Do Presidential Campaign Advertisements Matter for Early Voter Turnout?

by

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Abstract

Nearly half of voters cast their ballots before Election Day, according to the United States Election Assistance Commission (2016), giving presidential campaigns the ability to drive voter turnout concertedly. Yet, initial findings on the impact of early voting reforms on turnout find that where there is high early voting, there is often less overall turnout in a given election. Previous studies, however, did not examine whether campaign advertisements effectively increase early voter turnout. Using early voting turnout data and presidential advertising spending data for the battleground states of Iowa, Colorado, and Ohio during the 2012 and 2016 elections, I examine whether presidential campaigns influence turnout week-to-week before Election Day and examine the average effects of campaign television advertising on early voter turnout using difference in difference estimation. I hypothesize that there is a strong positive relationship between changes in turnout and changes in advertising. With exception to both Republicans and Democrats in Iowa with advertising spending leading turnout by one week, I find little support for the hypothesis of a strong positive relationship between advertising spending and early voter turnout. These results are consistent with previous findings and shows that campaigns are not effectively increasing early voter turnout. In addition, presidential campaigns do not respond to changes in early voter turnout. The finding that campaigns are not effectively impacting early voter turnout suggests that early voting is about convenience, not boosting turnout.

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Introduction

In modern American politics, there is no single Election Day. In fact, in three states, voting is entirely done by mail. In the most recent election, over four in ten voters cast their ballots before Election Day (2016 Election Administration and Voting Survey 2016). Early voting is any method whether in-person, absentee (excuse or no-excuse), or universal vote-by-mail, where the eligible voter can cast their ballot before Election Day.

Ironically, early voting is a back to the future sort of phenomena. Early voting traces its roots to the beginning of the United States, where for practical reasons, not everyone could travel miles to reach a polling booth in time for Election Day. In fact, the Second Congress of the United States allowed for a 30-day period for presidential electors to be selected.[1] Recently, early voting re-emerged beginning in the 1990s and rose significantly since then (McDonald 2016).

Today, there is a contentious national political debate surrounding early voting. Many Republicans argue that early voting hinders voter integrity by increasing the potential for voter fraud (Fund 2014). Democrats, on the other hand, view early voting as part of their fundamental right to vote due to the potential disenfranchisement of "working-class voters who can't afford to wait" in line to vote on Election Day (Ollstein and Lerner 2016).

Some state legislatures such as those in Ohio, Florida and North Carolina passed laws to shorten the period of early voting, and each of these laws faced intense litigation in the courts. Florida looked to shorten their early voting period from 12 days before Election Day to 8 days

[1] "An Act relative to the Election of a President and Vice President of the United States, and declaring the Officer who shall act as President in case of Vacancies in the offices both of President and Vice President." United States Statutes at Large/Volume 1/2nd Congress/1st Session/Chapter 8.

and faced opposition from U.S. Attorney General Erich Holder and the United States Justice Department, as well as Congresswoman Corrine Brown. After litigation in the United States District Court for the District of Columbia, the Justice Department agreed in *Florida* v. *United States of America* to allow for the law to remain in effect after the State of Florida allowed for longer hours at the polls during the early voting period (Perez 2012). In Congresswoman Brown's case, *Brown* v. *Detzner,* the judge denied the plaintiffs' motion for preliminary injunction for failing to demonstrate that the law infringes on the right to vote for African Americans (*Brown* v. *Detzner* 2012). Similarly, the Sixth Circuit U.S. Court of Appeals and the U.S. Supreme Court upheld an Ohio law to shorten early voting by a week, finding that the Ohio law "applies even-handedly to all voters" and that "adopting the plaintiffs' theory of disenfranchisement would create a 'one-way ratchet' that would discourage states from ever increasing early voting opportunities" (*Ohio Democratic Party* v. *Husted* 2016). In a more controversial case regarding several election law reforms, including a one-week shorter early voting period, in North Carolina, the U.S. Supreme Court denied the *writ of certiorari* to a decision by the U.S. Court of Appeals for the Fourth Circuit ruling the law as having discriminatory intent (*North Carolina State Conference of the NAACP* v. *McCrory* 2016). The court's reasoning was not on the merits of the case, rather it was due to "the blizzard of filings over who is and who is not authorized to seek review in this Court under North Carolina law" (*North Carolina State Conference of the NAACP* v. *McCrory* 2016). Early voting reforms are increasingly controversial, which merits the importance of the study of their implications for campaigns and elections.

There are preliminary findings on the impact of early voting on the overall turnout of an election. Interestingly, many such studies find that in areas that implement early voting reforms

there is stagnant or decreased turnout after the change goes into effect (Burden et al. 2014; Larocca 2011; Fitzgerald 2005; Gronke et al. 2007). This presents an irony: access to voting is easier than ever, yet it does not appear to have a significant positive impact on turnout. This literature, and the contentious nature of changes in early voting reforms, motivates an important question: are presidential campaigns effectively influencing early voting turnout returns with their get-out-the-vote (GOTV) efforts?

Using early voting turnout data and presidential advertising spending data for the battleground states of Iowa, Colorado, and Ohio during the 2012[2] and 2016[3] elections, I examine whether campaigns are influencing turnout week-to-week before Election Day and determine the average effects of campaign television advertising on early voter turnout through difference in difference estimation. I hypothesize that there is a strong positive relationship between increases in advertising and turnout innovation. Change in turnout innovation and advertising innovation are the changes in advertising week-to-week. To determine whether a relationship exists, I conduct a series of tests for both 2012 and 2016 campaign years, and for lags with advertising

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[2] The 2012 advertising data were obtained from the Wesleyan Media Project, a collaboration between Wesleyan University, Bowdoin College, and Washington State University, and includes media tracking data from Kantar/Campaign Media Analysis Group in Washington, D.C. The Wesleyan Media Project was sponsored in 2012 by grants from The John S. and James L. Knight Foundation and The John D. and Catherine T. MacArthur Foundation. The opinions expressed in this article are those of the author and do not necessarily reflect the views of the Wesleyan Media Project, Knight Foundation, MacArthur Foundation or any of its affiliates.

[3] The 2016 advertising data were obtained from personal correspondence with Professor Ken Goldstein of the University of San Francisco. The data includes media tracking data from Kantar/Campaign Media Analysis Group in Washington, D.C. The opinions expressed in this article are those of the author and do not necessarily reflect the views of Ken Goldstein or the University of San Francisco.

leading turnout, with turnout leading advertising, and with no lag to establish which lag, or no lag, best fits the relationship.

There is a strong positive relationship between changes in advertising week-to-week before Election Day leading changes in week-to-week turnout by the voters' affiliated political party for both Republicans and Democrats in Iowa, but not in Ohio or Colorado. This shows increasing early voter turnout with television advertising is possible and other states not examined in this study may demonstrate similar findings as Iowa, but Iowa is only one of the three states examined in this study with such a relationship. Therefore, I find little support for the hypothesis of a strong positive relationship between increases in campaign advertising spending and increases in early voter turnout. Furthermore, I find that presidential campaigns are not responding to early voter turnout with changes in campaign strategy. It appears that early voting is not about increased turnout, rather it is about increased convenience.

Early Voting and Turnout

Early literature on boosting turnout proposed institutional reforms, which many scholars suggested would maximize turnout. Such reforms include weekend voting, fewer elections, and even large-scale systematic reforms such as proportional representation and compulsory voting (Lijphart 1997, 1). One such reform is early voting—where voters can cast their ballot several days and weeks before election day at a variety of voting locations or by a mail-in absentee ballot. Academics like Lijphart would suggest that institutional measures like early voting that make voting more convenient would be an "effective enhancer of turnout" (1997, 2). Another foundational study by Steven Rosenstone and Raymond Wolfinger (1980, 61-62) made a similar argument: voters stay home because voting is difficult. Thus, they argue that making voting more convenient would produce the opposite effect: increasing turnout.

The focus of the academic community on institutional reforms to increase voter turnout intensified as a result of relatively low voter turnout relative to the voting rights extensions in the past century. The problem: more people are eligible to vote, yet a smaller proportion is voting (McDonald 2014). Counterintuitively, this conundrum is occurring after several voting reforms such as the expansion of no-excuse absentee voting, and the adoption of national voting standardization. Such nation-wide reforms include the Motor Voter Act of 1993 (NVRA), which expanded the ability for citizens to register to vote in government offices and increased standardization such as registering voters when receiving or renewing their driver's license. Its stated purpose is to, "establish procedures that will increase the number of eligible citizens who register to vote in elections for Federal office" (Motor Voter Act 1993). Another reform is the Help America Vote Act (HAVA) of 2002 which was intended to increase the accessibility of

polling locations, standardize voting machines, allow for provisional ballots, and created the Election Assistance Commission. One of its stated purposes is to educate, "voters concerning voting procedures, voting rights, and voting technology" (Help America Vote Act 2002). Both the NVRA and HAVA aimed to increase voter involvement and improve the integrity of our elections, yet turnout did not increase as many in the scholarly community suggested.

With significant expansions of the ability to vote early, we should expect an improvement in voter turnout (Lijphart 1997, 2). The limited studies that do exist regarding the effect of early voting on turnout reveal that early voting is inconsequential, and potentially damaging. Fitzgerald finds that "most voting reforms do not stimulate turnout" (2005, 855). These findings, which include early voting, show that the factors for voters to turnout are "less about convenience and costs than originally thought" (Fitzgerald 2005, 856). These findings suggest that turnout comes from voter engagement rather than election law reform. In other words, citizens that are already predisposed to be politically engaged may be more likely to register and vote and absorb the "costs" associated with voting. Similarly, Gronke, Rosenbaum, and Miller (2007, 639) find that early voting may have other benefits, but not turnout and that the only early voting mechanism that has a small positive effect on turnout is voting by mail. They find that while more people are voting early, more people are not registering and voting.

More recent research by Burden et al. (2014, 95), finds that early in-person voting hurts voter turnout. This result, which they recognize as "counterintuitive," is broken up into the direct and indirect cost of election reforms. The direct forms being the law change itself and indirect forms being the effect on campaigns and motivations of the voters. The research finds that "early voting decreases county turnout by 2.7 percentage points" (Burden et al. 2014, 107). Larocca

also has a similar finding in 2000, 2004, and 2008 presidential elections that early voting has a "negative and statistically significant correlation with turnout in all three elections" (2011, 76). They hypothesize that the diffusion of mobilization efforts and media attention may underlie their finding. They conclude that early voting only makes voting convenient but it "does not reduce the overall cost of voting" (Larocca and Klemanski 2011, 96). Similar to Burden et al. (2014), Larocca (2011), Fitzgerald (2005), and Gronke et al. (2007), Neeley and Richardson (2001) find that early in-person voting has no significant mobilization effect. Furthermore, Neely and Richardson (2001) find that early voting simply provides more convenience to people already predisposed to participating in an election and that states with limited financial resources should focus on other ways to engage the electorate.

This early voting and lower turnout conundrum is the motivating literature behind my project. Specifically, whether get-out-the-vote (GOTV) efforts from a presidential campaign positively influence early voting during the early voting period. This research departs from previous research in that no studies have examined whether campaigns effectively influence early voter turnout.

Presidential Campaign Operations and Strategies

In order to examine this research question, I make several assumptions based upon literature in political science. Namely, I assume that presidential campaign advertising is a tool campaigns use to drive turnout of their supporters, that decisions of allocating campaign advertising throughout the campaign is centralized, and that the focus of this advertising is on a few competitive battleground states.

Who makes decisions?

A campaign's strategy to drive turnout in support of their candidate is known as get-out-the-vote (GOTV). This may include, but is not limited to, television advertising, candidate rallies, direct mail, and phone-banking. Resource allocation decisions in presidential campaigns, as opposed to congressional or other state or local campaigns, are highly centralized, typically, "controlled directly by a handful of strategists at the national campaign headquarters" (Bartels 1985, 933). A modern study by Cann and Cole also confirms this observation (2010, 345).

Political campaigns also remain as the primary decision-makers when it comes to spending on advertising. Although outside groups such as political action committees have increased in influence since *Citizens United* v. *FEC*, this increase "coincided with a decline in ad sponsorship by parties" (Fowler et al. 2016, 462).

Spending on Advertisements

Television advertising is a significant component of GOTV efforts. Indeed, television advertising makes up a "substantial" proportion of GOTV efforts (Cann and Cole 2010, 347),

and is considered to be “one of the most important mechanisms that candidates use to appeal to voters” (Ashworth and Clinton 2006, 27). Another study observes that campaign advertisements make up, “the largest portion of the communications budget in campaigns for the most important elective offices and represents an important source of voter information about candidates” (Gerber et al. 2011, 135).

Presidential campaign advertising volume since 2004 has remained relatively consistent with historic levels of advertising volume, with the exception of the 2012 election (Fowler et al. 2016, 449). For instance, 2016 advertising spending was similar to 2004 and 2008; however, Hillary Clinton's campaign “spent vastly more on campaign advertising than did Donald Trump’s” (Fowler et al. 2016, 445). Even though campaign volume between election cycles and between candidates may vary, it is substantial nonetheless.

Battleground States

Advertising and GOTV efforts typically focus on perceived battleground states—those states where campaigns believe they could win with an investment of resources. It is intuitive that, “campaigns saturate closely contested ‘battle-ground' states in an effort to win electoral votes while largely ignoring other states” (Green and Schwam-Baird 2015, 159). Campaign advertisements were concentrated mainly in battleground states in presidential elections from 1980 to 2008 (Huang and Shaw 2009, 276), as well as in 2012 and 2016 (Fowler et al. 2016, 453).

Advertising and Turnout

There are mixed views on whether campaign advertising increases overall voter turnout. Some studies find that both positive and negative advertisements boost overall voter turnout (Goldstein and Freedman 2002, 721). Others "note the weak correlation between advertising volume and turnout" (Green and Gerber 2015, 117), but find that "the sheer volume of political ads is a poor predictor of voter turnout" (Green and Gerber 2015, 126). Television aside, Green and Schwam-Baird find, "a strong and statistically significant pattern of correlations between mobilization and participation" (2015, 159).

For this study, I assume that regardless of the real effect on turnout, campaigns purchase ads with the *intent* to drive turnout. Also, in 2011, the purported "first large-scale experiment involving paid political advertising" by Gerber et al. finds that "televised ads have strong but short-lived effects on voting preferences" (2011, 135). This finding is important for this study. Not only does this finding show the potential turnout effect of campaign advertising, but it also heightens the importance of GOTV strategy due to the "short-lived effects" of campaign advertising.

I make several assumptions based on this literature. First, I assume that campaigns use political advertising with the intent persuade voters to vote for them and to drive turnout of their supporters. Second, decisions made by campaigns are centralized. Third, I assume campaigns behave rationally and strategically allocate their finite resources in a way that they believe is most effective at achieving victory, thus focusing their energy on battleground states.

Presidential Campaigns and Early Voting

News networks are quick to connect early voter turnout with the effectiveness of campaign GOTV efforts. A variety of outlets consistently use early voter turnout to indicate results on Election Day. In the 2016 election, a *Bloomberg* columnist exclaimed: "Clinton's turnout machine could prove decisive" (Hunt 2016). Even further, a political reporter for the *New York Times* suggested that early voting was better than Real Clear Politics polling in measuring campaign GOTV effectiveness and that it was "mind-blowing" that "TV folks" are not realizing this (Martin 2016). An *ABC News* analyst agreed in a Tweet, asking: how do "sketchy states polls" have more impact on predictions "in this election than actual early vote results? Bizarre" (Dowd 2016). These journalists have some evidence to back them up. Brian Schaffner, a political scientist at the University of Massachusetts at Amherst, wrote in the *Washington Post* that, "In general, the party breakdown of the early vote — whether 10 days or one day out — tells us a decent amount about how that state will go" (Schaffner and Rentsch 2016). His small study examined the 2008 and 2012 elections and determined that early voter turnout was a viable indicator of Election Day results. These sources suggest early voting can provide an indication of results on Election Day.

Presidential campaigns told a similar story and made several public statements citing early voter turnout as an indicator for their GOTV efforts. During President Obama's 2012 campaign, the campaign released a memo bragging that compared with 2008, early voter turnout is higher in counties that Obama won in 2012 relative to those McCain won in the same year (Fabian 2012). In a conference call with reporters, the campaign stated that their early voting

success was due to their "get-out-the-vote" operation and puts the Romney campaign at a considerable disadvantage (Herb 2012).

Hillary Clinton's 2016 campaign sang a similar tune. Robby Mook, Clinton's campaign manager, explained that there, "are more opportunities to vote early—either by mail or in person—than ever before" (McLaughlin 2016). In an interview, he concluded that, "…states like Nevada, North Carolina and Florida could be decided before Election Day, and that is why we are encouraging our supporters to cast their vote early because it is possible — because there is so much access to early voting — that we could build an insurmountable lead in those key states before Election Day" (McLaughlin 2016). A month before Election Day, Mook also said that they expected to win Ohio due to early voting returns (Peters 2016). Mook made it clear that the Clinton campaign thought they were effective at driving early voter turnout in favor of Clinton.

The 2016 Trump presidential campaign attitude toward early voting results was none different. Donald Trump himself stated in a rally that early voter turnout has increased in Florida and North Carolina and that, "they're all voting for Trump" (Mason 2016). Of course, the increase in turnout cannot mean that every vote was for President Trump; however, this indicates that the campaign believed they were influencing early voter turnout. Indeed, the campaign's communications advisor, Jason Miller, told *Breitbart News* that, "We can talk about polls… But let me tell you about real votes coming in now in Florida. Republican numbers at this point are a combination of absentee voting and early voting. Republican numbers are up seven percent, and Democrat numbers are down ten percent. So, what does that mean?" (McHugh 2016). Miller also added nuance to his statement, recognizing that Democrats usually vote earlier than Republicans in Florida (McHugh 2016). Miller stated that Trump has more early votes than Mitt Romney did

in 2012 and was outperforming his competitor, Hillary Clinton. It is clear that the Trump Campaign believed they were effective at influencing early voter turnout.

Mitt Romney's 2012 presidential campaign had a different view towards early voting. In a memo, the campaign claimed that those loyal to their party vote early, meaning those who typically vote Democrat or vote Republican, and who vote anyway, show up to vote early (Fabian 2012). In other words, driving early turnout does not necessarily produce new voters. The memo called this phenomenon "cannibalizing" Election Day support and stated that their early voting efforts targeted toward "low-propensity," infrequent voters (Fabian 2012). The Romney campaign felt that this would be a better way to boost their early voter turnout numbers instead of targeting their base as the Obama campaign did (Fabian 2012). Rich Beeson, political director for the Romney Campaign, described this as a "completely different strategy" than the Democrats when it comes to early voting (Galen 2012). Beeson was comfortable with early voting performance and cited a narrowing gap between the campaigns as the early voting window closed, and was confident about Election Day turnout (Galen 2012).

Now to examine the scorecard. The Obama and Trump campaigns were mostly correct in their predictions of victory in states based off of early voting. The Clinton campaign was dead wrong. The Romney campaign, even though they did not win the election, had a compelling theory of early voting "cannibalizing" Election Day support, which could help explain Hillary Clinton's loss in 2016. What each of these campaigns had in common is that they looked to influence early voter turnout to win the election, and the majority thought they were effective at influencing early voter turnout.

Obtaining Turnout Data

The easiest way for campaigns to obtain this information is from a state's secretary of state's office where they can request basic information on early voters (Koczela 2016). Requesting this periodically gives campaigns the ability to gauge change over time in early voter turnout. Many states make this information available to the public. Ohio provided weekly updates in 2012 and 2016,[1] Iowa provided daily updates in 2012 and 2016,[2] and Colorado[3] provided daily updates in 2016. Michael McDonald, an associate professor at the University of Florida, provided periodic updates from his Twitter account on turnout for Maine, North Carolina, Florida, and Iowa for 2016.[4] McDonald also posted periodic updates for several states in 2012 at his now-defunct website at George Mason University.[5] Although turnout data is typically readily available to campaigns, it is not for the general public. Of the data that is available to the general public, it was not made readily available until 2012 from my research.

[1] 2016 early voting turnout data available from the website of the Ohio secretary of state(https://www.sos.state.oh.us/media-center/press-releases/2016/). 2012 early voting turnout data was made available from personal communications with Emily Groseclose, the Legislative Liaison & Assistant to the Ohio Secretary of State.

[2] 2016 early voting turnout data available from the website of the Iowa secretary of state(https://sos.iowa.gov/elections/results/#11). 2012 early voting turnout data was made available from personal communications with Dawn Williams, the Director of Elections for the Office of Iowa Secretary of State.

[3] Colorado data were obtained both from their website (https://www.sos.state.co.us/pubs/newsRoom/pressReleases/news2016.html) and through personal communications with Megan Waples from the Colorado Secretary of State office.

[4] Michael McDonald's twitter account can be accessed here: https://twitter.com/ElectProject.

[5] McDonald posted updates on his now-defunct website: http://elections.gmu.edu/.

Campaign consulting and data-technology firms also provide data and analysis for campaigns. Firms such as Catalist provide data and data visualizations for early vote returns (Catalist n.d.). According to their website, early vote "reports update automatically as new early voting data are processed and released" (Catalist n.d.).

Recently, a new firm, VoteCastr, aimed to use real-time turnout data to predict election results. They partnered with *Slate* and the *Huffington Post* during the 2016 election to provide predictions on election day (Alter 2016). Leaders of the group claim that they are merely making public what campaigns already have. They claim campaigns use turnout data "to make game-day decisions about how to market to you…they are going to try and drive your voting behavior based on the information they're seeing about the race and how it's going" (Weekend Edition Saturday 2016). In other words, campaigns use early voting as a tool to influence early voter turnout.

Bottom line: Early voting turnout data is readily available to campaigns, whether directly from the secretary of state offices or through data analytic firms. Presidential campaigns care about early voting and look to influence it.

Hypothesis

The literature suggests that campaigns try to influence voter turnout with campaign advertising, and campaigns pay attention to early voter turnout. The question becomes: are campaigns effectively influencing early voter turnout with campaign television advertising, and is this reflected in relative changes week-to-week before Election Day and from election year to election year?

Change in turnout innovation and advertising innovation are the changes in advertising week-to-week. I hypothesize that there is a strong positive relationship between turnout innovation and advertising innovation.

To test this hypothesis, I conduct a series of tests. First, I determine whether changes in advertising week-to-week before Election Day is reflected in changes in week-to-week turnout by the voters' affiliated political party. Second, I determine the average effects of campaign advertising spending on early voter turnout through difference in difference estimation. These tests will show whether campaign advertising is influencing early voter turnout, where I expect to find a strong, positive relationship.

Data

States

I select states that are considered "battleground states" in the 2012 and 2016 elections with a large percentage of voters voting early during the presidential election. Unfortunately, this limited list of "battleground states" becomes even more limited due to the availability of turnout data. With this data limitation, the states with the most data available are Colorado, Iowa, and Ohio. Due to data limitations, I was not able to choose Pennsylvania, Wisconsin, Michigan, North Carolina or Florida.

I am unable to establish a control group, competitive "battleground" states with little early voting because all of the competitive battleground states have a significant amount of early voting. Comparing these states with non-competitive states would be dubious, as advertising volume would be significantly lower in non-competitive states and therefore would not make for an accurate comparison to study the impact of political campaigns on early voting.

Advertising and Turnout

To measure the distribution of political advertisements, I use data on all political advertisements in the largest media markets across the country available from the Wesleyan Media Project through technology developed by the Campaign Media Analysis Group (CMAG). Data is obtained for the years 2012 and 2016, which are the only years where accurate turnout

data is available for this analysis. This dataset of campaign advertisements is comprehensive and includes every political advertisement aired during each election year.[1]

Campaign advertisement data seems to be a good proxy to measure the intensity and distribution of GOTV resources because it has a time horizon available, thus the dataset tracks when the advertisements air. Also, campaigns spend a large amount of their budget on television advertising.

Other forms of data that available to me would not work for this project. Campaign finance data, for example, only indicates when resources are purchased, not necessarily when campaigns use them. Candidate travel schedules do not include surrogates, and recounting all campaign stops after the election is difficult. Campaign advertising, however, gives an accurate point in time for the exact times that campaigns expend GOTV resources.

The dataset from the Wesleyan Media Project has many variables; however, I look exclusively at the cost of advertisements aired each week before Election Day. For Iowa this is seven weeks before Election Day; for Ohio this is four weeks before Election Day; and for Colorado this is three weeks before election day. Data limitations force a weekly instead of daily analysis due to weekly reporting of advertising data from 2016.

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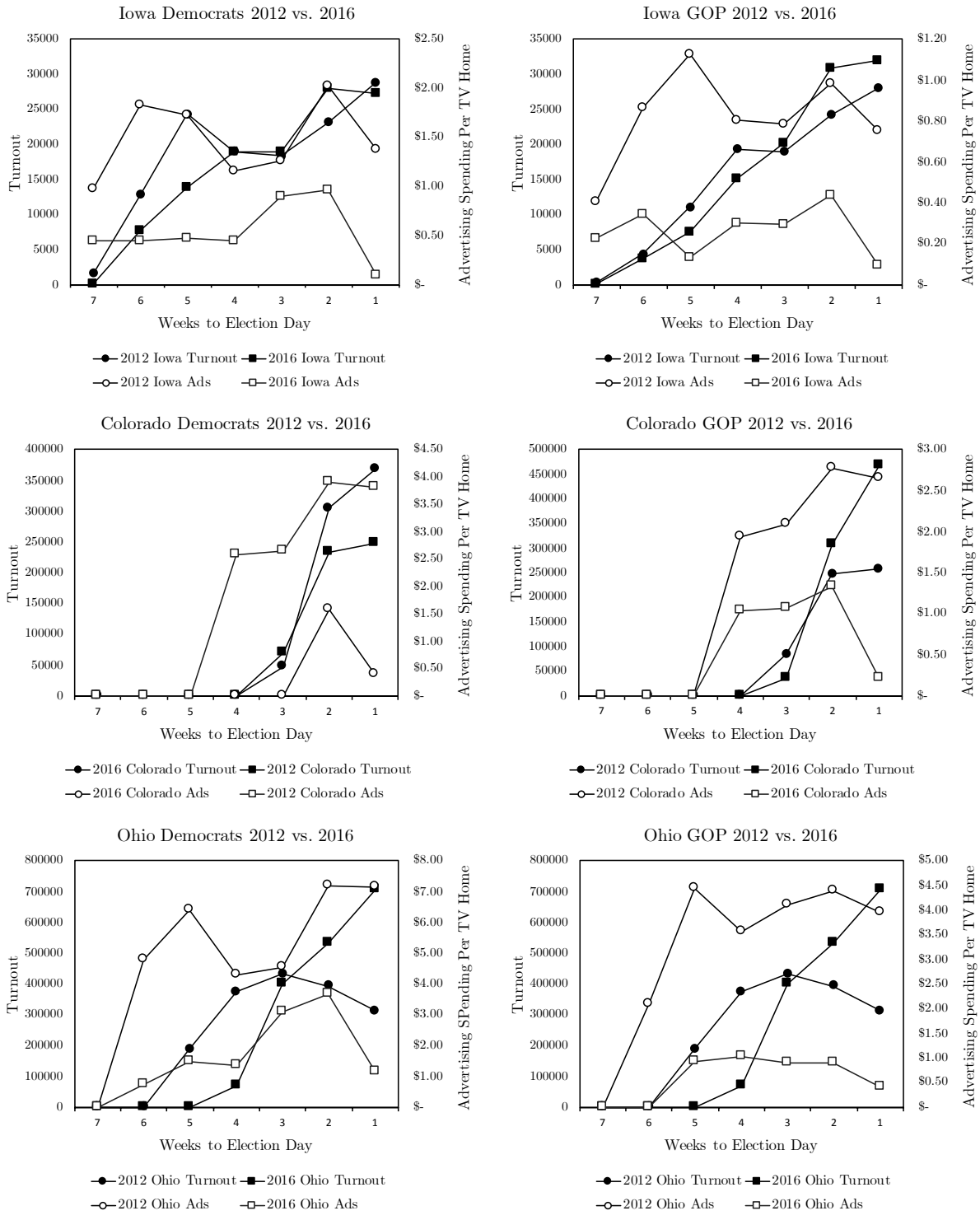
[1] Through the process of cleaning the advertising data for this project, I discovered a large mistake in the dataset that I corrected. For nearly 829,275 data observations, advertisements categorized as originating from a presidential campaign committee for both the Romney and Obama campaigns were categorized as sponsored by the political action committee, "Americans for Prosperity." The values for every other variable for these observations were consistent with exception to the input "Americans for Prosperity" as the advertisement sponsor. Therefore, this is likely incorrect, and its replacement should be the name of the campaign committee for either the Romney or Obama campaign. I notified the Wesleyan Media Project of this mistake.

The secretary of state offices for Colorado, Iowa, and Ohio provided the turnout data. Colorado data were delivered daily for each county. Iowa data were delivered daily for each congressional district. Ohio data were delivered weekly for each county. Campaigns can purchase advertising both by DMA and nationally. Advertisements purchased nationally through networks are not included in this dataset. From year-to-year, the proportion of advertising purchased locally as opposed to nationally by DMA may vary, and that information is not available for this study.

When pooled at the aggregate level, there are interesting patterns. First, television advertising begins slightly earlier than early voting, and television advertising appears more dispersed over time (Graph 1).[2] This suggests that political campaigns use television advertising to influence early voting. Second, the electorate voted in more significant numbers later in 2016 than in 2012. This could potentially prove misleading for campaigns in 2016 that rely on 2012 weekly turnout as a benchmark for performance. Third, the distribution of advertising for both parties is relatively similar; however, both parties spent significantly less money on advertising in 2016 than in 2012 (Graph 1).

[2] In this graph, and throughout the paper, turnout represents the number of people voting during each week and advertising spending is the amount of money spent on ads during each week. Advertising spending is normalized for inflation using the Consumer Price Index (CPI) and population using the number of homes with televisions in the DMA. There is more explanation on normalization at the end of this section.

Graph 1: Weekly Early Voter Turnout and Campaign Advertising Spending

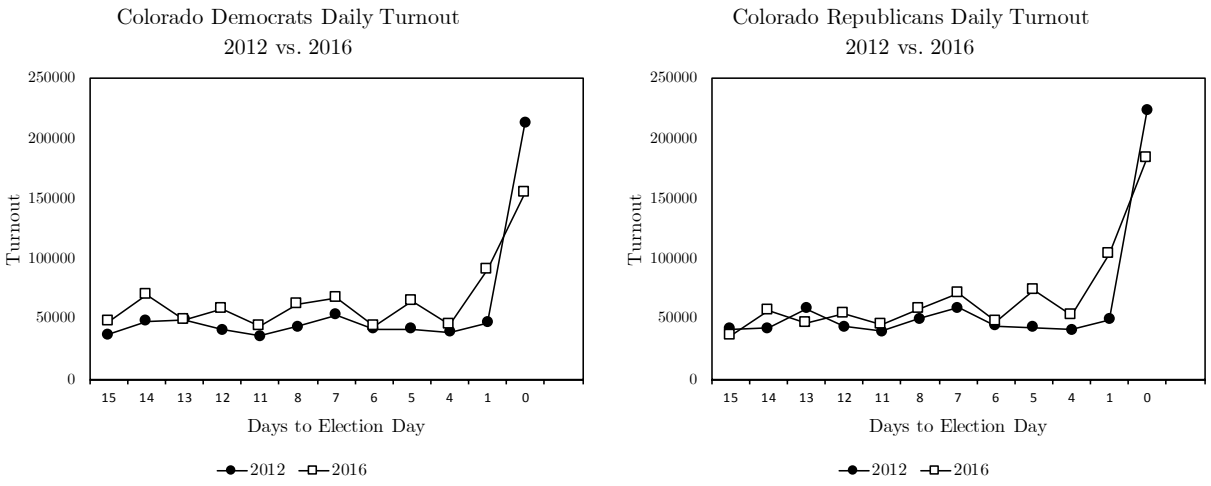


Note: 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

There were also some changes in election law that may have impacted the distribution of voter turnout in Ohio and Colorado. Ohio early voting was shortened by a week in 2014. The Ohio Democratic Party challenged this change in election law in the courts in *Ohio Democratic Party v. Husted* claiming this change had a disparate impact on minorities and was a violation of the Voting Rights Act. The Sixth Circuit U.S. Court of Appeals and the U.S. Supreme Court both denied the Ohio Democratic Party's request for a stay, upholding the law as it stands (*Ohio Democratic Party* v. *Husted* 2016). The distribution in turnout in Graph 1 reflects the shortened early voting period by one week in Ohio.

Colorado also experienced election law changes, but the voting period did not shorten as it did in Ohio. Colorado early voting beings 22 days, approximately three weeks, before election day; though, 2016 was the first general election in Colorado where all voters voted by mail (Underhill 2017). To address the change in Colorado, I examined the distribution of early votes in both 2012 and 2016. It appears that voting behavior did not significantly change (Graph 2). Since voter behavior did not significantly change, it is fair to compare early voter turnout between 2012 and 2016.

Graph 2: Colorado Early Voter Turnout



Note: Turnout data from the Colorado office of the Secretary of State.

Media Markets

The largest media markets were selected for each state. In general, from observing the overlap of media markets and counties, most media markets encompass entire counties. In Colorado and Ohio, only turnout data in the counties completely contained within the largest media markets are included in my calculations. In Iowa, the turnout data from congressional districts that best match media markets are used.

The media markets used in Colorado are Denver, Colorado Springs, and Grand Junction, the three largest. I did not include the Albuquerque-Santa Fe DMA which is the largest DMA in New Mexico and comprises only a few counties in Colorado.

The media markets used in Iowa are the Cedar Rapids, Des Moines, and Sioux DMAs. Since Iowa reports their early voting turnout data by congressional district, I matched the DMAs with the congressional districts that they overlap best with. The Cedar Rapids DMA matches

congressional district 1, and congressional districts 3 and 4 match the combined Des Moines and Sioux DMAs. All the other DMAs in Iowa comprise very few counties and are also large DMAs in other states. These DMAs include Sioux Falls (South Dakota), Mankato (Minnesota), Austin (Minnesota), Omaha (Nebraska), Moline (Illinois), Kirksville (Missouri), and Keokuk (Missouri).

The media markets used in Ohio are Cleveland, Cincinnati, Columbus, Dayton, Lima, Youngstown, and Toledo. I excluded Zanesville since the Trump campaign purchased no advertising there in 2016, and the Clinton campaign only purchased $70 in advertising for only the week before Election Day in the same year. There was only one data point that I could use, which is too few. I also excluded the DMAs with a large presence outside of the state: Ft. Wayne (Indiana), Steubenville (West Virginia), and Charleston (West Virginia).

There are a few problems with data reported from Ohio. Most importantly, the turnout data is not delimited by political party registration. This makes it difficult to compare campaign advertising by the campaign's political party with corresponding changes in turnout amongst those registered for the same political party. DMAs that lean heavily toward one political party or the other may show a stronger relationship between advertising and turnout for the dominant party. Nonetheless, it is interesting to investigate whether a relationship exists.

Campaign Advertising Categories

I only include campaign committees and coordinating committees in this study and exclude outside groups. I categorized advertising spending sources three ways: campaign committees, coordinating committees, and outside groups. I consider campaign committees to be

the actual candidate committee registered with the Federal Elections Commission. I consider coordinating committees to be political parties or joint committees that actively coordinate with the campaign committee. For example, I consider groups such as "Trump, Donald & Republican National Committee" as a coordinating committee. Outside groups are generally political action committees (whether national or local). For example, advertisements placed by "Priorities USA Action" supported Hillary Clinton, and "Great America PAC" supported Donald Trump.

Outside groups are not given the same advertising rates and access as political campaigns and coordinating committees which makes it dubious to pool that advertising data with that of campaign committees and coordinating committees. There are a number of laws and requirements for broadcasters that apply to congressional, senatorial, and presidential campaigns, namely that, "candidates are entitled to pay only the 'lowest unit charge' for campaign advertisements during the forty-five days preceding a primary election and the sixty days preceding a general election, and that broadcasters who permit a potential candidate to use their stations also must provide 'equal opportunities' to all other such candidates for that office" (Hundt 1996, 1090). This means that the cost to air advertisements for outside groups is potentially much higher than for campaigns. Therefore, this makes it difficult to compare outside group advertising spending to political campaigns and their coordinating committees because there is no way to control for this difference.

Normalizing

When political campaigns engage in media buying, they want to maximize their Gross Ratings Points (GRP), where each point is 1 percent of viewers in a media market or a target

audience (Goldstein and Freedman 2002, 725). The goal is to get the most GRPs with the least amount of money. In order to get Cost Per Rating Point (CPP), the cost of the advertisement is divided by the rating points of an advertisement. These ratings point measures can be tailored to fit the estimated targeted audience of the campaign. For example: instead of using the rating points for the entire audience of the program, they use the rating points for a specific demographic. Gross Ratings Points are the sum of all the ratings points for the entire campaign cycle.

Unfortunately, for my project, I do not have the same information that campaigns do when they buy advertisements. Therefore, I cannot compare campaign expenditures in each media market based upon rating points or Gross Ratings Points.

Instead, the way I will normalize campaign spending between media markets is by the estimated "TV homes" within those markets. Nielson, a large market research firm, produces "Market Universe Estimates" of the number of "TV homes" within each media market. For this project, I use universe estimates for the 2016-2017 television season for the 2016 advertising data (The Nielsen Company 2016). For the 2012 advertising data, I use the universe estimates from the 2012 to 2013 television season (The Nielsen Company 2012).

In addition to normalizing for "TV homes," I also control for inflation. When comparing 2012 and 2016, I will use the Consumer Price Index (CPI) in 2016 dollars to control for the little inflation that occurred between those years.

Advertisement costs for each week are adjusted both for inflation and population through "TV Homes." This is a better measure to compare more than one election cycle in more than one state because it controls for the cost of advertising both within and across election cycles.

Furthermore, outside group spending is not pooled with candidate and political party spending due to different rates charged by broadcasting networks for advertising spots.

Methods

Lags

Campaigns can adjust their television advertising rather quickly. According to professor of politics at the University of San Francisco, Ken Goldstein, campaigns can change their advertising within a day or two, but they "usually buy by the week."[1] Goldstein also served as president of Kantar Media CMAG, which is a campaign and political advertising consulting firm. Goldstein elaborated that it varies between campaigns how far in advanced they purchase advertising spots, "the Clinton campaign made most of their buys long before the election; Trump was more last minute."[2] Since there is a range between a day to a week before Election Day where campaigns adjust their advertising spending, I use a lag in the data to reflect this reality.

To focus on the research question, the most intuitive lag would place advertising leading turnout by one week. In other words, the turnout this week was influenced by the advertising last week. For the sake of research and comparison, I also include results for no lag, and with a one-week lag with turnout leading advertising.

[1] Personal interview with Professor Ken Goldstein of the University of San Francisco.
[2] Ibid.

Combining Media Markets (DMAs) and States

Chow tests were conducted for each lag, and for the data with no lag to see which data groups can be pooled for analysis.[3] If the F statistic is above the critical F, then the same model can represent two groups. Otherwise separate models must be used. Table 1 has each p-value of each group of data. If the $p < .05$ the null hypothesis should be rejected and the data cannot be pooled; however, if $p > .05$ we fail to reject the null hypothesis and the data can indeed be pooled.

Since my analysis focuses on a one-week lag with advertising leading turnout, I focus on Chow test results for ads first. The Chow test reveals that between parties, and between states, most groups cannot be combined (Table 1). Within each state, for both democrats and republicans, Des Moines/Sioux and Cedar Rapids groups can be combined. The number of data points for each group within Colorado and Ohio are so few that I pooled those data without conducting a Chow Test. For Republicans, the Cedar Rapids DMA can also be combined with Colorado DMAs, and the Des Moines/Sioux DMAs with the Ohio DMAs. There is more data for Democrats that can be pooled. For Democrats, the Cedar Rapids and Des Moines/Sioux DMAs can be combined with Ohio and Colorado DMAs. Iowa DMAs and Ohio DMAs can be combined for Democrats as well.

For both parties, the groups in Iowa can be pooled, and they have the most data points. Ohio has the second most data points; though, the turnout is not delimited by political party

[3] I use the statistical software from the R Project which is "a language and environment for statistical computing" (R Core Team 2017). For the Chow Test, I use the open source package available from the website "RDocumentation" (Zhao 2018).

registration as it is in Iowa and Colorado. Colorado, unfortunately, has very few data points. This is especially the case with the one-week lag with turnout leading advertising, where there is a total of six data points, and some weeks within some DMAs with no advertising spending. I still include Colorado in this study to see if the trends seen in Iowa and Ohio are also seen in Colorado.

Based on the Chow Test, campaign advertising and early voting turnout is grouped by political party, Republican and Democrat, and by state. In Iowa, which has more data points than Colorado and Ohio, I created two additional groups for the Cedar Rapids DMA and the Des Moines and Sioux DMAs. These groups will be used in each test throughout this study.

Table 1: Chow Test

	Ads First	No Lag	Turnout First
Between Parties			
Democrats vs. Republicans	0.313*	0.104*	0.018
Cedar Rapids (D) vs. Cedar Rapids (R)	0.701*	0.799*	0.723*
Des Moines + Sioux (D) vs. Des Moines + Sioux (R)	0.030	0.350*	0.365*
Iowa (D) vs. Iowa (R)	0.230*	0.809*	0.650*
Colorado (D) vs. Colorado (R)	0.002	0.082*	0.882*
Ohio (D) vs. Ohio (R)	0.001	0.003	0.005
Within Party			
Democrats			
Cedar Rapids vs. Colorado	0.032	0.261*	0.921*
Cedar Rapids vs. Ohio	0.563*	0.898*	0.928*
Des Moines + Sioux vs. Colorado	0.100*	0.336*	0.618*
Des Moines + Sioux vs. Ohio	0.986*	0.758*	0.483*
Colorado vs. Ohio	0.002	0.129*	0.666*
Iowa vs. Colorado	0.008	0.155*	0.764*
Iowa vs. Ohio	0.666*	0.728*	0.550*
Republicans			
Cedar Rapids vs. Colorado	0.074*	0.942*	0.613*
Cedar Rapids vs. Ohio	0.014	0.011	0.018
Des Moines + Sioux vs. Colorado	0.000	0.100*	0.509*
Des Moines + Sioux vs. Ohio	0.541*	0.894*	0.808*
Colorado vs. Ohio	0.000	0.005	0.153*
Iowa vs. Colorado	0.004	0.556*	0.882*
Iowa vs. Ohio	0.036	0.082*	0.155*
Within State			
Des Moines + Sioux (R) vs. Cedar Rapids (R)	0.125*	0.174*	0.127*
Des Moines + Sioux (D) vs. Cedar Rapids (D)	0.615*	0.911*	0.838*

Note: * indicates that groups can be combined. 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

Test 1

To examine whether there is a relationship between the change in advertising week-to-week (advertising innovation) before Election Day and the changes in turnout week-to-week (turnout innovation) before Election Day, I graph both these changes (change in innovation) to see a week-to-week trend and then conduct a sign analysis with contingency tables to establish whether a relationship exists and determine the significance of the relationship.

First, for graphing the change in turnout and advertising innovation, I convert cumulative turnout and advertising numbers into weekly data points. I then subtract data points from successive weeks to arrive at a figure for the change in turnout innovation. These figures are then plotted on a line graph to examine the week to week trends in the change in turnout innovation. This will reveal a hint to the strategy of campaigns and whether a positive change in advertising corresponds to a positive change in turnout or vice versa.

Second, to address the issue of not having the same units of advertising and turnout and to determine the dominant strategy for each campaign in each state or DMA, I conduct a sign analysis in a contingency table. I convert the change in innovation data for both turnout and advertising into signs: positive, negative or neutral. I develop a two-by-two table for each combinable group determined by the sign analysis. The sum of the frequency of each incidence of pairs of signs comprises each quadrant. To assess the dominant strategy, or direction, of the relationship I calculate the log odds ratio of each contingency table (group). A log odds ratio greater than 0 indicates a positive relationship, and a log odds less than 0 indicates a negative relationship. Then to assess the significance of the relationship, I first divide the log odds ratio by

the standard error estimate (National Institute of Standards and Technology n.d.). If the resultant absolute value is greater than 1.9592, for a level of significance at 0.05, I reject the null hypothesis that there is no relationship between variables. If the resultant absolute value is less than 1.9592, I fail to reject the null hypothesis that there is no relationship between the change in innovation for early voting advertising and turnout.

The above test, however, needs a large sample size. Due to the small sample size in some of these groups, there are complications with assessing statistical significance using log odds ratios and their standard error estimates. Therefore, I also use Fisher's exact test for count data which is a more precise method of determining the significance of the relationship (R Core Team n.d.). For a significance level of 0.05, if $p > 0.05$ I fail to reject the null hypothesis that there is no relationship between the variables. If $p < 0.05$, I reject the null hypothesis, and there is indeed a relationship between the change in innovation for early voting advertising and turnout.

Each of these tests is conducted for both 2012 and 2016 campaign years, and for lags with advertising leading turnout, with turnout leading advertising, and with no lag. This will help establish which lag, or no lag, best fits the relationship should it exist.

Test II

To assess whether there is a relationship between the average change over time of turnout relative to changes in campaign advertising spending and to make this a testable hypothesis, I conduct a simple regression analysis using difference in difference estimation. This is the difference between campaign advertising and voter turnout between 2012 and 2016 presidential

campaigns. This should determine if relationship exists between the change in advertising over time impacts the change in turnout over time.

To conduct this analysis, I will use a difference-in-difference analysis between the election years of 2012 and 2016. I then chart the coefficients for each group in addition to the standard errors. For a significance level of 0.05, if the corresponding p value is greater than 0.05, I fail to reject the null hypothesis that there is no relationship between the variables. If $p < 0.05$, I reject the null hypothesis, and there is indeed a relationship between the change in innovation for early voting advertising and turnout. This test is also conducted for lags with advertising leading turnout, with turnout leading advertising, and with no lag.

Challenges

Changes in Fundraising and Ad Spending

In reality, campaigns election year to election year do not have the same fundraising resources to spend on television advertising. Hillary Clinton spent a similar amount of money on television advertisements as the nominee in 2012, President Barack Obama. However, President Donald Trump spent almost half as much as Mitt Romney did in 2012, and Trump's spending began much later than Mitt Romney (Goldstein et al. 2016).

This also brings another important challenge: campaigns determine their GOTV strategies based on a variety of factors. The Trump campaign might take different factors into account than the Clinton campaign or even the Romney Campaign. Campaign strategies and messages change dramatically election year to election year.

Media Buying

The Trump campaign switched media buying agencies to National Media Research nearly a month before the election.[1] Furthermore, campaign advertising obviously does not reflect digital advertising, which may have comprised a larger proportion of advertising spending for the Trump Campaign for the 2016 election.[2]

[1] Personal interview with Professor Ken Goldstein of the University of San Francisco.
[2] Ibid.

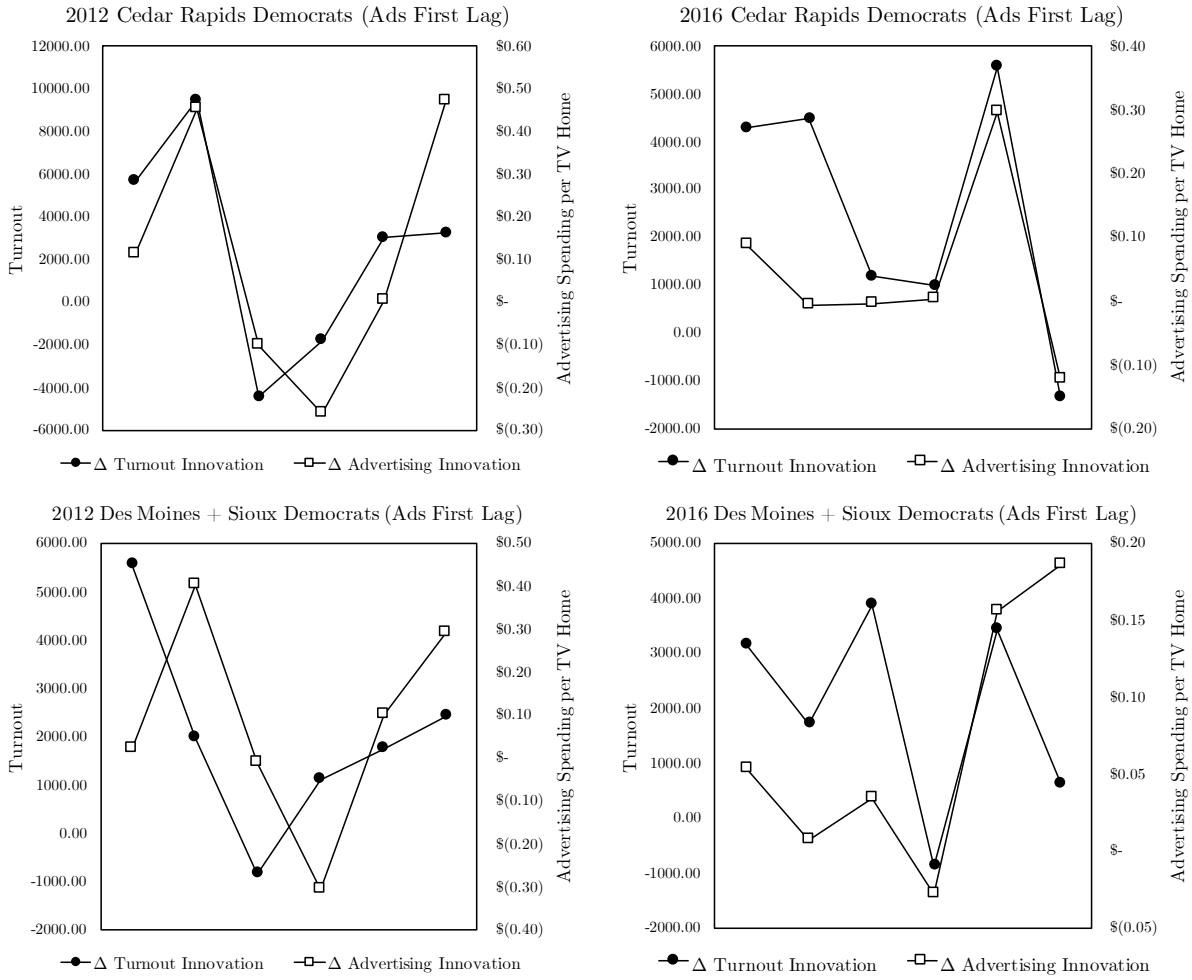
With these challenges taken into account, I am still confident that the methodology outlined in this paper provides an effective means of determining the impact of campaign advertising on early voter turnout.

Results

Test 1

When graphing the weekly change in advertising innovation and change in turnout innovation before Election Day within each political party in 2012 and 2016, there is some evidence that supports the hypothesis that there is a positive relationship between changes in turnout and advertising innovation with the lag having advertising lead turnout. The strongest evidence is in Iowa. For Democrats in the Cedar Rapids DMA in 2012 and 2016 and the Des Moines/Sioux DMAs in 2016 there appears to be a strong relationship between change in advertising and turnout innovation (Graph 3). This relationship appears weaker for Democrats in the Des Moines/Sioux DMAs in 2012. The relationship is quite striking, it appears that increases in campaign advertising match increases in early voter turnout a week later. These graphs provide the strongest support of my hypothesis, that there appears to be a coordinated strategy to increase early voter turnout and it appears to work.

Graph 3: Iowa Democrats

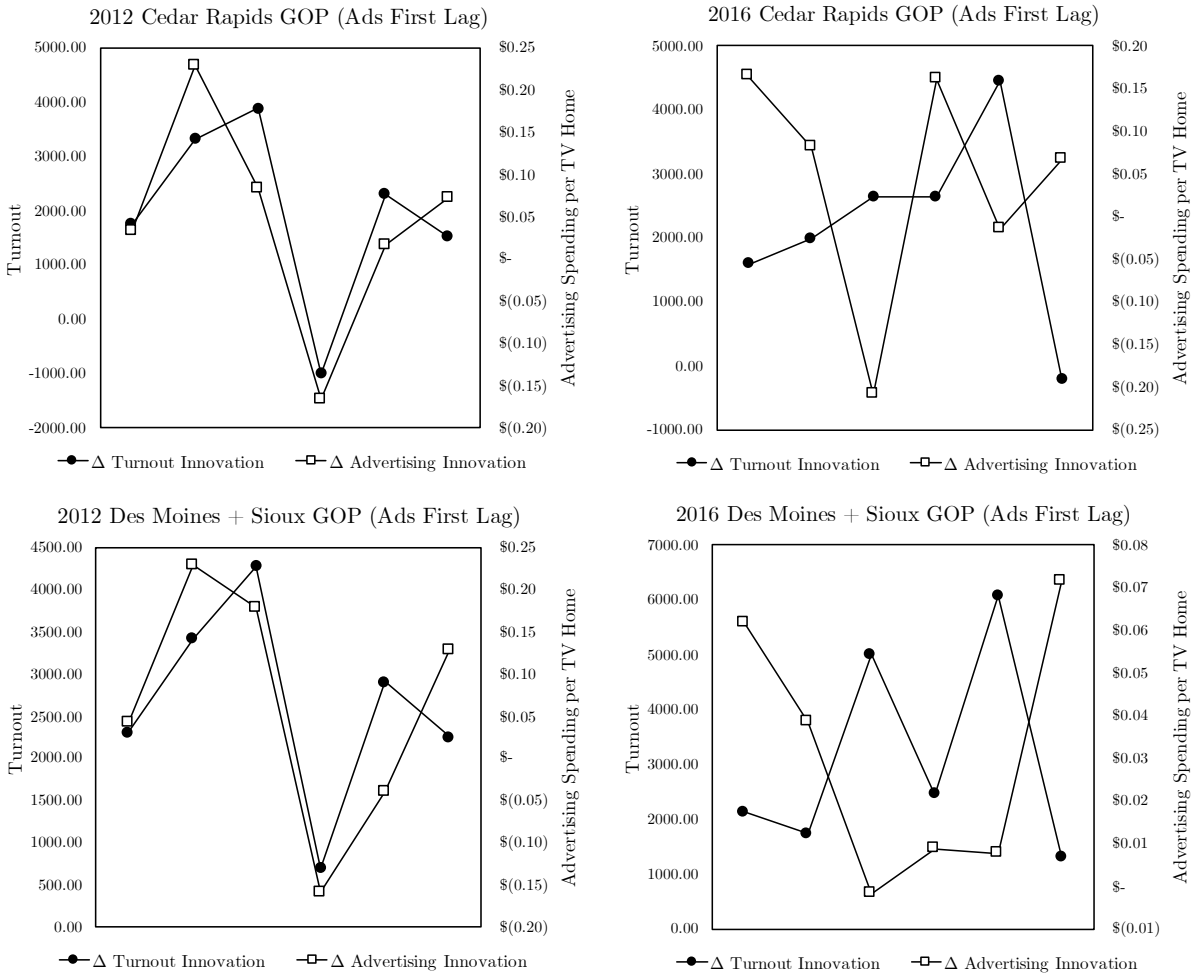


Note: 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

There are very interesting results for Republicans. Graph 4 shows that for the 2012 election in the Cedar Rapids, Iowa DMA and the Des Moines/Sioux DMAs there appears to be a strong relationship. However, this relationship completely disappears in the 2016 election in each of the DMAs. This reveals that the advertising strategy for the Trump campaign does not appear to influence early voter turnout. The difference between 2012 and 2016 is striking, it appears that

the Romney campaign was effectively influencing early voter turnout, but it appears the Trump campaign completely lacked this same strategy in 2016.

Graph 4: Iowa Republicans



Note: 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

To establish the dominant strategy for each campaign in each group (state or DMA), the sign analysis in a contingency table reveals that the dominant strategy has advertising increases leading turnout increases by a week (Table 2). This means that the quadrants having advertising increases matching turnout increases, and advertising decreases matching turnout decreases,

were dominant. This lends support to the hypothesis of the positive relationship between increases in advertising and increases in early voter turnout. In the contingency table, this relationship is strongest in both 2012 and 2016, for both parties in Iowa and Colorado, but not Ohio.

Table 2: Advertising and Turnout Innovation Converted to Signs

2012

Democrats					**Republicans**				
			Turnout					Turnout	
Summary			-	+	**Summary**			-	+
	Ads	-	10	7		Ads	-	4	9
		+	5	21			+	10	20
Iowa			-	+	**Iowa**			-	+
	Ads	-	3	1		Ads	-	1	2
		+	0	8			+	0	9
Cedar Rapids			-	+	**Cedar Rapids**			-	+
	Ads	-	2	0		Ads	-	1	0
		+	0	4			+	0	5
Des Moines + Sioux			-	+	**Des Moines + Sioux**			-	+
	Ads	-	1	1		Ads	-	0	2
		+	0	4			+	0	4
Ohio			-	+	**Ohio**			-	+
	Ads	-	7	6		Ads	-	3	7
		+	5	7			+	9	6
Colorado			-	+	**Colorado**			-	+
	Ads	-	0	0		Ads	-	0	0
		+	0	6			+	1	5

2016

Democrats					**Republicans**				
			Turnout					Turnout	
Summary			-	+	**Summary**			-	+
	Ads	-	2	13		Ads	-	1	14
		+	1	25			+	1	21
Iowa			-	+	**Iowa**			-	+
	Ads	-	2	2		Ads	-	0	3
		+	0	8			+	1	8
Cedar Rapids			-	+	**Cedar Rapids**			-	+
	Ads	-	1	2		Ads	-	0	2
		+	0	3			+	1	3
Des Moines + Sioux			-	+	**Des Moines + Sioux**			-	+
	Ads	-	1	0		Ads	-	0	1
		+	0	5			+	0	5
Ohio			-	+	**Ohio**			-	+
	Ads	-	0	10		Ads	-	1	9
		+	1	14			+	0	9
Colorado			-	+	**Colorado**			-	+
	Ads	-	0	1		Ads	-	0	2
		+	0	3			+	0	4

Note: 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

It continues to appear that the results from Iowa lend the most support for the hypothesis that a positive relationship exists between changes in turnout and advertising innovation before Election Day. After calculating a log odds ratio for each of these groups (DMA and state) within each party for each year, it appears that the dominant strategy lends support to the hypothesis of a positive relationship between change in advertising and turnout innovation (Table 3).

After dividing the log odds ratio by the standard error estimate in each group, there are three resulting absolute values greater than the critical value 1.9592 at a level significance 0.95 for Democrats in 2012 (Table 3). Those groups are Democrats pooled as a whole, the combined Iowa and Ohio DMAs, and the combined Iowa DMAs. Unfortunately, the result with Democrats pooled as a whole is not robust enough as Colorado data cannot be pooled with Iowa or Ohio data according to the Chow test. The Cedar Rapids DMA in 2012 and the Iowa DMAs in 2016 for Democrats do not meet this level of significance, but their absolute values are above the critical value of 1.65 at a level of significance of 0.90 (Table 3). The Fisher's exact test for count data confirms each of these findings with the same significance levels (Table 3). For these DMAs, I reject the null hypothesis; therefore, there is indeed a relationship between the change in innovation for early voting advertising and turnout.[1]

[1] Results for the other lags are in Appendix 1.

Table 3: Advertising First Lag

		2012			2016	
Pooled		**t**	**p**		**t**	**p**
Democrats	1.700	**2.515**	**0.011**	1.147	1.056	0.543
	(0.676)			(1.086)		
Republicans	-0.078	0.114	1.000	0.394	0.327	1.000
	(0.687)			(1.204)		
Democrats						
Iowa + Ohio	1.373	**1.992**	**0.050**	1.099	1.007	0.544
	(0.689)			(1.091)		
Iowa	3.681	**2.101**	**0.018**	2.833	**1.659**	**0.091**
	(1.752)			(1.708)		
Colorado	2.565	1.034	1.000	0.847	0.381	1.000
	(2.481)			(2.225)		
Ohio	0.453	0.584	0.695	-0.776	0.461	1.000
	(0.776)			(1.683)		
Des Moines + Sioux	2.197	1.165	0.333	1.435	0.784	1.000
	(1.886)			(1.831)		
Cedar Rapids	3.807	**1.771**	**0.067**	3.497	1.588	0.167
	(2.150)			(2.202)		
Republicans						
Iowa + Ohio	-0.258	0.365	0.734	0.336	0.277	1.000
	(0.705)			(1.213)		
Iowa	2.434	1.366	0.250	-0.211	0.121	1.000
	(1.781)			(1.752)		
Colorado	1.299	0.590	1.000	0.588	0.273	1.000
	(2.202)			(2.150)		
Ohio	-1.142	1.386	0.226	1.099	0.648	1.000
	(0.824)			(1.696)		
Des Moines + Sioux	3.497	1.588	0.167	-0.762	0.416	1.000
	(2.202)			(1.831)		
Cedar Rapids	0.588	0.273	1.000	1.299	0.590	1.000
	(2.150)			(2.202)		

Note: t= log odds/SE; p=Fisher exact test p-value. 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

Test 2

The results of the difference in difference regression analysis of change in advertising and turnout innovation between the election years 2012 and 2016 reveal that, for the lag with advertising leading turnout, there is only one statistically significant result at a significance level of 0.95, and that is the Ohio DMAs for the Democrats (Table 4). This leads me to fail to reject the null hypothesis that there is no relationship between increased advertising spending and increased turnout.

If the level of significance is instead 0.9, there are three groups with statistically significant results with a lag with advertising leading turnout. Republicans and Democrats in Iowa have a positive relationship and Republicans in Ohio have a negative relationship at a significance level of 0.9 (Table 4). At a significance level of 0.9, I am lead to reject the null hypothesis that there is indeed a relationship between change in innovation for early voting advertising and turnout. It is noteworthy that the results in Ohio that reveal a negative relationship between advertising and turnout does not support the hypothesis of a positive relationship.

When running this test with a lag with turnout leading advertising, there are three statistically significant results. Ohio Republicans and pooled Republicans a significance level of 0.95, and pooled Democrats at a significance level of 0.9. The pooled Republican and Democrat results are not robust enough due to the Chow test revealing that all of their DMAs cannot be pooled.

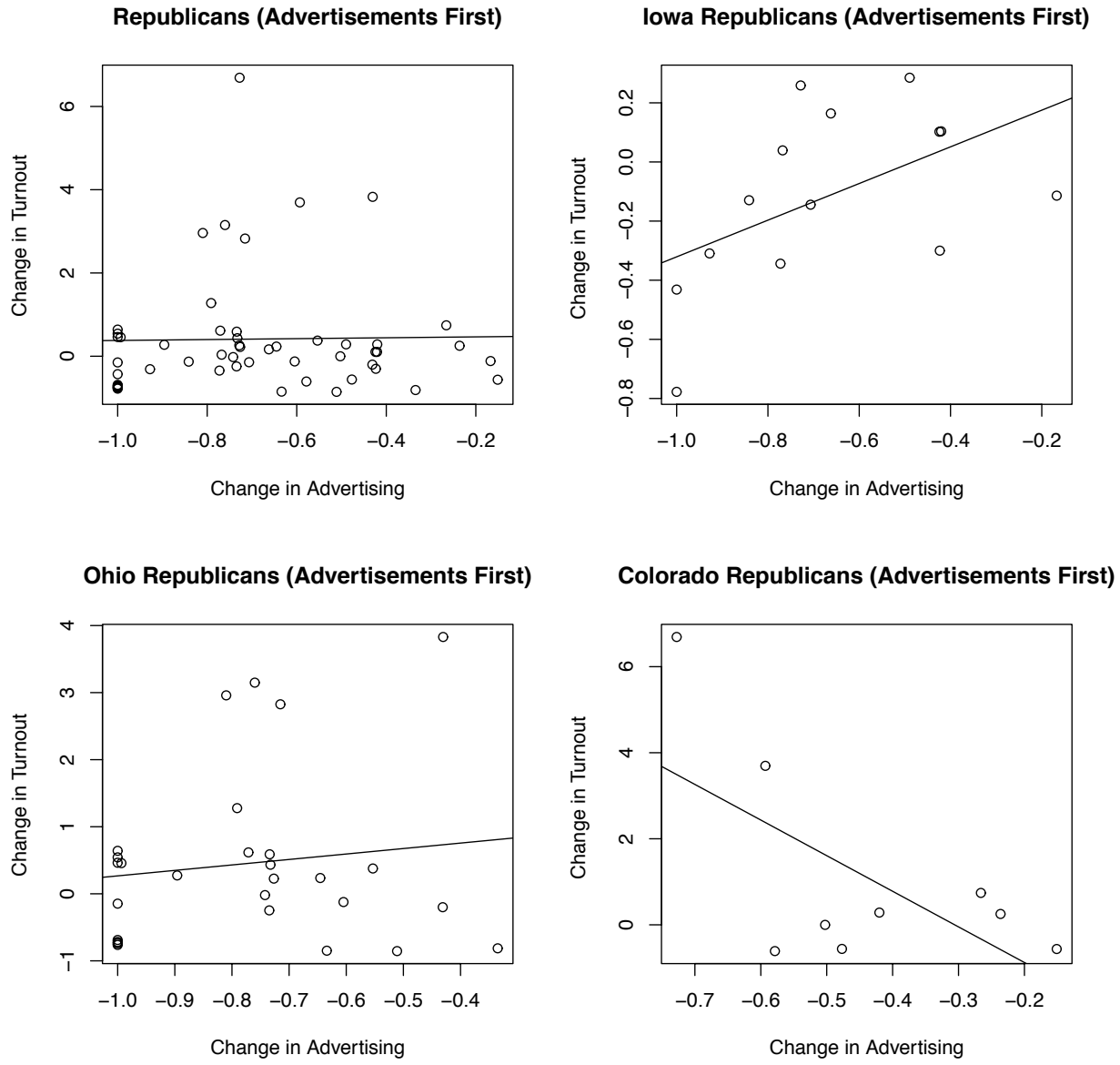
When running this test with no lag, there are also three statistically significant results. Ohio Republicans and Colorado Republicans a significance level of 0.9, and pooled Republicans at a significance level of 0.95. Once again, the Republican result is not robust enough due to the Chow test revealing that the Republican DMAs cannot all be pooled. It should be noted, however, that Ohio turnout is not delimited by registered political party, which makes it difficult to examine the relationship between campaign advertising and early voter turnout.

Table 4: Difference-in-Differences

	Ads First	**No Lag**	**Turnout First**
Republicans	0.107	**-1.919**	**-1.555**
	(0.843)	(0.854)	(0.588)
Iowa	**0.62**	-0.085	-0.406
	(0.296)	(0.381)	(0.479)
Colorado	**-8.279**	**-5.429**	-3.449
	(3.838)	(2.741)	(2.359)
Ohio	0.82	**-2.300**	**-1.747**
	(1.231)	(1.290)	(0.719)
Democrats	1.015	-0.792	**-1.003**
	(0.848)	(0.817)	(0.516)
Iowa	**0.943**	0.306	0.163
	(0.527)	(0.480)	(0.532)
Colorado	2.864	0.863	-5.322
	(4.472)	(4.981)	(3.815)
Ohio	**2.086**	-0.664	-0.615
	(0.828)	(0.841)	(0.445)

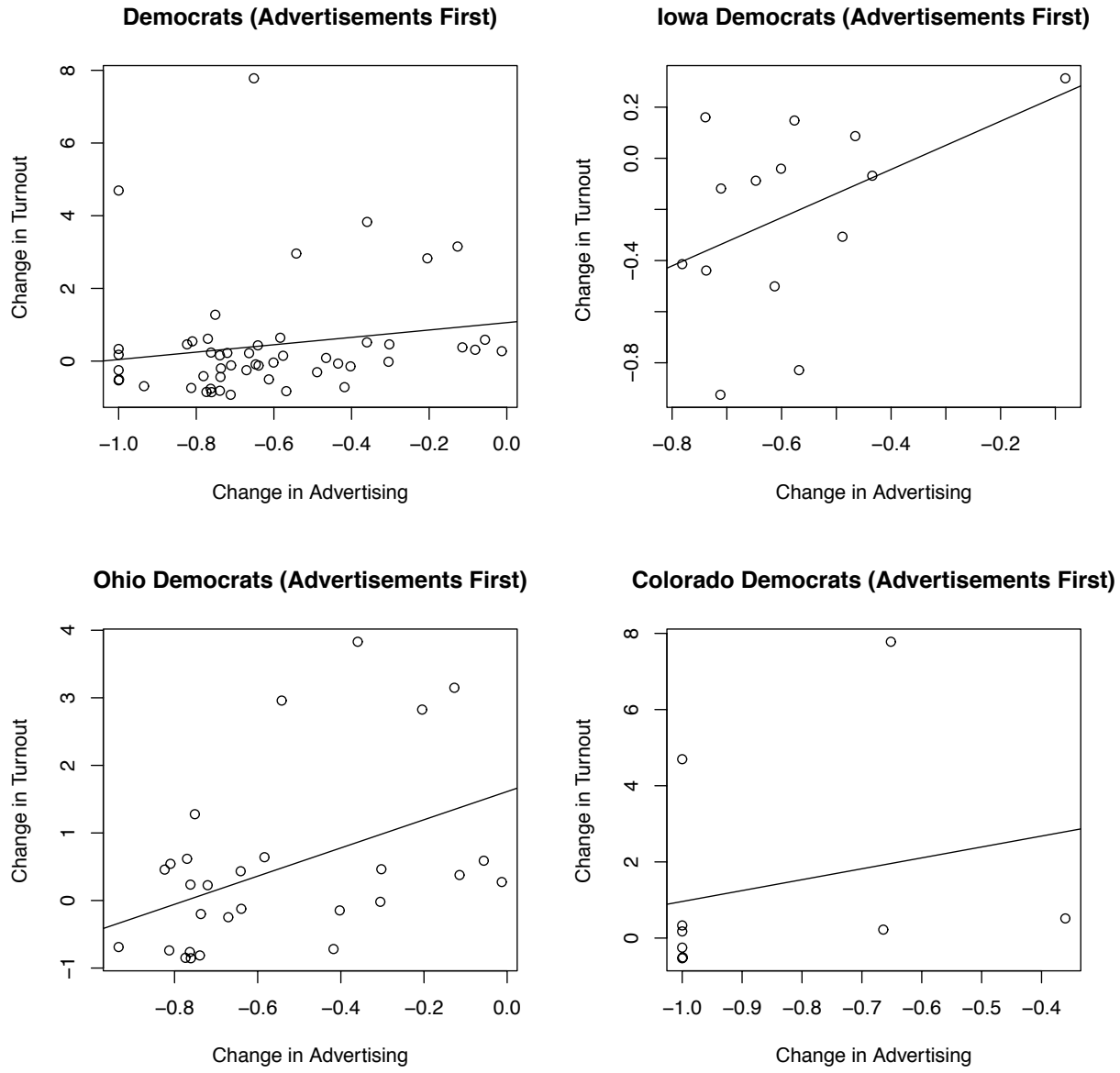
Note: 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

Graph 5: Republican Difference in Differences



Note: 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

Graph 6: Democrat Difference in Differences



Note: 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

Lags

The results with the strongest statistical significance all occur with a lag having advertising leading turnout by one week. According to the first test, there are no significant values with no lag or with the lag having turnout leading advertising (Appendix 1 and 2). That considered, with Iowa being the only state with some statistically significant results, there is little evidence to support my hypothesis of a strong relationship between increases in campaign advertising and increases in early voter turnout.

Discussion & Implications

There is little evidence to support the hypothesis of a strong relationship between increases in campaign advertising, and increases in early voter turnout. In Iowa, there is some support for this hypothesis in the Cedar Rapids, Des Moines, and Sioux DMAs for Democrats, where there is a strong relationship both graphically and statistically between increases in campaign advertising and early voter turnout. It appears that Democratic presidential campaigns are effective in driving early voter turnout in Iowa. For Republicans, there appears to be a strong relationship between changes in campaign advertising and early voter turnout statistically in test 2, and graphically in Iowa for the year of 2012, but not in 2016. The lack of a relationship in 2016 indicates either a lack of strategy for campaign advertising to influence early voter turnout, or the campaign strategy utilized other means to GOTV like social media or campaign rallies. Evidently something worked since President Trump won Iowa, which was carried by President Obama in 2012. Perhaps it is the case that early voting reforms make it difficult for campaigns to focus energy on early voter turnout, and the turnout that does occur early may be cannibalizing Election Day voters. Furthermore, it may be the case that what matters most is messaging and GOTV efforts on Election Day.

In addition, there are other factors such as exogenous shocks, known as October surprises, that could sway an election one way or another. In 2016, James Comey announced that he would not charge Hillary Clinton for her reckless use of her personal email account with sensitive information, then days before the election Comey announced new developments in the investigation (Blake 2016). In 2012, Hurricane Sandy hit the east coast. President Obama's handling of the Hurricane lead to a large bump in the polls (Walsh 2012). New Jersey Governor

Chris Christie praised President Obama's response during the hurricane; some Republicans attribute Obama's reelection to this (Walsh 2012). In both situations, October surprises occurred only a few days or weeks before Election Day and could have swayed the elections.

Overall, there are few findings with statistical significance. With exception to Iowa, there is little evidence to support a positive relationship between advertising efforts of presidential campaigns to influence early voter turnout before the election.

Interestingly, this study finds that presidential campaigns are not reactive to turnout results. After testing each lag and no lag, there does not appear to be a strong relationship with a one-week lag with turnout leading advertising, or with no lag. This means campaigns are not looking at the early voter turnout and changing their advertising strategy based upon it.

The strongest lag has advertising leading turnout, and it has a weak relationship. This shows that campaigns are trying to influence early voter turnout, but they are ineffective in doing so. It should be note, however, that weekly aggregated data could also suppress the effect of each of the lags. Unfortunately, due to data limitations, daily turnout and advertising data could not be obtained.

As seen in Graph 1, the electorate voted in higher numbers *later* during the 2016 election than in 2012. If voters are choosing to vote earlier or later during the early voting period regardless of campaign GOTV efforts, or campaign advertising, it may indicate that these efforts are not influencing early voter turnout effectively or at all.

It is clear from the results that presidential campaigns are not driving early voter turnout with a strong, coherent strategy. This could help explain the literature discussed earlier in this study regarding the decrease in turnout in states with early voting expansion. It might just be that

campaigns, for a variety of reasons, either do not have the capability, resources, or desire to drive early voter turnout with campaign advertising or other expenditures. This is a significant finding since early voting is purported to increase turnout, yet it might actually make it more difficult for campaigns to drive turnout.

These results might also show that presidential campaigns might truly be national campaigns as opposed to targeted regional campaigns. Targeted GOTV efforts during the early voting period may not be the most effective or efficient way to drive voter turnout during elections.

Conclusion

This project looked to determine whether presidential campaigns are effectively influencing voter turnout with GOTV efforts through campaign advertising. Although campaigns pay attention to early voter turnout, there is not enough evidence to demonstrate that they effectively influence it or boost it.

Although there is some support for the hypothesis of a strong relationship between increases in campaign advertising and increases in early voter turnout in Iowa, it is only one of three states examined in this study. Even though this shows increasing early voter turnout with television advertising is possible and other states not examined in this study may demonstrate similar findings as Iowa, there is not enough evidence overall to suggest strong support for the hypothesis of a strong relationship for the effectiveness of presidential campaigns in influencing early voter turnout.

One of the most interesting findings is that the results demonstrate that presidential campaigns are not reactive to turnout results. Presidential campaigns do not appear to be changing their GOTV strategy, vis-à-vis their advertising strategy, based upon early voting turnout returns. Instead, political campaigns are oriented at influencing early voter turnout, and they are doing a poor job of doing so.

This leads to the broader question of whether early voting reforms allow for increased voter turnout. Assuming the widely held conclusion in political science literature that turnout is lower following early voting reforms, one explanation found in this study is the poor ability for campaigns to drive early voter turnout. As seen in this study, voters voted later in 2016 than in

2012, even with advertising early in the early voting period. With this early advertising, there is no strong relationship between campaign advertising and its impact on early voter turnout.

Although this is speculation that warrants further study, the weak results of a relationship between advertising and turnout with advertising leading turnout indicate that increased advertising might have a better impact on voter turnout. Since it appears that campaign advertising is diffused in the early voting period, it may be the case that to truly drive turnout, advertising volumes need to increase dramatically. In such a scenario, this may mean that boosting early voter turnout is more expensive for campaigns since they need more resources for a longer period. This implication is purely speculative, and unlikely due to the tight budgets and time frames of presidential campaigns.

The result of this study might also have implications for election law. Some states that shorten the window for early voting are met with lawsuits like those seen in Ohio that claim the shortened early voting window has a disparate impact on the right to vote for minorities (*Ohio Democratic Party v. Husted 2016*). The Sixth Circuit U.S. Court of Appeals and the U.S. Supreme Court both denied the Ohio Democratic Party's request for a stay of the new law. This study lends support to the defendants in this case, as campaigns are not effectively driving early voter turnout during the early voting period. It may even be the case that longer in-person early voting periods hinder the ability for campaigns to mobilize voters over a longer time during the early voting period, the opposite effect of what the plaintiffs claimed.

The diffusion of advertising resources during the early voting period and the ineffective deployment of advertising by campaigns to boost early voter turnout might lead to a decrease in enthusiasm of Election Day. When advertising and other GOTV resources focus at a pinnacle,

Election Day, so too may be voter enthusiasm. In areas with high early voting and diffused advertising, the opposite may be the case. This is another area that warrants further study.

The findings in Iowa suggest that increasing early voter turnout with television advertising is possible. Other states may demonstrate similar findings. On the whole, however, this study finds presidential campaigns are not effective at increasing early voter turnout with campaign advertising, and they are not reacting to it either. Ultimately, early voting may be about convenience, not giving presidential campaigns the opportunity to boost turnout.

Appendix

Appendix 1: No Lag

	No Lag					
		2012			2016	
Pooled		**t**	**p**		**t**	**p**
Democrats	0.278	0.415	0.739	0.847	0.785	0.570
	(0.670)			(1.079)		
Republicans	0.129	0.205	1.000	1.963	1.241	0.187
	(0.629)			(1.582)		
Democrats						
Iowa + Ohio	0.174	0.251	1.000	0.905	0.832	0.562
	(0.695)			(1.087)		
Iowa	0.711	0.587	1.000	0.000	0.000	1.000
	(1.213)			(1.303)		
Colorado	0.588	0.273	1.000	0.000	0.000	1.000
	(2.150)			(2.138)		
Ohio	-0.058	0.069	1.000	1.651	0.981	0.385
	(0.831)			(1.683)		
Des Moines + Sioux	0.000	0.000	1.000	0.762	0.416	1.000
	(1.461)			(1.831)		
Cedar Rapids	1.435	0.784	1.000	-0.762	0.416	1.000
	(1.831)			1.831		
Republicans						
Iowa + Ohio	0.220	0.331	1.000	2.152	1.354	0.153
	(0.664)			(1.590)		
Iowa	-0.932	0.538	1.000	1.986	1.133	0.333
	(1.733)			(1.752)		
Colorado	-0.762	0.416	1.000	-0.588	0.273	1.000
	(1.831)			(2.150)		
Ohio	0.310	0.407	0.713	1.450	0.860	0.435
	(0.763)			(1.687)		
Des Moines + Sioux	-0.762	0.416	1.000	1.435	0.784	1.000
	(1.831)			(1.831)		
Cedar Rapids	0.000	0.000	1.000	1.299	0.590	1.000
	(2.138)			(2.202)		

Note: t= log odds/SE; p=Fisher exact test p value. 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

Appendix 2: Turnout First Lag

	Turnout First					
		2012			2016	
Pooled		**t**	**p**		**t**	**p**
Democrats	-0.570	0.828	0.494	-1.516	0.960	0.493
	(0.688)			(1.579)		
Republicans	-0.138	0.197	1.000	0.847	0.785	1.000
	(0.701)			(1.079)		
Democrats						
Iowa + Ohio	-0.726	1.027	0.476	-1.501	0.948	0.492
	(0.707)			(1.584)		
Iowa	-2.565	1.554	0.182	-1.266	0.730	1.000
	(1.651)			(1.733)		
Colorado	0.588	0.273	1.000	0.000	0.000	1.000
	(2.150)			(2.138)		
Ohio	0.000	0.000	1.000	-0.867	0.516	1.000
	(0.809)			(1.680)		
Des Moines + Sioux	-2.457	1.342	0.400	-0.588	0.273	1.000
	(1.831)			(2.150)		
Cedar Rapids	-1.435	0.784	1.000	-0.762	0.416	1.000
	(1.831)			(1.831)		
Republicans						
Iowa + Ohio	-0.230	0.320	1.000	-1.043	0.626	1.000
	(0.717)			(1.667)		
Iowa	-1.609	0.968	0.470	0.636	0.305	1.000
	(1.662)			(2.083)		
Colorado	0.588	0.273	1.000	-0.588	0.273	1.000
	(2.150)			(2.150)		
Ohio	0.211	0.261	1.000	-1.350	0.802	0.458
	(0.811)			(1.684)		
Des Moines + Sioux	0.000	0.000	1.000	0.000	0.000	1.000
	(2.138)			(2.138)		
Cedar Rapids	-1.609	0.900	0.467	1.299	0.590	1.000
	(1.789)			(2.202)		

Note: t= log odds/SE; p=Fisher exact test p value. 2012 advertising data from the Wesleyan Media Project (Fowler et al. 2017). Exclusive 2016 advertising data from the Wesleyan Media Project, via personal communication with Ken Goldstein of the University of San Francisco. Turnout data retrieved from each state's respective Secretary of State office.

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