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*Local Television, Citizen Knowledge and
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LOCAL TELEVISION, CITIZEN KNOWLEDGE AND POLITICAL
ACCOUNTABILITY: EVIDENCE FROM THE U.S. SENATE

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Local Television, Citizen Knowledge and Political Accountability: Evidence from the U.S. Senate*

Mattias Nordin[†]

Abstract

I investigate the causal effect of access to relevant local television on i) U.S. citizens' knowledge of their senators' actions in the Senate and ii) whether citizens hold their senators accountable for these actions. To do so, I utilize the mismatch between the local television markets and the states. This mismatch causes citizens living in counties where local television stations are based in their own state (in-state counties) to have greater access to relevant news about their senators, compared to citizens living in counties served by local television based in a neighboring state (out-of-state counties). Using survey data from the 2006 Cooperative Congressional Election Study, I find that the biased coverage of local television news leads to citizens in in-state counties, compared to out-of-state counties, to be more informed about their senators' roll-call votes, as well as more likely to hold opinions about these senators. However, I do not find that the increased knowledge affects the likelihood that citizens evaluate their senators based on the roll-call votes. This result suggests that passively acquired information through local television is not sufficient for individuals to hold their senators accountable for their actions in the Senate.

Keywords: Local television, political information, natural experiment, roll-call votes

JEL Classification: D72, D80, H50

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1 Introduction

In representative democracies, citizens elect representatives to act in the interests of the voters. In order to achieve this goal, a natural viewpoint is that citizens should be well-informed about what policies are desirable, as well as which politicians are likely to implement them. However, in the seminal publication of *The American Voter*, Campbell et al. (1960) questioned whether American voters have enough information to fulfill these goals. Since then, a large body of research have discussed the political implications of this apparent lack of voter information.

One of the primary ways for voters to acquire political information is through the mass media. However, the value of television news, in particular, have been heavily debated. Some scholars have criticized it for providing low news content where people view television as a source of entertainment rather than information. On the other hand, television is the primary source of information for many citizens, especially for those with limited education (Graber 2006). Understanding what effects television have on voter information is therefore important in order to understand the distribution of political knowledge in the electorate.

In this paper, I study the causal effect of access to relevant local television news on i) citizens' knowledge of their senators and ii) whether they hold their senators accountable for the actions they take in the Senate. I do so by utilizing a natural experiment in the local television market. Specifically, some citizens primarily have access to local television from a neighboring state, leading them to receive news about the "wrong" senators. I use this misalignment between states and local media markets to study whether citizens correctly identify their senators' roll-call votes on a number of different issues. Furthermore, I study whether citizens' hold their senators accountable based on how well the citizens' preferences over these same issues align with how the senators voted in the Senate. To carry out the analysis, I combine data from the 2006 Cooperative Congressional Election Study, together with data on the structure of the local television markets. To isolate the causal effect of local television, I make use of entropy balancing, a newly developed method designed for the estimation of causal effects using observational data (Hainmueller 2012).

I show that local television stations heavily bias their coverage of senators to focus more on the senators of the state where the television station is located, while spending comparatively less time on senators from other states within the media market. I find that this biased coverage leads citizens living in counties which receive local television from their own state (in-state counties) to be more informed about their senators' roll-call votes, compared to citizens in counties where the local television stations are based in a neighboring state (out-of-state counties).

I also find that access to relevant local television affects the probability that citizens express an opinion about their senators, both by placing them on ideological scales and on expressing either approval or disapproval of the job their senators are doing. It also affects the likelihood that citizens know which party their senators belong to. However, I do not find that this increased knowledge affects the probability that citizens evaluate their senators based on their actual roll-call votes. This result suggests that passively acquired information through local television is not sufficient for individuals to hold their senators accountable for their actions in the Senate.

2 Related literature

It is generally recognized that mass media is one of the most important sources of political information for voters. Nevertheless, early political science research typically failed to identify significant impact of mass media on voter behavior and opinion formation (Bartels 1993). Among the different mass media, television has been singled out because of its relatively low informational content and the fact that television viewers tend to have little political information.

However, interpreting the correlation between media consumption and political knowledge as causal is misleading. For instance, Morgan and Shanahan (1992) argue that heavy television viewers are found among marginalized groups with lower levels of political participation, causing the negative correlation between television news consumption and political knowledge. Furthermore, Price and Zaller (1993) found that, once controlling for prior political knowledge, watching television actually had a positive effect on information.¹ To address the issue of causality, earlier research instead relied on lab experiments. However, while lab experiments produce reliable estimates of causal effects, it is less clear that the estimated results are transferable to outside of the laboratory.

To estimate the causal relationship between media consumption and voter information, scholars have instead turned to quasi-experimental approaches utilizing natural experiments.² In one of the first studies to do so, Mondak (1995) utilized the eight-month newspaper strike in Pittsburgh to compare citizens' knowledge in Pittsburgh and Cleveland. Doing so, he found limited effects on national and international political knowledge, but that access to newspapers had some effect on knowledge of House representatives. More recently, Snyder and Strömberg (2010) studied the congruence between House districts and newspaper markets

¹See also Prior (2006), who argues that television during the 1950s and 1960s had stronger positive effects on knowledge for less educated citizens because they, compared to citizens with high education, relied more on television as a source of political information.

²For other approaches to estimate causal effects on mass media, see, e.g., Barabas and Jerit (2009).

and found that voters are more informed and more likely to vote when the media market is less fragmented. On the other hand, Gentzkow (2006) found that the introduction of television in the U.S. decreased both voter information and voter turnout. He argues that this decrease is due to television crowding out high-information media, such as radio and newspapers. For results from outside the U.S., Prat and Strömberg (2005) contend that the introduction of commercial television in Sweden, who mainly attracted relatively uninformed voters, increased voter information.

The conflicting findings in the literature highlights the importance of considering the existing media environment, because the effect of random variation in media coverage in one particular medium is likely to depend on the entire media environment.³ With the identification strategy used in this paper, I will be able to estimate the effect of getting *more relevant* television news coverage, while at the same time holding the overall media environment constant.

Whereas one strand of the literature has focused on the impact of mass media on political knowledge, another strand has discussed whether voters need to have much political information. In fact, already Downs (1957b,a) noted that while citizens are unlikely to be informed about politicians and political parties, they can utilize the ideologies politicians adhere to in order to approximate their policy positions. This idea that voters can rely on various cognitive shortcuts, or cues, to get information about their representatives have received large attention in the literature (see, among others, Popkin et al. 1976; McKelvey and Ordeshook 1986; Conover and Feldman 1989). By observing, for instance, whether a given politician is a Democrat or Republican, voters can base their vote decision solely on that information and act *as if* they had full information.

In contrast to this idea, Bartels (1996) and Delli Carpini and Keeter (1996) showed that informed and uninformed voters, conditional on their socioeconomic characteristics, differed substantially in their voting pattern. Similarly, Jesse (2009), by measuring the policy positions of voters and politicians on the same scale, found that more informed voters are more likely to vote in line with their own policy positions. The findings in these papers suggest that less informed voters are not able to completely make up for their lack of information using cognitive shortcuts, raising important concerns about political equality not only on the individual level, but also in the aggregate.

To isolate the effect of information, these papers control for various socioeconomic characteristics that may affect both the decision to acquire information, as well as political attitudes and vote decision. However, this approach requires the researcher to observe all such char-

³Liang and Nordin (2013) provide a formal discussion of how random variation in one type of media affects the entire range of media consumption, as well as the subsequent effects on voter information.

acteristics, where the presence of any omitted variable will bias the resulting estimates. In contrast, with the identification strategy I use in this paper, I can be agnostic about how informed and uninformed voters differ from each other, and instead rely on the mismatch between the states and media markets to create plausibly exogenous variation in voter knowledge.

In addition, I am able to isolate one specific mechanism through which information potentially affects how citizens view their politicians. A large literature has focused on how more information affects the beliefs and opinions voters have about which policies are desirable (see, e.g., Althaus 1998, 2003; Gilens 2001). On the other hand, more information about politicians and their policy positions may also make voters change their vote decision so as to vote for the candidate closest to the voters themselves. Empirically, it is hard to separate these two mechanisms from each other, because more informed voters are likely to have both more information about the effects of various policies as well as which politicians that advocate them.⁴ With the identification strategy I propose in this paper, I will be able to isolate the second mechanism, holding citizens' policy preferences constant.

The rest of the paper is structured as follows. Section 3 discusses the 2006 Cooperative Congressional Election Study, while section 4 provides the empirical strategy. In Section 5, I present the causal effect of the mismatch between the media markets and states on political knowledge, while in Section 6 I present the subsequent effects on senator approval rating. Finally, Section 7 provides a concluding discussion.

3 The 2006 Cooperative Congressional Election Study

To test how access to relevant local television affects i) the knowledge citizens have of their senators, and ii) how citizens evaluate these senators based on their actions in the Senate, I will rely on data on the structure of media markets, as well as individual survey data. The survey data come from the 2006 Cooperative Congressional Election Study (CCES). This survey sought to understand how citizens hold their representatives in Congress accountable during elections. The CCES data were acquired in three survey waves. First, a profile survey was conducted in August; subsequently, a pre-election survey was administered in October, and a post-election survey was performed two weeks after the election.⁵ I primarily use data from the pre-election survey. The CCES is a web-based survey that relies on sample matching to construct a representative sample of the general population. Additional discussion of the

⁴For instance, Lau and Redlawsk (1997) include both effects in their concept of “correct voting”. For result on the second mechanism, see, e.g., Alvarez (1997) and Nordin (2014).

⁵The election was held on November 7th, 2006.

sampling methodology is found in Ansolabehere (2008) and Vavreck and Rivers (2008).

An important feature of the CCES that is crucial for this paper is that it is unusually large: over 36,000 individuals were interviewed. This characteristic is important for the empirical strategy that I employ, which utilizes the fact that a minority of citizens, many of whom reside in relatively unpopulated regions, experience lower levels of access to relevant local television news because of the geographic locations of television stations. However, this strategy can only be applied successfully if enough individuals from these less populated areas are surveyed. Such a condition is achieved by the CCES but not by many other surveys.

The respondents to the survey were asked about a number of different policy issues that had been voted on in the Senate during the 109th Congress (2005–2006). Specifically, they were faced with the following statement:

As you know, Senators and Representatives in Washington regularly have to decide how to vote on issues affecting the country. We'd like to ask you about how you would vote on some of these same issues as well as how you think your representative voted.

The survey covered six different votes: the funding of stem cell research (H.R. 810), withdrawing troops from Iraq (S.Amdt. 4320), providing more opportunities for illegal immigrants to become legal citizens (S. 2611), increasing the minimum wage (S.Amdt. 2063), reducing the capital gains tax (H.R. 4297) and ratifying the Central America Free Trade Agreement (H.R. 3045).⁶ In combination with the actual roll-call votes, the survey data make it possible to test whether respondents were more likely to i) know how their senators had voted, and ii) base their evaluation of their senators on these votes.

Table 1 provides both the senators' roll-call votes for each issue and the preferences of the survey respondents. Because I do not use observations for states which either only contain in-state or out-of-state counties (see Section 4), there are only 68 senators in the sample: 28 Democrats and 40 Republicans. The two upper panels in the table depict the share of these Democratic and Republican senators who voted for, voted against or abstained from each roll-call vote. The first four votes were largely supported by the Democrats, whereas the last two issues were largely supported by the Republicans. The bottom panel presents the responses of the survey respondents. A majority of the respondents agreed with the Democrat's views regarding stem cell research, Iraq and minimum wage, and with the Republican's views regarding immigration and the Central America Free Trade Agreement

⁶There was also one additional question in the survey on banning of late-term abortions. However, voting regarding this issue occurred during the 108th Congress (2003–2004); thus, senators who were first elected in 2004 did not participate in this vote. I therefore exclude this question from the issues that are examined in this paper.

Table 1: Preferences over roll-call votes

	Stem Cell	Iraq	Immig.	Min. Wage	Capital Tax	CAFTA
Roll-call votes of Democratic senators						
For	0.96	0.86	0.82	1.00	0.07	0.29
Against	0.04	0.11	0.11	0.00	0.89	0.71
Abstained	0.00	0.04	0.07	0.00	0.04	0.00
Obs.	28	28	28	28	28	28
Roll-call votes of Republican senators						
For	0.23	0.00	0.35	0.07	0.95	0.78
Against	0.78	1.00	0.65	0.93	0.03	0.23
Abstained	0.00	0.00	0.00	0.00	0.03	0.00
Obs.	40	40	40	40	40	40
Respondents						
For	0.62	0.57	0.34	0.74	0.43	0.25
Against	0.29	0.35	0.57	0.22	0.44	0.52
No Opinion	0.10	0.08	0.09	0.04	0.13	0.23
Obs.	20,861	20,891	20,879	20,869	20,868	20,829

Note: The upper and middle panels show the share of Democratic and Republican senators respectively who voted for, against or abstained from each roll-call vote. The bottom panel shows the stated preferences of the respondents to the CCES survey. Sample sizes vary slightly between the different roll-call votes, because a few respondents did not answer each question.

(CAFTA). The respondents were largely split concerning the reduction of the capital gains tax. Only 4% did not have an opinion on the minimum wage vote, whereas 23% did not express an opinion about the CAFTA vote.

Table 2 shows how well the individuals' preferences for the roll-call votes align with their senators' actual roll-call votes, as well as the knowledge that the respondents possessed with respect to these votes. The top panel of the table reveals that for most of the examined issues, respondents were nearly evenly split between agreement and disagreement with their senators' positions. The bottom panel shows that approximately half of the respondents could correctly identify their senators' roll-call votes for each of the examined issues, whereas between 9 and 16 percent gave incorrect answers. A notable exception is the CAFTA vote, where less than one third of the respondents knew how their senators had voted. It is notable that respondents were less knowledgeable about the CAFTA and immigration votes, and that

Table 2: Respondents’ alignment with, and knowledge of, their senators’ roll-call votes

	Stem Cell	Iraq	Immig.	Min. Wage	Capital Tax	CAFTA
Respondents’ alignment with senators’ roll-call votes						
Same	0.52	0.48	0.44	0.54	0.44	0.36
Opposite	0.39	0.44	0.48	0.41	0.42	0.42
No Opinion	0.10	0.08	0.09	0.04	0.13	0.23
Obs.	41,722	41,699	41,433	41,737	40,846	41,657
Respondents’ knowledge of senators’ roll-call votes						
Know	0.57	0.59	0.43	0.55	0.54	0.30
Wrong	0.10	0.09	0.15	0.11	0.09	0.16
Don’t know	0.33	0.32	0.41	0.33	0.38	0.53
Obs.	41,865	41,814	41,652	41,865	41,315	41,865

Note: The upper panel of the table shows the share of respondents whose stated preferences are the same or opposite of their senators’ roll-call votes, as well as the share who did not state a preference. For each roll-call vote, observations for the senators who abstained from voting have been removed. The bottom panel shows the share of respondents who correctly or wrongly identified their senators’ roll-call votes, as well as the share who stated that they did not know how their senators voted.

the senators were least likely to follow their party line on these issues (see Table 1). This result is consistent with citizens using party labels as indications of their politicians’ policy positions.⁷

In the first part of the results (Section 5), I estimate how access to relevant local television coverage affects the knowledge citizens have of their senators’ roll-call votes. To do so, I define the variable $KnowRollCall_{is}$ as the share of issues where individual i correctly identified the roll-call votes of senator s . For example, an individual who correctly identified three of a given senator’s roll-call votes, answered “Dont’ know” for another two, and gave the wrong answer for one vote gets a value of $KnowRollCall = 3/6 = 0.5$.

In the second part of the results (Section 6), I test whether access to relevant local television affects citizens’ evaluation of their senators based on how well the senators’ roll-call votes align with the citizens’ preferences. To do so, I define the variable $SameRollCall_{is}$ as the share of issues where individual i expressed opinions consistent with how senator s

⁷Because there are two senators per individuals, the sample size in Table 2 is double that of Table 1. For the rest of the paper, the data are structured in this way, which means that for variables that are not senator-specific, the observations are duplicated. For all of the results, standard errors are clustered at the county level, which means that the standard errors will still be correctly estimated.

actually voted, ignoring the votes where either the individual did not express an opinion, or where the senator abstained from voting.⁸ For example, suppose the respondent agreed with the senator’s actual votes on the stem cell, Iraq and capital gains tax votes, opposed the senator on the immigration and minimum wage votes, and did not express an opinion on the CAFTA vote, then the value of *SameRollCall* would be $3/5 = 0.6$. Importantly, this variable does not measure how well the individual *believes* the roll-call votes of the senator align with the respondent’s preferences, but rather the *actual* policy alignment. That is, an individual who expressed preferences that perfectly align with the senator’s roll-call votes would get a value of *SameRollCall* = 1 regardless of how the respondent believed the senator voted.

To test how citizens evaluate their senators, I use senator approval rating as the outcome variable. The respondents were asked whether they approved or disapproved of the way each of their two senators were handling their jobs. Importantly, this question was asked prior to the questions about the different roll-call votes. Therefore, the approval rating results were not directly affected by the answers that related to these roll-call votes. The respondents could answer “strongly disapprove” (which is coded as 1), “somewhat disapprove” (2), “somewhat approve” (3), “strongly approve” (4) or “not sure” (which is coded as a missing value).⁹ I denote this variable *ApproveSen*.¹⁰

If citizens base their evaluations of their senators on the senators’ roll-call votes, we would expect to see, on average, a positive relationship between having the same preferences as the senator, *SameRollCall*, and senator approval rating, *ApproveSen*. Furthermore, if uninformed citizens are unable to completely make up for their lack of information by using various shortcuts, such as party labels, it is expected that the relationship between *SameRollCall* and *ApproveSen* gets stronger as the knowledge of the senators’ roll-call votes, *KnowRollCall*, increases.

Figure 1 shows that such an interaction effect between *SameRollCall* and *KnowRollCall* is indeed present in the data. When *KnowRollCall* = 0 (that is, the respondent is completely ignorant of the senator’s roll-call votes), the association between *SameRollCall* and

⁸To be consistent, I also make the same restriction for the *KnowRollCall* variable, so that *SameRollCall* and *KnowRollCall* cover the same issues for each individual.

⁹In Section 6, I show that the results are robust to alternative ways of coding this variable.

¹⁰An alternative to using approval rating as the outcome variable would be to use a variable indicating whether the respondent intended to vote for the incumbent senator in the upcoming election. However, there are several problems associated with this alternative. First, the quality of the challenger affects the vote decision. For instance, a citizen may disagree with his or her senator’s actions in office but may consider the alternative to be even worse, and therefore vote for the incumbent anyways. Second, only 16 of the 68 senators were running for reelection in 2006, and only a subset of the survey respondents claimed to possess an intention to vote; these two considerations drastically reduces the sample size from 41,865 to only 9,798. Third, there is large over-reporting by respondents who claimed to intend to vote without actually doing so. Nevertheless, it is notable that there is a strong positive correlation between an intention to vote for the incumbent and the *ApproveSen* variable (with a correlation coefficient of 0.83).

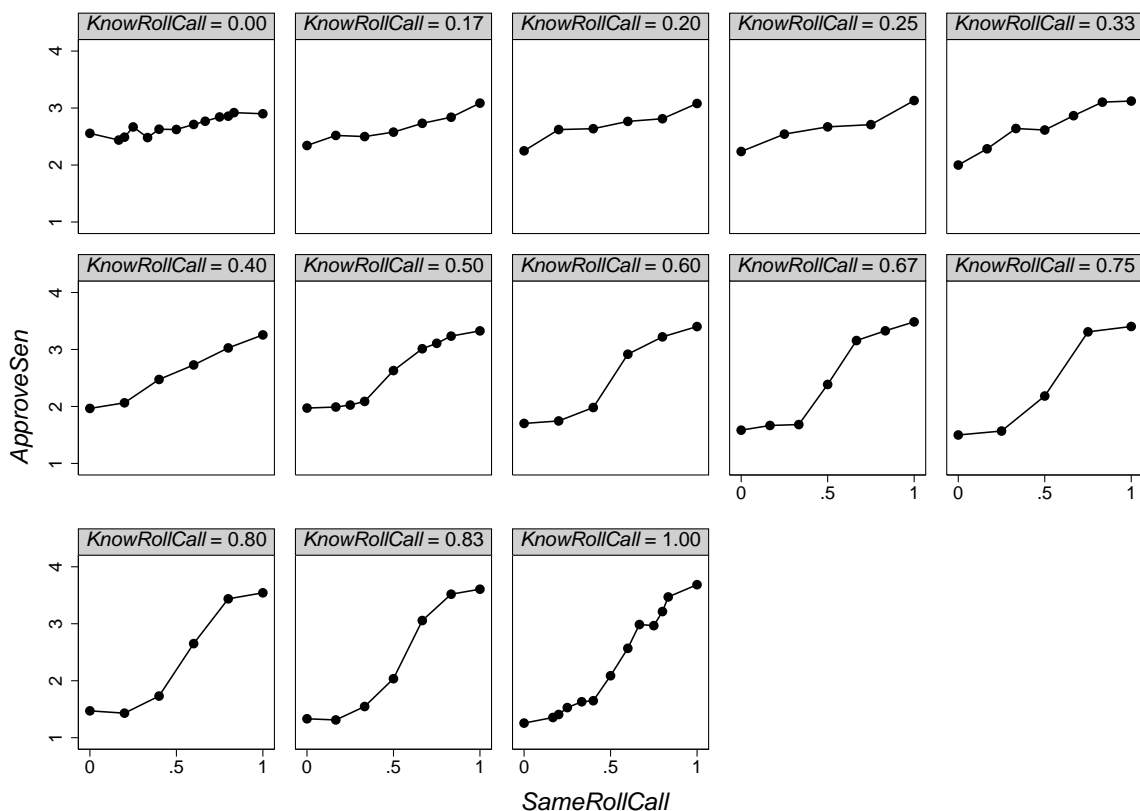


Figure 1: Relationship between senator approval rating and policy alignment for various level of knowledge of senators' roll-call votes

ApproveSen is almost non-existent, but as *KnowRollCall* increases, a positive relationship emerge. When *KnowRollCall* = 1, almost all respondents who disagree with their senators' roll-call votes disapprove of their work. On the other hand, the respondents who agree with all of their senators' roll-call votes almost universally approve of their senators. This figure suggests that knowledge of the actions of the politicians is very important for how citizens evaluate their representatives. This figure add to the findings in Ansolabehere and Jones (2010), who show that the beliefs citizens hold about their senators' roll-call votes indeed matter for how they evaluate their senators.

However, individuals who choose to acquire political information have very different observable characteristics compared to those who are comparatively uninformed. While it is possible to control for a wide array of such characteristics, it seems plausible that there are other characteristics, unobservable to the researcher, which correlate with both the decision to acquire political information, as well as the way the political representatives are evaluated.

In addition, it is also possible that citizens acquire information about senators who they already like, i.e., senators who already receive high approval ratings from the citizens in

question. If that is the case, *ApproveSen* has a causal effect on *KnowRollCall*, leading to the issue of reverse causality. By using the mismatch between local television markets and states, I can isolate a source of information which vary outside the control of the individuals. I utilize this plausibly exogenous variation in media access to study whether individuals with access to relevant local television are more likely to evaluate their senators based on their roll-call votes.

4 Empirical strategy

In this section, I discuss how the mismatch between local television markets and states create variation in the amount of news coverage about their senators citizens have access to. I also discuss the fact that this mismatch is not completely random, and how entropy balancing is used to deal with this issue. Finally, I describe the data and show descriptive statistics of the variables I use in the paper.

Local television markets do not respect state borders. While most individuals live in a county where they get their local television from a station located within the same state (these counties are called in-state counties) some individuals live in counties which, due to their proximity to a large city in a neighboring state, get local television from stations not based in their home state (called out-of-state counties). As long as individuals do not move to a different county to receive more relevant local news coverage, the structure of the local television markets create a situation where the individuals do not fully control which news they have access to, thereby creating an exogenous shift in the amount of relevant state-specific news consumers have access to.

To identify which television stations are available in different geographic locations, I use the designated market areas (DMAs) that have been defined by The Nielsen Company.¹¹ A DMA is a group of counties in which the local television stations dominate the total number of hours of television that are viewed by residents. There are a total of 210 DMAs in the United States. As long as news are driven by consumer demand, and consumers are more interested about news of their own senators, more news coverage would be expected of the senators from the state the local television stations are located in, than of the senators in other states covered by those stations. Each media market is named after the one or more cities where its largest television stations are based. To define which counties are in-state and which are out-of-state, I remove all media markets that are named after cities from more than one state. Furthermore, I exclude all states where respondents come exclusively from

¹¹Specifically, I use the 2005_2006 Zips by DMA dataset, acquired from the Nielsen Company.

in-state, or out-of-state, counties.¹² Finally, I remove the counties which are split between several DMAs.

Figure 2 shows an example of the Minneapolis-St. Paul DMA, which is covered by television stations that are located in either Minneapolis or St. Paul. This market primarily includes counties in Minnesota (in-state counties, light gray areas). However, because of their proximity to the twin cities, a number of counties in Wisconsin (out-of-state counties, dark gray areas) are also included in this market. As over 94% of the population in this media market is located in Minnesota, it seems reasonable that the local television stations will primarily cover the Minnesota senators and devote relative little attention to the senators from Wisconsin. Thus, in this media market, citizens in the Wisconsin counties should, exogenously, receive less information about their own senators, compared to citizens in the Minnesota counties.

Certain media markets are almost evenly split between different states. For instance, in the Kansas City media market, 59.6% of the citizens in the market are located in Missouri, whereas the remaining citizens are located in Kansas. In these cases, it appears likely that the local stations will focus on senators from both states. I therefore add the requirement that at least 2/3 of the citizens in a media market should be located in the primary state.¹³

Several papers have pointed out that the mismatch between electoral districts and mass media outlets can have effects on political outcomes. Campbell et al. (1984) and Niemi et al. (1986) find that the relative congruence of congressional districts and television markets is positively associated with voters' political knowledge of both the incumbent House representative and the challenger. Stewart and Reynolds (1990) extend the analysis to the Senate and find that citizens are less likely to see senatorial candidates on television when the television market is fragmented. Snyder and Strömberg (2010) study the congruence of congressional districts and newspaper markets and find that citizens in congruent districts have higher relevant news exposure, more political information and are more likely to vote.

The strategy used in this paper relates most closely to Ansolabehere et al. (2006) and Fergusson (2014), who both make a similar division into in-state and out-of-state counties as I do in this paper. The former study whether the increase in the incumbency advantage in U.S. elections can be explained by increases in television exposure for the incumbent, where they do not find any significant effect of television exposure on incumbency advantage in neither senatorial nor gubernatorial elections. The latter finds that voters in in-state counties punish incumbent senator candidates more for special interest contributions compared to voters in

¹²I make this restriction because once I control senator fixed effects in the estimations, observations from these states will not contribute to identification.

¹³Ansolabehere et al. (2006) and Fergusson (2014) who use a similar identification strategy (see below) use the same cutoff. In appendix A, I show that the results are robust to changes in the cutoff.

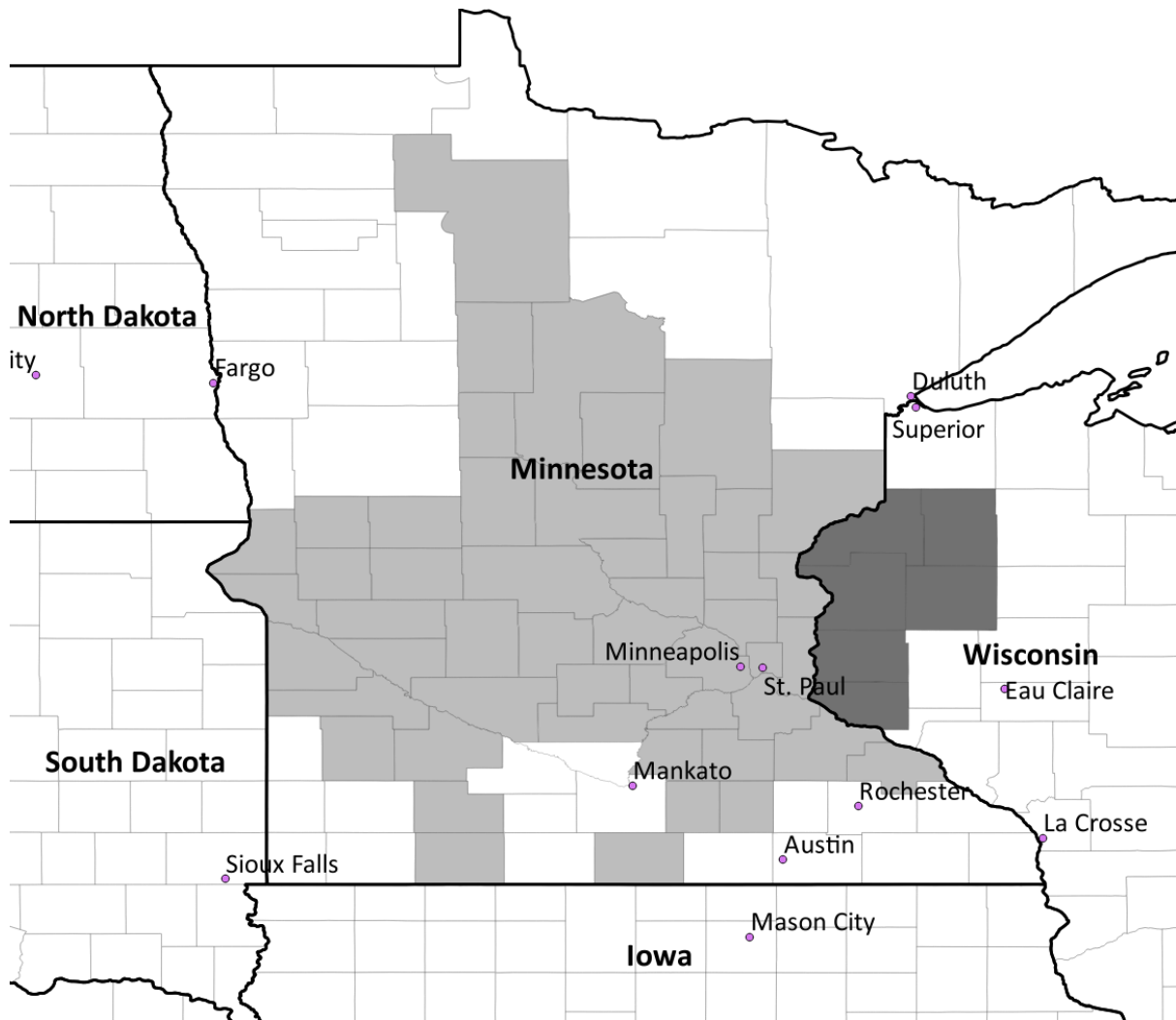


Figure 2: The Minneapolis-St. Paul media market

Note: The light gray area indicates the counties in the Minneapolis-St. Paul media market located in Minnesota (in-state counties), while the dark gray area indicates the counties in the media market located in Wisconsin (out-of-state counties). The cities marked in the map show the centers of different media markets where the local television stations are primarily located.

out-of-state counties.

4.1 Is television coverage biased?

For the mismatch between the television markets and states to have an effect on citizens' political knowledge, it must be the case that the television coverage is biased towards the primary state. For the example presented in Figure 2, that means that the television stations in Minneapolis and St. Paul devote significantly more coverage to the Minnesota senators compared to the Wisconsin senators. While I do not have access to data on the quantity of news that is reported by television stations for each senator, I use the senator coverage on the television stations' websites as a proxy for television coverage. Specifically, I searched the websites of all local television stations that are affiliates to one of the four major television networks (ABC, CBS, FOX or NBC) in the media markets that include at least one out-of-state county, but that serve a viewing area in which at least 2/3 of the populace resides in in-state counties. For each of these television stations, I conducted a search for mentions of each senator. I then calculated the share of hits for in-state senators, out-of-state senators and senators from states that are not a part of the media market in question. The average of these shares for all television stations in each media market is the measure of senator coverage.¹⁴

The results are shown in Figure 3. The numbers have been normalized so that a score of 1 implies that all senators receive equal amount of coverage. The figure shows that in-state senators receive by far the most coverage, almost 15 times the amount that would have been expected if coverage was completely random. By contrast, out-of-state senators receive much less coverage, almost 6 times less than in-state senators.¹⁵ This disparity in coverage means that citizens in in-state counties have greater access to information about their senators, compared to citizens in out-of-state counties. It is notable that out-of-state senators nonetheless receive almost 4 times as much coverage than the average senator from a state that does not overlap with the media market at all (labeled unmatched senators). This finding is unsurprising, given that the examined media markets serve at least one county in states that are represented by out-of-state senators.

¹⁴Senators from Alaska and Hawaii were not included in the search. Television stations with less than 100 total hits are dropped. The searches were performed on August 20th, 2010.

¹⁵This is consistent with the finding in Ansolabehere et al. (2006). They find that in-state governors receive much greater news coverage than out-of-state governors.

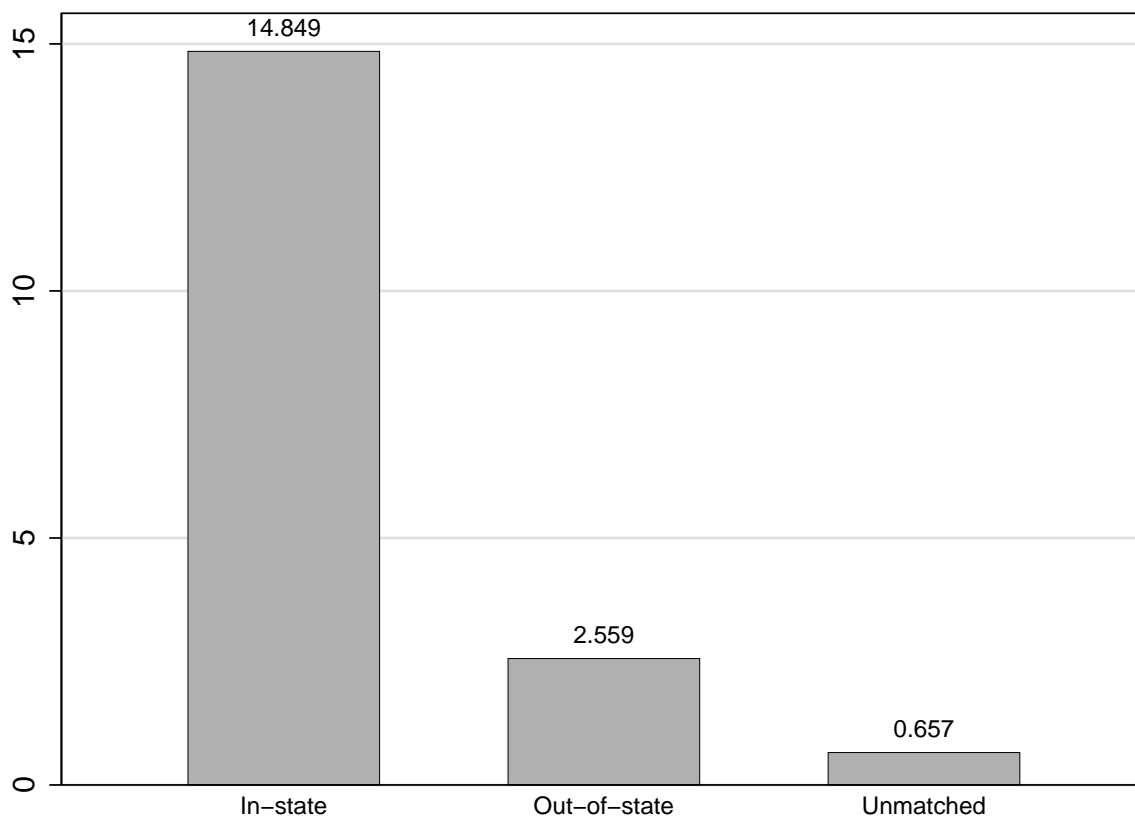


Figure 3: Senator coverage on local television stations' websites

Note: The figure shows the average number of hits for senators on the local television stations' websites (the local affiliates to ABC, CBS, FOX and NBC). The y-axis has been scaled so that a value of one is the expected number of hits if coverage was completely random. In-state senators are senators who come from the primary state of the media market. Out-of-state senators are senators who come from other states within the media market. Unmatched senators are all other senators (except senators from Alaska and Hawaii who are excluded). The sample is restricted to media markets where at least $2/3$ of the populace resides in the primary state, but which include at least one out-of-state county.

4.2 Entropy balancing

For the mismatch between media markets and states to produce unconditional exogenous variation it needs to be as good as randomly assigned. However, there are reasons why certain counties are covered by a media market from a different state. Television stations will typically locate in large cities; thus, surrounding counties (which are likely to be in-state counties due to their proximity to the television stations) are likely to have a larger population than out-of-state counties. Other county characteristics also differ between in-state and out-of-state counties. Table 3 presents descriptive county statistics depicting these differences. The first and second columns reveal the mean values of census data for in-state and out-of-state counties, respectively, while the third column indicates the differences between these two. Many of the differences are large and statistically significant at the 1 percent level. Relative to citizens from out-of-state counties, citizens from in-state counties are less likely to be older than 65, on average have higher education and higher income, and are more likely to be black or Hispanic. Finally, the population difference is perhaps the most striking. The difference in log population of 12.7 to 11.2 corresponds to an average population size of 1.1 million for in-state counties and only 140,000 for out-of-state counties.

Overall, these data show that there are substantial differences between in-state and out-of-state counties. To be able to estimate the causal effect, it is necessary to account for these differences. I use a new method developed by Hainmueller (2012) which is designed for observational data with a binary treatment to address this issue. This method reweights the sample to exactly adjust inequalities with respect to the first and second moment of the covariate distribution. In this case, the method works by reweighting the in-state observations so that the mean and variance of all the covariates listed in Table 3 are identical for the in-state and out-of-state counties.

There are many different ways the sample can be reweighted to achieve covariate balance. To find a unique solution, the method works by minimizing the deviation from some base weights, with the restriction that the balancing constraints should hold. In this simplest case, all observations have base weights equal to one, so that each observation gets equal initial weight. However, it is also possible for the researcher to provide other base weights. The CCES survey is a web-based survey where the sample is not randomly drawn from a well-defined population. Instead, the “representative” sample was selected using a sampling matching technique. As noted for instance in Ansolabehere and Jones (2010), the sample still had too few low-income minorities and non-voters. By using the survey weights provided with the CCES data, it is possible to correct for this skewed selection. As a sensitivity check, I will therefore use survey weights as base weights for both the treatment and control groups.

After reweighting, the total weight of in-state observations exactly matches that of the out-

Table 3: County characteristics, split by in-state and out-of-state counties

	(1) In-state	(2) Out-of-state	(3) Difference
Age 0-18	0.25	0.24	0.0047 (0.0036)
Age 65+	0.12	0.14	-0.016*** (0.0045)
9-12 years of educ.	0.11	0.12	-0.0077* (0.0043)
High school grad.	0.57	0.64	-0.067*** (0.0082)
College grad. or higher	0.25	0.18	0.071*** (0.0085)
Female	0.51	0.51	0.00099 (0.0016)
Black	0.11	0.077	0.038** (0.019)
Hispanic	0.11	0.051	0.062*** (0.018)
Log(median income)	10.8	10.7	0.11*** (0.028)
Log(population)	12.7	11.2	1.51*** (0.28)
Area (sq mi)	1351.3	1190.4	160.9 (289.0)
Obs.	39,725	2,140	41,865

Note: The county variables included in this table come from the 2000 census with the exception of the income and population variables, which are both census estimates for 2006. The independent cities in Virginia are merged with their surrounding counties. The first column shows the average for in-state counties and the second for out-of-state counties. The third column shows the difference between these two with associated standard errors (clustered at the county level). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

of-state observations so that each in-state observation, compared to out-of-state observations, on average have a much smaller weight.¹⁶ Figure 4 depicts the distribution of weights for the in-state observations. The left panel shows a histogram, while the right panel shows the cumulative distribution function of the weights. The distribution is skewed where half of the observations have a weight smaller than 0.025 while 4% have weights greater than 0.2. The maximum weight received for any in-state observation is for Pershing county in Nevada, with a weight of 0.71.

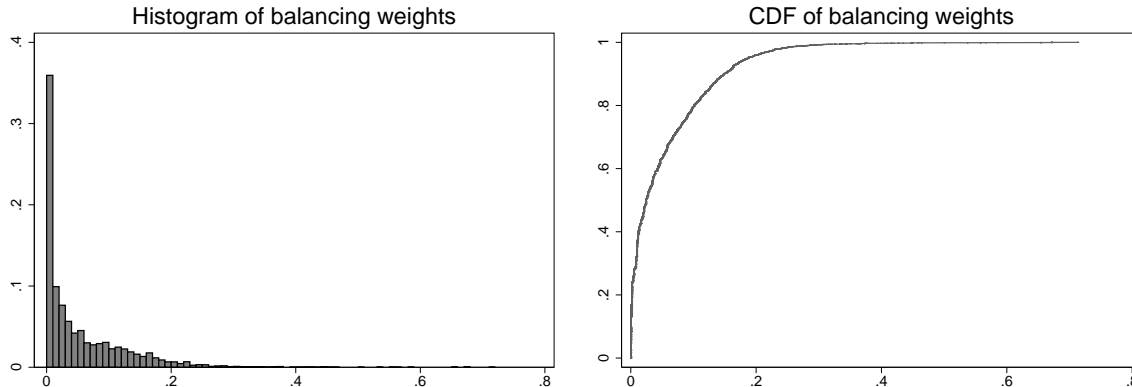


Figure 4: Distribution of entropy balancing weights (in-state counties)

Note: The figure shows the distribution of weights from entropy balancing, with county characteristics as balancing covariates. All base weights are set equal to one. The left panel shows a histogram of the in-state weights with a bin width of 0.01. The y-axis indicates the fraction of the observations belonging to each bin. The right panel shows the cumulative distribution function of the same weights. All out-of-state observations have weights equal to one after balancing.

There are two primary sets of results in this paper. In the first (Section 5), I estimate the effect of living in an in-state county on knowledge of senators’ roll-call votes, *KnowRollCall*, as well as other measures of political knowledge. In the second (Section 6), I investigate the subsequent effects on senator approval rating. I define the treatment variable, *InState*, to be a dummy variable taking a value of zero for respondents in out-of-state counties and one for respondents in in-state counties. For the first sets of results, I estimate the following simple model:

$$KnowRollCall_{ics} = \alpha_0 + \alpha_1 InState_c + \boldsymbol{\gamma}'\mathbf{D}_s + \varepsilon_{ics}, \quad (1)$$

where i stands for individual, c for county, and s for senator. I estimate the model with

¹⁶This is the case because there are many more in-state observations (39,725) than out-of-state observations (2,140). After regweighting, all out-of-state observations still have weights equal to one. However, when survey weights are used as base weights, both in-state and out-of-state observations are allowed to be reweighted.

weighted least squares where the weights come from the entropy balancing. Standard errors are adjusted to allow for cluster effects at the county level because that is the level of variation in the treatment variable. The causal effect of living in an in-state county, compared to an out-of-state county, on knowledge of the senators' roll-call votes is captured by the parameter α_1 .

The average level of *KnowRollCall* differs substantially between senators because some senators are more well known than others. The senator which citizens were most knowledgeable about in the sample was Barbara Boxer (D-CA) with an average value of *KnowRollCall* of 0.67. In contrast, for Mark Pryor (D-AR) the corresponding value is 0.30. The fact that knowledge varies markedly by senator poses no threat for identification as long as the share of in-state respondents do not correlate with the senators. However, by including a vector of senator fixed effects, \mathbf{D}_s , in the regression, it is possible to improve on efficiency by removing part of the variation in *KnowRollCall* that is unrelated to *InState*. To test the sensitivity of the results, I also present results where the senator effects are included in the entropy balancing instead of in the regression, which allow for the estimation of an even more flexible model. The drawback with such an approach is that the resulting estimator is likely to be much less efficient because the sample is reweighted so that the share of in-state observations equal the share of out-of-state observations for each senator, which makes the distribution of weights more dispersed.

For the second sets of results, the outcome variable is *ApproveSen*, senator approval rating on a four-point scale. The hypothesis is that if in-state citizens are more knowledgeable of their senators' roll-call votes, they will also be more likely to evaluate them based on how well their own preferences correspond to the votes of their senators (captured by the *SameRollCall* variable). This hypothesis is tested in the following model:

$$\begin{aligned} \text{ApproveSen}_{ics} = & \beta_0 + \beta_1 \text{InState}_c + \beta_2 (\text{InState}_c \times \text{SameRollCall}_{ics}) \\ & + \boldsymbol{\theta}' \mathbf{D}_s + \boldsymbol{\phi}' \mathbf{D}_s \times \text{SameRollCall}_{ics} + u_{ics}, \quad (2) \end{aligned}$$

where β_2 is the coefficient of interest. A positive β_2 implies that an increase in *SameRollCall* increases senator approval more for citizens in in-state counties compared to citizens in out-of-state counties. To facilitate a simple interpretation of the estimated coefficients, in all regression results presented in this paper, the variables *KnowRollCall*, *SameRollCall* and *ApproveSen* are standardized to have a mean of zero and standard deviation of one. Just as in equation (1), I include senator effects. Because the treatment variable (*InState*) is interacted with *SameRollCall*, the senator effects are also interacted with *SameRollCall*.

Because I include a full set of senator dummies interacted with *SameRollCall*, I do not need to include the main effect of *SameRollCall* in equation (2), as that would lead to perfect colinearity. Table 4 provides descriptive statistics of these main variables, as well as other variables used in the results below.

One advantage of using a data preprocessing method, such as entropy balancing, is that the final regression analysis is much less dependent on model specification than if the balancing covariates were used as control variables in a OLS estimation. This advantage is especially evident when estimating an interaction model, such as the one in Equation (2). In appendix B, I show that using control variables in a OLS estimation instead of entropy balancing yields similar results, as long as the interaction model is sufficiently flexible.

An alternative to using entropy balancing would be to use some other data preprocessing methods, such as propensity score matching. However, with propensity score matching, there is no guarantee that the covariates will balance, and the researcher may have to try different models to find a suitable one. In contrast, with entropy balancing, covariates will always be exactly balanced in the sample.

For the identification strategy to work, there can not remain any differences between in-state and out-of-state counties after reweighting which correlates with the outcomes. While the county variables will be perfectly balanced, that does not necessarily mean that there are no differences on observable characteristics at the *individual* level. One way to test whether the entropy balancing is successful is therefore to test whether individual characteristics differ between individuals in in-state and out-of-state counties after balancing. Table 5 shows such a comparison. The variables included in the balancing are the ones listed in Table 3 and the base weights are equal to one for all individuals.

The first column shows the difference between in-state and out-of-state individuals without entropy balancing. Some of the individual variables are similar to the county variables used in the balancing procedure. These variables show the same pattern at the individual level: individuals in in-state counties have higher income, are more likely to have higher education, more likely to be black or Hispanic and are younger. The second column shows the mean comparison after entropy balancing. As can be seen, there are no longer any significant differences between in-state and out-of-state counties. That in itself is not surprising: given that the matching procedure was performed at essentially county aggregates of these variables, we would expect these covariates to be balanced at the individual level. Less obvious is the comparison concerning the political variables. Individuals in in-state counties are less likely to be conservative and more likely to identify with Democrats relative to Republicans. However, once the sample has been reweighted, these differences are close to zero and not statistically significant on any conventional significance level. This result provide a first pass

Table 4: Descriptive statistics of main variables

	Mean	Std dev	Min	Max	Obs.
<i>InState</i>	0.95	0.22	0	1	41,865
<i>KnowRollCall</i>	0.52	0.34	0	1	41,865
<i>SameRollCall</i>	0.52	0.31	0	1	41,865
<i>ApproveSen</i>	2.54	1.11	1	4	36,838
<i>ApproveDummy</i>	0.56	0.50	0	1	36,838
<i>ApproveFivePoint</i>	3.09	1.48	1	5	41,762
<i>IdentifyDemocrat</i>	0.33	0.47	0	1	41,807
<i>IdentifyRepublican</i>	0.31	0.46	0	1	41,807
<i>IdentifyIndependent</i>	0.30	0.46	0	1	41,807
<i>IdentifySenParty</i>	0.34	0.47	0	1	41,853
<i>KnowSenParty</i>	0.82	0.38	0	1	41,757
<i>KnowGovParty</i>	0.88	0.32	0	1	41,793
<i>KnowRepParty</i>	0.76	0.43	0	1	41,749
<i>PlacingSen</i>	0.84	0.37	0	1	40,165
<i>PlacingGov</i>	0.88	0.33	0	1	41,045
<i>PlacingRep</i>	0.74	0.44	0	1	37,433
<i>PlacingDemocrats</i>	0.92	0.28	0	1	40,789
<i>PlacingRepublicans</i>	0.92	0.28	0	1	40,613
<i>ApproveDisapproveSen</i>	0.88	0.32	0	1	41,762
<i>ApproveDisapproveGov</i>	0.94	0.24	0	1	41,761
<i>ApproveDisapproveRep</i>	0.82	0.38	0	1	41,767
<i>KnowCongressMaj</i>	0.88	0.33	0	1	31,678
<i>NotMuchInterested</i>	0.07	0.26	0	1	29,665
<i>SomewhatInterested</i>	0.30	0.46	0	1	29,665
<i>VeryMuchInterested</i>	0.63	0.48	0	1	29,665

Note: The table presents mean, standard deviation, min and max values, as well as the number of observations for the variables used in the regression estimations.

Table 5: Difference in individual characteristics between in-state and out-of-state counties

	Unweighted	Entropy balance	Obs.
Age	-1.96*** (0.52)	-0.43 (0.52)	41,865
Highest degree: High school	-0.082*** (0.016)	0.0022 (0.015)	41,785
Highest degree: College	0.046*** (0.014)	-0.0063 (0.014)	41,785
Highest degree: Post-graduate	0.045*** (0.0075)	0.0059 (0.0067)	41,785
Female	-0.025 (0.019)	-0.0037 (0.019)	41,865
Black	0.060*** (0.015)	0.0098 (0.010)	41,865
Hispanic	0.039*** (0.013)	-0.0023 (0.0093)	41,865
Log(household income)	0.16*** (0.038)	-0.0014 (0.037)	36,299
Married	-0.067*** (0.019)	0.0036 (0.017)	40,139
Liberal-conservative scale	-0.11** (0.048)	0.018 (0.047)	39,011
Identify as Democrat	0.036* (0.019)	-0.0078 (0.018)	41,807
Identify as Republican	-0.034* (0.019)	0.012 (0.019)	41,807
Religion important	-0.027 (0.019)	0.022 (0.018)	41,585
Gun owner	-0.097*** (0.026)	0.020 (0.024)	39,957

Note: The table shows the difference in means for in-state and out-of-state counties with associated standard errors (clustered at the county level). The first column shows the unweighted difference, while the second shows the difference after entropy balancing. The third column shows the number of nonmissing observations for each variable. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

that the entropy balancing was successful in reweighting the sample to remove differences between individuals in in-state and out-of-state counties.

It is important to note that entropy balancing is only suitable under the assumption of *selection on observables*, whereas it will produce biased estimates, as is true for any observational study, if there is *selection on unobservables*. The fact that individual characteristics, not used in the entropy balancing, are balanced after reweighting is reassuring, but does not prove that this assumption is true. To further explore this assumption, I test if the treatment variable affects state-specific and nationwide political knowledge in the next section. If the treatment works in the way hypothesized in this paper, living in an in-state county should have a causal effect on state-specific knowledge, but not nationwide knowledge, and estimates on the latter will serve as placebo-tests.

5 Effect on political knowledge

In this section, I show that living in an in-state county, compared to an out-of-state county, has a causal effect on knowledge of state-specific politics, but not on nationwide or district-specific political knowledge. I begin by showing the effect of living in an in-state county on knowledge of senators' roll-call votes *KnowRollCall*.

The first column of Table 6 shows the result from the bivariate weighted regression of *KnowRollCall* on *InState* (i.e., it is a weighted comparison of means of the *KnowRollCall* variable for in-state and out-of-state counties, respectively, where the weights come from the entropy balancing). The point estimate implies that living in an in-state county, compared to an out-of-state county, increases citizens' knowledge of their senators' roll-call votes with, on average, 0.12 standard deviations. This estimate is statistically significant at the 5% level.

In the second column, I show the results from the estimation of equation (1), i.e., where senator fixed effects are added. The point estimate increases somewhat to around 0.16. Importantly, the inclusion of senator fixed effects decreases the standard error, and the estimate is statistically significant at the 1 percent level. This decrease is expected, because the senator dummy variables remove a lot of the variation in *KnowRollCall* unrelated to *InState*. In column 3, I include the senator dummies already in the preprocessing stage instead of in the regression. Doing so, the point estimate of interest remains unchanged, but the standard errors are almost double the size. While the model in column 3 is slightly less restrictive than that in column 2, the point estimate is virtually identical. Because the model in column 2 is much more efficient, I consider it to be the preferred model.

In the last three columns, I show results from regressions where survey weights have been used as base weights in the entropy balancing. Estimates are largely similar to those

Table 6: Political knowledge

	No initial weights			Survey weights		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>KnowRollCall</i> (knowledge of senators' roll-call votes)					
<i>InState</i>	0.12** (0.047)	0.16*** (0.030)	0.15*** (0.053)	0.11** (0.051)	0.17*** (0.037)	0.15*** (0.057)
Senator effects	No	In regression	In entropy balancing	No	In regression	In entropy balancing
Obs.	41,865	41,865	41,865	41,865	41,865	41,865
	Knowledge of congress majorities					
<i>InState</i>	0.0082 (0.015)	0.020 (0.015)	0.016 (0.017)	0.024 (0.020)	0.040* (0.021)	0.029 (0.022)
Senator effects	No	In regression	In entropy balancing	No	In regression	In entropy balancing
Obs.	31,678	31,678	31,678	31,678	31,678	31,678

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. In columns 3 and 6, a full set of senator dummies are also included in the entropy balancing. In the first three columns, no initial weights are used; in the last three columns, survey weights are used as base weights. The outcome variable in the top panel is *KnowRollCall*, the knowledge respondents have of their senators' roll-call votes (scaled to have mean of zero and standard deviation of one). The outcome variable in the bottom panel is a dummy variable indicating whether the respondents knew which party had the majority in both the House and Senate. A full set of senator dummies are included in columns 2 and 5. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

without survey weights. In addition, the standard errors increase somewhat. Overall, the use of survey weights instead of no initial weights does not seem to be very important for the results.

Even after performing entropy balancing and controlling for senator effects, concerns may remain that instead of access to relevant local television news, other omitted factors that are correlated with political knowledge may be responsible for the obtained results. One particular feature of the *InState* variable is that it should affect state-specific, but not nationwide, political knowledge. It is therefore possible to perform a placebo test by estimating the effect of living in an in-state county on political knowledge that is not state-specific. If the *InState* variable is correlated with omitted variables that affect political knowledge in general, we should expect to find a positive correlation with *InState* and nationwide political knowledge.

In the post-election survey, respondents were asked which party had the majority in the new Congress (both House and Senate). I define a dummy variable indicating if the respondent correctly identified the party in both chambers, and run a regression with this variable on *InState*. The results are shown in the bottom panel of Table 6. The point estimates are positive in all specifications but smaller in size.¹⁷ The only time the estimate is statistically significant (and only at the 10% level) is when survey weights are used in balancing and senator effects are added in the regression. Overall, these results do not support the hypothesis that *KnowRollCall* and *InState* correlate because of omitted variables. The sample size is significantly smaller in the bottom panel because not everyone responded to the post-election survey. One might therefore suspect that the difference in estimates between the top and bottom panel is due to sample differences. However, in Table 15 in Appendix C, I show that the results in the top panel do not change much when the sample is restricted to only the individuals that answered the congress-majority questions.¹⁸

To further investigate the effect of living in an in-state county on political knowledge, I also estimate the effect on respondents' willingness to place political leaders and parties on a left-right ideological scale. Because a certain amount of knowledge is needed to do so, previous literature has argued that such a rating can be a proxy for political knowledge (see, e.g., Snyder and Strömberg 2010). The top panel of Table 7 shows the effect of *InState* on the respondents' willingness to place their senators, governors and House representatives, as

¹⁷The size of the coefficients are not directly comparable between the two panels because the outcome variables have different scales. However, even if the dummy variable in the bottom panel would be standardized to have a standard deviation of one, the point estimate would still be substantially smaller in the bottom panel in all regressions.

¹⁸I use senator effects in the placebo regressions, even though there are little theoretical reasons to do so, in order to make the results comparable. However, using state effects instead of senator effects is virtually identical because the congress-majority question does not vary at the individual level.

Table 7: Political knowledge, additional results

	(1)	(2)	(3)	(4)	(5)
	Senator	Governor	Representative	Democrats	Republicans
	Ideological placement				
<i>InState</i>	0.055*** (0.016)	0.060*** (0.015)	-0.0047 (0.023)	0.014 (0.011)	0.0069 (0.011)
Fixed effect	Senator	Governor	Representative	State	State
Obs.	40,165	41,045	37,433	40,789	40,613
	Knowledge of incumbent's party				
<i>InState</i>	0.070*** (0.015)	0.051*** (0.016)	0.021 (0.019)		
Fixed effect	Senator	Governor	Representative		
Obs.	41,757	41,793	41,749		
	Approve or disapprove of incumbent				
<i>InState</i>	0.030** (0.013)	0.025** (0.0099)	0.0027 (0.017)		
Fixed effect	Senator	Governor	Representative		
Obs.	41,762	41,761	41,767		

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. No initial weights are used. The outcome variables in the top panel are dummy variables indicating whether respondents placed given politicians or parties on ideological scales. The outcome variables in the middle panel are dummy variables indicating whether the respondents knew which party the given politician belonged to. The outcome variables in the bottom panel are dummy variables indicating whether the respondents expressed either approval or disapproval of the incumbents' work. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

well as the Democratic and Republican parties, on ideological scales. In all regressions, the sample is weighted with entropy balancing weights and fixed effects are added depending on the outcome. That is, for the placement of politicians, senator, governor and House representative effects are included respectively. For the placement of parties, I include state fixed effects.¹⁹

As expected, respondents are more likely to place both senators and governors on ideological scales. Given the high baseline probabilities (84% and 88% respectively, see Table 4), the effects are large. For House representatives, the estimate is insignificant and close to zero.

¹⁹In fact, governor and state fixed effects are completely equivalent since there is one and only one governor per state.

This finding is consistent with Snyder and Strömberg (2010) who argue that local newspapers are more likely to cover House representatives, while local television stations are more likely to cover senators. Finally, for the willingness to place the Democratic and Republican parties, which function as placebo tests, there are no significant differences between in-state and out-of-state respondents. This result is expected, because knowledge of these parties is not state-specific.

The middle panel shows the effect on the probability of correctly identifying the party of the senators, governors and House representatives. The same pattern emerges here: for the first two there is a significant positive effect, but not for the last one. Again, considering that most individuals know which party their senators and governors belong to (82% and 88% respectively), these two effects are large. Finally, in the bottom panel the outcome variable is an indicator variable taking a value of one if the respondent expressed either approval or disapproval of the incumbents and zero if the respondent answered “not sure”. The pattern is, again, positive effects for senators and governors, but zero effects for House representatives. The interpretation is similar to those of the results in the top panel: in order to have an opinion of a politician, it is necessary to have some basic knowledge of him or her, and citizens in in-state counties have more access to relevant information.

The results so far indicate that access to relevant local television news has not only a causal effect on the knowledge citizens have of their senators’ roll-call votes, but also on the likelihood that they can identify which parties their senators come from. Previous literature has pointed out that one of the ways citizens can infer their politicians’ policy positions is by observing which party they belong to. If such a mechanism is in play here, the causal effect of access to relevant local television news on knowledge of the senators’ roll-call votes goes *through* knowing the senators’ party labels. To test whether such an effect is important, I disaggregate the data to the individual roll-call vote level and estimate equation (1) separately for roll-call votes where the senators voted with and against the party majority. If citizens infer their senators’ roll-call votes only through their party affiliation, we would expect a positive effect of *InState* on *KnowRollCall* for senators who voted with the party majority, but a negative effect for senators voting against their own party.

Table 8 shows that living in an in-state county increases the probability of correctly identifying a given roll-call vote with approximately 5.3 percentage points when the senator voted with the party majority. However, while smaller in magnitude, the effect is also positive and statistically significant (3.8 percentage points) for senators voting against the party majority. These results suggest that the increased knowledge of roll-call votes can not only be explained by citizens using the senators’ parties to infer their policy positions.

When asked if they knew how their senators had voted on each roll-call vote, the respon-

Table 8: Individual roll-call votes

	Know senators' roll-call vote		Wrong about senators' roll-call vote	
	(1)	(2)	(3)	(4)
<i>InState</i>	0.053*** (0.011)	0.038*** (0.013)	0.013*** (0.0048)	0.025 (0.015)
Senator vote	With party majority	Against party majority	With party majority	Against party majority
Senator effects	In regression	In regression	In regression	In regression
Obs.	217,600	32,111	217,600	32,111

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. No initial weights are used. The observations are at the individual roll-call vote level. In the first two columns, the dependent variable is whether the respondent correctly identified a given roll-call vote. In the last two columns, the dependent variable is whether the respondent was wrong about a given roll-call vote. The sample is split so that columns 1 and 3 only include votes for senators who voted the same way as the party majority, whereas columns 2 and 4 only include votes where the senators voted against the party majority. A full set of senator dummies are included in all regressions. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

dents could either give the correct or wrong answer, or they could say that they did not know. So far, I have shown that the probability of giving the correct answer increases with access to relevant local television, but I have not shown whether it is due to a decrease in the share who answered “Don’t know” or the share who were wrong about their senators’ roll-call votes. Column 3 in Table 8 shows the surprising result that, for votes where the senators voted with the party majority, living in an in-state county *increases* the probability of being wrong about the senators’ roll-call votes. Nonetheless, the point estimate is much smaller compared to the probability of correctly identifying the senators’ roll-call votes. For the roll-call votes where the senators voted against the party majority, the effect is actually larger in size, although not statistically significantly different from zero due to the much smaller sample size.

Overall, there are two important conclusions to draw from the results in Table 8. First, access to relevant local television significantly increases the probability that citizens hold beliefs about their senators’ roll-call votes. Most of this increase is due to citizens being more likely to give correct answers, but there is also a smaller increase in the probability of giving incorrect answers. Second, the different effects on giving correct and incorrect answers is greater when the senators follow the party majority.²⁰ The results therefore indicate that,

²⁰In fact, performing seemingly unrelated estimation to test for equality of coefficients reveal a significant difference between the coefficients in columns 1 and 3 (p-value of 0.001), but not a significant difference

Table 9: Knowledge of roll-call votes, by level of interest in politics

	(1)	(2)	(3)
	Not much interested	Somewhat interested	Very much interested
<i>InState</i>	0.17*** (0.065)	0.20*** (0.060)	0.081* (0.045)
Senator effects	In regression	In regression	In regression
Obs.	2,080	8,767	18,818

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. No initial weights are used. The outcome variable is *KnowRollCall*, the knowledge respondents have of their senators’ roll-call votes (scaled to have mean of zero and standard deviation of one). The sample is restricted in each column to individuals with a given level of interest in politics and current affairs. A full set of senator dummies are included in all regressions. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

while the effect of *InState* does *not only* go through the usage of party labels as a shortcut, in-state citizens make comparatively fewer mistakes when the senators vote with, rather than vote against, the party majority.

Television news have been criticized for providing relatively low news content, and for crowding out more informative mass media. On the other hand, scholars have argued that television can be important for providing news to citizens who otherwise would not consume any news (Graber 2006). It is therefore possible that television news, compared to newspapers, can capture the attention of citizens with no or little interest in politics. To test whether this is the case, I perform a subgroup analysis where I split the sample depending on the individuals’ expressed interest in politics and current affairs.²¹

The results are presented in Table 9. The effect of *InState* on *KnowRollCall* is comparatively strong for citizens with limited interest in politics and current affairs. Interestingly, for individuals who claim to be “very much interested”, the estimated effect is much smaller and only statistically significant at the 10% level. One interpretation of these results is that individuals who are very interested in politics will choose to acquire information about their senators if they do not have access to relevant local television. On the other hand, individuals who are comparatively uninterested in politics will be affected more by television, because if they get the “wrong” local news, they will not acquire the information in any other way. It should be noted, however, that while the point estimates differ substantially, the difference in effects for individuals with different levels of interest in politics is not statistically significant.

between the coefficients in columns 2 and 4 (p-value of 0.54). It should be noted, however, that the power is lower for the second test given the smaller sample size.

²¹The survey respondents were asked “How interested are you in politics and current affairs?” to which they could respond “Very much interested”, “Somewhat interested” or “Not much interested”

The results are therefore merely suggestive of differential effects.

In this section, I have shown that having access to relevant local television has strong positive effects on state-specific political knowledge, but no effects on knowledge of district or nationwide politics. Citizens in in-state counties are more knowledgeable about their senators' roll-call votes, and also more likely to express opinions about their senators (and governors) and knowing which parties these politicians belong to. Furthermore, the effect on knowledge of senators' roll-call votes is stronger for roll-call votes where the senator voted with the party majority, but present even when senators voted against the party majority. The results are consistent with the increased knowledge of the senators' roll-call votes being partly, but not fully, explained by citizens using party label as a shortcut for the senators' policy position. Finally, the effect of having access to relevant local television is stronger for citizens with less interest in politics, suggesting that passively acquired information through television is more important for this group.

6 Effect on senator approval rating

The results so far indicate that access to relevant local television has a causal effect on the knowledge citizens have of their senators. Does this increased knowledge affect how citizens evaluate their senators? In this section, I test whether citizens in in-state counties, compared to citizens in out-of-state counties, are more likely to approve (disapprove) of senators whose roll-call votes align with (are the opposite of) the citizens' own policy preferences.

To empirically assess this question, I estimate equation (2). Given that citizens in in-state counties have more knowledge of their senators' roll-call votes, we would expect *SameRollCall* (how well the preferences of the voters and their senators align) to have a stronger effect on senator approval rating, *ApproveSen*, for citizens in in-state counties, compared to citizens in out-of-state counties. That is, the hypothesis is that $\beta_2 > 0$.

The result is shown in Table 10. In the first column, I show results without the inclusion of senator fixed effects. As expected, having the same preferences as the senator is a strong predictor of approving of the senator. The result suggests that a standard deviation increase in *SameRollCall* increases senator approval with 0.51 standard deviations for citizens in out-of-state counties. The estimated interaction effect implies that a standard deviation increase in *SameRollCall* increases senator approval with an *additional* 0.038 standard deviations for citizens in in-state counties. While this estimate is positive, suggesting that citizens in in-state counties are more likely to evaluate their senators based on their roll-call votes, it is relatively small and not statistically significant at any conventional significance level.

Furthermore, in the preferred specification, when senator effects are included (column 2),

Table 10: Senator approval rating

	No initial weights			Survey weights		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>InState</i>	0.0082 (0.033)	0.020 (0.026)	0.029 (0.036)	0.0054 (0.034)	0.020 (0.028)	0.033 (0.037)
<i>SameRollCall</i>	0.51*** (0.034)		0.51*** (0.034)	0.48*** (0.035)		0.48*** (0.035)
<i>InState</i> × <i>SameRollCall</i>	0.038 (0.035)	0.0024 (0.021)	-0.012 (0.038)	0.045 (0.036)	0.0026 (0.023)	-0.0065 (0.039)
Senator effects	No	In regression (interacted) ¹	In entropy balancing	No	In regression (interacted) ¹	In entropy balancing
Obs.	36,838	36,838	36,838	36,838	36,838	36,838

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. In columns 3 and 6, a full set of senator dummies are also included in the entropy balancing. In the first three columns, no initial weights are used; in the last three columns, survey weights are used as base weights. The outcome variable is senator approval rating on a four point scale, *ApproveSen*, standardized to have a mean of zero and standard deviation of one. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

¹A full set of senator dummy variables are included both by themselves as well as interacted with *SameRollCall* (standardized to have a mean of zero and standard deviation of one).

Table 11: Senator approval rating, alternative specifications

	(1) <i>ApproveDummy</i>	(2) <i>ApproveFivePoint</i>
<i>InState</i>	0.026** (0.013)	0.031 (0.025)
<i>InState</i> × <i>SameRollCall</i>	-0.014 (0.010)	0.0056 (0.021)
Senator effects	In regression (interacted) ¹	In regression (interacted) ¹
Obs.	36,838	41,762

Note: Both regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. No initial weights are used. The outcome in column 1 is a dummy variable indicating whether the respondent approves of the senator. In column 2, the outcome is approval rating on a five point scale (standardized to have a mean of zero and standard deviation of one), where the middle category contains respondents who answered that they were “Not sure” on whether they approved or disapproved of the senator. Standard errors, clustered at the county level, are shown in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

¹A full set of senator dummy variables are included both by themselves as well as interacted with *SameRollCall* (standardized to have a mean of zero and standard deviation of one).

the estimate is almost exactly zero, suggesting that there is no difference in how in-state and out-of-state citizens evaluate their senators.²² In addition, including the senator dummies in the entropy balancing instead of in the regression makes no difference for the results: the interaction effect is still close to zero. Finally, the last three columns show the same estimations but where survey weights are used as base weights in the entropy balancing. The results are not affected in any significant way by the inclusion of these weights.

The outcome variable, *ApproveSen*, is linear in the four response categories. I make this simplification to use as much information as possible, while at the same time keeping the model simple.²³ However, it is possible that individuals mostly decide whether they like or not like a senator so that the difference between “somewhat approve” and “strongly approve” is negligible and mostly due to measurement error. I therefore estimate the alternative specification where the outcome variable takes on value of 1 if the respondent approves of the senator and 0 if the respondent disapproves, regardless of the intensity of their approval or disapproval.

The first column of Table 11 shows the result from the estimation of such a linear probability model. The estimated coefficient of the interaction variable is negative with a point

²²Because a full set of interactions are included, *SameRollCall* is no longer included in the model as it is perfectly colinear with the interactions.

²³I have also estimated ordered probit models with qualitatively identical results to those presented in Table 10. Results are available upon request.

estimate that implies that when *SameRollCall* increases with a standard deviation, *InState* citizens are 1.4 percentage points *less* likely to approve of their senators compared to citizens in out-of-state counties. However, the estimate is close to zero and not statistically significant on any conventional significance level.

For the results so far, I have removed all respondents who answered “not sure” on the question on whether they approve of their senators. As shown in the previous section, citizens in in-state counties, compared to out-of-state counties, are less likely to give this answer. By removing all observations with missing values on the approval question, it is therefore possible that I do not capture the total causal effect of living in an in-state county. One interpretation of the “not sure” response is that these individuals, because of their lack of information, neither approves nor disapproves of their senators, and that they therefore are indifferent towards them. In line with that argument, I define an alternative outcome variable, *ApproveFivePoint*, coded so that “not sure” responses take a value between “somewhat disapprove” and “somewhat approve”.²⁴

The result from using this alternative outcome variable is shown in column 2 of Table 11. The estimated interaction effect is very close to zero and similar to the previous results, suggesting that the lack of effect in the baseline results is not due to the removal of respondents who were unsure of whether they approve or disapprove of their senators’ work. The last two columns of the table show that using survey weights as base weights in the entropy balancing do not affect the results in any significant way.

An assumption in the estimation of the interaction model in equation (2) is that citizens’ preferences are not affected by whether they live in in-state or out-of-state counties. Because the roll-call votes are not of a particularly local nature, and that all individuals have the same access to national news outlets, this assumption seems plausible. However, some scholars have argued that individuals can form policy preferences based on the positions of the politicians (see, e.g., Zaller 1992). If this is the case, then it is conceivable that the fact that individuals in in-state counties are more knowledgeable of their senators’ roll-call votes, also affects the likelihood that they agree with their senators’ policy positions. That is, it is possible that *InState* has a causal effect on *SameRollCall*. If that is the case, then it is no longer possible to estimate the interaction model in equation (2). To test if such a causal effect exist, I regress *SameRollCall* on *InState*.

The result of such a regression is shown in the first column of Table 12. The estimated effect is very close to zero and not statistically significant. There is therefore no evidence of citizens in in-state counties, compared to out-of-state counties, being more likely to adopt

²⁴That is, the coding is (1) “strongly disapprove”, (2) “somewhat disapprove”, (3) “not sure”, (4) “somewhat approve” and (5) “strongly approve”.

Table 12: Additional results

	<i>SameRollCall</i>		<i>ApproveSen</i>		
	(1)	(2)	(3)	(4)	(5)
<i>InState</i>	0.0091 (0.031)	0.0053 (0.043)	-0.023 (0.028)	0.14*** (0.047)	-0.061 (0.046)
<i>InState</i> × <i>IdentSenParty</i>		-0.029 (0.060)			0.082 (0.057)
<i>InState</i> × <i>SameRollCall</i>			0.015 (0.026)	-0.0057 (0.032)	
Senator effects	In regression	In regression (interacted) ¹	In regression (interacted) ²	In regression (interacted) ²	In regression (interacted) ¹
Sample	All	Party supporters	Party supporters	Independents	Party supporters
Obs.	41,865	26,817	23,769	11,082	23,769

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. No initial weights are used. The outcome in columns 1 and 2 is *SameRollCall*, standardized to have a mean of zero and standard deviation of one. In columns 3 to 5, the outcome is senator approval rating on a four point scale, *ApproveSen*, also standardized to have a mean of zero and standard deviation of one. A full set of senator dummy variables are included in all regressions. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

¹A full set of senator dummy variables are included both by themselves as well as interacted with *IdentSenParty*.

²A full set of senator dummy variables are included both by themselves as well as interacted with *SameRollCall*.

their senators' policy positions. Of course, it is possible that citizens only adopt policy positions of politicians to which they are positively inclined. For instance, citizens who identify themselves as Democrats may only infer their policy position from Democratic senators, with the converse being true for Republicans. In the second column, I therefore restrict the sample to the citizens who identify themselves as either Democrats or Republicans, and then interact the *InState* variable with an indicator, *IdentSenParty*, for if the respondents identify with their senators' party. However, as shown in the table, the estimate of the interaction is in fact negative, although close to zero and not statistically significant. I therefore conclude that there is no evidence of citizens in in-state counties, compared to out-of-state counties, being more likely to adopt their senators' policy positions.

One potential reason for why it has not been possible to identify a positive interaction effect between *InState* and *SameRollCall* on senator approval rating could be that partisan citizens, who either identify themselves as Democrats or Republicans, evaluates their senators differently compared to citizens who identify themselves as independents. A hypothesis is that only independents will react to the senators' roll-call votes and that for partisans, it is sufficient to only observe which party their senators belong to. In the third and fourth column of Table 12, I test whether such a difference exists by estimating equation (2) separately for partisan and independent citizens. However, as shown in the table, the estimated interaction effect is very similar and estimated to be close to zero for both groups of citizens.

In the fifth column, I restrict the sample to partisan citizens and estimate the interaction effect between living in an in-state county and identifying with the senators' party. If citizens use party label as a shortcut, it is possible that Democratic (Republican) citizens in in-state counties are more likely to approve of Democratic (Republican) senators, because, as shown in the previous section, citizens in in-state counties are more likely to know which parties their senators belong to. The estimated interaction effect is not statistically significant on any conventional significance level. However, the sign of the coefficient is positive with a fairly large point estimate. The point estimate suggest that, for citizens who identify with the same party their senators belong to, having access to relevant local television increases the approval rating of the senator with approximately 0.08 standard deviations. Nonetheless, because the effect is imprecisely estimated, there is not sufficient evidence to conclude that partisan citizens in in-state counties use party labels as a shortcut, to a greater extent than citizens from out-of-state counties, when evaluating their senators.

Overall, the results in this section indicate that, while having access to relevant local television significantly increases the knowledge citizens have of their senators' roll-call votes, this increased knowledge does not have an affect on how they evaluate their senators. I show that this result is robust to different specifications of the outcome variable. Furthermore, there is

no evidence that citizens with access to relevant local television are more likely to adopt the policy positions of their senators, and also no indication that partisan and independent citizens react differently to their senators' roll-call votes. In the concluding discussion, I discuss a possible explanation for why the increased knowledge of the senators' roll-call votes does not seem to have an effect on how citizens hold their senators accountable for their actions in the Senate.

7 Concluding discussion

In this paper, I investigate the causal effect of having access to relevant local television on citizens' political knowledge, as well as the way they evaluate their senators. To do so, I utilize the mismatch between the local television markets and the states, leading to some citizens receiving their local television news from neighboring states. I show that local television stations devote the bulk of their attention to senators from the state they are based in, while having comparatively little coverage of senators from other states in the media market. This biased coverage leads citizens in in-state counties, compared to citizens in out-of-state counties, to have significantly more knowledge of, and opinions about, their senators. I show that they are more knowledgeable about their senators' roll-call votes in the Senate, as well as more likely to know which party they belong to. Furthermore, I perform several placebo tests, showing that citizens in in-state counties are not more likely to know which party have the majority in Congress or express opinions about the political parties. I also find no effect on knowledge of House representatives. Finally, I find that the increased knowledge of senators' roll-call votes does not have an effect on the way citizens evaluate their senators. That is, citizens in in-state and out-of-state counties are equally likely to approve or disapprove of their senators depending on how well their preferences align with their senators' roll-call votes.

This last finding is somewhat puzzling. As shown in the early part of the paper, there exists a strong correlation between citizens' knowledge of their senators' roll-call votes and the likelihood that they evaluate their senators based on these votes. Similarly, Ansolabehere and Jones (2010) show that citizens hold their senators accountable based on the citizens' beliefs about their senators' actions in the Senate. Why, then, are citizens in in-state counties, having more knowledge of their senators' roll-call votes, not more likely to use this increased knowledge when they evaluate their senators?

One explanation is that the way by which the political information is acquired, does not lend itself to sophisticated evaluations of the senators. In this paper, I focus on *passively* acquired information due to the fact that some citizens happen to receive, outside of their

own control, more relevant local news than others. However, there is of course many different sources of information available to citizens. Citizens in out-of-state counties who are interested in how their senators voted in the Senate could easily look up that information on the Internet, talk to their friends and co-workers or read about it in the newspaper. It is quite possible that the effect of *actively* acquired information is very different. In the terminology of Luskin (1990), in this paper I focus on variation in citizens' *opportunity* to become informed, but citizens also need the *ability* and *motivation* to process this information in order to make politically sophisticated judgments. Given that the effect on knowledge of senators' roll-call votes is strongest for individuals with low interest in politics, it seems likely that these individuals have comparatively low motivation. An interesting avenue for future research would be to estimate the causal effect of access to television in contexts where citizens are more motivated to acquire political information.

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Appendix

A Results for different media market thresholds

In the results presented above, the sample is restricted to media markets where at least $2/3$ of citizens come from in-state counties. The intuition behind this restriction is that television stations will bias their news coverage only if their audience predominantly come from one state. The choice of $2/3$ as the cutoff is arbitrary, but consistent with previous research (Ansolabehere et al. 2006; Fergusson 2014). In this section, I show that the results are not sensitive to this particular choice of cutoff.

Table 13 shows the results from using several different cutoffs. The top panel of the table shows the effect on the knowledge citizens have of their senators roll-call votes, *KnowRollCall*, while the bottom panel shows the effect on senator approval rating, *ApproveSen*.

The first column replicates the baseline results for comparison. In the second column I have removed any sampling restrictions, meaning that the media market with the smallest share of in-state individuals is the Salisbury media market, where 52.5% of the population live in Maryland (the primary state), and 47.5% live in Delaware. Removing the $2/3$ restriction, the estimated effect of *InState* decreases slightly, but is still statistically significant at the 1% level. For cutoffs of 0.6, and 0.8, the effect is slightly bigger, but largely similar to the baseline estimate. The only sizeable difference is when the cutoff is set at 0.9. However, at this point, most of the out-of-state observations are removed (from 2,140 when the cutoff is $2/3$ to only 686), which causes the standard error to increase substantially

The results in the bottom panel indicate that the interaction effect is never statistically significant and always close to zero, regardless of the cutoff. These results show that the main findings of the paper are not sensitive to the specific cutoff used for share of individuals living in in-state counties for a given media market.

Table 13: Different thresholds

	(1)	(2)	(3)	(4)	(5)
<i>KnowRollCall</i> (knowledge of senators' roll-call votes)					
<i>InState</i>	0.16*** (0.030)	0.13*** (0.029)	0.17*** (0.028)	0.17*** (0.038)	0.087 (0.067)
Senator effects	In regression	In regression	In regression	In regression	In regression
Cutoff	2/3	None	0.6	0.8	0.9
Obs.	41,865	51,087	44,361	35,399	18,385
<i>ApproveSen</i> (senator approval rating)					
<i>InState</i>	0.020 (0.026)	0.023 (0.022)	0.014 (0.024)	0.034 (0.030)	0.048 (0.038)
<i>InState</i> × <i>Same</i>	0.0024 (0.021)	-0.019 (0.019)	-0.00088 (0.020)	-0.0024 (0.024)	0.016 (0.037)
Senator effects	In regression (interacted) ¹	In regression (interacted) ¹	In regression (interacted) ¹	In regression (interacted) ¹	In regression (interacted) ¹
Cutoff	2/3	None	0.6	0.8	0.9
Obs.	36,838	44,811	39,055	31,194	16,059

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3, and separate weights have been obtained for each sampling restriction. No initial weights are used. The outcome variable in the top panel is *KnowRollCall*, the knowledge respondents have of their senators' roll-call votes (scaled to have mean of zero and standard deviation of one). The outcome variable in the bottom panel is senator approval rating on a four point scale, *ApproveSen*, also standardized to have a mean of zero and standard deviation of one. A full set of senator dummies are included in all regressions. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

¹A full set of senator dummy variables are included both by themselves as well as interacted with *SameRollCall*.

B Results using control variables instead of entropy balancing

In this section, I show that using control variables instead of relying on the entropy balancing method yields similar results. However, I also show that when not using entropy balancing, it is important to specify a sufficiently flexible model to avoid obtaining misleading results.

In the top panel of Table 14, I show the effect of *InState* on *KnowRollCall*. In the first column, I show the effect without any control variables. The estimated effect is positive and much larger than the baseline estimate of 0.16 (see Table 6). However, once the county variables (the same as those used in entropy balancing) are controlled for, the estimate drops significantly to 0.14, close to the baseline estimate. This change in the estimate with the inclusion of county controls is not surprising given that in-state and out-of-state counties differ significantly in their observable characteristics. In columns 3 and 4, I include senator effects and individual controls.²⁵ Including these variables do not change the results in any significant way.

In the bottom panel, I estimate the interaction model, with senator approval rating as the outcome variable. Here the results look very different from the baseline results presented in Table 10. Even with a full set of controls, the interaction effect is positive and statistically significant even at the 1 percent level. The results therefore seem to suggest that citizens in in-state counties are much more likely to evaluate their senators based on their roll-call votes, compared to citizens in out-of-state counties. Indeed, in an earlier draft of this paper, this was the conclusion that was presented.

However, such a conclusion is misleading. The controls are included because it is not random whether a county is in-state or out-of-state. But because the variable of interest is the interaction between *InState* and *Same*, the control variables also need to be interacted with *Same* to appropriately capture the endogeneity of *InState*. The results in the last two columns show that once the controls are interacted with *Same*, the estimated interaction effect diminishes and when all controls are included, it is not statistically significant on any conventional significance level and close to zero. The results are therefore consistent with the baseline results in Table 10.

This table shows one advantage of using entropy balancing to control for potential confounders instead of using control variables in an OLS estimation. With the latter method, the researcher needs to determine the functional form through which the control variables correlate with the treatment and the outcome. With entropy balancing, on the other hand,

²⁵The individual controls include variables for age, education, sex, race and marital status. I do not include all variables listed in Table 5, to avoid losing to many observations due to missing values.

it is not necessary to specify the functional form.

Table 14: Unweighted results

	(1)	(2)	(3)	(4)	(5)	(6)
<i>KnowRollCall</i> (knowledge of senators' roll-call votes)						
<i>InState</i>	0.27*** (0.049)	0.13*** (0.045)	0.15*** (0.032)	0.14*** (0.030)		
County controls	No	Yes	Yes	Yes		
Senator effects	No	No	Yes	Yes		
Individual controls	No	No	No	Yes		
Obs.	41,865	41,865	41,865	40,061		
<i>ApproveSen</i> (senator approval rating)						
<i>InState</i>	-0.014 (0.034)	0.010 (0.035)	0.059 (0.039)	0.063 (0.039)	0.016 (0.034)	0.050 (0.036)
<i>Same</i>	0.51*** (0.032)	0.51*** (0.033)	0.55*** (0.031)	0.55*** (0.030)		
<i>InState</i> × <i>Same</i>	0.086*** (0.033)	0.091*** (0.034)	0.080** (0.031)	0.082*** (0.031)	0.047 (0.032)	0.0028 (0.022)
County controls ²	No	Yes	Yes	Yes	Interacted ¹	Interacted ¹
Senator effects	No	No	Yes	Yes	Yes	Interacted ¹
Individual controls ³	No	No	No	Yes	Yes	Interacted ¹
Obs.	36,838	36,838	36,838	35,469	35,469	35,469

Note: This table shows unweighted results when entropy balancing weights have not been used. The outcome variable in the top panel is *KnowRollCall*, the knowledge respondents have of their senators' roll-call votes (scaled to have mean of zero and standard deviation of one). The outcome variable in the bottom panel is senator approval rating on a four point scale, *ApproveSen*, also standardized to have a mean of zero and standard deviation of one. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

¹These variables are included both by themselves, as well as interacted with *SameRollCall*.

²The county controls are the variables listed in Table 3.

³The individual variables include controls for age, education, sex, race and marital status.

C Effect on knowledge of senators' roll-call votes, restricted sample

Here, I present the baseline results from the top panel of Table 6, but where the sample has been restricted to the sample of respondents who answered the questions on who had the majority in the House and Senate. As can be seen, the results are very similar to when the full sample is used. The lack of effects in the bottom panel of Table 6 is therefore not due to estimating on a different sample.

Table 15: Political knowledge, restricted sample

	No initial weights			Survey weights		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>KnowRollCall</i> (knowledge of senators' roll-call votes)					
<i>InState</i>	0.13*** (0.049)	0.14*** (0.034)	0.15*** (0.057)	0.13** (0.055)	0.16*** (0.042)	0.17*** (0.061)
Senator effects	No	In regression	In entropy balancing	No	In regression	In entropy balancing
Obs.	31,678	31,678	31,678	31,678	31,678	31,678

Note: All regressions are weighted with entropy balancing weights. The weights are obtained using the variables in Table 3. In columns 3 and 6, a full set of senator dummies are also included in the entropy balancing. In the first three columns, no initial weights are used; in the last three columns, survey weights are used as base weights. The outcome variable is *KnowRollCall*, the knowledge respondents have of their senators' roll-call votes (scaled to have mean of zero and standard deviation of one). The sample is restricted to respondents who answered the questions on which party had the majority in the House and Senate. A full set of senator dummies are included in columns 2 and 5. Standard errors, clustered at the county level, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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