly reflect that availability in the Factbook indicates a longer period of availability and the effects of exposure accumulate over time, however the Nielsen availability data only goes back to 1998 so we can not empirically test this explanation.

We now update the placebo result regarding Fox News availability in 2000. Table A9 compares the placebo regression estimates using the original data and the Nielsen data. Using the more correct data in the district fixed effect specification, the placebo regression’s estimate for the effect of Fox News availability in 2000 on the change in vote shares from 1992 to 1996 is 0.0028, nearly the same as the estimate for the change in 1996 to 2000, compared to -0.00386 using the Factbook data. The coefficient’s precision can not rule out a zero effect. The confidence interval for the Fox News availability in 2000 has shifted from (-0.0085, 0.0038) to (-0.0014, 0.0070).

For the district fixed effects specification, when examining the correlation of Fox News availability in 2000 with the level of Republican vote share in 1996, the point estimate changes from -0.0343 to 0.150, though in both cases the estimates are noisy with standard errors of

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Republican two-party vote share change between 2000 and 1996 pres. elections									
Factbook Fox	0.00798*** (0.00257)	0.00844*** (0.00271)	0.00787*** (0.00172)	0.00421*** (0.00154)	0.00515*** (0.00166)	0.00360*** (0.00121)	0.00694*** (0.00150)	0.00778*** (0.00166)	0.00256* (0.00141)
Nielsen Fox									
Observations	9,256	8,013	8,013	9,256	8,013	8,013	9,256	8,013	8,013
R ²	0.557	0.565	0.567	0.753	0.760	0.760	0.812	0.823	0.822
Data Set	Factbook	Factbook	Nielsen	Factbook	Factbook	Nielsen	Factbook	Factbook	Nielsen
Sample	Full	Matched	Matched	Full	Matched	Matched	Full	Matched	Matched
FE	OLS	OLS	OLS	District	District	District	County	County	County

Robust standard errors in parentheses, clustered by cable firm
*** p<0.01, ** p<0.05, * p<0.1

Table A8: OLS, District FE, and County FE specifications from DVK and with alternative Fox News availability data.

0.095 and 0.124, respectively. The coefficient in the county fixed effects specification becomes slightly more negative, which is reassuring, though again the estimate is noisy.

To summarize, using the more correct Nielsen FOCUS data revises down the DVK estimates from a range of 0.4-0.7 to 0.3-0.4. The 99% confidence intervals in the placebo regression of the change in Republican vote share from 1992 to 1996 (before Fox News) on Fox News availability in 2000 include the point estimate for the effect of Fox News availability in 2000 on the change in Republican vote share from 1996 to 2000, in both the district and county fixed effects specifications. The evidence on balance could be interpreted that in studying the effects of Fox News, researchers should utilize the more accurate Nielsen data, and pay special attention to the source of variation identifying the estimates and weigh the costs and benefits of using availability in 2000 or channel positions as sources of variation in viewership of Fox News. Both sources of variation are attractive on different dimensions.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Republican two-party vote share change between 1996 and 1992 pres. elections									
Factbook Fox	0.00539 (0.00503)	0.00418 (0.00528)		-0.00237 (0.00313)	-0.00386 (0.00335)		-0.00686** (0.00291)	-0.0111*** (0.00286)	
Nielsen Fox			0.00807** (0.00327)			0.00280 (0.00212)			0.00045 (0.00244)
Observations	4,006	3,527	3,527	4,006	3,527	3,527	4,006	3,527	3,527
R ²	0.327	0.337	0.341	0.620	0.625	0.626	0.732	0.725	0.732
Data Set	Factbook	Factbook	Nielsen	Factbook	Factbook	Nielsen	Factbook	Factbook	Nielsen
Sample	Full	Matched	Matched	Full	Matched	Matched	Full	Matched	Matched
Specification	OLS	OLS	OLS	District FE	District FE	District FE	County FE	County FE	County FE

Robust standard errors in parentheses, clustered by cable firm

*** p<0.01, ** p<0.05, * p<0.1

Table A9: OLS, District FE, and County FE Placebo specifications from DVK and with alternative Fox News availability data.

	Fox News Availability in 2000							
	Factbook	Factbook	Nielsen	Factbook	Factbook	Nielsen	Factbook	Nielsen
Pres. republican vote share in 1996	0.390** (0.157)	0.421*** (0.159)	0.154 (0.176)	-0.0343 (0.0949)	-0.0182 (0.0995)	0.150 (0.124)	-0.0442 (0.110)	-0.0922 (0.117)
Observations	9,256	8,013	8,013	9,256	8,013	8,013	9,256	8,013
R ²	0.409	0.403	0.127	0.670	0.668	0.445	0.768	0.577
Sample	Full	Matched	Matched	Full	Matched	Matched	Full	Matched
Specification	OLS	OLS	OLS	District FE	District FE	District FE	County FE	County FE

Robust standard errors in parentheses, clustered by cable firm
*** p<0.01, ** p<0.05, * p<0.1

Table A10: OLS, District FE, and County FE specifications from DVK and with alternative Fox News availability data regressed on 1996 vote share.

D IV-2SLS Results with Individual Level Data

D.1 First Stage

Table A11 presents the analogous results using the individual-level data from MediaMark. In this version, we are able to include demographic characteristics measured at the individual level in addition to the full set of extensive zip level demographic measures. Estimating equations here take the form:

$$h_{izt}^c = \delta_{ct} + a_{zct} + \alpha_c^1 x_{zt} + \alpha_c^2 x_{it} + \zeta_{c,FNC} P_{zt}^{FNC} + \zeta_{c,MSNBC} P_{zt}^{MSNBC} + \epsilon_{ict}^H \quad (9)$$

Again, the FNC channel position correlates negatively with viewership, with very similar magnitude as in the independently sampled zip code level data. Unfortunately, because the individual level data span only about one-half as many clusters (cable systems) as the zip-code level data, the cluster-robust F statistics fall below ten in most cases, and the first stage coefficient on the instrument falls to zero when county-year fixed effects are included. The sample in Table A11 includes all respondents, including satellite subscribers and those who subscribe to neither wired cable nor satellite television. We use the pooled-sample first stage because the second stage data set lacks information on individuals' subscription choices. Section 4 presents a first stage estimated among cable subscribers alone; among cable subscribers, the individual-level position effect is precise and consistently negative.

In the individual level data, we can directly identify whether a respondent is a cable subscriber, a satellite subscriber, or neither.³⁸ We therefore run the first stage individual-level regression restricted to only cable and satellite subscribers, and interact channel positions with an indicator for whether the viewer subscribes to satellite.

D.2 Second Stage

The individual-level regressions are directly analogous, with the exception that the outcome y_{izt} is now an indicator for whether individual i states their intention to vote for the Republican presidential candidate in the election of year t :

³⁸Satellite subscribers make up about 18% of MediaMark respondents, and roughly 16% of MediaMark respondents report subscribing to neither cable nor satellite television service.

Table A11: First Stage Regressions: Mediamark / Simmons Data

	FNC Minutes per Week					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Cable Position	-0.0833 (0.0572)	-0.0977* (0.0542)	-0.1008** (0.0504)	-0.1068** (0.0447)	0.0124 (0.0485)	0.0302 (0.0464)
MSNBC Cable Position	0.0522 (0.0549)	0.0480 (0.0552)	0.0270 (0.0504)	0.0628 (0.0441)	-0.0323 (0.0511)	-0.0115 (0.0472)
HH Income			43.5512*** (2.9913)	39.6030*** (2.9649)	40.4058*** (3.0338)	36.6810*** (3.0511)
HH Income ²			-18.6924*** (1.6098)	-16.8152*** (1.5933)	-17.1702*** (1.6538)	-15.5555*** (1.6464)
HH Income ³			1.9785*** (0.1945)	1.7680*** (0.1915)	1.8209*** (0.2004)	1.6416*** (0.1974)
Age Quintile 2			10.9538*** (0.9631)	10.4238*** (1.0032)	10.6015*** (0.9852)	10.4606*** (1.0104)
Age Quintile 3			21.8585*** (1.0367)	21.0334*** (1.0775)	21.2143*** (1.0734)	20.8256*** (1.1106)
Age Quintile 4			31.5240*** (1.1648)	30.6014*** (1.2012)	30.9846*** (1.2028)	30.4839*** (1.2334)
Age Quintile 5			64.2801*** (1.4777)	62.4959*** (1.4761)	62.8403*** (1.5076)	61.4261*** (1.5137)
White			11.2290*** (1.1463)	9.8168*** (1.2379)	11.1014*** (1.1839)	10.7936*** (1.2764)
Black			8.9943*** (1.8396)	10.7470*** (1.7492)	11.9928*** (1.7361)	13.1555*** (1.7497)
Hispanic			-11.3233*** (1.4999)	-8.5084*** (1.3540)	-9.9711*** (1.3829)	-8.4407*** (1.3748)
College Degree			-7.6653*** (0.9601)	-6.1894*** (0.9833)	-6.6920*** (0.9519)	-6.3910*** (0.9897)
Man			10.5359*** (0.8083)	10.5422*** (0.8265)	10.6558*** (0.8155)	10.7509*** (0.8317)
Fixed Effects:	Year	State-Year	State-Year	State-Year	County-Year	County-Year
Cable Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Individual	Extensive	Individual	Extensive
Robust F-Stat	2.1	3.2	4	5.7	0.1	0.4
Number of Clusters	2589	2589	2589	2379	2589	2381
N	207,950	207,950	207,860	197,551	207,860	198,300
R ²	0.0099	0.0158	0.0395	0.0419	0.0737	0.0745

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Instrument is the ordinal position of FNC on the local system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. Cable system controls include the total number of channels on the system and the number of broadcast channels on the system. "Individual" demographics are measured at the level of the individual respondent. "Extensive" demographics include all of the same individual-level measures plus all of the zip-code-level demographics included in the zip-code-level analysis.

$$y_{izt} = \gamma_t + a_{it} + \beta^1 x_{it} + \beta^2 x_{zt} + \rho_f h_{it}^f + \epsilon_{it}^V \quad (10)$$

Predicted hours in the individual-level regression is produced by the first-stage estimates in Table A11.

Table A12: Second Stage Regressions: NAES / CCES Data

	P(Vote for Republican Presidential Candidate)		
	(1)	(2)	(3)
Pred. FNC Mins.	0.0018 (-0.0142, 0.0244)	0.0034 (-0.0049, 0.0234)	0.0023 (-0.0012, 0.0122)
HH Income		0.3358 (-0.5604, 0.7036)	0.3251 (-0.0755, 0.5129)
HH Income ²		-0.3090 (-0.4943, 0.0952)	-0.2769 (-0.3887, -0.0993)
HH Income ³		0.0836 (0.0385, 0.1115)	0.0740 (0.0505, 0.0988)
Age Quintile 2		-0.0073 (-0.2267, 0.0919)	-0.0008 (-0.1027, 0.0414)
Age Quintile 3		-0.0426 (-0.4798, 0.1463)	-0.0282 (-0.2317, 0.0514)
Age Quintile 4		-0.1027 (-0.7632, 0.1597)	-0.0764 (-0.3689, 0.0372)
Age Quintile 5		-0.1893 (-1.4844, 0.3452)	-0.1233 (-0.7469, 0.1068)
White		0.0539 (-0.1941, 0.1509)	0.0558 (-0.0411, 0.0964)
Black		-0.3836 (-0.5517, -0.3001)	-0.3544 (-0.4690, -0.3051)
Hispanic		-0.0434 (-0.1375, 0.1871)	-0.0561 (-0.0910, 0.0339)
College Degree		-0.0584 (-0.1235, 0.0978)	-0.0478 (-0.0736, 0.0147)
Man		0.0387 (-0.1610, 0.1299)	0.0505 (-0.0533, 0.0878)
Fixed Effects:	State-Year	State-Year	State-Year
Cable Controls:	Y	Y	Y
Demographics:	None	Individual	Extensive
Number of Clusters	6659	6523	5540
N	134,970	122,738	116,009
R ²	0.0286	0.1116	0.1365

The first stage is estimated on all MediaMark/Simmons respondents. See first stage tables for description of instruments and control variables. Confidence intervals are generated from 500 independent STID-block-bootstraps of the first and second stage datasets. Reported lower and upper bounds give the central 95 percent interval of the relevant bootstrapped statistic. “Individual” demographics are measured at the level of the individual respondent. “Extensive” demographics include all of the same individual-level measures plus all of the zip-code-level demographics included in the zip-code-level analysis.

Comparing the two versions, the point estimate of the second-stage coefficient on FNC

viewing is higher in the individual-level regression. It is also much less precise, however; the individual-level confidence interval entirely covers the zip code-level confidence interval. This difference is reflective of both the greater power of the instrument in the zip code-level first stage and the much greater predictability of zip code-level Republican vote shares as opposed to individual vote intentions: R^2 values in the zip code-level reduced form regression approach 0.85, as compared to 0.15 in the corresponding individual-level regression.

There are two factors which temper the threat of misleading inference due to weak instruments in the second stage. First, we are using a single instrument in the just-identified case. Second, recalling the two-sample nature of the individual data, the intent-to-vote data span many more clusters than the viewership data.

D.3 Reduced Form

With the individual level data, these correlations are only significant in the specifications with state-year fixed effects; due to the relatively small number of clusters in this sample there is insufficient within-county variation to estimate the position effects precisely.

D.4 Demographic Placebos

Table A13: Reduced Form Regressions: NAES / CCES Data

	P(Vote for Republican Presidential Candidate)					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Cable Position	-0.0003 (0.0003)	-0.0002 (0.0002)	-0.0003* (0.0002)	-0.0002* (0.0001)	-0.0004 (0.0002)	-0.0002 (0.0002)
MSNBC Cable Position	0.001*** (0.0003)	0.0002 (0.0002)	0.0001 (0.0002)	0.0001 (0.0001)	-0.0003* (0.0002)	-0.0005*** (0.0002)
HH Income			0.481*** (0.026)	0.414*** (0.027)	0.452*** (0.027)	0.398*** (0.028)
HH Income ²			-0.370*** (0.030)	-0.313*** (0.030)	-0.341*** (0.031)	-0.298*** (0.032)
HH Income ³			0.090*** (0.009)	0.077*** (0.009)	0.083*** (0.009)	0.073*** (0.010)
Age Quintile 2			0.030*** (0.005)	0.023*** (0.005)	0.028*** (0.005)	0.025*** (0.006)
Age Quintile 3			0.031*** (0.005)	0.020*** (0.005)	0.028*** (0.005)	0.022*** (0.005)
Age Quintile 4			0.003 (0.005)	-0.007 (0.005)	0.001 (0.006)	-0.003 (0.006)
Age Quintile 5			0.027*** (0.005)	0.019*** (0.005)	0.028*** (0.005)	0.023*** (0.005)
White			0.092*** (0.006)	0.079*** (0.006)	0.083*** (0.006)	0.079*** (0.006)
Black			-0.353*** (0.009)	-0.329*** (0.010)	-0.338*** (0.010)	-0.322*** (0.010)
Hispanic			-0.082*** (0.008)	-0.076*** (0.008)	-0.075*** (0.009)	-0.076*** (0.008)
College Degree			-0.084*** (0.004)	-0.062*** (0.004)	-0.070*** (0.004)	-0.062*** (0.004)
Man			0.074*** (0.003)	0.075*** (0.003)	0.075*** (0.003)	0.075*** (0.003)
Fixed Effects:	Year	State-Year	State-Year	State-Year	County-Year	County-Year
Cable Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Individual	Extensive	Individual	Extensive
Number of Clusters	6739	6739	6605	5582	6605	5582
N	135,574	135,574	123,297	116,465	123,297	116,465
R ²	0.012	0.029	0.112	0.137	0.188	0.197

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). “Individual” demographics are measured at the level of the individual respondent. “Extensive” demographics include all of the same individual-level measures plus all of the zip-code-level demographics included in the zip-code-level analysis.

Table A14: Comparison of covariate groups' influence on viewing equation, voting equation, and the first stage coefficient estimate: Mediamark / Simmons Data

	R ² Change (Viewing)	R ² Change (Voting)	First Stage	Reduced Form
Zip Race	0.000038	0.000507	-0.110166** (0.044847)	-0.000249* (0.000135)
Zip Age	0.000204	0.000584	-0.104163** (0.044891)	-0.000251* (0.000133)
Zip Education	0.000284	0.001017	-0.106287** (0.045566)	-0.000256* (0.000133)
Zip Marital Status	0.000227	0.001200	-0.101806** (0.045826)	-0.000318** (0.000136)
Zip 1996 Voting / Contribs.	0.000032	0.003585	-0.104493** (0.043564)	-0.000318** (0.000139)
County Religion	0.000068	0.000087	-0.113065** (0.044444)	-0.000241* (0.000134)
(No Demographics)	0.026092	0.107699	-0.097660* (0.054180)	-0.000181 (0.000248)
(Complete set)	0.000000	0.000000	-0.106764** (0.044709)	-0.000248* (0.000133)
Number of Clusters	2379	5582	2379	5582
N	197,551	116,465	197,551	116,465

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). The first two columns are the decrease in R^2 resulting from excluding all variables in the listed group from the viewership and the voting regressions, respectively, relative to the version of the model with the complete set of demographic controls included. The third column shows the estimated first stage coefficient on FNC position when the corresponding group of demographic variables is excluded from the equation. The final column is the same exercise, for the reduced form equation. All regressions include the "Extensive" demographic set, with the exception of the indicated group of variables, plus state-year fixed effects.

E Construction of Channel Ideology Estimates

Our estimates of each channel’s political ideology are generated by an adaptation of the method employed in Gentzkow and Shapiro (2010) to measure ideology of print newspapers. The method compares the use frequency of phrases in transcripts of the cable channel’s shows to the use frequency of the same phrases in floor speeches by members of Congress recorded in the Congressional Record.

Text sources and transcript selection We downloaded all transcripts from any show appearing on CNN, Fox News, and MSNBC during 2000-2013 that were available in the Lexis-Nexis database. Most of the highest-rated prime-time shows on all of the channels were available in Lexis, with one exception: Glenn Beck’s Fox News show, which aired from 2009-2011.³⁹ We supplemented the Lexis transcripts by downloading transcripts of Glenn Beck’s Fox News show from historical versions of the Fox News website archived by the Internet Archive (archive.org). Table A15 lists the shows for which we were able to collect transcripts, by channel. For each show, we downloaded all available transcripts of episodes of that show.

We also downloaded the 1998-2012 Congressional Record (CR) in its entirety from the US Government Publishing Office’s website (<http://gpo.gov>). From the raw HTML files we extracted every speech that could be attributed to an individual member of Congress.

Pre-processing of text Both transcript and Congressional record text was pre-processed by removing a list of 184 common “stop words” such as “we,” “have,” “for,” and the like. The list of stop words matches that used by Gentzkow and Shapiro (2010). We then applied the Porter stemming algorithm to reduce variants of words to their common roots.⁴⁰ For example, the words “beaches” and “beach” would both be stemmed to “beach.” Finally, a script counted the frequency of occurrence of every two word phrase that appears at least five times in total in the Congressional record in that year in the speech of every speaker.⁴¹ A two-word phrase is two stemmed words appearing next to each other (excluding stop words) in the same sentence.

³⁹The version of Mr. Beck’s show on CNN, which aired from 2006-2008, had transcripts available in the database.

⁴⁰We used an implementation of the Porter stemmer written in the Haskell language by Dmitry Antonyuk and Mark Wotton: <https://hackage.haskell.org/package/porter>

⁴¹A “speaker” in the TV transcripts is a show; in the Congressional record it is a member of Congress, either a senator or representative.

CNN	<i>Anderson Cooper 360, Campbell Brown, CNN Live Today, CNN News Room, CNN Tonight, Connie Chung Tonight, Crossfire, Erin Burnett OutFront, Glenn Beck, Greenfield at Large, John King, USA, Larry King Live, Moneyline / Lou Dobbs Tonight, News Night with Aaron Brown, Parker / Spitzer, Paula Zahn Now, Piers Morgan, The Point with Greta van Susteren, The Situation Room with Wolf Blitzer, Wolf Blitzer Reports</i>
Fox News	<i>Fox News Edge, Fox News Sunday, Glenn Beck, Hannity, The O'Reilly Factor, On the Record with Greta van Susteren, Special Report with Bret Baier, Special Report with Brit Hume, The Edge with Paula Zahn, The Kelly File, Your World with Neil Cavuto</i>
MSNBC	<i>All in with Chris Hayes, Ashleigh Banfield on Location, Buchanan & Press, Countdown with Keith Olbermann, Donahue, Hardball with Chris Matthews, Live with Dan Abrams, Morning Joe, Politics Nation, Rave for the White House 1600 Pennsylvania Ave., Rita Cosby Live and Direct, Scarborough Country, The Ed Show, Last Word with Lawrence O'Donnell, The News with Brian Williams, The Rachel Maddow Show, The Savage Nation, Tucker</i>

Table A15: Cable shows for which transcripts were available, by channel.

Choice of phrase set There are millions of two-word phrases which result from the phrase-counting algorithm described above. Most of these are of no value for distinguishing the partisanship of a speaker. As a result, it is necessary to reduce the set of phrases considered to a manageable size, and to limit the number of “noise” phrases. We construct, for each phrase appearing in the Congressional Record, the Gentzkow-Shapiro partisanship statistic. We use the top 1000 “most partisan” phrases in each year according to this criterion, subject to the condition that the phrase must appear at least 20 times in total in the cable news transcripts in that year. We impose this criterion to weed out the (many) purely procedural phrases that appear in the Congressional Record, many of which appear highly partisan because they are spoken primarily by committee chairs, the House Speaker, and other members of the Congressional leadership, who by definition are all members of the majority party in the chamber.⁴² The result is a set of 1000 phrases for each year.

Elastic-net regression For each speaker in both the CR and the transcripts, we compute the frequency of each phrase as the count of occurrences divided by the total number of two-word phrases (among all phrases, not just the set of 1000 selected in the previous set). We standardize all frequencies by subtracting the mean frequency (across all speakers) and dividing by the cross-speaker standard deviation of frequency of the phrase in that year. This scaling prevents phrases that are more common overall from being weighted more heavily in the elastic net objective.

The standardized phrase frequencies of the set of 1000 phrases in each year for Congressional speakers are then input to an elastic-net regression (Zou and Hastie, 2005) where the dependent variable is the common-space DW-nominate first dimension score (McCarty et al., 1997) of the legislator. We restrict the sample for this regression to the set of legislators who use the phrases in the set of 1000 at least 100 times in total, which drops a few very infrequent speakers from the sample. We select the lasso parameter λ in each year by cross-validation, and set the parameter α to 0.01. Finally, the estimated coefficients from the fitted models are used to compute a predicted ideology for each show-year.

Aggregation to channel-year level We aggregate the show-year-level predicted ideologies to the channel-year level by a simple weighted average: shows in prime time get weight of two, and non-prime-time shows get weight of one. This weighting scheme approximately

⁴²Some examples of such phrases are “move (the) question,” “cloture motion,” “unanimous consent,” and “absence (of a) quorum.”

reflects the cable news audience distribution across the two time slots. Finally, we apply a moving-average smoothing filter to transform the resulting channel-year ideology estimates. This filter has a window of three years; we assign weight of $1/2$ to the current year's estimate, and $1/4$ each to the previous and next year's estimate.

F Additional Regression Tables

F.1 MSNBC Analysis

This section contains analogous 2SLS results to those in section 4, where MSNBC viewership is treated as the endogenous variable, either instead of or in addition to Fox News viewership. Tables A16 and A17 show the first stage regression of MSNBC hours watched on cable channel positions in the zip code level and individual level datasets, respectively.

Tables A18 and A19 show single-instrument second-stage results with MSNBC viewership instrumented by MSNBC position.

Tables A20 and A21 show dual-instrument second-stage results with both FNC and MSNBC viewership instrumented by FNC and MSNBC positions.

Table A22 presents the analog to Table 7 for MSNBC. Here, the MSNBC cable effect is also strongly negative. The effect on satellite subscribers is around one-tenth the size of the effect on cable subscribers. We also present in Table A23 the analog of Table 6 but probing MSNBC position instead of Fox News position. While most of the coefficients are re-assuring, MSNBC position is significantly positively correlated with the predictable-by-demographics Republican vote share. Taken alone, this would suggest some degree of endogenous positioning of MSNBC, but an alternative explanation tempers this interpretation. The Fox News position displays a coefficient of the same magnitude in Table 6. This suggests an alternative interpretation that both news channel positions tend to be lower overall in less Republican areas, which would bias the Fox News effect in the opposite direction of what we find.

F.2 Separate Specifications Year by Year

In Tables A24, A25, and A26, we run the reduced form and first stage separately by year, as well as a pooled specification where all demographics interact with year dummy variables. There is no zip-level reduced form year-by-year because those data only cover the 2008 election. In the individual level reduced form (Table A24), the Fox News cable position coefficient is negative in every specification, but only significant in the pooled specification and marginally significant in 2004. Fox News position is negative and significant in every specification of the year-by-year zip-level first stage (Table A25). In the individual level year-by-year first stage (Table A26), the coefficient tends to be negative and noisy, though still negative and significant in the pooled specification.

Table A16: First Stage Regressions: Nielsen Data

	MSNBC Minutes Per Week						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MSNBC Cable Position	-0.099*** (0.014)	-0.088*** (0.022)	-0.087*** (0.016)	-0.082*** (0.014)	-0.082*** (0.013)	-0.035** (0.018)	-0.036** (0.015)
FNC Cable Position	0.037*** (0.013)	0.049*** (0.015)	0.040*** (0.011)	0.039*** (0.010)	0.036*** (0.009)	0.011 (0.012)	0.012 (0.011)
Has MSNBC Only	8.086*** (1.414)	7.758*** (1.387)	7.733*** (1.246)	8.086*** (1.593)	7.607*** (1.311)	5.730*** (2.060)	4.887*** (1.761)
Has FNC Only	-3.588*** (0.625)	-3.231*** (0.648)	-3.693*** (0.556)	-3.721*** (0.630)	-3.369*** (0.541)	-2.535*** (0.747)	-2.287*** (0.661)
Has Both	6.157*** (0.837)	5.621*** (0.919)	4.970*** (0.782)	4.873*** (0.805)	5.070*** (0.715)	2.522** (1.017)	2.958*** (0.901)
Sat. MSNBC Minutes					0.185*** (0.018)		0.162*** (0.018)
Fixed Effects:	Year	State-Year	State-Year	State-Year	State-Year	County-Year	County-Year
Cable Controls:	Y	Y	Y	Y	Y	Y	
Demographics:	None	None	Basic	Extended	Extended	Extended	Extended
Robust F-Stat	49.4	15.8	28.4	34.6	38.2	3.9	5.4
Number of Clusters	5633	5633	5632	4701	4632	4710	4641
N	69,731	69,731	69,683	58,394	50,970	58,537	51,082
R ²	0.095	0.126	0.164	0.178	0.323	0.370	0.488

*p < .1; **p < .05; ***p < .01

Notes: Cluster-robust standard errors in parentheses (clustered by cable system). Instrument is the ordinal position of MSNBC on the local system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. In Column (5), the specification conditions on the average MSNBC ratings among satellite subscribers in the same zip code. Cable system controls include the total number of channels on the system and the number of broadcast channels on the system, as well as an indicator for Nielsen collection mode (diary vs. set-top). “Basic” demographics include the racial, gender, age, income, educational, and urban/rural makeup of the zip code. “Extended” demographics adds information on the percentage of homeowners; median housing values, sizes, ages, and property tax rates; the fraction of the population receiving food stamps; median social security income; the fraction of veterans; the fractions of married, unmarried, and same-sex couples; the share of federal campaign contributions that went to Republican candidates in 1996; the Republican presidential share of the county in 1996; and the religious composition of the county. Observations are weighted by the number of survey individuals in the zipcode according to Nielsen.

Table A17: First Stage Regressions: Mediamark / Simmons Data

	MSNBC Minutes					
	(1)	(2)	(3)	(4)	(5)	(6)
MSNBC Cable Position	-0.179*** (0.030)	-0.158*** (0.033)	-0.165*** (0.032)	-0.161*** (0.029)	-0.152*** (0.033)	-0.151*** (0.033)
FNC Cable Position	0.085*** (0.032)	0.074** (0.030)	0.076*** (0.029)	0.077*** (0.028)	0.075** (0.031)	0.080** (0.033)
HH Income			23.923*** (1.717)	22.761*** (1.773)	23.348*** (1.696)	22.253*** (1.732)
HH Income ²			-8.825*** (0.953)	-8.555*** (0.975)	-8.642*** (0.943)	-8.351*** (0.954)
HH Income ³			0.886*** (0.119)	0.867*** (0.123)	0.861*** (0.119)	0.836*** (0.121)
Age Quintile 2			5.583*** (0.699)	5.889*** (0.714)	5.796*** (0.714)	6.130*** (0.735)
Age Quintile 3			8.420*** (0.743)	8.888*** (0.763)	8.620*** (0.772)	8.949*** (0.800)
Age Quintile 4			12.385*** (0.777)	12.896*** (0.808)	12.854*** (0.813)	13.246*** (0.841)
Age Quintile 5			22.768*** (0.854)	23.013*** (0.891)	22.793*** (0.892)	22.871*** (0.928)
White			-0.546 (0.848)	-0.549 (0.863)	-0.483 (0.838)	-0.421 (0.866)
Black			3.042** (1.188)	3.864*** (1.227)	2.824** (1.252)	4.138*** (1.269)
Hispanic			-5.515*** (0.843)	-3.549*** (0.791)	-4.817*** (0.775)	-3.529*** (0.816)
College Degree			3.838*** (0.528)	3.012*** (0.565)	3.611*** (0.543)	2.963*** (0.573)
Man			5.356*** (0.486)	5.372*** (0.491)	5.461*** (0.481)	5.515*** (0.491)
Fixed Effects:	Year	State-Year	State-Year	State-Year	County-Year	County-Year
Cable Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Individual	Extensive	Individual	Extensive
Robust F-Stat	36.7	22.8	27.3	29.7	21.9	20.2
Number of Clusters	2589	2589	2589	2379	2589	2381
N	207,950	207,950	207,860	197,551	207,860	198,300
R ²	0.004	0.009	0.020	0.022	0.052	0.054

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Instrument is the ordinal position of MSNBC on the local system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. Cable system controls include the total number of channels on the system and the number of broadcast channels on the system. "Individual" demographics are measured at the level of the individual respondent. "Extensive" demographics include all of the same individual-level measures plus all of the zip-code-level demographics included in the zip-code-level analysis.

Table A18: Second Stage Regressions: Precinct Voting Data

	2008 McCain Vote Percentage					
	(1)	(2)	(3)	(4)	(5)	(6)
Pred. MSNBC Mins.	-0.101	-0.099	-0.150**	-0.058	-0.082	-0.070
	(-0.327, 0.113)	(-0.259, 0.039)	(-0.306, -0.014)	(-0.692, 0.699)	(-0.853, 0.722)	(-1.207, 1.123)
Satellite MSNBC Mins.			0.022			0.009
			(-0.003, 0.054)			(-0.181, 0.191)
Fixed Effects:	State	State	State	County	County	County
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	Basic	Extended	Extended	Basic	Extended	Extended
Number of Clusters	5788	4830	6029	4814	4844	4830
N	22,509	17,400	12,129	21,801	16,917	12,155
R ²	0.730	0.833	0.839	0.878	0.906	0.918

The first stage is estimated using viewership data for all Nielsen TV households. See first stage tables for description of instruments and control variables. Observations in the first stage are weighted by the number of survey individuals in the zipcode according to Nielsen. Confidence intervals are generated from 1000 independent STID-block-bootstraps of the first and second stage datasets. Reported lower and upper bounds give the central 95 percent interval of the relevant bootstrapped statistic.

F.3 Turnout

In Table A27, we check whether Fox News position correlates with a measure of turnout. We sum the zip code level votes cast across parties in the precinct level data, and divide this number by the age eighteen and over population from the Census at the zip code level.⁴³ The coefficients on Fox News position tend to be small and noisy except with county fixed effects, where we see a significant negative coefficient on Fox News position. The results suggest that the persuasion estimates in our main specifications could be coming from both the conversion of swing voters and some additional turnout, though it is difficult to say with any precision.

⁴³We dropped any zip code whose implied turnout exceeded 1.

Table A19: Second Stage Regressions: NAES / CCES Data (MSNBC)

	P(Vote for Republican Presidential Candidate)		
	(1)	(2)	(3)
Pred. MSNBC Mins.	-0.0012 (-0.0047, 0.0018)	-0.0006 (-0.0028, 0.0018)	-0.0004 (-0.0019, 0.0012)
HH Income		0.4976 (0.4118, 0.5742)	0.4249 (0.3594, 0.4869)
HH Income ²		-0.3775 (-0.4394, -0.3071)	-0.3189 (-0.3830, -0.2563)
HH Income ³		0.0908 (0.0717, 0.1084)	0.0784 (0.0598, 0.0969)
Age Quintile 2		0.0332 (0.0162, 0.0497)	0.0255 (0.0107, 0.0396)
Age Quintile 3		0.0364 (0.0129, 0.0579)	0.0236 (0.0052, 0.0407)
Age Quintile 4		0.0114 (-0.0207, 0.0421)	-0.0011 (-0.0244, 0.0220)
Age Quintile 5		0.0418 (-0.0138, 0.0926)	0.0292 (-0.0089, 0.0658)
White		0.0915 (0.0790, 0.1018)	0.0781 (0.0677, 0.0897)
Black		-0.3513 (-0.3714, -0.3305)	-0.3282 (-0.3488, -0.3097)
Hispanic		-0.0851 (-0.1031, -0.0613)	-0.0770 (-0.0945, -0.0609)
College Degree		-0.0819 (-0.0925, -0.0699)	-0.0608 (-0.0688, -0.0519)
Man		0.0776 (0.0637, 0.0917)	0.0768 (0.0659, 0.0874)
Fixed Effects:	State-Year	State-Year	State-Year
Cable Controls:	Y	Y	Y
Demographics:	None	Individual	Extensive
Number of Clusters	6659	6523	5540
N	134,970	122,738	116,009
R ²	0.0286	0.1116	0.1365

The first stage is estimated on all MediaMark/Simmons respondents. See first stage tables for description of instruments and control variables. Confidence intervals are generated from 500 independent STID-block-bootstraps of the first and second stage datasets. Reported lower and upper bounds give the central 95 percent interval of the relevant bootstrapped statistic. “Individual” demographics are measured at the level of the individual respondent. “Extensive” demographics include all of the same individual-level measures plus all of the zip-code-level demographics included in the zip-code-level analysis.

Table A20: Second Stage Regressions: Precinct Voting Data

	2008 McCain Vote Percentage					
	(1)	(2)	(3)	(4)	(5)	(6)
Pred. Total FNC Mins.	0.078 (-0.026, 0.415)	0.164** (0.040, 0.336)	0.066 (-0.024, 0.246)	-0.035 (-0.533, 1.435)	-0.018 (-0.417, 1.176)	-0.326 (-0.192, 0.632)
Pred. Total MSNBC Mins.	0.046 (-0.261, 0.462)	0.077 (-0.182, 0.321)	-0.129 (-0.288, 0.206)	0.259 (-1.489, 3.366)	0.535 (-1.718, 1.780)	1.214 (-0.944, 1.603)
Satellite FNC Mins.			-0.011 (-0.047, 0.007)			0.098 (-0.110, 0.035)
Satellite MSNBC Mins.			0.019 (-0.043, 0.051)			-0.393 (-0.254, 0.149)
Fixed Effects:	State	State	State	County	County	County
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	Basic	Extended	Extended	Basic	Extended	Extended
Number of Clusters	5788	4830	6029	4814	4844	4830
N	22,509	17,400	12,128	21,801	16,917	12,154
R ²	0.729	0.833	0.839	0.877	0.906	0.918

The first stage is estimated using viewership data for all Nielsen TV households. See first stage tables for description of instruments and control variables. Observations in the first stage are weighted by the number of survey individuals in the zipcode according to Nielsen. Confidence intervals are generated from 1000 independent STID-block-bootstraps of the first and second stage datasets. Reported lower and upper bounds give the central 95 percent interval of the relevant bootstrapped statistic.

G More on Channel Positions

Our main arguments for the validity of channel positions as instrumental variables for the effect of watching cable news on voting Republican consisted over correlating channel positions with observable variables: demographics (aggregated in the manner they predict voting and viewership), pre-Fox News political variables, and satellite viewership of Fox News, together with the institutional narrative of the period 1992-2000 as leading to effective randomness in channel position assignment. Most of these tests were reassuring, aside from the satellite placebo test on zip code level data, where we find a significant negative correlation with Fox News cable position, albeit one-third the size of the coefficient for cable subscribers, and no such effect on the individual level data. In this section, we further probe the validity for the instrumental variables assumption. First, we show the first stage and satellite placebo for a variety of similarly positioned channels. Second, we show support for the satellite placebo test, by showing that cable and satellite subscribers have similar demographics. Third, we examine whether Fox News viewership is correlated with nearby or future Fox News positions. Fourth, we show that Fox News and MSNBC channel positions are highly correlated with the best available position on the system at the time they were added.

Table A21: Second Stage Regressions: NAES / CCES Data (FNC and MSNBC)

	P(Vote for Republican Presidential Candidate)		
	(1)	(2)	(3)
Pred. FNC Mins.	0.0012 (-0.0284, 0.0191)	0.0033 (-0.0095, 0.0364)	0.0028 (-0.0122, 0.0246)
Pred. MSNBC Mins.	-0.0009 (-0.8206, 0.5313)	-0.0001 (-0.3737, 0.5702)	0.0007 (-0.5754, 1.0111)
HH Income		0.3401 (-1.0749, 0.9888)	0.2895 (-0.9903, 1.0518)
HH Income ²		-0.3107 (-0.5910, 0.2909)	-0.2626 (-0.5797, 0.2786)
HH Income ³		0.0838 (0.0201, 0.1170)	0.0725 (0.0144, 0.1067)
Age Quintile 2		-0.0062 (-0.3703, 0.1568)	-0.0100 (-0.3410, 0.2123)
Age Quintile 3		-0.0407 (-0.7482, 0.2699)	-0.0448 (-0.6912, 0.3513)
Age Quintile 4		-0.0999 (-1.0900, 0.3443)	-0.1006 (-1.0540, 0.4832)
Age Quintile 5		-0.1839 (-2.2494, 0.7464)	-0.1704 (-1.9622, 0.9913)
White		0.0545 (-0.2811, 0.2014)	0.0513 (-0.1827, 0.1886)
Black		-0.3828 (-0.6832, -0.2501)	-0.3624 (-0.6602, -0.1681)
Hispanic		-0.0445 (-0.2073, 0.3334)	-0.0494 (-0.2063, 0.2140)
College Degree		-0.0585 (-0.1398, 0.1646)	-0.0468 (-0.1145, 0.0733)
Man		0.0398 (-0.2973, 0.1993)	0.0415 (-0.2918, 0.2496)
Fixed Effects:	State-Year	State-Year	State-Year
Cable Controls:	Y	Y	Y
Demographics:	None	Individual	Extensive
Number of Clusters	6659	6523	5540
N	134,970	122,738	116,009
R ²	0.0286	0.1116	0.1365

The first stage is estimated on all MediaMark/Simmons respondents. See first stage tables for description of instruments and control variables. Confidence intervals are generated from 500 independent STID-block-bootstraps of the first and second stage datasets. Reported lower and upper bounds give the central 95 percent interval of the relevant bootstrapped statistic. “Individual” demographics are measured at the level of the individual respondent. “Extensive” demographics include all of the same individual-level measures plus all of the zip-code-level demographics included in the zip-code-level analysis.

Table A22: First Stage Regressions: Nielsen Data, Satellite and Cable Subscribers

	MSNBC Minutes Per Week					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Position \times cable	0.064*** (0.017)	0.057*** (0.014)	0.053*** (0.014)	0.050** (0.023)	0.051** (0.021)	0.048** (0.024)
FNC Position \times sat	0.017 (0.014)	0.009 (0.014)	0.012 (0.014)	-0.011 (0.026)	-0.009 (0.027)	-0.014 (0.032)
MSNBC Position \times cable	-0.135*** (0.025)	-0.136*** (0.019)	-0.128*** (0.017)	-0.087*** (0.026)	-0.097*** (0.026)	-0.094*** (0.030)
MSNBC Position \times sat	-0.007 (0.017)	-0.004 (0.015)	0.003 (0.015)	0.019 (0.047)	0.011 (0.047)	0.021 (0.054)
Fixed Effects:	State-Year	State-Year	State-Year	County-Year	County-Year	County-Year
Cable Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	Basic	Extensive	None	Basic	Extensive
Chow Test p-value	0	0	0	0.022	0.02	0.031
Number of Clusters	5630	5629	4701	5630	5629	4701
N	124,442	124,386	105,654	124,442	124,386	105,654
R ²	0.053	0.063	0.068	0.203	0.209	0.223

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Positions are the ordinal position of FNC/MSNBC on the local cable system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. Cable system controls include the total number of channels on the system and the number of broadcast channels on the system. All controls (including fixed effects) are interacted with a dummy for the observation corresponding to satellite viewership. Observations are weighted by the number of survey individuals in the zipcode according to Nielsen.

Table A23: MSNBC cable position coefficients on predicted viewing / voting, and 1996 Republican voting and contributions.

	Predicted Viewing		Predicted Voting		1996 Contributions		1996 Vote	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MSNBC Position	-0.001 (0.007)	-0.008 (0.010)	0.036*** (0.013)	0.034** (0.016)	0.0002 (0.0002)	0.00003 (0.0002)	0.0002 (0.0001)	0.00004 (0.0001)
Fixed Effects:	State-Year	State-Year	State-Year	State-Year	State-Year	State-Year	State-Year	State-Year
Demographics:	Basic	Extended	Basic	Extended	Basic	Extended	Basic	Extended
Number of Clusters	5788	4830	6029	4814	4844	4830	5779	4830
N	71,129	59,551	22,509	17,400	59,843	59,551	70,971	59,551
R ²	0.757	0.734	0.403	0.340	0.146	0.176	0.464	0.571

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Columns 1-4 regress predicted hours of MSNBC and predicted Republican vote share, respectively, on MSNBC cable position. The predicting regressions exclude MSNBC position but include the indicated set of demographic controls. Columns 5-8 regress indicators of pre-treatment political attitudes (1996 county-level Republican presidential vote share and 1996 zipcode-level Republican campaign contribution share) on MSNBC cable position.

Table A24: Reduced Form Regressions: NAES / CCES Data, by Year

	P(Vote for Republican Presidential Candidate)			
	2000	2004	2008	Interacted
FNC Cable Position	-0.0003 (0.0002)	-0.0003* (0.0002)	-0.0003 (0.0002)	-0.0003*** (0.0001)
MSNBC Cable Position	-0.0003 (0.0002)	0.0004* (0.0002)	-0.00001 (0.0001)	0.0001 (0.0001)
Fixed Effects:	State	State	State	State
Cable Controls:	Y	Y	Y	Y
Demographics:	Extensive	Extensive	Extensive	Interacted
Number of Clusters	4404	3829	3194	5582
N	40,559	41,607	34,299	116,465
R ²	0.126	0.144	0.159	0.141

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Columns (1)-(3) show the position coefficients when the model is run separately for each year. In column (4), the extensive demographic set is interacted with dummy variables for each year, allowing the demographic effects on voting to vary flexibly by year.

G.1 First Stage for other Cable Channels

In Table A28, we display the coefficients on own-channel position for a variety of other cable channels. For each channel, we run a stacked regression where we interact cable channel position with dummy variables for whether the individual subscribers to cable or to satellite. As with the other checks on instrument validity, the results are mostly reassuring but not perfect. 26 out of 32 channels have a significantly negative position effect on cable subscribers at 99% confidence (2 more, for a total of 28 out of 32 at 95% confidence). 9 out of 32 have a significantly negative cable channel position effect on satellite subscribers at 90% confidence (only 2 at 99%), suggesting some degree of endogenous positioning for these channels.

Figure A2 plots the growth in subscribers for a group of peer channels during this time period. The top line shows ESPN, which was available on virtually every cable system. The other channels in the graph all experienced substantial growth during this time period. Idiosyncracies in the timing of contracts and system upgrades created variation in channel positions for a given channel across locations. In some cases, if Fox News was being added to a system facing capacity constraints, its channel position was determined by the position of the channel it was replacing.

Table A25: First Stage Regressions: Nielsen Data, All Households, by Year

	FNC Minutes Per Week				Interacted
	2005	2006	2007	2008	
FNC Cable Position	-0.180*** (0.040)	-0.163*** (0.039)	-0.187*** (0.038)	-0.168*** (0.040)	-0.177*** (0.028)
MSNBC Cable Position	0.087** (0.037)	0.088** (0.035)	0.011 (0.032)	0.055* (0.033)	0.064*** (0.024)
System has MSNBC Only	-3.041 (7.221)	-6.044 (5.404)	-6.526 (5.458)	-0.421 (12.119)	-3.832 (4.246)
System has FNC Only	24.566*** (4.259)	19.842*** (3.548)	23.859*** (3.545)	25.265*** (4.376)	23.487*** (2.274)
System has Both	16.855*** (4.431)	12.505*** (3.711)	23.021*** (3.686)	21.783*** (4.740)	18.175*** (2.360)
Fixed Effects:	State	State	State	State	State
Cable System Controls:	Y	Y	Y	Y	Y
Demographics:	Extended	Extended	Extended	Extended	Extended x Year
Robust F-Stat	20.7	17.4	24.4	18	40.1
Number of Clusters	4640	4517	4394	4233	4830
N	14,872	14,840	14,933	14,896	59,541
R ²	0.208	0.204	0.221	0.213	0.213

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Instrument is the ordinal position of FNC on the local system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. Columns (1)-(4) give the FNC position coefficient when the first stage model is run separately by year. In Column (5), the extensive demographic set is interacted with dummy variables for each year, allowing the demographic effects on viewership to vary flexibly by year. Observations are weighted by the number of survey individuals in the zipcode according to Nielsen.

Table A26: First Stage Regressions: MediaMark / Simmons Data, All Respondents, by Year

	FNC Hours Per Week										Interacted
	2000	2001	2002	2003	2004	2005	2006	2007	2008		
FNC Cable Position	-0.238*** (0.066)	-0.129 (0.089)	-0.120 (0.097)	-0.055 (0.103)	-0.124 (0.108)	0.066 (0.128)	-0.271** (0.126)	-0.057 (0.120)	0.151 (0.128)	-0.102** (0.045)	
MSNBC Cable Position	0.005 (0.059)	-0.002 (0.106)	0.005 (0.109)	0.022 (0.117)	0.108 (0.130)	0.016 (0.137)	0.079 (0.128)	0.040 (0.106)	0.111 (0.107)	0.032 (0.043)	
System has FNC Only	23.888*** (5.655)	30.039*** (8.956)	22.633* (12.191)	12.435 (11.427)	34.952*** (16.926)	-28.798 (19.310)	64.088*** (18.088)	31.975* (18.006)	20.074 (24.288)	24.446*** (4.166)	
System has MSNBC Only	2.267 (5.513)	5.431 (7.553)	-13.769 (11.564)	-15.302 (13.546)	-8.819 (20.321)	-85.713*** (25.021)	18.710 (28.166)	-68.251*** (18.173)	-26.497 (19.997)	0.754 (3.867)	
System has Both	19.748*** (5.974)	21.321*** (7.944)	17.707 (11.568)	0.457 (12.623)	29.839* (15.348)	-16.475 (19.646)	58.994*** (17.483)	17.761 (18.800)	13.637 (22.024)	17.045*** (4.144)	
Fixed Effects:	State	State	State	State	State	State	State	State	State	State	
Cable System Controls:	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Demographics:	Extended	Extended	Extended	Extended	Extended	Extended	Extended	Extended	Extended	Extended x Year	
Robust F-Stat	13	2.1	1.5	0.3	1.3	0.3	4.6	0.2	1.4	5.3	
Number of Clusters	811	782	747	741	738	684	679	712	1330	2379	
N	24,245	24,416	23,229	22,864	23,384	22,909	22,476	23,002	11,026	197,551	
R ²	0.018	0.025	0.029	0.032	0.038	0.047	0.046	0.054	0.067	0.045	

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). Instrument is the ordinal position of FNC on the local system. The omitted category for the availability dummies is systems where neither FNC nor MSNBC is available. Columns (1)-(9) run the model separately for each year. In Column (10), the extensive demographic set is interacted with dummy variables for each year, allowing the demographic effects on viewership to vary flexibly by year.

Table A27: Reduced Form Regressions: Precinct Voting Data, Turnout

	2008 Presidential Turnout					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Cable Position	0.036*	-0.012	-0.008	-0.008	-0.020	-0.031**
	(0.020)	(0.014)	(0.010)	(0.011)	(0.013)	(0.014)
MSNBC Cable Position	-0.006	0.010	-0.006	-0.002	-0.003	0.003
	(0.018)	(0.010)	(0.008)	(0.008)	(0.009)	(0.010)
Fixed Effects:	None	State	State	State	County	County
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Basic	Extended	Basic	Extended
Number of Clusters	5516	5516	5513	4508	5513	4508
N	20,390	20,390	20,353	16,274	20,353	16,274
R ²	0.020	0.196	0.404	0.465	0.522	0.596

*p < .1; **p < .05; ***p < .01

The dependent variable is turnout in the presidential election, measured as number of presidential votes cast divided by the voting-age population in the zip code. Cluster-robust standard errors in parentheses (clustered by cable system).

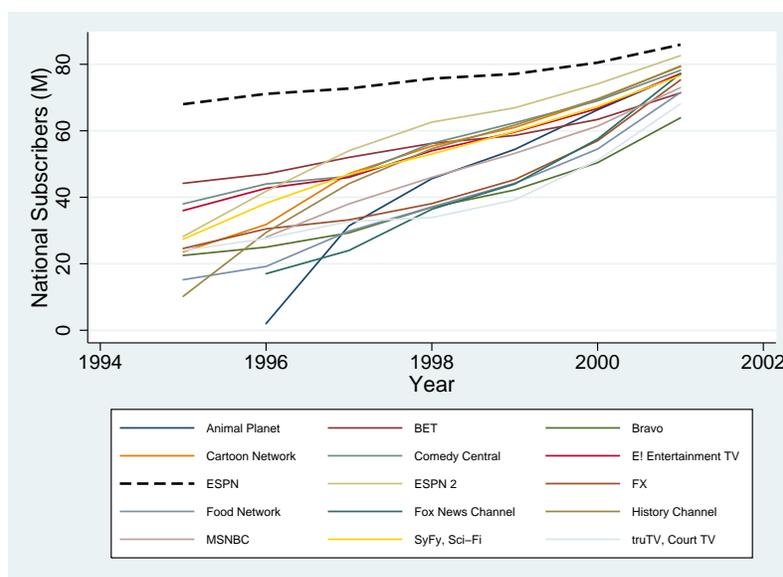


Figure A2: Number of subscribers for a group of peer channels by year for the period 1994-2001. National subscriber numbers according to SNL Kagan data.

Table A28: First Stage Regressions for Other Channels: MediaMark / Simmons Data, All Respondents

Channel	Own Position Effect		Channel	Own Position Effect	
	Cable Subscribers	Satellite Subscribers		Cable Subscribers	Satellite Subscribers
ABC Family	-0.0033*** (0.0007)	0.0001 (0.0008)	FX	-0.0024*** (0.0004)	-0.0009 (0.0006)
A&E	-0.0033*** (0.0006)	0.0004 (0.0010)	HGTV	-0.0037*** (0.0005)	-0.0022** (0.0009)
AMC	-0.0003 (0.0006)	0.0008 (0.0007)	History Channel	-0.0048*** (0.0007)	-0.0032*** (0.0011)
Animal Planet	-0.0023*** (0.0005)	0.0001 (0.0009)	Lifetime	-0.0021** (0.0009)	-0.0030** (0.0012)
BET	-0.0015*** (0.0004)	-0.0001 (0.0008)	MSNBC	-0.0034*** (0.0006)	-0.0005 (0.0008)
Bravo	-0.0038*** (0.0003)	-0.0003 (0.0004)	MTV	-0.0009*** (0.0003)	-0.0011** (0.0005)
Cartoon Network	-0.0008 (0.0005)	-0.0018** (0.0008)	Nickelodeon	-0.0014*** (0.0003)	0.0005 (0.0006)
CMT	-0.0012*** (0.0002)	-0.0007** (0.0003)	SyFy	-0.0039*** (0.0005)	-0.0005 (0.0008)
CNBC	-0.0017** (0.0007)	-0.0004 (0.0009)	Spike	-0.0007 (0.0006)	-0.0014* (0.0008)
Comedy Central	-0.0021*** (0.0005)	0.0005 (0.0008)	TLC	-0.0028*** (0.0005)	-0.0004 (0.0007)
Court TV	-0.0026*** (0.0004)	0.0003 (0.0007)	TNT	-0.0043*** (0.0009)	-0.0021* (0.0012)
Discovery Channel	-0.0027*** (0.0008)	-0.0012 (0.0012)	Travel Channel	-0.0022*** (0.0003)	-0.000004 (0.0003)
Disney	-0.0027*** (0.0003)	-0.0006 (0.0006)	TV Land	-0.0015*** (0.0003)	-0.0014*** (0.0004)
E!	-0.0020*** (0.0004)	-0.0004 (0.0005)	USA	-0.0022*** (0.0007)	-0.0016 (0.0011)
ESPN2	-0.0021*** (0.0005)	0.0008 (0.0009)	VH1	-0.0011*** (0.0003)	0.0001 (0.0004)
Food Network	-0.0035*** (0.0006)	-0.0015 (0.0010)	Weather Channel	-0.0006 (0.0012)	0.0025 (0.0017)

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). The main regressors are the ordinal position and availability of the indicated channel on the local cable system. All regressions include controls for individual and zipcode level demographics as well as cable system characteristics, and state-year fixed effects.

G.2 Cable and Satellite Subscriber Observable Correlations

Across locations, satellite subscriber characteristics correlate strongly with cable subscriber characteristics. Table A29 shows the regression coefficients of mean satellite subscriber characteristics on mean cable subscriber characteristics in the same cable system territory, nearly all of which are positive and large. Since the means of these characteristics are measured with sampling error - as they are constructed from the television viewership survey samples - the OLS coefficients are attenuated. In the table, we address this measurement error problem in two ways.⁴⁴ First, we progressively restrict the regression to markets with more and more survey respondents as these markets will have less sampling error. Second, we instrument for the mean cable characteristic with lead and lagged mean cable characteristic. Survey respondents are sampled independently from year to year. Consistent with measurement error, the coefficients generally tend upwards to one when we restrict to system-years with more respondents. Furthermore, the IV coefficients are generally very close to one.

In the same vein, we can look directly at viewership patterns. Satellite viewers watch 1.2 fewer minutes per week of Fox News Channel on average relative to cable viewers (on an overall mean of 90 minutes). At the bottom of Table A29, we regress predicted mean viewership of satellite subscribers (predicted from demographics) on that of cable subscribers. We also regress the cable system territory mean residual viewership of satellite subscribers (net of demographics) on the cable system territory mean residual viewership of cable subscribers. Across the board, cable and satellite subscribers within the same cable system territory display strong correlations of both demographics and viewing behavior.

G.3 Future and Nearby Channel Positions

We examine whether future cable news channel position predicts current viewership conditional on current position. If political tastes are shifting over time, and channel positions are endogenous but sticky, then future position should predict current viewership. A location which has become more Republican would watch more Fox News, but, if channel positions were endogenously tailored and sticky, their channel position may not have adjusted yet, so future position, after adjustment, would be informative about current ideology. The zip-level results for Fox News are in Table A30. Position in 2008 does not predict viewership in 2005 conditional on position in 2005.

⁴⁴One could also dis-attenuate the coefficients as the variance induced by sampling is known. This exercise is complicated because each cable system-year has different sampling variance.

Characteristic	N>0	N>10	N>50	N>100	IV
Black	0.649*** (0.0129)	0.733*** (0.0141)	0.836*** (0.0242)	0.978*** (0.0405)	1.043*** (0.0348)
Num Zips	5,843	4,685	1,252	342	2,436
College	0.454*** (0.0165)	0.576*** (0.0193)	0.728*** (0.0371)	0.793*** (0.0633)	1.013*** (0.0707)
Num Zips	5,843	4,685	1,252	342	2,436
HH Income	0.448*** (0.0150)	0.603*** (0.0164)	0.781*** (0.0287)	0.870*** (0.0646)	0.973*** (0.0656)
Num Zips	5,843	4,685	1,252	342	2,436
Age	0.264*** (0.0162)	0.350*** (0.0197)	0.414*** (0.0411)	0.449*** (0.0704)	0.812*** (0.147)
Num Zips	5,843	4,685	1,252	342	2,436
Hispanic	0.618*** (0.0143)	0.758*** (0.0157)	0.850*** (0.0250)	0.842*** (0.0365)	0.966*** (0.0380)
Num Zips	5,843	4,685	1,252	342	2,436
Party ID R	0.104*** (0.0364)	0.285*** (0.0567)	0.448*** (0.127)	0.588*** (0.215)	1.348*** (0.626)
Num Zips	896	453	78	25	361
Party ID D	0.165*** (0.0359)	0.274*** (0.0583)	0.341*** (0.126)	0.548*** (0.215)	1.348* (0.626)
Num Zips	896	453	78	25	361
Predicted Fox News	0.737*** (0.0133)	0.833*** (0.0137)	0.961*** (0.0202)	0.967*** (0.0291)	1.004*** (0.0436)
Num Zips	5,843	4,685	1,252	342	2,436
Predicted MSNBC Viewing	0.498*** (0.0118)	0.505*** (0.0130)	0.581*** (0.0254)	0.679*** (0.0436)	0.725*** (0.0563)
Num Zips	5,843	4,685	1,252	342	2,436
Fox News Residual	0.0977*** (0.0195)	0.165*** (0.0253)	0.392*** (0.0510)	0.424*** (0.0814)	0.688** (0.254)
MSNBC Residual	0.0814*** (0.0158)	0.117*** (0.0190)	0.381*** (0.0504)	0.567*** (0.0873)	0.320** (0.129)

Note: The first column of coefficients uses all cable system territory-years. These coefficients are attenuated because the mean cable is constructed from samples of survey respondents which can be as few as 2 per cable system territory-year. The second column of coefficients restricts to those with more than ten surveyed respondents. The third column of coefficients restricts to those with more than fifty survey respondents. The fourth column of coefficients restricts to those with more than 100 survey respondents. The final column of coefficients are uses lead and lagged means of cable subscribers as instrumental variables, as respondents are sampled independently from year to year.

Table A29: Regression coefficients of demographic characteristics and cable news viewership of satellite subscribers on the characteristics of cable subscribers in the same cable territory-year in MediaMark / Simmons viewership data.

Table A30: First Stage Regressions: Nielsen Data, Future Position Placebo

	Cable Subscribers		All Households		Satellite Subscribers	
FNC Position in 2005	-0.2574*** (0.0737)	-0.2153* (0.1253)	-0.1285** (0.0574)	-0.0829 (0.0857)	0.0661 (0.1231)	-0.0142 (0.1805)
FNC Position in 2008	-0.0569 (0.0754)	0.0193 (0.1127)	-0.0669 (0.0597)	0.0045 (0.0813)	-0.1487 (0.1139)	0.0267 (0.1726)
Fixed Effects:	State-Year	County-Year	State-Year	County-Year	State-Year	County-Year
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	Basic	Extended	Basic	Extended	Basic	Extended
Number of Clusters	3836	3836	3968	3968	3784	3784
N	13,372	13,372	13,918	13,918	12,240	12,240
R ²	0.0962	0.3890	0.2128	0.4421	0.0522	0.2056

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). The outcome is Fox News minutes per week in 2005 among cable subscribers, all households, and satellite subscribers, respectively in columns (1)-(2), (3)-(4), and (5)-(6). We include only zip codes that had access to Fox News in 2005, and regress hours per week on both the actual position in 2005, and the future position in the same zip code in 2008. Observations are weighted by the number of survey individuals in the zipcode according to Nielsen.

We also examine whether Fox News position in nearby systems predicts local viewership. If unobserved political tastes were uncorrelated with local positions, then they should also be uncorrelated with nearby positions even though ideology and demographics are correlated nearby. For each zip code-year in the data, we found the nearest zip code in the data for that year which wasn't in the same cable system. The results are in Table A31. We do not see a significant correlation of nearby position on local viewership in our preferred specifications. In Table A32, we see that nearby positions also do not correlate with 2008 McCain vote share.

G.4 Best Available Channel Position

We demonstrate one example of this historical influence in Table A33. We regress the ordinal positions of Fox News and MSNBC on the system's best available ordinal position in 1998, along with a control for the overall size of the system - its total number of channels.⁴⁵ The best available position in 1998 is a strong predictor of the current position, *even though* the positioning data here extends through 2008. A system's channel configuration prior to the

⁴⁵Our lineup data begins in 1998, and hence we restrict the sample for this regression to cable systems that did not have Fox/MSNBC in 1998. "Best available" is defined as the lowest open slot (unoccupied by an existing channel) in the region of the lineup dedicated to cable (i.e. non-network and non-local-access) channels. We define the cable region by locating the positions of CNN, ESPN, TNT, and The Discovery Channel, and consider any open slot above at least one of those channels to be available.

Table A31: First Stage Regressions: Nielsen Data, All Households, Nearby Position

	FNC Minutes per Week					
	(1)	(2)	(3)	(4)	(5)	(6)
FNC Position	-0.1311*** (0.0420)	-0.0710* (0.0384)	-0.1496*** (0.0286)	-0.1698*** (0.0281)	-0.1016*** (0.0333)	-0.1651*** (0.0252)
FNC Position in Nearby Zip	-0.0420* (0.0223)	-0.0185 (0.0216)	-0.0205 (0.0155)	-0.0166 (0.0159)	-0.0022 (0.0197)	-0.0110 (0.0139)
Fixed Effects:	Year	State-Year	State-Year	State-Year	County-Year	State-Year
Cable System Controls:	Y	Y	Y	Y	Y	Y
Demographics:	None	None	Basic	Extended	Extended	Extended+Sat.Hrs.
Number of Clusters	5796	5796	5787	4829	4829	4757
N	70,743	70,743	70,622	59,073	59,073	51,695
R ²	0.0299	0.0731	0.1903	0.2130	0.4292	0.3769

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). FNC hours per week (among all Nielsen households) are regressed on both the actual position and the position on a neighboring system. Regressions include controls for availability on both the actual and neighboring system. Observations are weighted by the number of survey individuals in the zipcode according to Nielsen.

Table A32: Reduced Form Regressions: Zip Code Data, All Households, Nearby Position

	2008 McCain Vote Share			
	(1)	(2)	(3)	(4)
FNC Position	0.0002 (0.0002)	0.0002 (0.0002)	-0.0002*** (0.0001)	-0.0001 (0.0001)
FNC Position in Nearby Zip	0.00005 (0.0001)	0.00005 (0.0001)	-0.0001 (0.0001)	0.00004 (0.0001)
Fixed Effects:	State-Year	State-Year	State-Year	County-Year
Cable System Controls:	Y	Y	Y	Y
Demographics:	None	Basic	Extended	Extended
Number of Clusters	4996	4996	4222	4222
N	17,588	17,588	14,719	14,719
R ²	0.2927	0.2927	0.8435	0.9171

*p < .1; **p < .05; ***p < .01

Cluster-robust standard errors in parentheses (clustered by cable system). FNC hours per week (among all Nielsen households) are regressed on both the actual position and the position on a neighboring system. Regressions include controls for availability on both the actual and neighboring system.

addition of Fox or MSNBC exerts a lasting influence on the positioning of Fox and MSNBC today.

Coefficient	MSNBC	Fox
(Intercept)	33.8 (0.573)	30.7 (0.432)
Number of Channels	0.032 (0.003)	0.032 (0.002)
Best Available	0.181 (0.014)	0.148 (0.012)
R^2	0.066	0.077
N	29,337	38,328

Table A33: Ordinal channel position vs. best available ordinal channel position, among systems where the channel (MSNBC or Fox News) was added in 1998 or later. Standard errors clustered by cable system.

H Solution Algorithm for Viewership Problem

Define ρ_{ict} as the Lagrange multipliers associated with the non-negativity constraints on T_{ict} . By complementary slackness, if $\rho_{ict} > 0$ then $T_{ict} = 0$. From the first order condition, $\rho_{ict} = \lambda_{it} - \gamma_{ict}$ where λ_{it} is the Lagrange multiplier on consumer i 's budget constraint. Therefore, T_{ict} can be zero if and only if $\gamma_{ict} < \lambda_{it}$.

For all the channels with $T_{ict} > 0$, $\lambda_{it} = \gamma_{ict}/(1 + T_{ict})$. Additionally, each consumer faces a time-budget constraint, $\sum_c T_{ict} = B$, where B is the total time available (in our scaling, the number of hours in a week: 168). This gives a system of equations with solution:

$$\lambda_{it} = \frac{1 + \sum_{c^+} \gamma_{ic^+t}}{B + C^+}$$

where c^+ are the indices of the channels that i watches a positive amount, and C^+ is the total number of such channels. Given this result, the iterative solution is to replace the γ_{ict} 's below the cutoff $(1 + \sum_c \gamma_c)/(B + C)$ with zero. If there were any γ_{ict} 's below this threshold, we now have a new cutoff defined by the remaining positive γ_{ict} 's, and we repeat the process again. There are at most C steps of this until we hit the final set of positive γ_{ict} 's, at which point we compute the times watched as:

$$T_{ict} = (T + C^+) \frac{\gamma_{ict}}{\sum_{c^+} \gamma_{ic^+t}} - \mathbf{1}(\gamma_{ict} > 0)$$

I Comparison of Regression Coefficients in Real and Simulated Data

Regressor	CNN Hours		FNC Hours		MSNBC Hours	
	Real	Simulated	Real	Simulated	Real	Simulated
CNN Position	-0.0038	-0.0084	-0.0009	0.0008	-0.0007	0.0003
FOX Position	0.0015	-0.0001	-0.0015	-0.0067	0.0014	-0.0003
MSN Position	0.0001	-0.0001	0.0006	0.0003	-0.0027	-0.0035
FOX Only	0.0389	-0.0084	0.3844	1.3971	-0.0476	0.0487
MSN Only	-0.0057	-0.0146	0.0165	0.1491	0.3546	0.7967
Both Available	0.0064	-0.0252	0.2806	1.3316	0.2769	0.7760
Number of Channels	0.0007	0.0001	0.0002	0.0003	-0.0003	-0.0003
Number of Broadcast Channels	-0.0079	-0.0044	-0.0060	-0.0032	0.0004	-0.0016
Age Quintile 2	0.2560	0.2859	0.1799	0.2885	0.0915	0.1503
Age Quintile 3	0.4167	0.4002	0.3610	0.2521	0.1395	0.1383
Age Quintile 4	0.6060	0.5935	0.5227	0.4636	0.2059	0.1925
Age Quintile 5	1.2475	1.1083	1.0711	1.1149	0.3790	0.4104
Income	0.6725	0.3916	0.7089	-0.0500	0.3998	0.1508
Income ²	-0.2374	-0.0971	-0.3055	-0.3782	-0.1482	-0.2310
Income ³	0.0227	0.0100	0.0324	0.0706	0.0149	0.0383
White	-0.1579	-0.1960	0.1774	0.3106	-0.0098	0.0229
Black	0.0444	-0.0012	0.1722	-0.1412	0.0497	-0.0160
Hispanic	-0.1756	-0.1687	-0.1728	-0.1591	-0.0938	0.0106
College Graduate	0.1865	0.1524	-0.1195	-0.0883	0.0632	0.1168
Man	0.1394	0.1312	0.1750	0.1325	0.0884	0.0986
1996 County R Share	-0.1976	0.0011	0.6419	-0.0310	-0.0223	0.0059

Table A34: Comparison of regression coefficients in real data and simulations: first stage regression at the individual level. Dependent variable is individual-level hours watched of each channel.

This section reports the fit of the indirect inference estimation routine. Tables A34 and A35 report the individual and zip-code level first stage regression coefficients, respectively. Table A36 reports the auxiliary regression of an indicator for watching any of the channel on individual demographics and cable positions. Tables A37 and A38 report the second stage IV and OLS regressions at the individual and zip levels..

Regressor	CNN Hours		FNC Hours		MSNBC Hours	
	Real	Simulated	Real	Simulated	Real	Simulated
CNN pos	-0.0027	-0.0054	0.0019	0.0010	0.0002	0.0001
FOX pos	0.0009	0.0003	-0.0033	-0.0043	0.0006	0.0000
MSN pos	0.0003	-0.0001	0.0009	0.0001	-0.0014	-0.0021
FOX Only	-0.0670	-0.0930	0.3723	0.8305	-0.0620	-0.0135
MSN Only	-0.0050	-0.0178	-0.0202	0.0103	0.1278	0.4004
Both Available	-0.1280	-0.0927	0.2780	0.8220	0.0821	0.3688
Number of Channels	-0.0001	-0.0002	-0.0004	-0.0004	-0.0002	0.0000
Number of Broadcast Channels	-0.0011	0.0042	-0.0051	0.0035	0.0008	0.0008
Nielsen Diary Market	-0.0559	0.0168	-0.1067	0.0029	-0.0356	0.0094
Log Population Density	-0.0066	-0.0046	-0.0177	-0.0073	0.0012	-0.0017
Percent Black	0.2616	0.2061	-0.4682	-0.2786	0.0475	0.1434
Percent Asian	0.0679	0.5497	-0.2136	0.0250	-0.1004	0.0310
Percent Other	0.3632	0.3221	0.5660	-0.3146	0.2717	0.1272
Percent Hispanic	-0.0414	-0.1372	-0.4037	-0.0934	-0.0753	-0.0444
Percent Male	0.2960	0.4305	2.1267	0.3432	0.3573	-0.0822
Percent Age 10-20	0.1428	-0.3086	-1.2863	-0.7501	0.3658	0.8269
Percent Age 20-30	0.4524	-0.1326	-1.6617	-0.2846	0.2384	0.6719
Percent Age 30-40	0.6939	-0.4529	-2.4931	-0.1636	0.4895	1.0751
Percent Age 40-50	0.3961	0.4848	-2.9705	-0.5794	-0.0944	0.4682
Percent Age 50-60	-0.0249	0.4462	-1.4036	-0.5868	0.3974	0.7346
Percent Age 60-70	1.6054	-0.1694	1.9905	-0.6619	0.8937	0.3962
Percent Age 70-80	1.8094	1.2224	3.4916	2.1240	0.8530	1.7386
Percent Age 80+	2.4572	0.3938	-1.0987	0.2538	1.0178	0.7552
Income Decile 2	0.0066	-0.0227	0.0439	-0.0830	0.0050	-0.0103
Income Decile 3	0.0129	-0.0071	0.0369	-0.0680	-0.0054	0.0040
Income Decile 4	-0.0114	-0.0078	0.0656	-0.0859	-0.0086	-0.0158
Income Decile 5	-0.0190	0.0081	0.0295	-0.0497	-0.0186	0.0037
Income Decile 6	-0.0400	0.0031	0.0182	-0.0917	-0.0250	0.0086
Income Decile 7	-0.0464	0.0235	0.0113	-0.0997	-0.0288	0.0144
Income Decile 8	-0.0480	0.0328	0.0228	-0.0840	-0.0330	0.0006
Income Decile 9	-0.0550	0.0702	-0.0079	-0.1217	-0.0426	-0.0014
Income Decile 10	-0.0590	0.0965	0.0193	-0.1018	-0.0435	0.0114
Percent HS Grad	0.2279	0.2207	0.0923	0.4498	0.1484	0.1515
Percent Some College	0.4931	-0.0068	0.9744	-0.1557	0.2755	0.0096
Percent Bachelors'	0.3295	-0.0267	1.4768	-0.1671	0.2556	0.0551
Percent Post-Grad	0.8696	0.5791	0.0432	-0.2022	0.5092	-0.0535
Percent Suburban	0.0767	-0.1377	0.2993	-0.1306	0.0498	-0.0511
Percent Urban	0.0475	-0.1187	0.2100	-0.1009	0.0556	-0.0502
1996 County R Share	-0.2069	-0.0893	0.5183	-0.0683	-0.1123	-0.0214

Table A35: Comparison of regression coefficients in real data and simulations: first stage regression at the zipcode level. Dependent variable is zipcode-level average hours watched of each channel.

Regressor	CNN-Zero		FNC-Zero		MSNBC-Zero	
	Real	Simulated	Real	Simulated	Real	Simulated
CNN Position	-0.0008	-0.0001	-0.0002	0.0003	-0.0002	0.0002
FOX Position	0.0003	-0.0001	-0.0005	-0.0004	0.0004	-0.0001
MSN Position	0.0000	0.0000	0.0002	0.0000	-0.0009	-0.0003
FOX Only	0.0160	0.0038	0.0824	0.2340	-0.0067	0.0038
MSN Only	0.0294	0.0021	0.0067	0.0002	0.1227	0.1870
Both Available	0.0171	0.0049	0.0654	0.2307	0.0993	0.1840
Number of Channels	0.0003	0.0000	0.0003	0.0000	0.0001	-0.0001
Number of Broadcast Channels	-0.0019	-0.0009	-0.0019	-0.0007	-0.0007	-0.0004
Age Quintile 2	0.0568	-0.0025	0.0395	-0.0244	0.0306	-0.0027
Age Quintile 3	0.0967	0.1241	0.0842	0.1143	0.0435	0.0512
Age Quintile 4	0.1321	0.1685	0.1080	0.1469	0.0588	0.0771
Age Quintile 5	0.2199	0.2416	0.1687	0.1439	0.0835	0.0082
Income	0.3180	0.3405	0.2443	0.3408	0.2102	0.2630
Income ²	-0.1175	-0.1394	-0.0983	-0.0738	-0.0795	-0.0252
Income ³	0.0115	0.0129	0.0100	0.0066	0.0079	0.0002
White	-0.0257	-0.0060	0.0197	-0.0469	-0.0004	-0.0207
Black	0.0119	0.0260	0.0490	0.1034	0.0091	0.0549
Hispanic	-0.0436	-0.0482	-0.0382	-0.0226	-0.0350	-0.1113
College Graduate	0.0610	0.0772	-0.0181	-0.0175	0.0385	0.0343
Man	0.0432	0.0429	0.0475	0.0634	0.0371	0.0400
1996 County R Share	0.0200	-0.0094	0.1487	-0.0071	0.0327	-0.0049

Table A36: Comparison of regression coefficients in real data and simulations. Dependent variable is an (individual-level) indicator for watching any of the channel.

Regressor	Vote Intention - IV		Vote Intention - OLS	
	Real	Simulated	Real	Simulated
FOX Predicted Hours	0.2127	0.0445		
CNN pos	0.0000	0.0002		
MSN pos	-0.0001	0.0000		
CNN Most-Watched			-0.0912	-0.0578
FOX Most-Watched			0.3073	0.2533
MSN Most-Watched			-0.0971	-0.0218
FOX Only	-0.0697	-0.0199	-0.0215	0.0224
MSN Only	-0.0017	0.0002	0.0163	0.0041
Both Available	-0.0522	-0.0212	-0.0066	0.0264
Number of Channels	-0.0006	0.0001	-0.0007	0.0000
Number of Broadcast Channels	0.0006	0.0000	-0.0005	0.0001
Age Quintile 2	-0.0103	0.0733	0.0467	0.0804
Age Quintile 3	-0.0489	0.0420	0.0658	0.0449
Age Quintile 4	-0.1096	-0.0143	0.0136	0.0068
Age Quintile 5	-0.2018	0.0044	0.0310	0.0580
Income	0.3104	0.5407	0.4242	0.4246
Income ²	-0.2918	-0.1149	-0.3043	-0.1010
Income ³	0.0803	0.0075	0.0707	0.0073
White	0.0443	0.1115	0.0899	0.1182
Black	-0.3662	-0.2804	-0.2920	-0.2697
Hispanic	-0.0277	-0.0772	-0.0859	-0.0797
College Graduate	-0.0522	-0.0940	-0.0508	-0.0759
Man	0.0367	0.0518	0.0427	0.0466
1996 County R Share	0.4810	0.0257	0.4894	0.0190

Table A37: Comparison of regression coefficients in real data and simulations. Dependent variable is individual-level Republican vote intention.

Regressor	Vote Intention - IV		Vote Intention - OLS	
	Real	Simulated	Real	Simulated
FOX Predicted Hours	0.0783	0.1002		
CNN pos	-0.0001	0.0003		
MSN pos	0.0000	0.0000		
CNN Hours			-0.0052	-0.0227
FOX Hours			0.0105	0.0240
MSN Hours			-0.0111	-0.0190
FOX Only	0.0007	0.0096	0.0306	0.0611
MSN Only	-0.0050	-0.0103	0.0073	-0.0199
Both Available	-0.0039	-0.0023	0.0143	0.0616
Number of Channels	-0.0001	0.0001	-0.0002	0.0000
Number of Broadcast Channels	0.0008	0.0000	0.0019	0.0002
Nielsen Diary Market	0.0090	0.0012	0.0151	-0.0052
Log Population Density	-0.0075	0.0020	-0.0086	0.0006
Percent Black	-0.4687	-0.3122	-0.5090	-0.3255
Percent Asian	-0.0133	-0.1085	-0.0337	-0.0945
Percent Other	-0.2625	-0.0986	-0.1716	-0.1677
Percent Hispanic	-0.1593	-0.0731	-0.2092	-0.0781
Percent Male	0.1447	0.1176	0.3167	0.2454
Percent Age 10-20	-0.0945	-0.1251	-0.6868	-0.2507
Percent Age 20-30	-0.4102	-0.2713	-0.8117	-0.4524
Percent Age 30-40	-0.4059	-0.3194	-1.2890	-0.4273
Percent Age 40-50	-0.0597	0.0332	-0.4025	-0.3862
Percent Age 50-60	-0.5314	-0.0808	-0.8885	-0.1065
Percent Age 60-70	-0.8083	-0.1636	-1.1453	-0.5558
Percent Age 70-80	-0.0943	-0.3253	0.0176	0.0176
Percent Age 80+	-0.2447	-0.2336	-0.7991	-0.3938
Income Decile 2	0.0253	0.0205	0.0500	0.0139
Income Decile 3	0.0354	0.0296	0.0625	0.0204
Income Decile 4	0.0374	0.0429	0.0687	0.0337
Income Decile 5	0.0416	0.0432	0.0702	0.0363
Income Decile 6	0.0450	0.0554	0.0773	0.0467
Income Decile 7	0.0578	0.0671	0.0941	0.0584
Income Decile 8	0.0670	0.0761	0.1010	0.0655
Income Decile 9	0.0815	0.1020	0.1074	0.0861
Income Decile 10	0.1001	0.1438	0.1197	0.1183
Percent HS Grad	-0.0425	0.0058	-0.0692	0.0690
Percent Some College	-0.0766	0.0244	0.0744	0.0225
Percent Bachelors'	-0.1721	0.0334	0.0001	0.0859
Percent Post-Grad	-0.4056	0.1130	-0.3799	0.0593
Percent Suburban	-0.0119	0.0205	0.0046	0.0117
Percent Urban	-0.0218	0.0109	-0.0064	0.0053
1996 County R Share	0.4572	0.0318	0.5034	0.0301

Table A38: Comparison of regression coefficients in real data and simulations. Dependent variable is individual-level Republican vote intention.