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ABSTRACT

Television Market Size and Political Accountability in the US House of Representatives*

This paper examines the role of local TV market structure in US congressional politics, exploiting variation in the overlaps of political markets and TV markets. Local TV stations are hypothesized to report relatively more per US House representative in less populous markets (where the number of House districts covered is smaller), leading to better informed voters and more accountable representatives. We find that smaller markets are indeed associated with (i) higher coverage of representatives, and (ii) a higher level of voters' knowledge about their representatives. However, (iii) representatives of smaller and more congruent markets are only more likely to decide aligned with their constituents' policy preferences in highly competitive districts. This evidence suggests that local political news coverage on TV serves as a complement rather than a substitute in holding members of the US Congress accountable.

JEL Classification: D72, L82

Keywords: political accountability, market congruence, media coverage, TV markets, legislative voting, US Congress, voter knowledge, campaign finance

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1 Introduction

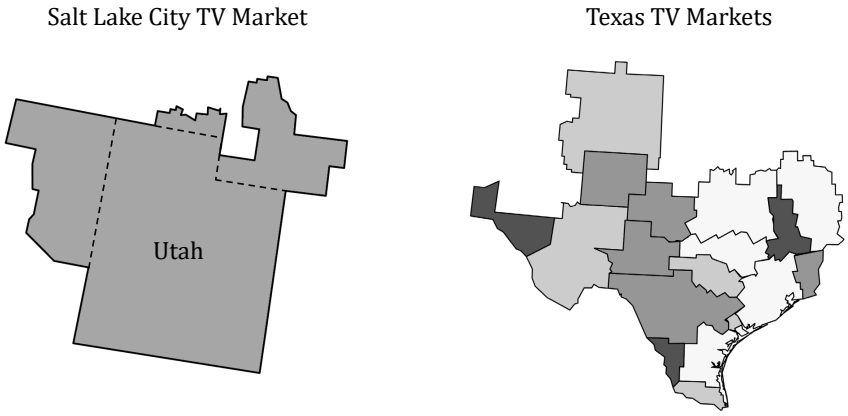
Media reporting about politicians' behavior is considered an important mechanism in a democracy to hold representatives accountable. Thereby the news media can be seen as a fourth power substituting for little contested electoral races or as a moderator complementing the electoral incentives created by tight electoral races. Influential contributions that describe the role of the media in electoral accountability are, for example, Arnold (2004), Besley and Prat (2006), Costas-Pérez et al. (2012), Ferraz and Finan (2008) and Snyder and Strömberg (2010) (for a review, see Strömberg, 2015).[1] Media coverage of representatives and their actions in office thereby depend on how media markets and political markets are organized. In this paper, we study how variation in the media coverage of representatives due to differently sized *television* markets affect the political representation of voter preferences in roll call votes. We undertake this main analysis for members of the US House for the period 2005 to 2018 and complement it with investigations on media coverage and knowledge for both chambers of the US Congress. In this context, the nationalization of US elections, i.e., the tying of lower tier election outcomes to presidential election outcomes has recently been described as a risk for democratic accountability (see, e.g., Abramowitz and Webster, 2016, Hopkins, 2018, Moskowitz, 2021, or Trussler, 2022). This development is partly linked to increases in the coverage of national politics in local news programs due to changes towards conglomerate owners of TV stations (see, e.g., Levendusky, 2022, Martin and McCrain, 2019, or Miho, 2022). Generally, it might be questioned whether TV news coverage of local US House representatives is substantial and informative enough to make a difference (see, e.g., the related consideration on campaign news and news deserts by Dunaway and Lawrence, 2015 and Miller, 2018).

For the variation in the size of TV markets, we exploit that local TV markets in the US are set by federal regulations (the so-called 'Designated Market Areas' or DMAs for short), so that voters in a particular area can only watch news from stations in their market area (see, recently, also Moskowitz, 2021). DMAs came about in a highly idiosyncratic way as they largely reflected and still reflect the traditional market areas of terrestrial local TV stations (Gentzkow, 2006). Thus, within one and the same DMA, voters from one to far more than ten electoral districts might get the news from the same set of TV stations, provided today largely via cable or satellite. Figure 1 illustrates this point with an example. The entire population of the state of Utah (with its 4 House districts) is served by a single TV market – that of Salt Lake City. Texas, by contrast, is divided up into 20 separate TV markets, reaching voters from 36 House districts. In other words, a TV station operating in the (relatively large) Salt Lake City market has 4 "relevant" representatives in its market area, whereas a station in Texas has, on average, only 1.8 representatives to cover.

Differently sized DMAs thereby induce variation in the incentives of profit-maximizing TV stations to report on representatives of particular congressional districts if voters want to learn primarily about the representatives of *their* district. We hypothesize that stations in larger TV markets (covering more

[1] A more detailed discussion of the related literature is provided in Section 2.

Figure 1: Local TV markets in Utah and Texas



Notes: The figure shows the TV market of Salt Lake City which completely encloses Utah with its 4 house districts, as well as the 20 TV markets in the state of Texas with its 36 house districts as of 2016.

districts) report relatively less about an individual representative in the US House. This effect results on the one hand simply from the rivalry between the different representatives for coverage when the profit maximizing total political reporting about members of Congress is fix (or if TV stations increase their political reporting less than proportionally with the number of representatives in their viewing area). On the other hand, an additional story about an individual representative becomes less interesting for more voters in the market if the market covers more electoral districts and thus the targeted politician is formally representing a smaller fraction of people in the market.

As a consequence of the market-driven differences in individual representatives' exposure to coverage in TV, representatives are expected to face differential scrutiny and pressure from their constituents. Accordingly, with more coverage and voter knowledge, they are expected to more likely vote aligned with the majority preferences in their district. Thereby, an attentive media environment may interact in alternative ways with the level of political competition in the district. On the one hand, media scrutiny might compensate as a fourth power for weak electoral competition and thus serve as a substitute. On the other hand, however, media attention combined with safe seats for a party may generate little incentives for a good representation of voter interests (and only be effective with high competition), i.e., the two forces for electoral accountability act as complements.

In order to test these hypotheses, our empirical strategy exploits within-state variation in the congruence of TV markets with congressional districts controlling for a large set of time-variant covariates. In the corresponding econometric analyses, we rely on several newly compiled data sets. The one for the main analysis covers the representation of voter preferences in congressional roll call voting. Thereby, we rely on a proxy measure for voters' bill-specific preferences. This measure builds on information about the number of citizens in a representative's constituency who donated to political campaigns and are linked to specific industries/ideological groups that have taken documented

positions regarding the bills in question. This enables us to code whether representatives voted aligned with their constituency preferences for about 190,000 individual roll call votes in the US Congress between 2005 and 2018.

In the analyses for the proposed mechanisms linking TV market size and accountability, we exploit variation across TV market areas in the number of congressional districts controlling for important covariates. We test whether there is a less frequent coverage of representatives in larger TV markets and whether the differences in media visibility of individual representatives are reflected in voters' knowledge about them. Specifically, we hypothesize that citizens served by larger TV markets are less likely to know certain facts (such as party, gender, or race) about their representatives in the House, since the latter receive less coverage in local TV stations' newscasts. The corresponding data sets are compiled from the TV News Archive for the coverage of members of Congress, and the Cooperative Congressional Election Study (CCES) for voters' knowledge about them.

The corresponding results with regard to news reporting on individual representatives in the US House between 2009 and 2018 (as covered in closed-captions transcripts data from newscasts of 142 local US TV stations) show that TV stations from markets covering between 5 to 9 different congressional districts report about 60% less per relevant representative than stations that operate in TV markets covering only up to 4 districts. The reporting is thereby approximated by the number of mentions per representative/month in local stations' newscasts. Consistent with this, we find that voters living in counties that are served by larger TV markets know less about their representative in the House. A citizen who lives in a TV market that only covers between 1 to 4 different districts is about 2.5 to 3 percentage points more likely to know basic facts about his or her representative than a citizen served by a market with between 5 and 9 relevant representatives. In comparison, the difference in voter knowledge is about 5 percentage points between respondents with a (2-year) college rather than a high school degree only. This is for an index of voter knowledge comprising citizens' answers to various questions about their representatives.

The results for accountability indicate that overall representatives are not generally more likely to vote aligned with their voters' political preferences in more congruent districts despite the relatively better knowledge of voters about them. A positive effect of a higher congruence between political markets and TV markets is only observed when there is also high electoral competition. The two potential forces for accountable behavior thus seem to work as complements rather than substitutes. Regarding the effect size, the partial correlation overall amounts to a minimal increase of aligned voting behavior by 0.1 percentage points (n.s.) when evaluated for a two standard deviations, i.e., 39.8% (on the observed range between 1% and 100%), increase in congruence. When we refer to representatives from highly competitive constituencies (with an incumbent's victory vote margin of less than 5 percentage points in the most recent elections), the corresponding positive effect for an increase in congruence by two standard deviations on alignment amounts to 2.7 percentage points.

The remainder of this paper is structured as follows. Section 2 sets our contribution in perspective to the related literature. Section 3 discusses the institutional setting and our conceptualization of TV market size in a politico-economic context. Based on a simple theoretical framework, we derive our

main arguments regarding the links between local TV market size, electoral competition, and political accountability. The following Section 4 presents our analysis of political alignment, testing the two competing hypotheses on the interaction of media scrutiny and political competition at the level of the congressional district. Section 5 presents the additional evidence on TV reporting and voter knowledge at the level of the TV market area. Section 6 offers concluding remarks.

2 Related literature

Our study is related to a rich empirical literature that examines the influence of the media on politics. In prominent early work, Besley and Burgess (2002) investigate the effect that access to media (focusing on newspaper circulation in India) has on government relief expenditures in response to local natural disasters. Their evidence is consistent with the view that actively reporting media increases political accountability. In a similar vein, Strömberg (2004) shows that a better radio coverage of US counties was associated with higher relief funds under the New Deal programs in the 1930s. Ferraz and Finan (2008) provide direct evidence that better informed voters are more likely to punish politicians for bad behavior. Examining corruption cases among Brazilian mayors, they find that voters from places with better coverage by local radio stations are more likely to vote against officeholders involved in corruption than voters from places with poorer radio coverage.

Political coverage in the media might also mobilize voters and thus contribute to increased government responsiveness and political accountability. Gentzkow et al. (2011) show that the market entry of US daily newspapers is associated with rising turnout levels. Regarding TV in the US, Gentzkow (2006) documents that its introduction was associated with declining voter turnout as it replaced other media with more political coverage. Studying the introduction of Spanish-language local TV, Oberholzer-Gee and Waldfogel (2009) find an increase in voter turnout among the Hispanic population that is served with more political information. For the internet, evidence so far shows that it seems to have more of a demobilizing effect on voters. Falck et al. (2014) find a negative effect of broadband internet roll-out on voter turnout in Germany. Similarly, Gavazza et al. (2018) find that in areas with higher internet penetration in the UK, turnout is falling as the internet displaces other media with higher news content, while Campante et al. (2018) document for Italy that access to high speed internet initially lowers turnout, but has no effect in the long run. Djourelova and Durante (2021) find evidence that due to the increased competition from online providers, local newspapers adjust their news content by covering politics less.

Besides the long term effects resulting from structural differences in the availability of political information, research also shows that variation in media attention affects politicians' decisions and their accountability in the short term. In pioneering work, Eisensee and Strömberg (2007) find that the US government is more likely to grant disaster relief to countries if the disaster is reported in the evening news. Based on a similar empirical design, Garz and Sörensen (2017) show that politicians are more likely to resign after the lifting of their political immunity if more media attention is given to the affair. Djourelova et al. (2021) show that controversial US presidential orders are more likely to

be issued (in the case of divided government) if predictable and newsworthy events occur afterwards. Balles et al. (2022) find that in roll call votes taken after serious shock events (crowding out political news), representatives are much more likely to vote against their constituents, and instead with the conflicting position of their special interest campaign donors. Kaplan et al. (2018) independently study the effect of natural disasters on the voting behavior of representatives and present results consistent with Balles et al. (2022).

We see our study as a contribution to the literature showing how the differential organization of media and political markets affects political accountability through the representation of voter preferences. Numerous studies show for the US that those newspapers with a larger share of their readership living in the same congressional district – that is, newspapers whose market area better matches a particular constituency – publish more news articles about that district's representative (Schaffner and Sellers, 2003; Arnold, 2004; Snyder and Strömberg, 2010; Hayes and Lawless, 2015). Snyder and Strömberg (2010) as well as Hayes and Lawless (2015) show that this increased coverage is reflected in voters' knowledge of their representatives and in their willingness to participate in the corresponding elections. Finally, Snyder and Strömberg (2010) document that representatives from more congruent districts work harder for their constituency. Specifically, they observe a higher proportion of roll call votes taken against the party line, a higher number of witness appearances before congressional hearings, and higher federal funds spent in those districts. Our study differs from Snyder and Strömberg (2010) insofar that we, first, focus on local TV rather than newspaper markets. For local TV, the authors find no effect on voters' knowledge about their House representatives. Thereby, the authors examine the period before the decline of newspapers in the 2000s, while we primarily study the period after 2010.[2] For our study period, a recent survey by the Pew Research Center (2018b) shows that TV is still the first choice for news consumption for a large part of the US population. As of 2018, 49% of the interviewed US adults reported that they often get their news from TV, compared to 33% for online news sites that rank second, and newspapers in fifth place with 16%. In related recent work on the geography of TV markets, Moskowitz (2021) finds a positive effect on voters' knowledge about 'their' Senator when they reside within an in-state TV market (rather than a neighboring state's market). Moreover, these residents are also more likely to engage in split-ticket voting indicating that they use their knowledge to implement more sophisticated strategies to pursue their political interests. Compared to all these earlier work, we use a direct measure of whether representatives follow constituent preferences studying their decisions on particular bills in Congress. Thereby, our conceptual and empirical framework takes into account political competition as another important

[2]Moreover, the authors only study voters' responses to one specific knowledge question. We use a set of questions that we combine to an index of voters' specific knowledge about their representatives.

factor influencing accountability, which cannot be considered independently of the media environment. When politicians have little to fear in the upcoming elections, the disciplining effect of media attention is likely to be limited.[3]

3 Local TV markets and congressional politics

3.1 The organization of US TV markets

Local US TV markets play an important role in the dissemination of political information for a large proportion of voters. As mentioned above, around 50% of US adults use TV as their primary medium for news. Compared to the other major TV platforms (network and cable TV), local TV thereby has the largest audience share (Pew Research Center, 2018a, 2019). TV markets correspond to geographical areas where residents can receive a specific set of local channels (historically, over-the-air TV). Usually located in larger cities, local TV stations' signals cover the surrounding suburban and rural areas (in many cases crossing state borders).

By the late 1980s, the local stations faced increasing competition from cable TV featuring entertainment programming and including the national cable news channels CNN, MSNBC, and FNC. In response, the so-called "must-carry" rules were introduced in the 1990s. They require cable companies to include local broadcasters in their service.[4]

Similar rules apply to satellite operators.[5] In order to determine which local stations are relevant in a certain area, and then to be included in the services of cable and satellite companies, the Federal Communications Commission (FCC; the regulatory authority responsible for TV) assigns each US county to one of 210 non-overlapping market areas – the so-called 'TV Market Areas' or 'Designated Market Areas' (DMAs). Since 2000, the FCC's definitions of these areas follow the definitions of Nielsen Media Research, a private US company specialized in measuring media audiences.[6] While the FCC adjusts its market definitions (following the adjustments by Nielsen) every three years to respond to changes in viewer behavior, these changes are only marginal in the context of this study.

[3] Previous research indicates that competition is higher in districts that are more congruent with local TV markets (Campbell et al., 1984; Stewart and Reynolds, 1990; Levy and Squire, 2000). For the press, however, Snyder and Strömberg (2010) documents a negative correlation.

[4] Under the *Cable TV Protection and Competition Act of 1992*, a local broadcaster is required to choose between must-carry or retransmission consent. If the station opts for must-carry, its content must be transmitted by the cable company, but the station may not charge fees for it. However, if retransmission consent is chosen, the cable provider may only retransmit the local station's signal if some form of compensation has taken place (financial or otherwise). If in the latter case no agreement has been reached, the cable provider is prohibited from retransmitting the broadcaster's signal. (https://www.fcc.gov/media/cable-carriage-broadcast-stations).

[5] The *Satellite Home Viewer Improvement Act of 1999*, a modification to the *Satellite Home Viewer Act of 1988*, requires satellite providers to carry all local channels if they carry at least one.

[6] See https://www.fcc.gov/oet/maps/areas for the FCC's account of market areas. The assignment of counties to DMAs by Nielsen is based on past viewing behavior (https://www.nielsen.com/intl-campaigns/us/dma-maps.html).

3.2 Measuring TV market size and congruence

For the analysis of representatives' alignment with constituency interests (Section 4), we follow the previous literature (Snyder and Strömberg, 2010) and use a measure that indicates at the congressional district level the geographical match between district boundaries and local TV markets. This measure of market congruence (denoted *TV Congruence*) is defined as the percentage that the population in a district makes up of the TV market serving that district. If a particular district is covered by more than one TV market (the median district is served by two), *TV Congruence* is defined as the average (population-weighted) share that the district's population makes up of the TV markets covering them. For example, if a TV market exclusively reaches voters from a particular district, *TV Congruence* takes a value of 1 (even if the district is served by several markets, but each market covers only that district). Correspondingly, *TV Congruence* has lower values if the TV markets in a district mainly cover voters from other districts. *TV Congruence* ranges from 0.01 to 1. In the lower extreme we thus observe a district whose voters make up only 1% of the TV market (or markets) covering them. This is the case for New York's 12th congressional district (before it was redistricted in 2012), being exclusively served by the New York TV market with its 18 mn. population. At the other extreme is Alaska's at-large congressional district, which is served by TV stations that only broadcast in the state of Alaska.

The main explanatory variable we use in the subsequent analyses on news coverage and voter knowledge (Section 5) is the number of congressional districts that lie (fully or in part) in the coverage area of a particular TV market. This indicates the size of the TV markets in our setting. We count a median of four districts for the US House of Representatives in a DMA. The number, however, differs widely from one in the Juneau DMA (covering Alaska's at-large congressional district) to 34 in the DMA of New York (figures for district lines following the 2010 census).

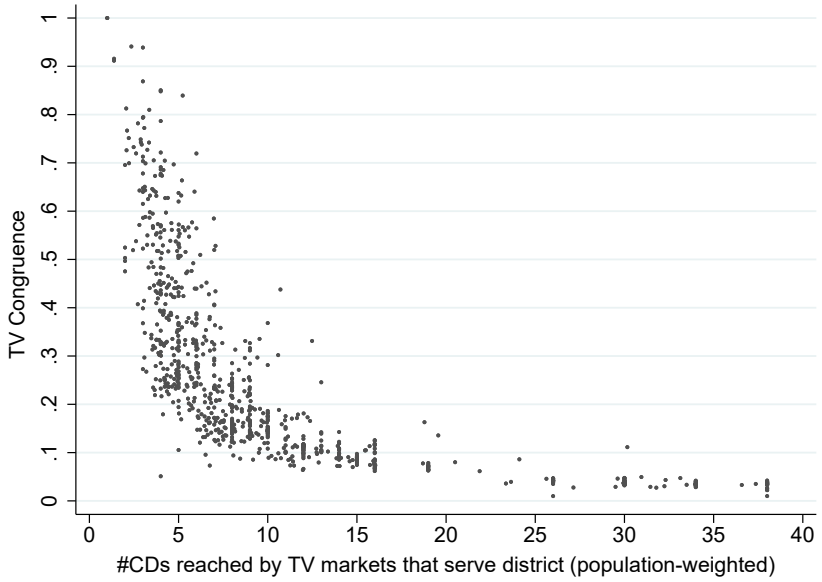
As is shown in Figure 2, there is a substantive correlation between the two measures: districts are more likely to be more congruent the smaller the TV markets are. The x-axis shows the average (population-weighted) number of congressional districts reached by the TV markets serving a particular district.[7] The y-axis shows the corresponding value of *TV Congruence*.

Changes in the assignment of single counties to TV markets have little impact on either measure. More substantial are changes in congressional district boundaries due to the redistricting following the 2010 US census (the first time effective for the 2012 elections). In order to take the redistricting into account and to appropriately assign congressional districts to TV markets, we use information from two different points in time. One before and one after the 2012 elections.[8]

[7] For example, a district D is served by two TV markets A and B. Market A makes up 80% of the population in D and serves 5 other districts. B makes up 20% and serves 4 more districts in addition to D. We therefore receive a value of $0.8 \times 6 + 0.2 \times 5 = 5.8$.

[8] More specifically, we use US ZIP crosswalk files from 2008 and 2016, indicating for the pre- and post-redistricting period which ZIP code lies in which TV market (the 2008 crosswalk file was kindly provided by Sarah Niebler and Carly Urban (Niebler and Urban, 2017), and the 2016 file is from Sood (2016), available on Harvard's Dataverse; see https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/IVXEHT). Along with two ZIP-district crosswalks (one each for before and after the redistricting took place), we can thus construct two concordances for before and after the redistricting, respectively, indicating which districts lie in which TV markets. Regarding the ZIP-district crosswalks, we use information provided by the US Department of Housing and Urban Development (HUD)

Figure 2: The relationship between TV market size and the congruence between TV markets and congressional districts



Notes: The graph shows the negative correlation between the total number of districts covered by the TV markets serving a particular district (population-weighted) and the congruence of that district with the TV markets (*TV Congruence*. The figure includes two values for each district, one for before and one for after the redistricting took place following the 2010 census.

From the outlined characteristics of local TV markets follows that citizens of a particular county are much more likely to only receive local stations from the TV market to which their county has been assigned to, no matter whether they watch TV via antenna, cable or satellite. It is, of course, possible to receive over-the-air TV across the geographic market area borders. However, this typically applies only for more rural, less densely populated areas. Another important exception are online streaming services broadcasting the contents of local TV stations. Yet, for the observation period in our study, the majority of US adults watched local TV transmitted via the more traditional channels. Even in 2017, an estimated 68% of US adults watched TV primarily via cable, satellite, or digital antenna TV (vs. online streaming services) (Pew Research Center, 2017).

We propose that the varying extent to which local TV markets overlap with congressional districts sets different incentives for representatives when it comes to representing voter preferences, since the latter are expected to be differently well informed about their representatives through TV. We argue, however, that media monitoring alone may not be sufficient, but that the degree of political

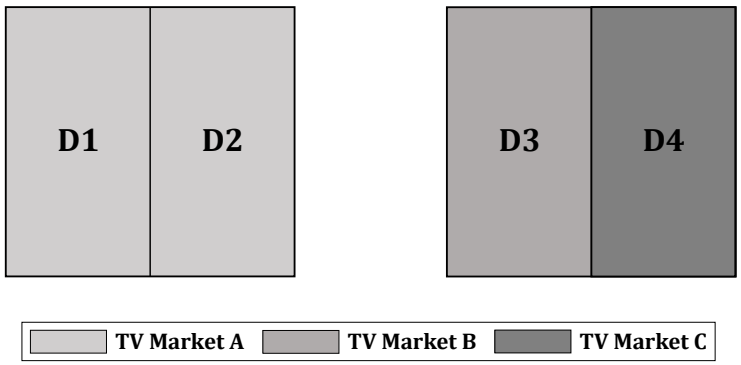
(see https://www.huduser.gov/portal/datasets/usps_crosswalk.html).
The resulting within-variation in TV market size is, however, only marginal (with a correlation coefficient of 0.94), which is why we primarily rely on cross-sectional variation within US states to identify effects. A slightly larger variation between before and after the redistricting is resulting for the geographical match (i.e., the congruence) between TV markets and congressional districts (correlation=0.80).

competition faced by individual representatives might act as a moderator. In the following, we present the theoretical arguments regarding TV coverage and its interaction with political competition, after which we formulate two possible hypotheses concerning their effect on political alignment.

3.3 Theoretical argument for the link between TV market size and political accountability

We outline our theoretical considerations based on the example of two hypothetical states, as illustrated in Figure 3. Both states have the same size in terms of population, corresponding with two seats in the US House of Representatives and thus two congressional districts (marked by D1/D2 and D3/D4 respectively), while the states' borders correspond to the US Senate districts. The state on the left is served by broadcasters that belong to the exclusive TV market A. Voters in the state on the right are served by broadcasters competing in the two separate TV markets B and C. In both cases, the markets are fully within the two states' borders. The geographical split of the markets in the state on the right has been chosen such that their boundaries perfectly overlap with the House district lines.

Figure 3: Two hypothetical states with one and two TV markets respectively



Notes: The figure shows two hypothetical US states, with one or two TV markets each (the grey areas) and two congressional districts each (D1/D2 and D3/D4).

We assume that TV stations maximize profits, which are largely determined by advertising revenues. They therefore strive to maximize their ratings in order to be as attractive as possible to advertisers. We also assume that TV stations put together their programs for the average viewer in their market. Competition between TV stations in a market takes place on an ideological level or involves vertical product differentiation (but does not involve the spatial dimension, thus ruling out the possibility that individual stations may specialize in political reporting of a particular district). Voters are assumed to solely demand information about incumbents who they can hold accountable, i.e., representatives of their district and senators of their state. In Figure 3, this implies that for citizens of district D1 only information about the incumbent of D1 is relevant. Information about the incumbent in D2 is useless to them. However, news about senators of a particular state are always relevant to all voters of that state.

Now, let us consider a station in the large TV market in the state on the left. It reaches voters in both districts (D1 as well as D2). A news story covering one of the two House representatives is thus relevant for only half of the station's audience. In the state on the right, on the other hand, the stations of the two smaller markets each exclusively reach voters who are represented by the same House incumbent. Here, a news segment covering a House representative is thus relevant for the station's entire audience. At the margin, every additional news story of the average representative is relatively less attractive to the average voter in D1/D2 than in D3/D4. We therefore predict that there will be more coverage of incumbents representing D3 and D4 in the state with small TV markets than there will be in the state with the large TV market covering D1 and D2.

In other words, for districts of the same size (currently about 700,000 people per US House district), larger/more populous TV markets are associated with more districts that lie within (or partly within) their boundaries, reducing the demand-driven incentives to report on an individual House representative.

The differential level of scrutiny given to representatives in the House is expected to have an impact on their behavior in office. We assume re-election oriented incumbents. With their political decisions, they try to maximize voter support, which depends on the extent to which those decisions are aligned with voters' preferences. We assume that voters watch TV to get informed. The amount of TV coverage representatives receive will therefore have an impact on their calculus. The less their actions are covered on TV, the more attractive it is for them to deviate from the preferred position of the constituency (and instead to pursue their own ideas or to take the position preferred by other stakeholders).

Since the unit of observation in the analysis of political alignment is the individual representative, we operationalize the aspect of TV market size in terms of congruence as described above. Referring to Figure 3, the two districts D3 and D4, which are served by TV markets B and C, would get a congruence value of 1, while the two districts D1 and D2, which are served by TV market A, would get a value of 0.5 each (assuming that 50% of the viewers in TV market A live in D1 and D2 each).

Interaction of TV market congruence with electoral competition

In theoretical models of political agency, media reporting is one among potentially several forces that affect political accountability. Many others are summarized in terms of political competition. For example, in Besley and Burgess (2002) both media reporting and competition are theoretically positively related with a politician's behavior that is more aligned with voters' preferences. We further consider that the extent to which a district is congruent with media markets might systematically interact with the intensity of electoral competition there. On the one hand, both mechanisms may independently contribute to accountability and might even compensate for weaknesses of the other. According to this *substitution hypothesis*, more congruent districts would particularly help to increase accountability if there is little competition in the district. On the other hand, congruence and electoral

competition might also reinforce each other regarding the effects on representatives' accountable behavior. According to this *complementary hypothesis*, the differential coverage in more congruent districts would leverage the incentives in contested districts.

We are aware that the intensity of political competition in a particular district might itself be driven by the congruence between the district and the local TV markets. This could be the case, for example, if challengers benefit relatively more than incumbents from the increased attention of local TV stations in a congruent district (so congruence would increase competition). In this context, Ansolabehere et al. (2006) study whether the extent of electoral competition is influenced by the presence of local TV stations covering the relevant political races, but find no evidence for this. Another channel through which the congruence between districts and TV markets could influence electoral competition is the cost of broadcast campaign advertising. In more congruent districts, potential challengers need to broadcast their campaign message in only one or a few TV markets in order to reach the entire electorate, making it relatively more attractive to enter the race. The studies by Campbell et al. (1984), Stewart and Reynolds (1990), and Levy and Squire (2000) indeed document that the incumbency advantage is smaller in districts that are more congruent with local TV markets.[9]

Furthermore, the selection of politicians with different characteristics into districts that are more or less congruent with media markets may affect the intensity of electoral competition. Following the model of Ashworth and Bueno de Mesquita (2008), the incumbency advantage arises because high-quality candidates are more likely to win the election, and potential challengers are discouraged from entering the race. This effect becomes larger the more visible the respective office is (i.e., in more congruent districts). Given this, we would expect highly congruent districts to be less competitive. Consistent with this prediction, Snyder and Strömberg (2010) document a larger incumbency advantage in districts that are more congruent with local newspaper markets.

In the econometric analysis, we thus have to be aware that electoral competition is not an exogenous covariate. Any positive effect of TV market congruence might partly work via the channel of an increased political competition. Practically, however, the concern might be of limited relevance with regard to our data set. We observe a rather weak correlation of 0.153 between our measure of electoral competition (the negative value of the incumbent's winning margin) and the congruence between congressional districts and local TV markets. We will therefore pursue an empirical strategy in which we include both measures in one estimation equation (or adopt sample splits based on the winning margin).

[9] See also Stratmann (2019) for a summary of this literature.

4 Analysis of political alignment

This section first introduces our proxy measure for voters' preferences with regard to specific policy proposals and describes how we measure political alignment based on it. We then explain the empirical model used to estimate the effects of TV market congruence and electoral competition on political alignment. Finally, we present the estimation results.

4.1 Measuring alignment between congressional voting and voter preferences

Our empirical test on the representation of voter preferences relies on congressional roll call votes.[10] We compare the chosen policy position of a particular representative with the preferred position of his or her electorate. To approximate the preferences of voters with regard to specific pieces of legislation, we use a novel approach introduced and validated in Balles et al. (2022). The basic idea is to combine data on campaign finance contributions by individuals with information on the policy positions of interest groups that the individual donors are assigned to. Campaign finance data is provided by the Center for Responsive Politics (CRP; `https://www.opensecrets.org`). The CRP complements the raw records from the Federal Election Commission (FEC) with categorized information about donor industries and ideological groups. Using information about these groups' policy positions on particular federal bills – provided by MapLight (`https://maplight.org`) – allows us to construct a precise measure for voters' bill-specific preferences (based on the documented positions of the industries/groups assigned to them).[11] Our baseline data set on political alignment summarizes 190,349 individual roll call decisions, taken on 670 bills over the period from 2005 to 2018. Our selection of votes corresponds to all final passage votes on bills for which we can reliably construct preferences of voters.[12]

The dependent variable in our main analysis is a binary indicator variable with possible values 0 and 100, referred to as *Political Alignment*. It indicates whether a particular representative has represented the majority of his or her constituents in a particular voting decision (coded with 100), or whether he or she voted against the majority (0). To approximate the preferences of voters with respect to certain bills, we count the number of individual donations that come from citizens who are (according to the measure outlined above) in favor of (or respectively against) the bill and put this number in relation to the total number of donations from citizens with preferences. We thus approximate the percentages of (actively donating) citizens in the constituency who support (oppose)

[10] The roll call data are collected from the Library of Congress (Congress.gov).

[11] Balles et al. (2022) show that the preference measure based on individual donors well reflects the preference structures contained in broader measures of voter preferences over specific bills, as derived from popular votes in California and election survey data. In addition, the authors show that the industry structure at the county level (as contained in official employment statistics) can be well approximated by individual campaign donors and the assigned industries/groups.

[12] In particular, we can only consider votes on bills for which we have documented positions of interest groups, and to which at least one recorded vote on final passage took place. Moreover, we restrict the sample to those bills that have not been amended, as the documented interest group positions only relate to bills and not to amendments that have been added to the latter. Finally, we only include voting decisions in our analysis where the representatives involved have clearly decided for or against the preference of the electorate and where we observe a sufficiently strong signal from the electorate (in terms of the proportion of voters with positions; see below for details).

a particular bill. We finally code a representative's vote as one where he or she decides politically aligned (misaligned) with her constituency if i) more than 62.5% (less than 37.5%) of his or her voters hold the same position regarding the bill, and ii) the bill is important enough for the representative's constituency in terms of the number of voters with preferences. The idea behind ii) is that we only want to code those voting decisions as aligned or misaligned with voters' preferences where a sufficient number of citizens in the constituency would care about the bill in question (and representatives face some electoral pressure). For this, we divide the number of donations from citizens with preferences regarding the respective bill by the total number of donations from the constituency. We then consider a bill as important enough if the resulting percentage for a particular representative when voting on a particular bill lies above the 25th percentile of the representative-congress-specific distribution. This is not particularly restrictive as in 14% of the cases there are no positions from constituents at all. We exclude all other observations from the analysis, i.e., such where the difference in the share of voters for and against the bill is less than 25 percentage points ($62.5\% - 37.5\%$), and/or we only observe a small share of voters with preferences regarding the bill.[13] Following this approach, we document that roughly 70% of all individual roll call votes in our sample of US House representatives were taken with the majority preference of the electorate, and about 30% were taken against the majority.

4.2 Estimation model

We study the relationship between TV market congruence, electoral competition, and alignment in a regression framework, adopting an extensive control strategy in the main specification:

$$\begin{aligned} \textit{Political Alignment}_{ijdst} = \textit{Const.} &+ \alpha\ \textit{TV Congruence}_{dt} \\ &+ \beta\ \textit{District Competitiveness}_{dt} \\ &+ \mathbf{X}_{dt}\,\theta + \textit{Vote}_j\ FE \\ &+ \textit{State}_{st}\ FE + \varepsilon_{ijdst}. \end{aligned} \tag{1}$$

Formally, the dependent variable $\textit{Political Alignment}_{ijdst}$ measures whether representative i takes into account the majority preference of his or her constituents in district d (state s) when voting upon a particular bill in vote j (held in year t) – with the two possible values 100 (aligned) or 0 (misaligned).[14] The explanatory variable $\textit{TV Congruence}_{dt}$ measures the geographical match between congressional district d and the local TV markets that reach voters from district d, ranging from 0 to 1. Further, we include in the model whether district d is competitive. For this purpose, we use the victory margin in

[13] In Table A3 (Appendix A), we show the estimation results for an alternative measure of political alignment, using a different threshold (10 percentage points) to determine whether a representative is likely to have represented the majority of his or her electorate with his or her voting decision. Note that the number of observations in the sample increases accordingly (since we exclude fewer of the ambiguous cases from the analysis). We document robust results consistent with our baseline estimates.

[14] 18 bills in our sample have been voted on twice. This can happen for two reasons. First, when bills do not get a majority in their first vote, and are voted upon at a later point in time, and, second, when the Senate does not agree with the House version of the bill, and the House takes a second vote on the bill. As no official change in the history of the bill is documented, we consider the draft to be unchanged. Our results do neither change qualitatively nor quantitatively if we exclude them from the sample. The additional results are available on request.

the last congressional elections before vote j takes place (i.e., the difference between the winner's and second-best candidate's vote share.). We define four categorical indicators – margin larger than 15% (reference category), between 10 and 15%, between 5 and 10%, and smaller than 5% (i.e., the most competitive category).[15] To test for a possible interaction effect between more congruent and more competitive districts, we estimate specifications where we restrict the sample to only those observations where representatives are exposed to high and low competition, respectively (choosing the vote margin of 5% as a threshold).

Our control strategy involves demographic controls at the congressional district level (expressed by the vector $\mathbf{X}_{dt}$). Particularly, it is important to control for whether the district is more urban or rural (whereby we use the share of people in the district living in urban areas). Our estimates of the relationship between congruence, competition, and political alignment are likely to be biased if representatives in more urban areas (where TV markets are larger and congruence accordingly lower) respond differently to voter preferences than representatives in more rural areas. At the district level, we also include per capita income (expressed in $1,000), the proportion of men, whites and blacks, and the share of people in the district aged 65 or older.[16]

Moreover, we include fixed effects for each legislative vote. Political alignment with voter interests might per se be higher or lower for certain votes, irrespective of the media environment, for example, in response to the election cycle.[17] We finally add state fixed effects to our model, which control for all state-specific characteristics that might affect representatives' incentives to decide aligned with voter preferences (such as state size or other demographic characteristics that are likely to be correlated with both congruence and politician behavior). In order to take into account that all other factors explaining the voting decisions of representatives may not be independent of each other for a given representative as well as within a given legislative vote, we two-way cluster the (heteroscedasticity-robust) standard errors at the individual representative and vote level.

4.3 Estimation results

Table 1 shows the OLS regression results on political alignment. In specification (1) we document a positive (statistically non-significant) correlation between more congruent districts and the alignment of those districts' representatives with their voters' preferences. This positive correlation is reduced to almost zero when we additionally control for district demographics in model (2). Moreover, the estimation results do not show a statistically significant relationship between competition and

[15] The information on election results comes from the Federal Election Commission (https://www.fec.gov/introduction-campaign-finance/election-and-voting-information).

[16] Regarding the district controls, we aggregate county level demographics to receive the respective figures at the district level. Here we use information from the National Historical Geographic Information System (NHGIS) (for the share of people living in urban areas, as of 2010; see Manson et al., 2020), from the US Census Bureau (for the share of men, whites, blacks, and share of people aged 65 or older; 2010-2014 estimates), and from the US Bureau of Economic Analysis (for per capita personal income; 2010 figures for 2005-2012 and 2020 figures for the 2013-2018 sample period).

[17] Lindstädt and Vander Wielen (2014) show, for example, that majority leaders are less likely to schedule votes that divide the parties when the threat of electoral sanctions due to partisan behavior is high, namely when elections are imminent.

politicians' alignment with voter interests. Thus overall, neither the congruence of TV markets with the boundaries of House districts, nor the closeness of the race when elected are systematically correlated with representatives' voting behavior.

However, the evidence suggests a positive effect of congruence in competitive districts. The result is presented in specification (3), where we focus on the voting decisions of politicians who won their last election by less than a 5% vote margin. In such a highly competitive district, an increase in congruence by two standard deviations (39.8%) increases the average political alignment by 2.7 percentage points. This is roughly comparable to the effect size when considering the lower political alignment in a district that is two standard deviations more urban.[18]

Taken together, we find evidence that more congruent districts only substantially contribute to improved electoral accountability in environments with high political competition. Local TV coverage of representatives and political competition thus seem to interact in a complementary way in terms of improving the representation of voter interests.

Table 1: Representation of voter preferences in the US House depending on TV congruence and electoral competition, 2005-2018

Dependent variable: *Political Alignment* *(0,100)*	(1) baseline model	(2) +district controls	(3) vote marg. <5%	(4) vote marg. >5%
TV Congruence	2.291	0.240	6.726*	-0.196
	(1.763)	(1.280)	(4.013)	(1.382)
District Vote Margin 10 – 15%	-0.866	-1.119		
	(0.876)	(0.822)		
District Vote Margin 5 – 10%	-0.764	-1.069		
	(0.846)	(0.804)		
District Vote Margin <5%	0.275	0.114		
	(0.780)	(0.792)		
Vote FE	X	X	X	X
State FE	X	X	X	X
District Controls		X	X	X
Observations	181,762	181,762	11,719	170,043
Adjusted R^2	0.290	0.291	0.362	0.289

Notes: OLS regressions with robust standard errors two-way clustered by representative and vote in parentheses. The unit of observation is representative-vote. At the district level, we control for the proportion of people living in urban areas, per capita income, the proportion of men, whites and blacks, and the proportion of people in the district aged 65 or older. The mean value for *Political Alignment* is 71.71. Descriptive statistics for the variables used are presented in Table A1 in the Online Appendix. * p<0.1, ** p<0.05, *** p<0.01.

[18]The full regression outputs including the coefficients of our covariates is available upon request.

5 Mechanism: TV coverage and voter knowledge

Our main findings suggest that more congruent districts (i.e., those served by smaller TV markets) do not generally lead to better political accountability, but only if there is strong electoral competition in the district. We might thus question the theoretical argument that in smaller TV markets voters learn more about their representatives. In this section, we therefore want to examine whether there is some evidence for the proposed mechanism related to TV coverage and voter knowledge. Specifically, we study whether TV stations in smaller markets actually provide more coverage of individual politicians in the US House of Representatives and whether voters, in turn, know more about them (quite independently of whether this is enough to substantially affect accountability).

For the analysis of TV coverage, we use information on local TV newscasts mentioning individual members of Congress. The study on voter knowledge relies on congressional election surveys. Primarily, we are interested in coverage and knowledge of US House representatives, but we also examine how TV market size is related to coverage and knowledge of US senators (representing entire states). Since the unit of observation is now no longer the congressional district (the level at which *TV Congruence* is defined), we rely on the size of the local TV markets as the primary explanatory variable.[19] In the following, we describe the data used on TV coverage and voter knowledge, respectively, then introduce the econometric model including the control strategy, and finally report the results.

5.1 News coverage of representatives and senators on local TV

We collect data on news reports about individual members of Congress from the TV News Archive (provided by the Internet Archive). For a selection of 142 local US TV stations broadcasting in 29 different US states, the TV News Archive gathers closed-captions transcripts of the spoken texts in news broadcasts going back to 2009 (however, not all stations were monitored throughout our observation period). Figure 4 shows an example of the closed captions in such news broadcasts.

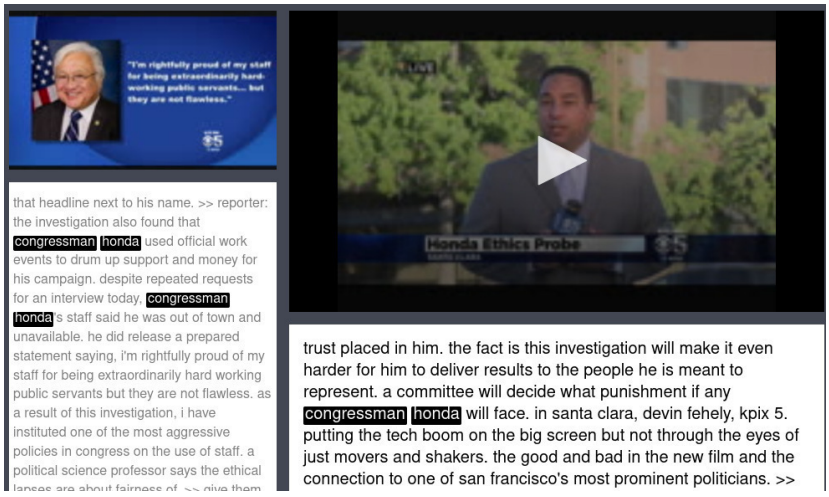
For all of the available stations and all available years, i.e., 2009 to 2018, we collect data on the mentioning of individual members of Congress in news segments. In our final data set, a state has a median number of four stations that belong on average to two markets each.[20]

In order to code the coverage of House representatives in local TV newscasts, we search the closed-captions data for news segments that mention "Representative" or "Congressman" / "Congresswoman" and (immediately following) the surname of a relevant representative (i.e., a representative who represents voters most likely reached by the TV station). For example, in the case of California Representative Nancy Pelosi, we search for "Representative Pelosi" as well as "Congresswoman Pelosi"

[19] See also Section 3.2 on the relationship between TV market size and congruence.

[20] We use the GDELT TV API to systematically query this database (https://blog.gdeltproject.org/gdelt-2-0-TV-api-debuts). GDELT splits the recorded news broadcasts into 15-second clips. The API then returns the number of such clips in which a certain keyword(-combination) occurred in the recorded news broadcasts.

Figure 4: Sample screenshot and closed captions of local TV newscast about a member of Congress



Notes: Images and corresponding closed captions text excerpts of clips from a newscast about former Representative Mike Honda (representing California's 17th District) broadcasted on KPIX 5, a local TV station located in the San Francisco DMA. The highlighting of text indicates the mentionings of the representative's name as specified by our keyword search. Source: Internet Archive (TV News Archive), original broadcast by KPIX 5 News and Pre-Game Show, September 3, 2015 6:00pm-7:01pm PDT.

in the news segments of all channels that serve voters from California's 12th congressional district. This exclusively concerns broadcasters located in the San Francisco TV market, which completely encompasses the district.

Following the same logic, we also search for news segments mentioning US senators. We thus search in the news segments of all stations that reach voters in a particular state.

We approximate the coverage of US representatives and senators by the frequency of hits for them in relevant local TV newscasts. For each station monitored, we count the number of hits for relevant representatives within a certain month and divide this number by the total number of representatives that are relevant to the station. Continuing the above example, if we get three hits for Nancy Pelosi in the newscasts of a station that is located in the San Francisco market in a given month, and also one hit for one of the other 12 representatives relevant to the San Francisco market, we receive an average number of 4/13 (≈ 0.31) hits per representative and month. For senators, we divide the number of hits for relevant senators by the total number of relevant senators. Note that we count a maximum of one hit per relevant representative/senator and day in a station's newscasts, even if the congressperson is mentioned more often (which is rare).[21] Importantly, some TV markets cover more than one state (and so do the therein located stations), up to a maximum of four. In these cases, we calculate separate hit frequencies for each state that the monitored TV station serves, taking into

[21] The reason for this is that in most of the cases where the same representative/senator is mentioned several times, the mentionings are actually in the same news report (e.g., at the beginning and at the end). By counting several mentionings within the same report, we would most likely overstate news coverage per individual politician. For the same reason, we are cautious about interpreting the documented number of hits in terms of 15-second segments as actual news airtime given to individual representatives/senators.

account only representatives/senators of the respective state. We are finally left with two figures for each station and month (or twice the number of states reached by a station), which measure the average number of hits per relevant representative/senator (of a particular state) in the TV station's news reports over a certain month.[22] We relate these coverage rates – referred to as *TV News Reporting* – to the total number of representatives relevant to a particular TV station (i.e., the number of congressional districts that lie within a station's reach, which increases with TV market size).

Estimation model

We estimate variants of the following model:

$$\begin{aligned} \textit{TV News Reporting}_{imsct} = \textit{Const.} &+ \gamma\, \textit{Senate}_c \\ &+ \textstyle\sum_{k=1}^{3} \alpha_{1k}\, \textit{\#CDs in TV Market (k)}_{mt} \\ &+ \textstyle\sum_{k=1}^{3} \alpha_{2k}\, \textit{\#CDs in TV Market (k)}_{mt} \times \textit{Senate}_c \\ &+ \textstyle\sum_{k=1}^{3} \beta_{1k}\, \textit{\#CDs in State (k)}_{st} \\ &+ \textstyle\sum_{k=1}^{3} \beta_{2k}\, \textit{\#CDs in State (k)}_{st} \times \textit{Senate}_c \\ &+ \phi\, \textit{\%TV Market in State}_{ms} \\ &+ \omega\, \textit{\%TV Market in State}_{ms} \times \textit{Senate}_c \\ &+ \mathbf{X}_{it}\,\theta + \mathbf{X}_m\,\lambda + \mathbf{X}_s\,\delta \\ &+ \textit{Month-by-Year}_t\; FE + \textit{Month-by-Year}_t \times \textit{Senate}_c\; FE \\ &+ \varepsilon_{imsct}. \end{aligned} \tag{2}$$

$\textit{TV News Reporting}_{imsct}$ is the variable described above and formally measures the number of hits for relevant representatives/senators of state s in the news reports of TV station i (located in market m) in month t. The subscript c thereby indicates whether it is coverage of representatives or senators (i.e., House or Senate members). $\textit{Senate}_c$ is a dummy variable that takes a value of 1 when it comes to reporting on senators and zero when it comes to reporting on representatives. We specify the total number of congressional districts within the reach of TV market m by categorical dummy variables, which are summarized in $\textit{\#CDs in TV Market (k)}_{mt}$. We choose the intervals $[1,4]$, $[5,9]$, $[10,14]$, and $[15\ \textit{or more}]$ districts (whereby we take $[1,4]$ as the omitted reference category).[23] The dummies expressed by $\textit{\#CDs in State (k)}_{st}$ similarly indicate how many congressional districts state s has in total. Here we use the same breakdown as for *\#CDs in TV Market*.[24] There might be a general effect of the total number of seats held by state s (i.e., state size) on the coverage of that state's members of Congress. For example, the individual representative or senator may be perceived as less important the more other members the state has in Congress. We control for this potential confounder when

[22] If stations were only monitored for parts of a certain month, we calculate averages over the monitored days and scale up to all days in the respective month.

[23] 22.5% of the 142 stations in our sample have between 1 and 4 districts in their market area, 38.0% between 5 and 9, 29.6% between 7 and 9, 27.5% between 10 and 14, and 12.0% of the stations face 15 or more relevant districts.

[24] 31% of the 29 states observed in our sample have between 1 and 4 as well as between 5 and 9 districts, 17.2% have between 10 and 14, and 20.7% have more than 14 districts.

interpreting the effect of TV market size on news reporting (as larger states are usually served by larger TV markets). We interact each of the categorical dummies for *#CDs in TV Market* and *#CDs in State* with the Senate dummy to examine whether TV market size as well as the size of the state are associated with differential effects on the news coverage of representatives vs. senators.

In addition, TV stations from markets serving several states may per se have less incentives to report on the politicians of a particular state. For this reason, we add the control variable $\%TV\ Market\ in\ State_{ms}$ which indicates the percentage of people in market m who are residents of state s (ranging from 0 to 100). We expect that a larger percentage of the audience in the same state will lead to more reports about that state's members of Congress. Since this is more likely to affect news reporting on senators (who are relevant to all voters of a given state) than reporting on House representatives, we allow $\%TV\ Market\ in\ State_{ms}$ to have a differential effect on the coverage of representatives vis-à-vis senators. More than half of the 142 local stations we observe in our sample exclusively reach voters from only one state.

Moreover, we include station-specific control variables in our model captured by the vector $\mathbf{X}_{it}$. First, in order to prevent that certain hits for representatives and senators are solely the result of better coverage, i.e., intensified monitoring by the Internet Archive's data collection procedure, of a channel in a certain period, we take the total news airtime recorded for a given station in a given month into account (expressed in days). Second, our control strategy involves fixed effects for the networks the local TV stations are affiliated with in order to control for, for example, differences between broadcasters affiliated with the major networks alongside all other stations.[25] Then, to rule out the possibility that our results are driven by a different degree of general political coverage by particular TV stations (or in particular markets), we have also searched for keywords related to national politics ("White House", "Federal Government" or "Congress"). We include the share of news devoted to national politics by station i in month t as a control – approximated by the share of 15-second news blocks in which at least one of the latter keywords is mentioned in the total number of recorded 15-second blocks (average share per day over all days observed in the month). We allow for a differential effect of any station-specific control on the news coverage of representatives and senators.

We also add TV market-specific control variables to our model, expressed by the vector $\mathbf{X}_m$. In particular, it is important to control for whether the TV market tends to serve viewers from urban or rural areas. If we did not control for this, our estimates of the TV market size effect might be biased, since larger TV markets often surround urban areas and media coverage of members of the US Congress in urban areas might differ from that in rural areas. Besides the share of urban viewers in the TV market, we add the average per capita income, the share of whites as well as the share of viewers

[25] We include one dummy variable each for the four major networks (ABC, CBS, NBC, and Fox) as well as a dummy that groups the remaining stations (independent/non-affiliated stations, and stations affiliated with smaller networks). 103 of the 142 local stations in our sample are either ABC, CBS, NBC, or FOX affiliates.

aged 65 or older to our model.[26] We interact each of the TV market-specific control variables with the Senate indicator so that the latter may have a differential effect on the reporting about politicians in the US House and Senate.

In addition to state size – as captured by the interval dummies *#CDs in State (k)*$_s$ – our control strategy includes further state demographic covariates which are summarized by the vector $\mathbf{X}_s$ (including interaction terms with the Senate indicator). They ensure that the documented effect of TV market size (as well as state size) on coverage per representative/senator is not attributable to other state-specific differences. We use the shares of white and black people in the state, the share of people aged between 20 and 65, the share of people living in urban areas, the state's Gini index (all from 2010/2012 US Census Bureau figures), GDP per capita in 2012 (provided by the US Bureau of Economic Analysis), and, finally, the 2012 presidential election Democratic two-party vote share in the state (from the Federal Election Commission).

Finally, we include fixed effects for each month in each year (Senate/House-specific), with which we aim to account for seasonal fluctuations and exceptionally high levels of TV coverage of senators and representatives (affecting all states in the same way).

For all coefficient estimates presented in the following, we two-way cluster the (heteroscedasticity-robust) standard errors at the individual TV station and month-by-year level. The idea here is that all other factors that may explain local TV stations' news reporting decisions are plausibly not independent of each other within a particular station, and are also likely to be correlated across all observed stations within a given period of time.

Estimation results

Table 2 shows the OLS regression results for the different specifications (with a more or less extended control strategy each). Descriptive statistics for the variables used are presented in Table B1 in the Online Appendix. Except the categorical dummies for *#CDs in TV Market* and *#CDs in State*, all explanatory variables (including the fixed effects) were demeaned before running the regressions. The constant term therefore indicates for an average observation in our sample the number of hits per representative/month by a station located in a market that reaches between 1 and 4 congressional districts in total, and, concerning the specifications that control for *#CDs in State*, for representatives from states that have between 1 and 4 districts/representatives in total (i.e., the chosen reference categories). The constant plus the coefficient on the Senate dummy correspondingly gives the number of hits per relevant senator/month. Based on model (5), for example, we document that an average station of the reference category mentions each relevant representative about 1.4 times per month in its news broadcasts, on average. This corresponds to a little less than 17 mentions per representative over the course of a year (and about 21 mentions for each of the two senators).

[26] We aggregate county level data from the National Historical Geographic Information System (NHGIS) from 2010 (for the share of urban viewers; see Manson et al., 2020) and from the US Census Bureau (2010-2014 estimates) to obtain the corresponding figures at the TV market level.

In line with hypothesis 2, we observe a decrease in the number of newscast mentions per representative as the market to be served increases. This result is robustly observed across all specifications we estimate. With reference to specification (5) – which exploits cross-sectional variation in TV market size, controlling for various covariates specific to the station, the TV market, and the state covered – we document about 0.83 hits less per representative and month (statistically not significant) for stations that reach voters from between 5 and 9 different districts rather than between 1 and 4 districts. In other words, the predicted number of hits per representative and year for a station in this category is only about 7 instead of 17. The estimated negative effect of a larger TV market on the coverage of representatives is even more pronounced for the two top categories and statistically significant for the categories that include stations covering between 10 and 14 as well as 15 or more districts. For the average station of this latter category, the predicted number of reports per representative/year is about 4.5

Regarding news reporting on senators, we also find evidence of reduced news coverage per relevant senator the larger the market the TV stations serve. Figure 5 summarizes the effects on coverage per representative/senator depending on TV market size. Each bar shows the predicted number of hits per relevant representative and senator in the local stations' news broadcasts over a month based on the estimated coefficients in column (5).

Concerning the effect of the size of a state (i.e., the number of districts it has in total) on the news coverage of its representatives, we find significant evidence for less coverage per representative in states with 10 or more districts as compared to the reference category which consists of states with up to 4 districts. This result also seems to apply to the coverage of senators.

As expected, a larger share of the market that lies within a particular state (i.e., a higher value for *%TV Market in State*) is related to more coverage of that state's members of Congress. This is particularly true for senators. Moreover, we find that a higher proportion of national political news in a station's newscasts is also associated with more coverage of individual members of Congress, although this result is statistically significant only for the coverage of senators in the last two specifications applying market respectively market and state level controls.

Overall, we interpret these results as evidence for the proposed mechanism linking the extent of coverage of individual politicians in the US House to the size of the TV market. While not precisely measured across the board and only identified in the cross-section, there is a clear tendency of representatives getting less coverage in local TV stations when more congressional districts fall within the same market. In the following Section 5.2, we investigate whether voters correspondingly know less about their representatives if more districts fall within a market area.

5.2 Voters' knowledge of their representatives and senators

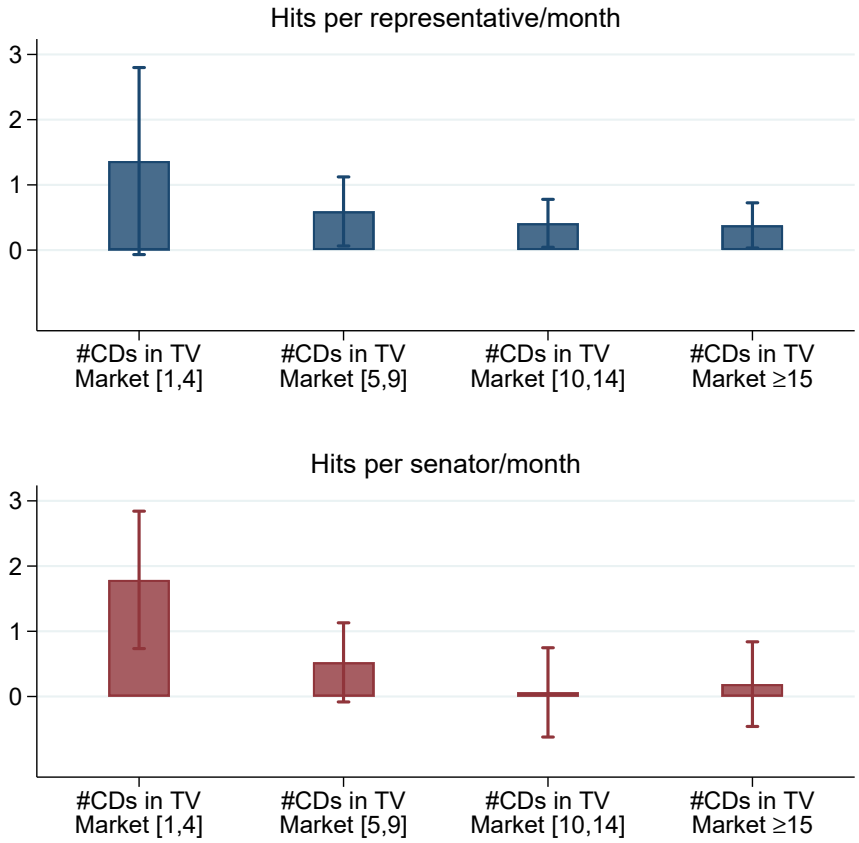
In order to investigate whether voters served by larger TV markets know less about their members of Congress, we analyze survey data from the Cooperative Congressional Election Study (CCES) based on a multiple regression approach. The CCES is a web-based survey on congressional elections

Table 2: TV news reporting on US representatives and senators depending on the size of the TV markets, 2009-2018

Dependent variable: *TV News Reporting (hits per representative/senator and month)*	(1) without controls	(2) +basic controls	(3) +station controls	(4) +market controls	(5) +state controls
Constant	0.853**	0.863**	0.895**	1.254*	1.396*
	(0.426)	(0.429)	(0.427)	(0.648)	(0.742)
Senate	0.645	0.321	0.582	0.512	0.387
	(0.389)	(0.425)	(0.466)	(0.780)	(0.875)
#CDs in TV Market $[5,9]$	-0.686	-0.640	-0.650	-0.888*	-0.829
	(0.437)	(0.426)	(0.415)	(0.535)	(0.514)
#CDs in TV Market $[10,14]$	-0.792*	-0.741*	-0.788*	-1.126*	-0.999*
	(0.421)	(0.411)	(0.414)	(0.641)	(0.591)
#CDs in TV Market ≥ 15	-0.806*	-0.661*	-0.687*	-1.143*	-1.019*
	(0.426)	(0.393)	(0.384)	(0.662)	(0.608)
#CDs in TV Market $[5,9]$ x Senate	0.157	0.289	0.077	0.128	-0.412
	(0.424)	(0.464)	(0.473)	(0.626)	(0.677)
#CDs in TV Market $[10,14]$ x Senate	-0.061	0.202	-0.146	-0.298	-0.712
	(0.420)	(0.468)	(0.487)	(0.813)	(0.770)
#CDs in TV Market ≥ 15 x Senate	-0.347	0.223	-0.064	-0.024	-0.570
	(0.395)	(0.440)	(0.465)	(0.864)	(0.876)
#CDs in State $[5,9]$		-0.131	-0.126	-0.139	-0.577*
		(0.084)	(0.079)	(0.087)	(0.328)
#CDs in State $[10,14]$		-0.081	-0.081	-0.057	-0.372
		(0.074)	(0.070)	(0.059)	(0.250)
#CDs in State ≥ 15		-0.120	-0.117	-0.126	-0.398*
		(0.077)	(0.077)	(0.082)	(0.233)
#CDs in State $[5,9]$ x Senate		-0.162	-0.092	0.033	1.095
		(0.248)	(0.253)	(0.249)	(0.675)
#CDs in State $[10,14]$ x Senate		-0.266	-0.219	-0.000	0.736
		(0.181)	(0.165)	(0.170)	(0.469)
#CDs in State ≥ 15 x Senate		0.115	0.156	0.314*	0.888*
		(0.146)	(0.156)	(0.189)	(0.468)
%TV Market in State		0.219***	0.221***	0.123*	0.042
		(0.074)	(0.073)	(0.062)	(0.122)
%TV Market in State x Senate		0.767***	0.701***	0.658***	0.888***
		(0.231)	(0.193)	(0.224)	(0.241)
Total News Days Recorded			0.018**	0.016**	0.016***
			(0.007)	(0.006)	(0.006)
Total News Days Recorded x Senate			0.129***	0.128***	0.129***
			(0.025)	(0.025)	(0.026)
National Politics Coverage			0.046	0.049	0.047
			(0.031)	(0.033)	(0.030)
National Politics Coverage x Senate			-0.016	0.021	0.006
			(0.074)	(0.076)	(0.071)
Month x Senate FE		X	X	X	X
Network x Senate FE			X	X	X
TV Market Controls x Senate				X	X
State Controls x Senate					X
Observations	12,744	12,744	12,744	12,744	12,744
Adjusted R^2	0.072	0.153	0.268	0.286	0.310

Notes: OLS regressions with robust standard errors two-way clustered by local TV station and month-by-year shown in parentheses. The unit of observation is station-state-chamber-month (with some stations covering more than one state). We approximate the coverage of US representatives and senators on local TV by the number of hits per relevant representative/senator in the station's news reports during the observed month (whereby relevant means that they represent voters living in the station's market). Note that if a station covers more than one state, we calculate state-specific hit rates across all relevant representatives/senators of the respective state. *#CDs in TV Market* are categorical dummies that indicate the total number of congressional districts (i.e., representatives in the House) in the station's market area. Descriptive statistics for the variables used are presented in Table B1.
* p<0.1, ** p<0.05, *** p<0.01.

Figure 5: The predicted number of hits per relevant US representative and senator in local TV stations' news broadcasts depending on the size of the TV markets, 2009-2018



Notes: The graph shows predicted values for the number of hits per relevant representative/senator in a local TV station's newscasts during a month, depending on the size of the TV market in which the station is located (measured by the number of congressional districts reached by the market). The underlying results are taken from column (5) in Table 2 (all covariates different to *#CDs in TV Market* were evaluated at their means). 95% confidence intervals are included.

(Schaffner and Ansolabehere, 2015).[27] We use survey responses from the years 2010, 2012 and 2014 when 9,500 individuals were asked specific questions about their politicians in the US House of Representatives and the US Senate. Our sample covers voters from more than 1,600 different counties across all 50 US states, being served by 204 distinct TV markets (out of the 210 that the US has in total). The average respondent is 57 years old, white, earns between $60,000 and $100,000 a year, and holds a college degree. Male respondents are slightly over-represented (56% men). In the survey, the respondents were asked (i) whether they recognize the name of their representative and the names of their two senators (*Name Recognition*), (ii) whether they can assign the correct party to them (*Party Recall*), (iii) whether they could provide a job evaluation on the corresponding representative (*Approval Rating*), and (iv) whether they knew gender and race of their representative (*Know Gender*

[27] CCES survey data is available online at the Harvard Dataverse (https://cces.gov.harvard.edu).

and *Know Race*). The gender and race question was not asked for senators.[28] Based on respondents' answers to these questions, we construct a set of different indicators with which we aim to approximate the knowledge that voters have about their representatives and senators. We provide more details below.

Estimation model

We test hypothesis 3 based on the following model (respectively variants thereof):

$$\begin{aligned} \textit{Voter Knowledge}_{imsct} = \textit{Const.} &+ \gamma\, \textit{Senate}_c \\ &+ \textstyle\sum_{k=1}^{3} \alpha_{1k}\, \textit{\#CDs in TV Market (k)}_{mt} \\ &+ \textstyle\sum_{k=1}^{3} \alpha_{2k}\, \textit{\#CDs in TV Market (k)}_{mt} \times \textit{Senate}_c \\ &+ \textstyle\sum_{k=1}^{3} \beta_{1k}\, \textit{\#CDs in State (k)}_{st} \\ &+ \textstyle\sum_{k=1}^{3} \beta_{2k}\, \textit{\#CDs in State (k)}_{st} \times \textit{Senate}_c \\ &+ \phi\, \textit{\%TV Market in State}_{ms} \\ &+ \omega\, \textit{\%TV Market in State}_{ms} \times \textit{Senate}_c \\ &+ \mathbf{X}_{it}\,\theta + \textit{State-by-Year}_{st}\, FE + \textit{State-by-Year}_{st} \times \textit{Senate}_c\, FE \\ &+ \varepsilon_{imsct}\,. \end{aligned} \tag{3}$$

The dependent variable $\textit{Voter Knowledge}_{imsct}$ approximates respondent i's knowledge about his or her representative and his or her senators (with c denoting the chamber, i.e., representatives/House or senators/Senate) in survey year t, whereby the respondent i is living (in a particular county) in state s and is served by TV market m. In a first step, we approximate voter knowledge with the survey variables *Name Recognition* and *Party Recall*, i.e., whether respondents indicate to remember the name of their representative/senators and also assign the correct party to them.[29] The simple average of correct answers (in percent) serves as our first index of voter knowledge (referred to as *VK1*). It ranges from 0 to 100. For a second index of voter knowledge (denoted *VK2*), we additionally include the information on whether respondents know gender and race of their representative (giving equal weight to each sub-question). We construct a third dependent variable where, in addition to the answers on *Name Recognition* and *Party Recall*, we take into account whether respondents are able to rate the job of their representative/senators (by providing a rating from strongly approve to strongly disapprove vs. answering "never heard of person"). It seems plausible to assume that citizens who know their representative/senators (i.e., have heard about them in the media) are also more likely to evaluate their performance. The corresponding index is denoted as *VK3*. Finally, we construct a fourth measure of

[28] Note that we only have observations from the years 2012 and 2014 where respondents were asked both the questions on *Know Gender* and *Know Race*. The full sample is therefore only available for those indices of voter knowledge where we exclusively use information on respondents' answers to *Name Recognition*, *Party Recall* and *Approval Rating*.

[29] Respondents are asked to assign a party to their members of Congress if they recognize them, or they can respond with "not sure" / "never heard of person". With regard to knowledge about the two senators in each respondent's state, we code a voter as knowledgeable even if only one of the two senators has been identified and correctly assigned to his or her party (provided there was no wrong assignment for the other).

voter knowledge (*VK4*) that includes the answers to all available questions, i.e., *Name Recognition*, *Party Recall*, *Approval Rating*, *Know Gender* and *Know Race*. Note that the measures incorporating the questions on gender and race (*VK2* and *VK4*) are only available for knowledge on representatives (the corresponding questions were not asked for senators).

As in the news reporting analysis above, our main explanatory variables are dummies that indicate the number of congressional districts, i.e., the number of US House representatives, within the coverage area of the TV market serving respondent *i* (*#CDs in TV Market*, with the same interval breakdown [1,4], [5,9], [10,14], and [15 *or more*], using [1,4] as the omitted reference category). The dummy indicators for *#CDs in State* analogously indicate the total number of districts in state *s* (where respondent *i* lives). With these indicators we aim to empirically separate the market size effect from a potential state size effect, i.e., that there is less attention to an individual representative in states with more representatives. Finally, in order to test whether TV market and state size affect citizens' knowledge on their representatives vis-à-vis their senators in a differential way, we interact all dummy indicators for *#CDs in TV Market* and *#CDs in State* with the Senate indicator.

Importantly, we also need to take into account when voters are served by stations that partly broadcast to viewers living outside the state. We thus include *%TV Market in State*, which measures the share of people in market *m* who are residents of state *s*. Moreover, we include a range of individual and county-specific characteristics that are most likely correlated with individual's exposure to news and political knowledge (represented by the vector $\mathbf{X}_{it}$).[30] For example, citizens with higher education or higher income are more likely to follow politics. Each of the control variables is allowed to have a differential effect on knowledge about representatives and senators.

Finally, we add state-by-year fixed effects to our econometric model (separately to knowledge on representatives and on senators). They control for any factors that may have an impact on the knowledge that voters of a certain state have about their representatives and senators. We have 43 states in the sample where we observe respondents from at least two differently sized TV markets. The variation we use for identification in the within-state models is thus based on a large number of states. In the models without state-by-year fixed effects, we include fixed effects for each year (specific to Senate and House). They control for general factors that may have influenced voters' political knowledge in a particular observation period (as, for example, the presidential election in 2012).

Estimation results

Figure 6 presents a summary of the main results regarding the effect of the TV market size on voter knowledge. The corresponding OLS estimations for the different specifications and indices of voter knowledge are provided in Tables C1-C4 in the Appendix. The figure shows predicted values for the

[30] The individual controls (directly taken from the CCES survey) are gender, age (5 categories), family income (5 categories), education (6 categories), and race (4 categories). At the county level, the control variables are per capita income, population size, median age, the share of people living in urban areas, as well as the population shares of men, blacks and Hispanics – taken from the US Census Bureau (2010-2014 estimates) as well as the National Historical Geographic Information System (NHGIS; for the share of people living in urban areas as of 2010; see Manson et al., 2020).

percentage of correct answers concerning voters' knowledge about their representatives and senators depending on the respective interval for *#CDs in TV Market* separately for the four indices of voter knowledge. The results are taken from the models which exploit within-state variation in TV market size, i.e., columns (5) in Tables C1-C4, and assume mean values for all the covariates.

Overall, we document a decrease in voters' knowledge about their representative in the US House, the larger the TV markets that serve them. This observation is robust across all indices of voter knowledge that we study, and even holds against the background that the average percentage of correct answers is around 90% and thus quite high. Regarding the effect size of a larger TV market, we find that the share of correctly answered questions about representatives decreases by about 2.5 to 3 percentage points when we move from a TV market of the reference category (reaching voters from 1 to 4 districts) to a market covering between 5 to 9 districts. In a market that reaches 15 or more districts, the average knowledge level even decreases by 3.8 to 4.5 percentage points compared to the reference category. This decrease in voter knowledge is comparable in magnitude to the increase in voter knowledge when respondents indicate that they hold a 2-year college degree instead of a high school degree as their highest educational attainment.

With regard to knowledge about senators, we observe no differences that are systematically related to the size of the TV markets. In fact, we cannot reject the hypothesis that the predicted level of voters' knowledge about their senators is the same across all interval categories.

Regardless of the size of the TV market, we document that the size of a state independently affects the knowledge that voters hold about their representatives and senators in Congress. As the corresponding columns (2)-(4) in Tables C1-C4 show, citizens from states with 15 or more congressional districts hold a knowledge level that is about 3 to 4 percentage points lower than that of citizens living in a state with between 1 and 4 districts (no significantly different effects regarding senators).

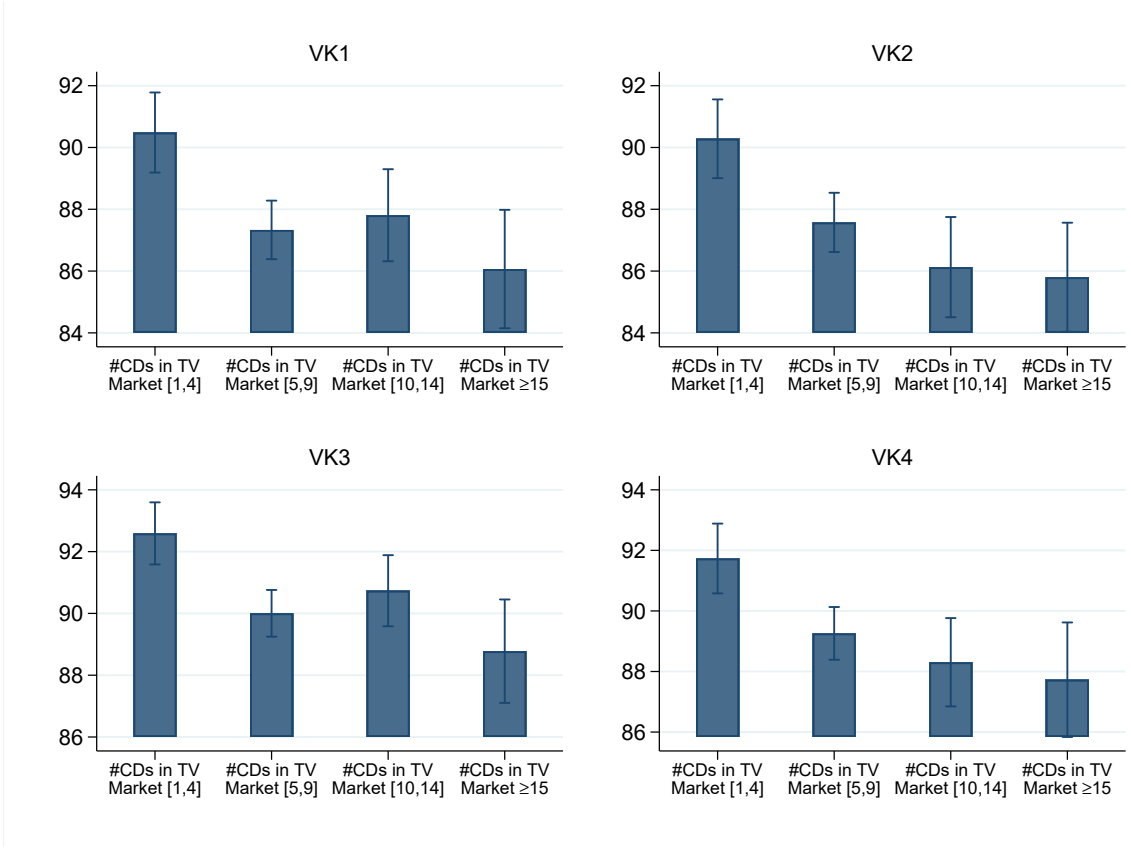
6 Concluding remarks

In this paper, we investigate the potential of spatially differently organized TV markets to hold politicians individually accountable. TV markets can be larger or smaller, and thus encompass more or fewer constituencies whose representatives are reported on by the various TV stations. In the US, this structural aspect is codified by regulation and is a key determinant of the congruence between TV markets and political markets.

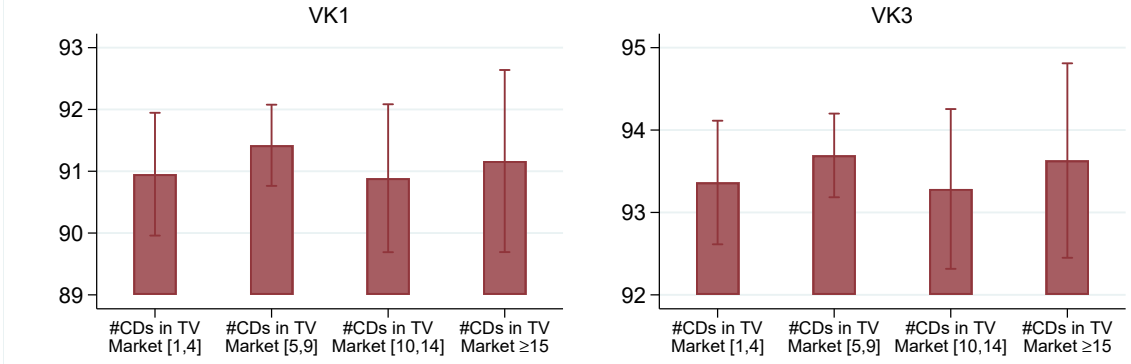
We find clear evidence that TV stations in large TV markets report less on each individual member of the US Congress who represents individuals from the corresponding TV market in Washington. Consistent with this observation, we find that voters also know less about their representative in the House of Representatives. However, this is not true for senators. Although coverage of them is substantially lower in large TV markets, voters' basic knowledge about them is not affected. Whether the greater attention that representatives receive in smaller and thus more congruent TV markets also exerts a relevant effect on the incentives to behave in the interest of voters is still not clear. In addition to voters, numerous other political actors exert pressure on politicians, especially the party

Figure 6: Voters' knowledge about their US representative and their senators depending on the size of the TV markets, 2010-2014

(a) Knowledge on representative



(b) Knowledge on senators



Notes: The graphs show predicted knowledge levels of CCES survey respondents about their representatives and senators in Congress, depending on the size of the TV markets in which the respondents live (measured by interval categories for the number of congressional districts that lie within the reach of the market). The respondents were asked specific questions regarding their representatives and senators, and the different graphs show the results for different indices of voter knowledge (VK1, VK2, VK3, VK4), each combining information from different sets of survey questions: VK1 takes into account respondents' answers to the questions on *Name Recognition* and *Party Recall*. VK2 additionally includes the questions on *Know Gender* and *Know Race*. VK3 includes the questions on *Name Recognition*, *Party Recall* and adds the question on *Approval Rating* (coded positive if respondents provide a rating about their representative/senators). Finally, VK4 includes the three questions considered in VK3 and adds the ones on *Know Gender* and *Know Race*. The knowledge indices respectively indicate the percentage of correct answers among the questions considered (ranging from 0 to 100, with each sub-question receiving equal weight). Note that the questions on *Know Gender* and *Know Race* were not asked for senators, which is why the respective indices could only be constructed for knowledge about representatives. The underlying estimates are taken from the within-state specifications, which can be found in columns (5) of Tables C1-C4 in the Appendix. All covariates other than *#CDs in TV Market* were evaluated at their means. 95% confidence intervals are included.

and interest groups that support politicians with funds during the election campaign. In addition, many representatives can look back on elections that they won with a relatively secure cushion. Whether or not attentive reporting has a particularly disciplining effect for these representatives is largely an open question based on the literature to date.

Indeed, based on our new measure of the alignment of voting behavior in the House of Representatives with voter preferences, we find that representatives' voting is generally not more aligned if their district exhibits a higher congruence with TV markets. However, we do find a positive effect on alignment for those representatives who won or retained their seat by a narrow margin. This suggests that the variation in media attention that results from the different size of TV markets has a limited disciplining effect, at least for individual politicians, unless he or she represents a contested constituency. In a broader interpretation of this result, this suggests a rather complementary mode of action for TV as the fourth power in the democratic process of American congressional politics.

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Television Market Size and Political Accountability in the US House of Representatives

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Online Appendix

A Political alignment: Additional tables 1

B News coverage: Additional tables 3

C Voter knowledge: Additional tables 4

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A Political alignment: Additional tables

Table A1: Descriptive statistics for the political alignment estimates in Table 1

Variable	Mean	Std. Dev.	Min.	Max.	N
Political Alignment	71.71	45.04	0	100	181,762
TV Congruence	0.256	0.199	0.010	1	181,762
District Vote Margin 10 – 15%	0.08	0.271	0	1	181,762
District Vote Margin 5 – 10%	0.064	0.244	0	1	181,762
District Vote Margin <5%	0.064	0.246	0	1	181,762
District Urbanity	0.791	0.177	0.238	1	181,762
District Income	36.53	10.38	15.61	102.7	181,762
District Share Men	0.492	0.008	0.470	0.522	181,762
District Share White	0.741	0.143	0.215	0.967	181,762
District Share Black	0.125	0.110	0.005	0.637	181,762
District Share Age $\geq$ 65	0.138	0.027	0.080	0.313	181,762

Table A2: Descriptive statistics for the political alignment estimates in Table A3

Variable	Mean	Std. Dev.	Min.	Max.	N
Political Alignment	70.62	45.55	0	100	191,817
TV Congruence	0.256	0.199	0.010	1	191,817
District Vote Margin 10 – 15%	0.080	0.271	0	1	191,817
District Vote Margin 5 – 10%	0.064	0.245	0	1	191,817
District Vote Margin <5%	0.064	0.245	0	1	191,817
District Urbanity	0.791	0.177	0.238	1	191,817
District Income	36.59	10.37	15.61	102.7	191,817
District Share Men	0.492	0.008	0.470	0.522	191,817
District Share White	0.741	0.143	0.215	0.967	191,817
District Share Black	0.125	0.110	0.005	0.637	191,817
District Share Age $\geq$ 65	0.138	0.027	0.080	0.313	191,817

Table A3: Representation of voter preferences in the US House depending on TV congruence and electoral competition, 2005-2018

Dependent variable: *Political Alignment (0,100)*	(1) baseline model	(2) +district controls	(3) vote marg. <5%	(4) vote marg. >5%
TV Congruence	1.966	0.193	7.293*	-0.151
	(1.727)	(1.241)	(3.728)	(1.343)
District Vote Margin 10 – 15%	-1.146	-1.377*		
	(0.861)	(0.810)		
District Vote Margin 5 – 10%	-1.144	-1.425*		
	(0.830)	(0.789)		
District Vote Margin <5%	0.205	0.073		
	(0.778)	(0.789)		
Vote FE	X	X	X	X
State FE	X	X	X	X
District Controls		X	X	X
Observations	191,817	191,817	12,346	179,471
Adjusted R^2	0.279	0.280	0.348	0.278

Notes: OLS regressions with robust standard errors two-way clustered by representative and vote in parentheses. The unit of observation is representative-vote. The estimates are based on an alternative dependent variable that uses a 10 percentage point difference in the Yes and No shares of voters who are for/against a particular bill to distinguish clear cases of political alignment (coded with 100) from clear cases of political misalignment (coded with 0) (for more details, see footnote 13 in Section 4.1). The mean value for *Political Alignment* is 70.62. At the district level, we control for the proportion of people living in urban areas, per capita income, the proportion of men, whites and blacks, and the proportion of people in the district aged 65 or older. Descriptive statistics for the variables used are presented in Table A2. * p<0.1, ** p<0.05, *** p<0.01.

B News coverage: Additional tables

Table B1: Descriptive statistics for the news reporting estimates

Variable	Mean	Std. Dev.	Min.	Max.	N
TV News Reporting	0.349	1.231	0	18	12,744
#CDs in TV Market [1,4]	0.039	0.195	0	1	12,744
#CDs in TV Market [5,9]	0.089	0.285	0	1	12,744
#CDs in TV Market [10,14]	0.518	0.500	0	1	12,744
#CDs in TV Market ≥ 15	0.353	0.478	0	1	12,744
#CDs in State [1,4]	0.199	0.399	0	1	12,744
#CDs in State [5,9]	0.191	0.393	0	1	12,744
#CDs in State [10,14]	0.170	0.376	0	1	12,744
#CDs in State ≥ 15	0.440	0.496	0	1	12,744
%TV Market in State	0.527	0.401	0.003	1	12,744
Total News Days Recorded	5.607	4.347	0	27.92	12,744
National Politics Coverage	0.989	0.787	0	5.058	12,744
TV Market Urban Share	0.875	0.077	0.516	0.964	12,744
TV Market p.c. Income (in $1,000)	38.40	5.168	23.55	41.96	12,744
TV Market Share White	0.626	0.085	0.555	0.914	12,744
TV Market Share Age ≥ 65	0.127	0.015	0.112	0.206	12,744
State Share White	76.55	9.949	60.70	95.33	12,744
State Share Black	13.28	8.973	1.122	31.31	12,744
State Share Age [20,65]	60.47	0.835	57.75	61.72	12,744
State GDP p.c. (in $1,000)	49.59	6.777	35.13	64.91	12,744
State Gini Index	0.472	0.016	0.430	0.523	12,744
State Urban Share	80.93	14.70	38.90	94.95	12,744
State Democratic Vote Share 2012	55.24	8.624	28.84	68.25	12,744

C Voter knowledge: Additional tables

Table C1: Voters' knowledge about their US representative and senators depending on the size of the TV markets, 2010-2014 –
Knowledge index *VK1* based on CCES survey responses

Dependent variable: *Voter Knowledge (% positive answers)*	(1) without controls	(2) +basic controls	(3) +individual controls	(4) +county controls	(5) +state FEs
Constant	88.91***	90.37***	90.96***	92.31***	90.48***
	(0.666)	(0.865)	(0.774)	(0.851)	(0.661)
Senate	1.306***	1.602**	1.508**	1.309*	0.480
	(0.454)	(0.678)	(0.708)	(0.756)	(0.536)
#CDs in TV Market $[5,9]$	-1.652*	-0.722	-1.504*	-2.625***	-3.151***
	(0.921)	(0.898)	(0.856)	(0.897)	(0.849)
#CDs in TV Market $[10,14]$	-0.024	1.281	0.021	-2.335**	-2.676**
	(1.168)	(1.213)	(1.022)	(1.062)	(1.110)
#CDs in TV Market ≥ 15	-1.587	0.708	-0.553	-4.357***	-4.419***
	(1.100)	(1.310)	(1.205)	(1.431)	(1.313)
#CDs in TV Market $[5,9]$ x Senate	2.228***	2.580***	2.640***	2.912***	3.619***
	(0.743)	(0.747)	(0.761)	(0.784)	(0.686)
#CDs in TV Market $[10,14]$ x Senate	2.514***	2.760***	2.823***	3.206***	2.611***
	(0.851)	(0.819)	(0.838)	(0.987)	(0.882)
#CDs in TV Market ≥ 15 x Senate	3.421**	4.262***	4.272***	4.069***	4.632***
	(1.354)	(1.388)	(1.342)	(1.518)	(1.132)
#CDs in State $[5,9]$		-1.255	-1.223	-1.345	
		(1.042)	(0.970)	(0.956)	
#CDs in State $[10,14]$		-2.887**	-3.225***	-3.365***	
		(1.354)	(1.192)	(1.146)	
#CDs in State ≥ 15		-3.739***	-3.284***	-2.781***	
		(1.109)	(1.047)	(1.023)	
#CDs in State $[5,9]$ x Senate		-1.010	-0.915	-0.680	
		(0.955)	(0.980)	(0.954)	
#CDs in State $[10,14]$ x Senate		-0.077	0.094	0.582	
		(1.007)	(1.043)	(1.013)	
#CDs in State ≥ 15 x Senate		-0.713	-0.684	-0.868	
		(0.879)	(0.900)	(0.849)	
%TV Market in State		2.504	2.156	0.239	0.026
		(1.551)	(1.497)	(1.629)	(1.734)
%TV Market in State x Senate		3.992***	3.871***	3.491**	3.993***
		(1.403)	(1.397)	(1.518)	(1.503)
Year x Senate FE		X	X	X	
Individual Controls x Senate			X	X	X
County Controls x Senate				X	X
State x Year x Senate FE					X
Observations	49,747	49,747	49,747	49,747	49,747
Adjusted R^2	0.004	0.008	0.092	0.095	0.108

Notes: OLS regressions with robust standard errors clustered by TV market shown in parentheses. The unit of observation is respondent-chamber-year (with chamber indicating whether it is knowledge of representatives in the US House or senators in the US Senate, with House being the reference category). The dependent variable *Voter Knowledge* approximates voters' knowledge of their representative/senators by the percentage of positive/correct answers among the survey questions on *Name Recognition* and *Party Recall* (potentially ranging from 0 to 100). Each respondent lives in a county that is assigned to exactly one TV market (with some markets covering more than one state and *%TV Market in State* indicating the share of the observed market in the observed state). The dummy indicators for *#CDs in TV Market* indicate the number of congressional districts that lie within the reach of the respondent's TV market, i.e., the number of House representatives who represent voters in the market area. Analogously, *#CDs in State* indicates the number of districts that the respondent's state has in total. The interval [1,4] thereby serves as the reference category respectively. As individual control variables, we take gender, age (5 categories), family income (5 categories), education (6 categories), and race (4 categories). At the county level, the control variables are per capita income, population size, median age, the share of people living in urban areas, as well as the population shares of men, blacks and Hispanics. All explanatory variables and fixed effects were demeaned before the models were estimated (except the categorical dummies for *#CDs in TV Market* and *#CDs in State*). Descriptive statistics for the variables used are presented in Table C5. * p<0.1, ** p<0.05, *** p<0.01.

Table C2: Voters' knowledge about their US representative depending on the size of the TV markets, 2012-2014 – Knowledge index *VK2* based on CCES survey responses

Dependent variable: *Voter Knowledge (% positive answers)*	(1) without controls	(2) +basic controls	(3) +individual controls	(4) +county controls	(5) +state FEs
Constant	89.02***	90.23***	90.85***	91.11***	90.48***
	(0.622)	(0.868)	(0.850)	(0.915)	(0.656)
#CDs in TV Market $[5,9]$	-1.281	-0.900	-1.525*	-2.081**	-2.707***
	(0.863)	(0.896)	(0.865)	(0.866)	(0.809)
#CDs in TV Market $[10,14]$	-1.501	-0.914	-1.853*	-2.905***	-4.154***
	(1.066)	(1.104)	(1.003)	(1.104)	(1.165)
#CDs in TV Market ≥ 15	-3.392***	-1.654	-2.735**	-3.832**	-4.480***
	(0.994)	(1.062)	(1.270)	(1.511)	(1.252)
#CDs in State $[5,9]$		-0.546	-0.650	-0.719	
		(1.090)	(1.053)	(1.022)	
#CDs in State $[10,14]$		-0.721	-1.379	-1.059	
		(1.440)	(1.236)	(1.124)	
#CDs in State ≥ 15		-3.339***	-3.067***	-2.356**	
		(1.136)	(1.146)	(1.088)	
%TV Market in State		0.647	0.513	0.204	-0.117
		(1.559)	(1.609)	(1.672)	(1.901)
Year FE		X	X	X	
Individual Controls			X	X	X
County Controls				X	X
State x Year FE					X
Observations	9,125	9,125	9,125	9,125	9,125
Adjusted R^2	0.001	0.004	0.126	0.128	0.134

Notes: OLS regressions with robust standard errors clustered by TV market shown in parentheses. The unit of observation is respondent-year. The dependent variable *Voter Knowledge* approximates voters' knowledge of their representative by the percentage of positive/correct answers among the survey questions on *Name Recognition*, *Party Recall*, *Know Gender* and *Know Race* (potentially ranging from 0 to 100). Each respondent lives in a county that is assigned to exactly one TV market (with some markets covering more than one state and *%TV Market in State* indicating the share of the observed market in the observed state). The dummy indicators for *#CDs in TV Market* indicate the number of congressional districts that lie within the reach of the respondent's TV market, i.e., the number of House representatives who represent voters in the market area. Analogously, *#CDs in State* indicates the number of districts that the respondent's state has in total. The interval [1,4] thereby serves as the reference category respectively. As individual control variables, we take gender, age (5 categories), family income (5 categories), education (6 categories), and race (4 categories). At the county level, the control variables are per capita income, population size, median age, the share of people living in urban areas, as well as the population shares of men, blacks and Hispanics. All explanatory variables and fixed effects were demeaned before the models were estimated (except the categorical dummies for *#CDs in TV Market* and *#CDs in State*). Descriptive statistics for the variables used are presented in Table C5. * p<0.1, ** p<0.05, *** p<0.01.

Table C3: Voters' knowledge about their US representative and senators depending on the size of the TV markets, 2010-2014 –
Knowledge index *VK3* based on CCES survey responses

Dependent variable: *Voter Knowledge (% positive answers)*	(1) without controls	(2) +basic controls	(3) +individual controls	(4) +county controls	(5) +state FEs
Constant	91.55***	92.86***	93.30***	94.31***	92.58***
	(0.509)	(0.608)	(0.560)	(0.629)	(0.513)
Senate	1.327***	1.338***	1.255**	1.070*	0.789*
	(0.343)	(0.485)	(0.511)	(0.550)	(0.414)
#CDs in TV Market $[5,9]$	-1.565**	-0.769	-1.355**	-2.229***	-2.586***
	(0.707)	(0.682)	(0.656)	(0.685)	(0.661)
#CDs in TV Market $[10,14]$	-0.215	0.944	0.031	-1.732**	-1.854**
	(0.917)	(0.937)	(0.807)	(0.852)	(0.849)
#CDs in TV Market ≥ 15	-1.915**	0.004	-0.881	-3.659***	-3.811***
	(0.933)	(1.083)	(0.991)	(1.213)	(1.092)
#CDs in TV Market $[5,9]$ x Senate	1.941***	2.122***	2.186***	2.404***	2.915***
	(0.557)	(0.566)	(0.576)	(0.593)	(0.541)
#CDs in TV Market $[10,14]$ x Senate	1.988***	2.039***	2.119***	2.448***	1.777**
	(0.693)	(0.647)	(0.662)	(0.785)	(0.699)
#CDs in TV Market ≥ 15 x Senate	3.148***	3.667***	3.712***	3.632***	4.078***
	(1.133)	(1.122)	(1.089)	(1.253)	(0.944)
#CDs in State $[5,9]$		-1.041	-1.059	-1.198*	
		(0.753)	(0.721)	(0.707)	
#CDs in State $[10,14]$		-2.595**	-2.853***	-3.001***	
		(1.106)	(0.979)	(0.936)	
#CDs in State ≥ 15		-3.292***	-2.976***	-2.561***	
		(0.818)	(0.791)	(0.788)	
#CDs in State $[5,9]$ x Senate		-0.577	-0.487	-0.294	
		(0.697)	(0.720)	(0.699)	
#CDs in State $[10,14]$ x Senate		0.251	0.382	0.786	
		(0.791)	(0.822)	(0.806)	
#CDs in State ≥ 15 x Senate		-0.114	-0.100	-0.239	
		(0.648)	(0.665)	(0.645)	
%TV Market in State		1.468	1.334	-0.004	-0.135
		(1.239)	(1.186)	(1.304)	(1.336)
%TV Market in State x Senate		3.481***	3.377***	3.093***	3.414***
		(1.057)	(1.051)	(1.165)	(1.114)
Year x Senate FE		X	X	X	
Individual Controls x Senate			X	X	X
County Controls x Senate				X	X
State x Year x Senate FE					X
Observations	49,533	49,533	49,533	49,533	49,533
Adjusted R^2	0.005	0.010	0.090	0.093	0.103

Notes: OLS regressions with robust standard errors clustered by TV market shown in parentheses. The unit of observation is respondent-chamber-year (with chamber indicating whether it is knowledge of representatives in the US House or senators in the US Senate, with House being the reference category). The dependent variable *Voter Knowledge* approximates voters' knowledge of their representative/senators by the percentage of positive/correct answers among the survey questions on *Name Recognition*, *Party Recall* and *Approval Rating* (potentially ranging from 0 to 100). Each respondent lives in a county that is assigned to exactly one TV market (with some markets covering more than one state and *%TV Market in State* indicating the share of the observed market in the observed state). The dummy indicators for *#CDs in TV Market* indicate the number of congressional districts that lie within the reach of the respondent's TV market, i.e., the number of House representatives who represent voters in the market area. Analogously, *#CDs in State* indicates the number of districts that the respondent's state has in total. The interval [1,4] thereby serves as the reference category respectively. As individual control variables, we take gender, age (5 categories), family income (5 categories), education (6 categories), and race (4 categories). At the county level, the control variables are per capita income, population size, median age, the share of people living in urban areas, as well as the population shares of men, blacks and Hispanics. All explanatory variables and fixed effects were demeaned before the models were estimated (except the categorical dummies for *#CDs in TV Market* and *#CDs in State*). Descriptive statistics for the variables used are presented in Table C5. * p<0.1, ** p<0.05, *** p<0.01.

Table C4: Voters' knowledge about their US representative depending on the size of the TV markets, 2012-2014 – Knowledge index *VK4* based on CCES survey responses

Dependent variable: *Voter Knowledge (% positive answers)*	(1) without controls	(2) +basic controls	(3) +individual controls	(4) +county controls	(5) +state FEs
Constant	90.70***	91.88***	92.40***	92.61***	91.90***
	(0.545)	(0.748)	(0.736)	(0.798)	(0.592)
#CDs in TV Market $[5,9]$	-1.325*	-0.927	-1.438*	-1.949**	-2.473***
	(0.772)	(0.780)	(0.765)	(0.758)	(0.718)
#CDs in TV Market $[10,14]$	-1.239	-0.574	-1.352	-2.332**	-3.427***
	(0.970)	(0.965)	(0.892)	(0.961)	(1.049)
#CDs in TV Market ≥ 15	-3.074***	-1.346	-2.260*	-3.362**	-4.004***
	(0.877)	(0.965)	(1.157)	(1.371)	(1.277)
#CDs in State $[5,9]$		-0.472	-0.592	-0.642	
		(0.937)	(0.920)	(0.892)	
#CDs in State $[10,14]$		-1.076	-1.617	-1.239	
		(1.338)	(1.143)	(1.033)	
#CDs in State ≥ 15		-3.252***	-3.022***	-2.289**	
		(0.995)	(1.015)	(0.957)	
%TV Market in State		0.544	0.503	0.148	-0.253
		(1.409)	(1.444)	(1.509)	(1.674)
Year x Senate FE		X	X	X	
Individual Controls x Senate			X	X	X
County Controls x Senate				X	X
State x Year x Senate FE					X
Observations	9,072	9,072	9,072	9,072	9,072
Adjusted R^2	0.002	0.004	0.120	0.122	0.127

Notes: OLS regressions with robust standard errors clustered by TV market shown in parentheses. The unit of observation is respondent-year. The dependent variable *Voter Knowledge* approximates voters' knowledge of their representative by the percentage of positive/correct answers among the survey questions on *Name Recognition*, *Party Recall*, *Approval Rating*, Know Gender and *Know Race* (potentially ranging from 0 to 100). Each respondent lives in a county that is assigned to exactly one TV market (with some markets covering more than one state and *%TV Market in State* indicating the share of the observed market in the observed state). The dummy indicators for *#CDs in TV Market* indicate the number of congressional districts that lie within the reach of the respondent's TV market, i.e., the number of House representatives who represent voters in the market area. Analogously, *#CDs in State* indicates the number of districts that the respondent's state has in total. The interval [1,4] thereby serves as the reference category respectively. As individual control variables, we take gender, age (5 categories), family income (5 categories), education (6 categories), and race (4 categories). At the county level, the control variables are per capita income, population size, median age, the share of people living in urban areas, as well as the population shares of men, blacks and Hispanics. All explanatory variables and fixed effects were demeaned before the models were estimated (except the categorical dummies for *#CDs in TV Market* and *#CDs in State*). Descriptive statistics for the variables used are presented in Table C5. * p<0.1, ** p<0.05, *** p<0.01.

Table C5: Descriptive statistics for the voter knowledge estimates

Variable	Mean	Std. Dev.	Min.	Max.	N
Table C1					
Voter Knowledge (VK1)	89.55	28.39	0	100	49,747
#CDs in TV Market $[1,4]$	0.222	0.415	0	1	49,747
#CDs in TV Market $[5,9]$	0.446	0.497	0	1	49,747
#CDs in TV Market $[10,14]$	0.166	0.372	0	1	49,747
#CDs in TV Market ≥ 15	0.166	0.372	0	1	49,747
#CDs in State $[1,4]$	0.113	0.316	0	1	49,747
#CDs in State $[5,9]$	0.290	0.454	0	1	49,747
#CDs in State $[10,14]$	0.135	0.342	0	1	49,747
#CDs in State ≥ 15	0.462	0.499	0	1	49,747
%TV Market in State	0.857	0.239	0.002	1	49,747
Table C2					
Voter Knowledge (VK2)	87.61	25.04	0	100	9,125
#CDs in TV Market $[1,4]$	0.221	0.415	0	1	9,125
#CDs in TV Market $[5,9]$	0.429	0.495	0	1	9,125
#CDs in TV Market $[10,14]$	0.174	0.379	0	1	9,125
#CDs in TV Market ≥ 15	0.175	0.380	0	1	9,125
#CDs in State $[1,4]$	0.122	0.327	0	1	9,125
#CDs in State $[5,9]$	0.280	0.449	0	1	9,125
#CDs in State $[10,14]$	0.141	0.348	0	1	9,125
#CDs in State ≥ 15	0.458	0.498	0	1	9,125
%TV Market in State	0.858	0.237	0.002	1	9,125
Table C3					
Voter Knowledge (VK3)	92.03	22.48	0	100	49,533
#CDs in TV Market $[1,4]$	0.222	0.416	0	1	49,533
#CDs in TV Market $[5,9]$	0.446	0.497	0	1	49,533
#CDs in TV Market $[10,14]$	0.166	0.372	0	1	49,533
#CDs in TV Market ≥ 15	0.166	0.372	0	1	49,533
#CDs in State $[1,4]$	0.113	0.317	0	1	49,533
#CDs in State $[5,9]$	0.290	0.454	0	1	49,533
#CDs in State $[10,14]$	0.135	0.341	0	1	49,533
#CDs in State ≥ 15	0.463	0.499	0	1	49,533
%TV Market in State	0.857	0.239	0.002	1	49,533
Table C4					
Voter Knowledge (VK4)	89.37	22.31	0	100	9,072
#CDs in TV Market $[1,4]$	0.222	0.415	0	1	9,072
#CDs in TV Market $[5,9]$	0.429	0.495	0	1	9,072
#CDs in TV Market $[10,14]$	0.175	0.380	0	1	9,072
#CDs in TV Market ≥ 15	0.175	0.380	0	1	9,072
#CDs in State $[1,4]$	0.122	0.327	0	1	9,072
#CDs in State $[5,9]$	0.279	0.449	0	1	9,072
#CDs in State $[10,14]$	0.140	0.347	0	1	9,072
#CDs in State ≥ 15	0.458	0.498	0	1	9,072
%TV Market in State	0.859	0.237	0.002	1	9,072