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The Effects of News Media Bias on Election Outcomes:

A Comprehensive Study of Interpretive-Framing, Priming and Agenda-Setting

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A Thesis in the Field of Government

for the Degree of Master of Liberal Arts in Extension Studies

Harvard University

February 2026

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Abstract

News media has the ability to create biases and influence audience perceptions by emphasizing certain elements of a narrative and minimizing others (Semetko and Scammell 2012). However, different news biases have different degrees of effectiveness in encourage (or discourage) broader political participation and affecting voters' political preferences in different geographic regions and electoral periods. This research studies the appearance and the timing of various media bias (using interpretative-framing, priming and agenda-setting techniques) before and after presidential elections in local political news reporting in all 50 states from 1980 to 2021. The empirical results show that the use of liberal-leaning priming technique used in the news increases the probability of electing Democratic presidential candidates while reducing the chance of Republican candidates. On the other hand, the use of conservative-leaning priming and agenda-setting techniques reduces the probability of electing Democratic candidates. In terms of voter participation, left-leaning interpretive-framing reduces the voting rate of Republican voters and left-leaning priming increases the rate of Democrat voters. Finally, the appearance of conservative-leaning agenda-setting technique is associated with a lower voter participation in the Democratic Party.

Acknowledgments

I extend my deepest gratitude to my thesis director James Herron for his constructive feedback and essential suggestions that enhanced the quality of my work throughout my research journey.

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Chapter I.

The Influence of News Media

The man who reads nothing at all is better educated than the man who reads nothing but newspapers.

—Thomas Jefferson

The influence of news media bias is especially noticeable in today's fragmented media environment, where individuals tend to gravitate towards news sources that reinforce their existing viewpoints. How exactly news media outlets effectively use various techniques to affect voter participation and influence election outcomes? For instance, framing a political candidate's actions as "bold leadership" versus "reckless decision-making" can drastically alter public perception. This particular focus has the potential to elicit emotional reactions, connecting favorable or unfavorable sentiments with the candidate, thereby perpetuating inherent prejudices and reinforcing prevailing viewpoints. It could cause polarization, as individuals may become firmly rooted in their own beliefs, hindering the ability to partake in meaningful discussions or entertain differing viewpoints and sway voting choices, ultimately molding the political environment. Studies have shown that framing, the process of highlighting certain aspects of an issue while downplaying others, can significantly influence voters' perceptions and ultimately their choices at the ballot box (Binder et al., 2015). This hypothesis has been challenged by other scholars who have suggested that news may not matter for voting outcomes (Gerber et al., 2009). At least, the literature has shown us that news media do frame the news in the U.S.

(Puglisi & Snyder, 2011) and the U.K. (Greer & Mclaughlin, 2018), and news coverage does help voters better evaluate political candidates and encourage them to vote (Hayes & Lawless, 2015).

Research Hypotheses

There are three separate mechanisms through which news framing can affect public political leanings: agenda setting, priming, and framing effects (Roessler, 2008):

Hypothesis 1: The effects of interpretive framing

Interpretive framing is more likely used during a contentious election where misinformation is rampant, particularly at the earlier stages of election cycles. News media may use different interpretations of political news to focus on clarifying policies, for example each party's agenda on border issues, the scope of foreign threats and trade, and the portraying of immigrants as criminals in 2024, rather than merely presenting them to the general audience. If there exists a framing effect from the news to the general public, it suggests that news media is capable of influencing how the public interprets events, understands issues, and attributes responsibility, potentially swaying opinions and shaping specific policy preferences or opposition.

Hypothesis 2: The effects of strategic priming

Strategic priming of issues pertinent to particular demographic groups—such as economic growth for white voters—are more likely to encourage greater participation in voting. Specific demographics may show disengagement from the electoral process. For example, right-wing news media's reinforcement of the narrative of "Making America

Great Again" help engage voters of such demographics and subsequently attract more voters leaning towards the Republican candidates.

Hypothesis 3: The effects of agenda setting

Agenda-setting technique is more often used when the outcomes remain uncertain approaching the election days. At the last minute, news media can elevate certain policy discussions, such as healthcare or immigration reform, thereby placing them at the forefront of political debate. By giving precedence to specific topics, the media helps to construct the electoral agenda, compelling candidates to address these issues if they wish to resonate with voters. If there exists an agenda-setting effect from the news to the general public, it suggests that news media are able to identify what issues matter most in the public and political arenas. As a result of using this framing technique, these issues highlighted by the media become topics of public discussion, voter concern, and political debate, compelling politicians and parties to address them.

The existing knowledge of how political communication affect political outcome, while rich in detail, is often constrained by the practicalities of manual data handling, the idiosyncrasies of individual coders and the specificity of the design of an experiment (Druckman & Leeper, 2012). For example, experiments are used to study how issue frames influence public opinion (Peterson & Simonovits, 2018). Political scientists had limited access to political data (e.g., hand-collected data, surveys, interviews, and historical documents) and used a manual process that is both time-consuming and subject to human bias. For instance, prior studies have focused on a single political event such as

the 2000 Minnesota Senate campaign using news text from only two newspapers: the Star Tribune and the St. Paul Pioneer Press (Druckman & Parkin, 2005).

In contrast to the empirical methods of previous research on how political communication and news media shape political outcome, most of which are surveys and experiments, my study examines a comprehensive news data set that Harvard is subscribing to (ProQuest TDM Studio) to understand how and when various strategies that were used by news media to affect voter participation and voting outcomes, not only across time (election years) but also across geographical locations (state and county levels). This research relying on machine-learning and big-data will help explain the intricate interplay between media consumption, political participation and voting behavior, shedding light on the role of news media in shaping public opinion and influencing political activities. The findings of this research have important implications for the development of strategies in mitigating the potential biases introduced by news framing and promoting informed decision-making among voters.

Chapter II.

Literature Review

News media has played an important role in shaping public opinion and influencing political outcomes, particularly in the context of U.S. presidential elections. While traditional media outlets have long been subject to accusations of bias and manipulation, the rise of social media has certainly intensified concerns about the potential impact of news framing on voter behavior (Semetko & Scammell, 2012). Prior studies in political science have provided empirical support for the impact of news framing on voter preference. For example, in an experimental study, participants who have more exposure to news stories emphasizing on issues in crime or inflation are more likely to pay more attention to candidate who support or ignore these issues. This, in turn, affects their voting intentions (Iyengar & Kinder, 2010). Even a simple framing of ballot language is shown to affect voters' choices at the ballot box except the case when vigorous campaign activity can mitigate the framing effects (Binder et al., 2015). This "clause of exception" is confirmed by the subsequent field experiment study, suggesting that voters' exposure to newspaper does not really affect political knowledge, stated opinions, or turnout in the 2006 Virginia gubernatorial election (Gerber et al., 2009).

On the national level, the 2016 U.S. presidential election has shown a strong connection between the framing of news coverage and voter sentiment towards the candidates (Bode et al., 2020). Within the correlations between news framing and candidate performance in various elections, negative framing of candidates, especially in close races,

offer the most significant influences on voters' perceptions, reducing turnout and leading to lower levels of support (S. D. Ansolabehere et al., 1999). However, this finding is rejected by the subsequent study which suggests that voters are in fact quite resilient to the onslaught of negative campaigning (Brooks, 2006). This contradiction can be partially explained by two factors. The first is the fact that the political leaning of news media is matched to that of readers. For example, liberal-leaning newspapers are more likely to report more scandals involving Republican politicians than those involving Democratic politicians, and endorse Democratic candidates in elections, while conservative-leaning newspapers tend to do the opposite (Puglisi & Snyder, 2011). This phenomenon of news writers catering to the partisan tastes of readers can also be found in the U.K. that different newspapers present two diametrically opposing interpretations of the same scandal of the prison system (Greer & Mclaughlin, 2018). The second factor is the intensity of news coverage. While news coverage helps voters better evaluate political candidates and encourage them to vote, citizens often expose to a lower volume of coverage. As a result of a decline in local coverage by news outlets, voters are less able to evaluate the candidates, to express opinions, and to vote in their districts (Hayes & Lawless, 2015).

Certainly, the power of news framing raises crucial ethical questions. The main responsibility of media outlets is to inform the public, rather than to focus on the art of journalistic storytelling that may manipulate the news and cause bias. They should strive for objectivity, presenting information in a neutral and factual manner, minimizing the influence of editorial bias (Happer & Philo, 2013). Research in journalism has recognized that complete objectivity is unattainable, given the inherent subjectivity of news reporting (Post, 2015). The role of news writers in shaping public opinion does

require that readers are aware of potential biases and manipulative framing techniques because writers can always amplify specific narratives, consciously or unconsciously, potentially benefiting certain political viewpoints or candidates at the expense of others. The widespread dissemination of misinformation through social media further complicates this landscape, emphasizing the need for responsible media practices and critical media literacy among the public (Osmundsen et al., 2021).

Definition of Terms

Interpretation effect is the way in which the presentation of information influences the perception and reception of that information by the audience. In other words, the same story can be told differently. Political science research has examined how different frames, such as episodic versus thematic frames, and conflict versus consensus frames, can alter public understanding of political issues. For example, episodic framing, which focuses on specific instances or individuals, tends to promote an individualistic understanding of issues, while thematic framing, which contextualizes issues within broader societal factors, encourages a more systemic perspective (Iyengar, 1994).

Priming effect is the phenomenon that voters are exposed to the manipulative focus of news, specific ideas or concepts that could potentially change the considerations. It is closely related to agenda-setting, but the focus is to influence the considerations (such as moral standards) that come to mind when voters evaluate political actors or issues. The framing of news stories can prime certain aspects of political reality, making them more accessible in the audience's memory and thus more likely to be used in the construction of opinions and judgments. Media coverage can alter the standards by which individuals judge

the president's performance, depending on which issues are emphasized in the news (Krosnick & Kinder, 1990). Strategic news framing, where politicians and news media deliberately employ priming to shape public discourse in political campaigns and policy debates, can lead to divergent public responses.

Agenda-setting effect is the phenomenon that news media influence the public's perception of the political issues by choosing what to cover and how to present it. In other words, news media does not tell people what to think (as in interpretation), but rather what to think about (M. E. McCombs & Shaw, 1972). It suggests that the salience of topics in the news media influences the public's perception of the importance of these topics (Entman, 1993). Not only it can highlight certain issues but also it can shape the specific attributes, properties and characteristics that the public associates with these issues, also known as attribute-agenda-setting (Dearing & Rogers, 1996). As a result, the emphasis on particular policy areas in election campaigns can sway voter priorities and their voting decisions (Soroka, 2014).

Voter participation refers to the active engagement of citizens in political activities and electoral processes, including registering to vote, casting ballots in elections, and engaging in campaigning or volunteering. It allows citizens to exercise their right to choose their representatives and influence public policy. High voter turnout is viewed as a sign of a healthy democracy, while low turnout can indicate apathy, disenfranchisement, or the existence of political barriers. Research has shown that political efficacy, socioeconomic status, and the perceived importance of the election are the major factors influencing voter participation (Powell, 1986).

There are two potential explanations for the failure of previous studies to confirm the impact of news framing on political outcomes. First, the news studied in the literature is too narrow in scope. The focus on one or two categories of news such as local newspaper reporting on gun violence (Liu et al., 2019) poses a significant challenge to generalize across studies that focus on different news topics and local political circumstances. In fact, most prior research has focused on a single election event in their studies, for example, the 2016 U.S. presidential election (Bode et al., 2020). Second, the effects of news framing and the theories that can explain these effects are not always straightforward. In the literature, there are three separate mechanisms or theories through which news framing can affect public political leanings: framing effect, agenda-setting effect, and priming effect (Roessler, 2008).

The first one is the *interpretation effect*. The presentation of news can impact how audiences understand and interpret the information, ultimately influencing their political attitudes (Nelson et al., 1997). For example, interpreting a proposed immigrant worker policy in a news article to mean that fewer jobs will be available to local residents may result in audiences viewing the policy in a more negative light compared to if the article had emphasized its potential economic benefits of lower labor costs. Likewise, depicting a political candidate telling casual jokes as competent and skilled in a news story may cause audiences to have a more positive perception of the candidate than if the story had highlighted their lack of seriousness or sense of responsibility. The psychological theory behind this effect is that a specific kind of interpretation of a news story can activate a root metaphor, such as an image or central theme that is associated with the political issue,

entity or event, in the mind of the reader. This metaphoric image or theme can in turn influence the reader's attitudes and opinions regarding the event or issue (Ottatti et al., 2014) .

The second one is the *Agenda-setting theory* in the literature of mass communication. While the interpretation effect of framing is based on the assumption that how an issue is characterized in news reports can have an influence on how it is understood by audiences, agenda setting emphasizes the correlation between the amount of coverage on certain issues and the importance attributed to these issues by readers (Scheufele & Tewksbury, 2007). News media, through its selection and emphasis of news stories, can significantly influence the public's perception of the salience and importance of issues (Entman, 1989). For example, if a news is highlighted with "alarming crime rate", viewers may perceive crime as a more immediate concern than it truly is, potentially resulting in greater support for stricter law enforcement measures.

The third one is the *priming theory* from social psychology that "changes in the standards that people use to make political evaluations." (Iyengar & Kinder, 2010). Readers' exposure to specific information can activate particular concepts and attitudes in our minds, making them more accessible and influential in subsequent judgments and decisions (Hart & Middleton, 2014). For instance, a policy proposal framed as a "tax hike" is likely to evoke negative sentiments and resistance among viewers; however, being framed as an "investment in public services" might attract more positive reactions. This is very close to the theory of agenda-setting, and in the literature, it is described as an extension of the agenda-setting effect. The subtle difference in priming is that it only occurs when news writers suggest the readers, by manipulating the content, to use specific issues

as benchmarks to understand the political issue or evaluate the candidate's performance and potential (Scheufele & Tewksbury, 2007).

It is critical to understand the interplay among the three theories that link news framing to political outcomes. For example, the way news is framed can activate pre-existing schemas and cognitive biases in the audience, shaping how individuals interpret the information and ultimately influencing their preferences. Similarly, the agenda-setting effect can prime certain issues, making them more salient and influencing how individuals interpret and respond to subsequent news coverage. The contradicting conclusions in the existing studies have shown that such interconnected nature has made it the empirical efforts difficult to find a direct link between news framing and election outcome because it is very likely that the combined mechanisms have contributed to shifts in political attitudes, policy support, and voter turnout.

Determinants of Presidential Election Outcome

To investigate political outcome, this research is focused on presidential elections in the U.S., It is important to review the political science literature on the determinant factors of presidential election outcome because these will be part of the control variables in the statistical analysis.

The first one is the economic factor. Prior studies have consistently shown that economic performance has a substantial impact on the outcome of presidential elections. For instance, the rate of economic growth, inflation, and unemployment are significant predictors of presidential election outcomes in the United States (Fair, 1978), and in fact, the rate of economic growth is the most important factor in determining the outcome of

presidential elections (Hibbs et al., 1982). The reason is that voters primarily focus on their personal economic circumstances when making electoral decisions (Hibbs & Jr, 1989). However, this simple notion can be challenged by the fact that voters also consider other economic indicators beyond personal financial situations (Norpoth, 1996). For instance, partisan identification and broader social and psychological factors have certainly influenced voting choices in the past (Campbell et al., 1980).

The second factor is demographics, such as age, gender, and ethnicity, that can also play a significant role in determining the outcome of presidential elections. This can be driven by the influence of social and psychological factors, including partisan identification, group attachments, and values, on voting decisions (Campbell et al., 1980). For example, Hispanic voters tend to support Democratic candidates, while white voters tend to support Republican candidates (Alvarez & Nagler, 1995). Similarly, younger voters tend to support more liberal candidates, while older voters tend to support more conservative candidates (Box-Steffensmeier & De Boef, 2001). This highlights the significance of social cleavages, such as class and religious affiliation, in determining the outcome of presidential elections (Norris, 2005).

The third factor is about news media and their communication with the public. It has been shown that the way candidates communicate their message to voters can significantly influence voter preferences. For instance, television advertising can have a significant impact on voter preferences, particularly among undecided voters (Graber, 1988). Similarly, the Internet can be an effective tool for presidential candidates to communicate with voters and build support (Bimber & Davis, 2003). The historical evolution of campaign communication and the impact of televised debates on electoral

outcomes has highlighted the strategic use of media to influence voter perceptions (Jamieson, 1993). The rise of social media and its impact on political mobilization and voter engagement is another area of increasing scholarly interest. Prior studies have investigated the role of the Internet in shaping political information consumption and campaign strategies, indicating that online platforms can significantly impact voter turnout and candidate choice (Prior, 2007). These findings suggest that the media and communication strategies employed by presidential candidates can be a key determinant of election outcomes.

The fourth factor is about personality and leadership. Voters tend to prefer candidates who possess strong leadership qualities (e.g., charisma, integrity, and vision). Sometimes, they prefer candidates who are perceived as strong leaders, particularly in times of crisis (Miller & Shanks, 1996) and at other times, they prefer candidates who possess a strong vision for the country's future (Funk, 1999). The literature has certainly demonstrated the impact of candidate traits and personal attributes such as competence, trustworthiness, and leadership qualities on voter preference (Iyengar & Kinder, 2010), and more importantly, it emphasizes the connection between the importance of candidate image and the role of media in shaping public perception (Stokes, 1963).

The fifth factor is about campaign finance and organization. Candidates who have a strong campaign organization and access to significant financial resources tend to perform better in elections. While the strength of a candidate's campaign organization is a crucial factor in determining election outcomes (Gopoian, 1985), campaign spending is a more significant predictor of congressional election outcomes (Jacobson, 1980). The reason is that political candidates can strategically target specific groups of voters with

nuanced messaging geared towards their pre-existing beliefs and biases, making campaigns more efficient and effective (Bartels, 2020).

The sixth factor is about political context and institution. The broader political environment and institutional structures, such as the party systems and the evolution of partisan politics, can significantly influence presidential election outcomes (Frymer, 2010). Incumbent presidents often benefit from greater name recognition, access to resources, and established networks, giving them a significant advantage in seeking re-election (Mayhew, 2004). Equally important are the voter turnout and mobilization efforts before elections (Rosenstone & Hansen, 1993). The important role of political parties in candidate selection and campaign mobilization highlights the strategic decisions made by party elites that can significantly shape electoral outcomes (Aldrich, 2011).

However, to understand how this could happens, we need to study the relationship between politicians, money and voters through advertising, psychology and news intermediation because this would offer a comprehensive understanding of the mechanisms through which campaigns and their advertising strategies may influence voters and, ultimately, election outcomes.

The Media's Influence on Voting Participation

Of course, election outcomes are the result of voter participation. In order to study the relationship between news media and the electorate, it is equally critical to understand how citizens engage with the democratic process. In contemporary societies, news media serve as the primary channel through which individuals gain information about political issues, candidates, and events. This mediating role positions the media as a potentially

powerful force capable of influencing the fundamental act of voting. Voting participation, or turnout, is a critical indicator of democratic health and legitimacy. It reflects the extent to which citizens are engaged with political life and willing to translate their preferences into collective action. A substantial body of political science and communication literature has investigated how the use of interpretive-framing, priming and agenda-setting techniques relates to citizen engagement, and more particularly, how media exposure can either encourage or discourage individuals from casting a ballot. This literature review will help motivate this research to explain the variances in voter turnout and engagement.

Interpretive-framing highlights some facets of an issue while obscuring others (i.e., the theory of involves selection and salience), thereby promoting a particular interpretation, evaluation, or solution. The way voting itself, campaigns, or political issues are interpreted can profoundly impact participation. For example, framing elections primarily as a "civic duty" or an opportunity for collective action tends to encourage participation by activating norms of citizenship and community engagement. Framing elections as a closely contested "horse race" might encourage strategic voting among some but could also discourage others who feel disconnected from the competition or perceive little substantive difference between candidates (Corrigall-Brown & Wilkes, 2014).

Furthermore, framing of political issues can impact participation by shaping perceptions of their relevance and tractability. Episodic framing interprets poverty as a consequence of individual failures might lead to less engagement with related political solutions compared to thematic framing that interprets it as a systemic problem requiring government intervention (Iyengar, 1994). Similarly, framing politics as overly complex,

divisive, or characterized by gridlock can foster feelings of powerlessness and disaffection, discouraging participation. An empirical research on televised incivility argues that while conflict can draw viewers, overly uncivil framing of political debate can decrease political trust and efficacy, potentially leading to withdrawal from participation (Mutz, 1998). Conversely, framing political action as impactful and highlighting instances of successful collective mobilization can encourage engagement. In fact, the media's framing of political efficacy itself can influence participation. For examples, news messages reinforcing perceived influence tend to mobilize, while those highlighting powerlessness demobilize (Nicodemus, 2004).

Priming theory, on the other hand, focuses on how the issues or traits made salient by the media influence the criteria people use to evaluate political figures or entities. If the media devotes significant coverage to the economy, people are more likely to judge the president or candidates based on their perceived handling of economic matters. The link between priming and voting participation is often theorized to operate through its effects on political efficacy and satisfaction. If media coverage primes the public to evaluate candidates or the political system based on heavily criticized aspects (e.g., corruption, policy failures), this can lower trust and efficacy, potentially discouraging participation, particularly among those who feel their vote cannot change the negatively primed conditions. Conversely, if media primes evaluations based on perceived successes or highlights effective leadership qualities, it might bolster efficacy and encourage voting. For example, negative political advertising, which often primes voters to focus on undesirable traits or failures of candidates, may contribute to voter demobilization (S. Ansolabehere et al., 1994). The reason can be that negative media contents make citizens

more cynical and less likely to participate (Madsen, 2019). However, other empirical work disagree with this argument by showing that negative advertising has no significant effect on turnout (Wattenberg & Brians, 1999). A potential explanation for this discrepancy is that the criteria news media prime individuals to use for evaluation can shape not just who they might vote for, but whether they feel their vote matters enough to cast, making the mechanism linking negative priming to reduced participation unpredictable.

Nonetheless, the media does not necessarily tell people what to think, but rather what to think about. agenda-setting theory suggests that the issues most prominent in the news media become the issues that the public perceives as most important. Within the context of voting participation, prior research has explored how the salience granted to certain issues or aspects of a campaign can influence an individual's motivation to vote. When media attention is heavily focused on contentious or high-stakes issues (e.g., economic crises, national security threats), this heightened salience can increase the public's sense of the election's importance, thereby potentially encouraging participation among those who feel strongly about the issues. Conversely, if media coverage emphasizes seemingly trivial aspects, scandals, or the "horse race" aspects of campaigns without clear connections to substantive policy implications, it could potentially depress turnout by fostering cynicism or a belief that the election holds little consequence for their lives.

For example, media attention to specific issues during election campaigns in different European countries influenced participation (Aarts & Semetko, 2003). While direct, unmediated effects of agenda-setting on turnout can be complex and are often

mediated by other factors like political efficacy or issue ownership, the literature suggests that by defining the landscape of political relevance, agenda-setting lays the groundwork for participatory decisions. Highlighting issues that resonate deeply with potential voters can mobilize them, while focusing on issues that seem distant or intractable might have the opposite effect (M. McCombs & Valenzuela, 2020).

The Power of News Media

Political advertising though newspaper and radio has a significant persuasive effect on shaping public opinion, influencing voter behavior, particularly among undecided voters (Lazarsfeld et al., 2019). Gradually, television advertising became the most important media in shaping voter perceptions of candidates and issues (Patterson & Mcclure, 1976) by highlighting the importance of visual imagery and emotional appeals (Jamieson, 1996). On the other hand, negative advertising is often used to emphasize opponents' flaws (Kern & Just, 1995) and they often have a greater impact on voter psychology than those touting a candidate's own achievements (Lau et al., 1999). They can reduce voter turnout and increase voter cynicism (Kahn & Kenney, 2021). Interestingly, negative advertising could also have a positive influence on voter engagement and mobilization (Geer, 2008), and the reason is that incivility, the driving factor behind negative advertising, can appeal to certain groups of electorates to participate in voting. (Brooks & Geer, 2007).

It is critical to investigate the underlying mechanism through which advertising influences votes' attitude and belief. Understanding the psychological underpinnings of voter decision-making is crucial to deciphering the effectiveness of campaign advertising.

The emotional and cognitive processes that advertising can trigger, often lead to reinforcement of existing political predispositions rather than genuine persuasion (Westen, 2008). However, beside the psychology, advertising may simply serve as an educative function, informing voters about candidates' platforms and policy positions (Zhao & Chaffee, 1995). Unfortunately, the entertainment-driven nature of political advertising can overshadow substantive content, potentially diminishing voters' ability to make good judgments and reasonable decisions (Prior, 2007).

In recent years, online advertising and social media engagement in reaching younger voters and mobilizing support by targeting specific voter demographics have gained popularity (Chadwick, 2006). The increasing sophistication of campaigns in leveraging data to micro-target voters with unprecedented precision (Strömbäck & Kiousis, 2010). It is critical to understand how candidates leverage these platforms to reach and influence potential voters, particularly in the context of increasing media polarization and the proliferation of "fake news" and misinformation (Bode & Vraga, 2018). The potential for misinformation and echo chambers raises concerns about the quality of political discourse and the integrity of election outcomes (Bennett & Pfetsch, 2018). Therefore, it is equally critical to question the ethical dimensions of such tailored political communication with the help of big data analytics (Turow, 2012).

Behind all of these phenomena lies the big money. Financial resources allow campaigns to reach more voters and deploy more sophisticated communication strategies. There has always been a positive relationship between campaign spending and electoral success, suggesting that money, when spent effectively on advertising, can indeed influence election results (S. Ansolabehere & Gerber, 1994). However, other factors matter

too, such as the role of incumbency, candidate quality, and the political environment in determining electoral outcomes (Jacobson & Carson, 2019). Recent research has explored the impact of campaign finance reforms on election outcomes and the role of "dark money" in influencing elections. Therefore, while the powerful role of money in political advertising helped improve campaign finance laws, the regulatory frameworks on the equity and transparency also helped shape campaign strategies.

The impact of campaign advertising and strategies is often mediated by the broader media and information environment. What are the roles of media ownership, media bias, and the availability of diverse news sources in shaping voter perceptions of candidates and campaigns (Prior, 2007). Previous studies have explored how media framing and agenda-setting influence public discourse and voter priorities, particularly in the context of contentious elections (M. E. McCombs & Shaw, 1972). The proliferation of cable news and online news sources has further complicated this landscape, raising concerns about the extent to which fragmented media environments contribute to political polarization and a lack of shared understanding of political issues.

As the landscape of political advertising continues to evolve with technological advancements, democracies are grappled with the challenges of misinformation and partisan polarization. There have been many occasions of media manipulation and the erosion of informed citizenry. It is the objective of my research to examine the implications of these changes on electoral dynamics. The literature review here has suggested a gap in the understanding of how news media could mediate the information in the context of encouraging a consensus, invading privacy, manipulating audience, and spreading misinformation during the communication process. We certainly care about media ethics

and journalistic responsibility because unbiased news media help empower citizens to critically engage with news content and participate in political activities.

My research is an empirical attempt to uncover the actual underlying mechanisms by which media can influence public opinion, and this help inform debates on media regulation and the impact of media ownership concentration. I hope my work can integrate insights from political science, communication studies, psychology, and data analytics to help understand how news media can shape voter behavior and electoral outcome.

Chapter III.

Research Data and Method

In this empirical research, I conduct statistical analysis to assess the effects of news framing on both U.S. presidential elections and U.S. Senator elections from 1980 to 2021, measuring changes in election outcomes after voters' exposure to different framed news stories. I collect political news on climate change, immigration, gun control, and abortion because the Pew's survey in 2016 has suggested that Republicans and Democrats see little common ground between the two parties when it comes to these issues. I conduct statistical analysis to assess the effects of news framing on both U.S. presidential elections and U.S. Senator elections from 1980 to 2021, measuring changes in election outcomes after voters' exposure to different framed news stories.

Data Sample

The main data source of local news is the ProQuest TDM Studio which provides five datasets containing historical news dating back to 1980, including the U.S. Midwest Newsstream, the U.S. North Central Newsstream, the U.S. Northeast Newsstream, the U.S. South Central Newsstream, the U.S. Southeast Newsstream, and the U.S. West Newsstream (Harvard Library, 2024). The fraction of biased news can be calculated based on the percentage of all political news that are identified by the NLP program as a biased presentation in each year and state:

$$\text{Framing}_{year,state} = \#\text{Framed News}_{year,state} / \#\text{Political News}_{year,state}$$

$$\text{Priming}_{year,state} = \#\text{Primed News}_{year,state} / \#\text{Political News}_{year,state}$$

$$\text{Agenda-Setting}_{year,state} = \#\text{News with Agenda}_{year,state} / \#\text{Political News}_{year,state}$$

The data of voting outcomes is from the MIT Election Data and Science Lab (MEDSL). The U.S. Senate statewide dataset contains constituency (state-level) returns for elections to the U.S. Senate from 1976 to 2020, and the U.S. President dataset contains constituency (state-level) returns for elections to the U.S. presidency from 1976 to 2020 (MIT Election Lab, 2024). Election outcome can be measured by the winning of an election by a political party such as the Democrat in the following format:

$$\text{Democrat}_{year,state} = \text{Majority of voters in a state and year elect a Democrat candidate}$$

The data of voter turnout is based on prior election data at both national and state levels. It is available at University of Florida's Election Lab and the data is available from 1980 to 2022 (University of Florida, 2024). Voter-turnout can be measured as the faction of voters in the population participated in a specific election year:

$$\text{Voter-Turnout}_{year,state} = \#\text{Voters}_{year,state} / \#\text{Population}_{year,state}$$

The fraction of biased political news, election outcome and voter turnout will then be matched based on election subjects and dates.

Research Method

With the data prepared, the next step is to specify the regression model. To analyze the influence of news framing on election outcomes, a logistic regression will be used because the dependent (response) variable is a value of zero or one when one political

candidate is eventually elected. The general form of the regression specification can be as follows:

$$\text{logit}(\text{Democrat}_{year,state}) = \beta_0 + \beta_1\text{Framing}_{year,state} + \beta_1\text{Priming}_{year,state}$$

$$+ \beta_3\text{Agenda-setting}_{year,state} + \beta_4\text{Control-Factors}_{year,state} + \beta_5\text{State} + \beta_6\text{Year}$$

To study the effect of news framing on voter turnout, a linear regression will be used because the dependent variable is the faction of voters in the population participated in a specific election. The linear regression model can be specified as follows:

$$\text{Voter-Turnout}_{year,\ state}) = \beta_0 + \beta_1\text{Framing}_{year,state} + \beta_1\text{Priming}_{year,state}$$

$$+ \beta_3\text{Agenda-setting}_{year,state} + \beta_4\text{Control-Factors}_{year,state} + \beta_5\text{State} + \beta_6\text{Year}$$

Both linear and logistic model will include control variables to isolate the effect of news framing from other factors that may also affect election outcome and voter turnout. The section of term and background has reviewed many of these factors such as economic condition, local demographic, campaign finance, and political context variables.

One of the key advantages of studying a large data set is its ability to reveal long-term trends and patterns in a consistent fashion. By analyzing data from multiple elections, this research can identify the evolution of news framing strategies and shifts in voter preferences over time. Furthermore, large data can shed light on the role of contextual factors in shaping voting behavior. By comparing election data across different states, we can explore how local news outlets create bias in the local contexts—such as economic conditions, demographic compositions, and political cultures—affect voter choice and turnout. Therefore, this large data sets facilitate comparative analyses

spanning 30 years across the 50 states, providing a more holistic understanding of the behavior of news media and voters in varying socio-political contexts over time without the bias from human researchers.

Chapter III.

Empirical Results and Discussions

In this section, I present the empirical results of my analysis of the voting participation and election outcome at the state level, shedding light on the news framing factors that influenced voters' decisions. My analysis is based on a comprehensive dataset that combines all reginal newspaper article reporting presidential election news, voting statistics, and local demographic and socioeconomic information from various sources.

I run a Python program to search all U.S. presidential election-related news articles, editorials, and commentaries that are available on the ProQuest TDM Studio. The details of the Python code are available in Appendix 1. To provide the reader with a brief overview of my data sample, Table 1 lists the name of each publisher, its headquarters' location, and the number of news articles it published from 1980 to 2021. These news articles are extracted from the ProQuest TDM Studio.

Table 1. Total number of news collected by publishers.

Publisher	City	State	News Count
AFRO AMERICAN COMPANY OF BALTIMORE CITY	BALTIMORE	MD	490
ALAMEDA PUBLISHING CORP	OAKLAND	CA	64
ALASKA DISPATCH NEWS	ANCHORAGE	AK	2057
ALBUQUERQUE PUBLISHING COMPANY	ALBUQUERQUE	NM	107
AMELIMEDIA COMMUNICATIONS LLC	ORLANDO	FL	877
ATLANTA JOURNAL CONSTITUTION LLC	ATLANTA	GA	16205
BANGOR DAILY NEWS	BANGOR	ME	1855
BAY AREA NEWS GROUP	SAN RAMON	CA	3208
BAY STATE BANNER	BOSTON	MA	253
BH MEDIA GROUP	TULSA	OK	1015
BIG SKY PUBLISHING LLC	BOZEMAN	MT	964
BILLINGS GAZETTE	BILLINGS	MT	294
BISMARCK TRIBUNE	BISMARCK	ND	1886
BOSTON GLOBE MEDIA PARTNERS LLC	BOSTON	MA	16031
BRIDGETOWER MEDIA HOLDING COMPANY	MINNEAPOLIS	MN	1862
BUFFALO NEWS	BUFFALO	NY	1085
BUSINESS PRESS	ONTARIO	CA	35

Publisher	City	State	News Count
CALL AND POST	CLEVELAND	OH	626
CENTRAL NEWSPAPERS INC	PHOENIX	AZ	3805
CHARLESTON NEWSPAPERS	CHARLESTON	WV	5985
CHARLOTTE POST PUBLISHING CO	CHARLOTTE	NC	1
CHATTANOOGA TIMES FREE PRESS	CHATTANOOGA	TN	7
CHICAGO SUN TIMES	CHICAGO	IL	17995
CITY SUBURBAN COMMUNITY NEWSPAPERS INC DBA EXTRA COMMUNITY NEWSPAPERS	CHICAGO	IL	5
CLARITY MEDIA GROUP INC	DENVER	CO	39449
CLEVELAND PLAIN DEALER	CLEVELAND	OH	3248
COLUMBIA DAILY TRIBUNE	COLUMBIA	MO	65
CONCORD MONITORSUNDAY MONITOR	CONCORD	NH	1779
CONTENTENGINE LLC A FLORIDA LIMITED LIABILITY COMPANY	MIAMI	FL	1237
COWLES PUBLISHING COMPANY DBA THE SPOKESMANREVIEW	SPOKANE	WA	1577
COX NEWSPAPERS INC	ATLANTA	GA	5
CREATORS SYNDICATE	HERMOSA BEACH	CA	1289
DAILY HERALD	ARLINGTON HEIGHTS	IL	8302
DAILY NEWS	BOWLING GREEN	KY	275

Publisher	City	State	News Count
DALLAS MORNING NEWS	DALLAS	TX	1523
DENVER POST	DENVER	CO	1295
DESERET DIGITAL MEDIA	SALT LAKE CITY	UT	1643
DETROIT NEWS	DETROIT	MI	112
DIARIO SAN DIEGO	CHULA VISTA	CA	5
DOW JONES COMPANY INC	SOUTH BRUNSWICK	NJ	14106
EL CHICANO NEWSPAPER	SAN BERNADINO	CA	32
EL PERIODICO USA	MCALLEN	TX	1
EL PREGONERO	WASHINGTON	DC	9
FLORIDA TIMES UNION	JACKSONVILLE	FL	625
FORT WORTH STARTELEGRAM	FORT WORTH	TX	6431
FREEDOM NEWSPAPERS INC	COLORADO SPRINGS	CO	2907
GANNETT MEDIA CORP	MC LEAN	VA	200044
GATEHOUSE MEDIA INC	PITTSFORD	NY	5528
GRAND RAPIDS PRESS	GRAND RAPIDS	MI	1519
HALIFAX MEDIA GROUP	DAYTONA BEACH	FL	10810
HEARST COMMUNICATIONS INC HEARST NEWSPAPERS DIVISION	NEW YORK	NY	27966
HIGH COUNTRY NEWS	PAONIA	CO	17

Publisher	City	State	News Count
HOLA PUBLICATIONS AMERICA INC	SILVIS	IL	26
HONOLULU STAR BULLETIN	HONOLULU	HI	1
IDAHO STATE JOURNAL	POCATELLO	ID	369
IDAHO STATESMAN	BOISE	ID	1766
IMPREMEDIA OPERATING COMPANY LLC	LOS ANGELES	CA	5194
INDIANAPOLIS NEWSPAPERS	INDIANAPOLIS	IN	140
JEWISH EXPONENT	PHILADELPHIA	PA	833
JOURNAL GAZETTE	FORT WAYNE	IN	1318
JOURNAL SENTINEL INC	MILWAUKEE	WI	12832
KANSAS CITY STAR COMPANY	KANSAS CITY	MO	3337
KENNEBEC JOURNAL	AUGUSTA	ME	1327
LA CROSSE TRIBUNE	LA CROSSE	WI	2
LA PRENSA AMRICA INC	CHULA VISTA	CA	143
LA PRENSA NEWSPAPER	TOLEDO	OH	74
LA PRENSA SAN ANTONIO	SAN ANTONIO	TX	43
LA VOZ HISPANIC	PASCO	WA	28
LA VOZ PUBLISHING COMPANY DBA AS LA VOZ	DENVER	CO	90
LAS VEGAS REVIEW JOURNAL	LAS VEGAS	NV	9232
LAS VEGAS SUN	HENDERSON	NV	2
LATINO COMMUNICATIONS NETWORK LLC	MINNEAPOLIS	MN	58

Publisher	City	State	News Count
LEE ENTERPRISES INC	LINCOLN	NE	1297
LNP MEDIA GROUP INC	LANCASTER	PA	1165
LOS ANGELES NEWSPAPER GROUP	WOODLAND HILLS	CA	7090
LOS ANGELES SENTINEL	LOS ANGELES	CA	262
LOS ANGELES TIMES COMMUNICATIONS LLC	LOS ANGELES	CA	15211
MADISON NEWSPAPERS INC	MADISON	WI	2925
MAINE TIMES	BANGOR	ME	4
MEDIA GENERAL INC	RICHMOND	VA	4
MILWAUKEE COURIER	MILWAUKEE	WI	183
MINNPOST	MINNEAPOLIS	MN	1400
MISSOULIAN	MISSOULA	MT	200
MORNING SENTINEL	WATERVILLE	ME	1584
MUSLIM JOURNAL	HOMEWOOD	IL	81
NASHVILLE BANNER	SHELBYVILLE	TN	90
NEW ENGLAND NEWSPAPERS INC	PITTSFIELD	MA	2405
NEW HAVEN REGISTER	NEW HAVEN	CT	1772
NEW YORK AMSTERDAM NEWS	NEW YORK	NY	602
NEW YORK OBSERVER LP	NEW YORK	NY	846
NEW YORK TIMES COMPANY	NEW YORK	NY	25411
NEWS GAZETTE	CHAMPAIGN	IL	974

Publisher	City	State	News Count
NEWSDAY LLC	MELVILLE	NY	26211
NEWSREVIEW PUBLISHING CO	ROSEBURG	OR	1
NORFOLK JOURNAL GUIDE	NORFOLK	VA	73
NORTH JERSEY MEDIA GROUP INC	HACKENSACK	NJ	5
NORTHWEST MEDIA INC	KENT	WA	1
OAHU PUBLICATIONS INC	HONOLULU	HI	735
OGDEN NEWSPAPERS INC	WHEELING	WV	554
OMAHA WORLDHERALD COMPANY	OMAHA	NE	1
ORANGE COUNTY REGISTER	ANAHEIM	CA	11503
OREGONIAN PUBLISHING COMPANY	PORTLAND	OR	751
OWENSBORO MESSENGER INQUIRER	OWENSBORO	KY	1678
PANTAGRAPH PUBLISHING CO	BLOOMINGTON	IL	6045
PARKERSBURG SENTINEL COMPANY	PARKERSBURG	WV	1
PATRIOT LEDGER	QUINCY	MA	2891
PATRIOT NEWS COMPANY	HARRISBURG	PA	2953
PEORIA JOURNAL STAR INC	PEORIA	IL	1
PHILADELPHIA MEDIA NETWORK NEWSPAPERS LLC	PHILADELPHIA	PA	24496
PHILADELPHIA TRIBUNE	PHILADELPHIA	PA	2408
PHILLIPS MEDIA GROUP	HARRISON	AR	467

Publisher	City	State	News Count
PITTSBURGH POST GAZETTE	PITTSBURGH	PA	6420
PORTLAND NEWSPAPERS	PORTLAND	ME	4104
PRAIRIE MOUNTAIN MEDIA	BOULDER	CO	1334
PRESS ENTERPRISE	RIVERSIDE	CA	1515
PROPUBLICA	NEW YORK	NY	526
PROVIDENCE JOURNALEVENING BULLETIN	PROVIDENCE	RI	283
PULITZER INC	ST. LOUIS	MO	5342
READING EAGLE COMPANY	READING	PA	134
REAL TIMES INC	DETROIT	MI	1518
REPUBLICAN HERALD	POTTSVILLE	PA	1816
RICHMOND NEWSPAPERS INCORPORATED	RICHMOND	VA	5
ROANOKE TIMES	ROANOKE	VA	2032
SAMPLE NEWS GROUP	CORRY	PA	328
SAN FRANCISCO MEDIA COMPANY	SAN FRANCISCO	CA	2145
SANTA FE NEW MEXICAN	SANTA FE	NM	866
SAVANNAH MORNING NEWS	SAVANNAH	GA	482
SCHNEPS MEDIA	BROOKLYN	NY	320
SCRIPPS HOWARD	CINCINNATI	OH	650
SCRIPPS LEAGUE NEWSPAPERS INC	DEKALB	IL	2
SHEBOYGAN PRESS	SHEBOYGAN	WI	716

Publisher	City	State	News Count
SONOMA MEDIA INVESTMENTS LLC	SANTA ROSA	CA	3093
SOURCEMEDIA DBA ARIZENT	NEW YORK	NY	921
SOUTH BEND TRIBUNE CORPORATION	SOUTH BEND	IN	82
ST JOSEPH NEWS PRESS	SAINT JOSEPH	MO	943
ST PAUL PIONEER PRESS	SAINT PAUL	MN	801
STANDARDSPEAKER	HAZLETON	PA	1317
STAR TRIBUNE MEDIA COMPANY LLC	MINNEAPOLIS	MN	1950
STATE JOURNAL REGISTER	SPRINGFIELD	IL	4060
SUN JOURNAL	LEWISTON	ME	1218
SYRACUSE NEWSPAPERS INC	SYRACUSE	NY	978
TAMPA TRIBUNE MEDIA GENERAL OPERATIONS INC DBA	TAMPA	FL	6079
TELEGRAPH HERALD	DUBUQUE	IA	6289
THE AMERICAN ISRAELITE	CINCINNATI	OH	136
THE ARIZONA DAILY STAR	TUCSON	AZ	543
THE BATON ROUGE ADVOCATE	BATON ROUGE	LA	3
THE BLADE	TOLEDO	OH	2514
THE CHRISTIAN SCIENCE PUBLISHING SOCIETY DBA	BOSTON	MA	7784
THE CITIZENS VOICE	WILKES BARRE	PA	1043
THE CONVERSATION US INC	BOSTON	MA	353

Publisher	City	State	News Count
THE DAILY PROGRESS MEDIA GENERAL OPERATIONS INC DBA	CHARLOTTESVILLE	VA	1
THE FORWARD ASSOCIATION INC	NEW YORK	NY	287
THE HERALD EVERETT	EVERETT	WA	929
THE HERALDSUN	DURHAM	NC	743
THE JANESVILLE GAZETTE	JANESVILLE	WI	620
THE JEWISH ADVOCATE	BOSTON	MA	360
THE LAWRENCE JOURNAL WORLD	LAWRENCE	KS	1514
THE LIMA NEWS	LIMA	OH	820
THE LOWELL SUN	LOWELL	MA	3460
THE MCCLATCHY COMPANY	SACRAMENTO	CA	11764
THE POST AND COURIER	CHARLESTON	SC	360
THE PRESS OF ATLANTIC CITY	PLEASANTVILLE	NJ	374
THE SALT LAKE TRIBUNE	SALT LAKE CITY	UT	6970
THE SAN DIEGO UNIONTRIBUNE LLC	SAN DIEGO	CA	7162
THE TIMESTRIBUNE	SCRANTON	PA	2042
THE YORK DISPATCH	YORK	PA	206
TIMES PICAYUNE PUBLISHING COMPANY	METAIRIE	LA	847
TIMES PUBLISHING COMPANY	SAINT PETERSBURG	FL	18265

Publisher	City	State	News Count
TRIBUNE PUBLISHING COMPANY LLC	CHICAGO	IL	68118
TRIBUNEREVIEW PUBLISHING COMPANY	WARRENDALE	PA	4267
UNION LEADER CORPORATION	MANCHESTER	NH	1148
USA TODAY	MACLEAN	VA	19592
VALLEY MORNING STAR	HARLINGEN	TX	51
VALLEY NEWS	WHITE RIVER JUNCTION	VT	1400
VILLAGE VOICE MEDIA HOLDINGS LLC	NEW YORK	NY	390
VIRGINIAN PILOT	NORFOLK	VA	974
WASHINGTON INFORMER	WASHINGTON	DC	646
WP COMPANY LLC DBA THE WASHINGTON POST	WASHINGTON	DC	24143
WYOMING TRIBUNEEAGLE	CHEYENNE	WY	708
YAKIMA HERALD REPUBLIC	YAKIMA	WA	253
ZAPATA MULTIMEDIA	TULSA	OK	7

The name of the publisher has been capitalized in this research.

To identify political news articles that are related to presidential elections, I use the search filter function on the data analytic platform of ProQuest TDM Studio with the following keywords and time periods: “Carter” and “Reagan” in the period of 1980 – 1981, “Reagan” and “Mondale” in 1984 – 1985, “Bush” and “Dukakis” in 1988 – 1989, “Bush” and “Clinton” in 1992 – 1993, “Clinton” and “Dole” in 1996 – 1997, “Bush” and “Gore” in 2000 – 2001, “Bush” and “Kerry” in 2004 – 2005, “Obama” and “McCain” in 2008 – 2009, “Obama” and “Romney” in 2012 – 2013, “Trump” and “Clinton” in 2016 – 2017, and “Trump” and “Biden’ in 2020 – 2021.

After obtained the entire sample of the original news text, the Python code uses the list of keywords in Table 2 to identify the framing techniques shown in each news article, namely, general framing, left-leaning interpretive framing, right-leaning interpretive framing, left-leaning priming, right-leaning priming, left-leaning agenda-setting, and right-leaning agenda-setting.

Table 2. Key words used for searching newspaper articles.

	Left (Liberal) Leaning	Right (Conservative) Leaning
General framing	historic victory landmark decision major breakthrough heart-wrenching tragedy devastating consequences tragic loss	
Interpretive framing	climate crisis climate change denier climate change skeptic climate scientist social safety net battle for the future of our planet healthcare as a human right	radical left far-left agenda liberal elite out-of-touch elites big government overreach political correctness woke culture fake news mainstream media bias
Priming	income inequality environmental justice mass incarceration police brutality gun violence epidemic racial disparities gun violence systemic racism war on women voter suppression	family values traditional family american exceptionalism patriotism free market limited government religious freedom christian value personal responsibility self reliance
Agenda-setting	climate emergency social justice gender equality women's rights reproductive rights lgbt rights lgbtq rights voting rights immigration reform	border security illegal immigration energy independence school choice parental Rights

Python code search news articles using these keywords in uppercase case, lower case and mixed case.

Statistical Findings

My primary research question investigates the relationship between various framing techniques by both liberal- and conservative-leaning news media and presidential election outcomes. Figure 1 presents the time-series trajectory of aggregate news framing, measured as the percentage of all U.S. newspaper articles about presidential elections, and voting outcomes, measured as the percentage of votes for the Democratic presidential candidates, over the period from 1980 to 2021. While the plot shows a stable news-framing behavior by the right-leaning media outlets, there is a substantial fluctuations and increases in the amount of news that are "framed" by the left-leaning media. Following a relatively stable phase in the early part of the series (e.g., 1980 to 2004), the data exhibits sharp increases and subsequent swings. For instance, a notable peak in liberal-leaning news framing is observed in 2010, reaching approximately 15% of all election-related news. This peak is followed by a rapid decline to a trough in 2011, where news-framing dropped to an approximate low of 1.4% before the appearance of another peak in 2013 with the fraction reached an all-time high of 15%. The magnitude of these swings within relatively short intervals underscores the turbulent nature of the trend. Furthermore, the graph does not suggest a clear cyclical pattern of consistent frequency or amplitude; instead, the shifts appear somewhat erratic. While some increases may precede subsequent decreases, the timing and scale of these movements vary considerably throughout the years.

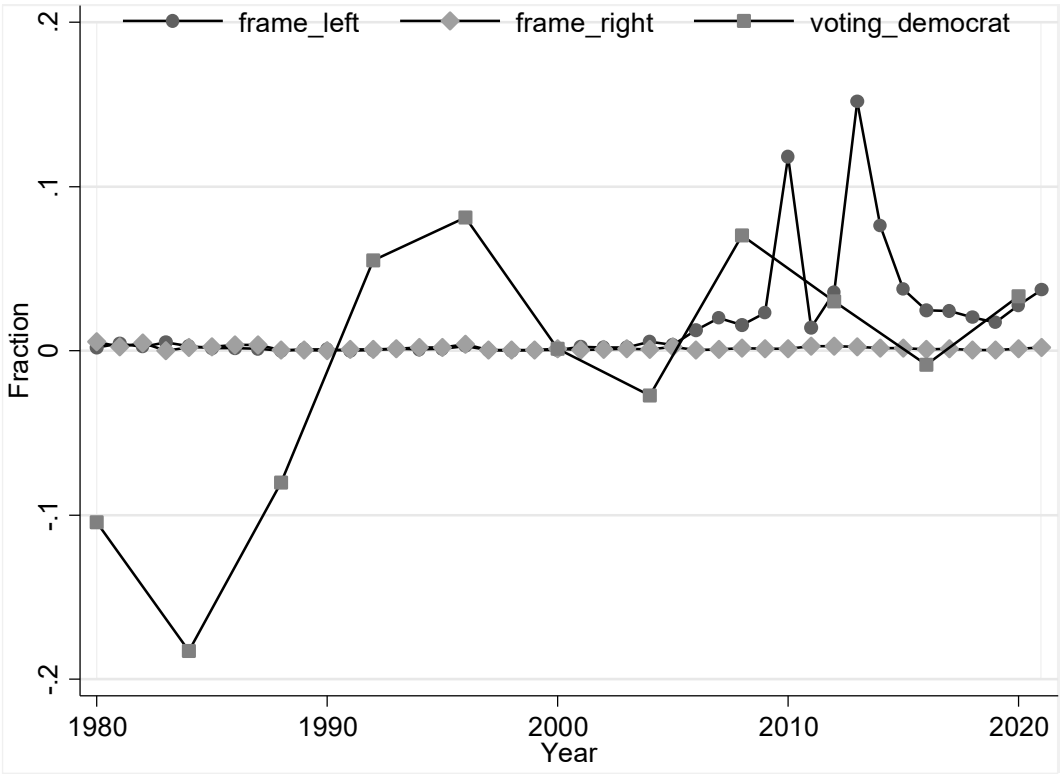


Figure 1. Political Leaning of News Framing and Election Outcome.

The variable frame_left is the average fraction of news that are left-leaning framed, and the variable frame_right is the average fraction of news that are right-leaning framed. The variable voting_democrat measures the fraction of votes for the Democrat Party during the Presidential Elections.

Figure 2 illustrates the geographic distribution of the net left-leaning frame by local news outlets during the period of 2012 to 2016. There is no evidence that the political leaning of the state, such as Democrat or Republican, is related to the news framing by media outlets in each state. For example, newspapers in both California and Texas have shown a higher degree of framing in this period.

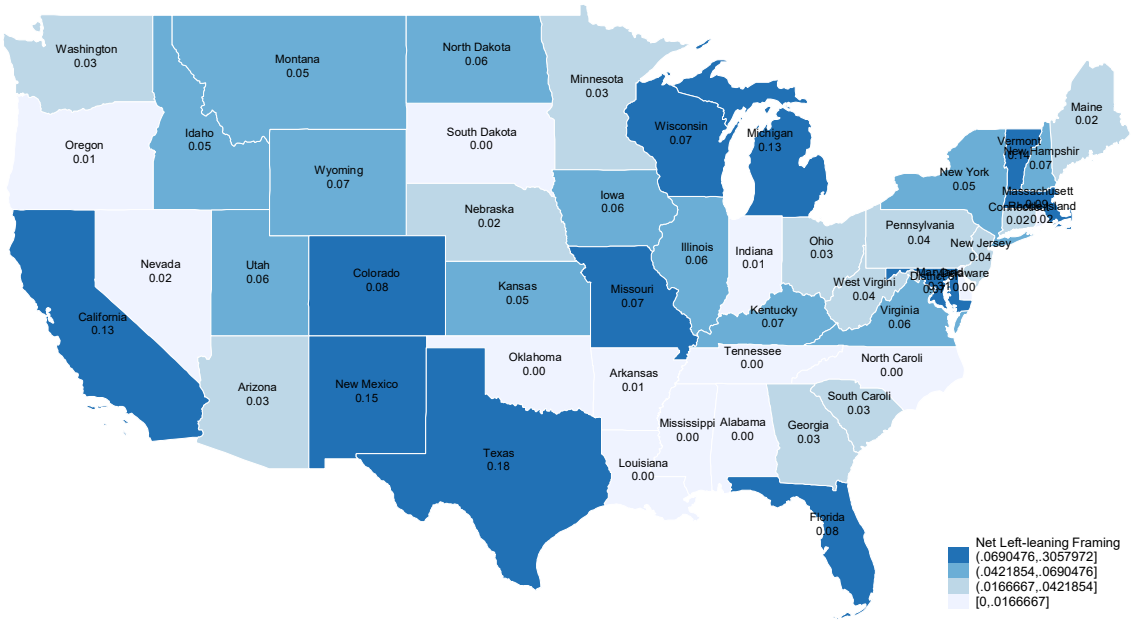


Figure 2. Geographic Distribution of News Political Leaning (2012–2016)

The color of each state represents the net framing effect of left-leaning and right-leaning news framing. Darker colors represent states with more left-leaning news framing than right-leaning framing.

Figure 3 plots the geographic distribution of the net voting participation between the Democratic voters and Republican voters from 2012 to 2016. There is not much correlation between the geographic distribution of news outlet (Figure 2) and that of voting participation (Figure 3).

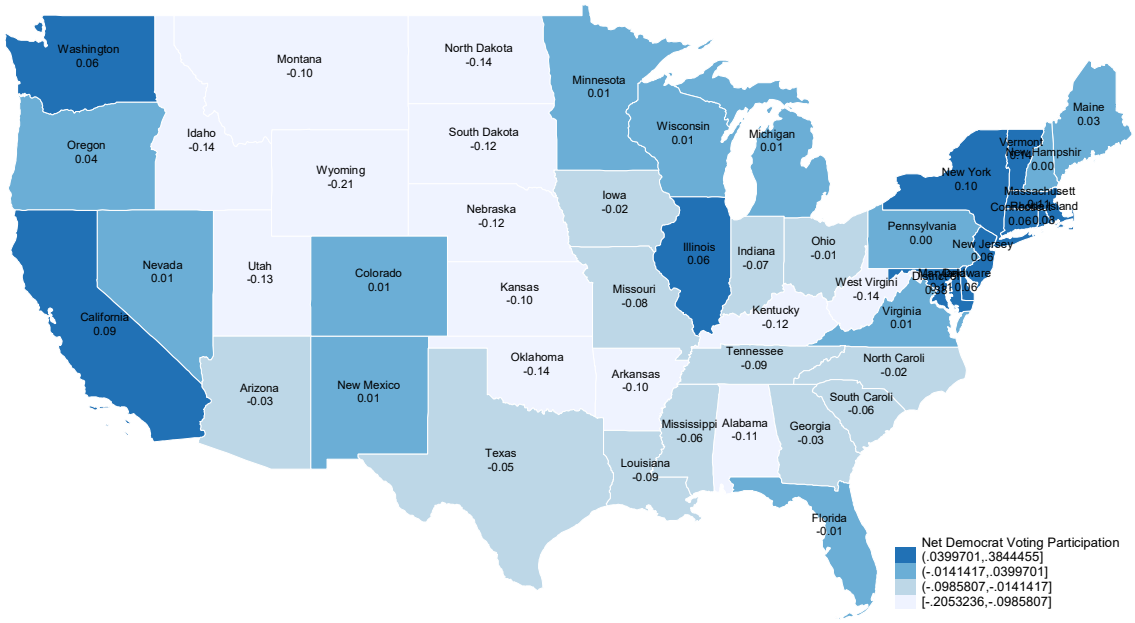


Figure 3. Geographic Distribution of Voting Participation (2012–2016).

The color of each state represents the net voting participation. Darker colors represent states with more Democratic voters than Republican voters participating in voting.

Figure 4 illustrates the geographic distribution of the net left-leaning frame by local news outlets during a more recent period from 2017 to 2021. In this more recent period, there is some evidence that media outlets in swing states have ramped up their news-framing efforts. For example, news framing is changed from more left-leaning (0.07 in Figure 2) to more right-leaning (0.04 in Figure 4) in Wisconsin, whereas it is changed to more left-leaning in Michigan (0.13 in Figure 2 to 0.18 in Figure 4). On the other hand, news framing in Pennsylvania has become more right-leaning from 0.04 in Figure 2 to 0.02 in Figure 4.

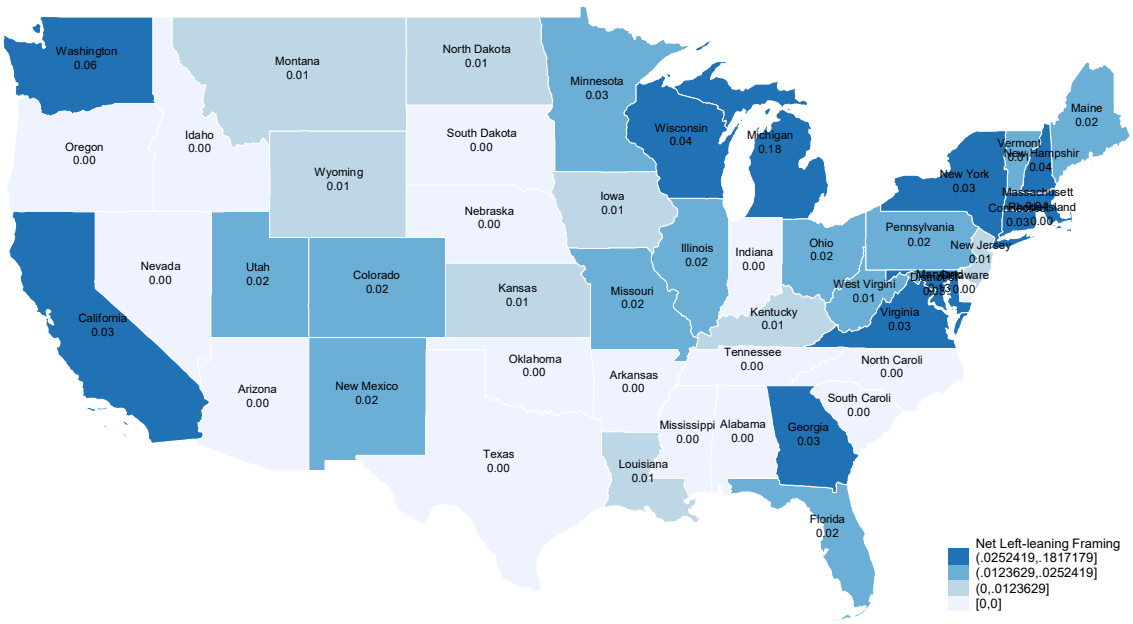


Figure 4. Geographic Distribution of News Political Leaning (2017–2021)

The color of each state represents the net framing effect of left-leaning and right-leaning news framing. Darker colors represent states with more left-leaning news framing than right-leaning framing.

Figure 5 plots the geographic distribution of the net voting participation between the Democratic voters and Republican voters during the recent period from 2017 to 2021. In this later period, voter participation in swing states like Wisconsin has decreased dramatically, potentially caused by more discourage right-leaning news framing by newspaper in the state.

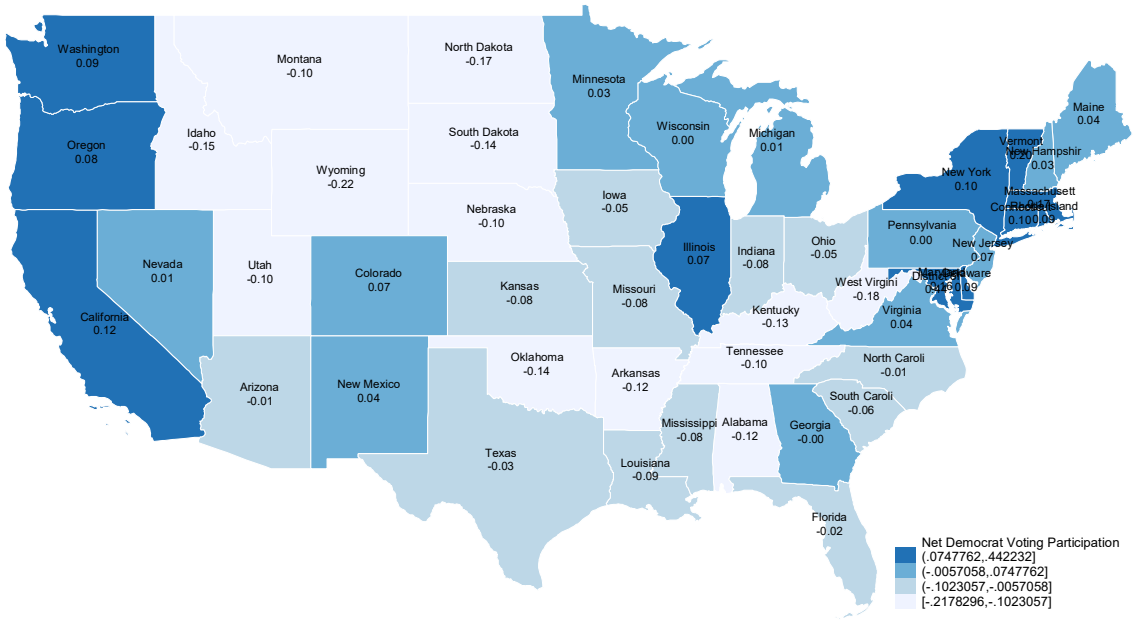


Figure 5. Geographic Distribution of Voting Participation (2017–2021)

The color of each state represents the net voting participation. Darker colors represent states with more Democratic voters than Republican voters participating in voting.

Drawing conclusions about the correlation between news framing by newspapers and the fraction of votes for the Democratic candidates from static maps over two time periods is difficult because it does not show the dynamic processes and contextual factors

at play. Therefore, I need to take a more granular view and assess to what extent news-framing is related to election outcomes at the state level.

In the following regression analysis, I hypothesize that voters in the states with more liberal-leaning framing from local publishers, measured by the total appearances of left-leaning "framed" news scaled by the total number of news reported in that state during the same year, are more likely to vote for the Democratic Party. Conversely, I expected that those in the states with more conservative-leaning framing from local publishers would be more inclined to support the Republican Party. To test these hypotheses, I employed a multivariate regression analysis, controlling for state and year factors.

The results of regression analysis are presented in Table 3, which displays the estimated coefficients, various controlling factors, t-statistics for the key variables of interest, and R-squared and F-statistic for overall model fit. Starting with the overall model fit for the model with the vote fraction of Democratic presidential candidates during the period of 1980 – 2021 (Column 1), the R-squared value of 0.42 indicates that approximately 42% of the variance in election outcomes is accounted for by the variables included in the model. The F-statistic, 65.2, is statistically significant at the $p < 0.001$ level, suggesting that the model as a whole explains a significant portion of the variance in the dependent variable (i.e., election outcomes).

As expected, I found a positive and statistically significant relationship between left-leaning news framing and the likelihood of voting for the Democratic Party. On the other hand, there is a significantly negative association between right-leaning news framing and the likelihood of voting for the Republican Party. Specifically, my results in column (1) indicate that a 10% increase in the fraction of liberal-leaning news framing is

associated with a 4.9% increase (t-statistic of 4.22) in the fraction of votes for the Democratic presidential candidates, and a 10% increase in the fraction of conservative-leaning framing is associated with a 5.6% decrease (t-statistic of 3.95) in voting for the Republican candidates. Because the regression specification includes both year and state fixed-effects, these significant coefficients are measured with the consideration of election cycle-specific concerns such as political agenda and international affairs (with the help of the year fixed-effect) and state-specific characteristics such as economic condition and social norm (with the help of the state fixed-effect).

In a smaller and more recent sub-sample from 2000 to 2021, the magnitude of this effect is slightly smaller (column 2), the effect of a 10% increase in left-leaning framing is reduced to 2.1% (t-statistic of 3.43) and the effect of right-leaning framing becomes insignificant (t-statistic of 0.24). In columns (3) where the dependent variable of the regression model is the vote share for the Republican presidential candidates, its relationship with liberal-leaning framing is negative (–5.0% with a t-statistic of –5.13) and its relationship with conservative-leaning framing is positive (6.3% with a t-statistic of 4.70). Similarly, in the smaller and more recent sub-sample (column 4), the effect of left-leaning framing is reduced to –2.1% (t-statistic of –3.66), and the effect of right-leaning framing becomes insignificant (t-statistic of 0.33).

Table 3. Effects of news media bias on election outcomes.

	(1)	(2)	(3)	(4)
Dependent variable	Vote Fraction for Democratic Presidential Candidate		Vote Fraction for Republican Presidential Candidate	
Sample Period	1980 – 2021	2000 – 2021	1980 – 2021	2000 – 2021
Left-leaning News	0.486***	0.208***	-0.497***	-0.211***
	(4.22)	(3.43)	(-5.13)	(-3.66)
Right-leaning News	-0.564***	0.0375	0.629***	0.0356
	(-3.95)	(0.24)	(4.70)	(0.33)
Intercept Term	0.399***	0.459***	0.526***	0.500***
	(40.15)	(86.72)	(70.60)	(114.01)
N	561	306	561	306
Adjusted R^2	0.419	0.401	0.652	0.256
F-statistic	65.18	64.34	143.9	40.52

*This sample only covers the years when elections are held in the U.S. All regression specifications include year and state fixed-effects. Below each coefficient estimate, T-statistic is shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.*

Besides the examination of the framing effects on election outcomes, I also study the effects on voter participation. Table 4 provides the estimated coefficients for three regression models with the fraction of state population that participated in voting as the dependent variable in column (1), the fraction of Democrat voters in columns (2) and the fraction of Republican voters in column (3). The overall model fit of these models is much higher than that of the models in Table 3. For example, the R-squared value in Column (1) suggests that approximately 76% of the variance in voter participation is accounted for by the variables included in the model. The F-statistic of 164.8 is statistically significant at the $p < 0.001$ level, indicating that the model as a whole explains a significant portion of the variance in voter participation.

For the overall participation by both Democrat and Republican voters in column (1), a 10% increase in the fraction of left-leaning news framing is associated with a 0.8% increase (t-statistic of 1.95) in voter participation, and a 10% increase in the fraction of right-leaning framing is associated with a 2.0% decrease (t-statistic of –3.14) in voter participation. When I change the dependent variable to only Democrat participation in column (2) and only Republican participation in column (3), the effects of conservative-leaning news framing on participation become insignificant (t-statistic of –1.30 and –1.60 respectively) while the effects of liberal-leaning remain significant: an 1.4% increase in Democrat participation (t-statistic of 3.61) and a 0.7% reduction in Republican participation (t-statistic of –2.60).

Table 4. Effects of news media bias on voter participation.

	(1)	(2)	(3)
Dependent Variable	Fraction of all voters to total population	Fraction of Democrat voters to population	Fraction of Republican voters to population
Sample Period	2000 – 2021	2000 – 2021	2000 – 2021
Left-leaning News	0.0792*	0.144***	-0.0701**
	(1.95)	(3.61)	(-2.60)
Right-leaning News	-0.204***	-0.0996	-0.0639
	(-3.14)	(-1.30)	(-1.60)
Intercept Term	0.392***	0.180***	0.196***
	(146.43)	(59.61)	(93.49)
N	306	306	306
Adjusted R^2	0.759	0.600	0.598
F-statistic	164.8	88.84	108.6

*This sample only covers the years when elections are held in the U.S. All regression specifications include year and state fixed-effects. Below each coefficient estimate, T-statistic is shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.*

While the evidence reported thus far indicates substantial influences of news framing, particularly from the liberal-leaning articles, on election outcomes and voter participation, it does not distinguish three different techniques of framing. In Table 5, I break down the framing measures into six separate variables, including left-leaning interpretive framing, left-leaning priming, left-leaning agenda-setting, right-leaning interpretive framing, right-leaning priming, and right-leaning agenda-setting, to investigate the mechanism by which news media affected political activities in the United States.

Table 5 repeats the regression analysis in Table 3 with six different measures of framing (rather than two measures in Table 3). The overall model fit of these models is similar to that of the models in Table 3. While none of the coefficient estimates is statistically significant in column 1 for the entire sample, the left-leaning priming, right-leaning priming, and right-leaning agenda-setting have significant impacts on electing Democrat presidential candidates in column 2 for a more recent period from 2000 to 2021. On the other hand, left-leaning agenda-setting is a significant factor in predicting the election outcome of Republican candidates in column (3). For a more recent sample period in column (4), left-leaning priming, right-leaning interpretive-framing, and right-leaning agenda-setting are the significant factors determining the vote faction towards Republican candidates.

Table 5. Effects of news framing on election outcomes.

	(1)	(2)	(3)	(4)
Dependent variable	Vote Fraction for Democratic Presidential Candidate		Vote Fraction for Republican Presidential Candidate	
Sample Period	1980 – 2021	2000 – 2021	1980 – 2021	2000 – 2021
Left-leaning Framing	102.8*	33.70	-88.05	-27.69
	(1.88)	(1.23)	(-1.42)	(-0.84)
Left-leaning Priming	0.121	0.187**	-0.126	-0.195**
	(1.07)	(2.55)	(-1.04)	(-2.45)
Left-leaning Agenda-setting	0.254	0.0402	-0.340**	-0.0858
	(1.56)	(0.38)	(-2.11)	(-0.82)
Right-leaning Framing	-2.240	-2.274	5.387*	4.364**
	(-0.80)	(-1.26)	(1.77)	(2.07)
Right-leaning Priming	-0.228	-0.810**	0.0257	0.662
	(-0.40)	(-2.08)	(0.04)	(1.67)
Right-leaning Agenda-setting	-0.551	-0.797***	0.644*	0.754***
	(-1.36)	(-4.93)	(1.79)	(4.80)
Intercept Term	0.394***	0.466***	0.601***	0.524***
	(64.30)	(104.81)	(88.84)	(111.95)
N	510	255	510	255
Adjusted R^2	0.405	0.474	0.672	0.292
F-statistic	42.89	68.75	121.0	60.09

*This sample only covers the years when elections are held in the U.S. All regression specifications include year and state fixed-effects. Below each coefficient estimate, T-statistic is shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.*

Table 6 repeats the regression analysis in Table 4 with six different measures of framing and a more recent sample period of 2000 – 2021. The overall model fit is similar to that of in Table 4. In column (1), while left-leaning priming have a significant positive impact on voter participation, both right-leaning priming and right-leaning agenda-setting have a significant negative effect (coefficients of 0.13 and –3.2 respectively) on voter participation. When I split the voters into two groups: Democrat and Republican, there is a stronger effect of left-leaning priming (coefficient of 0.19) encouraging the participation of Democratic voters (column 2) and a stronger effect of right-leaning agenda-setting (coefficient of –3.5) deterring Democrat voters. On the other side of the voter spectrum, left-leaning framing is the only significant factor that reduces the participation of Republican voters during presidential elections.

Table 6. Effects of news framing on voter participation.

	(1)	(2)	(3)
Dependent Variable	Fraction of all voters to population	Fraction of Democrat voters	Fraction of Republican voters
Sample Period	2000 – 2021	2000 – 2021	2000 – 2021
Left-leaning Framing	70.21 (0.76)	119.9 (0.97)	-90.26** (-2.14)
Left-leaning Priming	0.133*** (3.53)	0.192*** (4.91)	-0.0703* (-1.79)
Left-leaning Agenda-setting	-0.00908 (-0.15)	0.0618 (1.15)	-0.0715* (-1.96)
Right-leaning Framing	-2.044*** (-3.16)	-1.444* (-1.98)	-0.581 (-1.07)
Right-leaning Priming	-0.0764 (-0.95)	0.0251 (0.27)	-0.0569 (-1.29)
Right-leaning Agenda-setting	-3.215*** (-4.25)	-3.523*** (-4.87)	-0.694 (-1.08)
Intercept Term	0.394*** (147.60)	0.181*** (59.08)	0.196*** (89.60)
N	306	306	306
Adjusted R^2	0.762	0.608	0.595
F-statistic	130.0	388.3	95.19

*This sample only covers the years when elections are held in the U.S. All regression specifications include year and state fixed-effects. Below each coefficient estimate, T-statistic is shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.*

Discussion of Empirical Evidence

The framing of political issues within news media has become a critical part of contemporary political communication. Far from merely presenting objective facts, news outlets often shape the public discourse through the narrative structure applied to events, the selection of details, the tone employed, the moral standard applied, and the agenda set. While a significant area of analysis within the field of political science and communication concerns the potential impact of news framing on political activities, this research attempts to examine the effects of various framing mechanisms interpretative framing, priming, and agenda-setting, on political outcomes and voter participation of U.S. presidential election from 1980 to 2021. The empirical results presented here show that news content presented with a discernible liberal-leaning frame can simultaneously serve to encourage political activity among individuals aligning with the Democratic Party while discouraging similar engagement among those identifying with the Republican Party, and vice versa. However, not all framing mechanisms that result in changes in either election outcomes or voter participation, suggesting that voters do not necessarily react to the news biased toward their ideological preferences.

For Democrat voters, exposure to news articles primed to be consistent with their moral values appears to strengthen their existing beliefs and as a result, they are more likely to participate in presidential elections, and the Democratic Party candidates are more likely to win to win election. This news priming effect functions slightly differently among Republican voters. Their exposure to news primed to be consistent with conservative moral values does not appear to increase their participation in presidential elections; however, it does increase the chance of electing Republican candidates. I

interpret this evidence as consistent with, but cannot prove directly, the idea that news priming, rather than interpretive-framing or agenda-setting, strengthens voters' existing beliefs of social and moral values. This helps validate their concerns about issues they deem important and enhance their sense that their participation matters and can make a difference in politics. By making issues salient and priming them as urgent societal or moral imperatives requiring immediate solutions, such content can motivate voters to become more politically active.

On the contrary, the lack of interpretive-framing and agenda-setting effects on election outcomes and voter participation may suggest that there is not significant information asymmetry between the politicians and citizens. Voters are aware of the fact that media often have biases in presenting the information and portray certain problems as solvable through political means. Therefore, they do not react to news that simply re-interprete or highlight the information that they already possessed. In other words, the news acts not just as an information source but as a reaffirming signal that their political identity and goals are legitimate and supported by salient issues through the mechanism of priming.

Conversely, the same left-leaning (right-leaning) framing can have a demobilizing effect on Republican (Democratic) voters, albeit through different mechanisms. For Republican voters, news content that is interpretively framed through a left-leaning perspective is often perceived as biased, inaccurate, or even hostile, and in fact, it reduces their participation in elections; however, there is no effect on election outcome. On the other hand, more news primed to the left is associated with a lower probability of electing a GOP president, implying that the perception of discouragement is rooted in the

dissonance between the values presented in the news and their own conservative worldview through the mechanism of priming.

Among Democratic voters, issues highlighted as critical from a conservative perspective or presented with relatively conservative values may be viewed as discouraging signs that things won't work out by Democrats. Indeed, the empirical results in this research show that a more appearance of news that imply a conservative agenda and carry a conservative prime is associated with a lower rate of voter participation and a lower chance of electing a Democratic president. When the use of priming and agenda-setting techniques in news framing consistently presents these issues in a way that conflicts with voters' moral value and their priorities, it can trigger psychological reactance and motivated reasoning.

Chapter IV.

Alternative Causes and Confounding Factors

While the empirical evidence reported in the previous chapter has shown a statistical correlation between news media's use of framing techniques such as interpretative framing, priming, and agenda-setting and political outcomes and voter participation in U.S. presidential elections, it is crucial to examine whether this relationship is causal or spurious. In other words, is the observed effect of news media's framing on political outcomes and voter participation a result of the media's influence, or are there alternative causes that drive both the media's framing and the political outcomes? This chapter explores the existing literature on the topic of spurious correlation and argues that these potential alternative causes are possible but not likely in this present research.

One potential alternative cause of the relationship between news framing and political outcomes is the role of elite cues. For example, the tone and content of news coverage are often influenced by elite candidates' campaign strategies and the issues they emphasize (Fridkin & Kenney, 2011). In other words, news framing is not an independent cause of public opinion, but rather a reflection of the cues provided by political elites; rather, the media's framing of issues and candidates may simply reflect the candidates' own messaging and priorities, rather than an independent influence on voters. Prior research has shown that the framing effects of news media are significantly reduced when individuals are exposed to competing frames from credible sources, such as politicians or interest groups (Druckman, 2001a).

However, in a large sample of statistical studies such as the present one that draws upon comprehensive election data of the last eleven U.S. presidential elections from 1980 to 2021, the elite candidates' own messaging and priorities on political issues have less effect on individual voters than the news media's framing of these issues. In fact, voters' opinions on issues are more closely aligned with the media's framing of those issues than with the positions taken by their preferred candidates (Mutz et al., 1996). The chapter by John Zaller in this book specifically studies the 1992 U.S. presidential election and finds that voters who were exposed to more media coverage of a particular issue were more likely to adopt the media's framing of that issue, even if it conflicted with their candidate's position. This phenomenon can be attributed, in part, to the fact that voters are often more exposed to media coverage of campaigns and issues than to candidates' direct communications. The media's use of frames and counter-frames can affect not only voter attitudes but also their perceived importance, particularly when voters are exposed to competing frames (Druckman, 2001b). In addition, the media's ability to selectively report on certain aspects of a candidate and hence create an uneven playing field can sometimes outweigh this candidate's direct influence on voters (Patterson, 1994). On top of that, news outlets play a pivotal role in the polarization of public opinion, as voters become entrenched in their pre-existing attitudes and dispositions. This, in turn, can lead to a more divisive and fragmented electoral environment, where candidates' own messaging is often drowned out by the media's interpretive frameworks (Cappella & Jamieson, 1997). As a result, voters' perceptions of candidates are often shaped by the media's framing, rather than candidates' direct messages, which can influence how voters evaluate candidate traits,

policy positions, and issue stances, and of course, set the agenda for public discourse (Bartels, 1993).

Another potential alternative cause is the role of confirmation bias. Individuals tend to seek out news sources that confirm their pre-existing views, and are more likely to be influenced by frames that are consistent with their existing beliefs. The root cause of the relationship between news framing and political outcome is the pre-existing attitudes and preferences of voters. Voters' perceptions of candidates and issues are often shaped by their party identification, ideological leanings (Campbell et al., 1980), and demographic characteristics (Zaller, 1992). The media's framing of issues and candidates may simply be reinforcing or resonating with these pre-existing attitudes, rather than independently influencing voters' opinions. For example, voters who have already determined to support a particular candidate are more likely to seek out news sources that confirm their existing views, and to interpret news coverage in a way that reinforces their pre-existing attitudes (Stroud, 2011). Individuals are more likely to engage in motivated reasoning when exposed to frames that challenge their existing views, and are less likely to be influenced by frames that are inconsistent with their prior attitudes (Taber & Lodge, 2006).

Of course, individual voters' pre-existing political views can undoubtedly influence their perceptions of a given issue, but it is very likely that news media's framing of the same issue can mitigate this bias (Nelson et al., 1997). With voters scattered throughout the state, their individual biases are likely to be offset by those of others with differing views in the same state, resulting in a relatively neutral overall effect. At the national level, the geographical dispersion of voters across different states also tends to cancel out the impact of this bias on aggregate electoral outcomes. The state-level analysis presented in

this essay combines all news coverage and voting data in a year into one single line of state-wide data. This aggregation allows us to identify trends and understand overall influence of news media bias on voting outcomes. The use of state-level fixed-effects in all regression analysis is a crucial technique for analyzing panel data that contains news and voting information over time for each state. They can help disentangle the within-state variation over time from the constant, underlying economic, social and political differences that exist across states. In other words, random distribution of voters across different electoral districts can lead to a cancellation of individual biases, making the aggregate outcome less influenced by personal prejudices (Gelman & King, 1993).

Furthermore, the news media's framing may be influenced by the same factors that drive political outcomes and voter participation. For example, the relationship between news framing and political outcomes may be influenced by the broader media environment and the changing nature of news consumption (Gentzkow & Shapiro, 2010). To some extent, the news framing effects can also be confounded by factors such as the level of competition in the media market, and the incentives faced by journalists and news organizations (Hamilton, 2011). This increased competition, along with the advent of social media, has led to a proliferation of news sources with varying levels of quality and bias (Bimber & Davis, 2003), making it more challenging for voters to discern accurate and unbiased information (Gentzkow & Shapiro, 2008). Individual voters now have their own news preferences and selectively expose themselves to information that confirms their pre-existing views (Prior, 2007). Therefore, the impact of news media's framing on political outcomes is influenced by the extent to which individuals are exposed to diverse perspectives and viewpoints. As a result, the media's framing of

issues and candidates may be less influential than it would be in a more homogeneous media environment (Sunstein, 2009). In a more "homogeneous" environment, the news media's agenda can be easily driven by the issues and events that are prioritized by politicians and other elites (Bennett, 1990), whereas in a more "diversified" news market, individual voters' selective exposure to news, rather than some sort of common factors, can lead to the reinforcement of existing attitudes and beliefs, rather than the formation of new ones (Knobloch-Westerwick & Meng, 2009).

Additionally, political knowledge and engagement among voters also matters. The level of political knowledge among voters can affect their ability to critically evaluate the information presented in the news media and make informed decisions (Zaller, 1992). However, whether it is strengthening or weakening the effect of news framing remains as an empirical question. On the one hand, voters with higher levels of political knowledge are more likely to be influenced by the framing of news media, as they are better equipped to critically evaluate the information presented (Druckman, 2001b); however, on the other hand, these "knowledgeable" voters may be more engaged in the electoral process and hence, are less susceptible to media bias. Conversely, voters with lower levels of political knowledge may be more susceptible to the persuasive effects of news media's framing, as they may be less able to understand the news, and of course, voters who are less informed are likely to be less engaged with the political process; as a result, these "unknowledgeable" individuals may be more likely to follow the media (Kinder & Sanders, 1990). If the net effect happens to be zero, political outcomes would depend on other factors such as civic engagement, political efficacy, the competitiveness of the election, and the level of mobilization by political

campaigns (Verba et al., 1995). Given that these factors vary by election cycle and geographic region, it is important to incorporate the year and state fixed-effects to capture these variations. The research method in this essay employs year fixed-effects to control for time-specific factors that uniformly affect all states, such as national economic and social trends or global events, which may influence electoral outcomes (Bertrand & Mullainathan, 2003). In addition, it also uses state fixed-effects to account for state-specific characteristics that remain constant over time, including institutional features, demographic compositions, or historical legacies, which can also impact voting behavior and election results (Besley & Case, 2003).

In this study of news framing, the methodological choice between keyword matching and Large Language Models (LLMs) presents a fundamental trade-off between cost, clarity, and semantic depth. A keyword-based approach costs almost nothing, and by defining frames through explicit dictionaries of terms, I can ensure that the data and method are transparent and replicable. However, keyword searching cannot reliably distinguish between the use of a word and its negation, irony, or quotation, often leading to a high rate of false positives and an inability to capture nuanced or metaphorical framing. LLMs, on the other hand, can potentially understand context, semantic relationships, and abstract concepts, enabling them to identify thematic frames with a level of accuracy that approaches human-level interpretation. However, it is very costly and even prohibitive to feed the data into LLMs. For example, the data provider of this research, ProQuest TDM Studio, only allows me to take screenshots of processed data tables. It is not possible to download the entire news dataset to my personal computer and use it to train LLMs to predict and category news framing. Besides the cost of LLMs,

these AI models have major disadvantages for empirical research in political science. The opacity of their internal data processing and prediction processes raises significant challenges for methodological transparency and reproducibility. This can complicate the imperative for consistent, objective measurement.

In conclusion, while my essay has reported a statistical correlation between news media's use of framing techniques and political activities during U.S. presidential elections, it is likely that this relationship is at least partially spurious. Alternative causes, such as the underlying political environment, candidate characteristics, pre-existing voter attitudes, and the broader media environment, may drive both the media's framing and the observed political activities. I argue, however, that the use of state-level and year-level fixed effects in the regression analysis of a large-size sample of news articles and political activities over the 40-year period has helped mitigated the effects of spurious correlation on the interpretation of causal interactions. The analytical approach in this large sample study certainly provides a more nuanced understanding of the complex interplay between media, voters, and political outcomes. As such, it is able to offer a broad view of how interpretative framing, priming, and agenda-setting are effectively used by news outlets large and small to influence not only political outcomes but also voter participation during the contentious periods during the U.S. presidential elections from 1980 to 2021.

Appendix 1.

Python Code to Collect News Articles

The following piece of code is used to collect all news articles in the U.S. from 1980 to 2021. It is noted that this piece of Python code only collects news articles. All other dataset operation and statistical analysis are performed using SAS and STATA accordingly, as described in Appendix 2.

```
import os
import numpy as np
import pandas as pd
import datetime as dt
import dateutil as du
import xml.etree.ElementTree as et
import bs4 as bs
dir = '/home/ec2-user/SageMaker/data/Newsfiles/'
flist = 'filenames.txt'
datafile = 'framing.csv'
statefile = 'states.csv'
alphas = 'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789 '
years = list(range(1980, 2022))
states = ['AL', 'AK', 'AZ', 'AR', 'CA', 'CO', 'CT', 'DC', 'DE', 'FL', 'GA', 'HI', 'ID',
'IL', 'IN', 'IA', 'KS', 'KY', 'LA', 'ME', 'MD', 'MA', 'MI', 'MN', 'MS', 'MO', 'MT', 'NE',
'NV', 'NH', 'NJ', 'NM', 'NY', 'NC', 'ND', 'OH', 'OK', 'OR', 'PA', 'RI', 'SC', 'SD', 'TN',
'TX', 'UT', 'VT', 'VA', 'WA', 'WV', 'WI', 'WY']
zeros = np.zeros((len(years), len(states)), dtype=int)

framing_lr = ['historic victory', 'landmark decision', 'major breakthrough', 'heart-
wrenching tragedy', 'devastating consequences', 'tragic loss']
framing_l = ['climate crisis', 'climate change denier', 'climate change skeptic',
'climate scientist', 'social safety net', 'battle for the future of our planet',
'healthcare as a human right']
framing_r = ['radical left', 'far-left agenda', 'liberal elite', 'out-of-touch elites',
'big government overreach', 'political correctness', 'woke culture', 'fake news',
'mainstream media bias']
priming_l = ['income inequality', 'environmental justice', 'mass incarceration', 'police
brutality', 'gun violence epidemic', 'racial disparities', 'gun violence', 'systemic
racism', 'war on women', 'voter suppression']
priming_r = ['family values', 'traditional family', 'american exceptionalism',
'patriotism', 'free market', 'limited government', 'religious freedom', 'christian
value', 'personal responsibility', 'self reliance', 'self-reliance']
agenda_l = ['climate emergency', 'social justice', 'gender equality', "women's rights",
'reproductive rights', 'lgbt rights', 'lgbtq rights', 'voting rights', 'immigration
reform']
agenda_r = ['border security', 'illegal immigration', 'energy independence', 'school
choice', 'parental Rights']

def get_files(dir):
    filenames = os.listdir(dir)
    text = ' \n' .join(filenames)
    f = open(flist, 'w')
    f.write(text)
    f.close()
    print('Created "filenames.txt" file.')
# get_files(dir)
```

```
def diff_pubs():
    dir = '/home/ec2-user/SageMaker/'
    df1 = pd.read_csv(dir + 'publishers.txt')
    df2 = pd.read_csv(dir + 'pubs.txt')
    for x in range(len(df1)):
        name, city, state, count = '', '', '', ''
        if df1.iloc[x,0].strip() != df2.iloc[x,0].strip():
            name = df1.iloc[x,0]
        if df1.iloc[x,1].strip() != df2.iloc[x,1].strip():
            city = df1.iloc[x,1]
        if df1.iloc[x,2].strip() != df2.iloc[x,2].strip():
            state = df1.iloc[x,2]
        if df1.iloc[x,3] != df2.iloc[x,3]:
            count = df1.iloc[x,3]
        print(x+1, name, city, state, count)
# diff_pubs()

def diff_states():
    dir = '/home/ec2-user/SageMaker/'
    df1 = pd.read_csv(dir + 'states.csv', index_col=0)
    df2 = pd.read_csv(dir + 'stats.csv', index_col=0)
    df1.columns = df1.columns.str.strip()
    df2.columns = df2.columns.str.strip()
    for year in df1.index:
        for state in df1.columns:
            v1 = df1.loc[year, state]
            v2 = df2.loc[year, state]
            if isinstance(v2, str):
                if v2.isdigit():
                    v2 = np.int64(v2)
                else:
                    print(year, state, v1, v2, 'Not a number in string')
            elif v1 != v2:
                print(year, state, v1, v2)
# diff_states()

def keep_alpha(text):
    for x in text:
        if x not in alphas:
            text = text.replace(x, '').replace('   ', ' ').replace('  ', ' ')
    return text

def search_news(summary=False, detail=False):
    with open(flist, 'r') as f:
        names = [line.rstrip() for line in f]
    pubs = []
    state_df = pd.DataFrame(zeros, columns=states, index=years)
    pub_df = pd.DataFrame(columns=['Pub', 'Publisher', 'City', 'State', 'Count'])
    pub_df.set_index('Pub', inplace=True)
    seq = 0
    news_df = pd.DataFrame(columns=['Seq', 'Year', 'Date', 'State', 'Publisher', 'f_lr',
'f_l', 'f_r', 'p_l', 'p_r', 'a_l', 'a_r'])
    news_df.set_index('Seq', inplace=True)
    for name in names[0:10]:
        filename = dir + name
        # print (filename, ':' )
        # with open (filename, 'r') as f:
        #     print (f.read())
        tree = et.parse(filename)
        root = tree.getroot()
        date = root.find(f'.//NumericDate').text.rstrip()
        year = int(date[:4])
        publisher = root.find(f'.//PublisherName').text.rstrip()
        publisher = keep_alpha(publisher).upper()
        city = root.find(f'.//City').text.rstrip().upper()
        try:
            state = root.find(f'.//Province').text.rstrip()
            if state.upper() == 'HAWAII':
                state = 'HI'
            if state.upper() == 'MINNESOTA':
```

```
                state = 'MN'
            if state.upper() == 'NEW YORK':
                state = 'NY'
            if state.upper() == 'PENNSYLVANIA':
                state = 'PA'
        except:
            continue
        pub = publisher + city + state
        try:
            newshtml = root.find(f'.//Text').text.rstrip()
        except:
            try:
                newshtml = root.find(f'.//AbsText').text.rstrip()
            except:
                continue
        soup = bs.BeautifulSoup(newshtml, 'html.parser')
        try:
            news = soup.find('body').text.replace('\n', '').upper()
        except:
            news = soup.get_text().upper()
        seq += 1
        if detail == True:
            for word in framing_lr:
                f_lr = news.count(word.upper())
            for word in framing_l:
                f_l = news.count(word.upper())
            for word in framing_r:
                f_r = news.count(word.upper())
            for word in priming_l:
                p_l = news.count(word.upper())
            for word in priming_r:
                p_r = news.count(word.upper())
            for word in agenda_l:
                a_l = news.count(word.upper())
            for word in agenda_r:
                a_r = news.count(word.upper())
            if f_lr + f_l + f_r + p_l + p_r + a_l + a_r > 0:
                news_df.loc[seq] = [year, date, state, publisher, f_lr, f_l, f_r, p_l,
p_r, a_l, a_r]
        if summary == True:
            state_df.loc[year, state] += 1
            if pub in pubs:
                pub_df.loc[pub, 'Count'] += 1
            else:
                pubs.append(pub)
                pub_df.loc[pub] = [publisher, city, state, 1]
    if detail == True:
        news_df.to_csv(datafile, lineterminator='\r\n', index=False)
        print('Total Number of News Searched =', seq, '\n', news_df)
    if summary == True:
        pub_df = pub_df.sort_values(['Publisher', 'State', 'City'])
        pub_df.to_csv('publishers.txt', lineterminator='\r\n', index=False)
        state_df.to_csv(statefile, lineterminator='\r\n')
        print(state_df)
# search_news(summary=True, detail=False)
# search_news(summary=False, detail=True)

def analyze_news(statefile, datafile, monthly=False):
    news_df = pd.read_csv(datafile, header=0)
    # print(df['f_lr'].sum(), df['f_l'].sum(), df['f_r'].sum(), df['p_l'].sum(),
df['p_r'].sum(), df['a_l'].sum(), df['a_r'].sum())
    # print('Count by Year:\n')
    # print(df.groupby('Year').size().reset_index(name='Count'))
    # print(df.groupby('Year').sum(numeric_only=True))
    if monthly:
        begin_date = dt.date(1980, 1, 1)
        end_date = dt.date(2022, 12, 1)
        delta = du.relativedelta.relativedelta(end_date, begin_date)
        num_months = delta.years*12 + delta.months + 1
        list_months = list(range(0, num_months))
```

```
        months = [(begin_date+du.relativedelta.relativedelta(months=i)).strftime('%Y-%m')
for i in list_months]
        zeros = np.zeros((len(months), len(states)), dtype=int)
        mth_f_lr = pd.DataFrame(zeros, columns=states, index=months).copy()
        mth_f_l = pd.DataFrame(zeros, columns=states, index=months).copy()
        mth_f_r = pd.DataFrame(zeros, columns=states, index=months).copy()
        mth_p_l = pd.DataFrame(zeros, columns=states, index=months).copy()
        mth_p_r = pd.DataFrame(zeros, columns=states, index=months).copy()
        mth_a_l = pd.DataFrame(zeros, columns=states, index=months).copy()
        mth_a_r = pd.DataFrame(zeros, columns=states, index=months).copy()
        for row in news_df.values:
            date, state, f_lr, f_l, f_r, p_l, p_r, a_l, a_r = row[1], row[2], row[4],
row[5], row[6], row[7], row[8], row[9], row[10]
            date = dt.datetime.strptime(date, "%Y-%m-%d").date().strftime('%Y-%m')
            mth_f_lr.loc[date, state] += f_lr
            mth_f_l.loc[date, state] += f_l
            mth_f_r.loc[date, state] += f_r
            mth_p_l.loc[date, state] += p_l
            mth_p_r.loc[date, state] += p_r
            mth_a_l.loc[date, state] += a_l
            mth_a_r.loc[date, state] += a_r
        print(mth_f_lr, '\n', mth_f_l, '\n', mth_f_r, '\n', mth_p_l, '\n', mth_p_r, '\n',
mth_a_l, '\n', mth_a_r)
        mth_f_lr.to_csv('mth_f_lr.csv', lineterminator='\r\n')
        mth_f_l.to_csv('mth_f_l.csv', lineterminator='\r\n')
        mth_f_r.to_csv('mth_f_r.csv', lineterminator='\r\n')
        mth_p_l.to_csv('mth_p_l.csv', lineterminator='\r\n')
        mth_p_r.to_csv('mth_p_r.csv', lineterminator='\r\n')
        mth_a_l.to_csv('mth_a_l.csv', lineterminator='\r\n')
        mth_a_r.to_csv('mth_a_r.csv', lineterminator='\r\n')
    else:
        f_lr_df = pd.DataFrame(zeros, columns=states, index=years).copy()
        f_l_df = pd.DataFrame(zeros, columns=states, index=years).copy()
        f_r_df = pd.DataFrame(zeros, columns=states, index=years).copy()
        p_l_df = pd.DataFrame(zeros, columns=states, index=years).copy()
        p_r_df = pd.DataFrame(zeros, columns=states, index=years).copy()
        a_l_df = pd.DataFrame(zeros, columns=states, index=years).copy()
        a_r_df = pd.DataFrame(zeros, columns=states, index=years).copy()
        for row in news_df.values:
            year, state, f_lr, f_l, f_r, p_l, p_r, a_l, a_r = row[0], row[2], row[4],
row[5], row[6], row[7], row[8], row[9], row[10]
            f_lr_df.loc[year, state] += f_lr
            f_l_df.loc[year, state] += f_l
            f_r_df.loc[year, state] += f_r
            p_l_df.loc[year, state] += p_l
            p_r_df.loc[year, state] += p_r
            a_l_df.loc[year, state] += a_l
            a_r_df.loc[year, state] += a_r
        print(f_lr_df, '\n', f_l_df, '\n', f_r_df, '\n', p_l_df, '\n', p_r_df, '\n',
a_l_df, '\n', a_r_df)
        f_lr_df.to_csv('f_lr.csv', lineterminator='\r\n')
        f_l_df.to_csv('f_l.csv', lineterminator='\r\n')
        f_r_df.to_csv('f_r.csv', lineterminator='\r\n')
        p_l_df.to_csv('p_l.csv', lineterminator='\r\n')
        p_r_df.to_csv('p_r.csv', lineterminator='\r\n')
        a_l_df.to_csv('a_l.csv', lineterminator='\r\n')
        a_r_df.to_csv('a_r.csv', lineterminator='\r\n')
# analyze_news(statefile, datafile, monthly=False)
analyze_news(statefile, datafile, monthly=True)
```

Appendix 2.

SAS and STATA Code for Data Analysis

SAS code sorts and links various datasets used in this research.

```
OPTIONS THREADS CPUCOUNT = ACTUAL;
ODS LISTING CLOSE;
libname my '.';

%macro import_data(name);
%put &name;
data &name.;
infile "&name..csv" delimiter = ',' MISSOVER DSD lrecl=32767 firstobs=2;
   informat year best32.;
   informat AL best32.;
   informat AK best32.;
   informat AZ best32.;
   informat AR best32.;
   informat CA best32.;
   informat CO best32.;
   informat CT best32.;
   informat DC best32.;
   informat DE best32.;
   informat FL best32.;
   informat GA best32.;
   informat HI best32.;
   informat ID best32.;
   informat IL best32.;
   informat IN best32.;
   informat IA best32.;
   informat KS best32.;
   informat KY best32.;
   informat LA best32.;
   informat ME best32.;
   informat MD best32.;
   informat MA best32.;
   informat MI best32.;
   informat MN best32.;
   informat MS best32.;
   informat MO best32.;
   informat MT best32.;
   informat NE best32.;
   informat NV best32.;
   informat NH best32.;
   informat NJ best32.;
   informat NM best32.;
   informat NY best32.;
   informat NC best32.;
   informat ND best32.;
   informat OH best32.;
   informat OK best32.;
   informat OR best32.;
   informat PA best32.;
   informat RI best32.;
   informat SC best32.;
   informat SD best32.;
   informat TN best32.;
   informat TX best32.;
   informat UT best32.;
   informat VT best32.;
```

```
   informat VA best32.;
   informat WA best32.;
   informat WV best32.;
   informat WI best32.;
   informat WY best32.;
   format year best12.;
   format AL best12.;
   format AK best12.;
   format AZ best12.;
   format AR best12.;
   format CA best12.;
   format CO best12.;
   format CT best12.;
   format DC best12.;
   format DE best12.;
   format FL best12.;
   format GA best12.;
   format HI best12.;
   format ID best12.;
   format IL best12.;
   format IN best12.;
   format IA best12.;
   format KS best12.;
   format KY best12.;
   format LA best12.;
   format ME best12.;
   format MD best12.;
   format MA best12.;
   format MI best12.;
   format MN best12.;
   format MS best12.;
   format MO best12.;
   format MT best12.;
   format NE best12.;
   format NV best12.;
   format NH best12.;
   format NJ best12.;
   format NM best12.;
   format NY best12.;
   format NC best12.;
   format ND best12.;
   format OH best12.;
   format OK best12.;
   format OR best12.;
   format PA best12.;
   format RI best12.;
   format SC best12.;
   format SD best12.;
   format TN best12.;
   format TX best12.;
   format UT best12.;
   format VT best12.;
   format VA best12.;
   format WA best12.;
   format WV best12.;
   format WI best12.;
   format WY best12.;
input
   year AL AK AZ AR CA CO CT DC DE FL GA HI ID IL IN IA KS KY LA ME MD MA MI MN MS MO MT
NE NV NH NJ NM NY NC ND OH OK OR PA RI SC SD TN TX UT VT VA WA WV WI WY;
run;
proc transpose data=&name. out=temp_&name.;
   by year;
run;
data temp_&name.;
  type="&name.";
  set temp_&name. (rename=(_name_=state col1=count));
run;
proc sql;
insert into my.statenews select distinct type, year, state, count from temp_&name.;
quit;
```

```
%mend;

/* Import news count files
proc sql;
create table my.statenews (type varchar(6), year int, state varchar(2), count int);
%import_data(states);
%import_data(f_lr);
%import_data(f_l);
%import_data(f_r);
%import_data(p_l);
%import_data(p_r);
%import_data(a_l);
%import_data(a_r); */

/* Import election files
data my.president;
infile '1976-2020-president.csv' delimiter = ',' MISSOVER DSD lrecl=32767 firstobs=2;
   informat year best32.;
   informat state $9.;
   informat state_po $4.;
   informat state_fips best32.;
   informat state_cen best32.;
   informat state_ic best32.;
   informat office $14.;
   informat candidate $31.;
   informat party_detailed $28.;
   informat writein $5.;
   informat candidatevotes best32.;
   informat totalvotes best32.;
   informat version best32.;
   informat notes $2.;
   informat party_simplified $13.;
   format year best12.;
   format state $9.;
   format state_po $4.;
   format state_fips best12.;
   format state_cen best12.;
   format state_ic best12.;
   format office $14.;
   format candidate $31.;
   format party_detailed $28.;
   format writein $5.;
   format candidatevotes best12.;
   format totalvotes best12.;
   format version best12.;
   format notes $2.;
   format party_simplified $13.;
input
  year
  state $
  state_po $
  state_fips
  state_cen
  state_ic
  office $
  candidate $
  party_detailed $
  writein $
  candidatevotes
  totalvotes
  version
  notes $
  party_simplified $
  ;
run;
*/

/* Import Gallop polls
data my.gallop;
infile 'Gallup.csv' delimiter = ',' MISSOVER DSD lrecl=13106 firstobs=2;
   informat president $10.;
```

```
   informat date $15.;
   informat approve best32.;
   informat period anydtdtm40.;
   format president $10.;
   format date $15.;
   format approve best12.;
   format period datetime.;
input
   president $
   date $
   approve
   period;
run; */

/* Total news count */
proc sql;
create table temp_state as select distinct year, state, sum(count) as count
from my.statenews
where type = "states"
group by year, state;

create table temp_lr as select distinct year, state, sum(count) as count
from my.statenews
where type <> "states"
group by year, state;

create table temp_l as select distinct year, state, sum(count) as count
from my.statenews
where type in ('f_l' 'p_l' 'a_l')
group by year, state;

create table temp_r as select distinct year, state, sum(count) as count
from my.statenews
where type in ('f_r' 'p_r' 'a_r')
group by year, state;

create table temp_frac as select distinct lr.year, lr.state,
case when st.count = 0 then 0 else lr.count/st.count end as lr,
case when st.count = 0 then 0 else l.count/st.count end as l,
case when st.count = 0 then 0 else r.count/st.count end as r,
case when st.count = 0 then 0 else fl.count/st.count end as fl,
case when st.count = 0 then 0 else fr.count/st.count end as fr,
case when st.count = 0 then 0 else pl.count/st.count end as pl,
case when st.count = 0 then 0 else pr.count/st.count end as pr,
case when st.count = 0 then 0 else al.count/st.count end as al,
case when st.count = 0 then 0 else ar.count/st.count end as ar
from temp_state as st, temp_lr as lr, temp_l as l, temp_r as r, my.statenews as fl,
my.statenews as fr, my.statenews as pl, my.statenews as pr, my.statenews as al,
my.statenews as ar
where st.year = lr.year = l.year = r.year = fl.year = fr.year = pl.year = pr.year =
al.year = ar.year
and st.state = lr.state = l.state = r.state = fl.state = fr.state = pl.state = pr.state =
al.state = ar.state
and fl.type = 'f_l' and fr.type = 'f_r' and pl.type = 'p_l' and pr.type = 'p_r' and
al.type = 'a_l' and ar.type = 'a_r';

/* Presidential elections */
create table temp_dem as select distinct year, state_po as state, sum(candidatevotes) as
votes as dem, avg(totalvotes) as total
from my.president
where lower(party_simplified) in ("democrat" "democratic-farmer-labor" "green" "liberal")
group by year, state_po;

create table temp_gop as select distinct year, state_po as state, sum(candidatevotes) as
gop
from my.president
where lower(party_simplified) in ("republican" "conservative" "libertarian")
group by year, state_po;

create table temp_prestate as select distinct de.year, de.state, total, dem, gop,
population
```

```
from temp_dem as de, temp_gop as go, my.population as po
where de.year = go.year = po.year and de.state = go.state = po.state;

/* National level
create table temp_president as select distinct year, sum(dem)/sum(total) as dem,
sum(gop)/sum(total) as gop
from temp_prestate
group by year; */

create table temp_newspre as select distinct fr.year, fr.state, lr as news, l as
news_left, r as news_right,
fl as frame_left, fr as frame_right, pl as prime_left, pr as prime_right, al as
agenda_left, ar as agenda_right,
dem/total as democrat, gop/total as republican, dem/population as dem_part,
gop/population as gop_part, total/population as vot_part
from temp_frac as fr
left join temp_prestate as pr on fr.year = pr.year and fr.state = pr.state;

proc export data = temp_newspre
file = "temp_newspre"
dbms = dta replace;
run;
```

STATA is used to conduct regression analysis and generate data tables.

```
use national.dta, replace
gen voting_democrat = democrat - republican
twoway (connected news_left year) (connected news_right year) (connected voting_democrat
year), ytitle(Fraction) xtitle(Year) legend(rows(1) region(fcolor(none) margin(zero)
lcolor(none) lpattern(blank)) bmargin(zero) position(12) ring(0)) scheme(s2mono)
graphregion(margin(zero) fcolor(white) lcolor(none) lpattern(blank) ifcolor(white)
ilcolor(none) ilpattern(blank)) plotregion(fcolor(white) lcolor(none) lpattern(blank)
ifcolor(white) ilcolor(none) ilpattern(blank))

use temp_newspre.dta, replace
egen sid=group(state)
xtset sid year

******
*ELEC*
******
eststo clear
eststo r1: xtreg democrat news_left news_right i.year, fe robust
eststo r2: xtreg democrat news_left news_right i.year if year >= 2000, fe robust
eststo r3: xtreg republican news_left news_right i.year, fe robust
eststo r4: xtreg republican news_left news_right i.year if year >= 2000, fe robust
esttab using myfile.rtf, t star(* 0.10 ** 0.05 *** 0.01) ar2 scalar(r2_w r2_b r2_o F)
onecell nolines nogaps compress nomtitles nodepvars constant rtf replace

******
*PART*
******
eststo r1: xtreg vot_part news_left news_right i.year if year >= 2000, fe robust
eststo r2: xtreg dem_part news_left news_right i.year if year >= 2000, fe robust
eststo r3: xtreg gop_part news_left news_right i.year if year >= 2000, fe robust
esttab using myfile.rtf, t star(* 0.10 ** 0.05 *** 0.01) ar2 scalar(r2_w r2_b r2_o F)
onecell nolines nogaps compress nomtitles nodepvars constant rtf replace


**********
*LAG NEWS*
**********
eststo clear
eststo r1: xtreg f.democrat news_left news_right i.year, fe robust
eststo r2: xtreg f.democrat news_left news_right i.year if year >= 2000, fe robust
eststo r3: xtreg f.republican news_left news_right i.year, fe robust
eststo r4: xtreg f.republican news_left news_right i.year if year >= 2000, fe robust
```

```
esttab using myfile.rtf, t star(* 0.10 ** 0.05 *** 0.01) ar2 scalar(r2_w r2_b r2_o F)
onecell nolines nogaps compress nomtitles nodepvars constant rtf replace


***********
*ELEC EACH*
***********
eststo clear
eststo r1: xtreg democrat frame_left prime_left agenda_left frame_right prime_right
agenda_right i.year, fe robust
eststo r2: xtreg democrat frame_left prime_left agenda_left frame_right prime_right
agenda_right i.year if year >= 2000, fe robust
eststo r3: xtreg republican frame_left prime_left agenda_left frame_right prime_right
agenda_right i.year, fe robust
eststo r4: xtreg republican frame_left prime_left agenda_left frame_right prime_right
agenda_right i.year if year >= 2000, fe robust
esttab using myfile.rtf, t star(* 0.10 ** 0.05 *** 0.01) ar2 scalar(r2_w r2_b r2_o F)
onecell nolines nogaps compress nomtitles nodepvars constant rtf replace

***********
*PART EACH*
***********
eststo clear
eststo r1: xtreg vot_part frame_left prime_left agenda_left frame_right prime_right
agenda_right i.year if year >= 2000, fe robust
eststo r2: xtreg dem_part frame_left prime_left agenda_left frame_right prime_right
agenda_right i.year if year >= 2000, fe robust
eststo r3: xtreg gop_part frame_left prime_left agenda_left frame_right prime_right
agenda_right i.year if year >= 2000, fe robust
esttab using myfile.rtf, t star(* 0.10 ** 0.05 *** 0.01) ar2 scalar(r2_w r2_b r2_o F)
onecell nolines nogaps compress nomtitles nodepvars constant rtf replace
```

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