Orphan Counties and the Effect of Irrelevant Information on Turnout in Statewide Races

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Over 10% of the American electorate lives in counties served by out-of-state media because of the mismatch between media markets and state boundaries. Frequently, these "orphan" counties face a different information environment than others in their home state: they receive no news coverage and political advertising for their own statewide races, irrelevant information pertaining to candidates in the neighboring state who will not appear on their ballots, or both. With a combination of county-level, individual-level, and political advertising data, our analysis evaluates the effect of orphan county residency and irrelevant political information on political participation. Results indicate that orphan counties have lower turnout rates than non-orphan counties and that this difference is explained by lower levels of interest in the campaign stemming from exposure to irrelevant information.

Keywords political advertising, turnout, irrelevant information, mobilization

Because of media market and state boundary incongruence in the United States, 33 million Americans live in counties that belong to "alien" media markets, that is, media markets that primarily serve a neighboring state. As a result, the residents of these counties do not receive the same kind of information about their state's political races that people who are exposed to "native" media markets do. Although people residing in what we will refer to as "orphan" counties may enjoy easy access to newspaper articles about statewide races, they are not exposed to the same level of political advertising and televised campaign news coverage that people in the rest of the state are. Moreover, such people may be exposed to large amounts of irrelevant information about electoral contests in the neighboring state. Recently, many studies have exploited the incongruence of media market and state boundaries to examine the effect of advertising on turnout in presidential election years. In this article, we ask a related question: What is the effect of living in a county served by an alien media market on turnout in statewide races? Answering this question also involves determining how exposure to irrelevant campaign information affects turnout.

We confine our analysis to how belonging to an alien media market affects turnout in midterm elections because the interest and media coverage generated by presidential

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contests tend to swamp the more subtle effects of free media and paid media in down-ticket races (Jackson, 2002). Moreover, to understand fully the importance of televised communications, one should examine elections with poorer information environments because it is more likely that in such circumstances individual units of political communication—for example, each ad airing or 30-second campaign news story—will have stronger effects on turnout than in presidential election years because they are not competing with so many other pieces of information. One might also argue that it is simply more important to study the precursors of turnout in midterm rather than presidential elections because turnout in the former is so much lower than in the latter.

Using a fixed effects model with measures of actual turnout and political advertising data from 2002, we find that turnout in orphan counties was 2% lower than in non-orphan counties. Although one might attribute this difference to the fact that people living in such counties lack relevant information about their statewide races, we find that exposure to irrelevant information explains most of the turnout difference. To confirm that irrelevant information depresses voter engagement, we combine advertising data with individual-level survey data and show that voters who are exposed to large amounts of irrelevant information are less interested in the election. In short, and in line with a host of recent studies (Krasno & Green, 2008a; Huber & Arceneaux, 2007; Ashworth & Clinton, 2006), we find no evidence that political ads increase turnout and that they may in fact depress turnout if they contain information that is irrelevant to the electoral decisions voters have to make.

Incongruence of Media Market Boundaries and Political Geography

Every year, Nielsen Media examines the viewing behavior of Americans across the country and, based on those habits, assigns counties to media markets. Thus, when a cluster of counties are assigned to a given media market, it means that the residents of those counties tend to watch the same television stations, which usually emanate from the nearest metropolitan center. This process of assigning counties determines the size of a given media market and how much advertisers will have to pay to advertise in it. Because media markets are based solely on viewing habits, they do not accord with state or congressional district boundaries. The counties in a media market may not even be contiguous. For example, the residents of counties such as Eureka, Nevada, and Campbell, Wyoming, are assigned to the Denver media market even though they are far from the Colorado state line simply because they choose to watch Denver stations rather than others closer to home.

In election years, the incongruence between media market boundaries and political geography takes on significance for both candidates and voters. From the perspective of the former, this mismatch makes paid advertising less efficient and voters in orphan counties harder to reach, vexing campaign managers with finite resources (Shaw, 2006, p. 60; Campbell et al., 1984, p. 665). For instance, in House elections, researchers have found that challengers who are competing in districts that are split between two or more media markets find it difficult to gain name recognition (Levy & Squire, 2000). It is also worth noting that the frustrations felt by candidates and their campaign managers in expending precious resources in a media market where only a fraction of the audience is eligible to vote are shared with news editors. For example, Stewart and Reynolds (1990) remind us that news editors in the Bangor media market enjoy the privilege of having an entirely Maine audience, while those who make coverage decisions for the Paducah media market must split time or column inches between political news on both sides of the Mississippi River in Kentucky, Tennessee, Missouri, and Illinois. This means that media market and state boundary incongruence affects free media as well as paid media.

From the perspective of voters, the mismatch means they will be exposed to less advertising for and local news coverage about political races that pertain to them. Only one study has examined what this means for turnout in subnational elections. Using Kentucky as a case study, Konda (2006) compares the off-year turnout in a gubernatorial race to turnout in the subsequent 2004 presidential election. His study, which employs a bivariate method of analysis, finds that orphan counties in that state have turnout rates that are approximately 5% lower than counties in native media markets. Konda argues that this difference is due to Kentuckians in orphan counties being "less informed about and attuned to political campaigns in their state" (p. 4). The logic behind his conclusion is that those parts of Kentucky served by out-of-state media lack something that the other counties have, and that must be pertinent advertising and media coverage. Yet, it is not correct to characterize orphan counties as residing in information vacuums. If there is a race in the neighboring state—especially a competitive one—voters in orphan counties may actually be inundated by political cues, articles, and advertisements, but those information flows may consist entirely of irrelevant information. It is possible that irrelevant information, or perhaps the interaction of substantial amounts of irrelevant information combined with some relevant information, might explain lower turnout as well, but to our knowledge no one has examined this question.

If Konda's finding holds beyond Kentucky's borders, what is different about the information environment for orphan county residents that might account for their lower turnout? Local sources of political information, which might be affected by media market and state boundary incongruence, include television and radio news coverage of the campaign, as well as the radio and television ads produced by candidates and their supporters. Although Konda contends that a lack of exposure to such information is the reason behind lower participation rates, there is little evidence to support this conclusion due to a paucity of research on the effects of local media and inconclusive findings among the studies that have been conducted. For instance, there is no research on how radio news coverage of campaigns affects turnout. Studies of radio advertising and turnout have returned mixed results, with one study finding no relationship between exposure to radio advertising and self-reported turnout (Overby & Barth, 2006) and another field experiment finding a small positive effect on actual turnout (Panagopoulos & Green, 2008). The relationship between attention to local news and community involvement or political participation has been characterized as either weak (McLeod, Scheufele, & Moy, 1999; Stamm, Emig, & Hesse, 1997) or nonexistent (Shah, McLeod, & Yoon, 2001; Rothenbuhler, Mullen, De Laurell, & Ryu, 1996).

As for television advertising and its ability to affect turnout, there is considerable debate in the extant literature about its effects. While some believe that political ads, especially negative ads, may depress turnout (Ansolabehere, Iyengar, Simon, & Valentino, 1994), others believe that they boost it (Hillygus, 2005; Freedman, Franz, & Goldstein, 2004), and still others argue that they have no effect whatsoever on whether voters go to the polls (Krasno & Green, 2008a; Ashworth & Clinton, 2006; Huber & Arceneaux, 2007; Holbrook & McClurg, 2005). An additional issue is that most of these studies examine the effects of advertising in presidential elections. Far less is known about the relationship between political ads and turnout in down-ticket races.

Even if the literature on local media and turnout were more conclusive, we contend that orphan county residents often suffer from two conditions: a lack of relevant information and an overabundance of irrelevant information. If the residents of orphan counties are less likely to vote, the question is which of the two conditions is more responsible.

How might irrelevant political information affect voters? Are voters likely to pay attention to such information in the first place? After all, it is quite possible that voters

in orphan counties, long accustomed to receiving irrelevant information about campaigns in neighboring states, might have developed mechanisms for screening out such information. Moreover, psychologists have argued that people are "boundedly rational information processors" (Simon, 1982) or "cognitive misers" (Taylor, 1981), terms suggesting that people who encounter irrelevant campaign information are unlikely to pay very close attention to it. If we are rational information processors, then our minds should screen out information that does not pertain to our decision-making goals so we can focus on information that does. As cognitive misers, there is no reason to expend energy sorting through information that is prima facie useless in the offhand chance that it contains something useful.

Cognitive psychologists who have studied advertising effects, however, argue that people unconsciously and automatically process ad content prior to selecting it (Shapiro, 1999; Grunert, 1996). The example most often used is that of a person engaged in a conversation at a cocktail party who is able to quickly divert his or her attention if something of personal salience is overheard. The fact that people are able to do this suggests that "some parallel, unconscious processing of all incoming stimuli must occur" (Grunert, p. 90).

In addition to unconsciously absorbing information from an irrelevant ad, a person might decide to pay more attention to it (i.e., select and process it at a deeper level) for any number of reasons. This is because people pay attention to ads for reasons that have nothing to do with how relevant they might be to their decision making—a fact that advertisers know all too well. Research shows that people pay attention to likeable ads (Treisman, 1969; Ratneshwar, Warlop, Mick, & Seeger, 1997) or those that feature attractive individuals (Chaiken, 1979). Thus, political ads, especially positive ones that feature candidates in pleasant locales with feel-good imagery (e.g., American flags and smiling children), can grab the attention of an individual even if the information they contain is ultimately irrelevant to her or his voting decision. Interestingly, people tend to have a well-developed rejection heuristic for overtly persuasive ads, which enables them to quickly stop the processing of such ads (Friestad & Wright, 1994; Speck & Elliot, 1997), but there is no reason to assume that such a heuristic would be applied more often to irrelevant political ads than relevant ones.

The discussion thus far suggests that people do not automatically screen out irrelevant information and may process it more deeply. If this is the case, then what could they learn from it that has the potential to affect their turnout decision on election day? First, it is possible that irrelevant information might actually reduce the costs associated with voting by alerting voters to the upcoming election. It might also provide information about party positions and trigger partisan predispositions. Research suggests, however, that political advertisements rarely ask people to vote for a particular candidate or even mention election day (Krasno & Green, 2008a; Krasno & Goldstein, 2002), although it is possible that just seeing a political ad reminds people that election day is approaching. In addition, one study of ads in midterm elections found that only one third of them mentioned the party or ideology of a candidate (Vavreck, 2001), which suggests that the opportunity to learn about party issue positions from irrelevant ads and information is rather minimal. All of this research suggests that even if people pay attention to irrelevant ads, the content of those ads contains little that would affect a voter's propensity to vote.

There may be reason to believe that irrelevant advertising harms turnout, however. First, irrelevant ads might communicate to voters that the election does not concern them. For example, one study of advertising in a midterm election found that advertisements in House, Senate, and gubernatorial races mention the name of the state in which the candidate is running 73% of the time (Vavreck, 2001). Such mentions not only send a cue to voters about the relevance of the ad, but may also communicate to them that the important election is taking place in the neighboring state and not their own. Moreover, ads that

mention what a candidate is going to do for the neighboring state might subtly suggest to voters that politicians do not care about them. For example, in 2002, residents of orphan counties in Wyoming and Nebraska, who lived in the Denver media market, were inundated by ads about the Senate and gubernatorial races in Colorado that used phrases such as "My top priority is to get our economy working again for all Colorado families" and "Let's get Colorado moving again." The incumbents in these races also talked about all of the things they had done for Colorado. One advertisement aired by Wayne Allard, the Republican Senate incumbent, discussed how "he's bringing people together to help Colorado," while another ad for the gubernatorial incumbent, Bill Owens, said he has been "a darn good governor, delivering $1 billion in tax relief, the first administration in a decade to fully fund education. He's brought real reform to Colorado schools." Understandably, residents of Wyoming and Nebraska who are exposed to such advertisements, as well as news coverage about irrelevant campaigns, might wonder if anyone cares about what goes on in their state. If this is true, one might see lower levels of efficacy and interest in the campaign among residents of orphan counties.

Finally, irrelevant information might depress interest and turnout for the simple reason that it crowds out relevant information. Economists often assume that people are imperfectly informed because pertinent information does not reach them. If this is the problem, then the answer is to reduce the cost of information by providing more of it (i.e., air more ads). Yet one quickly runs up against the limits of human information processing (Simon, 1982). If the information environment is simple and people have time to consider each piece of information, they can easily screen out irrelevant bits of information. But if the information environment is complex, people have a harder time deciding what information is useful. Useless information therefore crowds out useful information and, as anyone who is plagued by junk mail or e-mail "spam" knows, the willingness to process any information at all wanes (Gabaix, Laibson, Moloche, & Weinberg, 2003). For people living in orphan counties who are often exposed to large quantities of irrelevant political information, this may result in declining interest in the election and even lower turnout.

Orphan counties have been the subject of much scrutiny lately by scholars seeking to disentangle the effects of political advertising in presidential campaigns from other types of campaign activity that might be correlated with it (Ashworth & Clinton, 2006; Huber & Arceneaux, 2007; Krasno & Green, 2008a). For example, Huber and Arceneaux take advantage of the mismatch between media market and state boundaries by assigning National Annenberg Election Study respondents to their appropriate media market and the commensurate advertising exposure. They then compare the turnout of two types of voters who live in battleground state media markets that bleed across state lines: those who reside in the battleground state and those who live in the neighboring state that the media market encompasses. Krasno and Green adopt a similar approach but use a state-level fixed effects model that compares turnout variance within states that have both native and alien media markets. All of the studies that have employed such an approach have concluded that political ads (i.e., presidential ads) have little or no effect on turnout. Instead of using the incongruence between media markets and state boundaries for analytic leverage as these studies do, we are interested in what this incongruence means for the voters living with its consequences. Although it may have little impact on their turnout in presidential elections, we expect it to make a significant difference in midterm elections.

A growing literature concerned with how instiutions shape political behavior has recently started to investigate the relevance of state boundaries and media markets for voters. Cho and Nicley (2008) compare the political propensities of neighboring counties to determine the import of state borders. Comparing the normal vote of neighboring counties

that lie within the same state and the normal vote of neighboring counties divided by a state border, they conclude that the homogenizing forces of geographic proximity are countered by institutions (e.g., state lines) that create distinct patterns of political behavior. Althaus and Trautman (2008) examine how media market size affects political participation levels. They find that large media markets, with their higher advertising prices per voter and lower incentives for news media to cover down-ballot races, exhibit lower levels of voter turnout. The first study does not examine how media markets might mitigate the divisive effect of state borders, while the second study does not confront the reality that media markets cross state borders.[1] The implication of such oversights is perhaps more severe for the Althaus and Trautman study because they contend that the reason for lower turnout in large media markets is that they offer less relevant information to voters. If it is more likely that orphan counties reside in large media markets, which our study finds, then it is also possible that some of the lower turnout is explained by parts of large media markets receiving excessive amounts of irrelevant information about campaigns and candidates that do not concern them.

Data and Methods

In the following analysis, we assess whether counties in alien media markets have lower levels of turnout than counties in native media markets and, if so, why. To do this, we combine 2002 county-level turnout data from all states with statewide races with political advertising data provided by the Campaign Media Analysis Group (CMAG) via the Wisconsin Advertising Project (WAP). That midterm was the first for which WAP provided political advertising data to scholars.[2] Choosing a midterm election to analyze also has the benefit of eliminating the confounding influence of presidential advertising, which is ostensibly relevant for all eligible voters. In 2002, there were 26 states that had both a Senate and gubernatorial race, 8 states that had only a Senate race, 12 states that had only a gubernatorial contest, and 4 states that had no statewide race. Of the 2,896 counties in the 46 states with statewide races, CMAG monitors political advertising in the media markets that serve 1,776 of them. These are the counties we include in our analysis.

The units of analysis for our study are counties and county-equivalent political entities.[3] Counties are the smallest political unit for which exhaustive and reliable demographic data are available, and county boundaries are far more stable than congressional or state legislative lines, allowing multiple year comparisons. Counties are the most appropriate unit for our study because the media market definitions comprise counties perfectly. Krasno and Green (2008a, p. 9) use what they refer to as the "media zone"—the portion of a media market that falls within a state—as their unit of analysis, arguing that it is the smallest unit of "meaningful variance." This decision essentially fuses counties together that share the same state and media market into one unit. While we agree with Krasno and Green that media zones are the lowest level of variance regarding the key independent variable of advertising exposure, we also agree with Franz, Freedman, Goldstein, and Ridout (2008) that counties are more intuitive units of analysis. Moreover, Krasno and Green (2008b, p. 4) acknowledge that using counties as the unit of analysis does not change their findings. Any findings that stem from an analysis based on a media zone–level study should manifest themselves at the county level as well.

In the analysis that follows, we use an ordinary least squares model with state-level fixed effects to compare turnout of orphan and non-orphan counties *within* the same state. As Krasno and Green (2008b, p. 15) assert, analyses that exclude fixed effects assume that voting rates can be compared across states as well as within them, and this is a highly

questionable assumption. The appropriate alternative to using this approach would involve a hierarchical linear model that controls for a wide variety of measures that might affect turnout (Krasno & Green, p. 4). Because everything from the competitiveness of an election to states' distinctive registration rules to states' meteorological conditions might affect turnout rates, we believe it is safest to use state-level fixed effects. One potential downside of employing such a model is that states with exclusively "alien" or "native" counties are excluded. Of the states that had statewide races in 2002, nine are therefore excluded from our analysis: Delaware, Florida, Hawaii, Louisiana, Maine, New Hampshire, New Jersey, North Dakota, and Rhode Island.

Campaign efforts are obviously not limited to television advertising. Senate campaigns seek to mobilize supporters and persuade others through other, more localized channels that are not hampered by media market boundaries and their resulting inefficiencies. Foundational research on the nature of Senate campaigns describes "modest but significant" improvement in the turnout of competitive races over uncompetitive ones (Abramowitz & Segal, 1992, p. 33), and the implied logic of this conclusion is that competitive races entail campaign efforts of all kinds to spur turnout. Beyond the campaigns themselves, other politically motivated actors and organizations participate in electioneering, especially among competitive races (Magleby & Monson, 2003). We do not have access to measures of campaign activity at the county level, so our method assumes that these "ground-war" efforts are evenly distributed across counties within states on a per-person basis. We acknowledge that this is very likely not the case, but it only poses a problem for our analysis if such ground-war efforts and political advertising are positively correlated. If this is true, and we find that turnout in orphan counties is lower than in non-orphan counties, it would mean that we could not say whether this lower turnout is due to less advertising or lower levels of grassroots mobilization. Yet, we believe that it is far more likely that campaigns intensify grassroots outreach to the residents of orphan counties precisely because it is so costly to reach them through televised advertising. Thus, if our analysis reveals lower turnout in orphan counties, it is in spite of more intense grassroots mobilization efforts.

Figure 1 depicts the counties in 2002 that fell within another state's media influence. As one would expect, these counties mostly border state lines, although there are a handful of cases where alien media markets penetrate deep into a state (e.g., Wyoming, Missouri, and Iowa) or swallow it up completely (e.g., New Hampshire, Delaware, and New Jersey). Only eight states are served entirely by native media markets: Alaska, Hawaii, Florida, Louisiana, Maine, Rhode Island, North Dakota, and Utah. In terms of population, 19% of the voting age population living in the continental United States reside in alien media markets. The proportion of a state's population that lives in neighboring states' media markets ranges widely. Ten states have over a quarter of their voting age population served by out-of-state media markets. For example, Kentucky, the state used in Konda's analysis (2006), contains 46 counties within bordering states' media markets, which in turn comprise 37% of Kentucky's voting age population. Table 1 provides information on the voting age population of each state that resides in alien and native media markets.

After coding counties as "orphan" or "non-orphan," we merged our county-level measures with data on political advertising.[4] For each county's media market, we counted the number of relevant gubernatorial and senatorial ad airings in the 5 days before the election, as well as the number of irrelevant gubernatorial and senatorial ad airings in the same 5-day period, and then applied a natural logarithmic transformation to the sums of each.[5] The two measures are correlated at $-.32$ ($p < .001$), which should eliminate concerns about collinearity in our models. We use a measure of

Figure 1. Counties in alien and native media markets, 2002. Source: Nielson Media. Darker shading indicates counties served by an out-of-state media market in 2002.

Table 1
State voting age population residing in alien and non-orphan counties, 2002

State	Orphan counties/All counties	Orphan VAP in thousands (% of state VAP)
Lower 48 states	584/3,107 (19%)	24,916 (11%)
Alabama	9/67 (13%)	245 (7%)
Arizona	1/15 (7%)	45 (1%)
Arkansas	22/75 (29%)	420 (20%)
California	5/58 (10%)	190 (1%)
Connecticut	1/8 (13%)	673 (25%)
Colorado	3/64 (5%)	58 (2%)
Delaware	3/3 (100%)	648 (100%)
Florida	0/67 (0%)	0 (0%)
Georgia	27/159 (17%)	624 (9%)
Idaho	13/44 (30%)	250 (24%)
Illinois	24/102 (24%)	751 (8%)
Indiana	23/92 (25%)	1,050 (22%)
Iowa	32/99 (32%)	615 (27%)
Kansas	16/105 (15%)	751 (36%)
Kentucky	55/120 (46%)	1,191 (37%)
Louisiana (runoff)	0/64 (0%)	0 (0%)
Maine	0/16 (0%)	0 (0%)

(*Continued*)

Table 1
Continued

State	Orphan counties/All counties	Orphan VAP in thousands (% of state VAP)
Maryland	1/24 (4%)	23 (1%)
Massachusetts	2/14 (14%)	524 (11%)
Michigan	5/83 (6%)	273 (4%)
Minnesota	21/87 (24%)	295 (8%)
Mississippi	16/82 (20%)	394 (18%)
Missouri	47/115 (41%)	1,011 (23%)
Montana	11/56 (20%)	48 (7%)
Nebraska	19/93 (20%)	142 (11%)
Nevada	3/17 (18%)	40 (2%)
New Hampshire	10/10 (100%)	1,007 (100%)
New Jersey	21/21 (100%)	6,556 (100%)
New Mexico	5/32 (16%)	194 (13%)
New York	3/62 (5%)	138 (1%)
North Carolina	31/100 (31%)	1,116 (17%)
North Dakota	0/53 (0%)	0 (0%)
Ohio	10/88 (11%)	323 (4%)
Oklahoma	12/77 (16%)	264 (10%)
Oregon	4/36 (11%)	87 (3%)
Pennsylvania	7/67 (10%)	335 (3%)
Rhode Island	0/5 (0%)	0 (0%)
South Carolina	13/46 (28%)	564 (17%)
South Dakota	4/66 (6%)	18 (3%)
Tennessee	4/95 (4%)	83 (2%)
Texas	10/254 (4%)	312 (2%)
Utah	0/29 (0%)	0 (0%)
Vermont	2/14 (14%)	64 (13%)
Virginia	38/134 (28%)	2,266 (39%)
Washington	5/39 (13%)	399 (8%)
West Virginia	16/55 (29%)	407 (28%)
Wisconsin	13/72 (18%)	301 (7%)
Wyoming	16/23 (70%)	16 (55%)

Note. Alaska and Hawaii are omitted. Source: Scammon, McGillivray, and Cook (2003).

advertising in the last 5 days of the election because recent studies have shown that the effects of ads decay quickly (Gerber, Gimpel, Green, & Shaw, 2007; Hill, Lo, Vavreck, & Zaller, 2007, 2008). The most comprehensive study of this issue to date finds that ads aired more than 5 days before an interview do not affect vote intention (Hill et al., 2008).[6] Because we are examining the effect of relevant and irrelevant ads on actual turnout, we use measures of advertising in the 5 days prior to the election.

We use the number of ad airings to capture televised political communication in general. This includes both paid television advertising and local television news coverage. Although it would be ideal to include some measure of local television news coverage in the analysis, such a measure does not exist for the 100 CMAG media markets.

The dependent variable, county-level turnout, is calculated as total ballots cast for the highest-level statewide race over the voting age population. While the vote-eligible population would be preferable due to bias from ineligible residents (McDonald & Popkin, 2001), voting age population data are more easily available, and we have no reason to suspect that the VEP/VAP distinction covaries with our variables of interest. Ballot totals for the counties come from the *America Votes* series (Scammon et al., 2003). The control variables include county-level factors that correlate strongly with turnout at both the aggregate and individual levels. Our use of these controls follows earlier research on turnout in midterm elections, such as Abramowitz and Segal (1992), which relies heavily upon the widely accepted array of socioeconomic factors identified by foundational research on political participation (Verba & Nie, 1972; Wolfinger & Rosenstone, 1980). Socioeconomic predictors of turnout include age, education, and income. The effect of age on turnout is controlled for by including a variable that measures the percentage of the county that is aged 65 and up. The effect of formal education on turnout is captured by including the percentage of county residents with a bachelor's degree or better. County-level income is measured by using the county's median income in thousands of dollars.

Turnout models have also traditionally included some measurement of race and/or ethnicity, so we include a control for percentage of the county that is White. Finally, because orphan counties tend to be more rural, we include a control for population density. These socioeconomic and racial data come from 2005 estimates from the U.S. Census Bureau. We also control for media market size because it affects turnout (Althaus & Trautman, 2008) and there is a small but significant positive correlation (.07, $p < .01$) between it and the likelihood that a county is an orphan.

Findings

To understand the nature of the information environment in orphan counties, one must take into account the amount of relevant and irrelevant political advertisements to which they are exposed. Figure 2 shows the distribution of relevant and irrelevant advertising in orphan and non-orphan counties.[7] These quantile plots depict how different the campaign information environments are for orphan and non-orphan counties. For example, over 40% of the orphan counties reside in media markets where fewer than 10 relevant political ads aired in the last 5 days of the 2002 election, while that was the case for just 8% of the non-orphan counties. In contrast, 89% of the orphan counties lie in media markets where at least 100 irrelevant political ads aired during the last 5 days of the campaign, and more than half of the orphan counties reside in media markets where more than 700 irrelevant ads aired. For the most part, few irrelevant ads aired in media markets serving non-orphan counties.

The reason why orphan counties do occasionally receive relevant information is that candidates in statewide races, especially competitive ones, may find it worthwhile to advertise in the media markets of neighboring states in order to reach voters in their own state. For example, in 2002, New Hampshire had a Senate and a gubernatorial election. That state, however, has no native media markets, so its counties are split between three alien media markets. In 2002, the races were sufficiently competitive for the candidates to advertise in the Portland, Maine media market, the Boston media market, and the Burlington, Vermont media market. On the flip side, the counties from Maine, Massachusetts, Vermont, and New York that were in those media markets were exposed to irrelevant ads pertaining
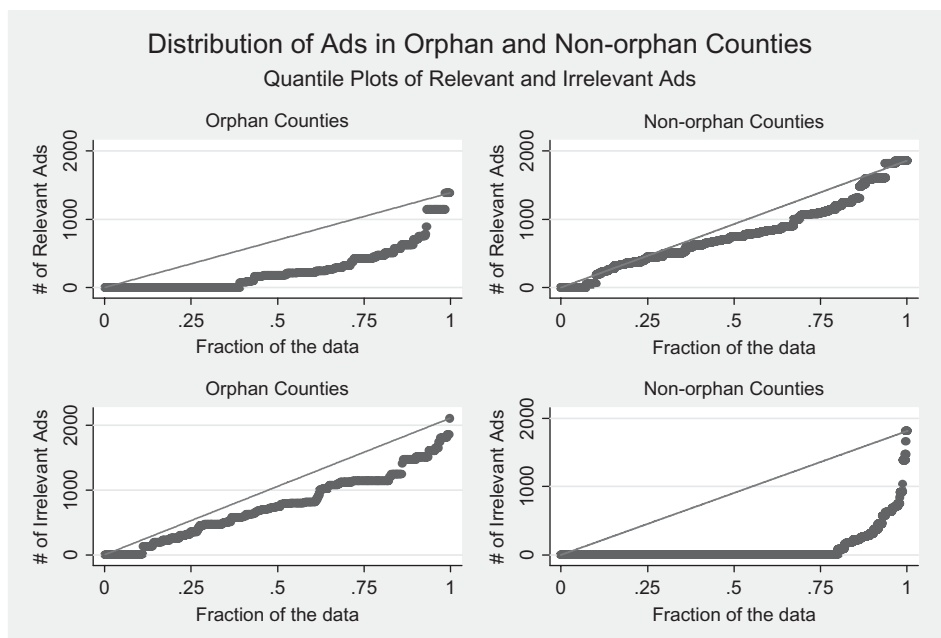
Figure 2. Quantile plots showing the distribution of relevant and irrelevant advertising in orphan and non-orphan counties during the last 5 days of the 2002 campaigns. Source: Campaign Media Analysis Group and Wisconsin Advertising Project.

to the New Hampshire race. This "collateral damage" of advertising is how non-orphan counties become exposed to irrelevant information.

To begin our analysis of how belonging to an alien media market affects county-level turnout, we ran a series of models, which are shown in Table 2. Model 1, which includes all of the basic county demographic variables serves as our base model. This is Model 1. In the next model, we included a dummy for whether a county was an orphan and found that orphan county turnout is approximately 2% lower than non-orphan county turnout. Including this variable improved the overall fit of the model by explaining more of the within-state variance, as one might expect. Using CLARIFY (Tomz, Wittenberg, & King, 2001), we calculated that the expected turnout rate for a non-orphan county in a state with a statewide race was 39% in 2002, while it was just 37% in an orphan county ($p \leq .001$).

The magnitude of the 2% difference that our analysis reveals is substantially lower than the 5% difference that Konda (2006) found in his analysis. Recall, however, that he examined turnout in a single state using a bivariate method that did not control for county characteristics. When we narrowed our analysis to Kentucky and controlled for basic demographic variables such as age, income, education, and race, we found that there was no significant difference in turnout between Kentucky's orphan and non-orphan counties in 2002.

In Models 3, 4, and 5, we examine the role that relevant and irrelevant information played in creating the 2% difference. If either form of information explains the depressed turnout in orphan counties, we should see the orphan county effect disappear when these two variables are added to the model, but they do not, as Model 3 shows. The magnitude of the orphan coefficient is reduced slightly from -1.95 to -1.76, but it remains significant ($p \leq .001$). As for the ad measures, relevant ads do not have a significant effect on turnout,

Table 2
Orphan county residency and turnout: OLS models of turnout with state-level fixed effects showing how irrelevant ad airings mediate this relationship

	Model 1	Model 2	Model 3	Model 4	Model 5
Percentage over 64	1.11***	1.11***	1.11***	1.11***	1.11***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Percentage with BA	0.15***	0.15***	0.15***	0.15***	0.15***
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Median income	0.14***	0.14***	0.14***	0.14***	0.14***
(Thousands)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Percentage White	−0.18	0.19	0.18	0.34	0.30
	(1.33)	(1.32)	(1.32)	(1.33)	(1.32)
VAP (Millions)	−1.61**	−1.71**	−1.72**	−1.71**	−1.72***
	(0.54)	(0.54)	(0.54)	(0.54)	(0.54)
Population density	−0.15*	−0.16*	−0.15*	−0.16*	−0.16***
(Thousands)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
TV stations in	0.17**	0.16**	0.16**	0.17**	0.16**
DMA	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
DMA size	−0.46***	−0.43***	−0.42***	−0.43***	−0.42***
(Millions)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Orphan		−1.95***	−1.76***	−3.12**	−0.69
		(0.37)	(0.52)	(1.12)	(1.13)
Relevant ad airings			−0.01	−0.14	
			(0.12)	(0.18)	
Irrelevant ad airings			−0.04		−0.01
			(0.08)		(0.08)
Orphan × Relevant				0.23	
				(0.19)	
Orphan × Irrelevant					−0.20
					(0.19)
Intercept	14.29***	14.63***	14.67***	15.30***	14.57***
	(1.43)	(1.42)	(1.65)	(1.74)	(1.45)
n	1,788	1,787	1,787	1,787	1,787
R^2 within	.324	.334	.334	.335	.335
R^2 between	.334	.326	.336	.298	.346
R^2 overall	.320	.336	.338	.331	.339

Note. Robust standard errors are in parentheses. Source: Scammon et al. (2003) and CMAG.
*$p \le .05$; **$p \le .01$; ***$p \le .001$ (two tailed).

which seems to confirm the findings of recent studies that argue political ads have minimal mobilizing effects (Krasno & Green, 2008a; Huber & Arceneaux, 2007; Ashworth & Clinton, 2006; Holbrook & McClurg, 2005). Irrelevant advertising, however, appears to have a marginally significant negative impact on turnout irrespective of whether one lives in an orphan county. As the number of irrelevant ads increases from the 20th to the 80th percentile, expected turnout drops from 40% to 39% ($p \le .10$).

Even though relevant and irrelevant ad airings do not have a large direct effect on turnout, it is possible that their effect on turnout is different in orphan and non-orphan

counties because the political information environments that characterize each are so fundamentally different, as Figure 2 demonstrated. For example, it may be that relevant ad airings tossed into a media environment that is flooded with irrelevant information—the situation for most orphan counties—will have no effect on turnout, while those same ad airings might make a difference in a less confusing information environment. Conversely, it is possible that irrelevant ad airings—especially the low levels one finds in native media markets—may have no effect on turnout in the face of vast amounts of relevant information. Another possibility is that irrelevant information may exacerbate feelings of alienation that residents of orphan counties, which frequently lie along state borders, may have from their home state. To test these hypotheses, we interacted the orphan dummy variable with the measures of relevant and irrelevant ad airings in Models 4 and 5. While neither of the interaction terms are significant, what matters is whether the interaction coefficient *plus* the main effect of the orphan measure is significant (Brambor et al., 2005).

In Model 4, we examine the interaction of the orphan dummy and the measure of relevant advertising. When the interaction term is included, the magnitude of the orphan dummy coefficient actually increases from -1.95 to -3.12 ($p \leq .01$). This, in combination with the positive direction of the interaction term coefficient, suggests that turnout is slightly lower in orphan counties that are not exposed to any relevant ads. As the number of relevant ads increases, the turnout gap between orphan and non-orphan counties begins to close. Yet, even when orphan counties receive a number of relevant ads in the 80th percentile, the expected turnout difference between orphan and non-orphan counties is still 2% (37% vs. 39%, $p \leq .05$). This suggests something else accounts for the turnout gap.[8]
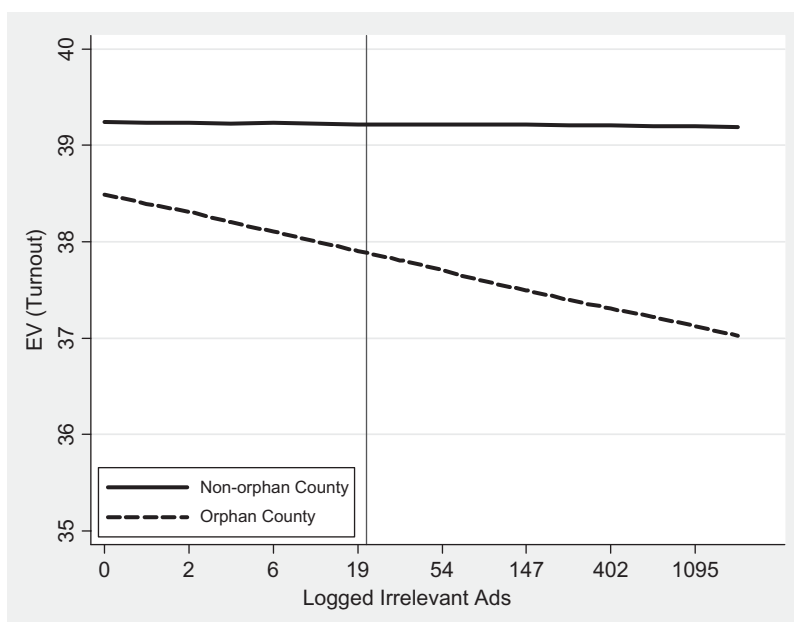

Figure 3. Effect of irrelevant ad airings on turnout in orphan and non-orphan counties. Source: Scammon et al. (2003), CMAG, and Wisconsin Advertising Project. The difference in turnout between orphan and non-orphan counties is significant ($p \leq .05$; indicated by the vertical line) when there have been more than about 22 irrelevant ad airings in the previous 5 days.

In Model 5, we see that irrelevant advertising is the culprit. When we interact the orphan variable and irrelevant ad airing measure, the orphan county effect virtually disappears. Moreover, both the main effect of irrelevant advertising and the interaction term are negative, suggesting that irrelevant ads depress turnout even more in orphan counties than in non-orphan counties. The direction of the coefficient implies that the difference in turnout between orphan and non-orphan counties is not significant at low levels of irrelevant advertising but is when citizens are exposed to large amounts of advertising that pertain to out-of-state candidates. Figure 3 depicts this interaction visually.

The x-axis shows the transformed logarithmic number of irrelevant ad airings, while the y-axis shows the expected level of turnout calculated using CLARIFY. At very low levels of irrelevant advertising, the difference in orphan and non-orphan county turnout is not significant, but it becomes significant ($p \leq .01$) around 25 ad airings (indicated by the solid vertical line). If one recalls the discussion of Figure 2, 89% of the orphan counties reside in media markets where more than 100 irrelevant ads were aired, so 25 irrelevant ad airings is quite low compared to the norm. Including this interaction term in the model reduces the magnitude of the orphan coefficient from -1.95 ($p \leq .001$) to -0.69 (*ns*), which means irrelevant information accounts for most of the orphan effect on turnout.[9]

Although we may have accounted for the orphan county effect, one may still wonder why the magnitude of irrelevant information's negative effect is larger in orphan than non-orphan counties. As we hypothesized above, it may be a result of the particular mix of positive and negative information that the residents of orphan and non-orphan counties receive. It may also be the case that orphan county residents feel somewhat alienated from their own state. The irrelevant information they receive may simply reinforce such feelings, contributing to their lower turnout.

This analysis has revealed a 2% difference in turnout between orphan and non-orphan counties. Although one might assume that this difference is due to a lack of relevant campaign information in orphan counties, our analysis suggests that their exposure to irrelevant information is a far more important factor.

Irrelevant Information and Political Interest

Why does irrelevant information depress turnout in orphan counties? In this section, we turn to an analysis of individual-level data to identify the causal mechanisms involved. Earlier, we hypothesized that irrelevant information might reduce voter engagement for two reasons: (a) It subtly communicates to potential voters that the election does not concern them, and/or (b) it crowds out relevant information. To estimate the effect of irrelevant political advertising on the amount of attention citizens pay to political campaigns, we analyze data from the November 2002 Election Weekend Survey conducted by the Pew Research Center for the People and the Press. The survey polled 2,113 people over 4 days, 1,610 of whom were registered voters.

We merged the Pew data with the CMAG advertising data based on respondents' county of residence. For this analysis, we employed the same 5-day logged measures used in the previous section.[10] To measure respondents' interest in the campaign, we combined two measures from the survey. One asked respondents, "How closely have you followed news about candidates and election campaigns in your state and district?" They could respond "not at all closely," "not too closely," "fairly closely," and "very closely." The second question asked, "How much thought have you given to Tuesday's election?"

Answers ranged on a 4-point scale from "none" to "a lot." We summed the responses to these questions and then subtracted two to create a scale of interest ranging from 0 to 6.[11]

Because the dependent variable is a categorical variable with an ordered scale, we use an ordered probit model for our analysis. The models include a range of individual-level controls, including respondents' socioeconomic status (age, formal education, and family income), race, whether or not they identify with one of the two major parties, and gender. As seen on the map in Figure 1, orphan counties tend to be located near state boundaries and are occasionally far from urban centers, so the model includes a control for the respondents' location, coded from rural to large city residence.

The five models in Table 3 use the same orphan county and advertising measures that Table 2 does. Model 1 is the base model, with all variables behaving in the expected

Table 3
Orphan county residency and interest: Ordered probit models showing how irrelevant ad airings mediate this relationship

	Model 1	Model 2	Model 3	Model 4	Model 5
Age	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female	−0.13*	−0.14*	−0.13*	−0.13*	−0.14*
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Formal education	0.11***	0.11***	0.11***	0.12***	0.11***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Family income	0.06***	0.06***	0.06***	0.06***	0.06***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
White	0.03	0.05	0.03	0.05	0.03
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Partisan	0.27***	0.27***	0.26***	0.27***	0.26***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Population density	0.01	−0.01	−0.00	−0.01	−0.00
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Orphan county		−0.63***	−0.37*	−0.94***	−0.23
		(0.16)	(0.21)	(0.32)	(0.48)
Relevant ad airings			0.02	−0.02	
			(0.05)	(0.06)	
Irrelevant ad airings			−0.04**		−0.04*
			(0.02)		(0.02)
Orphan × Relevant				0.08	
				(0.06)	
Orphan × Irrelevant					−0.03
					(0.08)
n	990	990	990	990	990
Pseudo R^2	.0603	.0656	.0670	.0662	.0670
Log-likelihood	−1,662	−1,652	−1,650	−1,651	−1,650

Note. Robust standard errors are in parentheses. Source: Pew Research Center and Wisconsin Advertising Project. State dummies were included in the models but are omitted from the table for presentation clarity. Residents of states without a statewide election were omitted.
  *p ≤ .05; **p ≤ .01; ***p ≤ .001 (two tailed).

direction. Increased levels of age, formal education, family income, and partisanship all exhibit a positive influence on respondents' interest in the election. Being female has a significantly negative impact on interest, while a respondent's race has none. In Model 2, we introduce the orphan county residence dummy variable, which has a large negative impact on respondents' interest in the election. The predicted probability of a respondent scoring a "6" on the interest scale is 31% in a non-orphan county and just 13% in an orphan county, assuming a White male partisan with average values of all of the other variables. This finding is not surprising as we expected orphan county residents to be less interested in the campaign. The question is what accounts for this disengagement: Is it the lack of relevant political information or an overabundance of irrelevant information? In the previous section, irrelevant information accounted for much of the reduced turnout in orphan counties. Does it also account for the lower levels of interest we observe here?

In Model 3, we introduce the logged measures of relevant and irrelevant advertising in the 5 days prior to each respondent's interview date. According to this model, ceteris paribus, relevant ads do not affect interest but irrelevant ads appear to have a significantly negative impact. Increasing the number of irrelevant ads from the 25th to the 75th percentile decreases the predicted probability of scoring a "6" on the interest scale from 26% to 18%, while increasing relevant ads by the same increment boosts interest by less than 0.1% with the other independent variables held constant.

In the next model, we interact the orphan and relevant advertising variables. If the lack of relevant information accounted for the orphan effect, we should see the orphan coefficient disappear, but instead its magnitude increases from −.63 in Model 2 to −.94, suggesting that relevant information plays no role in mediating the orphan effect. Instead, it suggests that interest is even lower in orphan counties that have no relevant advertising. In Model 5, we interact the orphan and irrelevant advertising variables. Again, just as in Table 2, the interaction term is not significant, but its negative direction implies that irrelevant advertising has an especially pernicious effect in orphan counties.

Figure 4 depicts this interplay between irrelevant advertising and election interest visually. The first graph shows the predicted probability of respondents in orphan and non-orphan counties scoring a "6" on the interest scale as the number of logged irrelevant ad airings increases. The second shows the predicted probability of them having scored a "1," low on the interest scale. Both graphs show that irrelevant ad airings have a detrimental impact on respondent interest in orphan counties, by either decreasing high interest or increasing low interest. Returning to Model 5 in Table 3, we see that including the irrelevant advertising measure in the model and interacting it with the orphan dummy reduces the magnitude of the main orphan effect from −0.63 ($p \leq .001$) in Model 2 to −0.23 (*ns*) in Model 5. In other words, the orphan effect on interest only appears when residents of orphan counties are exposed to irrelevant information. When there is no irrelevant advertising or very low levels of it, the residents of orphan and non-orphan counties exhibit similar interest in the election.

These findings—like those in Figures 3 and 4—raise the question of why irrelevant ad airings affect orphan county residents differently than non-orphan county residents. We suspect it is because irrelevant ad airings in non-orphan counties are countered by so much relevant information that their effect is muted.

A number of points have emerged from this analysis. First, relevant information, in particular relevant ad airings, does not have a significant effect on turnout. This finding aligns with results of studies showing that ads do not mobilize voters. Even in the non-complicated information environment of a midterm election, ads do not seem to encourage
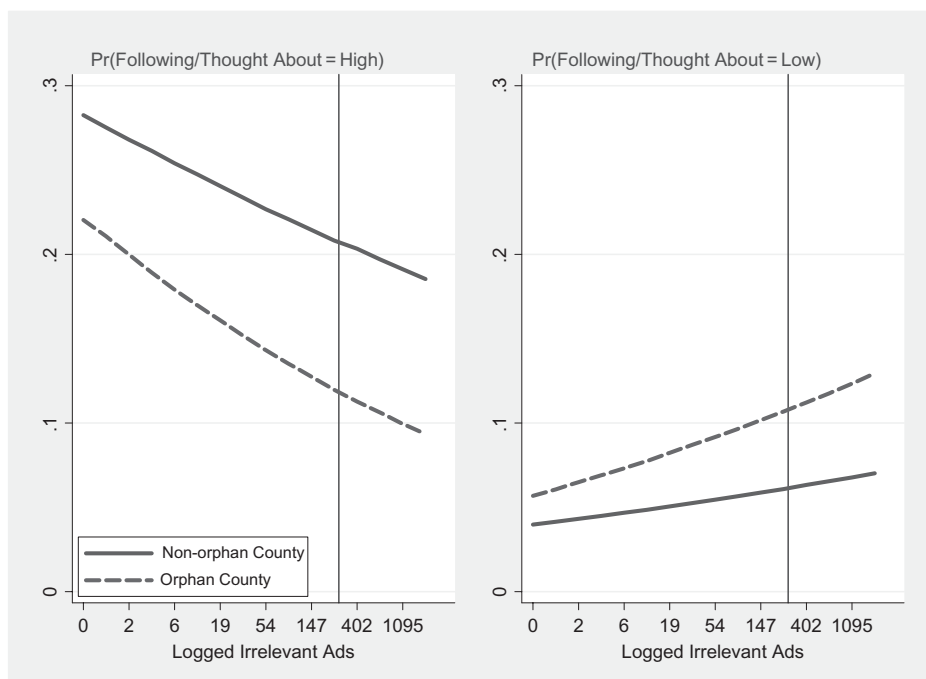
Figure 4. Predicted probabilities of having the highest and lowest levels of interest in the election for orphan and non-orphan counties. Source: Pew Research Center, CMAG, and Wisconsin Advertising Project. Probabilities were based on median values of age, education, and income, and on a White married female partisan living in a rural area. The vertical line represents the point at which the difference in the predicted probabilities between orphan and non-orphan country residents is significant ($p < .05$).

anyone to go to the polls. Second, the negative orphan county effect only appears to emerge if there is a Senate or gubernatorial race in the neighboring state with high levels of irrelevant advertising bleeding across state lines. If there is no race next door or if it is a less intense one, residents of orphan counties are just as interested and just as likely to vote in their home state elections as their non-orphan counterparts. Finally, the analysis reveals that high levels of irrelevant information suppress interest and turnout in an election. Perhaps not surprisingly, voters who are inundated with information about candidates who do not matter to them are less inclined to vote.

Conclusion

For decades, political scientists have been refining their understanding of why some citizens participate in elections while others abstain. Their search has identified a host of individual, institutional, and contextual factors that affect turnout. This analysis adds two more factors, one institutional and the other contextual, to the list: residing in an alien media market and being exposed to irrelevant information. Midterm and statewide elections make state lines salient. As others have, our research recognizes that boundaries matter in American politics. Cho and Nicley (2008) characterize state lines as "dynamic

social institutions that create spaces . . . of exclusion and inclusion, restriction and integration, isolation and community" (p. 804). We augment this conception by recognizing that voters exist in two spheres in American politics, each with borders, but the borders are incongruous. One sphere is their titular and official political identity, a role cast by their state of residence, which determines the registration rules, timing, protocols, and candidates faced by the potential voter. But the other sphere has developed independent of state boundaries: the urban center with its media market. Those in orphan counties must contend with both spheres. While living in an orphan county does not guarantee that one will see only irrelevant political information, it does mean that local news sources and political advertising will generally be concerned with a "foreign" state.

This finding should be particularly worrisome for Senate or gubernatorial candidates in states with orphan counties. Not only do they have to contend with the difficulties, expense, and inefficiencies of communicating with such voters, but they must also contend with the fact that orphan counties are often being barraged by irrelevant information from a race next door that will discourage them from turning out on election day.

The findings here also do not contain much good news for those who believe that spending campaign dollars will spur citizens to vote. In addition to demonstrating the negative effect of irrelevant advertising on turnout, our analysis confirms what others have found: that relevant advertising does not engender higher levels of interest or turnout among the electorate. When controlling for the effect of irrelevant ads and other known correlates of political participation and civic attention, campaign spending appears to yield little in terms of turnout or voter interest. The inability of relevant information to engage voters makes the significantly negative effect of irrelevant ads on interest all the more remarkable.

Notes

1. The authors acknowledge that media markets frequently cross state boundaries (Althaus & Trautman, p. 828), but their analysis does not address the issue.

2. CMAG did run a two-state pilot study in 1998. It has not released the 2006 data yet.

3. We refer to our units as counties even though we are considering counties, parishes, and non-county areas common in Virginia (though they exist elsewhere) that exist beyond counties. Hawaii and Alaska are omitted.

4. We classified the "native" portion of media markets based on population. Whichever state within a media market held the plurality of the voting age population was considered the "native" state.

5. Following others (Abramowitz, 1988; Shaw, 2006), we transform our measure of campaign advertising into logged advertising to acknowledge the diminishing nature of its assumed effect at higher values (i.e., the 500th ad is thought to have less impact than the first). We do not differentiate between candidate, party, and interest group ads since our main concern is distinguishing between those ads that are relevant for a voter's electoral decision and those that are not. Also, because the natural logarithm is undefined at the value of zero, we added one to the number of ad airings before the algorithm was taken.

6. We also tested 3-, 7-, and 10-day measures. In line with the Hill et al. (2008) analysis, we found that the 3- and 10-day measures were weaker than the 5-day measure. The 7-day measure yielded results that were virtually identical to the 5-day measure.

7. These distributions are for orphan and non-orphan counties in states with Senate and/or gubernatorial races.

8. The coefficient indicating the effect of relevant ad airings in non-orphan counties is negative (-0.2) but not statistically significant.

9. One reviewer suggested that the effect of irrelevant information, as well as the orphan county effect that we have identified here, might capture a general sense of alienation that residents of such locations feel because they live so far from their state center. To test this alternative hypothesis, we created a dummy variable to identify counties that lie along a state or international border. As Cho and Nicley (2008) point out, borders are not only "sites of division but also of interaction" (p. 3), which means residents of border counties are more likely to shop, work, and socialize in a neighboring state. As a result, residents of such border counties are more likely to integrate elements of another state's (or country's) identity and to feel less like they belong to their own state. When this border variable was included in the models discussed here, it did not significantly change the results.

10. Previous research has found logged measures of advertising are also appropriate for individual-level analyses (Stevens, 2008).

11. The two variables are highly associated ($\chi^2 = 649.5$, $p \leq .001$), and we combine them because of their inherent comparability and for purposes of simplifying the presentation of our inferences.

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