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## The Political Impact of Media Bias

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### Introduction

In a representative system of government, policy outcomes are affected by the political preferences and the beliefs of the voters. The media play a key role in shaping these preferences and beliefs. They collect, summarize, and frame the information that voters use in their voting decisions.

As a result, many have expressed concern that the media may be able to systematically manipulate political beliefs. Media slant may bias voters and thereby bias policy decisions.

Concerns of this type are relevant in the United States (U.S.), given that over 70 percent of Americans believes that there is a great deal or a fair amount of media bias in news coverage (Pew 2004). Media bias is at least as common, if not more common, in countries with less media freedom than the U.S.

Is media bias necessarily a problem? The effect of media bias depends on how the audience processes the information presented by the media. If the audience is aware of the media bias and filters it from the information, distortions in reporting are unlikely to have large effects on voter beliefs (Bray and Kreps 1987). In this rational world, media bias does not persuade voters.

Alternate theories hold that media bias does persuade voters. This may occur because voters do not sufficiently account for bias in the media (De Marzo, Vayanos, and Zwiebel 2003). This, in turn, may be a direct effect of the framing of the news (Lakoff 1987).

Ultimately, understanding the impact of media bias on voter beliefs and preferences is an empirical task. In this chapter, we first review some of the

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papers that have provided a measure of this impact. Most of these papers indicate that the media have a large impact. However, some of the findings can also be explained by self-selection of voters into preferred media. For example, **right-wing voters** are more likely to expose themselves to **right-wing media**, giving an impression that the **right-wing media** persuades them. Other studies provide evidence of an impact on self-reported voting, or stated voting in a laboratory experiment, as opposed to voting in actual elections.

In the rest of the chapter, we summarize the result of a natural experiment that addresses the question of the impact of media bias on political preferences. We draw on DellaVigna and Kaplan (2007), which examines the timing of the entry of the Fox News Channel into local cable markets and considers the impact of that entry on voting. Relative to DellaVigna and Kaplan (2007), we present new results on voter turnout for U.S. senatorial elections, as well as a more general analysis of persuasion rates.

Rupert Murdoch introduced the 24-hour Fox News Channel in October 1996. The channel expanded rapidly to reach 20 percent of U.S. cities and an audience of 17 percent of the population by June 2000 (Scarborough Research data). The decentralized nature of the cable industry induced substantial geographical variation in access to the Fox News Channel. Since the channel is significantly to the **right of all other mainstream** television networks (Groseclose and Milyo 2005), its introduction into a cable market is likely to have had a significant effect on the available political information in that cable market. This is true whether the Fox News Channel represents the political center and the rest of the media the liberal wing, or whether it represents the right and the rest of the media the middle.

The entry of the Fox News Channel into the U.S. media market makes it likely that, on the one hand, the impact was plausibly large enough to be detected and, on the other hand, that it is possible to identify that impact separately from other confounding factors affecting elections.

In this chapter, we discuss our findings on the impact of the Fox News Channel on voting patterns. The key finding is that we detect a significant impact on voting for the Republican candidates. Media bias, therefore, affected voting, at least in the case of the Fox News Channel's expansion. We discuss a variety of results ranging from the impact on the Republican vote share, the impact on voter turnout, regional variation in the impact, and the impact over a longer time horizon and on races that the channel did not explicitly cover.

To apply these results to other media markets, such as those in developing countries, it is useful to obtain quantitative estimates of the persuasive

[AQ: Do you think it advisable to define "right-wing" and "left-wing" and similar terms used throughout for a global audience?]

impact of the media that are able to be generalized to other contexts. We use our estimates of the impact of the Fox News Channel to compute persuasion rates, that is, the share of Democratic voters that switched to voting for Republican candidates because of exposure to Fox News. We also compute mobilization rates, that is, the share of nonvoters that turns out to vote because of exposure to the Fox News Channel. This section expands substantially on the discussion of persuasion rates in DellaVigna and Kaplan (2007).

In our baseline calibration, we estimate that 4 to 8 percent of the audience was persuaded to vote Republican because of this exposure. When we allow for a separate effect on nonvoters, we find that the mobilization effect of the Fox News Channel may have accounted for one-sixth to one-hundred percent [AQ: confirm large range] of the impact. We obtain similar persuasion rates for the channel's effect on U.S. senatorial elections. These estimates imply a sizeable impact of the media on political decisions. We conclude by discussing some limitations of our approach and some questions for future research on the impact of media bias on politics.

This chapter relates to the empirical literature on media bias (Herman and Chomsky 1998; Hamilton 2004; Groseclose and Milyo 2005; Puglisi 2004), as well as the theoretical literature on it (Mullainathan and Shleifer 2005; Gentzkow and Shapiro 2004). We provide evidence that exposure to media bias persuades voters, an implicit assumption underlying most of these papers.

## Theoretical Predictions

We summarize here the key results of a model (DellaVigna and Kaplan 2006) that allows for two channels through which exposure to media news can affect voting. The first channel captures rational learning and predicts that exposure to the media may have an impact on beliefs and voting only in the short-run. The second channel captures nonrational persuasion and implies that exposure to the media may affect beliefs and voting in the long-run.

We present first the rational updating channel in the presence of a new media source whose bias may not be known. A media source injects bias into its coverage of a political candidate. For example, it reports more positive and less negative news about the Republican candidate. Rational viewers, knowing the exact extent of the bias, realize that bad news often is not reported and good news often is exaggerated. If the viewers have a good

sense of the degree of the media source's bias, they will take into account the bias and discount the news about the candidate. They will not on average be persuaded by the biased news source.

The prediction differs if the bias of the media source is unknown. This is the case for television viewers who watch a new news source for the first time. As in the case of the Fox News Channel, we consider the case of a new media source that is more positive to the Republicans than other media sources. Viewers watch reports about Republican candidates and find the reports to be positive relative to what had been expected. Therefore, they alter their beliefs, thinking that the candidates are possibly high quality choices; also, however, they leave room for the possibility that the new media source might be biased to the right. Over time, as the viewers see a large number of positive reports about Republican candidates in comparison with other media sources, they start to realize that the new media source's bias is to the right of the average media source. Therefore, they take the updated bias into account when evaluating candidates. In the short run, therefore, they are persuaded by the new media source; in the long run, they learn about the bias and are no longer affected.

A second possibility is that nonrational viewers do not properly filter out the bias. For example, viewer may be able to learn the degree of the bias but do not realize the degree to which bias impacts reporting. Systematically then, this behavioral viewer places too little weight on the media source being biased and too much weight on the news reports of the media source. These behavioral viewers eventually learn the degree of bias of the media source but are nonetheless persuaded because they underweight the degree to which the bias of the source impacts news reports. In this behavioral scenario, the media has a permanent persuasive impact that does not decrease over time.

The two different theories—rational and behavioral—have similar short-run predictions but different long-run predictions. The first predicts that the Fox News Channel's effect will be temporary, and the second predicts that it will be more lasting.

## Estimates of the Impact of Media Bias

Table 6.1 summarizes a small number of key studies that examine the impact of media bias on political behavior and voting. The studies are grouped into four groups by the methodologies used: surveys, laboratory experiments, field experiments, and natural experiments.

**TABLE 6.1**  
**Survey of Studies on Effect of Media Bias on Political Decisions**

<i>Variable: Persuasion Rate <math>f</math> (Share of Listeners Convinced by Media)</i>										
<i>Paper</i>	<i>Treatment (1)</i>	<i>Election type or question (2)</i>	<i>Variable <math>t</math> (3)</i>	<i>Year (4)</i>	<i>Place (5)</i>	<i>Sample size (6)</i>	<i>Control group <math>t_T</math> (7)</i>	<i>Treatment groups <math>t_c</math> (8)</i>	<i>Exposure rate <math>e_T \cdot e_c</math> (9)</i>	<i>Persuasion rate <math>f</math> (10)</i>
<i>Surveys</i>										
Kull et al. (2003)	Respond. watches Fox News	Did US find WMD in Iraq?	Share of yes answers	2003	USA	N = 8,634	0.220	0.330	1.000	0.141
Gentzkow and Shapiro (2004)	Respondent watches CNN	Did Arabs do 9/11 attack?	Share of yes answers	2002	Arab countries	N = 2,457	0.215	0.280	1.000	0.083
	Respond. watches Al Jazeera			2002		N = 2,457	0.215	0.133	1.000	0.105
<i>Laboratory Experiments</i>										
Ansolabehere and Iyengar (1995)	Laboratory exposure to 30-Second political ad	Governor elect. Senate elect. Major elect.	Vote share for party sponsoring ad	1990 1992 1993	Southern California	N = 1,716	0.530	0.568	1.000	0.082
<i>Field Experiments</i>										
Gerber, Karlan, and Bergan (2006)	Free subscription to Washington Post	Governor elect.	Dem. share of votes	2005	Washington	N = 1,011	0.291	0.363	0.940	0.109
<i>Natural Experiments</i>										
Della Vigna and Kaplan (2007)	Fox News exposure, district f.e. Fox News exposure, county f.e.	Presidential election	Republican vote share	2000	28 US states	N = 66,372,804	0.556	0.560	0.127	0.034
							0.556	0.563	0.086	0.084

Calculations of media effect by the authors based on data from the papers cited. Columns (7) and (8) report the share of Republican voters in the Control and Treatment group. Column (9) reports the Exposure Rate, that is, the difference between the Treatment and the Control group in the share of people exposed to the Treatment. Column (10) computes the estimated persuasion rate as  $(f_T - f_C) / (e_T \cdot e_C * (1 - f_C))$ , except in the first row (see Text). The persuasion rate denotes the share of the audience that was not previously convinced and that is convinced by the message. The data for this paper refer to the estimates obtained using the (predicted) recall audience measure and the diary audience measure, respectively. The data for the Gerber, Karlan, and Bergan (2006) study is courtesy of the authors. For the Ansolabehere and Iyengar (1995) study, we use the data in Tables B1.1 and B2.4 neglecting voters that state the intention not to vote. We obtain the baseline share of voters  $t_{[C]}$  from Table B1.1 as the weighted average share of the subjects with the same party affiliation as the sponsoring party:  $(50/(50+38)) * 46/(46+18) + (38/(50+38)) * 18/(46+18)$ .

## Surveys

Following Lazarsfeld, Berelson, and Gaudet (1944), political scientists have widely used surveys to assess the impact of the media. Several of these surveys have pointed out that the people who watch a given media source tend to share a common political viewpoint with that source.

For example, a survey of 8,634 U.S. respondents in 2003 (Kull, Ramsay, and Lewis 2003) finds that 33 percent of the Fox News Channel viewers believes erroneously that weapons of mass destruction were found in Iraq by October 2003, compared to 22 percent for the overall sample. The finding holds even after controlling for the political affiliation of respondents. Taken at face value, these estimates imply that the Fox News Channel persuaded 14 percent of the respondents who did not previously believe that such weapons were found. Findings of this type suggest that exposure to the media may swing voter opinions in very significant ways.

Other studies find similar results. Gentzkow and Shapiro (2004) examine the effect of media exposure in nine predominantly Muslim countries based on a survey of 2,457 respondents. Members of the CNN audience were 30 percent more likely to believe, and members of the Al Jazeera audience were 40 percent less likely to believe, that Arabs carried out the 9/11 attacks, compared to survey respondents who did not watch either source. If, again, we translate these responses into persuasion rates, this study implies that the media persuaded from 8 to 10 percent of the audience.

These studies clearly document that media audiences differ in their political beliefs and opinions. They do not, however, necessarily imply that the media persuades voters. An alternative interpretation of this evidence is that people choose media sources that match their own political views. This alternative interpretation of the findings would lead to different policy implications, since it does not imply that media bias shapes the preferences of voters.

## Laboratory Experiments

Political scientists have taken a second approach—laboratory experiments—to measure the impact of the media on voting. In particular, they have examined the impact of political advertisements on stated voter preferences. The impact of political advertisements on voting is similar to the impact of media bias on voting in that both attempt to provide information to voters. However, they differ in that political advertisements claim to be partisan while the media do not.

Methodologically, a key difference from the survey studies is that the laboratory allows researchers to separate self-selection from persuasion. By

randomly assigning subjects to groups watching different advertisements, researchers can estimate the causal impact of exposure to different political information.

In a classical study in this literature, Ansolabehere and Iyengar (1995) expose experimental subjects to 30-second political advertisements supporting a candidate or criticizing the opposite candidate. They elicit beliefs and voting intentions at the end of the experiment. The advertisements are embedded in longer news clips to make the exposure to the advertisement more credible and more externally valid.

While the impact of political advertisement differs for positive and negative advertisements and depends on the content, in general Ansolabehere and Iyengar (1995) find substantial effects of persuasion. We summarize the results of three experiments run in southern California involving advertisements for a gubernatorial race in 1990, a senatorial race in 1992, and a mayoral race in 1993. When the data are aggregated for the 1,716 subjects in these three experiments, the results indicate that exposure to one advertisement increases the stated vote share for the sponsoring party from .530 to .568. This is a sizeable persuasion effect, implying that the advertisements convinced 8 percent of the subjects who would not otherwise have done so to support the sponsoring party.

These experiments capture the causal effect of exposure to the media on voting intentions in the laboratory. It is less clear, however, that these findings would translate into similar persuasion effects of the media in the field. In the experiments, subjects state their voting intention immediately followed the advertising. If the impact of exposure to advertising is temporary, advertisements in the field would have a much more muted impact. In addition, these experiments do not measure actual voting. Statements of voting in the laboratory do not readily translate into actual votes. For example, survey respondents generally report much higher voting rates than appear in voting records. Finally, subjects may also respond differently in a laboratory setting, compared to the response in an election campaign.

For these reasons, while these experiments suggest very interesting patterns of the impact of the media, it is important to also collect evidence in the field from media exposure in actual campaigns.

### Field Experiments

Recently Gerber, Karlan, and Bergan (2006) performed a randomized experiment to look at the impact of media bias on voting patterns. In the fall of 2005, they randomly selected three groups of people from a county in

Virginia at the time of the 2005 Virginia gubernatorial election. They gave a free subscription to the *Washington Post* (a purportedly **left-leaning** newspaper) to members of the first group. [AQ: elaborate on “purportedly” and “right” and “left?”] They gave a free subscription to the *Washington Times* (a purportedly **right-leaning** newspaper) to members of the second group. The third group was a control group whose members did not receive free subscriptions. A few months later, they surveyed the subscription recipients and the control group members with respect to knowledge of current events, political viewpoints, and voting patterns. They found little statistically significant evidence on the impact of media bias on knowledge or viewpoints, but they did find a significant impact on self-reported voting.

The group assigned a subscription to the **left-wing** newspaper stated that they voted more heavily for the Democratic candidate in the Virginia gubernatorial election of 2005. They also find that also the group assigned a subscription for the right-wing newspaper also voted more for the Democratic candidate, albeit insignificantly so. They interpret decrease in support for the Republicans by the group receiving the **right-wing** newspaper as due to an information provision (rather than bias) role for the media. The experiment took place at a time when a number of scandals reduced Republican popularity; exposure to these scandals reduced support for the Republicans.

A study of this type has a double advantage: it controls for self-selection by randomly allocating the newspapers, and it measures the impact in a real election. In this sense, it combines the advantages of the surveys and the advantages of the laboratory experiments. However, this study also has two drawbacks. First, the study does not measure actual voting, but only self-reported voting, which displays some known biases. Second, since field experiments such as this are expensive to run, the sample size is necessarily small (1,011 subjects) and geographically concentrated in one county. This implies that the impacts of voting are assessed with substantial uncertainty and may not represent the impact over a different population.

## The Impact of the Fox News Channel

We now report the results of a natural experiment on the exposure to media bias and its effects on voting. We summarize the results from the staggered timing of the entry of the Fox News Channel in local cable systems from DellaVigna and Kaplan (2007). In our view, natural experiments address the issues raised above for the other studies. As with the field experiments



and the surveys, we consider the impact of actual political information in the field, avoiding the artificial setting of the laboratory. Unlike the above studies, we measure the impact using actual voting as opposed to self-reports. Finally, while the assignment of the media is not random as in the laboratory of field experiments, we argue that it is quasi-random, allowing us to study the causal impact of media bias. Conditional on a set of controls, the availability of the new media of the Fox News Channel appears to be random.

### Introduction to the Market

Rupert Murdoch introduced the 24-hour Fox News Channel in October 1996 to compete with CNN. Like CNN, it was offered via cable and, to a smaller extent, via satellite. The introduction has three features that make it a particularly appropriate case to study to estimate the impact of media bias.

First, the expansion of the Fox News Channel was very fast. Thanks to an aggressive marketing campaign, a number of cable companies added the channel to their programming over the next four years. The geographical expansion was accompanied by a corresponding increase in the audience share. By June 2000, less than four years after the introduction, 17.3 percent of the U.S. population reported watching the Fox News Channel regularly. The speed of the expansion implies that the pre-Fox News Channel period (year 1996) and the post-Fox News Channel period (year 2000) are reasonably comparable.

Second, the expansion was geographically differentiated. Cable markets are natural monopolies with capacity constraints on the number of channels. The availability of the Fox News Channel in 2000 in a town depended on whether the local cable company decided to add it to the programming, possibly at the expense of another channel. Cable companies in neighboring towns adopted the Fox News Channel in different years, creating idiosyncratic differences in access. This allows us to compare voting patterns in neighboring towns that are similar except for the availability of the channel. The comparison at a very fine geographical level makes it less likely that confounding factors affect the estimates. While we do not have an instrument for the availability of the Fox News Channel, we document below that its introduction appears to be idiosyncratic, conditional on a set of controls.

Third, the expansion altered the political news coverage in a cable market. Even given the sudden expansion and popularity of the Fox News

Channel, and the variations in its diffusion, it is unclear whether the addition of any single media source could have a significant impact on the political beliefs of voters. The Fox News Channel's coverage, however, is unique among the television media. The channel is significantly to the right of CNN and all of the mainstream television networks (ABC, CBS, and NBC). This difference is agreed upon in popular discussions as well as academic ones (Groseclose and Milyo 2005). The introduction of the channel into a cable market, therefore, had a systematic and significant effect on the available political information in that cable market. This is true whether the Fox News Channel represents the political center and the rest of the media the liberal wing, or whether the Fox News Channel represents the right and the rest of the media the middle. The channel did not carry political advertisements and that political ads carried by local cable companies were uncommon in 2000. Hence, the impact of the exposure to the new channel is purely due to exposure to the content of the programming.

The three features of the expansion are unusual and are the main reason we focused on the Fox News Channel rather than other politically biased news sources. For example, it would be hard to estimate the impact of the introduction in the radio programming of **right-wing and left-wing** talk shows, since radio waves spread over a very large geographical area. Similarly, it is nearly impossible to study the impact of the coverage of the major networks (ABC, CBS, and NBC), which are now available virtually everywhere in the U.S.

### *Selection*

We take advantage of the three features of the expansion of the Fox News Channel and estimate the impact of its availability in 2000 on voting in the 2000 elections at the town level. The data set includes 9,256 towns with the 1996 and 2000 voting record. Before we do that, we assess whether the towns offering the channel in 2000 are *ex-ante* comparable to the towns not offering it in 2000.

We first compare the two groups of towns without including any controls. We find that the towns offering the Fox News Channel in 2000 are substantially more likely to vote Republican in the pre-period in 1996 and more likely to go to the polls in 1996. They are also more likely to live larger towns. This implies that we cannot compare the two groups of towns directly.

This kind of comparison, however, does not take advantage of the rich set of town-level controls that we assembled. In particular, the comparison

is not limited to geographical neighbors and cable systems with a similar number of channels. Next, we exploit the detailed town-level controls and introduce controls for the cable system and for county fixed effects or congressional district fixed effects. The introduction of these detailed geographical controls (fixed effects) implies that we compare towns with and without the Fox News Channel within a county and within a U.S. congressional district.

When we make the comparison conditional on these controls, there is no evidence that towns with higher Republican vote share in 1996, or higher turnout, are more likely to offer the Fox News Channel in 2000. Moreover, once we control for geographic heterogeneity and size of the cable system, the availability of the Fox News Channel in 2000 is uncorrelated with town-level demographic controls from the 1990 and 2000 U.S. Census, such as population, income, ethnic composition, education, and unemployment rate.

To summarize the findings, while overall the availability of the Fox News Channel is highly selective—the channel enters into larger markets and, given the town size, into more Republican areas—conditional on cable market size, the assignment to towns within an area (county or congressional district) is essentially random. This implies that, as long as we include the controls for geography and cable size, we can estimate the causal effect of the introduction of a new media by comparing towns with and without the Fox News Channel in 2000.

### Impact on Voting in Presidential Elections

Next, we come to the main analysis. We consider the impact of the entry of the Fox News Channel on the change in the Republican vote share between 1996 and 2000 at the town level, conditional on the control variables described. This strategy exploits the timing of the entry. By the November 1996 elections, the Fox News Channel had been launched in only a few markets; even in those markets, the launch was only one month before the elections. By the November 2000 elections, the channel had an audience that was smaller than, but nonetheless comparable to, that of CNN.

We compare the change in Republican vote share between 1996 and 2000 for towns with the Fox News Channel in 2000 and towns without the channel in 2000, weighting for number of voters. This uses a standard differences-in-differences methodology in that it compares the change over time (first difference) for the towns with the Fox News Channel versus

the towns without (second difference). This tests whether or not exposure to the channel, and more in general to politically biased media, leads to persuasion.

The results are reported in Table 6.2, column one. Formally, we estimate the specification as follows:

Q: renumber equations throughout?

$$v_{k,2000}^{R,Pres} - v_{k,1996}^{R,Pres} = \alpha + \beta_F d_{k,2000}^{FOX} + \Gamma X_k + \eta_g + \varepsilon_k \quad (4.1)$$

where  $v_{k,2000}^{R,Pres} - v_{k,1996}^{R,Pres}$  denotes the change in the two-party Republican vote share between the year 1996 and the year 2000. The set of controls  $X_k$  includes town-level demographic variables from the 1990 and 2000 U.S. Census, as well as controls for features of the cable system in the town (number of channels provided and in the number of potential subscribers). In addition, the specification includes a set of geographical fixed effects  $\eta_g$ , at the U.S. congressional district level in panel A and at the county level in panel B. The fixed effects and the control help to ensure the comparability of towns with and without the Fox News Channel. In the specification with district fixed effects, we compare towns in the same congressional district, served by cable companies with similar features, and with similar demographics. In the specification with county fixed effects we make the same comparison for towns within a county. Geographic neighbors are more likely to be comparable, in particular, if they share similar demographics and cable system features.

Our main finding is that the Fox News Channel had a significant impact on the 2000 elections. The entry increased the Republican vote share in presidential elections by 0.4 percentage points with district fixed effects (panel A) or 0.7 percentage points with county fixed effects (panel B). The difference between the specifications with congressional district (panel A) and county fixed effects (panel B) reflect different geographic comparisons. In both specifications, the result is statistically significant and robust to a variety of alternative specifications, alternative samples, and placebo specifications, documented in DellaVigna and Kaplan (2007). Column two in table 6.2 presents one such robustness check: We obtain very similar results if we control for the vote share in 1996,  $v_{k,1996}^{R,Pres}$ , instead of taking the first difference as in (4.1). Altogether, these results imply that exposure to the media shifted people's voting in the direction of the media content.

How large is this effect of the media? Since the Fox News Channel was available in 2000 in about 35 percent of households, the impact is estimated to be 0.15 to 0.2 percentage points, or approximately 200,000 votes nationwide. While this vote shift is small compared to the nationwide shift

toward the Republicans of 3.5 percentage points between 1996 and 2000, it is still likely to have been decisive in the close 2000 presidential elections. Moreover, this impact may become larger over time as the channel's audience and diffusion grow.

### *Town Characteristics*

We examine how the Fox News Channel's effect interacts with town characteristics, namely the number of channels, the share of population that is urban, and the political orientation of the congressional district (Della Vigna and Kaplan 2007).

The impact on voting was smaller in towns with more cable channels, which is consistent with a moderating effect of competition (Mullainathan and Shleifer 2005). The lower impact result could reflect exposure to more balanced reporting (although CNN and the network news are available in all towns in the sample) or merely lower audience rates for the Fox News Channel when more channels are available. In either case, this suggests that the impact of media bias on voting would be larger in countries with a small number of media sources, as is the case in most developing countries.

We also find that the impact of the Fox News Channel was significantly smaller in rural towns, in the South, and in more Republican districts. All these results may be explained by the fact that in rural towns, in the South, and in Republican districts most people already voted Republican and the share of the population that could be convinced was smaller.

### **Persistence of Effects**

A prediction of the model of persuasion described earlier is that the exposure to the Fox News Channel would have a persistent effect on voting rather than a temporary one. Instead, the model of rational learning predicts that over time the effect should decay, as voters learn about the previously unobserved bias.

We therefore study whether the impact of the Fox News Channel persists between the 2000 presidential election and the 2004 presidential election. In column three of table 6.2, we estimate the specification as follows:

$$v_{k,2004}^{R,Pres} - v_{k,2000}^{R,Pres} = \alpha + \beta_F d_{k,2000}^{FOX} + \Gamma X_k + \eta_g + \varepsilon_k.$$

We find that the availability of the channel in a town in 2000 is associated with an insignificant .2 percentage point vote share increase between 2000 and 2004. The result is essentially identical with district fixed effects

**TABLE 6.2**  
**Impact of Fox News on Voting**  
 Q: s/b U.S. throughout?

	Vote share			Turnout	
	Main result—presidential	Persistence	Senate	Presidential	US Senate
	Change in Pres. Rep. 2-party vote share: 2000–1996	Pres. Rep. 2-party vote share 2004–2000	US Senate Rep. 2-party vote share in 2000	Log change in Pres. turnout: 2000–1996	Log change in Senate turnout: 2000–1996
Dep. var.:	(1)	(2)	(3)	(4)	(5)
Panel A: US House fixed effect	(1)	(2)	(3)	(4)	(5)
Availability of Fox News	0.0042	0.0041	0.0021	0.0072	0.0046
Via cable in 2000	(0.0015)***	(0.0016)***	(0.0020)	(0.0026)***	(0.0039)
Republican vote share in 1996		0.9362		0.8295	
1996 presidential race		(0.0079)***		(0.0111)***	
Fox News in 2000 * (New York race)				0.0039	
				(0.0067)	
Control variables:					
Census controls: 1990 and 2000	X	X	X	X	X
Cable system controls	X	X	X	X	X
US House district fixed effects	X	X	X	X	X
Log change in voting-age pop.: 2000–1996				X	X
R <sup>2</sup>	0.7533	0.9824	0.6281	0.9768	0.6151
N	N = 9256	N = 9256	N = 8605	N = 8192	N = 9256
					N = 8186

<i>Panel B: county fixed effects</i>	(1)	(2)	(3)	(4)	(5)	(6)
Availability of Fox News	0.0069 (0.0014)***	0.0068 (0.0014)***	0.0019 (0.0024)	0.0071 (0.0028)**	0.0178 (0.0051)***	0.0158 (0.0056)***
Via cable in 2000		0.9432 (0.0092)***		0.8432 (0.0146)***		
Republican vote share in 1996						
1996 presidential race						
Fox News in 2000 * (New York race)				-0.0017 (0.0060)		
Control Variables:						
Census controls: 1990 and 2000	X	X	X	X	X	X
Cable system controls	X	X	X	X	X	X
County fixed effects	X	X	X	X	X	X
Log change in voting-age pop.: 2000–1996						
R <sup>2</sup>	0.8119	0.9865	0.6941	0.9829	0.6863	0.7474
N	N = 9256	N = 9256	N = 8605	N = 8192	N = 9256	N = 8186

An observation in the OLS regressions in columns (1)–(3) and (5) is a town in one of the 28 U.S. states in the sample. Panel A is estimated with US House district fixed effects and Panel B is estimated with county fixed effects. In columns (4) and (6), an observation in the OLS regression is a town in one of the US states with a Senate election in the year 2000. In column (1), the dependent variable is the change in the two-party Republican vote share for the 2000 presidential election. In columns (2), the dependent variable is the two-party Republican vote share in 2000. In column (3), the dependent variable is the 2-party Republican vote share for the 2004 presidential election minus the same variables for the 2000 election. In column (4), the dependent variable is the two-party Republican vote share for Senate in 2000. In column (5), the dependent variable is the log of turnout in Presidential elections in 2000 minus log of turnout in 1996. In column (6), the dependent variable is the log of turnout in US Senate elections in 2000 minus log of turnout in Presidential elections in 1996. The specification in Column (6) drops 6 outliers (observations with a change in log turnout larger than 1 in absolute value).

In columns (4) and (6), the change in log voting-age population between 1996 and 2000 is an (unreported) control variable. The variable “Availability of Fox News via Cable in 2000” is a binary variable that equals one if Fox News was part of the town’s local cable package in 2000. The Census controls are 12 demographic variables from the Census, present both in the 2000 values and in differences between 2000 and 1990. The Cable-system controls are dummies in the number of channels provided and in the number of potential subscribers. Robust standard errors clustered by local cable company in parentheses. The observations are weighted by total votes cast in the 1996 presidential election. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent

(panel A) and with county fixed effects (panel B). The effect therefore appears to be persistent, if not increasing over time. Persistence is consistent with the predictions of a model of nonrational persuasion; however, this result could also be due to greater audience exposure to the Fox News Channel over the period from 2000 to 2004.

### Ideology versus Popularity

The previous findings suggest that the channel had a significant effect on the Republican vote share and on turnout in the presidential election. We now consider whether the effect extends to local politics not covered by the channel. This allows us to test whether the effect is candidate-specific and does not extend to local elections, or a general ideological shift, and should affect local elections. Senatorial elections in the U.S. are a good test in this respect, because a large majority of these races fail to get national coverage. These elections are similar to local elections, for which unfortunately no town-level data set is available. As a test of the ideology shift, therefore, we estimate whether exposure to the Fox News Channel affected the two-party vote share in the senatorial elections.

In addition, one or two senatorial races per year attract substantial national coverage, almost like presidential races. This allows us to compare the effect on races that were not covered, where only ideological shifts should matter, to the effect on covered races, where candidate-specific coverage also could matter. In 2000, the senatorial race that got the most coverage on the Fox News Channel by a wide margin was the Hillary Clinton-Rick Lazio race in New York. These two candidates had 99 mentions in the *O'Reilly Factor* and the *Hannity & Colmes* show in the two months prior to the 2000 elections, with most mentions critical of Hillary Clinton. All other senate candidates in the 2000 campaign combined received a total of 73 mentions, with Joseph Lieberman, who was typically mentioned because of his vice-presidential race, getting the lion's share of these mentions.

We examine whether the Fox News Channel had an impact on the vote share in the senate elections, and whether it had a differential effect for the Clinton-Lazio race. In table 6.2, column four, we estimate as follows:

$$v_{k,2000}^{R,Sen} = \alpha_P v_{k,1996}^{R,Pres} + \alpha + \beta_F d_{k,2000}^{FOX} + \phi_F d_{k,2000}^{FOX} * d_{NY} + \Gamma X_k + \eta_g + \varepsilon_k, \quad (4.2)$$

where  $v_{k,2000}^{R,Sen}$  is the two-party vote share in the senatorial elections in 2000. The coefficient  $\beta_F$  indicates the effect of the Fox News Channel on senatorial races other than New York, and  $\phi_F$  indicates the differential



effect for the featured New York race. This specification controls for the 1996 presidential vote share.<sup>1</sup> We find that the Fox News Channel significantly increased the Republican vote share for the senate by 0.7 percentage points  $\hat{\beta}_F = .0072$  (panel A) and  $\hat{\beta}_F = .0071$  (panel B). Interestingly, the effect is as large as that on the presidential elections. Additionally, the effect is not significantly larger for the one senatorial race that the Fox News Channel covered heavily, the New York race between Hillary Clinton and Rick Lazio ( $\hat{\phi}_F = .0039$  in panel A and  $\hat{\phi}_F = -.0017$  in panel B). Thus, the channel appears to have induced a generalized ideological shift, as opposed to a candidate-specific popularity effect.

### Impact on Turnout

The significant impact of the Fox News Channel on voting in presidential and senatorial elections could have occurred through two mechanisms. First, the channel's entry convinced Democratic voters to vote for Republican candidates. Second, the entry attracted new Republican voters. To provide evidence on the two mechanisms, we study the impact of the Fox News Channel on voter turnout, as measured by the number of people going to the polls. To the extent that the persuasion effect was purely due to a change in the minds of Democratic voters, we would not expect an increase in turnout.

In table 6.2, column 5, we estimate as follows:

$$t_{k,2000}^{\text{Pres}} - t_{k,1996}^{\text{Pres}} = \alpha + \beta_F d_{k,2000}^{\text{FOX}} + \gamma \left[ \ln(\text{Pop}_{k,2000}) - \ln(\text{Pop}_{k,1996}) \right] + \Gamma X_k + \eta_g + \varepsilon_k, \quad (4.3)$$

where  $t_{k,t}^{\text{Pres}}$  is the log total votes in town  $k$  in year  $t$ :  $t_{k,t}^{\text{Pres}} = \ln(V_{k,t}^{\text{TOT,Pres}})$ . The change in this measure over time is the percent change in total votes cast. This specification controls for the percentage change in the voting-age town population over time,  $\ln(\text{Pop}_{k,2000}) - \ln(\text{Pop}_{k,1996})$ , since increases in population increase the number of votes cast.

We obtain somewhat different answers using our two benchmark specifications. The estimates with county fixed effects (panel B) imply that the availability of the Fox News Channel increased turnout to the polls by 1.78 percent, a large and significant effect. This estimate would imply that the effect on voting was mainly through mobilization of Republicans. The effect is still positive, but smaller and statistically insignificant using congressional district fixed effects (panel A). This latter estimate would imply that the impact operated mainly through convincing Democratic voters.

In table 6.2, column six, we estimate the impact on turnout in U.S. senatorial elections. We estimate an equation parallel to specification (6.3) with the change in turnout between the senatorial elections in 2000 and the presidential elections in 1996,  $t_{k,2000}^{\text{Sen}} - t_{k,1996}^{\text{Pres}}$ , as a dependent variable. We find that the entry increased turnout in senatorial elections by .54 percent with district fixed effects (panel A) or by 1.58 percent with county fixed effects (panel B). These estimates parallel the estimates of turnout for presidential elections, with a significant impact in the specification with county fixed effects.

Overall, the Fox News Channel's entry into a market appears to have mobilized voters. However, the evidence for this is not as consistent as for the effect on vote share.

### Persuasion Rates of the Media

Overall, we find a sizeable impact on the vote share for Republicans and on turnout. These estimates, however, do not tell us how effective the Fox News Channel was in convincing Democrats who were exposed, nor does it tell us how effective the channel was in mobilizing latent Republicans. Measures of the persuasiveness of the media depend, among other things, on the size of the audience in 2000. The smaller the audience, the larger the persuasion effect associated with the half percentage point impact on vote share. To generalize the results to other media markets, including possibly those in developing countries, it is useful to obtain quantitative estimates of effective persuasiveness of the media per individual exposed.<sup>2</sup> What share of the public exposed to a media source changes its opinions in the political direction of the media source? While the impact may not easily generalize to very different media markets, in principle the estimates of persuasion rates can be applied to other similar media markets.

In this section, we compute the effectiveness of the Fox News Channel in convincing non-Republican viewers to turn out and vote Republican. This substantially extends computations in DellaVigna and Kaplan (2007) where we assumed that the Fox News Channel convinced the same percentage of Democrats and nonvoters to vote Republican, and where we used only the vote share and not the turnout estimates to compute the persuasion rate. We generalize the previous approach by (1) allowing for differential influence rates on Democrats and on nonvoters and (2) using turnout estimates in addition to vote share estimates.

## Setup

We compare the vote share  $v_j$  in treatment towns exposed to the channel ( $j = T$ ) and control towns not exposed ( $j = C$ ). Before the exposure, a share  $r$  of the voting-eligible population votes Republican, a share  $d$  votes Democrat, and the remaining share  $(1 - r - d)$  does not vote. Since the two types of towns have similar political outcomes in the pre-Fox News Channel period conditional on a set of controls, we assume that  $r$  and  $d$  are the same in towns  $T$  and  $C$ .

A fraction  $e$  of the town population is exposed to the Fox News Channel after the nationwide introduction. Exposure  $e$  is higher in treatment towns, that is,  $e_T > e_C \geq 0$ . We allow for nonzero exposure  $e_C$  in control towns because, for example, of the availability of satellites that broadcast the channel to subscribers in both towns.

The key parameters we use to capture the effectiveness in affecting political behavior are the persuasion rate  $f$  and the mobilization rate  $m$ . The Fox News Channel persuades a fraction  $f$  of the Democrats in the audience,  $e_j d$ , to vote Republican. In addition, the channel mobilizes a fraction  $z$  of the nonvoters in the audience,  $e_j(1 - r - d)$ , inducing it to vote. Of these mobilized voters,  $f_m$  is the percentage of who turn out to vote for Republicans, with  $0 \leq f_m \leq 1$ .

$$v_j = \frac{r + fe_j d + me_j f_m (1 - r - d)}{r + d + me_j (1 - r - d)} \quad (6.1)$$

The number of Republicans in town  $j$  is equal to the number of Republicans in the town before the entry,  $r$ , plus the percent of exposed Democrats who were persuaded,  $fe_j d$ , plus the share of the mobilized voters that turn out for the Republicans,  $me_j f_m (1 - r - d)$ .

The denominator in expression (5.1) is the turnout in town  $j$ :

$$t_j = r + d + me_j (1 - r - d). \quad (6.2)$$

The turnout in town  $j$  is affected by the entry through the mobilization effect  $m$  on nonvoters.

Using expression (5.2) for the turnout  $t_j$ , we can compute the mobilization rate  $m$ . Subtracting  $t_C$  from  $t_T$  and re-arranging, we obtain the following:

$$m = \frac{t_T - t_C}{(e_T - e_C)(1 - r - d)}.$$

This expression is easily interpretable. The percent of those mobilized by the Fox News Channel to vote is equal to the difference in turnout across

treatment and control towns, divided by the differential in the number of treated individuals (the differential exposure rate multiplied by the size of the nonvoting population).

We can calculate the persuasion rate  $f$  given the mobilization rate  $m$  of Fox News, provided that we make assumption about  $f_m$ . The other variables  $v_j$ ,  $t_j$ ,  $r$ ,  $d$ , and  $e_j$  are observed. We report the solution for  $f$  in the appendix.

### Persuasion Results

We now provide results for the mobilization rate  $m$  and the persuasion rate  $f$  for different specifications. In particular, we estimate mobilization and persuasion rates for both presidential elections and senatorial elections, using the specifications with district fixed effects (table 6.2, panel A) and the specifications with county fixed effects (table 6.2, panel B). This provides a broad array of estimates of the impact of the media.

To obtain these estimates, we need measures for the parameters  $v_T$ ,  $V_C$ ,  $t_T$ ,  $t_C$ ,  $r$ ,  $d$ ,  $e_T$ , and  $e_C$ . We use the specifications in table 6.2 and summary statistics reported in DellaVigna and Kaplan (2007) to estimate the vote shares  $V_T$  and  $V_C$  and the turnout rates  $t_T$  and  $t_C$ . We estimate the pre-Fox News Channel share of Democrats and Republicans  $r$  and  $d$  using the average voting patterns in the data. Finally, we document the audience rates  $e_T$  and  $e_C$  using measures of the audience of the Fox News Channel according to Scarborough Research data. According to the benchmark audience measure of the recall audience and using the estimates with district fixed effects, the exposure to the Fox News Channel  $e$  is 8.9 percentage points in the control towns and 21.7 percentage point in the treatment towns. The availability of the channel via cable thus increased its audience by about 12.8 percentage points. The estimated increase in audience is of about 8.6 percentage points for the specification with county fixed effects. We document further the estimates of these parameters in the appendix.

We estimate the persuasion rates and the mobilization rates under three different scenarios and report the results in table 6.3. The first scenario, "Mobilization=Persuasion," assumes that the persuasion rate  $f$  and the mobilization rate  $m$  are equal, that is, the effect on nonvoters is the same as the effect on Democratic voters. This is the assumption used for the estimates in DellaVigna and Kaplan (2007). For presidential elections, these assumptions imply that the Fox News Channel persuaded 3.4 percent of voters in the specification with district fixed effects or 8.4 percent of voters in the specification with county fixed effects to vote Republican.

**TABLE 6.3**  
**Persuasion and Mobilization Rates**

<i>Assumptions for Calibration</i>	<i>Geographic controls (fixed effects) used for the estimates</i>	<i>Estimated effect of Fox News on vote share</i>	<i>Estimated effect of Fox News on turnout</i>	<i>Implied persuasion rate of the media</i>	<i>Implied mobilization rate of the media</i>
(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: presidential elections</b>					
<i>Mobilization = persuasion</i>	District fixed effects	0.0042	0.0046	0.034	X
<i>Mobilization 100% for Rep.</i>	District fixed effects	0.0042	0.0046	0.025	0.046
<i>Mobilization 56% for Rep.</i>	District fixed effects	0.0042	0.0046	0.054	0.046
<i>Mobilization = Persuasion</i>	County fixed effects	0.0069	0.0178	0.084	X
<i>Mobilization 100% for Rep.</i>	County fixed effects	0.0069	0.0178	-0.052	0.263
<i>Mobilization 56% for Rep.</i>	County fixed effects	0.0069	0.0178	0.115	0.263
<b>Panel B: US Senate elections</b>					
<i>Mobilization = persuasion</i>	District fixed effects	0.0072	0.0054	0.054	X
<i>Mobilization 100% for Rep.</i>	District fixed effects	0.0072	0.0054	0.062	0.045
<i>Mobilization 56% for Rep.</i>	District fixed effects	0.0072	0.0054	0.096	0.045
<i>Mobilization = persuasion</i>	County fixed effects	0.0071	0.0158	0.079	X
<i>Mobilization 100% for Rep.</i>	County fixed effects	0.0071	0.0158	-0.025	0.196
<i>Mobilization 56% for Rep.</i>	County fixed effects	0.0071	0.0158	0.122	0.196

This Table reports the estimated *persuasion rate* and *mobilization rate* of the media implied by the Fox News estimates. The *persuasion rate* is defined as the share of Democratic voters that are convinced to vote Republican due to exposure to Fox News. The *mobilization rate* is defined as the share of non-voters that are convinced to vote due to exposure to Fox News. The Table presents the result for three types of estimates. The first estimate, “*Mobilization = Persuasion*,” assumes that mobilization rates equal persuasion rates (that is, the effect of Fox News on non-voters is the same as the effect on Democrats). The second estimate, “*Mobilization 100% for Rep.*,” assumes that mobilization rates can differ from persuasion rates, and that all mobilized non-voters vote for the Republicans. The third estimate, “*Mobilization 56% for Rep.*,” assumes that mobilization rates can differ from persuasion rates, and that 56% of mobilized non-voters vote for the Republicans and 44% for Democrats (this is based on the composition of the Fox News audience). The formulas and parameters used to calculate the implied mobilization rate and the implied persuasion rate are detailed in the Appendix.

In Panel A, the estimated effect of Fox News on the vote share is the coefficient on the Fox News variable in the Presidential vote share regression (Column (1) in Table II), and the estimated effect on turnout is the coefficient on the Fox News variable in the Presidential turnout regression (Column (5) in Table II). We present separate estimates using US House district fixed effects (Panel A in Table II) and county fixed effects (Panel B in Table II). In Panel B, the estimated effect of Fox News on the vote share is the coefficient on the Fox News variable in the US Senate vote share regression (Column (4) in Table II) and the estimated effect on turnout is the coefficient on the Fox News variable in the US Senate turnout regression (Column (6) in Table II).

Intuitively, to obtain the estimate of the persuasion rate we rescale the effect on the vote share (.42 and .69 percentage points, respectively) by the 12.8 percentage point differential audience rate.<sup>3</sup> For senatorial elections, the estimates imply persuasion rates of 5.4 percent for district fixed effects and 7.9 percent for county fixed effects. These estimates indicate sizeable persuasive effects of the media.

A drawback of this first approach is that it predicts an increase in turnout due to the Fox News Channel that is significantly smaller than the observed large increase in the specifications with county fixed effects (table 6.2, panel B, column five). The larger impact on turnout may be due to higher mobilization rates  $m$  compared to the persuasion rates  $f$ . In addition, the newly mobilized voters may have in part voted for the Democratic party, implying that  $f_m$  is smaller than 1. In this section, we extend our previous work to separate out a mobilization effect on nonvoters from a persuasive effect on Democrats.<sup>4</sup>

In the second scenario, which we label “Mobilization 100% for Rep.,” we allow for different persuasion rate  $f$  and mobilization rate  $m$ . We also assume that all the nonvoters that the Fox News Channel mobilizes vote Republican, that is,  $f_m = 1$ . The results are quite similar for presidential and senatorial elections, but differ depending on the unit of the fixed effects (district or county). The estimated mobilization rates  $m$  are large with county fixed effects (26.3 for presidential and 19.6 percent for senatorial) and sizeable with district fixed effects (4.6 percent for presidential and 4.5 percent for senatorial). The estimates of the mobilization rates in turn affect the estimates of the persuasion rates. In the specification with county fixed effects, the large mobilization rates render the persuasion rates small, or even slightly negative. If the Fox News Channel had a large effect of convincing nonvoters to vote Republican, this fully explains the vote share results, even without any effect on converting Democratic voters. The estimates of persuasion rates with district fixed effects are less affected by this scenario since the estimated mobilization rates are lower.

This second scenario, while allowing for a separate turnout and conversion effect, requires the turnout effect to benefit only Republican candidates. However, it is possible that a fraction of the nonvoters that is mobilized votes for Democratic candidates. To quantify this, in the third scenario, “Mobilization 56% for Rep.,” we assume that 56 percent of mobilized nonvoters vote for the Republicans and 44 percent for Democrats, that is, we assume  $f_m = .56$ . This breakdown, while arbitrary, is based on

the observation that, according to Scarborough data, 56 percent of the Fox News Channel's audience is self-declared Republican. We assume that this breakdown also holds for the newly mobilized voters. Under this scenario, we obtain persuasion rates that are typically higher than under the other scenarios, ranging from 5.4 percent in presidential elections with district fixed effects to 12.2 percent in senatorial elections with county fixed effects. The reason is that under these assumptions, the increase in Republican vote share due to the Fox News Channel cannot be due to the effect on nonvoters, since nonvoters divide themselves fairly evenly across parties. The effect, therefore, has to be due to a large conversion effect of Democrats into Republicans.

Exposure to more conservative coverage had a sizeable effect on political choices of voters. Most scenarios imply a substantial role of the media in persuading Democratic voters to vote Republican. However, if we take at face value the estimates indicating large turnout effects (and hence high mobilization rates), the data are also consistent with pure mobilization and no persuasion. While our best guess based on the different estimates is that exposure affected both margins, we leave fully differentiating between persuasive impacts of the media and mobilizing impacts of the media to future research.

## Conclusions

The study on the impact of the Fox News Channel discussed in this chapter provides evidence on the extent to which the political content of a media source persuades and mobilizes potential voters.

We have compared this study to other studies in the literature that take different approaches to answering a similar question. We have argued that natural experiments in media exposure provide a combination of two desirable features, quasi-random assignment of the media and a natural setting. In comparison, surveys also examine voting in the field, but they cannot separate sorting from causal effect. Laboratory experiments provide a clean randomization, but they do so at the cost of an artificial setting. Field experiments can also provide randomization in the context of a real election, but it is often difficult to map the outcomes to real election variables.

Other studies use natural experiments to address the impact of the media on voting. Expansions of the *New York Times* in the 1990s (George and Waldfogel 2006) and of television between 1940 and 1972 (Gentzkow 2006) decrease turnout, while radio entry between 1920 and 1940 increases

**Q:** s/b *The New York Times*?

turnout (Stromberg 2004). These studies analyze the link between media and voting from other vantage points.

A number of important questions are left unanswered, or only partially answered, by this and other studies on the impact of the media. We outline a few that we consider to be particularly important.\*

- First, do the media mostly mobilize the “already convinced” or do they persuade voters to switch parties? We find evidence that the effect of the Fox News Channel was at least partly due to increased turnout of latent Republicans, the “already convinced,” but we cannot precisely evaluate the extent of this channel with precision.\*
- Second, does media bias affect other behavior beyond voting? It would be interesting to consider the impact on other politically charged decisions, such as the degree of political activism, propensity to contribute money to political causes, or military **conscription** rates. [AQ: **presumably you are referring to non-U.S.?**]
- Third, who is most likely to be persuaded by the media? A large literature in political science tries to determine when political preferences are formed, including whether young people are most affected by political messages. In this chapter, we did not have access to individual data and hence could not test these hypotheses.\*
- Fourth, does exposure to the media change policy? We have not directly examined the impact on policy making.\*
- Fifth, why do the media have an effect on voting? We have provided some evidence to distinguish rational updating from nonrational persuasion, but we cannot draw firm conclusions. Understanding the exact channels of media influence is important both from policy and research perspectives.

## Appendix

### Q: renumber equations throughout?

Using expressions (5.1) and (5.2), we can derive the difference in the vote shares as follows:

$$v_T - v_C = \frac{r + f_{e_T}d + m_{e_T}f_m(1 - r - d)}{t_T} - \frac{r + f_{e_C}d + m_{e_C}f_m(1 - r - d)}{t_C}$$

Multiplying by  $t_T t_C$  and subtracting off  $r(t_C - t_T)$ , we get the following:

$$(v_T - v_C)t_T t_C - r(t_C - t_T) = f_{e_T}d t_C + m_{e_T}f_m(1 - r - d)t_C - f_{e_C}d t_T - m_{e_C}f_m(1 - r - d)t_T$$



Subtracting the terms involving  $f_m$  and dividing by  $d(e_T t_C - e_C t_T)$ , we get the following:

$$f = \frac{(v_T - v_C)t_T t_C}{d(e_T t_C - e_C t_T)} - \frac{r(t_C - t_T)}{d(e_T t_C - e_C t_T)} - \frac{m f_m(1-r-d)}{d}$$

Finally, using the definition of  $t_j$  we note that  $e_T t_C - e_C t_T = (e_T - e_C)(r + d)$ . Substituting this expression, we can simplify, combine terms, and solve for the influence rate  $f$  as follows:

$$f = \frac{(v_T - v_C) \frac{t_T t_C}{r + d}}{d(e_T - e_C)} - \frac{m(1 - r - d) \left( f_m - \frac{r}{r + d} \right)}{d} \tag{7.1}$$

Expression (7.1) has two components, and is roughly interpretable as the effect of the Fox News Channel on vote share  $v_T - v_C$  per exposed Democratic, minus the increase due to Republican turnout. The first term says that the higher the impact of the Fox News Channel on the vote share per exposed Democrat, the higher the influence rate  $f$ . The second term subtracts the impact of mobilized nonvoters. This second term can be positive or negative depending upon whether mobilization is biased towards the Republicans or the Democrats (that is, whether  $f_m - r/(r + d)$  is greater or less than zero and how large its magnitude is).

As mentioned in the text, if we restrict  $f_m = 1$  and impose  $f = m$ , we can simplify (7.1) to the formula we used in DellaVigna and Kaplan (2007), which also corresponds to our “mobilization = persuasion” case in table 6.3. This formula is as follows:

$$f = \frac{(v_T - v_C)t_T t_C}{d(e_T - e_C)}$$

**Estimation**

We compute mobilization and persuasion rates for different specifications and using different assumptions. We measure  $v_T - v_C$  as the impact of the Fox News Channel on the two-party Republican vote share. In our county fixed effects specifications, we use 0.0069 for presidential elections and 0.0071 for senatorial elections. In our congressional district fixed effects specification, we use 0.0042 for presidential elections and 0.0072 for senatorial elections. We measure  $T_C$ , turnout in the control towns, as 0.5600 for the presidential elections and 0.5167 for senatorial elections. We measure  $T_T$ , turnout in the treatment towns, as the turnout in the control town plus the turnout effect of the Fox News Channel. For presidential elections, it

is  $(1 + 0.0178) * 0.56 = 0.5700$  for county fixed effect specifications and  $(1 + 0.0046) * 0.56 = 0.5626$  for district fixed effects specifications. Similarly, for senatorial elections, this is  $(1 + 0.0158) * 0.5167 = 0.5247$  for county fixed effect specifications, and for district fixed effect specifications it is  $(1 + 0.0054) * 0.5167 = 0.5195$ .

The exposure rates  $e_T$  and  $e_C$  do not depend upon whether we are looking at senatorial or presidential elections. The exposure rate for control towns  $e_C$  was  $0.0262 * 3.43 = 0.089866$ , whereas the exposure rate for treatment towns  $e_T$  is  $(0.0262 + 0.0371) * 3.43 = 0.2171$  with district fixed effects and  $(0.0262 + 0.0251) * 3.43 = 0.1760$  with county fixed effects.

We take our estimates of Republicans ( $r$ ) and Democrats ( $d$ ) from the population-weighted average of Republicans and Democrats in our sample. The variable  $d$  is the share of Democrats in the population before the entry of the Fox News Channel, computed as the two party-vote share of Democrats multiplied by turnout. The same is true for calculating  $r$ , the share of Republicans in the population. In presidential elections,  $d$  is equal to  $0.547 * 0.56 = 0.2537$  and  $r$  is equal to  $0.453 * 0.56 = 0.3063$ . Thus,  $1 - r - d$  is equal to the percentage of eligible voters that does not turn out, which is equal to 0.44. In senatorial elections,  $d$  is equal to  $0.5469 * 0.5167 = 0.2826$  and  $r$  is equal to  $0.4531 * 0.5167 = 0.2341$ . Thus,  $1 - r - d$  is equal to the percentage of eligible voters that does not turn out, which is equal to 0.4833.

## Notes

1. The results are similar if we control for the 1994 senatorial vote share instead. The disadvantage of this specification is that it restricts the sample to 2,037 towns in five states.
2. Of course, the effective persuasiveness per individual of the media can vary across countries due to differences in political systems, educational systems, competitiveness of media markets, political orientation of the media, and many other factors.
3. A more restrictive audience measure implies that availability of the Fox News Channel via cable increased the channel's audience by 2.5 to 3.7 percentage points. These audience numbers imply persuasion effects between 11 and 28 percent. We report results using these measures in DellaVigna and Kaplan (2007).
4. The mobilization effect on nonvoting Republicans could also be a persuasive effect on latent nonvoting Democrats.

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