Product of our Environment: The Effect of Institutions on the Use of Voting Heuristics

Nicholas D'Amico
Ph.D. candidate
Indiana University, Bloomington

Abstract:

The use of heuristics, or decision shortcuts, among voters has become the new common wisdom for how individuals compensate for a lack of information when voting. However, current research into political decision making has failed to provide adequate explanations for how individuals choose which heuristics they use when they vote. I theorize that three national level political institutions (the electoral, party, and governance systems) influence what heuristics individuals decide to use. By altering the organization of and relationship between political information, these institutions shape individual behavior.

This paper seeks to make two different contributions. First, it identifies and tests the importance of three institutions that have been understudied in relation to heuristics. While scholars know these institutions exert a powerful influence over the behavior of individuals, their study in American politics has been limited. Second, it builds and tests a theory of why an individual chooses one heuristic over another. Current research on heuristics primes subjects to use one heuristic or another, leading to an inability to examine the processes by which individuals choose one heuristic over another.

To test this theory, I use both experimental and survey data. The experimental design traces the decision making process of individual subjects using the Dynamic Process Tracing Environment (DPTE) of Lau and Redlawsk. In the study subjects participate in a simulated election campaign. During the study they interact with a scrolling information board that lists multiple pieces of information about constructed political candidates and parties that can be used to make the electoral decision. The variation in each of these experiments is the political institutions individuals are primed for in their experimental session. The DPTE makes it possible to identify the specific information items individuals leverage in their decision making, making it possible to categorize the types of voting heuristics subjects use. In order to compensate for potential problems of external validity with the experiment, the results are then confirmed with cross country survey analysis of five countries (United States, United Kingdom, Canada, Spain, and Italy).

Introduction

There is a consensus that individuals have little knowledge and interest in U.S. politics (Converse 1964; Delli Carpini and Keeter 1997). As a result, voters rely on numerous *heuristics*, or decision making shortcuts, to compensate for a lack of information when voting (Sniderman et al. 1991; Lupia 1994, 1992). However, current research into political decision making has failed to provide an adequate explanation for why individuals use any one heuristic over another one. **The specific aim of this paper is to examine how one understudied factor, national level political institutions, influences the use of voting heuristics in democratic elections.** By altering the way individuals think about and organize political information, institutions can shape individual behavior. In particular, I examine how electoral systems, party systems, and governance systems, can change the type of information that citizens will rely upon when voting, and thus the heuristics they use.

To test this theory, I analyze both experimental and cross-country survey data. Both methods have key advantages but also weaknesses. The experimental design can accurately identify heuristic use but has limited external validity. The survey analysis is very generalizable, but faces larger challenges in measuring heuristic use. By showing the consistency of results across methods, I demonstrate that my theory can be extrapolated into a real world setting.

The experimental design traces the decision making process of an online sample of U.S. subjects. The experimental data is generated using the Dynamic Process Tracing Environment (DPTE) developed by Lau and Redlawsk (2006). This design asks individuals to vote in a simulated election campaign. Subjects interact with a scrolling information board that lists multiple pieces of information about candidates and parties, with subjects making a vote choice at the end. The experiment manipulates the political institutions that define the context of the

voting decision and then measures how these different contexts alter the collection and use of political information and heuristics. The survey data analysis combines individual level data on voting behavior across five different advanced industrial democracies: the United States, the United Kingdom, Canada, Italy, and Spain. Using a simple OLS model, I estimate the effect of different institutions on heuristic use.

The connection between behavior and institutions, or the decision making environment more broadly, is not a novel idea (Simon 1990; Lupia et al. 2000). But, national level institutions such as party or electoral systems have been absent from empirical analysis despite suggestions of their importance for voting behavior (Gordon and Segura 1997; Sniderman 2000). As Sniderman himself explains, scholars are still unsure which institutions are important and how they are important for organizing political information. These gaps are where this work seeks to make a contribution. First, it provides an environmental explanation for why individuals use certain heuristics. Such theories and empirical tests of them have been lacking in the current heuristics literature, particularly concerning these institutions. Understanding patterns of heuristic use is also a crucial step in determining the overall value of heuristic voting. Studies have shown that heuristics can help voters make decisions (Lupia 1994; Boudreau 2009), but voters might be driven by the decision environment to use completely different heuristics. Evidence that some heuristics are helpful would be irrelevant, if voters don't actually use them in the real world.

Going forward, this paper will briefly explain the current literature on heuristics as well as the theory I use to connect them with institutions. Then I discuss in turn, the experimental design and results and survey data and results. I end with a discussion of the overall conclusions that can be derived from these two tests and its implications for future research.

Heuristic Decision Making and Institutions: Previous work

Decision making broadly involves individuals choosing a course of action in order to achieve a particular end result. Individuals will collect information about the different alternative actions, and select the alternative that best achieves their goals. Heuristic decision making is simply one type of decision strategy among many others. According to Kuklinski and Quirk (2000), a heuristic is a mental shortcut that requires little information. Lau and Redlawsk (2006) refer to heuristics as a type of problem solving strategy that helps to keep the information processing demands of the task within bounds by investigating less than the complete world of information demanded by rational searches. For the purposes of this paper, I consider voting heuristics to be a decision making strategy that simplifies the voter's task by ignoring part of the available information while more heavily weighting other pieces of information.

Theories of heuristic decision making emerged in political science as a response to findings of ignorant and uninformed individual opinions (Converse 1964; Zaller 1992; Delli Carpini and Keeter 1996). Scholars argued that these low levels of information did not cripple democratic politics, but rather that individuals could use decision shortcuts to behave as if they were better informed (Sniderman, Brody, and Tetlock 1991; Popkin 1994; Lupia 1994; Lupia and McCubbins 1998). In the past decade, these theories have been further elaborated following criticisms that heuristics failed to allow the less knowledgeable to make good decisions or that heuristics required significant amounts of political information to use effectively (Bartels 1996; Althaus 1998; Luskin 2000). One way scholars responded to these critiques was to introduce external, environmental factors into what had been primarily internal, cognitive theories. This followed from Simon's work which argued that human rationality could only be understood as

the dual product of both the task environment and the capabilities of the individual themselves (Simon 1990). These external elements could help with much of the grunt work of organizing and processing information for individuals, allowing heuristic decision making to still work. The external elements included a variety of decision contexts with an emphasis on institutions and institutional characteristics. Examples included institutions which increase penalties to the media and public figures for deception (Lupia and McCubbins 2000) or how two party politics tends to narrow political choices from a large set to two different fixed options (Sniderman 2000).

Unfortunately, despite the potential of institutions as an explanatory factor for heuristic decision making, there has been little further inquiry into institutions and heuristics in the past decade. One of the exceptions is Boudreau (2008), who extends Lupia and McCubbins's (1998) experiments on heuristics. Boudreau demonstrates that when certain institutions were present, using an endorsement heuristic could prove very useful to individuals at all levels of sophistication. But Boudreau's focus is on the effectiveness of the shortcut, missing the potential importance of institutions to influence the use of some heuristics. The finding that a heuristic works well in a particular institutional setting becomes trivialized if the decision environment moves individuals to use another, less helpful heuristic. Studying the process of heuristic selection is thus an important part of the puzzle in determining the overall efficacy of using heuristics to vote.

The Influence of Institutions on Heuristic Use

When making a voting decision, citizens face a large and varied amount of political information that can be used to assist them in their task. The information voters consume and the way they think about this information has a large influence on their final decision. Any factors that alter the organization of this information, such as institutions, will therefore be important in

determining what decision strategy an individual chooses and how effective that strategy will be. When institutions alter the organization of information that is relevant to a particular heuristic, individuals could be led to rely on such a heuristic and its information more.

This process happens through three causal mechanisms: the ease of processing information, the accessibility of information, and the connection between pieces of information. Considering the first mechanism, research has demonstrated that individuals limit the strain on their cognitive processing abilities as much as possible. Thus, when institutions make information easier to understand, voters will be more likely to rely on that information and use it effectively. The second mechanism is the accessibility of information cues. Scholars know that individual behavior can be influenced by the information that is emphasized. An example of this effect has been from research on periods of intense policy debates or campaigning (Classen and Highton 2006; Jerit et al. 2006; McClurg and Holbrook 2009). This research demonstrated that citizens become more knowledgeable about policy issues when those issues are heavily debated and that instances of intense campaign activity alter voting behavior of citizens. The issues emphasized in these intense campaigns tend to have an increased value for predicting voter behavior. Thus, when institutions emphasize certain pieces of information, individuals will rely more on this information when making a decision.

The final mechanism is the connection between information cues. When voters can identify the connection and redundancy between different pieces of information, they will be likely to constrain their information searches. Rather than searching for two pieces of information, individuals can instead search for one and extrapolate the values of the other, thus utilizing heuristic search strategies. For example, Arceneaux (2007) examines the predictive power of partisanship for voting, conditioned on the connection between party and policy

information cues. When candidates take positions consistent with a party ideology, he finds a very strong effect of partisanship on vote choice. When candidates take non-stereotypic positions however, individuals will consider partisanship in addition to the actual policy stances of candidates. Voters could not make connections between different information cues and were forced to expand their information searches. When institutions emphasize the relationship between information cues, individuals are more likely to recognize and utilize these cues.

Voting Heuristics examined

The list of heuristics that could possibly be studied is long, but I limit the analysis to three voting heuristics which have seen particular prominence in the literature. First are ideological heuristics, where individuals vote for the candidates or parties that share the ideological leaning of the voter (Kuklinski and Hurley 1994; Nicholson 2005; Arceneaux 2007). Ideological heuristics leverage summary pieces of information about the overall social and economic philosophy of candidates or parties to help the individual make their voting decision. From this information, voters can infer the actual policy positions of the candidates or parties, without having to collect this information independently.

Second are candidate image heuristics, where individuals vote for candidates that have desirable personal characteristics (Lodge and Taber 2005; Hayes 2008). Candidate image heuristics utilize information that is easier to process for individuals and which can be readily available during information searches. Individuals search for affect laden information cues such as descriptions of whether alternatives are smart, corrupt, compassionate, relatable, etc. Then an individual extrapolates the desirability of the different alternatives from these traits.

Third are evaluation heuristics, where individuals vote based on incumbent performance (Gomez and Wilson 2001; Peffley and Williams 1985; Ansolabehere et al. 2006). This heuristic

utilizes a voter's feelings and attitudes toward the government's performance over the last term to determine how the party in power would behave if elected again, or how the opposition would behave if put into power. This heuristic has most often been studied in the context of economic voting, but can encompass evaluations of any government policies, or government performance in general.

Institutions examined and derived hypotheses

The three institutions I consider are party, electoral, and governance systems. The party systems considered are two- versus multi-party systems. Two-party systems make party labels very easy to understand for voters. These systems create candidates with distinct ideological positions, providing clear cues of their political positions (Aldrich 1995). Also, the performance of an incumbent is both emphasized and easier to understand in two party systems. A voter rejecting the incumbent can simply choose the only other opposing party. Multi-party systems complicate voter decisions because of additional parties that form at many different points on the ideological spectrum. The ideological positioning of these many parties becomes more difficult to understand. Additionally, when dissatisfied with an incumbent, voters cannot simply vote for the opposition party but have to consider which opposition to support. I hypothesize that: *H1a) two-party systems increase use of ideological heuristics compared to multi-party systems* and *H1b) two-party systems increase use of performance heuristics compared to multi-party systems.*

The electoral systems investigated are majoritarian versus proportional. In majoritarian systems, information about individual candidates is made more readily available and voters are led to expect that this information is related to a candidate's expected performance on the job. This is because these systems emphasize individual candidates that seek to maximize their vote share by moving to the center to attract voters (Downs 1957). This creates tension between their

party label and issue positions. Proportional systems, where voters are deciding between parties, inherently emphasize the ideological positions of the party. Party ideology becomes an emphasized cue and voters expect that ideology will be closely connected to how a party will behave in power. As a result, the positions and personalities of candidates or party leaders are less relevant. I hypothesize that *H2a) majoritarian systems increase the use of candidate image heuristics compared to proportional systems* and *H2b) proportional systems increase use of party based ideological heuristics compared to majoritarian systems*.

Finally, the governance systems examined are presidential versus parliamentary systems. Presidential systems have a separate president and legislature with overlapping policymaking powers. In contrast, parliamentary systems give the majority party/coalition near absolute power to implement their agenda. Since parliamentary majorities have leeway in implementing their agenda, party platforms provide a strong cue of how they will behave in office. Thus, voters in a parliamentary system will be more concerned with what parties intend to do, rather than what they did while in office. In a presidential system, a president and legislature are dependent upon each other for what policies can be achieved. Looking at incumbent performance can give a window into what a party can actually accomplish, as opposed to what it claims it can accomplish. This leads to the final hypothesis that: *H3a) presidential systems will increase the use of performance heuristics compared to parliamentary systems.*

Experiments, surveys and validity concerns

Research in psychology has identified two major methods for studying decision making (Gigerenzer et al. 1999; Weber and Johnson 2008). The first is output based analysis. In this method, the researcher determines the process used by examining the decision outputs as a result of certain individual inputs. Such a method asks, "Given the characteristics of this individual and

the end decision they reached, what was the likely pathway they took to get there?" The problem

with such a method is that there can be many possible pathways that lead from the observed set

of inputs to the observed set of outputs. The second type of method is process tracing. This

method attempts to directly observe the decision maker's information search and decision

process. Given its ability to accurately identify actual decision processes and information

searches, it has become widely used in both political science and psychology. A key problem

with process tracing is that it tends toward experimental methods which simplify choice

situations compared to the contexts individuals find themselves facing in the real world. This

limits the external validity of such studies.

These problems apply particularly to the study of heuristics. Experimental methods

provide the control necessary to identify heuristic use, but at the cost of external validity. Output,

survey based measures have large external validity, but at the cost of an accurate measure of

heuristics. To resolve these problems, I employ both methods in my work. If a consistent result

can be generated across both methods, the weaknesses of the methods separately would be

compensated for while still allowing them to work to their strengths.

Experimental Design

The experimental test of my theory and hypotheses uses the Dynamic Process Tracing

Environment (DPTE), developed by Lau and Redlawsk (2006). The DPTE is a dynamic

information board showing information items which continuously scroll down the screen.

Subjects see item headlines and must select an item to read its contents (see pictures in

appendix). As subjects are reading any particular piece of information, the items continue to

scroll down the screen. This forces subjects to prioritize their search as they cannot read all

items. These items are written to mimic the short news blurbs voters are typically exposed to

during campaigns. Content within each item is exclusive so that, for example, there is no mixing of both an ideology and candidate image cue (see appendix for examples). This is necessary to ensure validity of the heuristic measures. At any moment six items are available to select from and every five seconds a new item appears and the oldest item disappears.

Table 1 lists the types of items available to read during the experiment. A wide range of political information is available, all of it being of a type of information usually seen during campaigns. The information available to subjects was kept constant across all treatment groups but the information items are displayed in a random order. Specific examples of these items and their wording can be found in the appendix.

Table 1: Information item types and frequencies

Item type	# of unique items (two party)	Total item frequency (% of total items)	# of unique items (three party)	Total item frequency (% of total items)
Candidate issue positions	12	12 (16%)	18	18 (17%)
Party issue positions	12	12 (16%)	18	18 (17%)
Candidate ideology	4 (appearing 3x)	12 (16%)	6 (appearing 3x)	18 (17%)
Party ideology	4 (appearing 3x)	12 (16%)	6 (appearing 3x)	18 (17%)
Candidate partisanship	2 (appearing 3x)	6 (8%)	3 (appearing 3x)	9 (8%)
Candidate image/personality	10	10 (13%)	15	15 (14%)
Incumbent performance	6 (appearing 2x)	12 (16%)	6 (appearing 3x)	18 (17%)
Total	50	76	67	114

Experimental primes and procedures

The experiment is composed of three distinct components: an opening questionnaire, the institutional primes and information collection, and an ending questionnaire. The opening questionnaire places subjects on six issue dimensions and also measures basic demographic and

political characteristics.[1] Subjects then received instructions about the voting task as well as one of four primes. Each of the primes highlights the institutional environment and explains its key features. These institutions do not exist in a vacuum but appear in combination with one another in the real world. Thus, to maximize the external validity of the study, each prime describes all three institutions. Then, institutions are manipulated one at a time to allow for controlled comparisons.

This creates four different groups: 1) a majoritarian, presidential, two party condition; 2) a majoritarian, parliamentary, two party condition; 3) a majoritarian, parliamentary, three party condition; and 4) a proportional, parliamentary, three party condition. **Table 2** summarizes the different conditions and what group comparisons are used.[2] After the prime, subjects collect information through the information board. This lasts for approximately six minutes in a two party condition and for approximately nine minutes in a multi-party condition, during which subjects select what items to read.[3] After the period of information collection, subjects are asked for their vote choice based on what they learned of the candidates and parties.

While electoral and governance institutions are primed with different treatment statements, party systems are manipulated by adding additional information cues for a third party candidate. But, as shown in **Table 1**, the overall proportion of cues available is maintained to ensure information is consistently available across experimental conditions. Finally, the party labels used in the experiment are fictitious. Using actual party labels (such as Democrats or Republicans) runs a risk of confusing subjects who would see these parties in unfamiliar settings,

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[1] Despite its importance, I leave political sophistication out of this experimental analysis in order to focus on institutions. The assumption is that variation due to sophistication will cancel itself across groups due to random assignment.

[2] The specific wording of the primes can be found in the appendix.

[3] The difference in time is due to the addition of information cues for an additional political party. The overall proportion by which heuristics are available does not change however.

like a proportional election. Also, using actual party labels would diminish subject search for ideological cues, since many voters are already familiar with what Democrats and Republicans stand for. Using fake labels allows me to more accurately assess how much subjects rely on ideological cues in their voting decisions.[4]

Table 2: Experimental Conditions and comparisons

	Majoritarian, Parliamentary, Three Party	Majoritarian, Presidential, Two Party
Majoritarian, Parliamentary, Two Party	Two vs. Three party comparison	Presidential vs. Parliamentary comparison
Proportional, Parliamentary, Three Party	Majoritarian vs. Proportional comparison	N/A

This priming technique was used successfully in recent experimental research that asked individuals to consider different electoral institutions and then measured resulting changes in voting behavior (Blais et al. 2012). But even though this manipulation technique has been used previously, a reasonable question is whether it is actually possible to manipulate an institutional environment. U.S. citizens have very low comprehension of domestic political affairs and institutions, let alone the democratic systems of other countries. To ensure that the experimental manipulations achieve the desired effect on subjects, all primes were pre-tested using a series of factual questions. In the priming test, subjects faced a series of questions[5] testing their understanding of the institutions after answering a series of distractor questions. All primes were shown to statistically and substantively increase subject knowledge of the relevant institutions, compared to an unprimed group.[6]

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[4] Labels were checked to ensure none were disproportionately associated with any real world party or ideology. Fruit names were used as labels with the Apple Party being a rough approximation of Republicans, the Orange Party being a rough approximation of Democrats, and finally the Pear Party being an approximation of Libertarians.
[5] Manipulation check questions are available in the appendix.
[6] Results available upon request. All pre-tests conducted through Amazon's Mechanical Turk. Pre-test N=297.

Heuristic measure

The DPTE provides data on what items are read, the order they are read in, and time spent reading each item. Previous research has demonstrated how these metrics can be used to accurately measure heuristic use (Lau and Redlawsk 2006). The argument is that if heuristics are being used, subjects should access heuristic related information often, make it a large part of their overall information collection, and quickly access it once they see it available. To identify heuristic use, I can correspondingly use the DPTE to measure how many information items related to a heuristic subjects read, the proportion of heuristic related items read over the total amount of information read, or the speed with which individuals accessed the heuristic related information.

The heuristic measure I rely on is the proportion of heuristic related search. This measure, which looks at the number of heuristic items read over the total number of items read, provides an idea of the overall importance of any particular heuristic. As heuristic use is conceptualized as ignoring part of the available information while more heavily weighting other pieces of information, this measure provides an idea of exactly that. If a heuristic is being used, voters should search for information related to that heuristic often (increasing the number in the numerator), while ignoring other pieces of information (decreasing the denominator).

Experimental Results

Sample characteristics

A test of the hypotheses was conducted using an opt-in sample of subjects recruited from Amazon's Mechanical Turk (n = 243) (Berinsky et al. 2012; Buhrmester et al. 2011) and randomized into one of four conditions. The sample recruitment was limited to U.S. citizens aged 18 and older only. The sample skews younger, more educated, and more liberal than the

general population, as would be expected of an internet sample and as described by Berinsky et al. These skews do not present problems for my study due to the phenomena under investigation. My treatment effects are not hypothesized to depend on the age, partisanship or education of individuals. Regardless of these skews, I should still be able to generate valid results regarding how institutions affect the individual behavior of citizens.

Experimental Results

Table 3: Differences in heuristic use between majoritarian and proportional systems

	Majoritarian	Proportional	Difference
Candidate Ideology	**.16**	.14	.02 (p-value = .06)
Candidate Image	.15	.14	.01 (p-value = .21)
Party Ideology	.16	**.18**	.02 (p-value = .01)

Table 3 shows the differences in heuristic use between a majoritarian and proportional electoral system. As hypothesized, party ideology was used more in the proportional setting compared to the majoritarian. As further evidence, when search for candidate specific ideology is analyzed, it is used less in a proportional system compared to the majoritarian system. The focus on individuals versus parties creates clear differences here. However, there was no difference in the use of a candidate image heuristic between the two conditions, indicating subjects were equally interested in candidate personalities regardless of the electoral system.

Table 4 shows the differences in heuristic use between a presidential and parliamentary system. These systems were hypothesized to be important for governmental performance heuristics. The results show a small difference in the theorized direction, but it is not statistically significant. It is possible that a larger difference might exist but that this small result is due to unfamiliarity among subjects with how parliamentary government works.

Table 4: Differences in heuristic use between presidential and parliamentary systems

	Presidential	Parliamentary	Difference
Incumbent Performance	.14	.13	.01 (p-value = .35)

Finally **Table 5** shows the differences in heuristic use between a two and three party system. As hypothesized, governmental performance is used less in a multi-party system. With multiple parties, dissatisfaction with the governing party cannot be easily translated into support for the opposition party. Citizens have to take an additional step of deciding which opposition party to support. Regarding ideological heuristics, the evidence actually runs counter to the hypothesized affect. Multi-party systems were thought to make ideological heuristics more difficult to understand and thus less likely to be used. However, the results indicate that both candidate and party ideology were used more in the multi-party systems compared to a two party system. It could be that the complexity of more parties, rather than making it difficult to understand ideological positions of parties, drives subjects to rely on this information more, to make sense of a complex system.

Table 5: Differences in heuristic use between two and three party systems

	Two	Three	Difference
Party Ideology	.14	**.16**	.02 (p-value = .02)
Incumbent Performance	**.13**	.09	.04 (p-value = .00)

When more parties are added, ideological summary cues gain more usefulness in being able to easily explain the political landscape for the voter, causing them to use it more. But, it could also be that this finding is more a result of experimental conditions than causal effect. The party labels used were completely new for subjects, and the heightened search might just be an indication of individuals having difficulty keeping three new and different parties straight in their minds. I will discuss this idea in more depth later.

In considering all of these results, a casual observer might comment that the differences might be statistically significant but that there is no substantive significance. The small numerical differences are simply a result of the experimental design however. The amount of information related to any particular heuristic cue was bound at a low number. The differences above can, in most cases, be substantively interpreted as subjects reading an additional two items related to a heuristic. Given that there are at most only 12 cues related to a heuristic appearing in the entire experiment, this represents significant effort on the part of subjects. This is particularly true as the constantly scrolling information board makes it possible for subjects to completely miss heuristic related information while reading other pieces of information.

Also, I would argue that these results are an extremely conservative test of the theory presented. A possible argument against this design would be that it is difficult to prime subjects to consider institutions that they are completely unfamiliar with. In addition there could be a learning process at work that would alter individual behavior as subjects become more accustomed to the decision context. Both of these responses work in favor of the theory though. If these experiments are able to show that even just institutional primes can move subjects to use different heuristics, it is likely the observed effects would be even larger if subjects were given more time to understand the institutions and vote in these systems multiple times.

Survey Analysis and Measures

To study the interaction of institutions and heuristics in a more generalized form, I utilize individual level election data from five different countries. This includes the United States (American National Election Study 2004), United Kingdom (2001 British Election Study), Canada (2004 Canadian Election Study), Italy (2006 Italian National Election Study), and Spain (2004 Comparative National Election Project). These countries were chosen to maximize

variation across the institutional variables and since data was available with comparable

questions which could be compiled into a single dataset.

This analysis uses the same three institutional variables as factors influencing heuristic

use. The electoral system is a dichotomous variable indicating whether a country uses

majoritarian (0) or proportional (1) party list voting. The governance system is a dichotomous

variable indicating whether a country has a presidential (0) or parliamentary (1) form of

governance. Finally, the Effective Number of Parties at the electoral level (ENEP) is a

commonly used measure indicating the number of relevant parties that contest elections (Laakso

and Taagepera 1979). In this data, the ENEP variable has a minimum of 1.99 and a maximum of

5.06. Table 6 shows the institutional variation across each of these countries for the above years.

Table 6: Institutional variation across five democracies

United States	United Kingdom	Canada	Italy	Spain
Majoritarian	Majoritarian	Majoritarian	Proportional	Proportional
Presidential	Parliamentary	Parliamentary	Parliamentary	Parliamentary
1.99 parties	2.17 parties	3.03 parties	5.06 parties	2.53 parties

Measuring heuristic use with survey data is a complicated prospect. Many studies of

heuristics rely on experimental data to ensure that the measurement of this crucial variable can

be isolated, but often at the expense of external validity. There has been some effort to utilize

survey data to measure heuristic use with what I believe is mixed success (Baldassarri and

Schadee 2005; Lau et al. 2008). This work has focused on two different ideas: a heuristic's

availability and its use. Heuristic availability refers to how readily accessible the particular

heuristic is to a voter. For example, individuals that are strong partisans will have the partisan

heuristic more readily available than those who are not. But, having a heuristic readily available

does not mean it is put to use. To determine use, researchers look at actual decision outputs in an

attempt to sort voters into two camps: those who apparently used the heuristic under study and

those who apparently did not. Continuing the illustration of a partisan heuristic, citizens who

voted for the candidate of their party are classified as partisan heuristic users. Citizens who did not vote for the candidates of their party are categorized as having not used a partisan heuristic.

Both of these measures are problematic. Heuristic use measures are prone to error because they are not sufficiently discriminating in their categorization. Anyone who makes a decision ostensibly in accordance with a specific heuristic rule is considered to have used that heuristic. But as mentioned, not all individuals who behave in a manner consistent with a heuristic have necessarily used that heuristic, and scholars using this measure do not distinguish between voters who are more or less likely to have used the heuristic. Measures of heuristic availability have the reverse problem. While these measures do provide an indication of which voters are more likely to use a heuristic, they do not check to see whether an individual behaved in a manner consistent with the heuristic rule.

The problems facing these separate measures can largely be overcome by combining them into a measure of *likely heuristic use*. I first construct a base score; a dichotomous variable indicating whether or not a voter's behavior is consistent with the heuristic rule. To this base I apply a weight measuring how available the heuristic is to a voter. Voters whose behavior is consistent with the heuristic rule but for whom that heuristic is not readily available receive a lower "likely use" score than voters whose behavior is consistent with heuristic use and for whom that heuristic is readily available. Similarly, a voter with all the information necessary for a given heuristic will nonetheless be assigned a zero probability of heuristic use if their behavior runs contrary to the heuristic rule.

For an ideological heuristic, availability is measured as ideological proximity to the closest political party (how closely does your ideology match up with the closest party). It is specifically measured as the distance between a respondent's ideological placement and their

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placement of the closest political party on the seven point liberal-conservative scale. The ideologically closer respondents place themselves to a party, the stronger their ideological connection to that party should be and the more available the heuristic. Voters are considered to have used this heuristic if they vote for the candidate or party (depending on the system) that is ideologically closest.

For a candidate image heuristic, availability is measured as how much more a respondent likes one particular candidate (in a majoritarian system) or party leader (in a proportional system) compared to all other candidates. Affect for candidates is constructed with respondent answers to questions regarding the personal characteristics of candidates. This includes whether candidates are considered moral, honest, intelligent, relatable, etc. The final score is calculated by how much more a respondent likes one candidate compared to all of the other candidates. When respondents rate a particular candidate as not just likable, but much more likable than all the other candidates, this heuristic is most highly available. Respondents are considered to have used this heuristic if they voted for the candidate or party of the leader that they liked best.

Finally, for a government performance heuristic, availability is measured as the strength of approval or disapproval for the current government's performance. This heuristic will be most available when voters have very strong feelings either about the government performing well or badly. A respondent is considered to have used this heuristic if they voted for a positively evaluated incumbent or against a negatively evaluated incumbent.

The measures of likely heuristic use have been scaled between 0 and 1. A value of 0 indicates a voter did not use the heuristic. A value of 1 would indicate they used the heuristic and it was highly available to them. Any values in between 0 and 1 are possible.

Also included in the statistical models are controls for political knowledge and interest in the election. Both variables are known to be relevant for how individuals select the heuristics they use and important for inclusion. Knowledge is constructed from answers to as many factual political questions as appeared in each of the surveys. While the specific content in each survey varied, they all used a similar format. This includes identification of major political figures and the political parties currently controlling the legislature. Interest is measured simply as a respondent's stated interest in the current political campaign. These variables have similarly been rescaled between 0 and 1.

Survey Results

In interpreting the results in the following tables, all variables (independent and dependent) are scaled between 0 and 1, except for number of parties which varies between 1.99 and 5.06. Also, it is important to consider that due to the large number of observations in each regression, it is natural that almost every variable will be statistically significant. As a result, the concern in the analysis is not simply statistical significance but the substantive significance of the coefficient terms.

Table 7 shows the results for an OLS model estimating the effect of different institutions on the use of an ideological heuristic. The primary institutions of theoretical concern for an ideological heuristic were the electoral system and party system. The electoral system behaves as expected, with ideological heuristics being used much more in proportional systems. The number of parties similarly behaves as expected, with each additional party decreasing the heuristic use variable. Both of these results match well with theory. However the finding regarding the number of parties conflicts with the experimental results. I will discuss this more later.

Table 7 *Influence of institutional variables on use of the ideological heuristic*

Variable	Coefficients
Electoral system	.24***
	(0.02)
Effective Number of parties	-.17***
	(0.01)
Governance system	.29***
	(0.03)
Political knowledge	.11*
	(0.05)
Interest in political campaign	.18***
	(0.04)
constant	.27***
	(0.03)
n	5767
pseudo R^2	0.18

* Significant at the 0.10 level; ** 0.05 level; *** 0.01 level
Robust standard errors given in parentheses, clustered by country.

Also of interest is that the governance system has a significant effect similar in substantive size to the electoral system. This is logical in hindsight, given that party labels are incredibly important in such systems. Party discipline is strong in such systems and ideological cues send a very strong signal to voters on how to respond make their decisions (Cox 1987).

Table 8 shows the influence of institutions on the use of the candidate image heuristic. The primary variable of interest was the electoral system. Again many variables reach statistical significance, but all are substantively small in magnitude. The effect of the electoral system is significant and positive, contrary to theory, but so substantively small that I would question its overall importance in the model. When considering the full range of the effective number of parties measure, this variable begins to become important but not theoretically interesting. Decreasing connection between candidate image heuristics and number of parties is likely a

result of cognitive limits. As more and more candidates and parties exist, it becomes difficult for individuals to keep them all separate and clear, leading to less reliance on the cue.

Table 8 *Influence of institutional variables on use of the candidate image heuristic*

Variable	Coefficients
Electoral system	.09***
	(0.01)
Effective Number of parties	-.03***
	(0.00)
Governance system	-.13***
	(0.01)
Political knowledge	.06
	(0.03)
Interest in political campaign	.12***
	(0.02)
constant	.26***
	(0.03)
n	5938
pseudo R^2	0.08
* Significant at the 0.10 level; ** 0.05 level; *** 0.01 level Robust standard errors given in parentheses, clustered by country.	

Finally, **Table 9** shows the influence of institutional variables on the use of a governmental performance heuristic. As expected, the number of parties is an important negative predictor of the use of this heuristic. As the number of parties increases to its maximum of 5.06, the use of the heuristic rapidly decreases. Governance system was also theorized and is found to be significant and large in the theorized direction. Voters in parliamentary systems rely much less on governmental performance as a heuristic, compared to voters in presidential systems.

Table 9 *Influence of institutional variables on use of a government performance heuristic*

Variable	Coefficients
Electoral system	.24***
	(0.06)
Effective Number of parties	-.04**
	(0.01)
Governance system	-.44***
	(0.05)
Political knowledge	.03
	(0.08)
Interest in political campaign	.18**
	(0.05)
constant	.62***
	(0.06)
n	6126
pseudo R^2	0.23
* Significant at the 0.10 level; ** 0.05 level; *** 0.01 level	
Robust standard errors given in parentheses, clustered by country.	

Understanding the combined results

Tables 10 - 12 provide a summary of the hypothesized influence of institutions on heuristics along with the relationships found in both the experimental and survey results. Three strong results emerge from the analysis. These results were consistent in direction and with theory across both methods. This includes: 1) the effect of electoral systems on ideological heuristics, 2) the effect of party systems on a governmental performance heuristic, and 3) the effect of governance institutions on a performance heuristic.

Table 10 shows that ideological heuristics are used much more in proportional compared to majoritarian settings, across both methods. Proportional, party centered systems put ideology front and center in the minds of voters. Similarly, Table 12 shows that the number of parties consistently decreases the use of a performance heuristic. The more party choices that occur in a

system, the harder it is for individuals to use incumbent performance as a voting cue. Finally, Table 12 also shows that incumbent performance is used much more in presidential systems as opposed to parliamentary systems. The checks and balances of a presidential system cue voters to consider what a party can actually accomplish in office, as opposed to what they promise to accomplish. These are the strongest results that emerge from the combined analysis.

Table 10 Summary results for how institutions alter use of an ideological heuristic

	Electoral System	**Party System**	**Governance System**
Hypothesized Effect	Majoritarian (–) Proportional (+)	Two Party (+) Multi-party (–)	N/A
Observed Effect, Experiment	Majoritarian (–) Proportional (+)	Two Party (–) Multi-party (+)	N/A
Observed Effect, Survey	Majoritarian (–) Proportional (+)	Two Party (+) Multi-party (–)	N/A

Table 11 Summary results for how institutions alter use of a candidate image heuristic

	Electoral System	**Party System**	**Governance System**
Hypothesized Effect	Majoritarian (+) Proportional (–)	N/A	N/A
Observed Effect, Experiment	Majoritarian (null) Proportional (null)	N/A	N/A
Observed Effect, Survey	Majoritarian (null) Proportional (null)	N/A	N/A

Table 12 Summary results for how institutions alter use of a governmental performance heuristic

	Electoral System	**Party System**	**Governance System**
Hypothesized Effect	N/A	Two Party (+) Multi-party (–)	Presidential (+) Parliamentary (–)
Observed Effect, Experiment	N/A	Two Party (+) Multi-party (–)	Presidential (+) Parliamentary (–)
Observed Effect, Survey	N/A	Two Party (+) Multi-party (–)	Presidential (+) Parliamentary (–)

More moderate results emerge with regard to the influence of party systems on the use of an ideological heuristic. The survey results showed the hypothesized effect while the experiments showed the opposite effect. This could be due to the experiment presenting subjects with completely new party labels. Since this would be the first time subjects had ever seen the parties, this unfamiliarity might be manifested in additional search for these cues. This would particularly occur in the multi-party situation of the experiment, as subjects exert additional effort to separate out differences between three parties. When looking at the survey data, with

respondents already embedded in a political culture, the effect is large and consistent with theory. Multiple parties create a complicated system that voters have difficulty understanding and resulting difficulty in using the ideological heuristic. These results are admittedly mixed though and worthy of further investigation.

Regarding the use of a candidate image heuristic, no result emerged. For both experimental and survey results, candidate image heuristics look to have a very substantively small effect. Voters across all systems are using cues based on candidate personality, but the use of this cue is not being driven by institutions. This could be due to the basic simplicity of the cue. No matter what system a voter is in, considering the appearance and personality of politicians is a ready, low information shortcut that is always available to voters.

Implications

With robustness in the results across methods, the evidence points toward the importance of these institutions in shaping the types of heuristics that individuals use. The way voters behave in elections is not simply a result of their cognitive capacities but the context of the election itself. In fact, comparing the influence of institutions to the importance of a cognitive variable like citizen interest reveals that institutions *play an equally important role*. In considering why voters in the United States, or even other democracies, are using particular shortcuts, scholars need to bring institutions in.

This work also has consequences for the continuing debate over whether heuristics help or hurt voters. This debate has consequences not only for political scientists but also psychologists who have been studying the effects of heuristic decision making in many realms besides politics. Some psychologists have argued all heuristics are not equally well adapted to all decision environments, with their usefulness conditioned on the institutional environment they

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are used in (Todd et al. 2011). It could be that the conflicting evidence in political science regarding heuristic effectiveness is due to mixed signals from institutions, which at times encourage the use of heuristics that are helpful in that particular setting, and other times the use of heuristics that are harmful.

The most logical extension of this work is to run these experiments cross-nationally. In such a natural experiment, problems of external validity could be avoided. Also, other institutional contexts in the United States are worth further investigation. This could include a consideration of how the type of position affects heuristic use (executive, legislative, or judicial). Another possibility would be how the level of election (national, state, local) influences heuristic use. The larger point, though, is that the evidence here should cause scholars studying heuristics and decision making more broadly to take seriously Simon's argument. Individual decision making is not a result of individual cognitive capacities, but also a product of the decision environment.

Appendix

I. Experimental Treatments

1. Majoritarian, Presidential, Two Party Condition

In this study, you will be voting in an election in a country that is majoritarian and presidential. In legislative elections using a majoritarian system, voters choose between individual candidates who will represent specific districts. The candidate from each district that receives the most votes in the election will win the legislative seat.

In a presidential system of governance, policymaking involves two separate and independent entities, a head of government (often referred to as a president) and the legislature. Each of them is separately elected by voters and each need to give their approval in order for legislation to be passed, often forcing the two branches to compromise in order to execute policy. In this study the presidency and legislature are controlled by different parties.

You will receive information about two different candidates, Alan Napier and Samuel Barton, as well as two different parties, the Apple Party and the Orange Party. Be aware that the same information might appear at multiple times during the study, giving you opportunities to read about something you previously missed. However, the information in an item appearing for a second time will never be different from its first appearance.

Once you click next, you will be able to collect the information that you think will be most helpful for you in making your decision. You will be asked how you will vote after this information collection

2. Majoritarian, Parliamentary, Two Party Condition

In this study, you will be voting in an election in a country that is majoritarian and parliamentary. In legislative elections using a majoritarian system, voters choose between individual candidates who will represent specific districts. The candidate from each district that receives the most votes in the election will win the legislative seat.

In a parliamentary system of governance, policymaking involves two closely related entities, a head of government (often referred to as a prime minister) and the legislature. The legislature is elected by the voters, while the prime minister is a member of the legislature chosen by the majority party to act as the head of government. The prime minister keeps their position as long as their party retains a majority in the legislature. Legislation only needs the approval of the legislature in order to be implemented, giving the majority party near absolute power to pass its agenda while in power.

You will receive information about two different candidates, Alan Napier and Samuel Barton, as well as two different parties, the Apple Party and the Orange Party. Be aware that the same information might appear at multiple times during the study, giving you opportunities to read about something you previously missed. However, the information in an item appearing for a second time will never be different from its first appearance.

Once you click next, you will be able to collect the information that you think will be most helpful for you in making your decision. You will be asked how you will vote after this information collection.

3. Majoritarian, Parliamentary, Three Party Condition

In this study, you will be voting in an election in a country that is majoritarian and parliamentary. In legislative elections using a majoritarian system, voters choose between individual candidates who will represent specific districts. The candidate from each district that receives the most votes in the election will win the legislative seat.

In a parliamentary system of governance, policymaking involves two closely related entities, a head of government (often referred to as a prime minister) and the legislature. The legislature is elected by the voters, while the prime minister is a member of the legislature chosen by the majority party to act as the head of government. The prime minister keeps their position as long as their party retains a majority in the legislature. Legislation only needs the approval of the legislature in order to be implemented, giving the majority party near absolute power to pass its agenda while in power.

You will receive information about three different candidates, Alan Napier, Samuel Barton and Kevin Larson, as well as three different parties, the Apple Party, Orange Party, and Pear Party. Be aware that the same information might appear at multiple times during the study, giving you opportunities to read about something you previously missed. However, the information in an item appearing for a second time will never be different from its first appearance.

Once you click next, you will be able to collect the information that you think will be most helpful for you in making your decision. You will be asked how you will vote after this information collection.

4. Proportional, Parliamentary, Three Party Condition
In this study, you will be voting in an election in a country that is proportional and parliamentary. In legislative elections using a proportional party list system, voters choose between different political parties to represent them. The number of seats a party wins in the legislature is equal to the percentage of the popular vote they win. The individual political candidates that will fill the seats parties win are listed by the parties ahead of the election, but not directly chosen by voters.

In a parliamentary system of governance, policymaking involves two closely related entities, a head of government (often referred to as a prime minister) and the legislature. The legislature is elected by the voters, while the prime minister is a member of the legislature chosen by the majority party to act as the head of government. The prime minister keeps their position as long as their party retains a majority in the legislature. Legislation only needs the approval of the legislature in order to be implemented, giving the majority party near absolute power to pass its agenda while in power.

You will receive information about three different candidates, Alan Napier, Samuel Barton and Kevin Larson, as well as three different parties, the Apple Party, Orange Party, and Pear Party. Be aware that the same information might appear at multiple times during the study, giving you opportunities to read about something you previously missed. However, the information in an item appearing for a second time will never be different from its first appearance.

Once you click next, you will be able to collect the information that you think will be most helpful for you in making your decision. You will be asked how you will vote after this information collection.

II. Information Item Examples (a full list is available upon request)
Title in bold is what will scroll across the screen during the study. When subjects click on a particular item, it expands to show the remaining non bolded text. See pictures 1 and 2 at end.

Candidate Partisanship Item
Samuel Barton's Party Affiliation
Samuel Barton was announced as a candidate for the Orange Party in upcoming legislative elections. Party officials indicated their strong support for Barton who is a long-standing member of the party.

Candidate Personality Item
Barton's honesty made into campaign issue

Questions have arisen recently about Samuel Barton's honesty. While Barton has campaigned as a Washington outsider that has not served in office before, recent documents have shown that he worked on a number of high profile political campaigns as an advisor. This new information has led some voters to question how truthful Barton has been about his connections with established Washington politics.

Candidate Ideology Item
Barton's social and political philosophy
Samuel Barton tends to be liberal on most issues, emphasizing equal rights for minorities and other disadvantaged groups.

Barton's economic philosophy
Samuel Barton argues that despite increasing debts, the U.S. has a commitment to current spending levels for most programs that help U.S. citizens. He has argued that the government should step in to help the economy when the free market fails.

Party Ideology Item
The Apple Party's social and political philosophy
The Apple Party tends to be conservative on most social issues, emphasizing traditional moral and religious values.

Candidate Position Item
Barton's position on environmental policy
Environmental groups expressed disappointment today for Samuel Barton's lack of support for greater environmental controls. The proposed changes would force companies to meet higher pollution emission standards by installing scrubbers that limit the amount of pollutants released into the air. Companies have complained that these scrubbers represent a large cost burden. Barton has walked a fine line on the issue. He has insisted that greater environmental protection is needed while arguing that this particular law would place to great an economic burden on firms.

Party Position Item
Groups respond to Orange's stance on environment
Environmental groups applauded the Orange Party's support for greater environmental controls. The Orange have proposed legislation that would force companies to meet higher pollution emission standards by installing scrubbers that limit the amount of pollutants released into the air. Companies have complained that these scrubbers represent a large cost burden. The Oranges have disputed these complaints, arguing that overall profit levels will not be significantly affected and that the environmental damage being caused outweighs any individual profit motive. The party insists that greater controls are needed to protect individual citizens from harmful pollution and preserve important ecosystems.

Incumbent Performance Item
Apple Congress defends record on environment
In the last year, the Apple controlled Congress worked to block federal laws that would have instituted tighter environmental controls on companies. The proposal met nearly unified opposition from Apples. Attempts at compromise proved ineffective, with the bill ending up dead in committee. Debates over the issue have continued among the different parties during the current election campaign.

III. Treatment Checks
Majoritarian Treatment Checks
What entity are you most directly voting for in a majoritarian electoral system?
1. Individual candidates
2. Political parties

3. Political ideologies
4. Don't know

In a majoritarian electoral system, how are seats in the legislature awarded?
1. The candidate that obtains the most votes in an election wins the seat.
2. Parties win a number of seats according to the percentage of the vote they obtain in the election.
3. Choices are ranked by voters. The choice receiving the fewest top choice rankings is eliminated and all votes for that choice are transferred to the voter's next top choice. The process continues until only one choice remains.
4. Don't know

In the 2010, Connecticut held U.S. Congressional elections using a majoritarian system. In one of those races, Jerry Labriola, a Republican, ran against Rosa DeLauro, a Democrat. DeLauro won 61% of the vote while Labriola won 33% of the vote. Given these results and what you know of majoritarian election systems, how would this Congressional seat be awarded?
1. Jerry Labriola would take the seat.
2. Rosa DeLauro would take the seat.
3. The Democratic Party would take the seat and appoint someone to it.
4. The Republican Party would take the seat and appoint someone to it.
5. Don't know

Proportional Treatment Checks
What entity are you most directly voting for in a proportional election?
1. Individual candidates
2. Political parties
3. Political ideologies
4. Don't know

In a proportional election system, how are seats in the legislature awarded?
1. The candidate that obtains the most votes in an election wins the seat.
2. Parties win a number of seats according to the percentage of the vote they obtain in the election.
3. Choices are ranked by voters. The choice receiving the fewest top choice rankings is eliminated and all votes for that choice are transferred to the individual's next top choice. The process continues until only one choice remains.
4. Don't know

In 2010, Sweden held elections for its legislature of 349 representatives using a proportional system. Three of the major parties in that election were the Social Democrats, the Moderate Party, and the Green Party. The Social Democrats won 30.6% of the popular vote, the Moderate Party won 30% and the Green Party won 7.3%. Given these results and what you know of proportional election systems, how would seats in the parliament be awarded?
1. The two parties with the most votes, the Social Democrats and the Moderates, would split the 349 seats between themselves.
2. The parties receive a percentage of the 349 seats equal to the percentage of the vote they won.
3. Votes won by individual candidates would determine who takes legislative seats, not the overall percentage won by the political parties.
4. Don't know

Presidential Treatment Checks
In a presidential system, how is the head of government chosen?

- The head of government is an elected legislative representative chosen by the political party that controls the legislature.
- The head of government is elected independently of the legislature.
- The head of government is a non-elected official appointed by the legislature.
- Don't know

In a presidential system, what is the relationship between the head of government and the legislature?
- The head of government and the legislature each have a separate popular electoral mandate.
- The head of government depends on the legislature for his/her authority and position.
- The legislature depends on the head of government for their authority and positions.
- Don't know

In 2001 the No Child Left Behind Act was passed in the United State, a presidential system. In order for this legislation to be passed, what had to happen?
- The law had to be approved by both the legislature (the U.S. Congress) and then sent for approval and implementation to a separate chief executive (the President).
- The law had to be approved only by the legislature (the U.S. Congress).
- The law must be only be approved by a chief executive (the President).
- Don't know.

Parliamentary Treatment Checks
In a parliamentary system, how is the head of government chosen?
- The head of government is member of the legislature chosen by the political party that controls the legislature.
- The head of government is elected independently of the legislature.
- The head of government is a non-elected official appointed by the legislature.
- Don't know

In a parliamentary system, what is the relationship between the head of government and the legislature?
- The head of government and the legislature each have a separate popular electoral mandate.
- The head of government depends on the legislature for his/her authority and position.
- The legislature depends on the head of government for their authority and positions.
- Don't know

In 2000 the Freedom of Information Act was passed in the United Kingdom, a parliamentary system. In order for this legislation to be passed, what had to happen?
- The law had to be approved by both the legislature (the Parliament) and then sent for approval and implementation to a separate chief executive (the Prime Minister).
- The law had to be approved only by the legislature (the Parliament).
- The law must be only be approved by a chief executive (the Prime Minister).
- Don't know.

Picture 1:

Stage: Election Campaign
Sub-stage: Election Information collection

Time Remaining: 4:35
4:35

Republicans discuss future of health care law

Barton's economic philosophy

Napier's leadership qualities

Napier's social and political philosophy

Defense spending levels considered by Republicans

Barton's leadership qualities

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Picture 2:

Stage: Election Campaign
Sub-stage: Election Information collection

Time Remaining: 4:07
4:07

Dems discuss future of health care policy

Democratic Party leaders addressed U.S. health care policy during a discussion with press conference today. The leaders stated that their party supports current health care legislation and that it would work to stop any attempts to repeal it in the upcoming legislative session. They argued that health care costs are quickly increasing beyond the means of regular Americans and must be addressed. They believe current health care legislation makes a first step toward this and that the federal government needs to take further steps to help control costs and subsidize them for citizens.

Close

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