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Framing Contention: A Content Analysis of How U.S. Newspapers Report on the Policy Solutions of Climate-Change

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by

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A CONTENT ANALYSIS OF HOW U.S. NEWSPAPERS FRAMED THE NATIONAL CLIMATE-CHANGE POLICY DEBATE

By Brian Hires

has been approved for the School of Journalism and Mass Communication

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Brian Hires (M. A., Mass Communication Research, School of Journalism and Mass Communication)

Media Coverage of Climate-Change Policy: A Content Analysis of How U.S. Newspapers Framed the National Climate-Change Policy Debate

Thesis direction by Assistant Professor Deserai Anderson Crow

ABSTRACT

By examining U.S. newspaper coverage of climate-change policy, this paper seeks to fill a gap in our understanding of how media covers this issue. With agenda setting and framing theories as its theoretical foundation, this project employs a systematic, quantitative content analysis of how the five largest U.S. newspapers reported the most recent national climate-change policy debate in 2009-2010. Based on what is known about public understanding of and attitudes about climate-change policy, it is hypothesized that media largely downplayed climate-change policy as an issue of national importance. The pilot study conducted for this project also pointed to coverage that would be dominated by economic costs and risks, little reporting on the effectiveness of policy to address climate change, and discourse dominated by political elites, such as members of Congress and President Obama.

This project found that climate-change policy was downplayed as an important issue, only making the front page of newspapers a handful of times over the course of the two-year debate. Newspapers also mostly framed climate policy in terms of economic considerations, with little reporting on the efficacy of policy, possible benefits, the costs of inaction, or the social and moral dimensions of the issue. Extensive literature points to the negative impacts that this type of coverage has on public engagement in this issue. Lastly, by including opinion content in the analysis, this project determined that a more robust and diverse discourse is happening about

the full range of costs, benefits and efficacy is happening on the opinion pages of newspapers than is being reported by journalists.

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Understanding how news media cover climate change is important since it represents a primary source of news and information about science and environmental issues (Anderson, 2009; Nelkin, 1987; Stamm, et al., 2000; Wilson, 1995). Although there has been an extensive body of literature on media's coverage of climate change since it first became a national issue in the mid-1980s, we know surprisingly little about how media have covered climate-change policy. What scholars have is that found that reporters have consistently failed to accurately report on the science of climate change, from the types of sources reporters used and the questions asked of them, to how the science is portrayed. This project seeks to determine if news media coverage of climate-change policy represents a robust debate over the costs and benefits of policy or is being equally misrepresented.

To determine how the media reported on the most recent national climate-change policy debate, a quantitative content analysis of agenda setting and framing measures is undertaken. By measuring the prominence given to climate-change policy news and the way it was framed this project clarifies the primary messages the public receives about this issue. Underscoring the importance of how media cover climate change are extensive findings by social researchers that subtle differences in the way an issue is portrayed serves to either engage and inform audiences or exclude and confuse them (CRED, 2009; Hard & Nisbet, 2011, Lakoff, 2010).

STATEMENT OF PURPOSE

This project seeks to fill a gap in the literature by clarifying how U.S. media reports on climate-change policy in the U.S. It will do this through a systematic, quantitative agenda-setting and framing analysis of how the five-largest U.S. newspapers reported on the national climate-change policy debate between 2009 and 2010. Although the American Clean Energy and Security Act (ACES) expired in the U.S. Senate in 2010, its passage by the House of Representatives represents an historic moment in the climate-policy debate in the U.S. (Carey, 2009). Since media represent a primary source of news and information about science and environmental issues for Americans (Anderson, 2009; Nelkin, 1987; Stamm et al., 2000; Wilson, 1995), understanding how it covered ACES provides us with an opportunity to clarify the primary messages the public is receiving about the issue.

Agenda setting and framing theories form the theoretical foundations for this project by calling attention to the powerful influence of media in setting national agendas. By choosing what issues to cover, the way it chooses to cover them, and the prominence given to that coverage (Entman, 1993; McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007). If the findings of social researchers are any indication, we would expect media coverage of climate-change policy. Not only did Americans rank climate change as the lowest of all concerns during the period of this study (Pew Research Center, 2009; 2010), most Americans were unaware that national climate-change policy was even being debated during this time (Leiserowitz et al., 2010). In fact they could not even identify what it was for (Pew Center for the People & the Press, 2009).

To be fair, there is ample evidence that climate-change policy is a much more complex,

politically driven and intractable issue than the debate over the reality of anthropocentric climate change. Not only is the process of crafting climate legislation inherently political, it also involves decisions over where and when the cuts should be made, by how much, who should regulate them, and ultimately who will foot the bill for the costs (Boyd, 2010). This project seeks to measure the prominence that media gave to climate-change policy through agenda-setting measures and how the issue was framed. By doing so, it contributes an important gap in our knowledge about the primary messages the public receives in the ongoing debate over climate-change policy.

This thesis is divided into four main chapters: The Literature Review outlines the important contributions of agenda-setting and framing to our understanding of how media play a powerful role in shaping U.S. culture, what issues Americans pay attention to and how they think about those issues. It also reveals the contributions of scholars who researched media coverage of the 20-plus year debate over climate change and policy. To give context to the analysis of media coverage of ACES, the literature review includes a brief overview of the history of policy in the U.S. It concludes with six hypotheses based on what we know of media coverage of climate change, public opinion, and the pilot study conducted for this project. The Methods section outlines the empirically driven content approach to content analysis employed by this project, which were established by scholars to overcome the primary threats to valid and reliable framing analysis. Finally, the Findings chapter uses charts, graphs, tables and discussion sections to detail the results of each hypothesis.

This project provides evidence of failed discourse on climate-change policy. Not only was the issue downplayed as a matter of national importance, it was framed primarily as an economic costs and risks issue, and failed to report on other critical aspects of the debate. Almost

absent from most articles during the two-year was reporting on the effectiveness of policy to address climate change, social, environmental and ethical dimensions of the debate, and diverse claims makers.

LITERATURE REVIEW

"This generation has altered the composition of the atmosphere on a global scale through…a steady increase in carbon dioxide from burning fossil fuels," President Lyndon Johnson, speaking to Congress in 1965.[1]

Extensive research points to the importance of media in environmental and scientific debates. Not only do most Americans rely on news media as their primary source of news and information about science, environmental, and climate change (Anderson, 2009; Nelkin, 1987; Stamm et al., 2000; Wilson, 1995), they count on media for translating the complexities and interactions of these issues to make them understandable (Bell, 1994). Agenda-setting and framing theory, the theoretical framework of this project, point to the role in of media in performing these functions by choosing what to cover, which issues to promote as most newsworthy, and how to cover issues (Entman, 1993; McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007). This chapter will start with an exploration of these two theories and their implications for how Americans come to understand climate-change-policy. Following will be a brief overview of climate-change policy debates in the U.S. This discussion forms the basis of this research project. This review of the literature will show that while there was been extensive research on media coverage of climate change, there has been no quantitative or systematic analysis of media coverage of national climate-change policy. This section will then review the many recommendations of scholars and advocates to reframe climate-change policy, which these actors say is necessary for the issue to gain traction with the American public. This section will conclude with an overview of climate-change policy in the U.S, and this project's hypotheses. A series of hypotheses were also developed based on what we know about media coverage of climate change and the pilot study conducted for this project.

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[1] Oresks, N. "The Long Consequences on Global Warming," *The Washington Post*, 2/19/2007

2.1 Agenda Setting

Agenda-setting theory points to the central role of media in shaping what issues the American public pays attention to and prioritizes as important (Dearing & Rogers, 1996; McCombs & Shaw, 1972, 2005; Scheufele & Tewksbury, 2007). News media do this by choosing what issues to report and give prominence to, and which items to downplay or ignore. Thus the prominence and the frequency with which media covers issues are powerful indicators about the day's most, and least, important issues (Iyengar & Kinder, 1987; McCombs & Shaw, 1972). As Bernard Cohen famously quipped, "Media may not be successful in telling us what to think, but they are stunningly successful in telling us what to think about" (Cohen, 1963, p. 13).

The influence of agenda-setting effects on public awareness of and attitudes about contemporary issues has been well-documented by scholars. In one of the first such studies, McCombs and Shaw (1972) found that the emphasis newspapers placed on different aspects of a campaign influenced what the readers of those newspapers considered most important (McCombs & Shaw, 1972). Therefore, the authors argued that media are actively engaged in shaping our reality on a day-to-day basis:

> In choosing and displaying news, editors, newsroom staff, and broadcasters play an important part in shaping political reality. Readers learn not only about a given issue, but also how much importance to attach to that issue from the amount of information in a news story and its position (1972, p. 176).

A number of researchers who replicated McCombs and Shaw's study also found support for media's agenda-setting role but that those effects vary according to external circumstances (Funkhouser, 1973; Palmgreen & Clark, 1977; Shaw & McCombs, 1977; Salwen, 1988). For instance, Palmgreen & Clark (1977) found agenda-setting effects might be weaker when it comes to local news media, while Salwen (1988) found that agenda-setting effects need five to seven weeks of consistent media coverage to measurably influence audiences, and that the strength of

effects generally peak after eight to ten weeks. Iyengar and Simon (1991) not only found that increased news consumption translated to increased support for the first Gulf War, but that dramatically increased coverage of one national issue can result in steep declines in coverage of other issues. The authors termed this news dynamic the "hydraulic effect."

Key concepts of agenda-setting research include measuring the both quantity and prominence of news coverage (McCombs & Shaw, 1972). These findings can then be compared with the findings of public surveys measuring public knowledge, understanding or opinion about an issue to arrive at theories regarding agenda setting effects. The prominence of stories can be measured by the length of story and where in a newspaper a story appeared (McCombs & Shaw, 1972), and the inclusion of photos or graphics (Gordon et al., 2010; Jenner, 2012; Shoemaker & Cohen, 2005). The rationale for this is that front-page news is considered by readers as the most important news of the day (McCombs, 2004), while the use of graphic elements, such as photographs or charts, serve to highlight stories and make them both more readable and frequently read (Jenner, 2012; Poynter, 2007). The length of a story can also be an indicator of a story's prominence, since longer articles contain more information (Shoemaker and Cohen, 2005). Together, these prominence measures help shape what we understand as the most relevant and important issues of the day (McCombs & Shaw, 1972; Shoemaker & Cohen, 2005). Research has also shown that citizens are more influenced by these effects when they don't have personal experience with the issue (Iyengar, 1991; Kahneman & Tversky, 1984; Zaller, 1992; Zucker, 1978).

Related to agenda setting is priming, which points to influence of frequent coverage of an issue in making issues more readily available in our memories (Tversky & Kahneman, 1981). By "priming" such issues and interpretations, we are influenced by future coverage than we

otherwise would be (Salancik, 1974). The influence of priming underscores a theme repeated throughout the literature review by scholars from across disciplines – humans are cognitively limited, and rely on mental shortcuts to make sense of and interpret the world around them (Graber, 1988; Iyengar, 1990). In the case of priming, we make judgments about issues based on the most accessible, recently received information. Iyengar and Kinder (1987) called attention to the impact of priming in an experiment involving participants watching several days of evening news, and then ranking what they felt were the most important issues. The researchers found participants consistently ranked the importance of issues in the same order as the broadcasts.

While agenda-setting points to the role of media in shaping public agendas by choosing what issues to cover and how to feature them, framing theory points to media's influence through the way it covers issues (Entman, 1993; Lakoff, 2004; Nisbet, 2009; McCombs & Shaw, 1972). Since both theories call attention to media's power in shaping what people think about (Cohen, 1963) and how they think about them, some theorists have defined framing theory as a second-order effect of agenda-setting (Weaver, McCombs, & Shaw, 1998). Scheufele (2000) took issue with this attempt at unifying these theories into one theoretical model, however, arguing that framing theory is fundamental different than agenda setting. Namely, agenda setting focuses on the prominence and accessibility of issues, whereas framing is concerned with the effects of subtle differences between texts. Both Scheufele and McCombs agree, however, that agenda-setting, framing and priming are important tools for understanding both how issues are communicated and how individuals receive and interpret them.

2.2 Framing

Gamson and Modigliani described media frames the "central organizing idea or story line that provides meaning to an unfolding strip of events…The frame suggests what the controversy is about, the essence of the issue" (Gamson & Modigliani, 1987, p. 143). Robert Entman's frequently cited definition of frames underscores the human agency involved in the framing process. According to Entman, to frame is to "select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described" (1993, p. 52). Frames can be measured in news texts by "the presence or absence of certain keywords, stock phrases, stereotyped images, sources of information and sentences that provide thematically reinforcing clusters of facts or judgments" (1993, p. 52). Therefore, when journalists frame issues, they draw on the societal frames and those of the individuals they quote or paraphrase, while also contributing their own frames, interpretations, and language to the story (Gamson & Modigliani, 1998). Having such power over the messages the public receives makes news reports a contested space, where "various social groups, institutions, and ideologies struggle over the definition and construction of social reality" (Gurevitch & Levy, 1985, p. 19).

Iyengar and Kinder (1987) examined the influence of two specific types of frames on our perception. These are episodic frames, which put a human face on the problem, by emphasizing individual-level causes and effects, and thematic frames, which focus on more abstract, systemic elements of the problem. Iyengar and Kinder found that when news about poverty focused on specific victims of poverty, audiences tended to blame individuals for their situation. When the issue was framed thematically, however, focusing on broader, macro-level causes and effects,

audiences tended to view government and decision makers as part of the problem. The authors found that the strength of such media effects were dependent on the issue, however. Attitudes about highly salient issues, such as unemployment, with which audiences have a personal experience with or engagement in, are less affected by media framing.

Framing theory also points to how information is promoted or downplayed in articles, make some information more "salient," or noticeable/meaningful to readers (Entman, 1993; Fiske & Taylor, 1978). All news that we consume has been framed for us by journalists and editors in this way (McCombs & Shaw, 1972).

2.3 How Frames Work

Framing research is a type of cognitive theory, since it studies how individuals interpret, understand and add meaning to the world around them (Lakoff, 2010). While the communications scholars who focus on framing examine how frames and framing processes effect communications, social scientists look at how framing contributes to public discourse, knowledge and opinion formation. Unlike agenda-setting theory, framing research examines the messages found within messages. Behaviorists and communications scholars measure framing effects in part by employing experimental studies measuring the impacts of different frames on participants. For example, in the 54-page, *The Psychology of Climate Change Communication*, researchers use framing literature to point to the powerful influence of simple word choices, concepts and sources in altering the way audience perceive climate change and policy. The authors argue that climate change is more engaging and relevant to audiences when presented as a local and community issue, with present gains to be realized by taking action, as opposed to discussing future losses, which serves to turn audiences off (Center for Research on Environmental Decisions, 2009).

Together, these frames represent the complex interactions between media, communicators, society, and the receivers and interpreters of information. For individuals, frames (or schemata) serve as the interpretive tools for understanding the world around them (Graber, 1988). In describing how schemata work, Graber noted that schemata represent processes by which we define and interpret the world, by "adding, subtracting, or altering features so that the situation fits the established mental image" (1988, p. 28). Graber also noted that schemata are not always in perfect alignment with each other, and that they determine what information will be noticed and processed and what information will be ignored. Given these considerations, not all frames or media effects are equally influential, since audiences bring their own interpretations to their consumption of news events. For a frame to resonate with audiences, it must inform the individual while also corresponding with the individual's schemata (Entman, 1989; Graber, 1988; Snow & Benford, 1988). As Lakoff noted, "When the facts do not fit the frame, the facts are ignored and the frame is kept" (Lakoff, 2004, p. 17).

What is excluded from a story can also profoundly impact audience perception. If information is missing or ignored by a news report, for example, audiences are left to fill in the gaps with their own understanding, or to ignore the missing information altogether (Entman, 2004). This is highly problematic, since most citizens are generally not well-informed about complex science, policy and political issues and the ways that they interact (Iyengar, 1991; Kahneman & Tversky, 1984; Zaller, 1992). In other words, if consistent reporting of an issue focuses narrowly on the economic aspects of an issue that also involves environmental or social consequences, these elements will likely be ignored by audiences.

2.4 Public Opinion Surveys and Climate Change

There have been more than 300 surveys measuring public attitudes on climate change and policy since 1986 (Brulle, 2012). Before examining some of the findings of the relevant surveys, it is important to acknowledge that public opinion research is an inexact and at times flawed social science. For instance, public opinion surveys do not always measure what they claim to measure, that is, the true knowledge and attitudes of respondents (Zaller, 1992; Iyengar & Kinder, 1987). Instead, what often gets measured is the second-hand opinion of elites, which are frequently reported by media and then echoed by respondents (Converse 1964; Katz & Lazarsfeld, 1955; Zaller, 1992). The answers that respondents give are also highly dependent on how the question is asked, and when it is asked (Converse, 1964; Iyengar, 1990; Krosnick, 2010; Price and Zaller, 1993; Wihberg, 2009).

It also cannot be assumed that public opinion directly translates to public-policy decisions by elected officials who are paying attention to opinion research. Rather, policy is formulated through complex interactions between media and political elites, and between political elites themselves (Katz & Lazarsfeld, 1995; Zaller, 1992). The two-stage flow of communication points to this complex dynamic by underscoring the influence of political elites in shaping public opinion. Rather than media influencing citizen's understanding of and attitudes about issues (the 'hypodermic needle' effect), political elites translate and frame policy issues, and define how they will be received and interpreted by the public, in part through savvy use of news media (Katz & Lazarsfeld, 1995; Zaller, 1992). Zaller (1992) found that the messages of elites do not affect all issue publics the same. He found that citizens who were less politically engaged were more likely to accept the frames of elites, even when they conflicted with their own beliefs. On the other hand, politically engaged citizens, consumers of diverse and often conflicting messages

from elites, are both more sensitive those messages and less likely accept them at face value.

When it comes to the American knowledge of and attitudes about climate change, social scientists have found six distinct groups of issue publics (Maibach et al, 2009; Leiserowitz et al., 2010). In 2009 these groups range from the Alarmed, the Concerned and the Cautious, to the Disengaged, Doubtful, and Dismissive (Maibach et al., 2009) and are broken down by percentages in Figure 1 below.

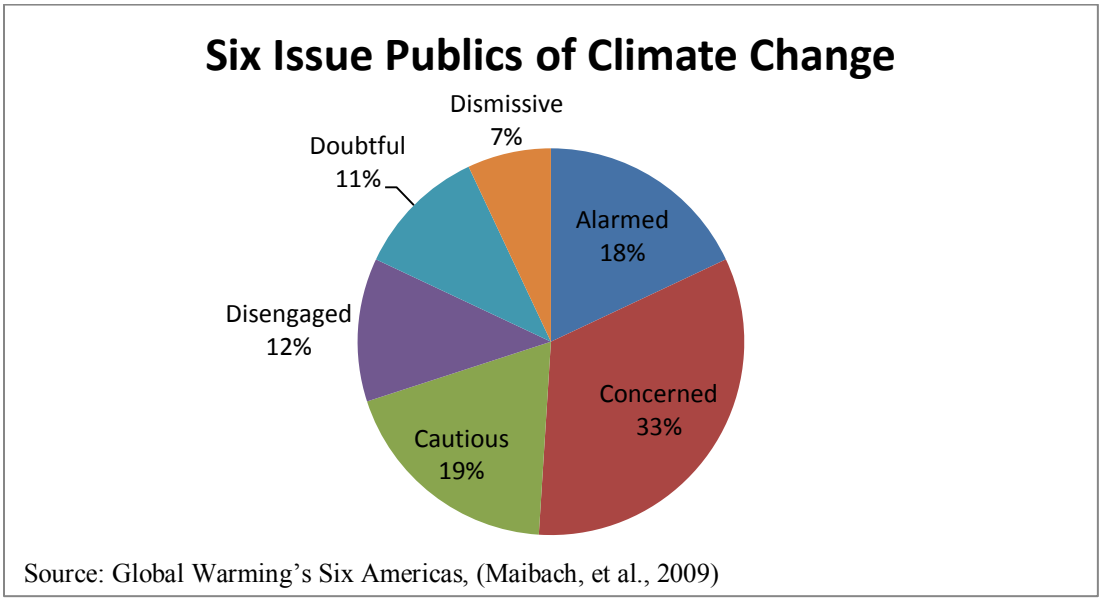

Figure 1 Six Issue Publics of Climate Change

These groups are briefly described as follows: The Alarmed are convinced of climate change, its serious consequences and are actively engaged in the issue. The Concerned believe climate change is happening, has serious consequences, support national policy but are not actively engaged in the issue. The Cautious also believe climate change is happening, but are less certain about the science the Alarmed or the Concerned, and do not believe that the impacts will affect them directly. Accordingly, they lack a sense of urgency regarding the need to address it. The Disengaged pay little attention to climate change news, are generally uninformed about

it. They are also the most likely to change their positions on climate change. The Doubtful represents three sub-groups: those who believe climate change is happening, those who do not, and those who are uncertain. Those who believe climate change is happening believe that the causes are natural, rather than anthropocentric, and generally believe that climate change won't harm people for many years, if ever. None support national climate-change policy. Finally, the Dismissive do not believe in climate change, and are actively engaged in opposing policy solutions.

Climate change has been consistently measured as a highly partisan issue, with belief in its scientific reality and threat to nature and humanity highly dependent on political party, strength of affiliation, and other demographics. For instance, in a 2010 public opinion poll, only 38% of Republicans agreed that there was solid evidence for climate change, compared to 70% of Democrats (Pew Research Center for the People and the Press, 2010). Likewise, in the same poll, only 24% of Republicans believed that climate change was a problem requiring immediate government action, compared to 68% of Democrats polled.

Public opinion research has also found that most Americans were completely unaware of the 2009-2010 Congressional debate over ACES. A poll taken just four months after the historic passage of climate legislation by the U.S. House of Representatives in October 2009 determined that 55% of Americans had never heard about cap-and-trade policy (Pew Research Center for the People and the Press, 2009). In January 2010, 88% of Americans polled had heard little or nothing about climate policy (Leiserowitz et al., 2010). "That was evidence of a huge problem," said Leiserowitz. "House Democrats had for the first time ever passed a comprehensive cap-and-trade bill in June of last year; in the following six months, the president and his allies in

Congress and in green groups had done nothing to explain to the public what they were trying to sell in the Senate, where the politics were much tougher" (Leiserowitz, 2010).

Pointing to the importance of thorough reporting, researchers found that when cap-and-trade policy was explained to citizens, 58% of Americans supported it. That support is fairly weak, however, since support for policy dropped by 40 % if it would cost respondents more than $15 a month. That said, if policy included an annual rebate of $180 to offset increased costs, support rose to 66% (Leiserowitz, 2010). Pointing to the power of how costs are framed is a poll by Hardisty et al. (2009), who found that when a carbon fee is referred to as an "offset" Republicans were almost five times more likely to favor the policy than when it was called a "tax."

Most recently, Brulle et al. (2012) tracked the leading factors that are attributed to shaping the public's understanding of and awareness about climate-change policy. In their study they compared public opinion polls from 2002 and 2010 against the frequency of media coverage, availability of scientific information, extreme weather events, cues from environmental and skeptic groups, and actions by Congressional members. The researchers found that media coverage and actions by congressional members accounted for 80% of the variability in public concern over climate change between 2002 and 2010. They also found that actions by congressional Democrats corresponded with an increase in public concern, while actions by Republicans corresponded to a decrease in public concern. When the frequency of actions taken by Congressional members also corresponded with greater news coverage, public concern over climate change rose to its highest levels. When these factors declined rapidly, so did public concern. The researchers argued that their findings point to strong evidence of agenda-setting effects and the power of media and political elites in the climate-change policy

debate. One notable shortcoming of the Brulle study is that it did not account for how the actions of political elites filtered through news media, since it only tracked the frequencies of media reports and Congressional actions and not how they were reported**.**

2.5 Climate Change in the Media

There has been extensive research on media's coverage of climate change over the past 20 years, largely pointing to both the importance of media coverage and its shortcomings in reporting on this issue. In the mid-1980s, media played a central role in first raising awareness that the planet was likely warming due to human activity (McComas & Shanahan, 1999; Trumbo, 1995). In these early days, journalists knew little about climate-change science (Wilson, 1995), and relied heavily on scientific sources and science frames (Trumbo, 1996). At the expense of accurate reporting of the science, journalists have historically done little to vet the expertise of sources who claimed to be scientific experts, many of whom represented special interests or were funded by industry (McCright & Dunlap, 2003; Nitz and Ihlen, 2006).

It wasn't until the late 1980s and early 1990s that climate change became the politically contentious issue marks it today. This occurred when carbon-based industries, worried about the possible impacts of climate-change policy to their bottoms lines, launched a well-funded campaign to raise doubts about climate change science and policy (McCright & Dunlap, 2003; Trumbo, 1996; Wilkins, 1993). These were highly successful efforts according to McCright and Dunlap, inserting doubt among the public over climate change where it did not exist before, and leading the U.S. to pull out of Kyoto Protocol. According to Zehr, the effect of media focusing on the complexities and uncertainties of climate-change science and the need for additional research has served to exclude the public from personally engaging in the issue (2000).

Researchers have also found that public concern over climate change corresponds with

increased or decreased coverage by media (Trumbo & Shanahan, 2000; Brulle, 2012). Greater attention by news media can also work as a positive feedback loop, with media first raising public awareness of climate change, and then this increased public attention serving to drive additional coverage (Trumbo, 1995). Extreme weather events, such as the intense heat wave of 1988, have also increased media attention to and public concern over climate change, with increased media coverage driving greater public attention, and a more engaged public then driving increased coverage (Carvalho & Burgess, 2005; Shanahan & Good, 2000; Ungar, 2000). High-profile science/policy events, such as the release of IPCC assessment reports, have also briefly turned media and public attention to climate change (Anderson & Gaber, 1993; Boykoff & Boykoff, 2007a). While increased concern over possible connections between extreme weather and climate change may have served to increase the profile of climate change and make it personally relevant to citizens (Mazur and Lee, 1993; Shanahan & Good, 2000), the increased concern quickly faded along with these weather events (Ungar, 2000).

2.6 Journalistic Norms and Climate Change

The role of professional norms and routines of journalists that shape how news is reported and framed by media has been extensively researched (Bennett, 1996; Boykoff & Boykoff, 2007a; Graber, 2002; Wilkins, 1993). Journalistic norms include fairness and balance in reporting, the employment of narrative devices such as personalization, drama, and novelty. These devices serve to make news interesting and relevant to readers (Bennett, 1996; Boykoff & Boykoff, 2007a; Lippmann, 1922). The use of drama, personalization, narrative, and novelty, for instance, help make mundane, esoteric, and complex issues understandable and engaging to lay readers (Lippmann, 1922). However, scholars have found that these practices often come at the expense of more nuanced and accurate representations of climate change (Nitz, 1996). While

news that lacks excitement or drama often gets ignored (Boykoff & Boykoff, 2007a; Ungar, 2000), the use of drama to underscore the scientific uncertainty or dangers of climate change has been frequently used to create heightened attention to the issue, often at the expense of future engagement (McComas & Shanahan, 1999). While it is certainly true that scientists have been largely in agreement for many years about the potentially devastating consequences of climate change (IPCC, 2007b; Rosenberg et al., 2010), the use of dire, "apocalyptic framing" by journalists and actors create heightened interest and engagement (Foust & Murphy, 2009), but also serves to shut the public off to the issue by creating the perception that climate change is insurmountable problem, too big for individuals to engage, and too late for policy solutions to matter (Bell, 1994; Keller, 1999; Leiserowitz, 2007; Moser & Dilling, 2004).

2.7 Sources in Climate-Change News

Journalists choose not only what types of sources to use in articles, but what questions to ask these sources, and which sources will ultimately be printed. This can have a profound impact on how issues are framed and perceived by audiences, since a story dominated by scientists, economists, or political elites gives cues to readers as to what kind of issue is being debated (Bennett, 1996). The highly complex nature of climate-change policy and science makes the use of knowledgeable sources critical, since most journalists do not have training in environmental or scientific issues (Crow & Stevens, 2012).

Since news articles represent both a finite space and a contested space, the quoted and paraphrased texts we read represent the imprint of power, with sources using their privileged access to shape public discourse and to frame issues in ways that suit their interests (Bennett, 2002; Entman 1989; Hall et al., 1978). Researchers have found that this frame-building process takes place in a continuous interaction between journalists and elites (Gans, 1979; Tuchman,

1978) and social movements (Cooper, 2002; Snow & Benford, 1992). Gans described this process as a dance, in which "either sources or journalists can lead, but more often than not, sources do the leading" (p. 116). In such cases, reporters are limited to the words and frames of their sources (Jenner, 2012; Paletz & Entman, 1981).

Research on the types of sources used in media coverage of climate change has found that journalists have consistently gone to a few privileged scientific and political sources (Anderson, 2009; Newell, 2000; Pooley, 2008, 2010). As noted previously, in these early days, journalists knew little about climate-change science (Wilson, 1995), and unsurprisingly they relied heavily on the scientific sources and science frames (Trumbo, 1996). At the expense of accurate reporting of the science, journalists have historically done little to vet the expertise of sources claiming to be scientific experts, many of whom were funded by industry (McCright & Dunlap, 2003; Nitz, 2006). Since climate-change policy will require a restructuring of carbon-based economies on some level, some industries have been deeply threatened by policies such as the Kyoto Protocol (McCright & Dunlap, 2003). Therefore, the initiation of policy discussions in the 1990s brought with it increased politicization of the issue (Wilkins, 1993; McCright & Dunlap, 2003), and with it the frames of scientific sources gave way to those of politicians, governmental figures, and interest groups (Trumbo, 1996; Wilkins 1993; McCright & Dunlap, 2003).

Examining the specific statements of sources, Hart examined the types of statements that sources made in climate-change news, and found that environmentalists primarily used the disaster-aversion theme, while skeptics used scientific uncertainty and economic themes (2008). Trumbo found that scientific sources in articles emphasized the problems and causes of climate change, while politicians and special interests made value judgments about problems and causes,

or discussed possible solutions (Trumbo, 1996). Nisbet and Mooney also determined that Democrats and Republicans quoted in news stories framed the issue differently, with Democrats using apocalyptic frames, and Republicans emphasizing economic and scientific-uncertainty frames (Nisbet & Mooney, 2007). Finally, Kuban found that between 2000 and 2005, politicians and government officials were the most cited sources (22%) in nightly national news broadcasts, while scientists as a group provided the most conflicting statements about climate change (2008), despite the scientific consensus that existed at the time. He also found that few sources attempted to explain the specific causes, consequences, or solutions to climate change (2008).

One of the most cherished journalistic norms, that of an impartial reporter covering both sides of a story, has frequently led to inaccurate coverage of climate change. Such "balanced reporting," in which opposing sides of a debate are reported, has dominated much of the debate over climate change (Boykoff & Boykoff, 2004; Dunwoody & Peters, 1992; Dunwoody, 1999). From the late 1980s through 2005, media coverage of climate change has balanced the accounts of climate scientists with skeptical scientists, with the overwhelming consensus that climate change is anthropocentric and requires immediate action (Boykoff & Boykoff, 2004). The result is that the public receives the message that there is a legitimate scientific debate over the anthropocentric causes of climate change, when the reality is that no debate actually exists. Since 2003, however, this type of coverage of climate-change science has declined significantly (Boykoff, 2007c).

With regard to media coverage of ACES, which is the focus of this report, the most comprehensive study we have to date on national climate-change policy debate in the U.S. is a case study by Eric Pooley that analyzes coverage of the debate by three U.S. newspapers. According to Pooley, the debate over climate policy is "the story of our time. But news

organizations have not been treating it that way" (Pooley, 2008, p. 1). For his case study of media coverage of the Lieberman-Warner cap-and-trade bill, Pooley examined the coverage of 40 articles from newspapers, wire services, and newsmagazines between December 2007 and June 2008, finding that 24 articles featured balanced "he said, she said" coverage of pros and cons of policy without "questioning the validity of the arguments," even when facts were being blatantly misrepresented (Pooley, 2008, p. 5). Seven of the forty articles examined by Pooley featured one-sided accounts of the issue, while nine featured in-depth reporting that attempted to move beyond simple balanced reports. Although Pooley's study provides engaging anecdotal evidence of media's failed coverage of climate-change policy, his work lacks rigorous and systematic analysis of newspaper reporting on climate-change policy.

2.8 Climate Change-Policy in the U.S.

By some estimates, the debate over climate-change policy is a much more difficult, complex, and politically driven process than the scientific debate (Boyd, 2010; Pooley, 2010). Since the U.S. and global economies are tied to fossil fuels, addressing climate change will also require an economic restructuring, which is deeply threatening to powerful industry and elites (McCright & Dunlap, 2003). The development of climate-change policy also involves complex and interwoven interactions between science, economics, politics, and social structures (Weingart et al., 2000), adding to the challenges accurate reporting (Revkin, 2007).

A scientific consensus on the reality of anthropocentric climate change has existed for more than 20 years. Not only do scientists agree that climate change is occurring and is largely anthropocentric, but that it will have severe consequences for global ecology, social issues, and economies (IPCC, 2007a; Rosenberg et al., 2010). Where debate does exist is around the timing and intensity of impacts, and how these will be localized in different geographies (Rosenberg et

al., 2010). There also exists a scientific consensus that taking action to reduce global greenhouse gas emissions is urgent and would have a meaningful impact (Rosenberg et al., 2010; IPCC, 2007a). Policy that would begin to address climate change requires a set of immediate voluntary and mandatory national and global policies that will reduce greenhouse gas emissions. These include market-based incentives, putting a price on carbon, educational programs, and funding for renewable energy research and development (Rosenberg et al., 2010).

U.S. Policy Debate

A historical review of climate-change policy in the U.S. provides relevant historical context for analyzing national climate policy debate, which is the focus of this project. Climate change as a growing national and global concern began around the late 1980s, with growing awareness of climate change, a record-setting heat wave in 1988, and the formulation of the IPCC. The IPCC is a joint effort between the United Nations and the World Meteorological Organization to review and assess climate-change science and its environmental and socioeconomic impacts (IPCC, 2007a). Thousands of scientists from across related disciplines from around the world contribute to researching, writing, and peer reviewing the IPCC assessment reports, which are then approved by the more than 120 participating countries before being published.

International Policy Efforts

The first IPCC report was published in 1990, stating that it was "certain" that human activities were causing climate change. Since that time, the IPCC has published four major assessment reports, with the next one scheduled for publication in 2014. As part of its ongoing scientific and policy work, IPCC scientists and participating governments meet every few years to discuss recent scientific findings, as well as consequences and actions for dealing with climate

change. During the period of this study, one of these high-profile meetings occurred in December 2009 in Copenhagen. In the final days of this meeting, considered an unmitigated failure by advocates, U.S. President Obama attended in order to support global negotiations and to tout the passage of domestic climate policy by the U.S. House of Representatives in June 2009. Senator James Inhofe (R-OK), the most vocal critic of climate science and policy, also travelled to Copenhagen, and he assured global leaders that the U.S. would *not* be taking action on climate change any time soon: "We know [the bill] is never going to go to a vote," said Inhofe. "It's dead. It's gone... I'm not going to allow them to think America is going to do something it's not" (Winter, 2009, p. 13A). Following the conference's conclusion, no progress was made toward a binding agreement to reduce greenhouse gases, and even a promise by the U.S. to contribute to adaptation funds for developing and island nations came under attack: "Given the current state of our economy, it is shocking that the Obama administration is pledging to hand over billions of dollars to developing nations for a global warming fund," said Inhofe (Eilperin & Faiola, 2009, A01).

Kyoto Protocol

Perhaps the most significant global effort to address climate change to date has been the Kyoto Protocol, which entered into force in 2005, has been ratified by 192 countries and calls for developed countries reduce their greenhouse gas emissions through a cap and trade system by 5% from 1990 levels by 2012 (United Nations Framework Convention on Climate Change, 2012). Although then-U.S. President Bill Clinton signed the Kyoto Protocol, Congress was needed to ratify it, and they balked. At the time, the U.S. energy sector, major corporations, and conservative think tanks saw global climate treaty as a direct threat to the status quo, and they developed a sophisticated, successful campaign against it (McCright & Dunlap, 2003). Scholars

argued that one result of these efforts was increased skepticism, as well as action by Congress forbidding presidential action on climate change. While the Kyoto agreement has led to modest reductions in the greenhouse gas emissions of participating developing countries, mostly due to a slowdown in the global economy (Science News, 2011), the world's biggest polluters have not joined the agreement, and global greenhouse emissions continue to spike at historic levels (Environmental Protection Agency, 2011).

2.9 U.S. Climate-Change Policy

A brief review of climate-change policy in the U.S. is helpful here in order to help situate the content analysis and the findings regarding some of its basic goals and requirements, as well as how media framed it.

Lieberman-Warner Act (S. 2191). The first national climate policy debated in the U.S. was the Climate Security Act of 2008, which was sponsored by Senator Lieberman (D-CT) and Senator Warner (R-VA). The policy called for a cap-and-trade program that would reduce U.S. greenhouse gas emissions to 63% below 2005 levels by 2050. Two-percent reductions were targeted from 2012–2020, through imposing cap-and-trade reductions across power generation, transportation, and manufacturing sectors, with 70% reductions by 2050. Although the bill passed the Senate Environment and Public Works Committee, after a month of contentious debate on the Senate floor, it fell short of the needed 60 votes. Foreshadowing the policy debate that is focused on in this study, during this period the Senate Republicans framed the bill as a jobs killer that would lead to $8-a-gallon gas, and a bankrupt economy (Pooley, 2010). Senator Inhofe (R-OK) framed the bill as "an unacceptable price on American industry, homeowners, and consumers [that will] cost up to 2.3 million jobs over the next decade" (Broder, 2007).

American Clean Energy and Security Act (H.R. 2454). The focus of this study deals with media coverage of the American Clean Energy and Security Act and its Senate companion (Clean Energy Jobs and American Power Act, S. 1733). These policies represent the most recent climate-change policy debate in the U.S. It was introduced in the U.S. House of Representatives in March 2009, where it was sponsored by representatives Waxman (D-CA) and Markey (D-MA), and included many of the provisions in the Lieberman-Warner bill. ACES included many of the mandatory and voluntary policies that scientists said were needed to begin tackling climate change (IPCC, 2007a; Rosenberg et al., 2010). ACES called for reducing 2005 greenhouse gas emission levels 17% by 2020 through a market-based cap-and-trade program, offsets for addressing global deforestation, and a requirement that electric utilities meet 20% of their electricity demand through renewable energy sources or energy efficiency.

ACES was passed by the U.S. House of Representatives, which was then narrowly controlled by Democrats, in June 2009 by a vote of 219–212. This represented a historical milestone in the climate-change policy debate in the U.S., since it was the first time a congressional body passed legislation designed to address climate change. Fuelling Congressional debate on climate policy was an April 2009 Supreme Court decision, which found that climate change represented a public endangerment, and that the Environmental Protection Agency (EPA) had the authority to regulate greenhouse gas emissions. All sides of the policy debate agreed that EPA regulation of greenhouse gases through a command-and-control system represented a worst-case scenario. Meanwhile, any climate policy passed by Congress would preempt action by the EPA. In October 2009, senators Kerry (D-MA) and Boxer (D-CA) introduced companion legislation in the Senate that was stripped of anything objectionable, including the heart of ACES, namely the cap-and-trade provisions. Recovering from contentious

health-care reform legislation that was passed in March 2010 and with midterm elections looming later that year, the Senate climate legislation expired in committee in July 2010.

Also responsible for the bill's failure in the Senate were successful efforts by Republicans and industry, framing it as a "cap and tax" policy that would raise energy costs and hurt U.S. competition in the global marketplace (Mufson, 2009, p. A03). While the neutral Congressional Budgetary Office (CBO) reported in May 2009 that ACES would raise the cost of energy $175 a year for most Americans, return $40 a year to the poorest Americans, and slow the U.S. economy by 0.25–0.75% in 2020 (CBO, 2009). Republicans used flawed research and misleading reports to point to increased energy costs for Americans of $3,100 a year and upward (Pooley, 2010).

It is important to note that not all environmentalists or advocates of action on climate change supported the cap-and-trade policy focused on in this study. Some, like prominent NASA scientist James Hansen, and critics of the environmental movement Nordhaus and Shellenberger, argued that it would not only be ineffective at reducing greenhouse gas emissions, but it would give the dangerous perception that something was being done about climate change (Gronewold, 2009; Nordhaus & Shellenberger, 2009). Others described cap and trade as a political sleight-of-hand, policy that sought to reduce greenhouse gases by putting a price on carbon, but then hiding that price signal in early years through free allowances and tax rebates (Fahrenthold, 2009, p. A12). Similarly, not all industries and corporations were against cap and trade. For example, while U.S. Chamber of Commerce and the National Association of Manufacturers were vocal critics the policy, some of the nation's biggest corporations, such as Dow Chemical, Ford, Nike, and Apple Computers backed it (Broder, 2009, p. A1).

2.9.1 Hypotheses: Clarifying Media Coverage of Climate Policy

Given the extensive body of scholarly work on media coverage of climate-change policy, we know surprisingly little about how it has covered the policy debate. For instance, Brulle (2012) noted that quantitative studies of climate-change policy were found in researching this project, with research mostly limited to the McCright and Dunlap study of the Kyoto Protocol (2003), a case study by Pooley (2008) of the media coverage of 2007 Lieberman-Warner climate bill, and a book on the climate-policy debate in the U.S. since 2007 by Pooley (2010).

Studies of how climate change has been framed by media have been limited to the application of generic, *a priori* frames used across an array of social sciences research. For example, Good (2008) examined the relative weight given by journalists reporting on climate change to the four frames of causes, consequences, solutions, and social context. She found that U.S. media coverage of climate change included the causes of climate change in just 3% of articles, the consequences of climate change in just 5% of articles, and the solutions of frames in just 2% of articles. Nisbet (2009) identified eight *a priori* frames from existing literature (Gamson & Modigliani, 1989) that are particularly applicable to how media renderings of climate change. These frames are: social progress; economic development and competiveness; public accountability; morality and ethics; scientific and technical uncertainty; Pandora's Box; middle way; and, conflict and strategy. The economic and conflict frames are of particular relevance to this study. While the economic and competitiveness frame deals with economic risks, benefits, investments and competiveness, whereas the conflict and strategy frame deals with competitions or battles between elites, personalities or groups over an issue (Gamson & Modigliani, 1989; Nisbet & Lewenstein, 2002).

Pointing to the public's lack of engagement in and understanding of climate-change

policy, scholars and advocates have blamed part of the problem on how it has been framed. For instance, Nisbet attributed the failure of policy in 2010 in part to the framing of climate change as an issue that could be solved by a single policy (Nisbet, 2011). Rather, climate change must be framed as a systemic problem that needs policy solutions on many levels (Nisbet, 2011). Leiserowitz has argued that climate-change policy must framed as an issue dealing with jobs and economic growth, nothing that Republicans were highly successful at employing jobs and economic frames by framing it as cap-and-tax legislation (Kintisch, 2010, para. 4). Former Republican strategist Frank Luntz said that talking about climate change directly would only hurt the climate legislation's prospects (Luntz, 2010), and there is evidence that this kind of advice is being followed by decision makers as high as President Obama (Boykoff, 2012, "A Dangerous Shift in Obama's Climate Rhetoric"). Still others recommend that climate-change policy be framed as alternative energy, pollution, and national security issues (Center for Research on Environmental Decisions, 2009, Luntz, 2010; Nisbet, 2011; Nordhaus & Shellenberger, 2009).

The literature review, however, indicates that we know very little about how news media has been reporting on climate-change policy. Therefore, few if any of the recommendations of scholars and advocates are based on an empirical knowledge of the messages the primary messages being received by the public about climate policy. For instance, Nisbet draws his conclusions about failed media coverage of climate-change policy based on a content analysis of articles climate change and not climate-change policy (Nisbet, 2011).

This literature review has pointed to the powerful role the media play in the climate-change policy debate, through shaping public understanding and engagement in the issue and through political elites. Therefore, a clear understanding how media are reporting climate change policy is critical. By quantitatively measuring how U.S. newspapers framed the most

recent national climate-change policy debate, this project not only fills an important gap in the literature, but contributes to communications discourse on whether climate-change policy is indeed an issue in need of reframing.

Based on the literature review, six hypotheses will be investigated in this thesis. The first will measure the prominence and frequency of coverage given by newspapers to news about climate-change policy:

> ***H1:*** *Climate-change policy news will be downplayed in the media, as reflected by high page numbers, or lack of graphic elements that help make articles relevant and engaging.*

During the two-year debate over climate-change policy in the U.S, public opinion research consistently found a public deeply misinformed about the purpose of policy. Given that media are a primary source of news and information about the issue, this project seeks to determine if news accounts included the primary reason policy, or if equal weight was given to other, secondary reasons for policy, such as job creation, economic stimulus, and energy independence. Based on the findings of public opinion researchers, the second set of hypotheses theorized that:

> ***H2:*** *Most articles will exclude the primary reasons for policy, and give equal weight to secondary reasons, such as creating jobs or spurring economic growth.*
>
> ***H2a:*** *The secondary reason for policy will be given equal weight in articles as the primary reasons for policy.*

The literature on media coverage of climate change and the prior national policy debate over the 2007 Lieberman-Warner bill points to coverage that was dominated by discussions of the economic costs and risks of policy, while excluding frames dealing with the efficacy of policy to address climate change or reduce greenhouse gas emissions. Therefore, H3 and H4 ask:

H3: *Frames dealing with the debate over the effectiveness of policy will not be reported in the majority of stories, or will be given equal weight as the secondary effectiveness of policy measures, such as job creation.*

H3a: *Elements dealing with the effectiveness of policy in reducing greenhouse gas emissions or addressing climate change will not be reported by media, or will be given equal weight as the effectiveness of policy to meet other, secondary goals, such as creating jobs or spurring economic growth.*

H4: *The debate over the costs and risks of policy will be one of the most frequent themes in articles.*

H4a: *The frame themes dealing with the costs and risks of policy will be highlighted in articles.*

The literature points to both the critical role that sources play in news reports and the dominance of a few political and policy elites in climate-change news. The next hypothesis proposes that this was also the case with the climate-change policy debate:

H5: *The sources media used in articles about climate change will be dominated by a few political elites, and few local voices.*

How climate-change policy debate was framed by the media tells readers what kind of issue was being debated, its costs and benefits, the moral implications, and the effectiveness of policy at achieving its goals—all key elements to understanding the policy debate and what was at stake. The final research seeks to discover the overall framing of climate-change policy by media, and to see if these frames shifted over time, based on high-profile policy events:

H6: *Climate-change policy articles will be predominantly framed as an economic and political issue, lacking environmental and moral/ethical themes.*

Although framing theory is a rapidly growing field of research, the discipline has been marked by scattered conceptualizations of what frames are and how they can best be measured (de Vreese, 2005; Entman, 1993; Scheufele, 1999; Tankard, 2001). To address some of the

major shortcomings of framing analysis that have been identified by theorists, this project employs the empirically driven methods established by Matthes and Kohring (2008) for defining, coding, and measuring frames.

METHODS

The empirical evidence for this study will be generated from a systematic reading of newspaper articles about ACES that appeared in the five largest U.S. newspapers between January 3, 2009, and December 31, 2010. This represents a two-year period in which policy was debated and passed by the U.S. House of Representatives, and also debated in the Senate, where it expired in July 2010. The cutoff date for this study, which is December 31, 2010, represents the period in which little or no news about policy would be expected in the media.

The newspapers examined in this study are *The New York Times, Wall Street Journal, Washington Post, USA Today,* and the *Los Angeles Times.* These publications, which represent the five largest circulation newspapers in the country, devote considerable attention to national affairs, and therefore are appropriate for this study. As such, these newspapers play a powerful role in shaping discourse about national public policy, as well as the news agendas of other newspapers and television newscasts (Boykoff, 2004; Carvalho & Burgess, 2005; McChesney, 1999; Project for Excellence in Journalism, 2006; Roberts & McCombs, 1994). Omitted from consideration will be content appearing in Style/Fashion, Sports and Entertainment sections, since climate-change policy is likely to be treated peripherally or as non-news in these sections (Boykoff & Boykoff, 2004).

The starting date for this study is January 3, 2009, and this date was chosen because it was the first day of the 111th Congress, which debated ACES legislation. The Senate companion bill, known commonly as the Kerry-Boxer bill, officially expired in the U.S. Senate on July 22, 2010. Therefore, the ending date of this study is December 31, 2010, and this date was chosen since it represents the post-national climate-change policy debate. In addition to analyzing media coverage for this entire two-year period as a whole, the sample will be divided

into three distinct periods of the climate-policy debate, in order to determine if and how frames shifted around these events. These periods correspond with the U.S. House of Representatives debate over ACES (from January 3, 2009, until its passage on June 26, 2009); the U.S. Senate debate (from June 27, 2009, until July 22, 2010, when the companion legislation, known informally as the "Kerry-Boxer bill," expired); and post-climate policy discourse that immediately followed (July 23, 2010 to December 31, 2010).

The sample of articles was gathered using LexisNexis, employing search terms that dealt with climate change and variations of the U.S. House and Senate climate policies that were debated from 2009–2010. The search generated a population of 1,109 articles, with 142 articles from the *Wall Street Journal*, 381 from *The New York Times*, 70 from the *USA Today*, 430 from the *Washington Post* and 86 from the *Los Angeles Times*. Following removal duplications, letters to the editor, or articles not dealing directly with climate-change policy, a sample of 420 articles was derived, representing 43% of the population. The sample was generated by selecting every other article from the population, stratified by date. Choosing every *n*th article is an acceptable procedure generating a random sample from a population (Krippendorff & Bock, 2009). In this case, by choosing every other article ensures a highly representative sample.

3.1 Pilot Study

A pilot study was conducted to test the coding tools and concepts, and involved coding more than 50 articles by four independent researchers. The codebook (appendix A) and coding processes were extensively revised based on the pilot project. For example, the original codebook contained more than 50 framing variables, which were coded for the statements of sources, and required 30 minutes to code per article. By dropping variables that rarely occurred or merging closely related concepts, framing variables were reduced to just 19 primary concepts,

which in turn improved intercoder reliability (reported later in this chapter). To facilitate coding, these variables were grouped into four categories that matched the themes found in articles, and the way they were reported. These categories and corresponding variables are listed below, along with the hypotheses they helped answer on the right.

Primary Reasons for Policy

- Mentions the purpose or reason for policy (H2, H2a, H6)
- Bill is part of international policy efforts (H2, H2a, H6)
- Bill would support renewable energy (H2, H2a, H6)
- Explicit moral or ethical dimensions of policy debate (H6)

Causes and Impacts of Climate Change

- Mentions causes of climate change (e. g., greenhouse gases, or sources of greenhouse gases such as power plants, industries, or nations) (H6)
- Presents scientific findings, data, or report (H6)
- Mentions impacts of climate change to environment (H6)
- Mentions uncertainty, doubt, or controversy over science (H6)

Efficacy Themes

- Policy would be effective at reducing greenhouse gases or addressing climate change (H3, H3a, H6)
- Policy would be ineffective at reducing greenhouse gases or addressing climate change (H3, H3a, H6)
- Questionable or problematic regulations, provisions, or oversight of policy (H3, H3a, H6)
- Policy would spur innovation (e. g., putting a price on carbon) (H3, H3a, H6)
- Policy would not spur innovation (e. g., price on carbon too low) (H3, H3a, H6)

Costs, Benefits, and Problems

- Policy would lead to higher energy costs, and is a de facto energy tax (H4, H4a, H6)
- Increased costs would be minimal or negligible (H4, H4a, H6)
- Policy would give payoffs to industry and giveaways to polluters, including windfall profits and free allowances (H4, H4a, H6)
- Policy would generate funds for government, help economy, industry, developing countries (H4, H4a, H6)
- Bill is overly complex or unwieldy (H3, H3a, H6)
- Policy would be too costly, kill jobs, harm economy or industry, or put U.S. at competitive disadvantage (H4, H4a, H6)
- Other _____

3.2 Coding and Measures

This project will measure the frames of U.S. newspapers by using the empirically driven methods developed by Matthes and Kohring (2008). This method addresses some of the biggest threats to valid and reliable framing research, such as the inherent subjectivity involved in defining and coding complex, abstract frames. This is done by coding for the elements of frames, as determined by Entman (1993), as opposed to using the entire frames. This approach greatly reduces the likelihood of researchers coding their own biases or expectations, rather than using the frames found in the text (Matthes & Kohring, 2008). Frame elements and frames are then empirically determined through descriptive and multivariate analyses. Chi-square tests of independence will also be used to determine relationships between variables.

The creation of the variables coded in this project was guided by established content-analysis principles: codes should be mutually exclusive, independent, and exhaustive (Neuendorf, 2003). The codebook used by Matthes and Kohring in their study of media framing of biotechnology was adapted for this project. This codebook was originally created in 1988, when it achieved high reliability scores across all variables; it has also been widely used in diverse social research, and has been continually refined and updated since that time (Ruhrmann, 1992). The codebook, which includes explicit definitions of all concepts, variables, and coding protocols, was divided into four categories of variables. These are basic information, newsworthiness, frame themes, and actors. The variables included in each section are listed below.

Basic information. These variables measure name of coder, newspaper, date article was published, and assigns a unique number to each article.

Newsworthiness. These variables track newsworthiness were page number, section of article, word count, staff reporter or newswire, and inclusion of photography or graphic elements. The operationalization of frame prominence was developed based on Gordon et al. (2010) and Shoemaker and Cohen (2010). This newsworthiness index assigned four points to articles appearing on the front page of newspapers, two points for articles appearing on the second page, and zero points if the article appeared on pages three or higher. Articles with more than one photograph or graphic item were assigned three points, articles with one photograph/graphic item were assigned two points, and articles with no graphic elements received no points.

Frame themes. There were a total of nineteen frame theme variables spanning the reasons for policy, causes and impacts of climate change, efficacy of policy, and costs/risks of policy. Together these represent the primary debate over climate-change policy. (For a full list of these themes and the codebook, see Appendix A.)

Actors. The list of 46 nominal variables composing possible actors in articles was created from the list of sources in the original codebook, and were adapted based on the pilot study and prior research on climate change. Each article will be coded for all actors that make statements about climate change or climate-change policy. Sources in articles taking up other themes or issues were not coded.

Coding of Articles

All articles were coded using hard copies of articles and coding sheets, following established coding methods by a single coder. To measure where variables appeared in the articles, the articles were first divided into thirds, by dividing the number of paragraphs by three. If there was one or two additional paragraphs after articles were divided into thirds, these were

added to the last third and then the second third. Following the content analysis protocols of Krippendorff (2004), only one set of codebook variables were coded at a time.

To ensure reliability, only concepts and evaluations that were explicit and clear were coded. Latent frames or meanings that were suggestive or implied were not coded. For example, evaluations of policy by sources were coded only if the source made a clear, direct statement with about costs, benefits or effectiveness. The statements of sources were coded as frame elements, and not as statements or evaluations of sources. However, since climate change is a highly politicized issue, source type is highly predictive of source statement. Lastly, other variables were created for both frame themes and sources in order to capture relevant concepts that did not fit within existing variables, and to capture quotes and evaluations.

3.3 Intercoder Reliability

Following the pilot test, intercoder reliability tests were performed with an independent coder on 20% of the articles, randomly selected. Intercoder reliability tests were performed using Scott's Pi and the online reliability analysis tool "ReCal."[2] A reliability of 0.96 was found for variables coding basic information of articles, 0.93 for newsworthiness variables, 0.84 for framing variables, and 0.86 for sources (See Appendix B for detailed list of reliability scores for each set of variables.) These findings are well within accepted ranges of reliability, which is generally 80% or higher (Krippendorff & Bock, 2009; Riffe et al., 1998).

3.4 Data Entry Methods

Following the completion of coding, coding sheet data were manually entered into an Excel spreadsheet, which was then imported into the statistical analysis software program, Social Statistical Package for the Social Sciences (SPSS).

This section begins with descriptive data on the sample population before presenting,

[2] See http://dfreelon.org/utils/recalfront/

descriptive and multivariate findings for each hypothesis. Following the presentation of findings will be discussion sections, which contextualize the findings in the broader literature.

FINDINGS

This Findings section will employ charts and graphs to report on the descriptive and multivariate analyses. The findings section will be broken up into two sections, dealing with agenda setting measures (H1) in the first section and framing analyses (H2-H6) in the second section. Following the presentation the findings for each hypothesis are Discussion sections, in which the findings are interpreted and situated within the literature. The robust data set reported on in this section will provide compelling evidence of failed media discourse on climate change policy, through both inconsistent and low-prominence coverage and framing that did not report on the most compelling and critical aspects of the climate-policy debate.

4.1 Agenda Setting Findings

The agenda-setting measures of this project include both the quantity and prominence of news coverage. These findings will be compared against public survey data on public understanding of and attitudes about climate-change policy. While it is beyond the scope of this project to determine the media consumption habits of the public in comparison to these findings, since this study measures the highest-circulation newspapers in the country and the polling data on climate change attitudes are a national sample, some links can be inferred. Also, as has been previously noted, since newspapers are major source of news about climate change for Americans (Anderson, 2009; Nelkin, 1987; Stamm, et al., 2000; Wilson, 1995).

The 398-article sample, broken down by newspaper in Figure 2 below, represents more than a third of the entire population (n=1,109). Just over two-thirds of the sample (68%) was composed of news articles, with 72% of articles coming from *The New York Times* and *Washington Post*.

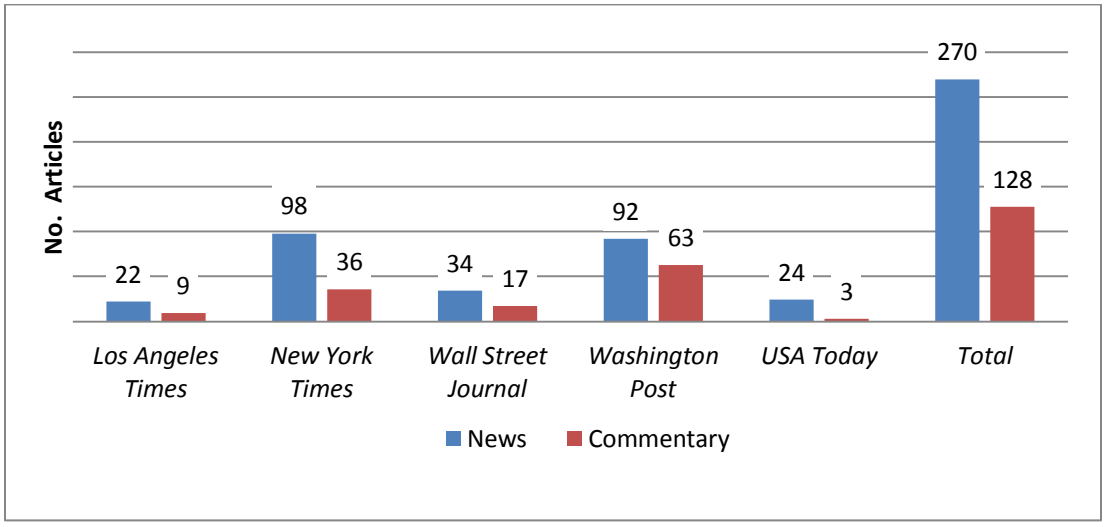

Figure 2 Frequencies of News and Opinion by Newspaper

The section of the newspaper in which an article appears give cues to readers about what an article is primarily about. For example, an article in the business or science section tells readers that the story is primarily about those issues. As reported in Figure 3 below, news articles about climate-change policy were predominantly reported as "news," "national news," and "business," with the exception of *Washington Post* articles that predominantly ran as "Section A," without section or beat information. Section A in the *Washington Post* represents news appearing in the front section of the newspaper.

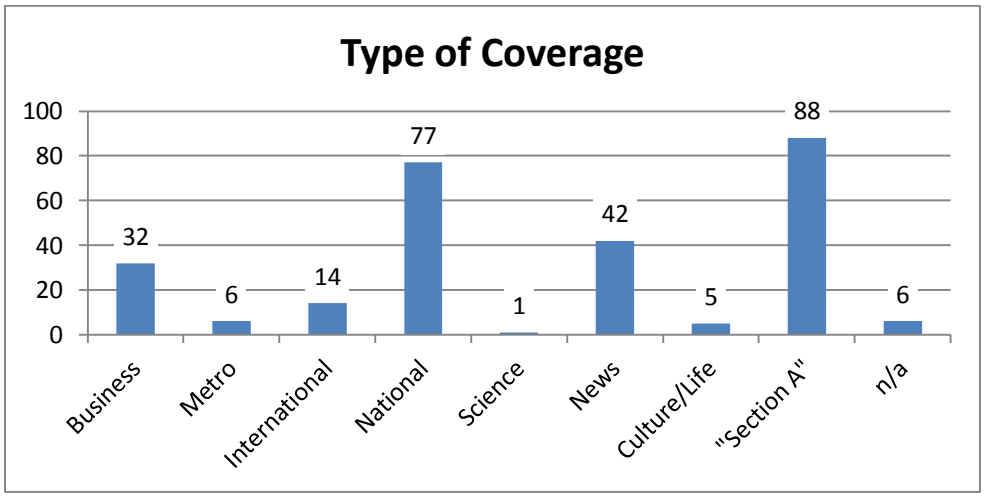

Figure 3 Newspaper Section of News Articles

Of the 128 opinion pieces, 66% were editorials (*n*=83) and 34% were opinion pieces (*n*=44), a ratio roughly mirrored across all newspapers. Editorials are defined as an article that gives the opinions of a newspaper's editors or publishers,[3] while opinion and commentary content are defined as opinion and content of individual columnists, writers, and columnists.

Prominence of News Articles

Determining where in the newspaper articles ran, we can determine whether news about climate-change policy was downplayed or given prominence among other issues of (McCombs, et al., 1997). Front-page news is not only the most accessible and frequently read (Dearing & Rogers, 1996; Entman, 1993; McCombs, 2005; Scheufele & Tewksbury, 2007), it is viewed as the day's most important news, by reporters and readers alike (Shoemaker and Cohen, 2005). Further, news articles that feature graphic elements, such as photographs or charts, also make them more accessible and frequently read (Poynter, 2007). Therefore, the first hypothesis postulated that:

[3] *New Oxford American Dictionary* (3rd ed.). Oxford University Press, 2010.

H1: *Climate-change policy news will be downplayed in the media, as reflected by high page numbers, or lack of graphic elements that help make articles relevant and engaging.*

Excluded from consideration in prominence measures were all opinion pieces, since it is customary for this type of news to run in the commentary/opinion sections of newspapers. Further, opinion content frequently does not include graphic elements.

To construct the prominence measure, an index/additive variable was used that included: the page number of the article, inclusion of graphic elements, and word count. The data for each of these factors are reported by the search engine LexisNexis, which is consistent with established research methods (Krippendorff, 2004). Descriptive statistics determined that 18% of the 270-article news sample appeared on the front page (*n*=49), while nearly half (48%) included photographs, graphs, or other artwork. Only 11% (*n*=31) of news articles that ran on the front page also included photographs, charts, or graphics. Consistent with researcher expectations, only 2% of the 128-article opinion sample ran as front-page news.

Regarding word count, 35 of 270 articles were less than 500 words, over half (n=139) had words counts of between 500-999, 81 where between 1000-1499, and15 were over 1500 words,

As indicated in Figure 5 below, the *Washington Post* gave the highest prominence to climate policy news, with 22% of all news appearing on the front page. The *Los Angeles Times* and *New York Times* were second with 15% of news appearing on the front page. Conversely, just one of 34 articles, or 3%, in the *Wall Street Journal* appeared on the front page.

Regarding the inclusion of the graphic elements, the *USA Today* had the highest percentage of articles with photos, charts or graphs, which is consistent with its reputation. Sixty-seven percent of articles in the *USA Today* had 67% included photographs, charts, or other

artwork. A majority of climate-policy news in *The New York Times* also featured graphic elements (61%), while the *Wall Street Journal* had the fewest articles with graphic elements, with just over 20% of articles including graphics, which is also consistent with its reputation (see Figure 5 below).

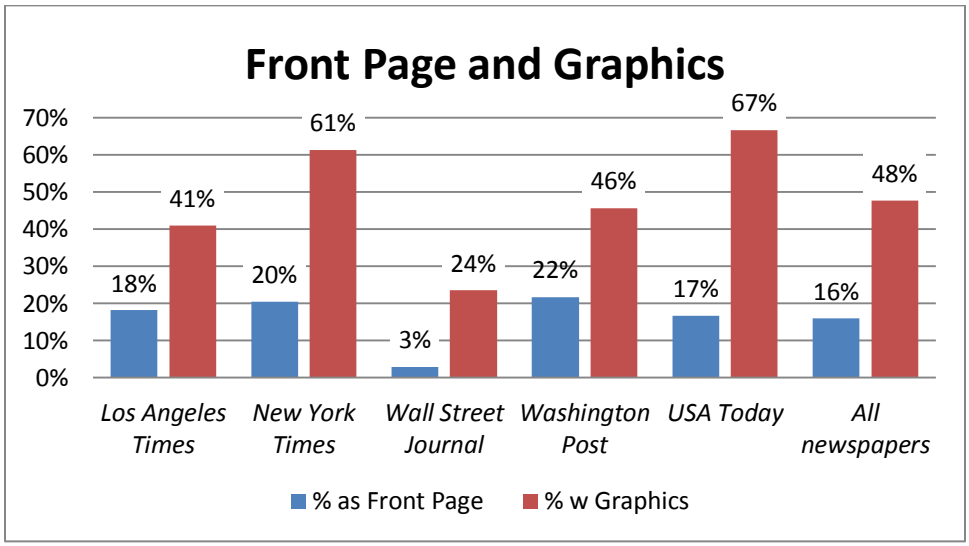

Figure 4 Articles as Front Page News and with Photos

The prominence measures were examined over time, to better understand how newspapers featured or downplayed news about climate policy over the course of two years of the climate-policy debate. Of interest was whether newspapers gave more frequent or prominent news coverage to the issue during or around major policy events, such as the U.S. House's historic passage of ACES in mid-2009. Such a measure would help determine the attention and prominence given to climate-change policy news around major events. Figure 5 below shows there was an increase in the frequency of coverage around several major climate-policy events in 2009 and 2010, but that this increased coverage did not actually translate into greater prominence given to the issue. Surprisingly, Figure 5 also reports that coverage of *any* kind dissipated drastically in 2010. Descriptive statistics were then employed to determine that 284 of the 298-article sample ran in 2009, with 109 articles in 2010 (five articles had insufficient date

information). Suggesting climate-change policy as a more editorialized issue in 2010 than 2009, 30% of articles in 2009 were opinion pieces, compared to 40% for 2010. The findings that coverage in 2010 dropped off rather dramatically from 2009 is supported by the research of Brulle (2012) and Nisbet (2011), who similarly found this decline. This should be a surprising finding, since the Senate debated climate policy for much of 2010, just as the House had the previous year, and the only obstacle in the way of it becoming law was the Senate. In other words, given what we know about the climate-change policy debate, it should have continued to be a newsworthy issue throughout much of 2010.

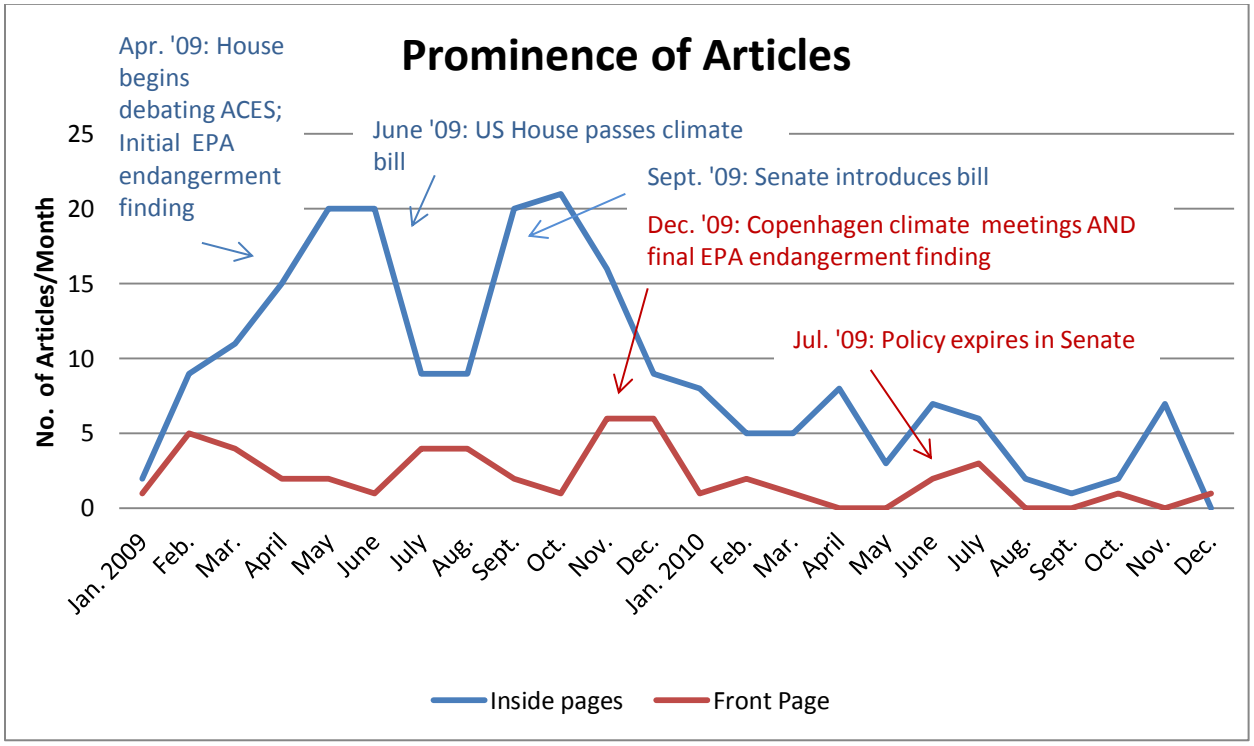

Figure 5 Prominence and Frequency of Articles

To clarify these findings, a more sophisticated measure was developed, adapted from previous research (Gordon et al., 2010; Shoemaker & Cohen, 2005). This prominence measure accounted not only for the frequency and prominence of news within the newspaper, but the

inclusion of graphic elements and word counts. The rationale for this is that not only do longer articles contain more information, but that longer articles are generally treated as more important news than shorter articles (Shoemaker and Cohen, 2005). The index assigned four points to stories appearing on the front page, two points to news appearing on the inside page, and zero points for news appearing on pages three or higher. For word count, the index assigned six points for articles with word counts of 1,500 or more; five points for articles with 1,250–1,499 words; four points for articles with 1,000–1,249 words; three points for articles with 750–999 words; two points for articles with 500–749 words; and one point for articles with word counts between 1–499 words. For graphic elements, articles with multiple photographs or charts were assigned four points, articles with a single photograph or graphic received three points, and articles with no graphic elements received zero points. The resulting 12 groups of prominence levels were then placed into one of three categories of low, moderate, and high prominence articles.

Of the 270-news article sample, 263 had all necessary data in order to be included in the prominence measure. Just 12% of articles (n=31) scored as high-prominence items, having high word counts, appearing on the front page, and including graphic elements. Thirty-eight percent of articles (n=100) were medium prominence, defined as having high word counts or graphics, but not appearing on the front page. A full half of the sample (n=132) were low-prominence articles, appearing on inside pages without graphic elements and with low word counts.

Figure 6 below reports the prominence given to climate-policy news by each of the newspapers during the 2009-2010 climate-policy debate. As a percentage of coverage, *The New York Times* treated climate-change policy with the highest prominence, with 18% of all articles (n=18) qualifying as high-prominence. Conversely, nearly 60% or more of the coverage in the

Los Angeles Times, *Wall Street Journal*, and *USA Today* was low prominence. None of the *Wall Street Journal* articles in the sample scored as high-prominence news.

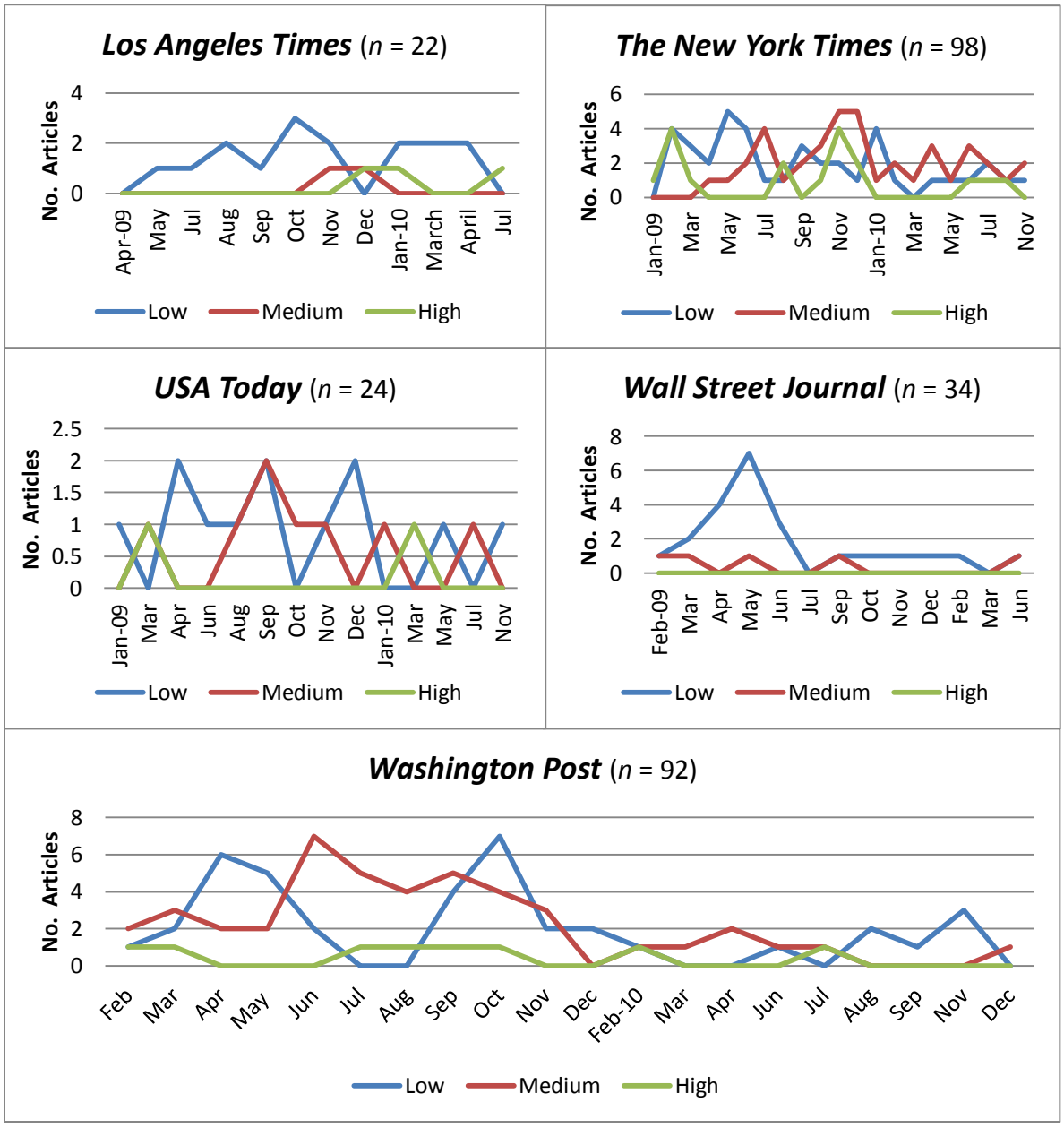

Figure 6 Prominence of Climate-Policy News by Newspaper

Figure 7 below reports the prominence of the entire news sample between 2009 and

2010. Surprisingly, there are no high-prominence articles during the height of the House policy debate, and high-prominence coverage never surpasses four articles per month by all newspapers *combined*. Overall, coverage follows a somewhat predictable pattern over the two-year debate: high-frequency coverage precedes major policy events, and is followed by sharp spikes and declines in low-prominence coverage during major policy events. The four periods of brief spikes in high-prominence coverage roughly corresponding to: the introduction of climate policy in the U.S. House of Representatives in early 2009; the introduction of policy in the Senate in September 2009; international climate negotiations in Copenhagen and the EPA's final greenhouse-gas endangerment finding; and the expiration of policy in July 2010.

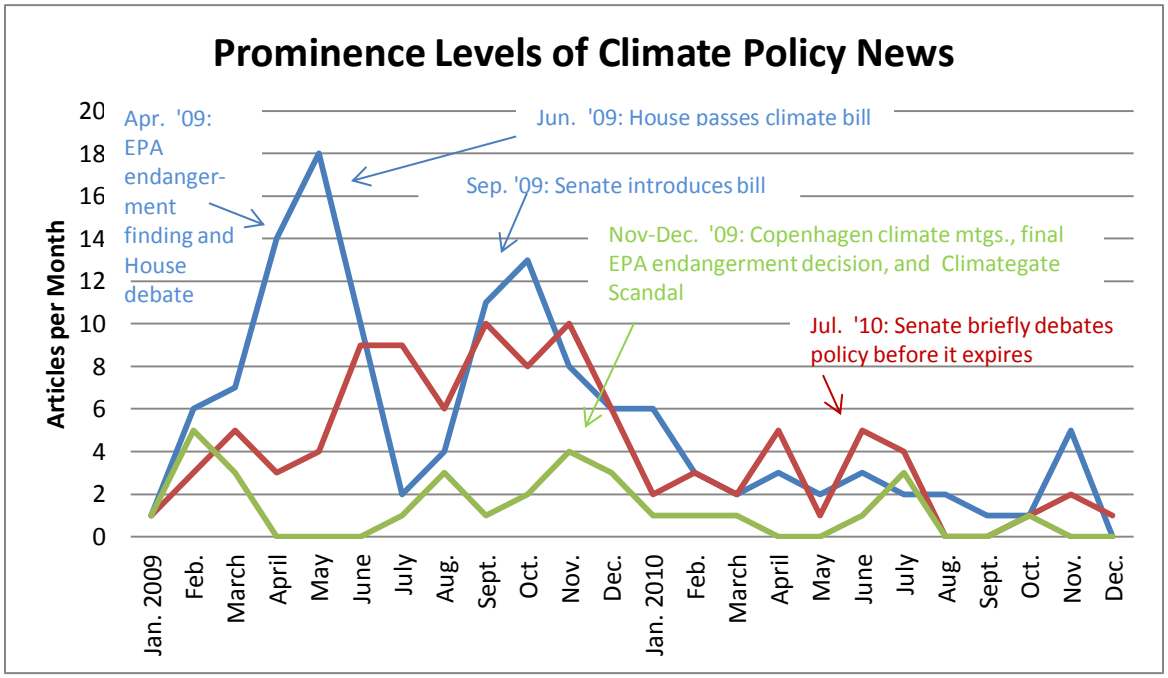

Figure 7 Prominence of Climate-Change Policy News (*n*=263)

H1 Discussion: Media Agenda-Setting

These findings support the hypothesis that climate-change policy would be largely downplayed by the media. Not only did were just 18% of news articles given prominence during the two-year debate, coverage completely dropped off during the second half of the policy debate in 2010. Since agenda-setting theory points to the central role of the media in shaping public awareness of and engagement in issues, it points to these findings as one likely source for the public's disengagement in climate-change policy. For instance, 85% of Americans had heard little or nothing about climate change policy just months after its historic passage by the House of Representatives in 2009 (McCombs and Shaw, 1972; Pew Research Center for the People and the Press, 2009), while 77% could not even identify the primary purpose of policy (Pew Center for the People and the Press, 2009). Agenda-setting theory notes that if news about climate-change policy is consistently pushed to the inside pages of newspapers, not only are most Americans unlikely to be exposed to this information, they are likely to deem it as relatively unimportant compared to other news.

The finding that media coverage of climate-change policy fell into relative obscurity in 2010, with overall coverage dropping 30% from 2009, was not predicted. Since policy was introduced in the Senate in late 2009 and the primary obstacle to its enactment was Senate passage, climate-change should have continued to be a relevant, newsworthy issue in 2010. One likely contributing factor in the failure of climate-change policy gaining traction in 2010 is the "hydraulic pattern" effect identified by Iyengar and Simon (1991) in the literature review. This media effect points to the media coverage as a finite resource, in which a sharp rise in national concern and media attention to one issue will likely come at the expense of attention to and coverage of other issues. In this instance, it was the contentious and all-consuming health-care

reform debate that occurred in 2010 that likely negatively affected news coverage of climate-change policy. Indeed, the setback to climate-change policy that the healthcare reform debate represented was noted by journalists, advocates, Democrats and scholars alike (Pooley, 2010).

4.2 Framing Analysis

4.2.1 Reasons for Policy

The second hypothesis sought to determine how reporters framed the reason for climate-change policy. A basis for this project was that without a firm understanding of the primary reason for policy—that is, to address climate change or reduce greenhouse gas emissions—readers would have an inadequate context for evaluating policy. Numerous surveys point to a public that was misinformed about the basics of policy (Pew Center for the People and the Press, 2009; Leiserowitz et al., 2010). It was therefore hypothesized that media coverage would omit or downplay the primary reasons for policy, and that the secondary reasons for policy that were often cited by advocates, such as green jobs and economic growth, would compete with primary reason for salience in articles. The second hypothesis posited that:

> ***H2:*** *Most articles will exclude the primary reasons for policy, and give equal weight to secondary reasons for policy, such as creating jobs or spurring economic growth.*

The primary reason for policy is defined as "addressing climate change," "reducing greenhouse gas emissions," or a variation of these themes. In that vein, policy would also have served as a powerful "marker" for a global treaty. Five variables captured the secondary reasons for policy that were determined in the pilot study. These are: create jobs; spur economic growth; assist U.S. energy independence; support renewable energy; and generate government funding (part of which, the Obama Administration argued, would be used to reduce the national deficit and provide funding to the poor and working classes). The primary and secondary reasons for policy were coded not only based on their inclusion in articles, but also based on where they

appeared in the articles. This provides an indicator as to whether these frame elements were given salience by media, or whether it was downplayed.

Descriptive Findings

The primary reason for policy was included in 66% of all news (*n*=180) and 54% of opinion (*n*=69). The majority (80%) of the primary reasons for policy involved reducing greenhouse gases, with the remaining 20% being that policy was designed to address climate change. As reported in Figure 8 below, the frequencies of primary versus secondary reasons for policy outnumbered the secondary reasons in all newspapers. Each variable is then described, along with their frequencies.

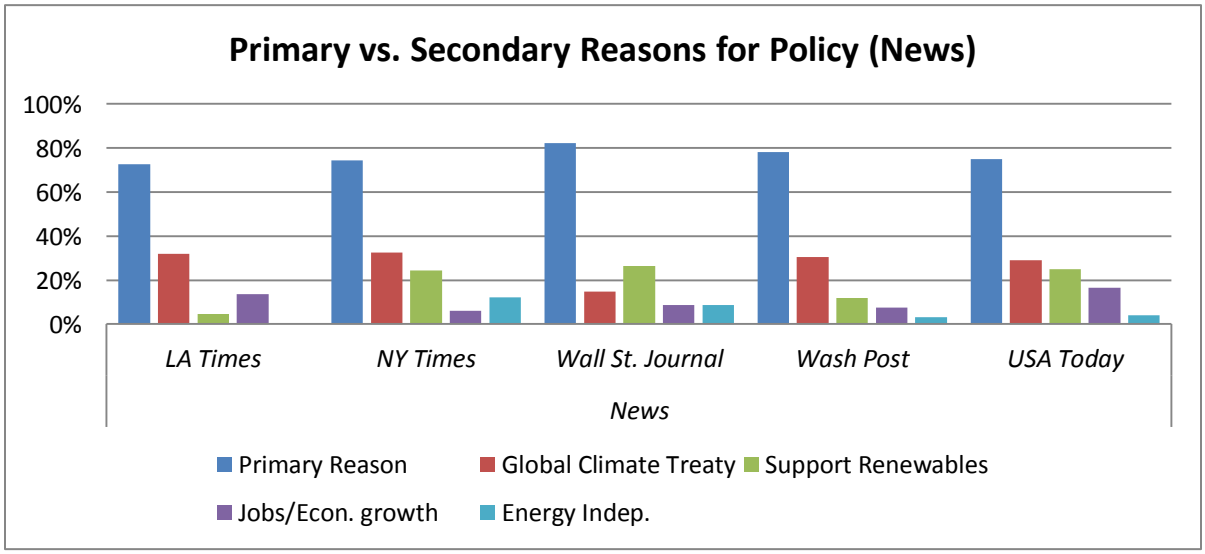

Figure 8 Primary versus Secondary Reasons for Policy (News)

Secondary Reasons for Policy

Together, secondary reasons for policy occurred in 70% of all news (*n*=190) and 58% of opinion (*n*=74). Figure 9 below shows that the secondary reasons for policy in contrast to the primary reasons for policy in opinion articles, with the primary reasons outweighing secondary reasons in the opinion content at all newspapers. Outliers to this trend are the *Wall Street*

Journal and *USA Today*, in which secondary reasons for policy compete with primary reasons. However, given the small sample of opinion articles for these newspapers, 17 and 3 respectively, these findings cannot be considered statistically significant.

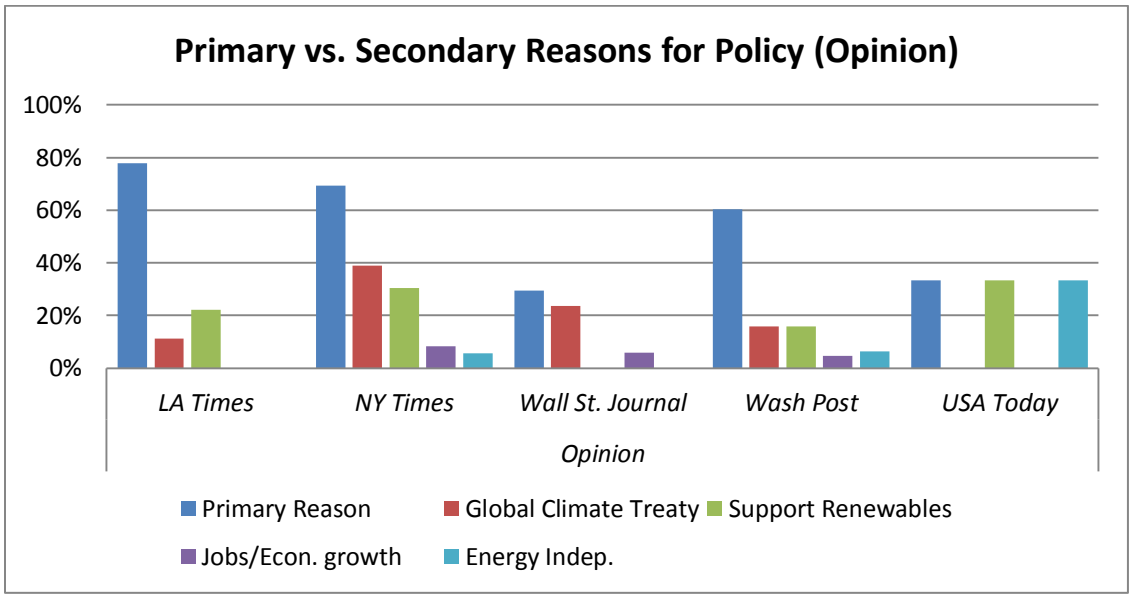

Figure 9 Primary versus Secondary Reasons for Policy (Opinion)

Pearson's chi square tests run across primary and secondary reasons for policy variables found that these themes were not evenly distributed during the two year debate. There was a significant relationship between the renewable energy frame and the House debate period (January 1, 2009 – June 30, 2009), for example, χ^2 (2, N = 393) = 9.33, p = .009. As noted earlier, support for renewable energy was used by some Democrats and advocates as a primary selling point for climate-change policy. Crosstabs on policy period and the renewable energy variable determined that these frame elements were a part of 26% of articles during the House debate, only 15% of Senate and International Debate period, and 9% of the Post-Policy period. This points to reporters echoing some of the primary positive evaluations of policy during the House debate period.

Chi square tests also pointed to an increase in the use of the support for international

policy frame during the Senate and International Policy debate period (July 2009-June 2010), $\chi^2(2, N = 393) = 17.08, p = .000$. Crosstabs run on these variables found that 21% of articles included the U.S. policy as supportive or part of international policy negotiations in the House Debate period, compared to 38% for the Senate and International period, and 13% of articles for the Post-Policy period. As noted in H1, high-profile global climate treaty negotiations took place from September to December of 2009, and these findings suggest that media contextualized the national climate-change policy debate with the concurrent international negotiations.

H2 Discussion

The findings do not support the hypothesis that the primary reasons for climate policy would be largely missing from articles, since primary reason for policy was reported in the majority of news articles (66%) and over half (54%) of opinion. Understanding the primary reason for policy is a central element in understanding what is being debated, why, and whether or not it would be effective. H2 was therefore developed based on the numerous public opinion surveys finding a public largely misinformed about the purpose of policy (Leiserowitz, 2009, Pew Research Center, 2009, 2010). These findings would therefore point to citizens reading articles having the opportunity to learn about the primary reason policy was being debated.

The hypothesis that the secondary reasons for or benefits of policy would compete with the primary reasons was supported, since it occurred more frequently in both news (70%) and opinion (58%). The inclusion of both primary and secondary reasons for policy represents both the potential for readers to confuse not only the reason for climate-change policy, but its costs and benefits as well. Since most citizens are not so well-informed about complex policy issues such as is the subject of this study, the competition of secondary and primary reason for policy frames represents a possible if not likely source of confusion about policy for readers (Iyengar,

1991; Kahneman & Tversky, 1984; Zaller, 1992).

4.2.2 Prominence of Primary Reasons for Policy

As noted in the literature review, the prominence of frames in stories serves to promote some interpretations of an issue over others. Entman defined salience as "making a piece of information more noticeable, meaningful, or memorable to audiences" (Entman, 1993, p. 53). This has consequences for news consumers, since "The character, causes, and consequences of any phenomenon become radically different as changes are made in what is prominently displayed, what is repressed and especially in how observations are classified" (Entman, 1993, p. 54). Given what we know about the lack of public understanding of and confusion about climate-change policy, the next hypothesis posits that:

> ***H2a:*** *The secondary reason for policy will be given equal weight in articles as the primary reasons for policy.*

As with other variables, concepts dealing with the reasons for policy were coded not only for their presence/absence in articles, but where they appeared in the article.

Descriptive Findings on Reasons for Policy Frames

Descriptive statistics determined that there were a total of 405 mentions of the primary reasons for policy across all articles (some included the variable multiple times throughout, while others did not mention it at all). As reported in Figure 10 below, the primary reason for policy was a most frequently included in the headline or lead paragraphs (n=208) than elsewhere in articles. Secondary reasons for policy were included in lead paragraphs and headlines almost half as frequently (n=108).

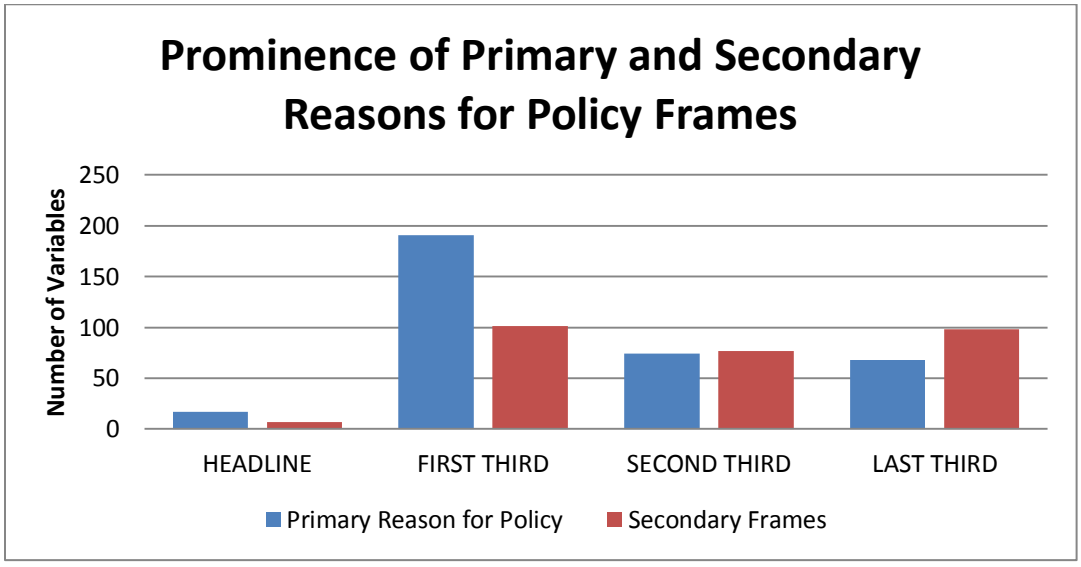

Figure 10 Prominence of Primary and Secondary Reasons for Policy (*n*=633)

H2a Discussion

The findings do not support the hypotheses that the primary reasons for policy would be downplayed in articles, since the inclusion the primary reason for policy was most often a part of lead paragraphs.

The hypothesis that the secondary reasons for policy, such as job creation and energy independence, would compete with the primary reasons for policy for prominence, was also not supported by the findings. The data indicate that many of the articles coded for this project were reported in the classic "inverted period" style, with journalists telling readers the reason for policy up front. For example, many articles began with opening similar to this *USA Today* lead: "The Senate bill, scheduled to be introduced today, would require a 20% decrease in 2020 in the greenhouse-gas emissions blamed for global warming. The House bill passed in June would require a 17% cut in 2020" (Watson, 2009, p. 4A). The fact that the primary reasons for policy were reported in most articles, and often as a part of the lead, points to media giving these salience to these elements of the debate.

4.2.3 Efficacy of Policy

Media coverage of the efficacy of policy debate is of central interest to this project. These concepts not only define for readers what the policy is for but if it would be effective in those goals. In other words, if Democrats or advocates espouse climate-change policy as a jobs creation bill, it is more likely to be considered an economic issue rather than an environmental or social justice one. Based on the literature, it was hypothesized news coverage of climate-change policy would exclude reporting on the debate over the effectiveness of policy to address climate change or reduce greenhouse gas emissions. This in turn would force readers to identify what was missing from stories and to figure out these details for themselves, or ignore the missing information altogether (Entman, 1993). Scholars note that this scenario represents an enormous obstacle to and informed and engaged society, since the public is mostly unfamiliar with complex issues such as the science-policy interactions represented by climate change (Entman, 1993; Iyengar, 1991; Kahneman & Tversky, 1984; Zaller, 1992). As noted elsewhere, many opinion surveys found that the public was both largely unaware of climate-change policy and misinformed about its primary goals (Leiserowitz et al., 2010; Pew Research Center for the People and the Press, 2009).

This project also hypothesized that newspapers took up the secondary reasons for policy, such as its effectiveness in creating jobs, spurring energy independence, and supporting renewable energy. The next hypothesis therefore postulates that:

> ***H3:*** *Frames dealing with the debate over the effectiveness of policy will not be reported in the majority of stories, or will be given equal weight as the secondary effectiveness of policy measures, such as job creation.*

By all accounts, the climate-change legislation that was debated and passed by the House of Representatives and taken up by the Senate was an enormously complex bill. These

complexities presented a challenge not only for citizens seeking to understand the bill, but for policy makers, advocates, and reporters alike (Pooley, 2010; Revkin, 2010). The debate over the effectiveness of policy to address climate change involved not just straightforward effective/ineffective policy evaluations, but complex discourse over offsets, needed innovation, regulatory loopholes, perverse incentives, job creation, and much more. Debate over the effectiveness of secondary reasons for or benefits of policy include windfall profits and industry giveaways, the threat of EPA regulations if Congress didn't act, and the debate over free versus auctioned allowances. This project developed variables for each of primary and secondary concepts, with primary efficacy accounting just for the debate over the effectiveness of policy to address climate change.

Descriptive Findings on Effectiveness Debate

Figure 11 below summarizes the efficacy debate that took place in news reports versus opinion articles. Although more than half (54%) of all opinion pieces took up the debate over the effectiveness of policy to address climate change (n=69), only a quarter of all news articles (n=68) did so. The secondary efficacy debate, over the effectiveness of policy to achieve goals other than address climate change, such as create jobs, occurred similarly in news (28%) and opinion (30%).

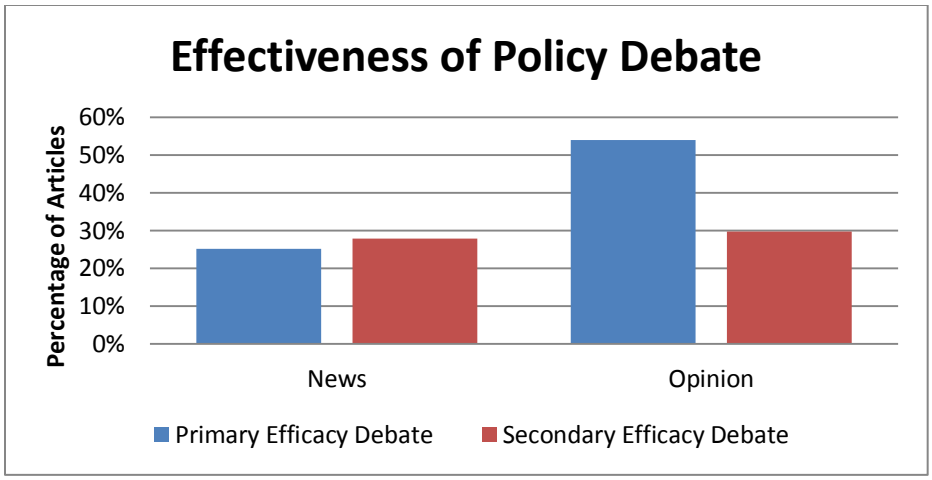

Figure 11 Efficacy of Policy Debate – News vs. Opinion

Primary Efficacy Debate Themes

Six variables accounted for the debate over the efficacy of policy to address climate change. Together, these variables occurred in 25% of news articles and 54% of opinion pieces. These six variables are described in further detail below, along with descriptive findings and examples of coded in texts.

Policy would be effective. Concepts dealing with positive evaluations of policy to address climate change or reduce greenhouse gas emissions were included in just 5% of news articles (n=13) and 12.5% of opinion pieces (n=16). An example of a straightforward positive evaluation of the effectiveness of policy was written by the *Washington Post* editorial board: "The most cost-effective way to reduce carbon emissions is to place a price on carbon that gradually rises, which a cap could achieve" ("Climate Change Incentive," 2010, p. A10).

Policy would be ineffective. Explicit negative evaluations of policy to address climate change occurred twice as often as positive frames, included in 10% of all news articles (n= 26) and 23% of opinion pieces (n=29). The *Wall Street Journal* provides an example of a negative evaluation of the effectiveness of policy in an August 2009 report: "The cap is so loose in early years that through cheap offsets the U.S. need not significantly reduce greenhouse gases until

2025" (Schoenbrod & Stewart, 2009, para. 3). Similarly, *The New York Times* reported that "even if the policy met all of its goals, it would only reduce global greenhouse gases by 3%" (Fahrenthold, 2009, p. A06). Nor would the policy have done anything to "help China and India keep global emissions from reaching levels that scientists consider ominous" wrote another reporter for *The New York Times* (Leonhardt, 2010, p. 1).

Policy too complex. This theme occurred in 3% of news articles (*n*=8) and 9% of opinion pieces (*n*=11), and focused specifically on the complexity of cap-and-trade legislation. Cap and trade was reported as veritable "Rube Goldberg contraption" (Wasserman, 2010, p. 23), "so complex and confusing that it only benefits regulators and the lobbyists who outwit them" (Gerson, 2009, p. A21), and a "Chockablock with policy contraptions impossible to even explain, much less put into effect" (Wasserman, 2010, p. 23).

Policy would spur innovation. By many accounts, addressing climate change will require a new level of innovation, in developing new, carbon-friendly technologies and efficiencies in all sectors of the economy. Indeed, the cap and trade legislation studied in this project included many incentives for spurring innovation, from support for renewable energy developments to research for carbon capture and sequestration. These concepts occurred in 3% of news articles (*n*=9) and 11% of opinion pieces (*n*=14). These concepts dealt with the need to put a price on carbon in order to drive innovations that would find more efficient ways to produce, consume, and save energy. *The New York Times* editorial board wrote about this theme in a positive 2010 editorial by saying, "the market is the best tool for spurring innovation to find cheaper and less carbon-intensive fuel" ("A Climate for Change," 2010, p. A18).

Would not spur innovation. Although one of central components of climate legislation entails putting a price on carbon, much of the legislation debated and passed by the House

involved reducing or delaying that price signal, primarily for political reasons. As one reporter wrote, "With legislation unlikely to support such prices, uncertainty is better than a low price that disincentivizes the development of technologies that have radically less carbon" (Khosla, 2010, p. A21).

Problematic policies and provisions. This frame occurred in 8% of all news articles (*n*=21) and 18% of opinion pieces (*n*=23), and accounted for policies and provisions explicitly defined as undercutting the bill's effectiveness. These themes included everything from accountability problems with offsets, to issues with measuring reductions in greenhouse gas emissions from major sources. One such example was a provision in the House passed climate bill that double-counted carbon reductions from avoided deforestation, which would have allowed one to literally "chip up the world's forests and burn them for fuel without noting the effect on the world's greenhouse gases" (Bhanhoo, 2009, para. 7).

Secondary Efficacy Debate

Since many of the talking points about climate legislation of politicians and advocates involved not climate change but secondary issues such as job creation for instance, it is not surprising that much of the debate over policy involved these secondary issues. Accounting for the frequency and prominence of these themes in articles helps contextualize the efficacy discourse. The three primary concepts of this secondary debate are described below, along with descriptive findings and examples found in text.

Policy would provide industry giveaways. This concept took place in 16% (*n*=43) of news articles and 19% (*n*=24) of opinion pieces, and deals with the incentives designed to generate support or reduce opposition of corporations, states, and regions of the country, and elected officials from those regions. These giveaways included free allowances, windfall profits,

and funds for job retraining in industries that might be negatively affected by policy. As one reporter wrote, cap and trade "is almost perfectly designed for buying and selling of political support through granting of valuable emissions permits to favor specific industries and even specific Congressional districts. That's precisely what's taking place now in the House Energy and Commerce Committee" (Broder, 2009, p. 1).

Debate over free versus auctioned allowances. This theme took place in 10% of all news articles (*n*= 29) and 7% of opinion pieces (*n*=9), and involved whether allowances should be auctioned or given to industry for free in the early years. Advocates frequently argued that these allowances should be auctioned in order to create a needed price signal on carbon, while the Obama Administration said that the billions raised from auctioning allowances would be used to assist the poor and working class with higher energy costs (Calmes, 2009, p. 1). Industry, on the other hand, argued that allowances should be free in the early years, in order to help offset higher prices of doing business and to assist with transitioning to clean-energy technologies (Mufson, 2009, p. A11). The rationale for defining the allowances theme as a secondary efficacy measure is that it was predominantly about the debate over whether higher energy costs should be offset in early years, and whether corporations should be allowed windfall profits. When this theme did take up the issue of whether or not free allowances would hinder the bill's effectiveness, it was done so indirectly and in passing. For example, in an editorial supportive of the climate bill, *The New York Times* wrote, "Legislators from coal-dependent states want free allowances to mitigate costs of compliance and give emitters time to switch to cleaner fuels. Others fear that free allowances would delay hard choices while reducing revenues the government could use to make clean-energy investments and help the poor with higher energy costs" ("The Climate Debate Heats Up," 2009, p. 30)

Policy would be better than EPA regulations. This theme occurred in 6% (*n*=15) of news articles and 8% (*n*=10) of opinion pieces, and involved the threat of the Environmental Protection Agency (EPA) regulating greenhouse gases if Congress does not take action. This possibility was actually foreshadowed by the U.S. Supreme Court in 2007 when it ordered the EPA to determine whether the greenhouse gases contributing to climate change should be regulated under the Clean Air Act. In April 2009 the EPA determined that greenhouse gases represented a "public endangerment," and it began taking highly publicized actions toward regulating them. All sides of the climate-policy debate seemed to agree that Congressional action was preferable to an onerous EPA "command and control" system, with Democrats and advocates using this threat to drive the policy debate (Pooley, 2010). For these reasons, the "better than EPA" frame was defined as part of the secondary efficacy debate: it does not deal with the efficacy of policy being debated, but rather with the *threat* of something much worse if Congress failed to act. In reporting on the EPA's initial endangerment finding in April 2009, the *Washington Post* quoted Congressman Markey (D-MA) as saying, "It is now no longer a choice between doing a bill or doing nothing. It is now a choice between legislation and regulation. The EPA will have to act if Congress does not act" (Eilperin, 2009, p. A01).

Multivariate Findings on Efficacy Debate

Pearson's chi square tests run across primary and secondary efficacy variables revealed a that policy period was predictive of variables dealing with the efficacy debate, χ^2 (2, N = 393) = 7.78, p = .020. Crosstabs run on all efficacy variables determined that negative evaluations of policy, that is that it would be ineffective at addressing climate change or reducing greenhouse gas emissions, were highest during the House debate period (19% of all articles), and lowest during the Senate and International debate period (9% of articles), with 11% articles including

this frame in the Post-Policy period. Further, debate period was also predictive of the inclusion of ineffective evaluations of policy in the lead paragraphs of stories, χ^2 (2, N = 393) = 9.58, p = .008. Crosstabs run on these variables determined that the ineffective policy variable was a part of 20% of leads in stories during the House Debate, in 8.5% of leads in Senate Debate, 11% of leads in post policy.

H3 Discussion

The findings support the hypothesis that the effectiveness of policy debate would be largely missing from newspaper reporting, occurring in just a quarter of all news articles and just over half of opinion content. Further, straightforward evaluations of policy as effective or ineffective were conspicuously absent in media reporting of policy, included in just 6-11% of news reports. The exception to this was the *Wall Street Journal*, which included effective/ineffective evaluations in just 2% of articles. This project conceptualized the efficacy debate as one of the most critical elements of the climate-change policy debate, since it represents useful information in evaluating policy. Communication scholars have consistently cited that excluding information dealing with efficacy of policy being debated serves to disenfranchise them from engaging in the issue (CRED, 2009; Hart & Nisbet, 2011; Lakoff, 2010; Shelby, 2011).

One reason it was hypothesized that the efficacy themes would be largely missing from media reporting of climate-change policy was that even the group of Americans most alarmed by climate change and supportive of policy solutions did not support cap and trade (Maibach et al., 2009). Although it is obviously possible that the Alarmed rejected cap and trade based on its merits, or lack therefore, it is also possible given these findings that they lacked sufficient information to adequately evaluate it. In place of a robust debate over the pros and cons of cap

and trade in reducing greenhouse gas emissions, readers were treated to a debate over allowances and the economic costs/risks of policy (H4). So, whereas Leiserowitz argued that Americans did not support cap-and-trade policy because they didn't know what it was (Kintisch, "Cap and Trade Got Ditched Because Voters Didn't Know What It Was," 2010), these findings suggest the possibility of a slightly different reason for its lack of support: Americans did not support cap-and-trade policy because they did not know whether it would be effective or not.

Lastly, as noted in the literature review, there have been few if any, studies on how climate change is being written about in opinion/commentary pages. Therefore, the finding that a more robust debate with regard to the effectiveness and pros and cons of policy is occurring in the opinion section of newspapers is also revelatory. One possible explanation for this is that these pages are more reflective of broader society and diverse voices, rather than the narrow framing of issues of reporters and claims makers represented in news reports.

4.2.4 Prominence of Efficacy Themes

The next hypothesis seeks to further clarify media's reporting of the efficacy of policy debate by determining if these themes were highlighted or downplayed in articles. Based on the literature and the pilot study conducted for this project, it was hypothesized that the efficacy of policy would be downplayed in articles:

> ***H3a:*** *Elements dealing with the effectiveness of policy in reducing greenhouse gas emissions or addressing climate change will not be reported by media, or will be given equal weight as the effectiveness of policy to meet other, secondary goals, such as creating jobs or spurring economic growth.*

Descriptive findings determined that there were a total of 283 variables dealing with the effectiveness of policy, compared with 188 secondary efficacy themes. Figure 12 below points to the efficacy debate being downplayed in articles, since these themes occurred most frequently

in the last third and second third of the articles. In total, 35% of all primary efficacy themes occurred in the final third of articles, with 29% occurring in the second third, and 25% occurring in the headline or first third of articles. This trend also held for secondary reasons for policy, with 41% located in the last third of articles, 33% in the second third, and 25% in the headline or first third of articles.

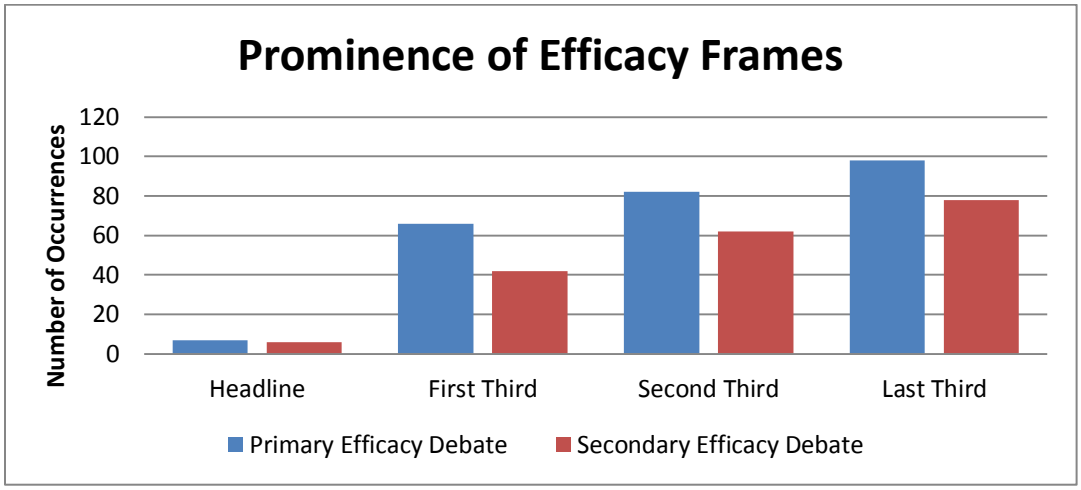

Figure 12 Prominence of Efficacy Themes

H3a Discussion

The findings show mixed support for the hypothesis the debate over the effectiveness of policy to address climate change would be downplayed in articles. Although these themes occurred most frequently in the first third of articles, they appeared consistently in each third of articles 30-40% of the time. Chi square tests did not find a relationship between the prominence of efficacy themes and other variables.

4.2.5 Costs and Risks of Policy

Since the U.S. economy is powered by carbon-intensive sources of energy, from coal-fired powered power plants to petroleum-fueled automobiles, a robust debate over the economic impacts of climate-change policy can be expected. Conversely, some experts have also pointed

to the negative impact that climate change will have on the economy if no action is taken (Mendelsohn & Neuman, 2004; Yohe, 2010). Since the literature suggests that economic issues dominated the debate over climate-change policy, the next hypothesis is that:

> ***H4:*** *The debate over the costs and risks of policy will be one of the most frequent theme s in articles.*

Based on the literature, this project hypothesized that the debate over the economic costs and risks of policy would greatly outweigh all other frame elements. Five variables were developed to code for the primary debate over the costs/risks of policy. These five variables were that policy would: hurt U.S. economy or kill jobs; lead to higher energy costs; lead to *dramatically* higher energy costs; harm specific states, regions, or industries; and policy would have minimal cost impacts. These variables were later merged into two categories dealing with higher costs (higher costs, dramatically higher costs, and minimal costs) and economic impacts (hurt U.S. economy/kill jobs, hurt specific industries or regions).

Descriptive Findings on Costs/Risks of Policy

The descriptive statistics found that at least one of these themes occurred in 62% (n=167) of news articles and 45% (n=57) of opinion pieces. The economic harm variable occurred in 42% of all news articles (n=113) and 26% of all opinion pieces, while the increased costs variables occurred in 40% of all news articles and 31% of opinion pieces. Figure 13 reports how costs and risks of policy were reported by each newspaper as news and opinion.

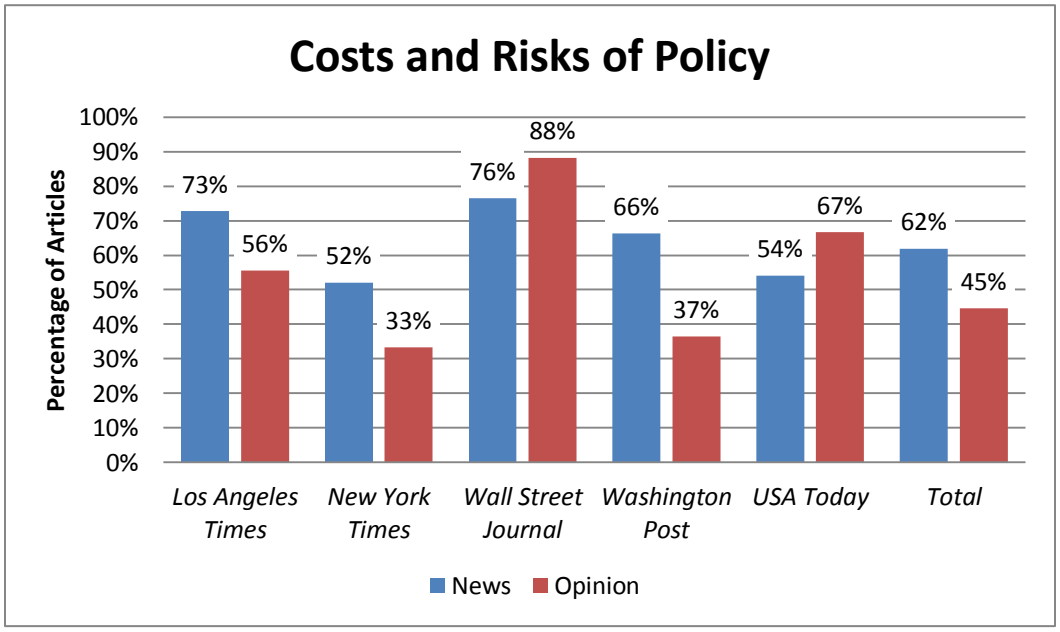

Figure 13 Costs and Risks and Policy by Newspaper

To illuminate the findings on media coverage of the costs/risks of policy, brief descriptions of each of the variables composing these measures are given below. In addition, frequencies for each variable are given, as well as examples found in articles.

Policy would harm economy or kill jobs. By many accounts, the most heated debate over climate change policy took place around the possibility that policy would harm the U.S. economy or kill jobs (Pooley, 2010). Descriptive statistics determined that these themes occurred in 30% of all news articles (n=82) and 20% of all opinion pieces. This frame was composed of: economic harm disadvantage; hurt industry, state, or region; kill jobs; represent an energy tax or cost increase; dramatically raise energy costs; or hurt U.S. consumers. An example of this theme is the October 2009 report carried by the Washington Post, “Most Republicans in Congress have dismissed the Democratic initiative as little more than a "national energy tax" that would kill U.S. jobs when the country is grappling with severe economic problems” (Reuters, 2009, A05).

Policy would raise energy costs. This concept occurred in 33% of all news articles (*n*=90) and 28% of opinion pieces (*n*=36). It captured diverse concepts dealing with possible increased costs that Americans and businesses would pay if climate legislation were passed. For example, in a July 2010 news story on national energy legislation, *The New York Times* quoted one of Senator Murkowski's (R-AK) staffer saying, "Senator Murkowski won't support a utility cap-and-trade bill because it raises energy prices on Americans at a time when they are already struggling financially ... It's a light-switch tax" (Baker & Herszenhorn, 2010, p. 20). The *Wall Street Journal* editorialized in June 2009:

> The whole point of the cap and trade is to hike the price of electricity and gas so that Americans will use less. These higher prices will show up not just in electricity bills or at the gas station but in every manufactured good, from food to cars ("Cap and Tax Fiction," 2009, A14).

These types of evaluations were frequently made by Republicans and energy industry sources, citing that the bill would lead to "a permanent recession" that would drive jobs to other countries (Fahrenthold, 2009, p. A03), and negatively affect the petroleum industry. According to the American Petroleum Industry president, the bill would "destroy millions of American jobs and drive up fuel prices, punishing everyone who drives, flies, takes a bus or train" (Tankersley, 2009, p. A18). The *Washington Post* reported: "GOP congressional leaders have criticized the legislation, saying it would sharply increase electricity and gasoline costs for American households, and ship millions of jobs overseas." And *The New York Times* wrote, "The objections of the Republican opponents were summed up in the words of Representative Mike Rogers of Michigan, who said the bill would mean sharp increases in energy costs and the loss of millions of jobs" (Broder, 2009, p. 13).

Minimal increased costs. If implemented, the cap and trade bill would have cost American households an estimated $75 in 2015, with this price slowly rising to about $510 a

year by 2025 (Congressional Budgetary Office, 2009). Democrats and policy advocates cited this report and other price-control provisions in pointing to the modest financial costs of policy. For instance, the *USA Today* reported on the Congressional Budgetary Office (CBO) report: "CBO's analysis of the House bill forecasts an average net cost per household of $175 a year, with the lowest-income households receiving $40 a year in benefits" (News, 2009, p. 11A). This concept occurred in 15% of news articles (n=43) and 19% of opinion pieces (n=24).

Bill would harm industry, states, or regions. This theme occurred in 5% of news articles (n=14) and 5% of opinion pieces (n=7), and captured the reality that climate legislation would affect states, regions, or industries unequally. This is because the economies and energy profiles of different regions of the U.S. are dramatically different. For instance, Midwestern states rely heavily on manufacturing and coal-fired power plants for generating electricity, whereas coastal states get much more of their energy from natural gas. Further, some carbon-intensive manufacturing industries that are prominent in the Midwest and Rust Belt states would be greatly impacted by carbon pricing. An example of this frame is a March 2009 report on the House bill by *The New York Times*: "because of regional differences in energy sources, political lines are blurred, potentially uniting Democrats and Republicans from states heavily dependent on coal plants, against other parts of the nation looking for alternatives" (Mufson, 2009, p. D01).

Multivariate Findings on Costs/Risks Debate

Chi square tests found that themes dealing with the economic harms of policy where not evenly distribute throughout the two-year policy debate. For instance, there was a statistically significant relationship between debate period and the use of economic harm frame, χ^2 (2, N = 393) = 8.71, p = .013. Crosstabs run on these variables determined that it the economic harm variable was included in a full 44% of articles during the House debate period, 32% of the Senate

and International debate period, and 21% of articles in the Post-Policy period. Chi square tests also revealed a relationship between articles that ran on the front page and the inclusion of variables dealing with the higher costs of policy in the lead of stories, χ^2 (1, N = 272) = 3.43, p = .064, (with $p < .05$). Crosstabs run on these variables determined that 17% of all front-page news (n=52) included themes dealing with the higher costs of policy, compared to 9% of stories with this lead in the inside pages of newspapers.

H4 Discussion

These findings support the hypothesis that the costs and risks of policy dominated newspaper reporting, occurring in most news (62%) and almost half (45%) of opinion. In fact, economic costs and risks variable were second only to the primary reasons for policy as the most frequent variable across all articles. In the context of the overall framing of policy (H6), this is a potentially significant finding, especially if other critical elements are missing or downplayed. This has the effect of rendering the costs/risks of policy frames with greater relevance and importance than they would have under an alternative framing (Entman, 1993; Gamson & Modigliani, 1989).

These findings also support the assertions Pooley, who in *Climate Wars* (2010) argued that journalists overemphasized the costs and risks of policy. Pooley also found that journalists failed to fact-check or evaluate the claims of political elites and the reports of conservative think tanks pointing to catastrophic impacts of policy. The next hypothesis will help determine whether these economic costs and risks policy, as Pooley as asserted, where overemphasized by journalists.

4.2.6 Prominence of Costs and Risk Frames

Measuring where costs/risks themes occurred in articles helps determine not only whether these themes were promoted or downplayed, but helps contextualize the other frame prominence measures of this project. Based on the pilot study, it was hypothesized that the costs and risks of policy would be promoted in articles, being reported in the lead paragraphs more frequently than in the last third of stories. The hypothesis postulated that:

> ***H4a:*** *The frame themes dealing with the costs and risks of policy will be highlighted in articles.*

As was done with other frame variables, the costs and risks of policy frames were coded according to whether they appeared in the headline, first, second, or last third of articles. There were a total of 683 frames in all articles, with 49% (n=336) occurring in the first third of articles, 33% occurring in the second third (*n*=228), and 17% in the last third (*n*=119).

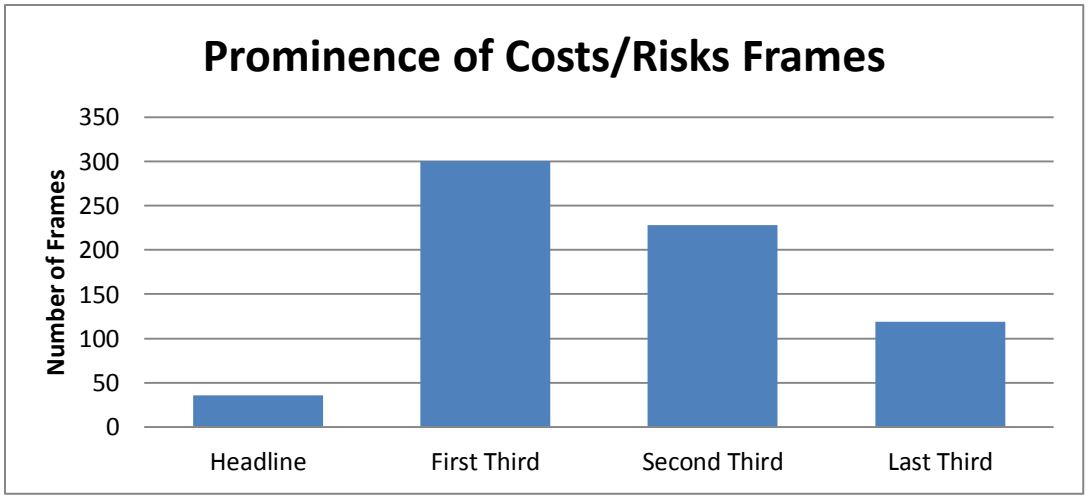

Figure 14 Prominence of Costs and Risks of Policy

H4a Discussion

The findings support the hypothesis that themes dealing with the costs and risks of

policy would be highlighted in articles, and would occur more frequently in the headline and first third of articles than elsewhere. By highlighting the costs and risks of policy in the first third of articles, these frame elements were made more noticeable and salient to readers (Entman, 1993; Fiske & Taylor, 1991). As Entman noted, "The character, causes, and consequences of any phenomenon become radically different as changes are made in what is prominently displayed, what is repressed and especially in how observations are classified" (1993, p. 232). H4 and H4a together clarify that was most frequently and prominently displayed in climate-change policy articles—the economic costs and risks of policy. Later in this findings section, H6 will contextualize media's reporting on the costs and risks of policy by comparing these variables against all others. The Nobel-prize winning work of Kahneman and Tversky (1979) in the area of the psychology of decision-making processes points to why how journalists report on costs and benefits of policy matter. Kahneman and Tversky found that when making decisions and evaluating policy, the negative emotions stirred up by risks and losses tend to greatly outweigh positive emotions associated with potential gains. In other words, people's perceptions of policy will be much more impacted by frames dealing with the economic harms and risks of policy than with perceived benefits. This is doubly so if the losses and risks involve the present and the rewards are framed as possible and futuristic. Therefore, the dominance of negative economic costs/risks frames and counter frames over frames dealing with positive rewards of policy can be interpreted as a dramatic success of anti-policy interests of Republicans, conservative think tanks and industry over those of Democrats and policy advocates.

4.2.7 Sources in News

The types of sources that journalists use in stories are a central element in how stories are framed by journalists and interpreted by citizens (Converse, 1964; Katz & Lazarsfeld, 1955;

Zaller, 1992). Not only do the *types* of sources in stories help define the problem for readers (Entman, 1993; Matthes & Kohring, 2008), sources seek to frame issues according to their own interests (Hall et al., 1978; McCright & Dunlap, 2003; Nitz, 2006). The next hypothesis sought to measure the primary sources in articles on climate-change policy. Based on the literature and pilot study, it was hypothesized that the types of sources in articles would be dominated by political elites, and feature few diverse voices such as citizens and laypersons, or local decision makers. The next hypothesis posited that:

> ***H5:*** *The sources media used in articles about climate change will be dominated by a few political elites, and few local voices.*

The list of sources coded in articles was developed from the codebook adapted for this project (Ruhrmann, 1992), existing research on climate change in the media (Jones, 2006), and the pilot project. All sources were merged eventually placed into one of eight primary categories: political; industry; environmental/social groups; think tanks; government; international; university; and other.

There were a total of 1,053 sources coded in all news and opinion articles, with 976 of those found in news articles and 77 in opinion pieces. Of these sources, three groups of sources dominated, with 43% of all sources being political (n=455); 16% from environmental or social groups (n=172); and 13% from industries or corporations (n=134). The breakdown of all sources is described in Figure 15 below, followed by a description and breakdown of each of these categories.

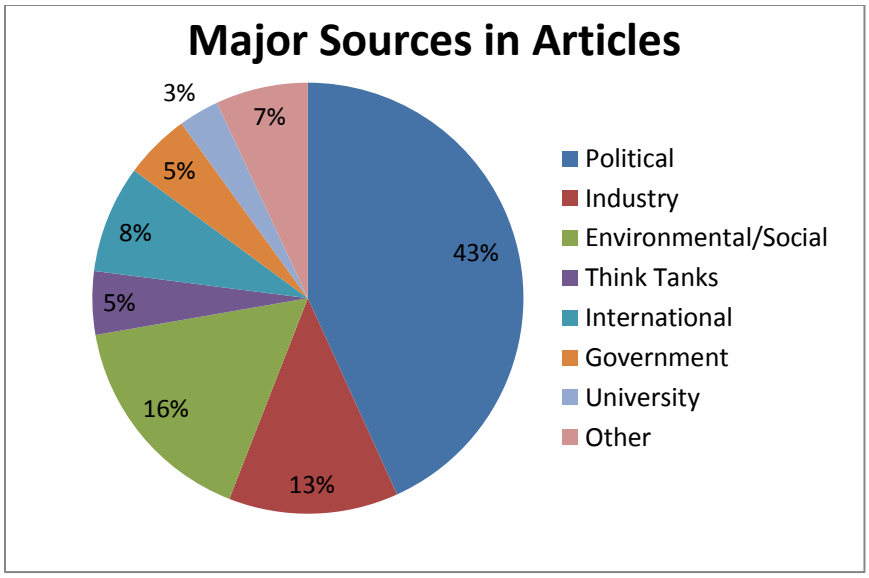

Figure 15 Eight Major Sources Found in News Articles (*n*=1,053)

Political. Congressional Democrats represented 43% (*n*=194) of all political sources, while congressional Republicans represented 30% (*n*=139). Statements by President Obama accounted for 9% (*n*=40) of political sources, and White House spokespersons made up 11% (*n*=50) of political sources. White House spokespersons included the White House press secretary, officials from Obama's Office of Energy and Climate Change Policy, and his climate negotiation team, which represented the U.S. in international negotiations. Finally, local and state elected officials represented just 2.6% (*n*=12) of all sources, while former U.S. Vice President Al Gore accounted for 2.4% (*n*=11).

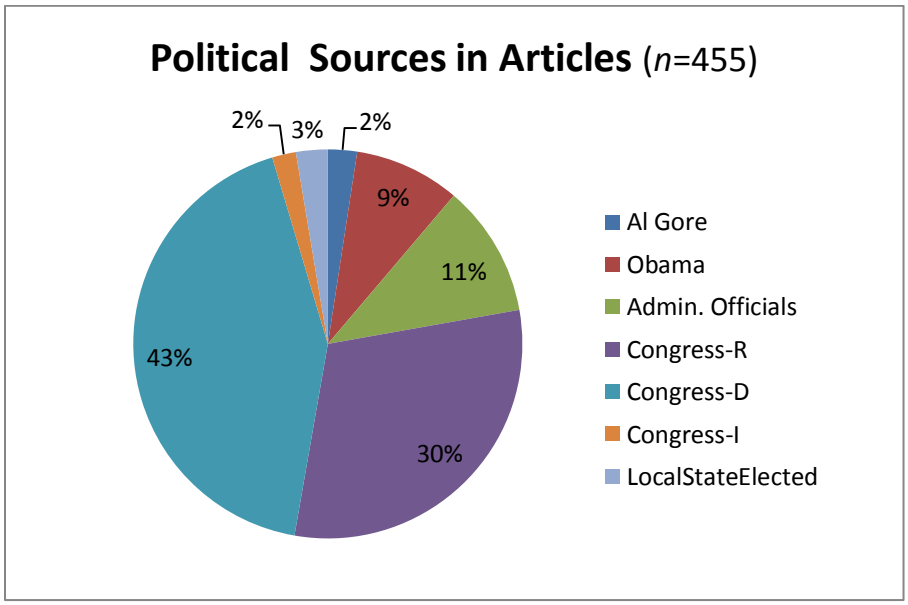

Figure 16 Breakdown of Political Sources

Government sources. Governmental sources composed 5% of all sources (*n*=52). These included sources from the EPA, National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, and the Department of Energy, the Department of Treasury and U.S. Energy Informational Administration. If a scientist working for the EPA was quoted in a story, this source was coded as an EPA/government source type, and not as a scientist.

Environmental and social groups. Environmental and social groups represented 16% of all sources (*n*=172), and were overwhelmingly composed of national nongovernmental organizations. The environmental-industry collaborative United States Climate Action Partnership (*n*=5) was included in the environmental source category, since its primary goal was to help shape and pass climate policy.

Corporations and industry. Sources from corporations and industry were grouped into categories of corporations and businesses (*n*=50) and those from the energy sector (*n*=88). The

corporations and businesses subgroup was composed of corporate spokespersons and lobbyists (*n*=24), the U.S. Chamber of Commerce or local chambers of commerce (*n*=19), the auto industry (*n*=5), and agriculture (*n*=2). The energy-sector subgroup was composed of electric utilities (*n*=35), oil and gas companies or lobbyists (*n*=28), the American Petroleum Institute (*n*=9), renewable energy companies (*n*=8), carbon market and investment firms (*n*=4), and coal companies (*n*=4).

Think tanks and policy groups. There were a total of 50 sources from think tanks or policy groups. Just under half this group (*n*=23) was composed of sources from progressive think tanks, such as the Center for American Progress; 17 were from conservative think tanks, such as the Heritage Foundation; and the remainder (*n*=10) were from centrist groups, such as Third Way.

International sources. There were a total of 85 international sources in news and opinion articles, with more than two-thirds (*n*=58) of these internationally elected officials, such as German Chancellor Angela Merkel. International elected officials overwhelmingly supported U.S. passage of climate policy. For instance, Chancellor Merkel spoke to the U.S. House of Representatives on the eve of House Representative's historic vote on the climate bill, describing climate change as "one of the great tests of the 21st century," and thanking the House for taking action (Eilperin, 2009, p. A04). Another 27 sources came from the IPCC or the United Nations.

Other sources. Sources that rarely occurred in articles are also noteworthy, since the absence of frames and framing devices also serve to define the issue (Entman, 1993; Bennett, 1996). Composing the other category were a total of 69 sources with frequencies of 15 or less. These included scientists or science groups (*n*=11), citizens or laypersons (*n*=11), religious groups (*n*=4), and emerging carbon market investment firms (*n*=4).

The absence of scientists and diverse voices in climate-policy debate is significant for a number of reasons. As noted elsewhere in this report, the type of sources in articles and the claims they make shape public opinion and understanding of issues (Katz & Lazarsfeld, 1995; Zaller, 1992), and scientists are vital resources in translating science-policy interactions and the efficacy of policy (Rosenberg et al, 2010).

Source Preferences of Individual Newspapers

The frequencies of sources at each newspaper, which is outlined below in Figure 17, indicate that journalists go to a select group of sources for news about climate-change policy. Most newspapers overwhelmingly went first to political elites, and then to secondary sources of environmental agencies and the government. The *Wall Street Journal* had the highest percentage of political elites in news reports (55% of all sources), and sources from industry (22%) and the lowest percentage of environmental sources (10%). Conversely, the coverage of the *USA Today* and *Los Angeles Times* represented the most balanced use of sources. While political elites were the leading sources in *Los Angeles Times* reports at 28% of all sources, 26% of sources were environmentalists. At the *USA Today,* 32% of sources were political elites, compared to 28% of sources environmentalists.

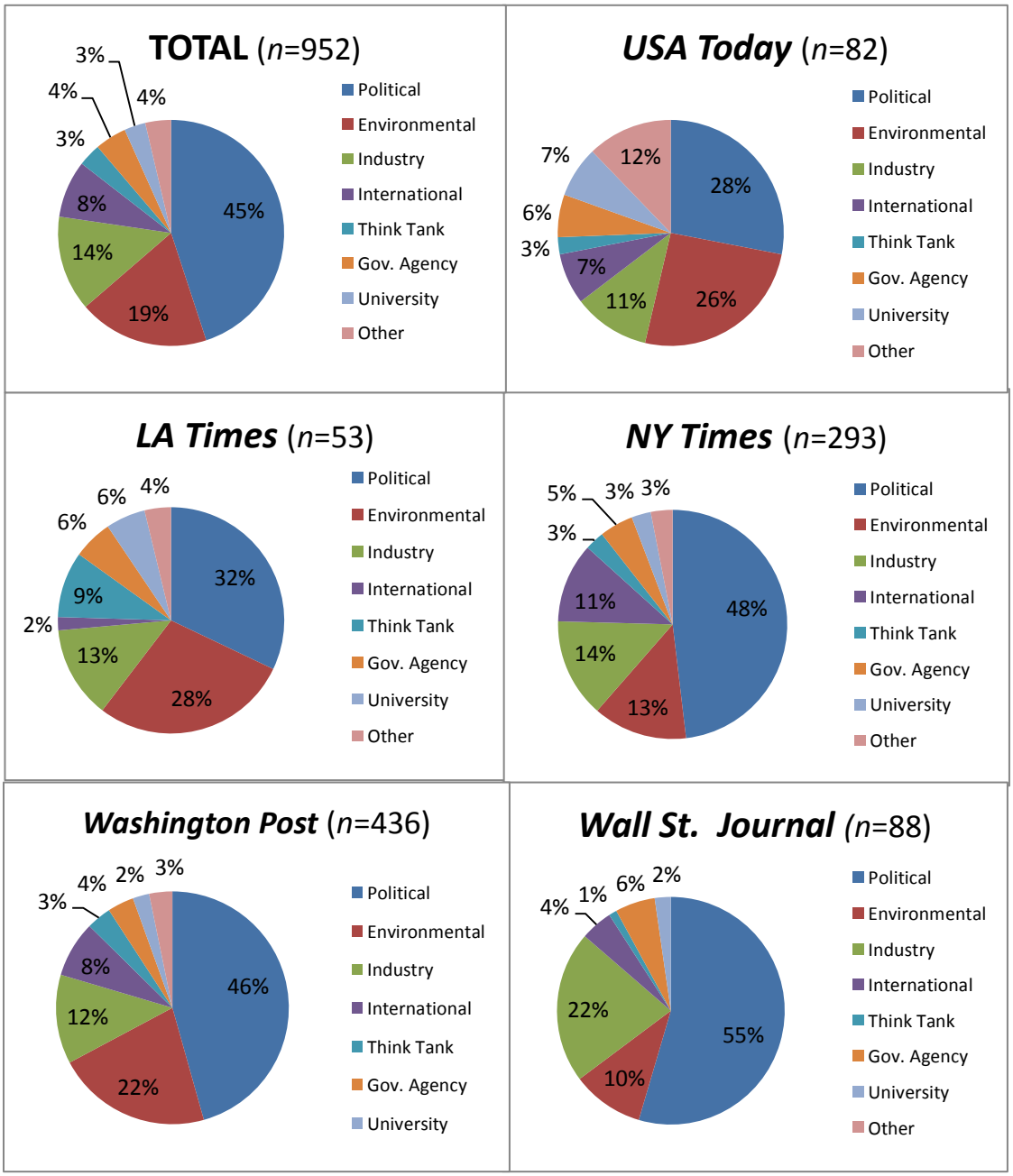

Figure 17 Sources in Articles by Newspaper

Sources Over Time

To determine if specific events informed or inspired the use of specific types of sources throughout the two-year period, the frequencies of sources per month were mapped for the two year-period of this study. Figure 18 below charts these findings, with a few of the high-profile

policy events that occurred during this period. The number of political sources in the news (mostly members of Congress) corresponds with the increased news coverage measured in H1. These events happened around a convergence of major policy events and milestones from May to June 2009 and from August to November 2009. As Figure 18 denotes, political elites were the major source for journalists during these periods. The decrease in overall coverage found in H1 is matched by the sharp decline of all sources in 2010.

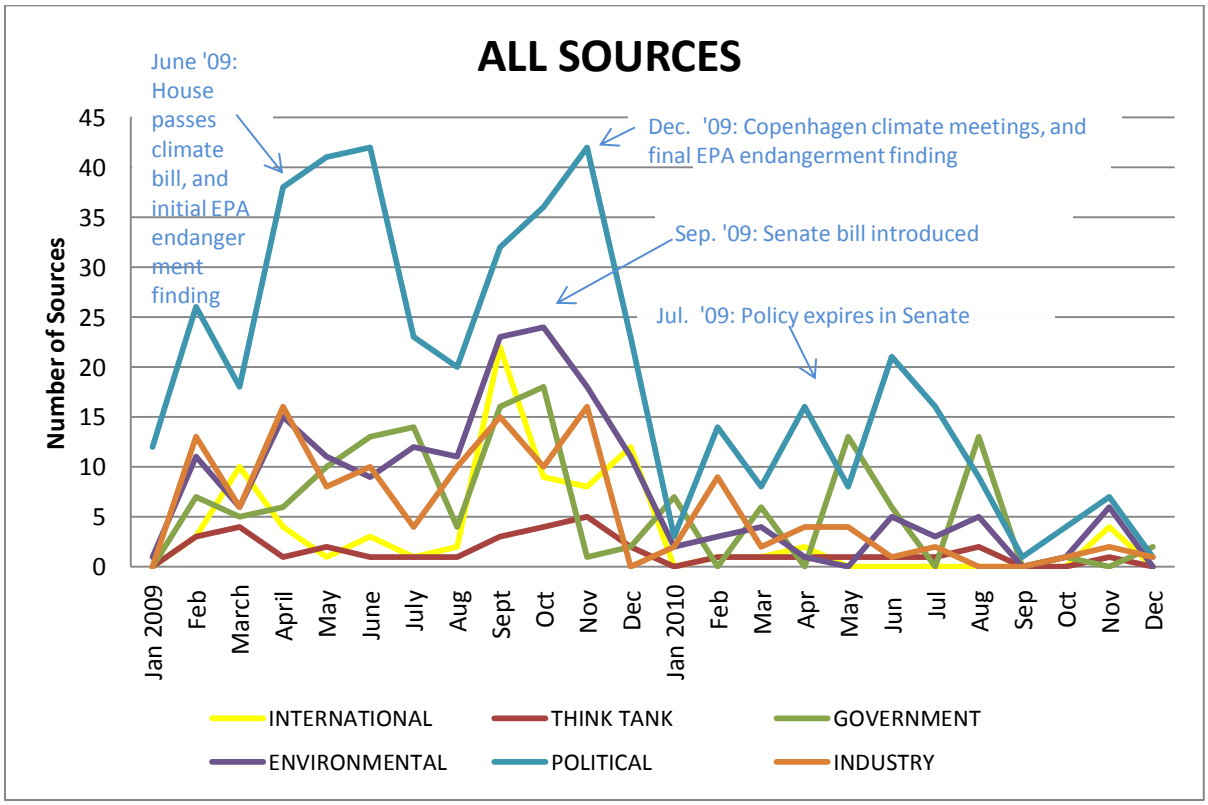

Figure 18 Sources by Month From 2009–2010

As previously noted, there were three periods during the two-year policy debate when significant developments shifted the debate. To measure if and how these shifts in the debate altered the way that journalists framed climate policy, the sources were also measured according to these periods. The House Debate (January 1, 2009–August 2009) represents the U.S. House

of Representatives' debate over and passage of policy; the Senate and International Debate (September 2009–July 2010) represents the introduction by the Senate of its version of climate legislation, as well as the concurrent international policy negotiations that took place in Copenhagen during this period; and the Policy-Policy Debate represents the discourse over climate policy immediately following the Senate's failure to take up the legislation (August 2010–December 2010. Table 1 below reports the descriptive findings on how the types of sources shifted according to each of these periods.

Table 1 *News Sources During in Three Periods of the Debate*

SOURCES	***n***	**ENTIRE DEBATE**	***n***	**HOUSE DEBATE**	***N***	**SENATE & INT'L. DEBATE**	***n***	**POST-POLICY DEBATE**
Energy	83	8%	32	8%	49	9%	2	**3%**
Industry	50	5%	22	5%	25	4%	3	5%
Enviro./Social	181	**17%**	65	**16%**	104	18%	12	**21%**
Think Tanks	36	3%	12	3%	21	4%	3	5%
Pres. Obama	40	4%	15	4%	22	4%	3	5%
Administration	50	**5%**	21	5%	27	5%	2	3%
House Republicans	32	3%	26	6%	3	1%	3	5%
House Democrats	85	**8%**	68	**16%**	15	3%	2	3%
Senate Republicans	81	**8%**	16	4%	62	**11%**	3	5%
Senate Democrats	95	**9%**	24	6%	70	**12%**	1	2%
Govt. Agency	51	5%	23	5%	23	4%	**5**	**9%**
International	85	8%	22	5%	59	**10%**	4	7%
Other	73	7%	26	6%	41	7%	6	10%
TOTAL	**942**	**100%**	**372**	**100%**	**521**	**100%**	**58**	**100%**

The figures and charts on the primary sources in climate-change policy news point to the dominance of political elites during all periods of the debate. For instance, during the House Debate Period, members outweighed all other sources by a significant margin, while Senators dominated the Senate and International debate, by a wide margin, also with a significant rise in

international political sources during this period. The data point to President Obama and his spokespersons, as playing only a minor role in the climate-change policy debate, however, representing 7–10% of sources in all periods. Although there was a rise in environmental sources during the Post-Policy Period, likely representing a discussion about next steps, political elites dominated even the Post-Policy Debate period, when no policy was being debated.

Multivariate Analyses of Sources

Multivariate tests found no statistically significant relationships between sources in articles and other variables.

H5 Discussion

The findings on the sources journalists use to report on and evaluate policy support the hypothesis that the types of sources in articles would be dominated by a few political and policymaking elites, and that few diverse voices, such as lay citizens or local elected officials, would be included. Of the 952 sources in news articles, 45% were elected officials, and with 98% of those being members of Congress or President Obama. Only 2% of all elected officials (n=12) were local or state elected officials. This type of reporting reflects conflict framing (Gamson & Modigliani, 1989; Nisbet, 2009), in which the public is likely perceive the issue as a back-and-forth framing and counter-framing of political elites, having little to do with everyday citizens or a debate over the full range of costs and benefits of policy (Brulle, 2012; Lakoff, 2010; Pooley, 2010). An example of the type of reporting on the narrow framing of political elite that marked much of the policy debate of newspapers is provided by the *Washington Post*, and Governor Granholm (D-MI), who said at the height of the House ACES debate in 2009: "The only thing that is going to get this passed in the United States is for real people to understand what this means to them—this is about jobs. They don't care so much about carbon

or greenhouse gases or carbon sequestration. They want to know: Is this going to be a job for them?" (Eilperin, 2009, p. A04).

Also, the complete omission of scientists in the reporting on climate-change policy is not insignificant, since scientists play a central role in translating and evaluating climate science-policy interactions (Rosenberg et al., 2010). For example, 90% of scientists surveyed by Rosenberg et al. (2010) supported market incentives to encourage industries to reduce greenhouse gas emissions; and develop renewable energy sources; 80% of scientists supported a tax on industry to reduce greenhouse gas emissions and higher prices for energy and carbon-intensive goods; while 71% support a carbon tax on carbon-intensive activities of citizens (Rosenberg et al., 2010).

4.2.8 Overall Framing of Climate-Policy

The final hypothesis seeks to determine overall newspaper framing of climate- change policy. Based on the literature and pilot study, this project hypothesized that overall framing of climate-change policy would be dominated by economic and political themes, while downplaying environmental, social justice and ethical dimensions. With regard to treatment recommendation or evaluation of policy, it was further hypothesized that reporting would focus on the costs and risks of policy, while ignoring whether it would be effective at its primary task of addressing climate change. Although these findings were determined individually in hypotheses one through five, the final hypothesis seeks to measure how these frame elements came together during the two-year policy debate and the three distinct policy periods as overall frames. Given what we know about public attitudes and media coverage of climate change, it was hypothesized that:

> ***H6:*** *Climate-change policy articles will be predominantly framed as an economic and political issue, lacking environmental and moral/ethical themes.*

The framing definition of Entman will be employed to measure and analyze frames, employing the empirically-driven methods established by Matthes and Kohring (2008). According to Entman, to frame is to "select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described" (1993, p. 52).

As noted in the literature review, one of the biggest threats to reliable framing analysis is the subjectively involved in defining and coding complex, abstract frames. This project sought to overcome these shortcomings through the empirically driven methods established by Matthes and Kohring (2008). Instead of predetermining possible frames and then measuring their presence/absence, frame elements are narrowly defined and coded and overall frames determined through statistical analysis. Using the framing analysis method established by Matthes and Kohring as a guide, the four elements of frames were operationalized as follows:

Problem definition. The problem definition is defined as the nature of the problem and the leading actors or sources in articles. According to Entman, the problem definition can be defined as "what a causal agent is doing with what costs and benefits" (1993, p. 52). Accordingly, for this project, problem definition is defined as variables dealing with the costs and benefits of policy, and the primary claims makers, or sources.

Causal attribution. Defines the cause of the problem. For this project causal attribution is defined as the causes of climate change. Accordingly, two variables were created to measure causal attribution in articles, and are greenhouse gas emissions and the major sources of emissions, such as power plants, cars, and countries. Since some debate existed in articles about the scientific reality of climate change, scientific skepticism variable was included under causal

attribution.

Treatment recommendation (Efficacy). Addresses the debate over the efficacy of policy, such as treatment for the problems and predicted outcomes (Entman, 1993, p. 52). Treatment recommendation variables were largely defined in H3, as variables dealing with the efficacy of policy. These measures include both explicit evaluations of policy, such as policy would be effective/ineffective, secondary evaluations, such as policy would be effective at goals other than addressing climate change, as well as variables dealing with predicted outcomes of policy.

Moral evaluation. Captures the ethical and moral dimensions of the climate-policy debate. Two variables capture these elements, and are explicit references to moral/ethical aspects of climate change and policy, and the impacts of climate change or consequences of inaction. The environmental impacts of climate change that have indirect if not direct moral/ethical implications include rising sea levels and melting polar ice caps due to rising temperatures.

Before bringing each of the four frame elements together to determine overall framing of climate-change policy, descriptive findings for each frame element are presented below.

Findings for Problem Definition

The descriptive findings for problem definition are reported in Table 2 below, with the dominant frame elements highlighted in red. These findings point to climate-change policy as being primarily defined as a problem of economic costs and risks throughout all periods of the two-year debate. These finding help contextualize H4 and H4a by situating the dominant costs and risks frames against other variables dealing with problem definition. As reported in Table 2 below, the economic costs/risks variable outweighed all other variables dealing with problem definition by a wide margin. Table 2 also reports a sharp rise in frame elements dealing with

international policy negotiations during the Senate & International policy period, pointing to reporters contextualizing the U.S. climate-policy debate with the global climate negotiations that occurred during this period in Copenhagen. Pointing to further support for the possibility that overall framing of climate-change policy is dominated by political and economic themes, political elites, such as members of Congress and President Obama, greatly outweighed other source types during all periods of the policy debate.

Table 2 *Reporting on the Problem Definition*

PROBLEM DEFINITION	ENTIRE DEBATE (*n*=393)	HOUSE DEBATE (*n*=173)	SENATE & INT'L. DEBATE (*n*=192)	POST-POLICY DEBATE (*n*=28)
RISKS OF POLICY				
Increased Costs/Econ. Harm	**221 (56%)**	**128 (74%)**	**80 (42%)**	**13 (46%)**
Minimal Costs	53 (13%)	33 (19%)	18 (9%)	2 (7%)
BENEFITS OF POLICY				
Address climate change	29 (7%)	9 (5%)	19 (10%)	1 (4%)
Funds to Gov't. or Citizens	24 (9%)	19 (17%)	4 (3%)	1 (4%)
Support International Policy	**108 (27%)**	36 (21%)	**67 (35%)**	**5 (18%)**
Support Renewables	75 (19%)	**45 (26%)**	27 (14%)	3 (11%)
Create Jobs/Econ. Growth	27 (7%)	15 (9%)	12 (6%)	0 (0%)
Energy Independence	24 (6%)	15 (9%)	9 (5%)	0 (0%)
CAUSAL AGENT/ACTOR				
Political Sources	**453 (45%)**	**200 (50%)**	**232 (42%)**	**21 (38%)**
Environmental/Social	181 (18%)	65 (16%)	104 (19%)	12 (21%)
Industry/Energy	133 (13%)	54 (13%)	74 (13%)	5 (9%)
International	85 (8%)	22 (5%)	59 (11%)	4 (7%)
Other	73 (7%)	26 (6%)	41 (7%)	6 (11%)
Think Tanks	36 (4%)	12 (3%)	21 (4%)	3 (5%)
Govt. Agency	51 (5%)	23 (6%)	23 (4%)	5 (9%)

When it comes to the benefits of policy, support for global treaty negotiations and renewable energy lead all other variables by a wide margin, while the notion that policy would help address climate change was one of the least-cited benefits.

Since frames are also noteworthy for what they leave out (Entman, 1993; Bennett, 1996; Iyengar, 1991; Kahneman & Tversky, 1984; Zaller, 1992), it is worthwhile to discuss the frame elements omitted by journalists. Not only are potential benefits central part of any policy debate since the majority Americans are concerned about climate change and support policy (Leiserowitz et al, 2009, 2010; Pew Research Center 2009, 2010, solutions to climate change

would be of interest to these readers.

Findings for Treatment Recommendation (Efficacy)

As reported in Table 3 below and the findings of H3, the inclusion of the evaluations of policy were rarely included in articles. Direct evaluations of policy as effective or ineffective at addressing climate change were included in a quarter or less of all articles, the debate over allowances and industry giveaways, given as much attention as direct evaluations of policy's effectiveness. In the context overall framing of climate-change policy, the absence of direct evaluations in more than 75% of newspaper coverage is significant, since citizens looking to newspapers for information on climate-change policy have little opportunity to evaluate the policy's effectiveness.

Table 3 *Media Reporting of Treatment (Efficacy) Recommendation*

TREATMENT RECOMMENDATION	**ENTIRE DEBATE** (*n*=393)	**HOUSE DEBATE** (*n*=173)	**SENATE & INT'L DEBATE** (*n*=192)	**POST-POLICY DEBATE** (*n*=28)
Would/would not address issue	81 (21%)	43 (25%)	**47 (24%)**	3 (11%)
Would/would not drive innovation	32 (8%)	15 (9%)	14 (7 %)	3 (11%)
Problematic provisions	44 (13%)	23 (17%)	20 (11%)	1 (4%)
Allowances/industry giveaways	**89 (23%)**	**56 (32%)**	32 (17%)	1 (4%)
Too complex	19 (5%)	11 (6%)	7 (4%)	1 (4%)

Findings on Causal Attribution Frame Element

As reported in Table 4 below, the causes of climate change were reported consistently in 36-42% of articles in all periods of the debate, while skeptical frames were included in 12% of articles.

Table 4 *Inclusion of the Causes of Climate Change*

CAUSAL ATTRIBUTION	ENTIRE DEBATE (*n*=393)	HOUSE DEBATE (*n*=173)	SENATE & INT'L DEBATE (*n*=192)	POST-POLICY DEBATE (*n*=28)
Causes of climate change	164 (42%)	70 (40%)	84 (44%)	10 (36%)
Scientific skepticism	49 (12%)	15 (9%)	27 (14%)	6 (21%)

Findings for Moral Implications of Policy

There are deep moral dimensions to the debate over how to address climate change, from severe to potentially catastrophic harms to ecosystems and biological diversity around the world, to the disproportionate impacts to the planet's poor and disadvantaged communities (IPCC, 1990; IPCC, 2007). Since the harms of climate change will greatly worsen with the status quo, and reductions must begin in the near future if catastrophic impacts are to be avoided (IPCC, 2007a), a robust debate over the moral and ethical dimensions of policy should be expected. Although these elements of the policy debate represent some of the most engaging and compelling reasons for action, they were almost entirely ignored by journalists. As reported in Table 5 below, elements dealing with explicit moral dimensions appeared in just 4% of all articles, representing 3% of news articles and 6% of opinion content.

Table 5 *Media Reporting on Moral Dimensions of Policy*

MORAL TREATMENT	ALL ARTICLES (*n*=393)	HOUSE DEBATE (*n*=173)	SENATE & INT'L DEBATE (*n*=192)	POST-POLICY DEBATE (*n*=28)
Impacts of climate change	130 (33%)	49 (28%)	64 (33%)	17 (61%)
Explicit ethical implications	16 (4%)	7 (4%)	8 (4%)	1 (4%)

Since the moral implication frame element has not been explored by a previous

hypothesis, an example found in text is given here. In this case, *The New York Times* columnist Paul Krugman wrote:

> Yet the deniers are choosing, willfully, to ignore that threat [climate change], placing future generations of Americans in grave danger, simply because it's in their political interest to pretend that there's nothing to worry about. If that's not betrayal, I don't know what is (Krugman, 2009, p. 21).

H6 Discussion

These findings support the hypothesis that newspapers would frame climate-change policy predominantly as an economic, political and contention frames issue. These frames involve politicians squabbling over the economic risks and benefits of policy. As noted in the literature review, framing scholar Matthew Nisbet (2009) identified eight generic framing typologies from existing scholarship (Gamson and Modigliani, 1989) that are applicable to climate-change debate. These frames range from "social progress" and "economic development and competiveness" to "public accountability" and "conflict and strategy." Two of these frames, economic development and competiveness, and conflict and strategy, are particularly relevant to the findings of H6, since a hybrid of these two are what defined newspaper framing of climate-change policy in this study. The economic development frame is roughly defined as dealing with economic costs, risks and benefits and competitiveness, while the conflict and strategy frame is defined as a "game among elites, such as who is winning or losing the debate, a battle of personalities, or groups, as interpreted by journalists. The economic and costs/risks frames and the inclusion of political sources greatly outstrip all other frame variables, these elements were highlighted in articles. These findings support the arguments and findings of several leading climate-change policy researchers. "The more research we do, the more I'm convinced that we are way overselling the risk and way underselling the ways we can pursue solutions," said Edward Maibach, a leading social researcher on climate change (Shelby, 2011). Eric Pooley

similarly found that reporters greatly overemphasized the risks of policy while completely omitting the costs of not taking action (Pooley, 2010).

The findings of H6 also suggest that the journalistic norm of balanced reporting is occurring in the debate over climate-change policy, around the issue of the economic costs/risks. For instance, Congressional Republicans and Democrats were leading claims makers in news articles, and these sources often used frames and counter-frames dealing with the economic implications of policy. Environmentalists, the third leading sources in articles represent an alternative framing of the issue, although even these sources were largely drawn from national environmental groups with narrowly defined talking points, often dealing with renewable energy and positive economic outcomes of climate-policy. Scholars have pointed to the negative impacts that highly contentious economic and political frames that are dominated by political elites have on excluding and disenfranchising the public in climate-change discourse (CRED, 2009; Hart and Nisbet, 2011; Lakoff, 2010; 2012; Shelby, 2011).

Media reporting of other critical aspects of the climate-change policy debate, such as the potential of policy to reduce greenhouse gas emissions or address climate change, the benefits of policy and its moral dimensions were largely ignored by newspaper reporters. (The inclusion of explicit moral implications of policy were included in just 3% of news articles and 6% of opinion.) For instance, the most frequently cited benefit of policy did not include the potential for reducing the impacts of climate change, but support for global treaty negotiations, included in 27% of articles. Although the impacts of climate change were often included in articles, these impacts were reported matter-of-factly, with few connections to their moral implications.

News Versus Opinion

Research on how climate change and climate-change policy are represented on the

opinion pages of newspapers has been a largely ignored topic to date. Therefore the findings of this project that a more engaging, nuanced and robust debate might be occurring in the opinion content of newspapers than on news pages is a surprising finding. When compared with news coverage, the opinion articles included significantly more references to and details about the efficacy of policy, the moral and ethical dimensions of policy, and the benefits of taking action, frame elements that were largely ignored by journalists reporting on the issue.

Newspaper Framing During Three Policy Periods

The shift from the House Debate to the Senate and International Debate period represented an 11% drop in frames dealing with the effectiveness of policy, a 15% drop in industry giveaway frames, and a 43% drop in costs/risks frames. Along with a with a rise in international policy frames and international sources, the Senate and International Debate represents a significant drop in debate over the merits of policy, signifying that media framing of domestic policy was influenced by the international treaty negotiations that were taking place in Copenhagen during this time.

4.3 Summary of Findings

By pointing to the importance of how media cover issues in shaping public discourse and understanding about national issues, agenda-setting and framing theories point to the findings of this report as one reason for failed public engagement in and understanding of climate-change policy. Even though climate change is an issue of national and global importance, and both policy solutions and a failure to act will affect all sectors of society, media coverage reflected a low priority issue. Not only did the issue rarely rise to front-page importance, coverage completely dropped off in 2010, relative to 2009. The framing analyses measures found coverage that failed to report on the full set of costs, risks and benefits of the policy debate. Not

only did most news accounts fail to report on the effectiveness of policy to address climate change (H3), possible benefits of policy, moral ethical themes or, the harms of doing nothing (H4). Instead, the issue was largely framed as economic and political issue (H6), in terms of its financial costs and risks (H4), using the narrow claims and counterclaims of political elites (H5). Rather, climate-change policy was predominately framed as an economic and political issue (H6), one primarily about financial costs and risks (H4), and the claims and counterclaims political elites (H5).

Several bright spots in newspaper coverage of climate change policy include the consistent reporting of the primary reason for policy in most articles (H2), and the robust, nuanced and engaging debate over policy that is occurring in opinion and commentary articles. By including opinion and commentary content in this analysis, it was revealed that a more robust, nuanced and engaging debate about climate change policy is occurring on the opinion commentary pages of newspapers than is being reported by news journalists.

CONCLUSION

Given the pressing nature of climate change and the need to begin making meaningful reductions to greenhouse gas emissions in the coming years (IPCC, 2007), one of the most important findings of this report is that media are failing to report on the efficacy of policy. As will be spelled out, for people to engage in climate change, it is critical that they know there are solutions to the issue, and that they can participate in these solutions. And what does it say of climate change as solvable, when even news coverage of policy solutions do not discuss whether it would be effective or not? The findings of this report on how media are reporting climate-change policy should be of interest to communication scholars, policymakers and advocates alike, since it contributes to the ongoing debate over how it can be communicated more

effectively, and thereby serve to engage citizens in the problem and its solution. The extensive social research on public knowledge and opinion about climate change and policy indicates that just the opposite is happening. The findings of this report point to several critical areas where media may be contributing to the problem through the way it is reporting climate change policy.

For example, H1 found that articles about climate-change policy may not be reaching the public at all, since it was rarely given prominent treatment (even during peak periods of the policy debate), or the type of consistent coverage needed to make the issue salient with the American public (Salwen, 1988). At the peak of the climate-change policy debate, when it was being hotly contested by the U.S. House of Representatives, three of the five newspapers of this study gave high-profile coverage to policy news only briefly before the House's historic passage of climate legislation in 2009. In 2010, when passage by the Senate was the only thing keeping it from becoming law, coverage completely dropped off altogether. Given this type of inconsistent and low-profile coverage, agenda setting theory would predict limited public knowledge of and engagement in climate-change policy

As for the types of messages the public received about the issue, this study supports the work of Pooley (2009, 2010), pointing to an overemphasis on the economic costs and risks of policy, and underreporting of its benefits and ethical implications, and the costs associated with doing nothing. While H3 found that reporting on the efficacy of policy to address climate change was virtually absent from news reports, H4 and H4a determined that reporting focused on the economic costs and risks of policy, and that these were frequently highlighted in articles. The messengers of these economic frames and counter frames were mostly political elites (H5). The diverse stakeholders of climate-change policy, such as laypersons, communities, local government officials, politicians and advocacy groups, were virtually absent from news reporting

on climate-change policy throughout the entire two-year debate (H5). The exclusion of the contributions of these voices, not only excludes citizens from actively engaging in public discourse (Entman, 2004), but diverse perspectives and framings. Even the expert opinions of scientists, who are critical sources in evaluating, contextualizing and translating complex science-policy interactions (Rosenberg et al, 2010), were left out of the policy debate.

H6 determined that the overall framing found of policy closely reflects the generic, *a priori* economic and conflict frames defined by Gamson & Modigliani (1989) and (Nisbet & Lowenstein (2002). These frames point to journalist interpretations of policy as political battles between elites and other groups over the economic dimensions of policy, while excluding other elements. Since frames are notable for what they omit as well, H6 reported an absence of the mortality and ethical dimensions, the costs of inaction, and the efficacy themes. According to scholars, these are some of the most powerful frames for generating public engagement and understanding of climate-change policy (CRED, 2009; Lakoff, 2010).

Lastly, there were several positive findings regarding media coverage of climate-change policy. Not only did journalists consistently report on the primary reason for policy, included in 66% of news articles and 54% of opinion content, this information was often featured in the leads of stories. This project hypothesized that these elements would be missing from the debate, since most Americans did not understand the primary reason for policy, or basic details about how it would work. Another bright spot in media coverage was the inclusion of the impacts of climate change, which were included in more than a third (33%) of all articles on policy.

Finally, this project provided a rare glimpse into how the opinion pages of newspapers are covering climate-change policy in contrast to news reporting. Surprisingly, it found that a

more robust, diverse and contextualized debate is occurring in the opinion-editorial pages of newspapers rather than in the news sections. Unlike news reports, opinion articles frequently included the true set of costs, risks, ethics and benefits of policy, as well as themes dealing with the efficacy debate and the implications of doing nothing.

In closing, how media frame climate-change policy is important to the ongoing climate-policy debate, since it not only is a primary source of information about this issue, but serves to define and interpret it for citizens. Behaviorists have found that when humans face a threat they either work to neutralize the danger, or to control their fear of it (Hart & Nisbet, 2011). The latter happens when there is no apparent way for individuals to deal with the issue directly, so individuals respond by changing their attitude about it by ignoring it or becoming skeptical. Thus if climate change is consistently portrayed as unsolvable or out of our hands to effectively deal with it, even citizens concerned about the matter, will eventually ignore it or change their attitudes about it. Meanwhile, important opportunities for engaging and informing citizens and taking action are lost. "People must believe this is a solvable problem," said Edward Maibach, a leading social researcher on climate change. "They have to believe this is not too big and beyond us. They have to understand that this is not just in God's hands … It is the risk information that tends to drive people away" (Shelby, 2011). In other words, what's the point of being alarmed or concerned about a problem that has no solution? There is evidence that meaningful action can be taken on climate change by governments, communities and citizens, using existing technologies, and that do not require enormous sacrifices or risks (Lovins, 2011; Nordhaus & Shellenberger, 2009; Pacala & Socolow, 2007; Pielke, Jr., 2010). However, based on the literature and findings of this report, these are the types of frames that are largely missing from media representations of climate change.

5.1 Limitations

Although the sample of articles drawn for this project closely matched the overall population of articles on climate-change policy, several subsamples, such as the number of articles by the *USA Today* (*n*= 27) and *Wall Street Journal* (n=54), were small, making for suggestive but not statistically significant findings about the coverage of these newspapers. Also, might be expected, the number of articles in the Post-Policy Debate period was also small (*n*=28).

The measures for the prominence of specific frame themes helped shed light on which aspects of the debate were downplayed or highlighted in articles, for a number of reasons, these measures are of limited value. For instance, there debate over whether the inverse pyramid scheme is still preferred reporting style by journalists (Scanlan, 2008). While the effects of leads in creating salience may be also limited, since researchers have found that some readers are highly selective in the articles they read, scanning newspapers for specific issues of interest and then reading those articles intensively (Poynter, 2007).

Due to time constraints, many of the differences between how news and opinion framed climate-change policy were not explored. For instance, the overall framing of policy between newspapers and opinion content (H6) was not measured.

Another limitation of this study was that the statements of sources were not coded directly. Although the type of source making the evaluations or statements often dictated the type of message (eg, pro-policy Democrats and environments and anti-policy Republicans and industry), this certainly was not always the case. Clarifying the messages of sources would have provided useful insights into the messages, frames and counter-frames used by their groups and their impacts. For instance, how did Democrats and national environmental groups frame climate-

change policy? Given the present debate by advocates over how climate policy should be reframed, understanding the messages that the pubic received from environmental groups would have contributed to this debate.

Lastly, by focusing exclusively on newspapers, this project excluded host of other relevant and influential sources of news and information about climate-change policy, such as radio, television and social media. For example, in a 2010 poll 66% of Americans named television is their main source of news (Pew Research Center for the People & the Press, 2010).

5.2 Recommendations

Given the dominance of political elites in media coverage of climate-change policy and the impact it has on narrow framing and counter-framing of the issue, a broader and more inclusive discourse is needed. For advocates, this means understanding the messages the public receives and ensuring they are more balanced by including diverse voices such as those of citizens, scientists, local government and elected officials. Further, the ongoing debate over how climate change should be reframed to create greater engagement and traction with the public, should be grounded in an understanding the primary messages the public is receiving about the issue, as well as their impacts on perception. Without this, simply reframing the issue as a renewable energy or energy independence issue is a matter of guesswork.

In order to bring about better coverage of climate-change policy, it is important for journalists to understand the limited framing of climate-change policy and the dominance of political elites in news reports that is taking place. Reporters must situate policy discourse within the much broader set of relevant costs, benefits, moral/ethical dimensions, and the impacts that frames have on audiences.

5.3 Suggestions for Future Research

Although there are no serious national or global climate negotiations being debated at the time of this writing, understanding how (and if) the solutions to climate change are being reported in stories about climate change is critical. Content analysis into media coverage of the solutions to climate change in the current political and policy landscape would clarify whether climate change is being reported as a growing problem out of the hands of citizens and governments to address, would help determine if media reporting is contributing to greater misinformation and disengagement in the ongoing climate change discourse.

Television and cable newscasts represent the most-watched and influential sources of news, a framing analysis of transcripts of these news sources would provide insight into the messages the public receives about climate change policy. It is likely that these news sources give climate-change policy completely different treatment than newspapers. Though this project presumed that most citizens get their national news from national news sources, local news sources undoubtedly play a role in national policy debates, and a study of metropolitan or local newspapers would help our understanding of how non-prestige press are covering climate change and policy interactions.

Given that there is evidence that social and independent media are an increasingly important source of news and information for Americans, understanding how these emerging media are framing climate change and policy would help clarify how they are contributing to the debate.

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Appendix A

U.S. Press Coverage of Climate-Change Policy 2009-2010
A Longitudinal Content Analysis

CODING SHEET

Version 11.17.11

I. Basic information

==========

V1 Coder _____ (*enter one in corresponding V1 column in codebook*)

Brian	1
Code2	2
Coder 3	3
Coder 4	4

==========

V2 Unique article number

Instructions: A unique article number will be assigned for each articled coded. This number should be entered as variable number two and on top of each corresponding article. This number will be generated by using the coders initials and ascending number starting with 1 (1BH, 2BH, etc.)

==========

V3 Newspaper [*circle one*]

Los Angeles Times	1
The New York Times	2
The Wall Street Journal	3
Washington Post	4
USA Today	5

==========

V4 Month, Day and Year of Article *(eg, 101109 for October 11, 2009)*_____

The day is coded as day is coded by numbers 1-31, months are represented by the corresponding numbers below from 1-12, while year is coded as 09 or 10 for 2009 or 2010.

January=1	May=5	September=9
February=2	June=6	October=10
March=3	July=7	November=11
April=4	August=8	December=12

==========

II. Newsworthiness

With these variables we are measuring the newsworthiness of articles about climate-change policy through tracking where stories appear in the newspaper.
==========

V5 Page number _____

Information not available 0

Instruction: This metric tracks page number only. This can be found next to the headings "Section" or "Publication title." In the event that newspaper page number includes letter and section information (for example (2A), include this information on line above.
==========

V6 Section of article _____

Instruction: This information is found under the "Section" heading at top of article printed article. This information is tracked in the "Section" column. If the newspaper section is not listed below, write name of section on the line next to "Other" below.

Not applicable	0
Business/Financial	1
Metro/Metropolitan	2
International	3
National	4
Science/Technology/Environment	5
Health	6
NEWS	7
Local news	8
Culture	9
Opinion/Commentary	10
EDITORIAL	11
Other *(if letter is used for section, enter here)*_____	12

==========

V7 Staff reporter or newswire service _____

Instruction: This variable tracks whether the article was written by a staff reporter of the newspaper or by a newswire service, such as Associated Pres.

Not applicable/unknown	0
Staff reporter	1
Associated Press	2
Reuters	3
United Press International	4
Other (*list here*) _____	5

==========

V8 Word count of article _____

Instruction: This information is found next to the "Length" column heading at top of article.
==========

V9 Graphic item _____

Instruction: This variable measures if any graphic items, such as a chart or photograph, accompanied the article. This is tracked by the "GRAPHIC" column at the end of the story. Below is a list of possible graphics to code for. Enter the type of graphic/photo if a description is given.

None	0	
Not applicable/unknown		1
Image/photograph		2
Chart/table	3	
Other (*list here)*_____	4	

==========

III. Frame Themes

Main Themes of articles. Please code for the presence/absence of each variable below, and where in article the theme appears. To break articles into thirds, divide the number of paragraphs by three, and if there is an uneven number of paragraphs add additional paragraphs to the Last Third and Second Third first. DO NOT CODE TEXT THAT DOES NOT DEAL DIRECTLY WITH CLIMATE CHANGE OR CLIMATE-CHANGE POLICY, or text for which there are no existing variables.

Themes have to deal EXPLICITLY with climate being studied and NOT with text dealing with an ideal bill, what policymakers or industry want to see, alternative solutions to addressing climate change, or pros/cons of EPAs endangerment finding.

For editorials: DO NOT CODE what writer says **COULD/SHOULD** happen or be the case. Code only what writer says **IS or WOULD** be the case if policy is passed.

A. PRIMARY REASONS FOR POLICY THEMES

These measures account for the PRIMARY reasons policy was crafted and debated (eg, reducing greenhouse gas emissions, tackling climate change, helping transition to clean/renewable energy (which would reduce greenhouse gas emissions/help tackle climate change). EXCLUDED are the secondary benefits of policy that might be realized by but aren't the PRIMARY reason for policy (eg, job creation, energy independence).

Variable		Headline	First Third	2nd Third	Last Third
V10a-d	mentions PURPOSE or REASON for policy. (eg, reduce GHG emissions, tackle climate change). Variable deals **ONLY** with **PRIMARY PURPOSE/GOALS** of bill (See Section B for effectiveness/efficacy.) **MUST INCLUDE DETAILS**, & not simply refer to 'global warming legislation.' ***LIST PURPOSES here*****_____.**				
V11a-d	bill is part of **INTERNATIONAL POLICY** effort, includes references to European Union or international support				
V12a-d	would support **GROWTH OF RENEWABLE ENERGY** (incl. govt. funding for renewable energy projects or research and development (R&D). **LIST RENEWABLE ENERGY MENTIONED HERE_____.**				
V13a-d	EXPLICIT reference to the **ETHICAL or MORAL** dimensions of climate change and policy (eg, human rights, impacts to **POOR**, future generations, loss of life). **LIST HERE**_____.				

B. CAUSES & IMPACTS OF CLIMATE CHANGE THEMES

Variable		Headline	First Third	2nd Third	Last Third
V14a-d	**EXPLICITLY/FACTUALY** mentions CAUSES OF CLIMATE CHANGE (includes GHG, industries/emitters of GHG and references to, industries, and nations). ***LIST CAUSES OF CLIMATE CHANGE here***_____.				
V15a-d	presents SCIENTIFIC DATA/NUMBERS or REPORT (incl. reports **FINDINGS** by scientific bodies, and other second-hand references about climate change or needed GHG reductions). ***LIST DATA/FINDING cited here*****_____.**				
V16a-d	mentions **IMPACTS** of climate change to ENVIRONMENT (Includes 'DIRE' or 'severe' CONSEQUENCES, sense of URGENCY in taking action, environmental/social benefits of policy, sea rise, coastal flooding, loss of plants/animals, and **COSTS OF INACTION**). ***LIST IMPACTS and their TIMING HERE*** _____.				
V17a-d	UNCERTAINTY, DOUBT or CONTROVERSY over the SCIENCE of climate change. ***LIST TYPE OF CONTROVERSY AND WHO IS RAISING DOUBT here***_____.				

C. EFFECTIVENESS OF POLICY THEMES

Variable		Headline	First Third	2nd Third	Last Third
V18a-d	policy would be EFFECTIVE in REDUCING, LIMITING or CAPPING GHG or ADDRESSING climate change. ***LIST REASONS POLICY WOULD BE EFFECTIVE HERE*** (eg, avoid impacts of climate change, or move to sustainable renewable energy economy) _____.				
V19a-d	policy is or would be **INEFFECTIVE** at addressing CLIMATE CHANGE or REDUCING GHG. Limit this variable to ONLY these variables. Includes LEAVES OUT OTHER COUNTRIES, deeper cuts needed or reduces energy independence). ***LIST REASONS HERE_____.***				
V20a-d	questionable or PROBLEMATIC REGULATIONS or OVERSIGHT (includes problems with **oversight** regarding ALLOWANCES and OFFSETS). ***LIST ISSUE HERE_____.***				
V21a-d	higher costs of policy would SPUR INNOVATION in reducing GHG or energy use (eg, FORCE companies to find the least expense ways to reduce GHG).				
V22a-d	policy would **NOT** BE RAISED ENOUGH TO MAKE A DIFFERENCE, SPUR INNOVATION or FORCE NEW BEHAVIORS (Incl. would support coal/oil/gas status quo.)				

D. COSTS, BENEFITS & PROBLEMS OF POLICY THEMES

Variable		Headline	First Third	2nd Third	Last Third
V23a-d	policy would lead to HIGHER ENERGY COSTS, or is a 'de facto' ENERGY TAX (incl. higher cost of emissions. ***LIST AMOUNT of INCREASE*** _____, for whom _____and when_____.				
V24a-d	INCREASED **COSTS** would be **MINIMAL** or **NEGLIGIBLE**. LIST AMOUNT OR RELEVANT DETAILS HERE**_____.**				
V25a-d	would give 'PAYOFFS' to industry or provide **GIVEWAYS** to POLLUTERS, including WINDFALL **PROFITS, FREE ALLOWANCES** (Note: this deals just with **non-neutral financial aspects**, such as straightforward 'issuing of free allowances' statements . LIST DETAILS HERE_____.				
V26a-d	policy would generate FUNDS FOR GOVERNMENT, HELP ECONOMY, INDUSTRY or DEVELOPING COUNTRIES. Includes money for clean coal technology, carbon capture & sequestration (CCS). LIST AMOUNT OF FUNDING _____FOR WHOM_____ & WHEN_____.				

V27a-d	bill is COMPLEX, COMPLICATED or UNWIELDY (eg, 'complex web' of mandates, subsidies, regulations).				
V28a-d	policy would be **TOO COSTLY**, **KILL JOBS, HARM ECONOMY or INDUSTRY** or put it at **COMPETITIVE DISADVANTAGE**. Includes INEQUITABLE DISTRIBUTION of costs to corporations, industries, regions, or groups/individuals. INCLUDE DETAILS HERE_____.				
V29a-d	**OTHER.** If another theme re costs, benefits or problems, include details here_____.				

==========

V30 ARTICLE IS **PRIMARILY** ABOUT_____**.** This variable captures in a few words what the article is *primarily* about, such as specific aspect of climate-policy debate (eg, allowances, offsets or financial impacts of policy). Hint: the abstract/summary section and headlines/leads often summarize what the article is primarily about.

==========

IV. Sources

V31 Type of Actors. Only code statements that deal with climate change or policy. Code for either quoted or paraphrased content. Statements of sources is often denoted by "said," "says," "saying," "pointed out," "accused," "noted" or "cited" and accompanied by a statement or evaluation. For instance, Sen. Kerry said ACES would reduce ghg."

A. public sector

citizen/lay opinion _____ 1
judicial or legal voice_____ 2
economist_____ 3
religious organization_____ 4
scientist or scientific group_____ 5
labor unions/consumer group_____ 6
the public, public opinion (also: "we," "one") _____ 7

B. industry/corporations

energy/petroleum trade association or lobbyist or lobbying group_____ 8
corporation, industry group or lobbyist_____ 9
corporate/industry scientist_____ 10
oil/gas company or refiner _____ 11
coal company 12
electric utility/energy/nuclear energy 13
automobile industry_____ 14
renewable energy sector_____ 15

C. advocacy groups

ENVIRONMENTAL organization, environmentalist or foundation _____ 16
clean energy group _____ 17
U.S. Climate Action Partnership (USCAP) _____ 18
American Petroleum Institute _____ 19
U.S Chamber of Commerce_____ 20
CONSERVATIVE or LIBERTARIAN think tank/policy group _____ 21

LIBERAL think tank/policy group _____ 22
SOCIAL or public health group _____ 23
agriculture/farming _____ 24
generic reference to 'ADVOCATES' 25
generic reference to 'OPPONENTS' 26

D. U.S. elected official
local/state elected or official 27
Al Gore _____ 28
US **Senator(s)** – REPUBLICAN _____ 29
US **Senator(s)** – DEMOCRAT _____ 30
US Senator - INDEPENDENT_____ 31
US House of Representatives/**CONGRESSMAN** – REPUBLICAN _____ 32
US House of Representatives/**CONGRESSMAN** – DEMOCRAT _____ 33
US House of Representatives/**CONGRESSMAN** - INDPENDENT____ 34
US President/OBAMA/Administration official _____ 35
state governor_____ 36
US Congressional COMMITTEE____ 37
Republican(s)/GOP _____ 38
Democrat(s)/Liberals _____ 39

E. government agency
Environmental Protection Agency (EPA) _____ 40
Congressional Budgetary Office (CBO) _____ 41
Department of Energy (DOE) 42
Agricultural (USDA) 43
other agency (*name here*)_____ 44

F. university
academic/professor *(incl. scientists, economists, univ. research)*_____ 45

G. international
International or elected European Union _____ 46
United Nations or IPCC (Intergov. Panel on Climate Change)_____ 47
other international organization/figure_____ 48

H. other (*list here*)_____ 49
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V32 Source of OPED (use V31) _____.

Appendix B
Scott's Pi Reliability Scores
By Variable and Category

N columns	248
N variables	124
N coders per var	2

BASIC INFORMATION	Percent Agreement	Scott's Pi	*N* Agreements	*N* Disagreements	*N* Cases	*N* Decisions
Variable 1	100	1.0	42.0	0.0	42.0	84.0
Variable 2	100	1.0	42.0	0.0	42.0	84.0
Variable 3	100	1.0	42.0	0.0	42.0	84.0
Variable 4	98	0.8	41.0	1.0	42.0	84.0
		0.95				

NEWSWORTHINESS	Percent Agreement	Scott's Pi	*N* Agreements	*N* Disagreements	*N* Cases	*N* Decisions
Variable 5	95	0.6	40.0	2.0	42.0	84.0
Variable 6	100	1.0	42.0	0.0	42.0	84.0
Variable 7	100	1.0	42.0	0.0	42.0	84.0
Variable 8	100	1.0	42.0	0.0	42.0	84.0
Variable 9	100	1.0	42.0	0.0	42.0	84.0
		0.92				

FRAME VARIABLES	Percent Agreement	Scott's Pi	*N* Agreements	*N* Disagreements	*N* Cases	*N* Decisions
Variable 10	100	1.0	42.0	0.0	42.0	84.0
Variable 11	95	0.6	40.0	2.0	42.0	84.0
Variable 12	100	1.0	42.0	0.0	42.0	84.0
Variable 13	100	1.0	42.0	0.0	42.0	84.0
Variable 14	100	1.0	42.0	0.0	42.0	84.0
Variable 15	100	1.0	42.0	0.0	42.0	84.0
Variable 16	100	1.0	42.0	0.0	42.0	84.0
Variable 17	98	0.8	41.0	1.0	42.0	84.0
Variable 18	98	0.8	41.0	1.0	42.0	84.0
Variable 19	100	1.0	42.0	0.0	42.0	84.0

Appendix B

Reliability Findings by Variable and Category

Variable 20	[illegible]	[illegible]	[illegible]	[illegible]	42.0	84.0
Variable 21	100	0.8	41.0	1.0	42.0	84.0
Variable 22	100	0.8	41.0	1.0	42.0	84.0
Variable 23	100	1.0	42.0	0.0	42.0	84.0
Variable 24	100	1.0	42.0	0.0	42.0	84.0
Variable 25	95	0.8	40.0	2.0	42.0	84.0
Variable 26	95	0.8	40.0	2.0	42.0	84.0
Variable 27	100	1.0	42.0	0.0	42.0	84.0
Variable 28	100	1.0	42.0	0.0	42.0	84.0
Variable 29	100	1.0	42.0	0.0	42.0	84.0
Variable 30	100	1.0	42.0	0.0	42.0	84.0
Variable 31	90	0.4	38.0	4.0	42.0	84.0
Variable 32	98	0.0	41.0	1.0	42.0	84.0
Variable 33	100	1.0	42.0	0.0	42.0	84.0
Variable 34	100	1.0	42.0	0.0	42.0	84.0
Variable 35	95	0.8	40.0	2.0	42.0	84.0
Variable 36	90	0.6	38.0	4.0	42.0	84.0
Variable 37	95	0.5	40.0	2.0	42.0	84.0
Variable 38	100	1.0	42.0	0.0	42.0	84.0
Variable 39	100	1.0	42.0	0.0	42.0	84.0
Variable 40	98	0.8	41.0	1.0	42.0	84.0
Variable 41	100	1.0	42.0	0.0	42.0	84.0
Variable 42	100	1.0	42.0	0.0	42.0	84.0
Variable 43	100	1.0	42.0	0.0	42.0	84.0
Variable 44	100	1.0	42.0	0.0	42.0	84.0
Variable 45	95	0.0	40.0	2.0	42.0	84.0
Variable 46	100	1.0	42.0	0.0	42.0	84.0
Variable 47	95	0.8	40.0	2.0	42.0	84.0
Variable 48	100	1.0	42.0	0.0	42.0	84.0
Variable 49	100	1.0	42.0	0.0	42.0	84.0
Variable 50	100	1.0	42.0	0.0	42.0	84.0
Variable 51	100	1.0	42.0	0.0	42.0	84.0
Variable 52	98	0.8	41.0	1.0	42.0	84.0
Variable 53	100	1.0	42.0	0.0	42.0	84.0
Variable 54	100	1.0	42.0	0.0	42.0	84.0
Variable 55	100	1.0	42.0	0.0	42.0	84.0
Variable 56	90	0.7	38.0	4.0	42.0	84.0
Variable 57	93	0.8	39.0	3.0	42.0	84.0
Variable 58	93	0.7	39.0	3.0	42.0	84.0
Variable 59	100	1.0	42.0	0.0	42.0	84.0
Variable 60	100	1.0	42.0	0.0	42.0	84.0
Variable 61	100	1.0	42.0	0.0	42.0	84.0

Appendix B

Reliability Findings by Variable and Category

Variable 62	95	0.8	40.0	2.0	42.0	84.0
Variable 63	100	1.0	42.0	0.0	42.0	84.0
Variable 64	95	0.8	40.0	2.0	42.0	84.0
Variable 65	90	-0.1	38.0	4.0	42.0	84.0
Variable 66	95	0.0	40.0	2.0	42.0	84.0
Variable 67	100	1.0	42.0	0.0	42.0	84.0
Variable 68	98	0.8	41.0	1.0	42.0	84.0
Variable 69	86	0.6	36.0	6.0	42.0	84.0
Variable 70	100	1.0	42.0	0.0	42.0	84.0
Variable 71	98	0.0	41.0	1.0	42.0	84.0
Variable 72	100	1.0	42.0	0.0	42.0	84.0
Variable 73	98	0.8	41.0	1.0	42.0	84.0
Variable 74	100	1.0	42.0	0.0	42.0	84.0
Variable 75	100	1.0	42.0	0.0	42.0	84.0
Variable 76	98	0.9	41.0	1.0	42.0	84.0
Variable 77	100	1.0	42.0	0.0	42.0	84.0
Variable 78	100	0.8	40.0	2.0	42.0	84.0
Variable 79	100	1.0	42.0	0.0	42.0	84.0
Variable 80	100	1.0	42.0	0.0	42.0	84.0
Variable 81	100	1.0	42.0	0.0	42.0	84.0
Variable 82	100	0.8	40.0	2.0	42.0	84.0
Variable 83	100	1.0	42.0	0.0	42.0	84.0
Variable 84	95	0.6	40.0	2.0	42.0	84.0
Variable 85	100	1.0	42.0	0.0	42.0	84.0
Variable 86	100	1.0	42.0	0.0	42.0	84.0
Variable 87	95	0.6	40.0	2.0	42.0	84.0
		0.84				

SOURCE VARIABLES	Percent Agreement	Scott's Pi	*N* Agreements	*N* Disagreements	*N* Cases	*N* Decisions
Variable 88	98	0.0	41.0	1.0	42.0	84.0
Variable 89	100	0.8	42.0	0.0	42.0	84.0
Variable 90	100	1.0	42.0	0.0	42.0	84.0
Variable 91	100	1.0	42.0	0.0	42.0	84.0
Variable 92	100	1.0	42.0	0.0	42.0	84.0
Variable 93	95	0.8	40.0	2.0	42.0	84.0
Variable 94	100	1.0	42.0	0.0	42.0	84.0
Variable 95	98	0.0	41.0	1.0	42.0	84.0
Variable 96	100	1.0	42.0	0.0	42.0	84.0
Variable 97	98	0.7	41.0	1.0	42.0	84.0
Variable 98	100	1.0	42.0	0.0	42.0	84.0

Appendix B

Reliability Findings by Variable and Category

Variable 99					.0	84.0
Variable 100	95	0.8	40.0	2.0	42.0	84.0
Variable 101	95	0.0	40.0	2.0	42.0	84.0
Variable 102	98	0.8	41.0	1.0	42.0	84.0
Variable 103	100	1.0	42.0	0.0	42.0	84.0
Variable 104	100	1.0	42.0	0.0	42.0	84.0
Variable 105	100	1.0	42.0	0.0	42.0	84.0
Variable 106	100	1.0	42.0	0.0	42.0	84.0
Variable 107	100	1.0	42.0	0.0	42.0	84.0
Variable 108	95	0.9	40.0	2.0	42.0	84.0
Variable 109	100	1.0	42.0	0.0	42.0	84.0
Variable 110	100	1.0	42.0	0.0	42.0	84.0
Variable 111	95	0.9	40.0	2.0	42.0	84.0
Variable 112	95	0.9	40.0	2.0	42.0	84.0
Variable 113	100	1.0	42.0	0.0	42.0	84.0
Variable 114	100	1.0	42.0	0.0	42.0	84.0
Variable 115	100	1.0	42.0	0.0	42.0	84.0
Variable 116	100	1.0	42.0	0.0	42.0	84.0
Variable 117	100	1.0	42.0	0.0	42.0	84.0
Variable 118	98	0.8	41.0	1.0	42.0	84.0
Variable 119	100	1.0	42.0	0.0	42.0	84.0
Variable 120	100	0.8	42.0	0.0	42.0	84.0
Variable 121	100	1.0	42.0	0.0	42.0	84.0
Variable 122	100	1.0	42.0	0.0	42.0	84.0
Variable 123	100	1.0	42.0	0.0	42.0	84.0
Variable 124	100	1.0	42.0	0.0	42.0	84.0
		0.88				