

Who let the dogs out? News media attention stimulates negative political advertising*

Paul B. Ellickson, Simon Business School, University of Rochester
Mitchell J. Lovett, Simon Business School, University of Rochester
Ron Shachar, Arison School of Business, Interdisciplinary Center †

November 2, 2021

Abstract

Previous studies of political advertising focused on the role of candidates and voters, but paid less attention to the role of news media. This study demonstrates, using daily panel data on Congressional races (2000, 2002 and 2004), that the news media has a critical and significant impact on the tone of the campaign. A key challenge in identifying the impact of the news media on tone is the potential endogeneity of news coverage. To resolve this challenge, we identify two sets of instrumental variables. The first involves the observed ownership of local newspapers by media conglomerates. Ownership shifts some of the editorial decisions (such as, how much attention to pay to politics) from the local level to the national level, which is exogenous to daily tone decisions. The second exploits variables that capture newsworthy events at the daily and local levels—severe weather events, sporting contests, and major crime stories. These events can crowd-out the space allocated for political reporting. Using a 2SLS approach we find that the attention of the news media encourages the candidates to employ negative ads. When the media turns its attention to a race, negativity increases by 8 percentage points.

Keywords: advertising tone, negative advertising, news media, instrumental variables, dynamics.

*We thank Wes Hartmann and the attendees of seminars at Ben Gurion University and Tel Aviv University as well as at sessions at the Marketing Science Conference, Marketing Dynamics Conference, and the IVth Conference on the Economics of Advertising for helpful comments and suggestions. Ron Shachar acknowledges partial support from the Israel Science Foundation number 1495/12.

†Paul B. Ellickson is the Michael and Diane Jones Professor of Marketing and Economics, at the Simon Business School, 500 Wilson Blvd., NY, 14627, tel: (585) 273-1491, paul.ellickson@simon.rochester.edu. Mitchell J. Lovett is an Associate Professor of Marketing at the Simon Business School, 500 Wilson Blvd., NY, 14627, tel: (585) 276-4020, mitch.lovett@simon.rochester.edu. Ron Shachar is a Professor at Arison School of Business, Israel, tel: +97299602408, ronshachar@idc.ac.il.

1 Introduction

Political campaigns have always captured the attention of scholars (e.g., Pollock 1930 and Ogburn and Coombs 1940) and, more recently, those in marketing (e.g., Klein and Ahluwalia 2005, Hedgcock, Rao and Chen 2009, Kim, Rao and Lee 2009, Shachar 2009). Not surprisingly, marketers are particularly interested in political advertising (Soberman and Sadoulet 2007, Phillips, Urbany and Reynolds 2008, Hoegg and Lewis 2012, Gordon and Hartmann 2013, Lovett and Peress 2015, Wang, Lewis and Schweidel 2018, and Gordon, Lovett, Luo, and Reeder 2021). Previous marketing research has examined the interaction between competing candidates (Gordon and Hartmann 2016), as well that as between candidates and voters (Lovett and Shachar 2011). However, these studies ignore an important player in the field – news media.¹ In this study, we show that news media plays a critical role in one of the most important decisions candidates take – whether and when to “go negative”.

Political advertising is often negative, and this negativity is on the rise (e.g. Figure 2 in Ridout, Franz and Fowler 2014). By “negative” we refer to cases in which an ad discusses the competitor. In our data, described below, 59 percent of ads are negative. Negativity is rarely scattered evenly over the campaign. In most cases it is concentrated in two to four distinct timespans (see subsection 2.2.1). Therefore, it is not only interesting to examine whether candidates go negative or not, but also when exactly they choose to do so. Thus, we focus our investigation on the role media plays in shaping the *dynamics* of negative advertising in political campaigns.

For this purpose, we collect data on 248 congressional races for the U.S. House of Representatives in 2000, 2002, and 2004. The data include daily information on both the tone of the campaign (i.e., positive or negative) and its media coverage (i.e., whether the local media covered the campaign in each specific day). We follow tone and media coverage in the 70 days between Labor Day and Election Day, and find that they tend

¹As discussed below, previous scholars have studied how news media cover advertising, but not how campaigns respond to media coverage. Specifically, the role of the news media in shaping the tone of the campaign has not been studied empirically.

to go together – in 55 percent of the occasions that either the tone is negative and the coverage is high, or the tone is not negative and the coverage is low.

While we wish to show that this correlation is at least partially due to increased media coverage causing negativity to increase, the simple correlation described above does not necessarily imply that the relationship represents a causal effect of media attention. In fact, a long literature has offered an alternative explanation – that media is more interested in negative ads than in positive ones (Patterson 1994, Ansolabehere and Iyengar 1995, Geer 2006, Ridout and Smith 2008, Fowler and Ridout 2009, Geer 2012, West 2018). This thesis portrays media as active participant with incentives to attend to the spectacle of negative advertising. In subsection 2.4 we provide evidence in our data that is consistent with these previous findings and show (using analysis of the content of more than 1000 articles) that news coverage of congressional campaign ads is heavily slanted towards echoing negative rather than positive advertising. This thesis (about the attraction of media to negativity) and empirical findings complicate the potential role of media, so we focus on carefully disentangling the role of media coverage in shaping negativity. To do so, we need appropriate instrumental variables to establish the causal relationship.

In Section 3 we introduce and discuss two sets of such IVs. First, we leverage the fact that (i) in the US a small number of big media holding companies (MHCs, hereafter) own a large proportion of local newspapers, and (ii) more than one-half of the local newspapers in our data belong to one of the top 11 media holding companies. These MHCs tend to differ in their editorial policies along many dimensions, including their interest in politics and in sensational news. Such policies, set at the national level, are exogenous to the daily variation in local political campaigns. Furthermore, since it is likely that the editorial policies depend on the distance from Election day, we allow the interest of MHCs to vary over time, yielding daily variation in this instrumental variable (IV).

Second, we collected data on local news-worthy events (e.g., a major crime) for each day in our sample. Such events can serve as IVs for the coverage of the political

campaign because they can crowd-out the space allocated for political reporting in the relevant congressional district. The three types of events included in our data are severe weather conditions, sporting events and major crime stories. Furthermore, we distinguish among three types of sporting events (e.g., an event in the neighboring district is treated separately than one in the focal district).

Section 3 reports the results of the first stage regression – i.e., the dependent variable is the media coverage and the independent variables are (1) the instruments, (2) congressional district fixed effects, and (3) other controls (e.g., whether the incumbent is running). We find that the instruments are related to media coverage as expected (e.g., political coverage is lower when there is a local sports event) and that their interaction assists in explaining the variation in coverage (e.g., the effect of sport events is especially high among newspapers owned by the media holding company CNHI). We also find, using a partial F-test, that the instruments are relevant (not weak). To the best of our knowledge, these are the first findings on the dependence of political media coverage on these variables.

Section 4 presents the main result of this study – the dependence of candidates’ tone on media coverage. The analysis includes various control variables: (1) lagged tone (i.e., negativity on the previous day), (2) days until the election (allowing for curvature), (3) political characteristics of the specific race (e.g. the expected closeness of the race’s outcome), (4) district’s attributes (e.g., education) that can vary between elections, and (5) district and year fixed effects. Using 2SLS regression, with clustered standard errors, we find that media coverage is an important factor in candidates’ decisions to go negative. On average, when the media turns its attention to the campaign, negativity increases by 8 percentage points. This effect is substantial, since the tone is negative only 28 percent of the days.²

While previous studies demonstrated that the attention of the news media is slanted toward negative ads over positive, the current study brings novel causal evidence that

²In 19.58 percent of the days the tone is positive and in 52.37 percent of them the candidates do not air any ads. Note that, as mentioned earlier, the share of ads that are negative is $28/(28+19.58)=58.8$.

the attention of the media encourages the candidates to go negative. In other words, rather than just being responsive to campaign negativity, news media have an active and critical role in political campaigns that should not be ignored.

In the concluding section, we speculate on the rationale behind this result, tying together previous accounts with our new findings. For example, it is quite possible that candidates dig for dirt on their rival all the time, but wait with their findings until the media turns its attention to the race. Indeed, some accounts of campaigns suggest exactly this pattern, such as Mary Landrieu’s 2008 campaign which went as far as shooting multiple ads including negative ones in February, but waited until late summer to air them (Feltus, Goldstein, and Dallek 2018). Waiting is likely to be an optimal strategy since, as we show in section 2, the news media is more likely to amplify negative rather than positive ads.

The rest of the paper is organized as follows. Section 2 describes the data and the empirical challenge. Section 3 presents the instruments and the first stage regression. Section 4 includes the main results and various sensitivity analyses and section 5 concludes.

2 Data and challenges

This section describes our first two data sets: (1) the tone of political advertising, and (2) the extent of media coverage. Then it describes their basic statistics and time series properties, and the correlation between negativity and coverage.

2.1 Tone and coverage

Our analysis focuses on U.S. Congressional (House of Representatives) races held in three election years: 2000, 2002, and 2004. Because our focus is on political advertising, we set the timeframe of our analysis to be the 70 days leading up to Election Day (Labor Day is the traditional kickoff point for electoral advertising campaigns). To simplify the analysis, we include only those in which just the two major parties are relevant

to the contest and each candidate advertises at least once. This results in 248 races and 496 candidate/campaign level observations. Since we follow candidates' behavior over 70 days, and in some of the analyses we use 2 lags of the variables, the number of sample observations in our main analysis (if there are no missing observation) is $496 \times 68 = 33,728$.

2.1.1 Tone

The tone data are based on a methodology developed by the Campaign Media Analysis Group (CMAG) that records every ad on broadcast TV and some cable channels in a storyboard format. The CMAG data include advertising for all candidates in the races taking place in the top 75 Nielsen designated media areas (DMAs) in 2000 and the top 100 DMAs in 2002 and 2004.

The raw CMAG data contain thousands of unique advertisements. This information is coded by the Wisconsin Advertising Project (WAP) along various dimensions. Central to our study, the data include information on who the ad supports, when it was aired, and what tone it took. The original tone categories are “promote,” “attack,” and “contrast.” We follow the prior literature (Lovett and Shachar 2011; Spenkuch and Toniatti 2018; Wang, Lewis, and Schweidel 2018; Gordon, Lovett, Luo, and Reeder 2021) and code each ad as either negative (contrast or attack, to reflect at least some discussion of the opponent) or positive (promote). Lumping these together makes sense both theoretically and empirically. Theoretically both attack and contrast ads are meant to undermine the rival. These are different techniques to achieve the same result. Accordingly, it makes sense to lump them together. Empirically, the findings in Ridout and Smith (2008) illustrate that the effects of attack and contrast are almost identical in their magnitude (1.3 and 1.437).

Candidates do not always advertise, especially at the beginning of the election cycle. In particular, while candidates show no ads 52% of the time, 85% of these ad-free days occur before the candidate airs their first ad of the campaign. After airing the first ad, days without ads are infrequent (only 15% of days).

Candidates sometimes show more than one ad creative. On 14% of days candidates air both positive and negative ads. To handle all cases, we create three tone categories positive (all ads on that day were positive), negative (all ads were negative), or mixed (some ads were positive while others were negative ads). We note that the composition of ads in the “mixed” category is tilted towards negative (60% negative), and that of all days on which a candidate airs an ad, 41% are only positive ads, 30% only negative, and 29% mixed. The 2000 elections were the most negative (only 28% of the days were all positive) and those in 2002 the most positive (50 percent of the days were all positive). We note that, in many of our descriptive results and our main analyses, we define our negativity measures as equal to one if any of the ads aired on that day was negative (i.e., combining negative and mixed) and term this variable *AnyNegative*. We also test for robustness when only negative ads were aired (*OnlyNegative*).

2.1.2 Media Coverage

To quantify the degree of media attention focused on a given race, we assemble a dataset of news articles (print or digital) that discuss the race and/or its participants. Obviously, newspapers are not the only media entity that covers political campaigns and elections, but it seems reasonable to expect that when the news media develop an interest in a congressional campaign, the interest and attention will be shared by all types of media, not just one of them. Furthermore, Schaffner (2006) demonstrated that newspapers tend to devote far more attention to members of Congress than local television stations, supporting our use of newspapers as a leading proxy.

Our data collection started with newslibrary.com. This web-based resource includes detailed news data from local newspapers, which represent a significant part of the media coverage for U.S. House Races. Using a variety of queries, we recorded the total number of articles in local newspapers pertaining to each candidate on a given day in the 70 days leading up to Election Day. To bolster the precision of our measure (i.e., to ensure all relevant articles are included) we used various alternative spellings for each candidate in the search tool. For example, Thaddeus McCotter, the Republican

Congressman from the 11th district of Michigan, was referred to, in some articles, as Thad McCotter. We ended-up considering 243,346 articles. The average number of articles per race is 7.21. Not surprisingly, the off-year election (2002) received the most media attention with an average of 11.95 articles per race.

Despite our efforts, it seems reasonable to expect that the media coverage is measured with noise. Accordingly, we account for it in the estimation. Furthermore, most of our analysis is not conducted with the continuous and crude measure of media coverage, but rather with a binary variable, termed *MediaHigh*, that is based on a median split of this continuous measure. This can be justified both theoretically and empirically. Theoretically we wish to distinguish between two states: (1) media paying attention to the campaign, and (2) media not paying attention. Unlike presidential elections, Congressional elections are not as engaging for the media and thus the default is very little coverage. Our approach is meant to distinguish between those regular days and special days in which the media turns its attention to the race. This approach makes sense empirically as well since, as noted above, it is reasonable to expect that the continuous measure is too crude and a median split will have less noise. Finally, to illustrate the robustness of our result, we report the main result both with the continuous measure and the binary one.

In summary, in the analysis we will be using two measures of media. The variable *MediaArticles* represents the number of articles about the race on any specific day and the binary variable *MediaHigh*, which distinguish between days in which the media pays attention to the race and those in which it does not using a median split. Most of the analysis focuses on the *MediaHigh* variable.

2.1.3 Summary Statistics

Table 1 below provides summary statistics for the data. The table includes all variables used in the analysis, some of which (control variables and instruments) will be introduced and discussed later in the paper.

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
AnyNegative	33,728	0.281	0.450	0	0	1	1
AnyNegative_Lagged	33,728	0.272	0.445	0	0	1	1
OnlyNegative	33,728	0.143	0.350	0	0	0	1
OnlyNegative_Lagged	33,728	0.139	0.346	0	0	0	1
MediaHigh	33,728	0.493	0.500	0	0	1	1
MediaArticles	33,728	14.430	37.442	0	0	9	1,400
TossUps	33,728	0.129	0.335	0	0	0	1
OpenSeat	33,728	0.274	0.446	0	0	1	1
SameOpponent	33,728	0.105	0.306	0	0	0	1
PercentWhite	33,728	0.787	0.153	0.180	0.700	0.903	0.970
PercentBachelorsDegree	33,728	0.235	0.083	0.060	0.170	0.280	0.560
MeanHouseholdIncome	33,728	0.438	0.112	0.272	0.360	0.483	0.916
Frontrunner	33,728	0.304	0.460	0	0	1	1
Incumbent	33,728	0.373	0.484	0	0	1	1
Weather	33,728	0.010	0.102	0	0	0	1
Sport	33,728	0.050	0.219	0	0	0	1
SportSameState	33,728	0.039	0.193	0	0	0	1
SportNextDistrict	33,728	0.096	0.295	0	0	0	1
NewsCrime	33,728	0.008	0.089	0	0	0	1
MHC_Gannet	33,728	0.218	0.413	0	0	0	1
MHC_CNHI	33,728	0.206	0.404	0	0	0	1
MHC_Lee.Enterprises	33,728	0.065	0.246	0	0	0	1
MHC_Ogden	33,728	0.073	0.259	0	0	0	1
MHC_Boone	33,728	0.024	0.154	0	0	0	1
MHC_Landmark	33,728	0.117	0.321	0	0	0	1
MHC_Paxton	33,728	0.081	0.272	0	0	0	1
MHC_Knight.Ridder	33,728	0.052	0.223	0	0	0	1
MHC_New.Media.Corp	33,728	0.044	0.206	0	0	0	1
MHC_Hearst.Newspapers	33,728	0.032	0.177	0	0	0	1
MHC_Pulitzer.Inc	33,728	0.032	0.177	0	0	0	1

Table 1: Summary Statistics

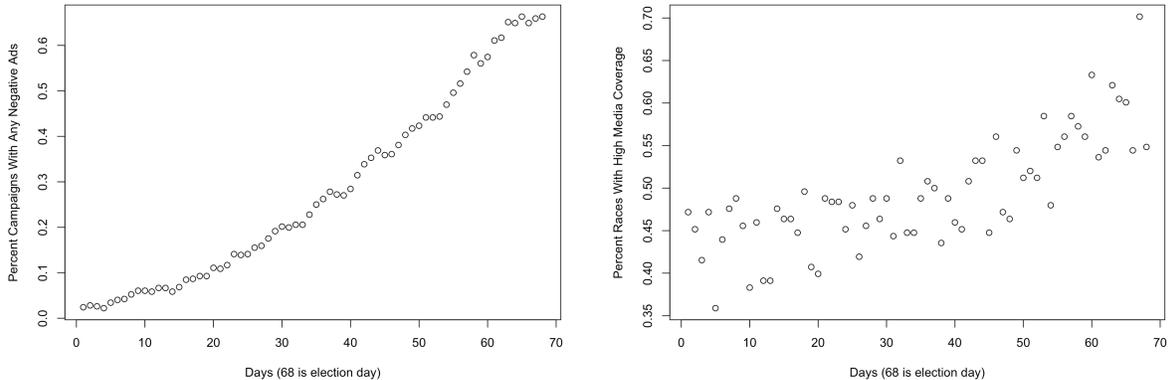


Figure 1: Time Series of *AnyNegative* and *MediaHigh* Daily Averages (Across Races)

2.2 Dynamics of tone and coverage

Given our interest in the dynamics of political campaigns, it makes sense to begin our data description by exploring some of the basic time series patterns they exhibit. We first examine how candidate negativity and news media coverage vary over the 70 days leading up to each election. The left panel of Figure 1 presents the proportion of days that *AnyNegative* equals one. The clear overall trend progresses steadily from low negativity to high. Campaigns generally start on a positive note, but become more and more negative as the election nears. This finding is consistent with Goldstein and Freedman (2002).

Turning to the temporal pattern of media coverage, the right panel of Figure 1 displays the variable *MediaHigh*, averaged across races for each day. As with negativity, news media coverage clearly increases over time, though with a more marked acceleration in the last twenty days of the contest. Indeed, the day with the lowest media coverage is in the first week of the campaign (five days after Labor Day) and the highest arrives two days before Election Day. Specifically, on the fifth day of the race, the news media in most districts hardly covers the race (only 36 percent of them have a high coverage), while two days before the election almost three quarters of them (70 percent) provide high coverage. Another way to look at this is as follows: while the news media hardly cover the race in the first three weeks of the campaign, it almost always covers it in the last three weeks.

Thus, the basic time series patterns – in which both negativity and coverage increase throughout the race – suggest that these variables (negativity and coverage) are at least correlated, though this association is not yet causal.

2.2.1 Negativity spans

Campaigns tend to air ads of the same tone for a few days or more at a time. To capture the tendency to continue with the same tone over few days, we describe these events as “spans” and provide a statistical description of their properties here. We consider both candidates’ tones together so that there are nine possible tone-pairs per race-day, corresponding to the two candidates’ choices (e.g., positive-positive, negative-positive, no ads-positive). The longest spans (23 days on average) are ones with no ads, which are largely early in the race when many campaigns do not air ads. To describe negativity, we pool over any spans that contain negative ads from either candidate. The average length of these negativity spans is 8.9 days. Of races that ever go negative, on average, they include 3.8 such spans (3.3 if considering all races). We plot the histogram of the number of these negativity spans per campaign in Figure 2. The modal case is two negativity spans (32%), with most of the mass centered closely around this mode as 56% of races have between 2 and 4 negativity spans. Races with only one such negativity span occur in only 12.5% of the total cases. Further, these negativity spans are spread across the campaign, with 44% of the spans with some negativity occurring prior to the last 30 days of the campaign. Taken together, these features suggest that the dynamics of negativity are an important feature of the decision to go negative.

2.3 The correlation between tone and coverage

The correlation between media coverage and negativity isn’t very large, 0.11, but is highly significant ($p < .0001$), and as illustrated later, quite meaningful. The correlation is the highest in the 2004 elections (0.17) compared with only 0.08 in 2000 and 0.07 in 2002. Recall that our measure of negativity includes both days with only negative ads and days with a mixture of negative and positive ads. If we do not consider days with

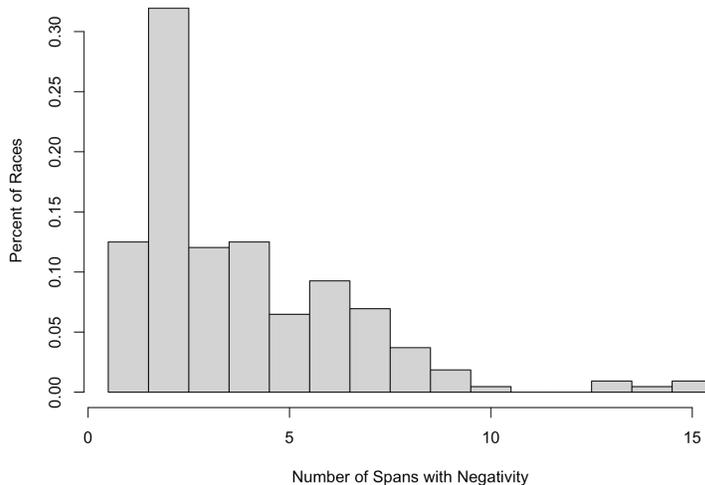


Figure 2: Distribution of the Number of Spans of Negativity per Race

mixture of tones as “negative” correlation decreases to 0.07 ($p < .0001$).

On days in which the media coverage is low and the candidates air ads, the share of negativity is 55 percent. On days in which the coverage is high, the share of negativity increases to 62 percent. Looking at the other side of the coin, we find that, on days that a candidate goes negative, the prospect of high coverage is 58 percent compared with only 46 percent if she doesn’t. All in all, these statistics suggest that negativity and coverage tend to go together. However, so far, we have not examined causality.

2.4 The effect of tone on coverage

Previous studies have examined how media coverage depends on the campaign’s tone. The theoretical argument is intuitive: the news media’s success depends on attracting readers, and sensational news does a better job in this task than standard news (Bennett 2003; Patterson 1994). Since attack and comparison ads bring any controversy in the campaign to the forefront, the news media is more likely to echo and amplify negative ads in comparison to positive ones.

Existing empirical work supports this idea (Ridout and Smith 2008, Fowler and Ridout 2009, Geer 2012, and West 2018). West (2018), for example, evaluates the negativity of TV news coverage of presidential advertising on CBS Evening News from

1972 to 2008. He finds that 66% of the ads discussed were negative. Ridout and Smith (2008) use content analysis of news coverage in ten Senatorial races in 2004 to show that attack and contrast ads are more likely to receive media attention than positive ads. In their analysis, the dependent variable is the number of newspapers mentions of each ad, while the explanatory variables are various characteristics of the ad, the race, and the newspaper. One of the attributes of the advertising is tone. The authors found that both attack and contrast ads are likely to be mentioned more than positive ads, and their effect was quite similar (the coefficient of attack ads was 1.437 and the one for contrast ad was 1.3).

In Appendix A we show that similar patterns arise in our sample. Specifically, using content analysis of newspapers articles about ads, following Ridout and Smith (2008), we show that a negative ad is more likely (than a positive ad) to appear in the news. In other words, free media focuses on negative ads more than paid media.

The evidence so far demonstrates that a negative ad is more likely to be reported on in the news than a positive one. There are several mechanisms that might lead to this result. One hypothesis is that media coverage increases during times of the race when tone is negative. In other words, the media pay more attention to the race when it is nasty and thus a negative ad has a better chance to be covered than a positive one.

This hypothesis is examined in Table 2, which reports regression results. The dependent variable is the media attention – i.e., *MediaHigh*. The explanatory variable of interest is whether the campaign airs negative ads on the previous day – *AnyNegative_Lagged*. The estimation also controls for (1) year dummies, (2) a time trend (i.e., a quadratic form of the number of days until the elections), (3) day of week effects, and (4) district fixed effects.

The estimation results support the hypothesis that the media is more likely to cover the race following days in which the tone is negative than after days in which it is not. This result is preliminary and should be treated with caution. In the next section, we show that in our final specification that includes more control variables and the instrumental variables, the effect of tone on coverage becomes insignificant. We return

to these analyses in our discussion of potential mechanisms in the concluding section.

	<i>Dependent variable:</i>		
	(1)	(2)	(3)
		medHigh	
AnyNegative_Lagged	0.039*** (0.006)	0.033*** (0.006)	0.032*** (0.006)
Weather			-0.004 (0.021)
Sport			-0.084*** (0.012)
SportSameState			-0.135*** (0.017)
SportNextDistrict			0.010 (0.012)
NewsCrime			-0.050** (0.024)
DaysUntilElection	-0.005*** (0.0004)	-0.005*** (0.0005)	-0.005*** (0.0005)
DaysUntilElection2	0.00004*** (0.00001)	0.00004*** (0.00001)	0.00005*** (0.00001)
MHC_Gannet:DaysUntilElection		0.002*** (0.0002)	0.001*** (0.0002)
MHC_CNHI:DaysUntilElection		-0.002*** (0.0003)	-0.002*** (0.0003)
MHC_Lee.Enterprises:DaysUntilElection		0.002*** (0.0004)	0.002*** (0.0004)
MHC_Ogden:DaysUntilElection		0.002*** (0.0004)	0.002*** (0.0004)
MHC_Boone:DaysUntilElection		0.001* (0.001)	0.001* (0.001)
MHC_Landmark:DaysUntilElection		-0.001*** (0.0003)	-0.001*** (0.0003)
MHC_Paxton:DaysUntilElection		0.002*** (0.0004)	0.002*** (0.0004)
MHC_Knight.Ridder:DaysUntilElection		0.0004 (0.0005)	0.001 (0.0005)
MHC_New.Media.Corp:DaysUntilElection		-0.001** (0.001)	-0.001** (0.001)
MHC_Hearst.Newspapers:DaysUntilElection		-0.003*** (0.001)	-0.003*** (0.001)
MHC_Pulitzer.Inc:DaysUntilElection		0.0005 (0.001)	0.0004 (0.001)
Day of Week Effects	Y	Y	Y
Year Effects	Y	Y	Y
District Fixed Effects	Y	Y	Y
Observations	33,728	33,728	33,728
R ²	0.410	0.414	0.416
Residual Std. Error	0.385 (df = 33551)	0.384 (df = 33540)	0.383 (df = 33535)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2: Descriptive Regressions on Media Coverage

3 Instruments and first stage results

The core focus of this study is on demonstrating that the news media plays an important and significant role in political campaigns. For this purpose, we wish to show that one of the critical decisions made by candidate – when to “go negative” – is affected by the attention that the news media pay to the campaign. Such an empirical question raises an immediate endogeneity concern, since it is unreasonable to assume media coverage is exogenous to the candidates’ tone.

To address these concerns, we estimate the effect of coverage on tone using 2SLS regression. Note that using 2SLS also assists in resolving the potential measurement error in the media coverage variable noted in section 2. The 2SLS analysis will be presented in the next section. This current section introduces two sets of potential instrumental variables (IVs) – ownership by media holding companies and events that crowd out political news – and then presents the dependence of media coverage on these IVs and the control variables.

3.1 Media holding companies

Not all media outlets are highly interested in politics. Variation in coverage among news media (not just in politics) is the norm. Each newspaper has an editorial policy that governs its interest in various topics. For example, while some news media elaborate and intensely cover crime stories, others focus more intently on business news.

Such heterogeneity in interest can provide us with exogeneous variation in media coverage. For example, if we know that the news media that operates in district A is more interested in politics than the one that exists in district B, we would expect to find that the media coverage of the race in district A is more intense than that of B.

The editorial policy is arguably determined a long time before each specific political campaign, and it is, thus, likely to be a good instrument for particular tone decisions during the campaign. To ensure even further that the editorial policy is exogeneous to each specific district, we leverage on the ownership structure of newspapers in the

USA.

In the United States, a small number of large media holding companies own a large proportion of local newspapers. Such media holding companies (MHCs, hereafter) are likely to have editorial policies that are followed, at least to some degree, by their local newspapers. Consider, for example, the sensationalist focus of newspapers in the Murdoch portfolio. Indeed, Eshbaugh-Soha (2010) find that the tone of local newspaper coverage of presidential races depends on the corporate ownership. The ownership of local newspapers is not expected to directly influence campaign decisions, but rather influence the newspaper's coverage of the campaigns and their advertising through the coverage.

We collect information about the structure of these MHCs from historical information drawn from news articles and websites. We examine the top eleven MHCs, which include Gannet, CNHI, Lee Enterprises, Ogden, Boone, Landmark, Paxton, Knight Ridder, News Media Corp, Hearst Newspapers, and Pulitzer, Inc. For each entity, we identify the districts that are covered by the newspapers owned by the MHC. Some districts have multiple newspapers held by one or more MHCs. Of the 248 races we study, 147 are covered by at least one newspaper controlled by a MHC, and 59 by at least two. The dominant MHC in our sample is Gannet, whose newspapers cover 22% of the races. See Table 1 for descriptives of the coverage of races by the MHCs.

There are a few changes in ownership within district between years, but there is no change in ownership during the 70 days of any of the campaigns in our data. Hence, MHCs have limited variation within a district. However, it is reasonable to expect that, in practice, the editorial decisions are not fixed during the campaign. For example, we know that the interest of the media in local politics grows as Election Day comes close. Furthermore, it is also quite reasonable to expect that this increase in interest is not identical for all MHCs, given their different editorial policies. To incorporate this variation, we allow the MHCs variables to interact with a time trend (i.e., number of days until Election Day) in constructing our instruments.

To get a preliminary sense of the role that this set of variables might play, they were

added to the estimation model reported in the previous section (i.e., Table 2). The estimates (presented in column 2 of Table 2) demonstrate the vast heterogeneity in the interest of the MHCs over the days of the campaign. To get a sense of the meaning of these estimates, recall that the estimation already includes a general time trend (i.e., a quadratic function of the variable *DaysUntilElection*), which captures the average increase in interest in politics as Election Day gets closer. Compared with this average trend, some MHCs pay more attention to the early days of the campaign (e.g. Ogden), while others (especially Hearst Newspapers) focus on the days closer to Election Day.

3.2 Crowding out variables

The daily attention given by the local media to a congressional race depends on the other topics that make the news. Some days are slow, with very few things happening, while others are crowded with newsworthy events. When things are slow, the news media is likely to “fill up” the space with anything, including, of course, reporting on the local campaign. On the other hand, on busy days, news on congressional races is likely to be crowded out.

In order to measure the daily interest of the media in news regarding the campaigns, we identified three types of events that are likely to draw the media’s attention and crowd-out reporting on anything else – severe weather conditions, a major crime story, and sporting events. It is reasonable to expect that, for example, a major local crime story would attract the attention of the local news media and crowd-out any news on the local congressional race, but such an event is not likely to have a direct effect on the decisions of the candidates to go negative on that day. Thus, it makes sense to expect that such variables can serve as good IVs.

The category of “severe weather” includes tropical storms and hurricanes, but also natural disasters such as earthquakes and floods (*Weather*). “Major crime” included mass killings, terror attacks, killings by serial killers, and other criminal cases that would receive broad media coverage and public attention (*NewsCrime*). “Sport events” included major league sporting events: NHL, NFL, MLB, and the NBA. The data was

collected from local and national online sources. Given the variety of sporting events, we have split them into three categories: events in the focal district (*Sport*), in the neighboring district (*SportNextDistrict*), and in the state (*SportSameState*). The most frequent event is sports in neighboring districts, which covers 10% of the cases. Table 1 presents some basic statistics about these data.

To get a preliminary sense of the role that this set of variables might play, they were added to the estimation model reported in the previous subsection. The estimates (presented in column 3 of Table 2) demonstrate that four of the five variables have the expected negative sign and three of those are significant (“sport events in the district” and “sport events in the state” are significant at $p < .0001$ and “major crime” stories at $p < .05$).

3.3 Interactions

Another set of variables that can potentially serve as instruments are interactions between the two sets of IVs just discussed (MHCs and crowding out). It makes sense to include this set of variables for two reasons: theoretical and empirical. Theoretically, these interactions seem relevant because all of them reflect editorial policy considerations. For example, it seems likely that newspapers that belong to different MHCs will adjust their coverage of political issues differently when there is a major crime story. The reasoning is as follows: MHCs’ editorial policies are relevant not only to political reporting, but to all news categories. In other words, if two MHCs differ in their treatment of political topics they are likely to differ also in their coverage of most other issues as well. The second reason to include the interaction is simple – empirically there is some chance that the interactions improve the fit of the model and thus will assist us in the 2SLS analysis.

To get a preliminary sense of the role that this set of variables might play, they were also added to the estimation model reported in the previous subsection. The estimates are presented in column 1 of Table 4 in Appendix B. These results are included in the Appendix due to the large number of coefficient estimates. The estimates demonstrate

that these interactions add richness to the analysis. For example, we find that the crowding out effect of sport events (in the district) is even stronger for the newspapers owned by the MHC Knight Ridder, and that crime stories have an extra crowding out effect for newspapers owned by the MHC CNHI.

3.4 Testing the instruments

Finally, in order to test for the usefulness of the variables above as instruments in the 2SLS reported in the next section, we add variables that are expected to have a direct effect on negativity (i.e., in the second stage of the estimation). We discuss these variables now and justify their inclusion in the next section.

The list of variables in this category includes (1) race characteristics, (2) candidate’s attributes, and (3) demographics of the district. The race characteristics variables are (i) whether the race was defined as closely contested by Cook’s Political Report based on being categorized as a “toss-up” (*TossUp*), (ii) a binary variable that equals one if neither one of the candidates is an incumbent (i.e. *OpenSeat*), and (iii) a binary variable that equals one if the two candidates competed in the same race two years earlier (*SameOpponent*). The candidate-specific variables are whether she is: (i) the *Frontrunner*, (ii) the *Incumbent*, and/or (iii) a *Republican*. The demographic variables are: (i) the proportion of white voters in the district (*PercentWhite*), (ii) the share of individuals with a Bachelor degree (*PercentBachelorsDegree*), and (iii) the mean income of a household in the district (*MeanHouseholdIncome*).

These variables are added to the ones already included in Table 2 (e.g., the time trend). The results, reported in column 2 of Table 4 in Appendix B, account for Congressional district fixed effect and the standard errors are clustered by district. These results correspond to the first stage estimates for the causal model that is discussed in the next section.

The question of whether the instrumental variables (i.e., the interaction between the MHCs and time, the crowding out variables and the interaction between the crowding out and the MHCs) provide sufficient power can be addressed by the partial F-test

of these variables in this regression. The result is reassuring – ($F[63, 165] = 66.59$; $p < .0001$) – supporting the use of these variables as instruments in the 2SLS analysis.

Another interesting result in column 2 of Table 4 is that the coefficient of lagged tone (*AnyNegative_Lagged*) is insignificant. In other words, media coverage does not depend on the tone of the race in the proceeding day. Of course, we should be careful in putting too much weight on any insignificant result.

4 Results: media attention encourages negativity

We approach the empirical question – does media coverage affect candidates’ tone – without a specific theory in hand.

On the one hand, it seems reasonable to expect that media attention encourages negativity. Two related rationales are available. The first is that media, due to its commercial considerations (Patterson 1994), are biased toward negative ads versus positive ones. As mentioned above, this idea is consistent with the evidence in previous studies. If the media is more likely to echo negative ads, when media coverage is high, candidates should air more negative ads. The second is that negative ads are more effective than positive ads in convincing consumers (Gordon, Lovett, Luo, and Reeder 2021). In this case, when media coverage is high and there is a good chance that ads will be echoed by the press, candidates should air more negative ads. In either case, as accounts of campaigns suggest (Feltus, Goldstein, and Dallek 2017, p. 139), candidates might hold on to damaging material in anticipation of the right moment.

On the other hand, previous findings have also suggested that, in some cases, media coverage of a negative ad can backfire (see Kahn and Kenney 1999; Ridout and Fowler 2012 and Pedersen 2014 who discuss the framing effect and Major and Andersen 2016 that highlight the potential backfire). Therefore, while we expect media coverage to lead to higher negativity, the opposite is also possible.

In this section, we report the results of a two-stage least squares (2SLS) analysis in which tone is the focal dependent variable and media coverage is the endogenous

regressor. The estimation includes day of week effects, year effects, and congressional district fixed effects, as well as a set of control variables for lagged negativity, time within a race (a quadratic form of the variable `DaysUntilElection`), and race, candidate, and (yearly-varying) district characteristics. The standard errors are clustered at the congressional district level.

The estimates are presented in Table 3. Furthermore, in order to assess the robustness of the results, the table reports the results for specifications that evaluate alternative operationalizations of the media coverage variable (columns 1-4) and the dependent variable (column 5). We start by presenting an overview and interpretation of the focal effects in our preferred model, we then discuss robustness across alternative specifications, and then return to the other explanatory variables.

The effect is as expected – media attention encourages negativity. In all five specifications, we find a significant and positive effect. The result is robust to a variety of operationalizations of the variables of interest.

The operationalization of the media coverage in the first column captures the essence of the media attention the best – it distinguishes between times in which the media pays attention to the race (i.e., the media coverage of the race is above the median) and times in which it does not (*MediaHigh*). The operationalization of the dependent variable in this column is also optimal in our view, as it considers any day in which some of the ads were negative as “negative” – i.e., it does not require that all ads that were aired that day be negative.

The coefficient in the first column of the table is 0.081 (s.e. = 0.017; $p < .001$). This magnitude indicates that, on average, shifting from low to high media coverage increases the probability of airing negative ads by eight percentage points. Since campaigns on average air negative ads on 28% of days, the coefficient represents a substantial average increase.

This effect size appears consistent with those in columns 2-4. In these columns, we introduce candidate-specific media coverage measures and measures that count the number of articles, rather than using the median split. In column 2, the media

	<i>Dependent variable:</i>				
	(1)	(2)	(3)	(4)	(5)
AnyNegative_Lagged	0.887*** (0.006)	0.887*** (0.006)	0.888*** (0.006)	0.888*** (0.006)	
OnlyNegative_Lagged					0.843*** (0.007)
TossUps	0.014 (0.011)	0.022** (0.010)	0.028*** (0.010)	0.029*** (0.010)	0.003 (0.011)
OpenSeat	0.046*** (0.011)	0.031*** (0.009)	0.030*** (0.010)	0.026*** (0.008)	0.035*** (0.011)
SameOpponent	0.007 (0.009)	0.004 (0.009)	0.007 (0.007)	0.005 (0.008)	0.002 (0.009)
Frontrunner	-0.001 (0.004)	0.005 (0.004)	0.003 (0.003)	0.004 (0.004)	0.005 (0.004)
Incumbent	0.012*** (0.003)	0.001 (0.004)	0.009*** (0.003)	0.004 (0.004)	0.016*** (0.003)
Republican	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.003 (0.002)	0.005*** (0.002)
PercentWhite	0.020 (0.086)	0.100 (0.071)	0.073 (0.069)	0.108 (0.073)	0.017 (0.064)
PercentBachelorsDegree	0.310 (0.217)	0.333* (0.175)	0.359** (0.176)	0.343* (0.178)	0.417** (0.188)
MeanHouseholdIncome	-0.261 (0.176)	-0.294** (0.148)	-0.349** (0.145)	-0.346** (0.143)	-0.365*** (0.135)
DaysUntilElection	-0.001*** (0.0003)	-0.001*** (0.0003)	-0.002*** (0.0003)	-0.002*** (0.0003)	-0.001* (0.0003)
DaysUntilElection2	0.00000 (0.00000)	0.00000 (0.00000)	0.00001 (0.00000)	0.00001 (0.00000)	-0.00000 (0.00000)
'MediaHigh(fit)'	0.081*** (0.018)				0.069*** (0.023)
'MediaHighCandidate(fit)'		0.077*** (0.020)			
'log(MediaArticles + 1)(fit)'			0.014** (0.006)		
'log(MediaArticlesCandidate + 1)(fit)'				0.018** (0.008)	
Day of Week Effects	Y	Y	Y	Y	Y
Year Effects	Y	Y	Y	Y	Y
District Fixed Effects	Y	Y	Y	Y	Y
Observations	33,728	33,727	33,728	33,728	33,728
R ²	0.874	0.874	0.878	0.877	0.762
Residual Std. Error	0.160 (df = 33541)	0.160 (df = 33540)	0.158 (df = 33541)	0.158 (df = 33541)	0.171 (df = 33541)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 3: Results from 2SLS Analysis

coverage variable is the same as in column 1 with one important difference – it is candidate-specific rather than race-specific (*MediaHighCandidate*). In other words, we separately consider how each candidate obtains high or low media coverage. For this candidate-specific measure, we find an effect size of 0.077, which is quite similar to that of the race level variable. While the operationalization in column 1 seems more reasonable, it is reassuring that the result is robust to a different definition of the endogenous variable.

While columns 1 and 2 use *MediaHigh* which distinguishes between high and low coverage, columns 3 and 4 use the natural logarithm of the actual number of newspapers articles covering the race (*MediaArticles* in column 3) and the candidate (*MediaArticlesCandidate* in column 4). Note that, in practice, we add 1 to all values before taking logs to avoid the singularity. In both of these cases, the effect sizes are measured to be 0.014 and 0.018, which might appear small, but in practice do not differ much from the 8 percentage points reported above. Specifically, negativity is about 6 percentage points higher if the media coverage shifts from no articles to two standard deviations higher articles. Taking into account the restrictive curvature of the logarithm, the estimates appear to be quite similar. Again, while we view the operationalization of the media via *MediaHigh* to be the most sensible, the results in columns 3 and 4 provide support for the robustness of the main result.

Unlike columns 1-4, in column 5 the dependent variable is more exclusive: in order for a day to be considered “negative” all ads aired that day need to be negative (*OnlyNegative*). In other words, even if only one ad aired on that day was positive, the tone is not defined as negative. As a result, the percent of observations that are defined as “negative” decreases from 28.5 to 14.2. The finding is again consistent with the idea that media attention stimulates negativity – the estimate is smaller (0.069), but still significantly different from zero.

Overall, these results indicate a robust, statistically significant finding that higher media coverage causes an increase in candidates airing negative ads. The magnitudes are substantial and suggest that media plays an important role in shaping the negativity

of races.

We next discuss the control variables focusing on the specification in column 1 (our preferred specification). Recall that the estimates of the first stage are presented in Appendix B. The most obvious independent variable is lagged tone. The estimate is as one might expect – if a candidate aired a negative ad on the prior day, she is likely to continue with that tone on the focal day.

The next three variables are political characteristics of the race. These variables vary between elections. The first variable represents close races (*TossUps*). Consistent with prior research, we find that close races are more negative. However, the effect is not significant when including all of the controls. The second variable distinguished between races with and without an incumbent (*OpenSeat*). It turns out that races without an incumbent are significantly more negative. The third variable distinguished between races in which both candidates competed against each other two years ago (*SameOpponent*), and those in which at least one candidate is new. These races also tend to be more negative, but the effect is not significant.

The next three binary variables (*Frontrunner*, *Incumbent*, and *Republican*) are attributes of the candidate that sends the ads. The only variable that has a significant effect is *Incumbent*. Interestingly, the effect implies that incumbents tend to be more negative. Three variables characterize the district: percent of white individuals, percent of people with a Bachelor degree and the mean household income (in hundreds of thousands of dollars). These variables do not have a significant effect. That said, recall that the estimation includes district fixed-effects which already capture the heterogeneity of the congressional districts.

The next two variables capture the effect of time as days until the election (*DaysUntilElection*) in a quadratic form. Although the quadratic element is not significant, the significant negative estimate for *DaysUntilElection* implies that negativity increases throughout the campaign. Finally, we note unreported year effects for 2000 and 2004 (i.e., the base group is the off-election year, 2002). We find that the off-election year is characterized by significantly lower negativity.

The evidence in this section implies that the news media play an important and even critical role in political campaigns and should not be ignored. We already knew that the news media cover negative ads more than positive which could amplify the effect of negative ads more than positive. The evidence in this section illustrates that it has another role in advancing and strengthening the negativity in political campaigns – its attention encourages the candidates to escalate the negativity of their messages and ads. This portrays an interesting picture of negativity in political campaigns. Each race has intense and mild periods. In the intense (mild) periods the tone of the ads is negative (not negative) and the media coverage is high (low). Furthermore, one of the reasons that the candidate air negative ads in these period is the attention of the media.

5 Conclusion

This study shows that the news media play a meaningful role in political campaigns. Using data on the congressional races of 2000, 2002 and 2004 we find that when the news media turn their attention to one of the races, the tone of the candidates in this race is more likely to become negative (i.e., the candidates stop focusing their advertising messages solely on themselves and start talking about their rivals). To our knowledge, this is the first causal evidence of the media’s role in setting the tone of political advertising.

This study addresses the challenge of endogeneity in media coverage by identifying two new instruments. First, we exploit the ownership of local newspaper by media conglomerates. Such ownership moves some of the editorial decisions (such as, how much attention to pay to politics) from the local level to the national level, which is clearly exogenous to the daily tone decisions of congressional candidates. Furthermore, we interact the media-holding-company variables with time effects (i.e., number of days until the election) in order to capture variation in the interest of such conglomerates over the course of the race.

Our second set of instruments include variables that capture newsworthy events at the daily and local levels. These events – severe weather, sporting events, and major crime stories – can crowd-out the space allocated for political reporting in the relevant congressional district. Of course, these events do not depend on the daily tone decisions of the candidates and are expected to have a direct effect on these decisions.

Using 2SLS (with fixed-effects for congressional districts and clustered standard errors), we find that the attention of the news media encourages the candidates to be negative in their ads. In other words, the news media have a role in political campaigns and they are responsible, at least partially, for the negativity in political campaigns.

The obvious limitation of our results is that they are based on a period in which social media was not a factor. This is both an advantage and a disadvantage. It is an advantage in the sense that the effect of the news media can be estimated cleanly without worrying about its interaction with social media. It is a disadvantage in the sense that the role of the news media might be (at least partially) different when social media is in play. Thus, future research should explore the role of news media in such a setting.

We believe that the findings reported here can encourage research in additional directions. This study does not distinguish between the actions of the two candidates. It might be interesting to consider not only the dynamic interaction between the candidates and the news media, but also (at the same time) the daily interaction between the candidates. Such examination can be both empirical and theoretical. Furthermore, in the current study the budget of the candidates is exogenous. In practice, both the tone of the race and the media coverage might affect the success of fundraising efforts, and thus, total spending on ads.

It is also interesting to examine whether the coverage of the news media affects only the timing of negativity or its total volume. It is possible that the attention of the news media does not change the total negativity of the race, but rather just concentrates it in specific periods of the race. The task of empirically distinguishing between these two hypotheses is daunting and might require a natural experiment setting.

Another direction that one can take, following the findings here, relates to the content of the ads. While the tone of the candidates is the most interesting and important aspect of ads' content, the text analysis tools that exist today can shed a more precise light on the strategies of the candidates.

Previous studies (and subsection 2.4) demonstrated that negative ads are more likely to be reported by the news media than positive ones. The obvious explanation for this result is that, for commercial reasons, the media is more interested in negative ads – i.e., the news media's success depends on attracting readers, and sensational news does a better job in this task than standard news (Bennett 2003; Patterson 1994). However, the results above suggest another potential explanation. We show that when the media turns its attention to the race and start reporting on it, the tone of the candidates becomes more negative. In such a case, negative ads (aired mostly at times of high media coverage) are more likely to be echoed by the news media than positive ads (aired mostly at times of low media coverage), even without assuming that the media is more interested in negative ads. It would be interesting to find a method to distinguish between these two explanations or to measure the relevance of each of them.

Finally, while political advertising is of interest to marketers per se, our findings might encourage scholar to examine the role of news media in a commercial setting. There are significant differences between the political and commercial settings that makes such an “extension” both interesting and challenging. Unlike political campaigns, commercial campaigns are not limited in time (by something like Election Day), and thus, it is possible that the coverage of a specific industry or market does not come in spikes, but rather it is at a modest level continuously. If this is the case, it would be interesting to examine the impact of a permanent increase in the coverage of an industry on the tone of advertising of the players in this market. For example, what if Huffpost started covering the automobile industry extensively? Will that have an effect on the commercials of car makers and distributors?

This study demonstrates the meaningful role that the news media play in political setting. This should encourage us to introduce the news media in other fronts of

marketing, both theoretically and empirically.

6 References

Ansolabehere, S. and Iyengar, S. (1995). *Going Negative: How Political Advertisements Shrink & Polarize the Electorate*. The Free Press.

Bennett, W. L. (2003). *News: The politics of illusion*. New York: Longman.

Feltus, W. J., Goldstein, K. M., and Dallek, M. (2018). *Inside campaigns: elections through the eyes of political professionals*. CQ Press.

Fowler, E. F., and Ridout, T. N. (2009). Local television and newspaper coverage of political advertising. *Political Communication*, 26(2), 119-136.

Geer, J. G. (2006). In *Defense of Negativity: Attack Ads in Presidential Campaigns*. University of Chicago Press.

Geer, J. G. (2012). The news media and the rise of negativity in presidential campaigns. *PS: Political Science & Politics*, 45 (3), 422-427.

Gordon, B. R., and Hartmann, W. R. (2016). Advertising competition in presidential elections. *Quantitative Marketing and Economics*, 14 (1), 1-40.

Gordon, B. R., and Hartmann, W. R. (2013). Advertising effects in presidential elections. *Marketing Science*, 32 (1), 19-35.

Gordon, B, Lovett, M. Luo, B. and J. Reeder (2021) "Disentangling the Effects of Ad Tone on Voter Turnout and Candidate Choice in Presidential Elections", forthcoming *Management Science*.

Hedgcock, W., Rao, A. R., and Chen, H. (2009). Could Ralph Nader's entrance and exit have helped Al Gore? The impact of decoy dynamics on consumer choice. *Journal of Marketing Research*, 46 (3), 330-343.

Hoegg, M. and M. Lewis (2012). The impact of candidate appearance and advertising strategies on election outcomes? *Journal of Marketing Research*, 48 (5), 895-909.

Kahn, K. F. and Kenney, P. J. (1999) *The Spectacle of U.S. Senate Campaigns*. The Princeton University Press.

Kim, H., Rao, A. R., and A. Y. Lee, (2009). It's time to vote: the effect of matching message orientation and temporal frame on political persuasion. *Journal of Consumer Research*, 35 (April), 877–888.

Klein, J. and R. Ahluwalia (2005). Negativity in the evaluation of political candidates. *Journal of Marketing*, 69 (1), 131–142.

Lovett, M., and Peress, M. (2015). Targeting Political Advertising on Television. *Quarterly Journal of Political Science*, 10(3), 391-432.

Lovett, M., and R. Shachar (2011). The seeds of negativity: knowledge and money. *Marketing Science*, 30 (3), 430–446.

Major, M., and D. J. Andersen (2016). Polls and elections: Swift boating reconsidered: News coverage of negative Presidential ads. *Presidential Studies Quarterly*, 46 (4), 891-910.

Ogburn, W. F., and L. C. Coombs (1940). The economic factor in the Roosevelt elections. *American Political Science Review*, 34 (4), 719-727.

Patterson, Thomas E. (1994). *Out of order*. New York: Vintage Books.

Pedersen, R. T. (2014). News media framing of negative campaigning. *Mass Communication and Society*, 17 (6), 898-919.

Phillips, J., Urbany, J., and T. Reynolds (2008). Confirmation and the effects of valenced political advertising: a field experiment. *Journal of Consumer Research*, 34 (6), 794–806.

Pollock, J. K. (1930). The German Reichstag Elections of 1930. *American Political Science Review*, 24 (4), 989-995.

Ridout, T. N., Franz, M. M., and Fowler, E. F. (2014). Advances in the study of political advertising. *Journal of Political Marketing*, 13 (3), 175-194.

Shachar, R. (2009). The political participation puzzle and marketing. *Journal of Marketing Research*, 46 (6), 798–815.

Soberman, D. A., and L. Sadoulet (2007). Campaign spending limits and political advertising. *Management Science*, 53 (10), 1521–1532.

Spenkuch, J. L., and Toniatti, D. (2018). Political advertising and election results.

The Quarterly Journal of Economics, 133 (4), 1981-2036.

Wang, Y., Lewis, M., and Schweidel, D. A. (2018). A border strategy analysis of ad source and message tone in senatorial campaigns. *Marketing Science*, 37 (3), 333-355.

West, D. M. (2018) *Air Wars: Television Advertising and Social Media in Election Campaigns 1952-2016*. Sage CQ Press.

A Following Ridout and Smith (2008) with Congressional races (2000-2004)

In this Appendix we wish to examine whether the news media tend to echo negative ads more than positive ads. For this purpose we needed to determine for each newspaper article in our data (i) whether it is about advertising or not and (ii) if it about advertising, does it echo a negative or a positive ad. This required us to conduct a detailed manual data collection and analysis.

To cleanly identify media mentions specifically about advertising, we focused attention on the 50 races in our overall sample that exhibited the most news media coverage. (Recall that we have collected data on media coverage for our entire sample.) For each race we searched newslibrary.com for local news articles that contain either of the candidates' names and the term "ad*", which nests additional terms like "advertising" and "advertisements". We tried various alternative terms, and found the term "ad" provided a large degree of precision than others (e.g., "media"), while avoiding too small of a sample (e.g., "advertisement"). We also found that most articles that covered advertising in a race mentioned both candidates. Each such search produces an ordered list of articles for each race from which we randomly selected articles to examine manually. This random selection provides a representative sample that is feasible to analyze given the manual process that is required.

We start from a sample of 1119 articles across the 50 races. Two judges evaluated each of the articles. Their first task was to determine whether the article is about an advertisement.

Part of the judgment related to whether the article was relevant to our study. Considerable effort was taken to avoid evaluating the tone of non-advertising content (e.g., a campaign speech) and to ensure that the evaluation was specifically about ads in that race (many articles cover multiple local races). Specifically, the articles were filtered for four conditions. First, that the article mentioned political advertising. Second, that the political advertising was on TV. Third, that the TV ads were aired by the candidates or

the party (i.e., not independent groups or political action committees (PACs)). Fourth, that the TV ads could be identified as positive, negative, or both.

We coded up to 10 articles per race that met these criteria. The minimum, median, and maximum number of articles used to evaluate tone per race are 1, 4, and 10, respectively. Through the selection process described above, our final sample includes 41 races and 197 articles. This number may appear small. Our filtering criteria are quite strict in the sense that we require the content of the articles to clearly indicate that they are about political advertising on TV by the candidate or party. There are many more articles that could be construed as about advertising, but we throw them out because they do not specifically indicate so. We also analyzed the data with less strict filtering and found similar conclusions. Out of all cases, these independent evaluations were in agreement 87.71% of the time. The discrepancies were then resolved by joint re-evaluation.

In order to examine whether the media focuses on negative messaging, we construct two variables for each race: (1) the percentage of articles about negative advertising (vs. positive advertising) out of all the ads that were covered by the news media, and (2) the proportion of advertising (by both candidates) that is spent on negative ads. The percent of advertising spending that is negative is calculated using the 70 days leading up to the election for each of the relevant races and comes from the CMAG/WAP advertising data. The two variables are positively and significantly correlated ($\rho = 0.34$, $p = .03$), providing face validity to our manual data collection effort.

Figure 3 addresses the question of whether the media is more likely to echo a negative versus a positive ad. Each point represent a particular race. The x-axis represents the proportion of ads that are negative (out of all the ads aired in this race). The y-axis represents the proportion of articles that discuss negative ads (out of all the ads covered by the media). If the news media does not prefer one type of tone over the other (e.g., negative over positive), we should expect that the observations would be close to the 45 degree line. If the observations are above (below) the 45 degree line, the media prefer negative over positive ads (positive over negative ads. It is easy to see that most races

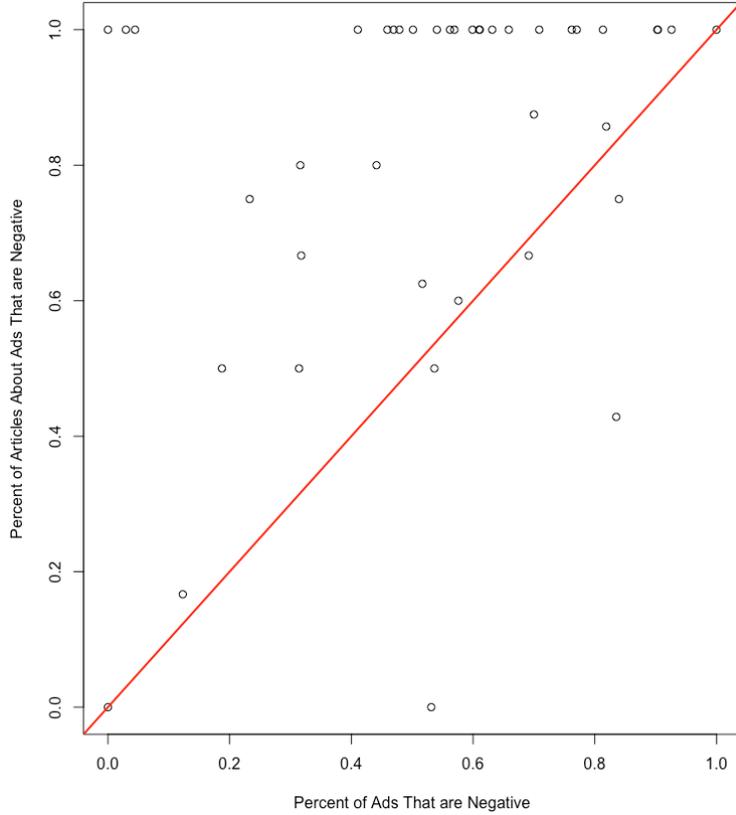


Figure 3: Plot of Media Coverage of Negative Ads vs. Actual Negative Ads

fall above the 45 degree line. In fact, 83% of the races have more reporting of negative ads than airing of these ads.

While the figure illustrates this result visually, it can be also tested statistically. Aggregating the data, the mean difference between the percent of media coverage of negative advertisements and the percent of negative advertisements is 28.16% (t-stat = 5.71, $p < .001$). This result clearly indicates that news media coverage slants heavily toward negative advertisements.

The evidence in this Appendix is somewhat similar to that of Ridout and Smith (2008) who already illustrated this point with ten U.S. Senate campaigns in 2004.

B First stage: the effect of the instruments on media coverage

	<i>Dependent variable:</i>	
	MediaHigh	NA
	(1)	(2)
AnyNegative_Lagged	0.031*** (0.006)	0.011 (0.022)
TossUps		0.352*** (0.110)
OpenSeat		-0.361*** (0.101)
SameOpponent		-0.016 (0.094)
Frontrunner		0.080*** (0.024)
Incumbent		-0.055*** (0.018)
Republican		0.001 (0.003)
PercentWhite		0.671 (0.815)
PercentBachelorsDegree		-0.552 (2.538)
MeanHouseholdIncome		-0.735 (1.800)
Weather	-0.008 (0.030)	0.022 (0.043)
Sport	-0.078*** (0.017)	-0.052 (0.042)
SportSameState	-0.046* (0.024)	-0.041 (0.181)
SportNextDistrict	0.021 (0.016)	0.028 (0.096)
NewsCrime	-0.056 (0.035)	-0.054 (0.061)
DaysUntilElection	-0.006*** (0.0005)	-0.006*** (0.001)
DaysUntilElection2	0.00005*** (0.00001)	0.00005*** (0.00001)
MHC_Gannet:DaysUntilElection	0.002*** (0.0003)	0.001* (0.001)
MHC_Gannet:Weather	-0.087 (0.064)	-0.103 (0.067)
MHC_Gannet:Sport	0.181*** (0.032)	0.140** (0.056)
MHC_Gannet:SportSameState	0.184*** (0.044)	0.134 (0.199)
MHC_Gannet:SportNextDistrict	-0.177*** (0.034)	-0.185* (0.109)
MHC_Gannet:NewsCrime	0.059 (0.055)	0.044 (0.084)
MHC_CNHI:DaysUntilElection	-0.002*** (0.0003)	-0.001 (0.001)
MHC_CNHI:Weather	0.010 (0.059)	0.017 (0.084)
MHC_CNHI:Sport	-0.140*** (0.047)	-0.176*** (0.060)
MHC_CNHI:SportSameState	0.096 (0.066)	0.123 (0.147)
MHC_CNHI:SportNextDistrict	0.042 (0.043)	0.014 (0.072)
MHC_CNHI:NewsCrime	-0.128* (0.068)	-0.118 (0.090)
MHC_Lee.Enterprises:DaysUntilElection	0.002*** (0.0004)	0.001 (0.001)
MHC_Lee.Enterprises:Weather	0.095 (0.165)	0.066 (0.206)
MHC_Lee.Enterprises:Sport	-0.135 (0.428)	-0.121 (0.099)
MHC_Lee.Enterprises:SportSameState		
MHC_Lee.Enterprises:SportNextDistrict	0.113 (0.073)	0.139** (0.064)
MHC_Lee.Enterprises:NewsCrime	0.173* (0.100)	0.167* (0.094)
MHC_Ogden:DaysUntilElection	0.002*** (0.0004)	0.002 (0.001)
MHC_Ogden:Weather	-0.025 (0.103)	-0.051 (0.072)
MHC_Ogden:Sport	-0.034 (0.066)	-0.036 (0.075)
MHC_Ogden:SportSameState	-0.100 (0.122)	-0.138 (0.254)
MHC_Ogden:SportNextDistrict	0.009 (0.042)	0.012 (0.187)
MHC_Ogden:NewsCrime	-0.029 (0.085)	-0.043 (0.086)
MHC_Boone:DaysUntilElection	0.001 (0.001)	0.001 (0.001)
MHC_Boone:Weather	0.181 (0.125)	0.126* (0.074)
MHC_Boone:Sport		
MHC_Boone:SportSameState		
MHC_Boone:SportNextDistrict		
MHC_Boone:NewsCrime	0.171 (0.205)	0.154* (0.090)
MHC_Landmark:DaysUntilElection	-0.001*** (0.0003)	-0.001 (0.001)
MHC_Landmark:Weather	-0.074 (0.058)	-0.111 (0.078)
MHC_Landmark:Sport	0.148 (0.107)	0.173 (0.107)
MHC_Landmark:SportSameState	-0.600*** (0.050)	-0.418* (0.217)
MHC_Landmark:SportNextDistrict	0.248*** (0.040)	0.118 (0.166)
MHC_Landmark:NewsCrime	-0.051 (0.069)	-0.063 (0.096)
MHC_Paxton:DaysUntilElection	0.003*** (0.0004)	0.002* (0.001)
MHC_Paxton:Weather	-0.022 (0.082)	-0.039 (0.145)
MHC_Paxton:Sport	0.179*** (0.061)	0.186*** (0.066)
MHC_Paxton:SportSameState	-0.031 (0.073)	0.019 (0.159)
MHC_Paxton:SportNextDistrict	-0.104** (0.052)	-0.114 (0.074)
MHC_Paxton:NewsCrime	0.057 (0.196)	0.035 (0.177)
MHC_Knight.Ridder:DaysUntilElection	0.002*** (0.0005)	0.001 (0.002)
MHC_Knight.Ridder:Weather	0.281*** (0.099)	0.239 (0.261)
MHC_Knight.Ridder:Sport	-0.157*** (0.034)	-0.100 (0.156)
MHC_Knight.Ridder:SportSameState	-0.577*** (0.194)	-0.422** (0.212)
MHC_Knight.Ridder:SportNextDistrict	-0.086 (0.055)	-0.115 (0.092)
MHC_Knight.Ridder:NewsCrime	0.279** (0.128)	0.320*** (0.108)
MHC_New.Media.Corp:DaysUntilElection	-0.001 (0.001)	-0.001 (0.001)
MHC_New.Media.Corp:Weather	0.054 (0.398)	-0.137 (0.112)
MHC_New.Media.Corp:Sport	-0.006 (0.539)	-0.007 (0.005)
MHC_New.Media.Corp:SportSameState	0.040 (0.384)	-0.069 (0.080)
MHC_New.Media.Corp:SportNextDistrict	-0.214 (0.385)	0.159 (0.137)
MHC_New.Media.Corp:NewsCrime	-0.116 (0.122)	-0.145 (0.159)
MHC_Hearst.Newspapers:DaysUntilElection	-0.003*** (0.001)	-0.003*** (0.001)
MHC_Hearst.Newspapers:Weather	0.105 (0.097)	0.082 (0.165)
MHC_Hearst.Newspapers:Sport		
MHC_Hearst.Newspapers:SportSameState		
MHC_Hearst.Newspapers:SportNextDistrict		
MHC_Hearst.Newspapers:NewsCrime		
MHC_Pulitzer.Inc:DaysUntilElection	0.0001 (0.001)	0.0002 (0.001)
MHC_Pulitzer.Inc:Weather	-0.167 (0.290)	-0.191** (0.081)
MHC_Pulitzer.Inc:Sport	-0.053 (0.381)	-0.078* (0.042)
MHC_Pulitzer.Inc:SportSameState	0.072 (0.274)	0.126 (0.205)
MHC_Pulitzer.Inc:SportNextDistrict	-0.051 (0.275)	0.073 (0.155)
MHC_Pulitzer.Inc:NewsCrime	-0.138 (0.314)	-0.049 (0.207)
Day of Week Effects	Y	Y
Year Effects	Y	Y
District Fixed Effects	Y	Y
Observations	33,728	33,728
R ²	0.423	0.453
Residual Std. Error	0.381 (df = 33488)	0.371 (df = 33479)

Note:

* p<0.1; ** p<0.05; *** p<0.01

Table 4: Media Coverage Regressions (Column 2 is 1st Stage Regression of 2SLS)