



GUNS ON THE CAMPAIGN TRAIL: LINKS BETWEEN THE 2016 U.S. PRESIDENTIAL DEBATES AND GUN CONTROL INFORMATION-SEEKING

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ABSTRACT

While many existing studies have examined how U.S. presidential debates affect candidate preference, voting patterns, and knowledge gains, voter information-seeking surrounding debates remains understudied. Current theory suggests that voters and others seek out campaign-relevant information for specific purposes; debate viewers are not merely passive. The present study examined gun control related information-seeking surrounding the 2016 U.S. presidential campaign debates. Google Trends data were used to assess change in relative search frequency for gun control during this time period. Models included controls for state demographics to assess possible reasons for state-to-state variation. Results indicate that search frequencies for gun control increase in the week prior to presidential debates, not afterwards, and only for Democratic campaign events. This observation highlights the need to study pre-debate voter behavior, particularly the ways in which voters educate themselves on campaign-related issues. Results also indicate that state-to-state variation in gun control information-seeking was not related to the percent of a state's population that identified as Republican, once other factors were controlled.

Keywords: Information-Seeking, Debates, Gun Control

INTRODUCTION

American voters receive campaign, issue, and candidate information from a wide variety of sources, including television, newspapers,

social media, internet search engines, and radio, among others. In 2008, research by the Pew Research Center (2008) determined that 72% of Americans obtained most or all of their election-related news from television, followed by the internet (33%), newspapers (28%), and radio (15%). These figures have changed substantially in recent years. Use of the internet as a primary election news

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source climbed 23% between 2004 and 2008 (Pew Research Center 2008). In 2016, about a quarter of respondents to a Pew Research survey indicated they had accessed a presidential candidate's social media feed for campaign-related information (Shearer 2016).

Some of the earliest models of voter information-seeking behavior, falling into the direct effects literature, proposed that citizens were essentially the recipients of wide-scale messages sent out by the media (Weaver 1949). This passive theoretical view of voters has shifted through the years (Neuman & Guggenheim 2011). Today, the uses and gratifications perspective posits that voters seek out and selectively expose themselves to political information for a variety of reasons (Kaye & Johnson 2002). Existing research found that individuals access political information on the web to seek out more information, get guidance for voting decisions, for entertainment, and to gather information for use in social contexts (Kaye & Johnson 2002). Selective exposure theory suggests that voters may use the web and other sources to selectively expose themselves to political information that supports their existing viewpoints (Garrett 2009).

The present paper focuses on the impact of presidential candidate debates on aggregate patterns in internet information-seeking. Existing research has found that these debates increase voter knowledge and reduce the knowledge gap (Benoit, Hansen, & Verser 2003; Holbrook 2002; Lemert 1993). They have also been found to increase issue salience, the degree to which voters use issues to evaluate and distinguish candidates (Benoit et al. 2003). However, it is unknown to what extent these debates actually lead voters to seek out more information on particular issues. This possibility may be contributing to information gains post-debate.

The present paper focuses on gun control

related information-seeking, specifically. While the exact number of firearms in the U.S. is unknown, the 2007 Small Arms Survey estimated that there were 270 million civilian-owned firearms in the U.S., equating to roughly 89 firearms per 100 residents (Small Arms Survey 2011). The current number of firearms is estimated to be more than 350 million (Ingraham 2015). However, scholars disagree on whether high rates of gun ownership have positively or negatively impacted crime in the U.S. Some authors have found that areas with higher gun ownership experience higher homicide rates (Siegel, Ross, & King 2013) and higher gun suicide rates (Killias, van Kesteren, & Rindlisbacher 2001). Others, in contrast, have determined that higher rates of gun ownership serve as a deterrent to crime (Lott 2013) and that firearm ownership allows potential victims to effectively defend themselves (Kleck 2005).

Those on either side of the controversy acknowledge that gun violence is a concern in the U.S. According to the Centers for Disease Control and Prevention, firearms caused the deaths of more than 33,000 individuals in the year 2014; this figure rivaled deaths attributed to motor vehicle accidents (Centers for Disease Control 2014). Further, more than 60,000 individuals are injured by firearms each year (Fowler, Dahlberg, Haileyesus, & Annett 2015). Hemenway and Solnick (2015) estimated that 110 children were unintentionally injured by firearms each year between 2005 and 2012. At least three of the deadliest mass shootings in U.S. history have occurred in the past ten years (Willingham 2016). Unfortunately, there is little political consensus on how to both address gun violence as well as manage the competing demands of gun control and gun rights advocates.

After the Sandy Hook shooting in Newtown, Connecticut, in 2012, the gun control debate, which had stagnated to some extent after

the 2000 presidential election, resurfaced as a key political issue for Democrats and Republicans alike (Henigan 2016). Opinions on the subject are highly polarized. Even the anticipated effect of gun control policy can have very real consequences. Past research has determined that fear of gun control regulations can motivate gun purchases (Wallace 2014). Anxiety can actually lead to an increase in voter information-seeking (Valentino, Hutchings, Banks, & Davis 2008). The current study assesses the link between presidential debates and seeking out internet-based information on gun control. Specifically, this study examines the timing of information-seeking surrounding presidential debates, as well as demographic differences that may explain state-to-state variations in information-seeking. It is hypothesized that each debate will be followed by a temporary increase in gun-control related searches.

DATA

This study uses weekly Google Trends data for the time period of April 1st, 2015 to October 31st, 2016. These dates were chosen to incorporate the early beginning of the 2016 presidential campaign, starting with the Clinton campaign announcement in April of 2015 and ending after the last presidential debate in October of 2016. Several weeks were included before and after these dates to allow better assessment of trends. These data are based on all Google searches for the term “gun control” originating from the United States during this time period. Data values for each week represent search interest relative to the highest week of interest during the period of April 1st, 2015 to October 31st, 2016. Google Trends assigns a value of 100 to the week of peak popularity for the search term. A value of 50 for a given week means that the term was half as popular as a search term during that week than during the peak week. Likewise, a score of 0 means the term was less than 1% as popular as

during the peak week. The data used for the present study include these values for the United States as a whole, as well as for every state. The values for each state are calculated separately. That is, data values for each week for a given state represent search interest relative to the highest week of interest for searches originating from that state during the time period of the study.

Google Trends is a valuable source of information about internet information-seeking partially because of the sheer size of the Google user base. In December of 2012 alone, approximately 77% of search engine users worldwide used the Google search engine at least once (Richter 2013). That equates to well over one billion Google users at that time, far outpacing the number of users for other search engines like Bing or Yahoo (Richter 2013). Google also provides data that is currently unavailable for Bing or Yahoo (Richter 2013). Specifically, Google Trends displays the relative search frequency by region and time period, making the data well-suited for longitudinal studies. Bing and Yahoo do not provide such details. The Google Trends data have been validated against a number of outside sources. For example, the search data have been found to be a robust predictor of flu and other disease outbreaks, even before these outbreaks have been identified by the Centers for Disease Control and Prevention (Carneiro & Mylonakis 2009). The data have also been used to reliably predict economic market trends (Choi & Varian 2012) and state political participation (Reilly, Richey, & Taylor 2012). In this study, the data are used to examine change in information-seeking patterns related to gun control surround key events in the 2016 presidential election campaign.

To ensure that the search term “gun control” was not too narrow to identify changes in gun control information-seeking, Google Correlate was used to determine the degree to which

Google searches for “gun control” correlated with Google searches for other terms (Google 2011). The results indicate a correlation of $r = 0.90$ or higher with related terms including “for gun control,” “about gun control,” “gun control laws,” “pro gun,” and “news gun control.” These high correlations demonstrate that searches for gun control and other gun control related terms were highly related. Other measures, described in the Measures section, were included in models to account for differences in state populations and trends that may partially explain shift in gun control interest over time.

METHOD & MEASURES

The data consist of weekly relative search frequencies for each state. Since the primary interest of this study is the effect of presidential campaign events on this time series, unit root tests are used to verify that the outcome series is difference-stationary within state (Raffalovich 1994); the series pass this test. An additional test indicated the presence of serial correlation, also referred to as autocorrelation (Wooldridge 2002). Models use clustering by state, the panel variable, as well as robust standard errors, to correct for this tendency. Regression estimates are calculated using the `xtreg` feature in the Stata software, which fits random-effects models by using the GLS estimator (StataCorp 2013). This produces a matrix-weighted average of the between and within results. These models are designed for use with longitudinal panel data. The basic random effects equation on which these models are based is given by:

$$y_{it} = x_{it} \beta + u_{it} + \epsilon_{it}$$

where $i = 1, \dots, 50$ states and $t = 1, \dots, 82$ weeks, the number of weeks observed for each state. Here, u_{it} refers to between-state error and ϵ_{it} refers to within-state error. The x_{it} refers to a predictor, with β as the corresponding coefficient. Each model in this paper uses multiple predictors: campaign

event, week, violent crime, West, Midwest, Northeast, percent white, percent urban, percent Republican, and relative Google search frequency for the term hunting. The y_{it} refers to the outcome, relative Google search frequencies for gun control. For more details on the GLS estimator and clustering, the reader is referred to the methods and formulas description provided by the *Stata* software (StataCorp 2013).

Since all analyses focus on trends at the state level, demographic characteristics of the state population are included as controls. Specifically, those characteristics known to be closely related to gun ownership and opinions about guns are included because the outcome of interest is relative search frequency for gun control. A control for the state violent crime rate is included because personal protection is the top reason Americans report owning a gun today (Swift 2013). Concern about crime may underlie views of and interest in gun control. Similarly, a control for the relative Google search frequency for the term “hunting” is included since hunting/ sport is the second most common reason for gun ownership in the U.S (Swift 2013). It is also possible that those interested in hunting may look up relevant laws at times surrounding hunting seasons. Since these dates may be similar to those for various presidential debates, this control is essential. Lastly, a control for region is included as prior research has identified evidence for a Southern culture of honor and/ or a Southern culture of violence that may influence gun-related views and interest (Felson & Pare 2010).

Measures

Debates. The primary predictor(s) across models are election events. This study focuses on Republican Party and Democratic Party debates, the Presidential debates, as well as the Vice Presidential debates that occurred during the Presidential election campaign of 2016. These events are shown

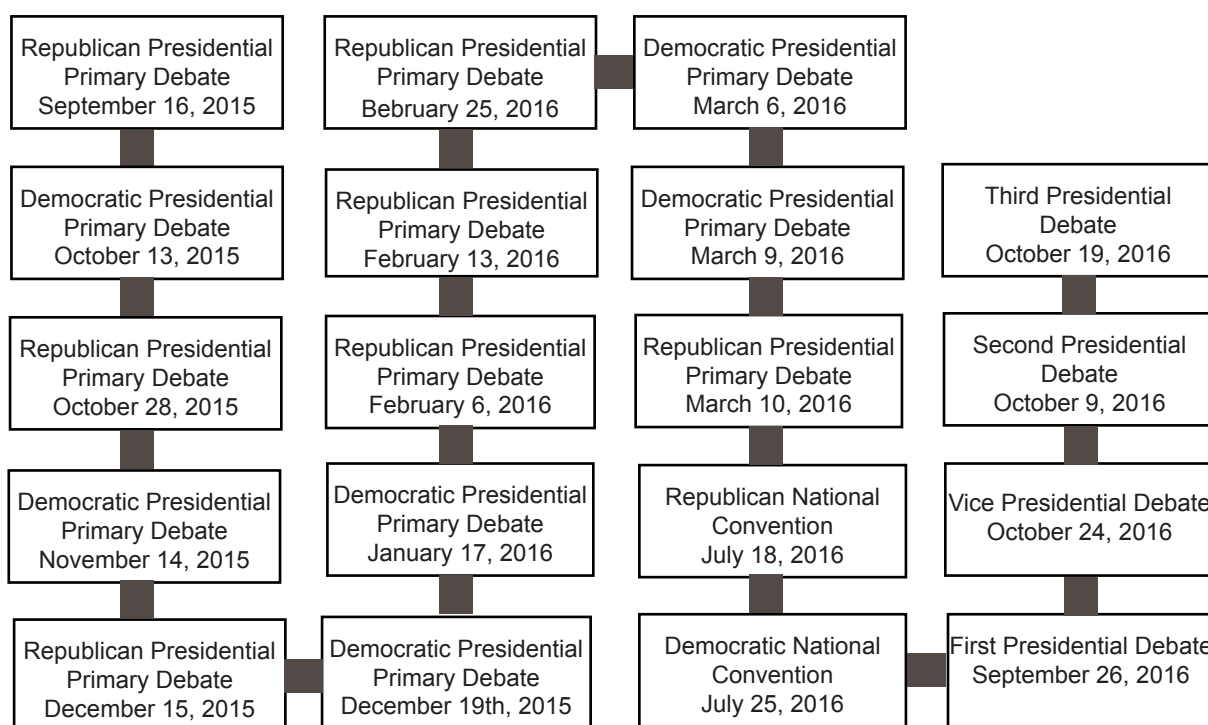
in Figure 1. Each of these events was highly advertised, and often available to viewers on major television networks. A binary indicator of any of these events occurring is coded as 1 for each week when an event occurred, and 0 otherwise. A similar binary variable is used to indicate Republican Party events (including the Presidential and Vice Presidential debates) and Democratic Party events, also including the Presidential and Vice Presidential debates. Models test for immediate effects like these, as well as lagged and anticipatory effects. To test for whether changes in search frequency were lagged (i.e. delayed), indicator variables are shifted so the weeks coded as 1 occur after the actual election events. To test for whether changes in search frequency actually preceded the events, indicator variables are shifted so the weeks coded as 1 occur before the actual election events. Effect shifts of between one and three weeks are tested. All models include a time control variable (week).

include a control for each state’s percent white population and percent urban population. Gun ownership is more commonly associated with being white, being male, and residing in a more rural area (Gewurz 2013). There is substantial variability in racial/ ethnic homogeneity across states as well as in urbanicity, but extremely little variation in gender proportions. A control for the percentage of the population that identified as or leaned Republican in 2014 is also included, as opinions on gun control often fall along party lines. This measure was obtained from the Pew Research Center (Pew Research Center 2015).

State population demographics. Using U.S. Census estimates from 2010, models

Crime and Hunting. To help account for differences in gun crime across states, models included the 2015 violent crime rate per 100,000 residents from the Uniform Crime Reports (FBI 2017). Personal protection is the top reason Americans report owning a gun (Swift 2013). As a result, variation in this crime across states may contribute to interest in guns or gun control. The relative Google search frequency for the term “hunting” is calculated in the same way as the dependent

Figure 1: Timeline of major 2016 U.S. Presidential campaign events



variable and included as a control in all models for reasons identified in the Methods section.

Region. Analyses control for region, as classified by the U.S. Census Bureau (U.S. Census Bureau 2014). These regions are the Northeast (9 states), Midwest (12 states), South (16 states and the District of Columbia), and West (13 states). This particular measure of region is included in an effort to be consistent with data source used (see State Population Demographics) and prior studies.

FINDINGS

Figure 2 displays relative search frequencies for the United States as a whole during the time period of April 1st, 2015 to October 31st, 2016. As shown, there is substantial week to week variability in Google searches for “gun control.” Weeks of peak search activity occur during October and December of 2015, as well as January and late June of 2016. Remaining analyses assess the ways search frequencies vary in relation to presidential

campaign events and state demographics.

Table 1 shows the results of models assessing the impact of all presidential campaign events. These models include an immediate effect model, as well as lagged and anticipatory effect models. South is the reference region in all models. When the effect is modeled as anticipating the campaign event itself, shown in the first three panels of Table 1, there is a significant negative effect for three weeks prior to the debate. That is, the debate was preceded by a decrease in relative search frequency for “gun control.” In the two weeks before the debate, the effect reverses direction, though fails to achieve statistical significance. On the week the event occurs and afterwards, shown in the last three panels of Table 1, the effect changes back to negative. In other words, the week of a presidential campaign event and the two weeks following are associated with a decrease in relative search frequency for “gun control.” The association increases in magnitude as time after the event increases. Together, these

Figure 2: Relative search frequency across the U.S. from April 1st, 2015 to October 31st, 2016

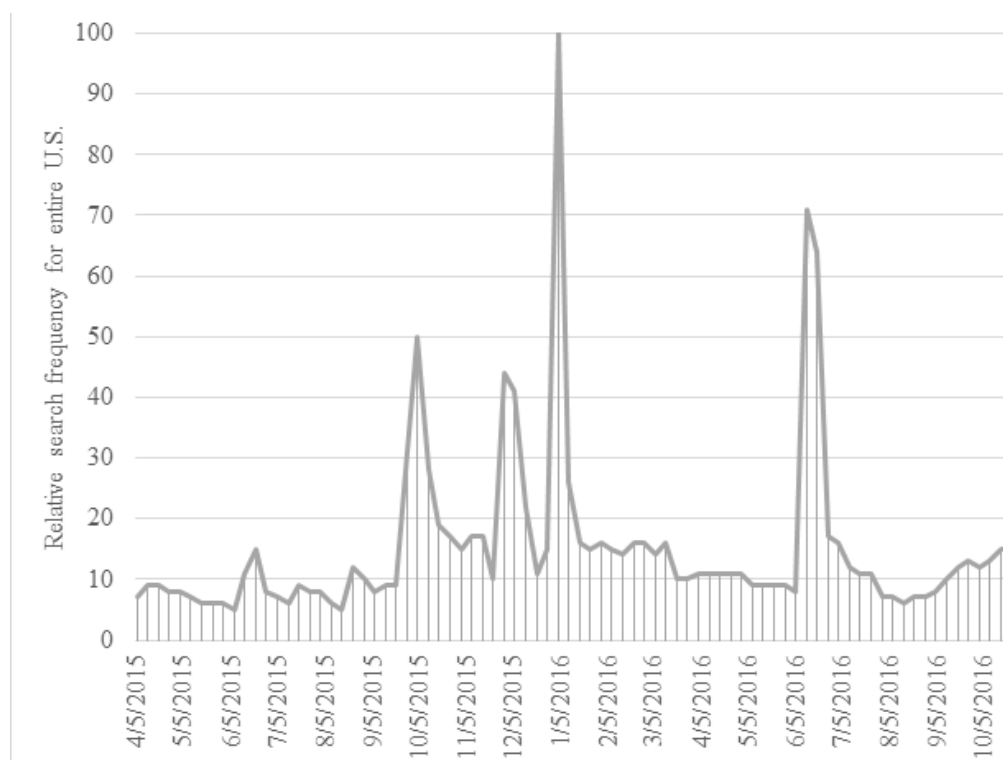


Table 1: Panel regression models of immediate, delayed, and anticipatory impact of presidential campaign events on Google trends

	Three weeks before event	Two weeks before event	One week before event	Immediate	One week after event	Two weeks after event
Any campaign event	-0.887** (0.200)	0.275 (0.199)	-0.038 (0.200)	-2.164** (0.197)	-4.088** (0.198)	-4.092** (0.212)
Week	0.034** (0.004)	0.031** (0.004)	0.032** (0.004)	0.036** (0.004)	0.040** (0.004)	0.035** (0.004)
Violent crime 2015	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)
West	3.177** (1.211)	3.221** (1.208)	3.199** (1.207)	3.124** (1.212)	3.014* (1.215)	3.030* (1.216)
Midwest	2.823* (1.156)	2.820* (1.153)	2.823* (1.153)	2.829* (1.157)	2.834* (1.165)	2.833* (1.164)
Northeast	3.396* (1.552)	3.404* (1.544)	3.391* (1.544)	3.369* (1.554)	3.351* (1.571)	3.353* (1.569)
Percent white	-11.828* (4.774)	-11.858* (4.762)	-11.848* (4.766)	-11.803* (4.784)	-11.752* (4.809)	-11.757* (4.808)
Percent urban	-0.113** (0.033)	-0.111** (0.033)	-0.111** (0.033)	-0.113** (0.033)	-0.117** (0.034)	-0.116** (0.034)
Percent Republican	-5.533 (6.445)	-5.477 (6.419)	-5.617 (6.368)	-5.811 (6.411)	-5.917 (6.455)	-5.908 (6.456)
Hunting searches	0.142** (0.013)	0.137** (0.013)	0.137** (0.013)	0.144** (0.013)	0.156* (0.013)	0.154** (0.013)
Constant	27.769** (5.105)	27.774** (5.093)	27.851** (5.089)	28.015** (5.103)	27.951** (5.129)	28.225** (5.128)

Notes: ** p < 0.01. * p < 0.05. + p < 0.10. Standard errors displayed in parentheses.

effects indicate a possible increase in gun control information-seeking in the weeks leading up to each event, followed by a clear decrease in interest at the time of the event and after the event. However, the nonsignificant sign change merits further investigation, detailed below.

The control variables included in the Table 1 models indicate that there are no significant differences in relative search frequency based on state percentage of Republican residents, and largely violent crime (a marginal effect). Results also show that states with a higher percentage of urban residents or a higher percentage of white residents have lower relative search frequency across weeks than those with more rural or non-white populations. Region dummy variables indicate that all regions had higher relative search frequencies than found in the South, once other variables were accounted for. There is a positive association between relative search frequency for hunting and relative search frequency for gun control, indicating overlapping interest in the two concepts. Lastly, the control for time (week) indicates a small, but statistically significant, increase in relative search frequency for gun control as the campaign progressed.

Table 2 displays the results of comparable models assessing the events of Democratic Party campaign events in particular, including the presidential and vice presidential debates. Results are similar to those for all campaign events, but are more consistent with this paper's core hypothesis. When the effect is modeled as anticipating the campaign event itself, shown in the first three panels of Table 2, there is a significant negative effect for three weeks prior to the debate. That is, the debate was preceded by a decrease in relative search frequency for

Table 2: Panel regression models of immediate, delayed, and anticipatory impact of Democrat campaign events on Google trends

	Three weeks before event	Two weeks before event	One week before event	Immediate	One week after event	Two weeks after event
Democratic campaign event	-6.607** (0.283)	-0.045 (0.259)	1.908** (0.323)	-2.281** (0.259)	-4.925** (0.291)	-6.279** (0.309)
Week	0.055** (0.004)	0.032** (0.004)	0.028** (0.004)	0.037** (0.004)	0.044** (0.004)	0.038** (0.004)
Violent crime 2015	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)
West	2.928* (1.225)	3.209** (1.210)	3.269** (1.205)	3.109** (1.213)	2.970* (1.219)	2.939* (1.223)
Midwest	2.840* (1.174)	2.821* (1.154)	2.818* (1.149)	2.830* (1.158)	2.837* (1.169)	2.841* (1.170)
Northeast	3.344* (1.595)	3.402* (1.546)	3.405* (1.533)	3.366* (1.556)	3.342* (1.578)	3.332* (1.584)
Percent white	-11.661* (4.842)	-11.850* (4.767)	-11.895* (4.748)	-11.793* (4.788)	-11.722* (4.822)	-11.687* (4.835)
Percent urban	-0.120** (0.034)	-0.112** (0.033)	-0.109** (0.033)	-0.114** (0.033)	-0.118** (0.034)	-0.119** (0.034)
Percent Republican	-5.913 (6.577)	-5.496 (6.423)	-5.512 (6.367)	-5.834 (6.419)	-5.990 (6.476)	-6.079 (6.508)
Hunting searches	0.169** (0.013)	0.138** (0.013)	0.130** (0.013)	0.146** (0.013)	0.161** (0.013)	0.164** (0.014)
Constant						

Notes: ** p < 0.01. * p < 0.05. + p < 0.10. Standard errors displayed in parentheses.

“gun control.” While still negative in direction, this association fails to achieve statistical significance two weeks prior to the event. For the week prior to the event, there is a significant positive association between the event occurrence and the relative search frequency for “gun control.” In other words, relative search interest increased in the week prior to the debate. As in Table 1, on the week the event occurs and afterwards, shown in the last three panels of Table 2, the effect changes to negative. In other words, the week of a Democratic campaign event and the two weeks following are associated with a decrease in relative search frequency for “gun control.” The association increases in magnitude as time after the event increases. Effects of all control variables remain the same as in Table 1.

Table 3 displays the results of comparable models assessing the events of Republican Party campaign events, including the presidential and vice presidential debates. Results indicate a consistent negative association across all weeks shown. The effects for the two weeks preceding the debate fail to achieve statistical significance at the p = 0.05 level and are quite small in magnitude. For the week of the debate and all weeks following, effects are statistically significant and increase in magnitude as the weeks go by. Effects of all control variables remain the same as in Tables 1 and 2.

DISCUSSION

This exploratory study examined

Table 3: Panel regression models of immediate, delayed, and anticipatory impact of Republican campaign events on Google trends

	Three weeks before event	Two weeks before event	One week before event	Immediate	One week after event	Two weeks after event
Republican campaign event	-0.370 + (0.197)	-0.025 (0.224)	-1.880** (0.213)	-2.864** (0.216)	-3.963** (0.220)	-2.634** (0.218)
Week	0.033** (0.004)	0.032** (0.004)	0.037** (0.004)	0.040** (0.004)	0.043** (0.004)	0.036** (0.004)
Violent crime 2015	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)	-0.004+ (0.002)
West	3.204** (1.209)	3.210** (1.209)	3.158** (1.208)	3.137** (1.209)	3.081* (1.211)	3.135** (1.208)
Midwest	2.821* (1.154)	2.821* (1.154)	2.825* (1.156)	2.828* (1.157)	2.829* (1.160)	2.826* (1.157)
Northeast	3.402* (1.548)	3.402* (1.546)	3.383* (1.551)	3.372* (1.551)	3.365* (1.560)	3.376* (1.551)
Percent white	-11.846* (4.767)	-11.851* (4.764)	-11.821* (4.776)	-11.811* (4.781)	-11.796* (4.790)	-11.830* (4.777)
Percent urban	-0.112** (0.033)	-0.111** (0.033)	-0.113** (0.033)	-0.113** (0.033)	-0.115** (0.033)	-0.113** (0.033)
Percent Republican	-5.490 (6.433)	-5.494 (6.423)	-5.678 (6.418)	-5.790 (6.404)	-5.813 (6.422)	-5.734 (6.400)
Hunting searches	0.139** (0.013)	0.138** (0.013)	0.142** (0.013)	0.143** (0.013)	0.149** (0.013)	0.143** (0.013)
Constant	27.773** (5.098)	27.774** (5.096)	27.848** (5.101)	27.895** (5.101)	27.775** (5.110)	28.018** (5.100)

Notes: ** p<0.01. * p<0.05. + p<0.10. Standard errors displayed in parentheses.

trends in gun control information-seeking surrounding the 2016 U.S. presidential campaign debates. It was hypothesized that debates would be associated with a temporary increase in gun control information-seeking. Rather than showing post-debate increases in information-seeking, the results showed an anticipatory effect. Relative search frequencies for gun control increased in the week prior to each Democratic campaign event and decreased thereafter. In other words, individuals were seeking out issue-specific information in a preparatory pattern, not as a reaction to questions raised during the debates themselves. However, this pattern was only observed for Democratic campaign events, not for Republican campaign events. While state-to-state variation was apparent, results also indicated that the percent of state residents identifying as Republican did not significantly affect these patterns. In other words, both “red” and “blue” states showed a similar progression in gun control information-seeking surrounding each presidential debate. State-specific experiences with violent crime and information-seeking related to hunting were also not responsible for the pattern observed in results, suggesting that individuals were not seeking out gun control related information purely based on fear of crime, hunting, or some related construct.

The anticipatory nature of this effect merits further mention. One study of the 2008 presidential campaign found that 80% of respondents already had a candidate preference before a debate occurred (Warner,

Carlin, Winfrey, Schnoebelen, & Trosanovski 2011). According to research by Redlawsk (2004), information-seeking patterns vary by campaign context. In a two-candidate election, voters tended to search for comparable information about each candidate, but in less depth than would be the case in an election with three or more candidates. Voters also used more structured searching strategies in more complicated campaigns and simplified their searches to make comparing multiple candidates more straightforward (Redlawsk 2004). These findings demonstrate that voters engage in rational information-seeking patterns that adjust to campaign circumstances. Additionally, information-seeking, party affiliation, media exposure, and other factors have already impacted voters by the time a debate occurs. Together, these studies underscore the importance of examining voter behavior before debates and before Election Day.

In particular, existing research has found that voters have a tendency to selectively expose themselves to information that supports their pre-existing beliefs (Garrett 2009). Iyengar and Hahn (2009), for example, found that Republicans tended to read news from Fox News, while Democrats avoided this particular news outlet in favor of CNN and NPR. However, the extent to which this type of selection occurs varies by medium. Past research found that the extent of segregation, which refers to seeking out information based on one's own party perspective, was higher for internet-accessed information than for televised or print media (Gentzkow and Shapiro 2011). However, the extent of segregation was still low in absolute terms (Gentzkow and Shapiro 2011). Unlike other forms of campaign-related information, debates present viewers with a unique opportunity to observe the views of both political parties at a single event. As a result, viewers may be exposed to viewpoints and related information that they otherwise

would not seek out. A study of the 1992 Presidential debates found that viewing the televised debates significantly increased voter awareness of each candidate's issue positions (Zhu, Milavsky, and Biswas 1994). While this paper hypothesized that increased awareness would impact voters' post-debate information-seeking behavior, this was not the case. This may be due, at least in part, to another form of selection. Benoit and Hansen (2004) observed that Presidential debate watching was more likely to strengthen existing candidate preferences than alter them. While not directly comparable to information-seeking, it is possible that debates simply restate or reinterpret information viewers have already located in their anticipatory searches. This pattern would be consistent with the results of the present study.

An unanticipated result of the present study is that the spike in gun control information-seeking was only apparent for Democratic campaign events. The reasons for this pattern are unknown. However, this pattern may be partly reflecting a shift in American priorities. A Pew Research survey in 2015 marked the first time Americans reported that they felt it was more important to protect gun rights than to pursue gun control by a margin of 52% to 46% (Doherty 2015). Historically, the Republican Party has emphasized the protection of gun owners as a key focus. This has been a consistent policy stance. Thus, it is possible that Republican debates resulted in less attention to gun control than to gun rights or other issues. A wide variety of possible gun control strategies, however, have been advocated by the Democratic Party over the past two decades, including universal background checks and assault weapons bans (Law Center to Prevent Gun Violence 2017). Viewers may have been especially curious about the possible gun policy proposals of the Democratic party due to this variation. Events such as the Orlando, Florida, nightclub shooting in June of 2016

may have drawn further attention to gun control. However, a recent study determined that the 2016 Republican debates were viewed by a sizeable number of Democrats as well as Republicans, suggesting that viewers were interested in not only the policies of their own party, but those of the opposing party as well (Pew Research Center 2016).

Relatedly, another unanticipated result was that the percentage of a state's population identifying as Republican was not significantly associated with information-seeking patterns. This was the case in spite of the differences noted above in relation to Democratic versus Republican events. One possible explanation is limited variation in this measure. While the range was 11% to 57%, the state with 11% was a significant outlier. Half of states fell between 35% and 45%. Thus, a unit increase in percentage Republican may not significantly distinguish a number of states. While the number and list of states vary by election, as many as a dozen states can be considered swing states in a given election. In those states, there is a very narrow divide between Republican and Democratic voters. Additionally, in the present study, there was a modest correlation of -0.5 between percent Republican and percent urban. The inclusion of both variables in the model may have attenuated the coefficient for percent Republican.

Variation in the percentage of the population living in urban areas, a state-level variable, was significantly related to information-seeking patterns. Specifically, gun-related information-seeking was lower in states with a more urban population. As noted above, this may be, in part, attributable to party differences. States with more urban residents also had a lower percentage of Republican residents. However, the difference may also be related to gun ownership patterns. The existing literature has well-documented that males, non-Hispanic whites, those residing

in rural areas, those residing in the South or West, and older adults are more likely to report household gun ownership than those without these characteristics (Morin 2014). Thus, the impact of percent urban may be due to a lower percentage of gun owners. If this is the case, this finding suggests that gun owners may have been particularly engaged in gun control information-seeking in comparison to non-owners. Since this study focused on gun control information-seeking specifically, these are individuals who may be concerned that their existing status and/or rights as gun owners may be threatened in some way. As a result, they may be seeking out information related to gun control. Indeed, past research found that the threat of potential gun control policies was linked to increases in gun purchases (Wallace, 2014). Since the Democratic party has a stronger association with gun control policy than the Republican party, this trend may also partly explain why the change in gun control information-seeking was only apparent for Democratic campaign events.

LIMITATIONS

The present study has several limitations. First, Google Trends reports relative search frequencies rather than raw counts. As a result, the data can only be used to assess relative change in search frequencies over time. A given user may search Google for the same search term multiple times. Second, the data do not include demographic information about respondents. As a result, this study can only speak to aggregate trends, not the behavior of individuals. Third, the results of this study are limited to Google users, since Bing and Yahoo do not make their historical data available for research. As a result, it remains possible that there is something unique about Google users in comparison to those who use other search engines. Fourth, this study is limited to one search term and the events of the 2016 presidential election

campaign. It is possible the varying trends may emerge for other search terms or for state/ local campaigns. Further research is needed to assess this possibility.

Lastly, this study employed weekly data analyzed as a time series. As with any study of this form, the effects of the event of interest (debates) cannot be disentangled from events that may have occurred during the exact same week. These might include shootings, speeches made by other politicians or lobby groups, etc. While the differences observed by political party and the inclusion of multiple campaign events make it unlikely that all effects are due to other national occurrences, this possibility cannot be fully investigated with the data used.

DIRECTIONS FOR FUTURE RESEARCH

The results of this study can be extended in several ways. First, this study examines only Google search frequencies. Given the increase in social media feed access in 2016 (Shearer 2016), a useful corroborative study could examine trends in access and posts to social media, particularly for key issues like gun control. Should Bing or Yahoo make comparable data available, this study could be replicated for alternative search engines as well. Second, this study examines trends at the aggregate level. It would be helpful to identify, at the individual level, why voters seek out information prior to debates and what sort of websites are accessed. This insight may help identify the exact role of this sort of information-seeking (Kaye and Johnson 2002). It may also help inform a study of how pre-debate information seekers differ from others who view debates in terms of the knowledge gap, overall knowledge gained, and candidate preferences.

Lastly, selected topics for U.S. presidential debates are announced to the public beforehand. While gun policy may not be specifically listed as a topic, it is possible

that some viewers think about and seek out information on gun-related policies when announced topics include items such as “securing America.” This was one of the topics announced for the first 2016 presidential debate of September 26, 2016. Indeed, during that debate, gun violence and possible approaches to gun control were mentioned (Blake 2016). Future research may be able to build on the present study by examining whether announced topics impact information-seeking patterns for gun-related issues.

CONCLUSION

The present study assessed internet-search patterns surrounding the 2016 presidential debates, focusing on gun control. Results indicated that each debate was associated with a significant change in relative search frequency. Google Trends showed an increase in search frequency in the week prior to each Democratic campaign event, followed by a decrease in gun control search frequency at the time of the debate and afterwards. In other words, information-seeking preceded the debates, rather than followed the debates. Past research has largely focused on post-debate behavior. The results of this study highlight the importance of considering campaign event advertising as a key factor in voter information-seeking. While existing research shows that debates increase knowledge (Benoit et al. 2003), today’s voters may be viewing debates already armed with newly acquired knowledge about key issues.

REFERENCES

- Benoit, W. L., and Hansen, G. J. (2004). Presidential debate watching, issue knowledge, character evaluation, and vote choice. *Human Communication Research*, 30 (1), pp. 121-144
- Benoit, W. L., Hansen, G. J., and Verser, R. M. (2003). A meta-analysis of the effects of viewing U.S. presidential debates.

- Communication Monographs*, 70 (4), pp. 335–350
- Blake, A. (2016). The first Trump-Clinton presidential debate transcript, annotated. *The Washington Post*. Retrieved from https://www.washingtonpost.com/news/the-fix/wp/2016/09/26/the-first-trump-clinton-presidential-debate-transcript-annotated/?utm_term=.c8be6ac4a680
- Carneiro, H. A., and E. Mylonakis. (2009). Google Trends: A Web-Based Tool for Real-Time Surveillance of Disease Outbreaks. *Clinical Infectious Diseases*, 49 (10), pp. 1557–1564
- Centers for Disease Control. (2014). FastStats: All Injuries. Retrieved from <http://www.cdc.gov/nchs/fastats/injury.htm>
- Choi, H., and H. Varian. (2012). Predicting the Present with Google Trends. *Economic Record*, 88, pp. 2–9
- Doherty, C. (2015, January 9). A public opinion trend that matters: Priorities for gun policy. Retrieved from <http://www.pewresearch.org/fact-tank/2015/01/09/a-public-opinion-trend-that-matters-priorities-for-gun-policy/>
- FBI. (2017). Crime in the U.S. 2015. Retrieved from <https://ucr.fbi.gov/crime-in-the-u.s/2015/crime-in-the-u.s.-2015>
- Felson, R. B., and P. Pare. (2010). Gun Cultures or Honor Cultures? Explaining Regional and Race Differences in Weapon Carrying. *Social Forces; Oxford*, 88 (3), pp. 1357–1378
- Fowler, K. A., L. L. Dahlberg, T. Haileyesus, and J. L. Annett. (2015). Firearm injuries in the United States. *Preventive Medicine*, 79, pp. 5–14
- Garrett, R. K. (2009). Politically Motivated Reinforcement Seeking: Reframing the Selective Exposure Debate. *Journal of Communication*, 59 (4), pp. 676–699
- Gentzkow, M., and J. M. Shapiro. (2011). Ideological segregation online and offline. *The Quarterly Journal of Economics*, 126 (4), pp. 1799-1839
- Gewurz, D. (2013, March 12). Section 3: Gun Ownership Trends and Demographics. Retrieved from <http://www.people-press.org/2013/03/12/section-3-gun-ownership-trends-and-demographics/>
- Google. (2011). Google Correlate. Retrieved from <https://www.google.com/trends/correlate>
- Hemenway, D., and S. J. Solnick. (2015). Children and unintentional firearm death. *Injury Epidemiology*, 2 (1), p. 26-32
- Henigan, D. A. (2016, September 6). What Trump Vs. Clinton Means For Gun Control. Retrieved from http://www.huffingtonpost.com/dennis-a-henigan/what-trump-vs-clinton-mea_b_11869956.html
- Holbrook, T. M. (2002). Presidential Campaigns and the Knowledge Gap. *Political Communication*, 19 (4), pp. 437–454
- Ingraham, C. (2015). There are now more guns than people in the United States. *The Washington Post*. Retrieved from https://www.washingtonpost.com/news/wonk/wp/2015/10/05/guns-in-the-united-states-one-for-every-man-woman-and-child-and-then-some/?utm_term=.d14fde410266
- Iyengar, S., and Hahn, K. S. (2009). Red media, blue media: Evidence of ideological selectivity in media use. *Journal of Communication*, 59 (1), pp. 19-39

- Kaye, B. K., and T. J. Johnson. (2002). Online and in the Know: Uses and Gratifications of the Web for Political Information. *Journal of Broadcasting & Electronic Media*, 46, pp. 54–71
- Killias, M., J. van Kesteren, and M. Rindlisbacher. (2001). Guns, Violent Crime, and Suicide in 21 Countries. *Canadian Journal of Criminology*, 43, p. 429-448
- Kleck, G. (2005). *Point Blank: Guns and Violence in America*. New Brunswick, NJ: Transaction Publishers
- Law Center to Prevent Gun Violence. (2017). Gun Law TrendWatch. Retrieved from <http://smartgunlaws.org/resources/trends/>
- Lemert, J. B. (1993). Do televised presidential debates help inform voters? *Journal of Broadcasting & Electronic Media*, 37 (1), pp. 83–94
- Lott, J. R. (2013). *More Guns, Less Crime: Understanding Crime and Gun Control Laws, Third Edition*. Chicago, IL: University of Chicago Press
- Morin, R. (2014, July 15). The demographics and politics of gun-owning households. Retrieved from <http://www.pewresearch.org/fact-tank/2014/07/15/the-demographics-and-politics-of-gun-owning-households/>
- Neuman, W. R., and Guggenheim, L. (2011). The Evolution of Media Effects Theory: A Six-Stage Model of Cumulative Research. *Communication Theory*, 21 (2), pp. 169–196
- Pew Research Center. (2008, October 31). Internet Now Major Source of Campaign News. Retrieved from <http://www.people-press.org/2008/10/31/internet-now-major-source-of-campaign-news/>
- Pew Research Center. (2015, May 11). Religious Landscape Study. Retrieved from <http://www.pewforum.org/religious-landscape-study/>
- Pew Research Center. (2016, January 28). Democrats much more likely to have watched debate of opposing party. Retrieved from http://www.pewresearch.org/ft_16-01-28_watchdebate_dems4/
- Raffalovich, L. E. (1994). Detrending Time Series: A Cautionary Note. *Sociological Methods & Research*, 22 (4), pp. 492–519
- Redlawsk, D. P. (2004). What Voters Do: Information Search during Election Campaigns. *Political Psychology*, 25 (4), pp. 595–610
- Reilly, S., S. Richey, and J. B. Taylor. (2012). Using Google Search Data for State Politics Research An Empirical Validity Test Using Roll-Off Data. *State Politics & Policy Quarterly*, 12 (2), pp. 146–159
- Richter, F. (2013, February 12). 1.17 Billion People Use Google Search. Retrieved from <https://www.statista.com/chart/899/unique-users-of-search-engines-in-december-2012/>
- Shearer, E. (2016, July 20). Candidates' social media outpaces their websites and emails as an online campaign news source. Retrieved from <http://www.pewresearch.org/fact-tank/2016/07/20/candidates-social-media-outpaces-their-websites-and-emails-as-an-online-campaign-news-source/>
- Siegel, M., C. S. Ross, and C. King. (2013). The Relationship Between Gun Ownership and Firearm Homicide Rates in the United States, 1981–2010. *American Journal of Public Health*, 103 (11), pp. 2098–2105

- Small Arms Survey. (2011, December). Research note: Estimating civilian owned firearms. Retrieved from http://www.smallarmssurvey.org/fileadmin/docs/H-Research_Notes/SAS-Research-Note-9.pdf
- StataCorp. (2013). xtreg. In *STATA Longitudinal-Data/ Panel Data Reference Manual, Release 13* (pp. 155–166). College Station, TX: Stata Press
- Swift, A. (2013, October 28). Personal Safety Top Reason Americans Own Guns Today. Retrieved from <http://www.gallup.com/poll/165605/personal-safety-top-reason-americans-own-guns-today.aspx>
- U.S. Census Bureau. (2014). Census regions and divisions of the United States. Retrieved from http://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf
- Valentino, N. A., Hutchings, V. L., Banks, A. J., and Davis, A. K. (2008). Is a Worried Citizen a Good Citizen? Emotions, Political Information Seeking, and Learning via the Internet. *Political Psychology*, 29 (2), pp. 247–273
- Wallace, L. N. (2014). Castle Doctrine legislation: Unintended effects for gun ownership? *Justice Policy Journal* (online), 11 (2), retrieved from <http://www.cjcj.org/news/8473>
- Warner, B. R., D. B. Carlin, K. Winfrey, J. Schnoebelen, and M. Trosanovski. (2011). Will the “Real” Candidates for President and Vice President Please Stand Up? 2008 Pre- and Post-Debate Viewer Perceptions of Candidate Image. *American Behavioral Scientist*, 55 (3), pp. 232–252
- Weaver, W. (1949). The Mathematics of Communication. *Scientific American*, 181 (1), pp. 12–15
- Willingham, A.J. (2016). A visual guide: Mass shootings in America. Retrieved from <http://www.cnn.com/2016/06/13/health/mass-shootings-in-america-in-charts-and-graphs-trnd/index.html>
- Wooldridge, J. M. (2002). *Econometric Analysis of Cross section and Panel Data*. Cambridge, MA: MIT Press
- Zhu, J. H., J. R. Milavsky, and R. Biswas. (1994). Do televised debates affect image perception more than issue knowledge? A study of the first 1992 presidential debate. *Human Communication Research*, 20 (3), pp. 302-333