Why Groups Divide:
Understanding the Mechanisms that Lead to Polarization in Deliberative Polling™

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Abstract

Political polarization is an issue that divides the US, as members of opposite political parties have trouble agreeing on political and personal issues. Despite its potential flaws, deliberation—when conducted properly—can result in many benefits to help with polarization. My thesis quantitatively tests whether the balance of argumentation plays a role in the way that a group’s opinion moves following deliberation. The results show that the balance of warranted arguments is statistically significant in explaining the phenomena of homogenization and group-splitting. From these results, I argue that 1) schools should encourage more balanced discussions among students as classroom exercises 2) bureaucrats, rather than politicians, should have more influence over congressional committees to ensure a variety of views are discussed and 3) the government should incentivize federally funded news outlets to report multiple sides of issues rather than partisan views.

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Preface

When I was in high school, I participated extensively in national debate tournaments. I competed in a style of debate called Lincoln Douglas, and the topics I debated centered on issues of justice and morality. Since the topic we debated changed every two months, I had the opportunity to learn about a wide range of issues. One memorable topic I researched was from the beginning of my 10th grade year in school. For those two months, the debate topic was “Resolved: In a democratic society, felons ought to retain the right to vote.”

During the brainstorming process, my high school debate coach told me to begin by thinking about the term “democratic society.” As he explained, before determining whether or not felons should vote, I first needed to define what a “democratic society” was. As a 10th grader, I clearly did not appreciate the nuances behind defining democracy, and as such, my high school coach referred me to a book titled The Voice of the People: Public Opinion and Democracy—authored by James Fishkin. From the book, I learned about deliberative democracy for the first time, and I became interested in the various ideas.

As such, when Professor Fishkin gave a guest lecture in my class during the fall quarter of my freshman year at Stanford, I spoke with him afterwards and asked to get involved with the Center for Deliberative Democracy at Stanford. Four years later, here we are.

This thesis is dedicated to my high school debate coach and more importantly, a close friend—Shaun Thistletwaite, or as I called him, Coach T.
Chapter 1: Introduction to Political Polarization in the US

Introduction

It is no secret that there is immense political polarization in the United States. One look at Congress illustrates the deep, ideological divide between Republicans and Democrats, and a look at the general population shows this to an even greater extent. Recent studies show that partisanship has extended into people’s daily lives. A number of political figures have massive followings on social media outlets like Facebook and Twitter.\(^1\) More notably, political divisiveness has begun to invade homes, as recent studies show parents in the US are growing in their disapproval of inter-party marriages.\(^2\) A 2009 survey of married couples revealed that only 9% of couples were Democrat-Republican pairs.\(^3\) People now prefer marrying within their political party to choosing a partner based on physical attractiveness or personality qualities.\(^4\) Moreover, 30% of Conservatives and 23% of Liberals state that they would disapprove of a member of the opposite political party marrying into their families, while only 23% of Conservatives and 1% of Liberals say they would be unhappy if someone from a different race married into their families.\(^5\) Liberals and Conservatives in America disagree over whether to live in cities or rural areas and claim they would rather avoid members of other parties.\(^6\)

Before condemning the divineness in our society, it is worth asking the question, “Why is this heterogeneity bad?” After all, prominent scholars do believe that distinct, 

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2 Iyengar and Westwood, 6.
3 ibid
4 ibid
5 ibid
competitive political parties are necessary for democracy.\textsuperscript{7} Theoretically, these different viewpoints should spark debate on the issues, which is a key part of democracy. As such, the polarization that exists in the US today could merely be the product of rational thought and deliberation.

Unfortunately, there is a wealth of evidence to indicate that rational debate is not the case. Rather, voters in the US often offer opinions on issues that they have not carefully considered or may not even know the details of. One poignant example of this is George Bishop’s seminal 1986 study, which asked participants to offer their views on the Public Affairs Act of 1975. Bishop et al found that twenty to forty percent of Americans expressed an opinion.\textsuperscript{8} A similar study by the Washington Post in the early 1990s asked people about their views of the repeal of the Public Affairs Act of 1975 and found that 43\% of respondents offered a viewpoint.\textsuperscript{9}

Sadly, both the Public Affairs Act of 1975—and hence its repeal—were fictional pieces of legislation. This result should be worrisome, as the logical continuation of this discovery is to question the other issues that Americans are offering uninformed or “phantom” opinions on.\textsuperscript{10} Moreover, a wealth of other studies shows that Americans are uninformed about how politics work within the US and even the prominent political figures within the US itself.\textsuperscript{11}

\begin{itemize}
\item \textsuperscript{8} Bishop, George; Tuchfarber, Alfred; and Oldendick, Robert. Opinions on Fictitious Issues: The Pressure to Answer Survey Questions. \textit{The Public Opinion Quarterly} 50.2 (1986): 240-250. Web.
\item \textsuperscript{11} Pew Research Center, 2014.
\end{itemize}
Thus, the polarization seen in the US today is problematic, since it does not appear to be the result of a careful consideration of the issues. In fact, much of the public seems disinterested with political issues in general, which makes the polarization even more confusing and disturbing.

Further studies show that even when people attempt to learn about the issues, their polarized views obstruct this process. For instance, Liberals and Conservatives in the US disagree over which sources to obtain their news from, as people tend to watch news that confirms their beliefs. 12 47% of Conservatives state that Fox News is their primary source of information about government and political news. 13 Similarly, the majority of Liberals name sources like MSNBC, CNN, and the New York Times. 14 Moreover, studies find that when people read customized news, they only become further polarized, which frames the problem as cyclical and without a clear solution. 15

In addition to reading news that suits their views, people discuss political issues with those that share their opinions. 16 A substantial body of evidence shows that these discussions with like-minded individuals further radicalize the public and increase polarization, which has led some scholars to suggest that deliberation is not a viable solution to the problem of political polarization that the US faces today. 17 This literature opposing deliberation is presented in detail below, but before discussing the literature, I turn my attention to the goal of the study.

**Research Question**

I argue that deliberation is indeed a useful tool when it is conducted properly. I seek to understand the reasons that groups become more similar or divide after deliberation in order to provide recommendations for society as a whole. As I will argue throughout the thesis, deliberation is at the center of democracy and has been shown to have many positive outcomes for its participants and their respective societies when undertaken properly.

More formally, the goal of this thesis is to answer the question, “What explains the shifts in group opinions that occur during deliberations?” In particular, I analyze two types of shifts: 1) homogenization, which is movement toward a group’s pre-deliberation views and 2) group-splitting, which is an increase in the spread of a group’s opinions following deliberation.

I hypothesize that the more balanced group discussions are, the more unpredictably groups shift. As will be explained later, unpredictable or non-systematic shifts are *desirable* in deliberative groups. If we knew how a group would move after deliberation prior to the discussion, then there would be little value to deliberation. For example, if simply knowing the group’s prior leanings were enough to determine how deliberation would affect the group—irrespective of the topic being discussed—then deliberation would be useless.

The independent variable is the balance of argumentation, and the model looks at how this balance affects the outcome of group shift. The methodologies and models will be discussed in great detail in Chapters 3 and 4.
The group discussions that I analyze are from a particular type of deliberative forum known as deliberative polling. While there are several other types of deliberative forums, such as jury studies and focus groups, deliberative polling provides a form of deliberative democracy ideally suited for my research question. Research has shown that deliberative polls minimize several of the major pathologies associated with deliberation.\textsuperscript{18,19} In particular, research has demonstrated that deliberative polling does not have systematic or predictable shifts of group opinions.\textsuperscript{20} In fact, participants that have taken part in deliberative polls are more likely to appreciate different sides of issues and respect those with opposing views.\textsuperscript{21}

While this previous research has not analyzed the particular poll that I study, it is still helpful in my thesis. In particular, deliberative polls lack systematic shifts, which allows me to more rigorously differentiate the groups that homogenized and split from the groups that did not. As I have noted above, I will explain the methodology in later chapters.

\textbf{Implications}

Given the brief discussion of the political climate of the US thus far, some might say that are more pressing concerns than deliberation to the democratic vitality of the US. For instance, one could argue that the focus should be on voter turnout, as the 2014

\textsuperscript{18} Sunstein, 176.
\textsuperscript{20} Luskin, Robert; Fishkin, James; and Hahn, Kyu. Consensus and Polarization in Small Group Deliberations. Center for Deliberative Democracy at Stanford University, 2007.
midterm elections in the US saw the lowest turnout in any election cycle since World War II, with a mere 36.4% of eligible voters casting their votes.\(^{22}\)

I argue that people’s opinions, even when they are on real pieces of legislation, are often uninformed or misguided. In the 2004 Presidential election, research showed that “likeability” of a candidate was a deciding factor in undecided voters and that 57% of these undecided voters stated they would rather have a beer with President George W. Bush than Senator John Kerry.\(^{2324}\) With this in mind, even if there was 100% voter turnout, it seems hard to believe that the result would mean anything if the voters had not seriously considered the candidates/issues. Does democracy merely mean everyone randomly casting a vote?

\(^{24}\) ibid
Chapter 2: The Advantages and Drawbacks to Deliberation

Introduction

This chapter discusses democracy and its various conceptions, with a particular emphasis on deliberative democracy. After discussing some perceived problems to deliberation, I explain how deliberative polling works and the theory behind its design. From here, I show how previous research has demonstrated that deliberative polling does not have many of the pathologies associated with other types of deliberation. I conclude by using this discussion to explain the current literature base surrounding my research question.

Democracy

Before answering the important question that I ended Chapter 1 asking, it is useful to start with a discussion of what democracy means. Exploring all the meanings that the term could take would be a thesis in itself, so I will briefly discuss a few possible interpretations.

According to Larry Diamond, a society must have regular, competitive, free, and fair elections in order to be considered a democracy. Terms such as “free and fair” entail universal adult suffrage and sources of information outside of a state-run media. In addition, in order to be competitive, there should be more than one political party with a chance to win—so as to ensure some uncertainty in the results. While a society is

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25 Diamond and Morlino, 21.
26 ibid
democratic if it meets these minimum criteria, this certainly does not mean that the society is a “good” democracy.\textsuperscript{27}

When discussing quality of democracy, there are additional axes that we can evaluate societies on. Such attributes that characterize a “thick,” or desirable, form of democracy include and are not limited to the right for all adult citizens to vote and run for office (provided they meet age and competency requirements), freedom of belief, opinion, discussion, speech, and other needs, and the due process of law and freedom from unjust detention exile, or interference in personal lives by the state or non-state actors.\textsuperscript{28}

While these attributes of a well-established democracy provide a starting point to understand the term, there are still many questions left unanswered. For example, there remains ambiguity as to how a democratic system should actually work. For example, we might agree that democracy entails that all adult citizens have a say in the matters that concern them. However, does this mean that each time a society wants to pass a new law, it must go through a lengthy voting process that involves all eligible voters? Moreover, does every eligible voter really want to vote on all of the “minor” issues that might arise? In some cases, people might cede authority to legislators that they have voted into office. With this in mind, the important question arises of where the line is drawn between people wanting a vote in the issues that affect them and entrusting some power to an elected legislative body.

Thus, even if we agree that a society is democratic in either the thin or thick form, it is another issue to determine how democracy should be implemented. In order to

\textsuperscript{27} ibid
\textsuperscript{28} Diamond and Morlino, 22.
answer this question, Fishkin writes that it is helpful to distill democracy and its various conceptions along four axes or values that various conceptions of democracy wrestle between. These four values are political equality, participation, non-tyranny, and deliberation. It is clear that an ideal form of “thick” democracy that Diamond describes would most likely consist of elements that meet these four values.

Four main positions that highlight the tradeoff of these four values that often occur when implementing democracy are highlighted in the table below.

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<thead>
<tr>
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<th>Competitive Democracy</th>
<th>Elite Deliberation</th>
<th>Participatory Democracy</th>
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The first is competitive democracy, which prioritizes political equality and non-tyranny. Essentially, as long as there is the legal framework to allow everyone to vote, the main concern is with ensuring that there is competition. Particular implementations of this system might differ in how representative or deliberative they are, but in general, the primary focus is on maintaining uncertain elections through multiple competitive parties.

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30 Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution, 618.
31 Reproduced from page 618 of Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution.
32 Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution, 618.
A second form is elite deliberation. An example of this can be seen through the process of today’s US Congress. With its roots in James Madison’s sentiments in the late 1780s, elite deliberation allows certain elites to refine the opinions of the public. Given events such as Shay’s Rebellion, the original proponents of this view feared the influence of raw, mass opinion. Hence, this view gives priority to non-tyranny of the masses and to deliberation, while it varies on its emphasis on participation and political equality.

Participatory democracy places its value on the number of people who cast votes in the process. An extreme implementation of this form of democracy would involve all voting members of a community convening to decide issues that affect them. Historical examples of this include the New England town meetings that we have seen since the late 19th century. During these meetings, residents have a say in key issues such as the operating budget of their towns, and since votes are equal, the system places emphasis on political equality as well. Whether there is a priority placed on deliberation depends on the particular implementation. It is not inconceivable to imagine a situation where many of these residents have not seriously considered the issues that they are voting on. While the results of the voting certainly have impact on the lives of the voters, there are numerous empirical findings—such as the ones regarding presidential elections in the US cited above—that show that participatory democracy does not necessarily mean that the voters are informed.

Lastly, deliberative democracy places weight on the values of deliberation and political equality. Rather than strive for the largest quantity of voters, deliberative democracy celebrates the consideration that the voters have given to the topics.

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33 Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution, 619.
34 ibid
35 Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution, 620.
Deliberative democracy aims to encourage dialogue between people with opposing views to ensure that everyone has heard the various sides of topics. An example of deliberative democracy in practice is deliberative polling, which is the focus of the thesis and will be explained in detail later.

Since the goal of this thesis is to analyze the dynamics within deliberation, it makes sense to focus on deliberative democracy. Even beyond my arbitrary choice, I argue that an uninformed and apathetic voter base poses a serious harm to the quality of democracy within the United States—even more so than the lack of voter turnout. In fact, understanding ways to engage the voter base and encourage it to deliberate the issues could prove valuable in increasing turnout, since it is not unreasonable to think that the more invested people are in the issues, the more likely they will vote. Fishkin and others have observed overwhelming benefits to deliberation for the past two decades, including an increase in knowledge of political issues and an increase in civic engagement for those who participate.36

**Problems of Deliberation**

**Domination**

There are those who believe that deliberation is not a solution to the political polarization facing the US, as some argue that deliberation might further entrench this phenomenon. Many of these criticisms are rooted in jury studies, which are indeed a type of deliberative forum. One main criticism of juries—and other types of deliberative forums—is that certain individuals will dominate the discussions.37

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36 ibid
Jury studies show that there exists a bias in favor of selecting men as the heads of juries over women. Rather than making the selection based on merit, people tend to choose heads based on those who speak first and sit at the head of the table—activities that men do more often than women. Additionally, Ellsworth et al have found in jury studies that males are disproportionately chosen as heads even relative to the number of males that sit on juries. While two-thirds of the jurors studied were female, males were chosen as heads of juries almost ninety percent of the time.

Studies have further found that the selection of males as foremen is not driven by prior experience or expertise, as the difference in experience levels between the foremen and other jurors is not statistically significant. Moreover, even after the head is selected, there is overwhelming evidence from jury studies that men talk significantly more than women in juries. To compound the problem, studies also show that jurors give more credence to arguments that they hear the most—which are the ones that the males deliver.

In fact, the domination concern extends beyond juries and gender. Studies of classrooms show that certain races tend to invoke a sense of competence even when it is unwarranted. A study at an American college matched African American and Caucasian students to groups of equal ability and asked them to work together to solve problems. Researchers found that Caucasian students started more conversations than African Americans.

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38 Sanders, 10.
39 Sanders, 10.
41 Sanders, 10.
42 ibid
43 ibid
Americans and students of both races talked more to Caucasians than African Americans.\textsuperscript{44}

These studies cast serious doubt on the deliberative process for a variety of reasons. As I wrote above, deliberative democracy is a conception of democracy that values political equality in addition to deliberation, but these studies do not seem to instill confidence in the equality of these deliberations. After all, if certain members of deliberative groups have disproportionate influence over the views of others based on gender or race, then deliberation may simply be a tool to entrench the already “advantaged” members of society.

\textbf{Predictable Shifts}

Aside from certain groups speaking more than others, another major concern with deliberative discussions is group polarization, which is the focus of this thesis.

The seminal discussion of group shifting comes from Sunstein’s \textit{The Law of Group Polarization}. Sunstein illustrates the effect through the following examples. Imagine that affirmative action is under controversy in Texas. A group of professors at a branch of the University of Texas that support affirmative action convene to discuss their views. What is likely to happen as a result of this discussion?\textsuperscript{45} Our intuition would lead us to believe the professors will end up supporting affirmative action even more than they did prior to the deliberation.

\textsuperscript{44} Sanders, 11.
\textsuperscript{45} Sunstein, The Law of Group Polarization, 175.
Similarly, consider a group of citizens who have just seen a nationally publicized shooting at a high school.\textsuperscript{46} If most of these citizens prior to the meeting are moderately supportive of gun control while the rest are undecided, how should we expect the composition of views to look after deliberations? Again, we would expect the undecided members of the group to become supportive of gun control, and as a whole, the group will likely become more solidified in its support for gun control.

In both of these examples, the group has entered deliberation leaning toward one side of an issue, and after deliberation, the group has become more entrenched/homogeneous in this prior view—an effect that Sunstein calls “group polarization.”

While Sunstein refers to this effect as “polarization,” he admits that the name is quite misleading since it does not refer to a group splitting into two or the variance increasing after deliberation.\textsuperscript{47} Rather, as Sunstein writes, “Instead, the term refers to a predictable shift within a group discussing a case or problem. As the shift occurs, groups, and group members move and coalesce, not toward the middle of antecedent dispositions, but toward a more extreme position in the direction indicated by those dispositions.”\textsuperscript{48}

Two issues are clear in the quotation above: 1) it appears that polarization is a misnomer for the effect that Sunstein describes and 2) there appears to be more several interesting types of group movements that can occur after group deliberation.

With regard to these two points, I proceed to define the following effects that I study in my thesis: 1) homogenization: when a group shifts following deliberation in the

\textsuperscript{46} ibid
\textsuperscript{47} Sunstein, The Law of Group Polarization, 178.
\textsuperscript{48} ibid
direction that it leaned prior to deliberation and 2) group-splitting: when a group divides following deliberation toward the extremes of the issue.

Thus, an example of homogenization would be the two examples that Sunstein provides above. In both of these examples, the group uniformly leans toward one side of an issue and becomes more radical in these views following deliberation. For group-splitting to occur, part of the group would need to lean toward one side and the rest of the group toward the opposite side prior to deliberation. If deliberation drove the two sides to become more extreme in their prior views, then the group has clearly “split.” As such, one way to view group-splitting is homogenization when there are multiple factions within a group.

**Why Does Homogenization Occur?**

Our intuition of what might happen in Sunstein’s hypothetical examples aligns with observations from various social psychology experiments. There seems to be a consistent phenomenon of similar groups becoming more homogeneous following deliberation. Sunstein gives two reasons why these trends seem to occur from group discussions—social influences and a limited argument pool.

The first of these is based on Solomon Asch’s research in social psychology and group discussions. Asch’s work helped establish scientifically the tendency that people have to conform to the views that they believe others have. Asch asked groups to deliberate about the simple task of matching a white card with a given line’s length to a similar card with a similarly sized line drawn on it. In the experiment, all members of the

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50 Ibid.
group except for one were instructed how to vote, which made the only “subject” be the one member voting freely. Asch found that when all members of the group were told to vote on the correct card, the subject almost never changed his or her initial opinion after discussing with the group.\textsuperscript{51} However, in instances where the other members were told to advocate for an incorrect card, over 36\% of the subjects changed their original opinion to the wrong card as well.\textsuperscript{52}

On its surface, this seems like a devastating result for proponents of deliberation. According to this theory, it may be the case that participants merely attempt to discern the prevalent views from their groups to adopt as their own.\textsuperscript{53} Hence, it might be the case that opinion change is due to the desire to gain approval of others, similar to how studies have shown that people refrain from acts such as binge drinking and littering because they model their own actions based on those that they feel define social norms.\textsuperscript{54}

Sunstein’s second explanation for homogenization centers on the limited argument pool that exists within many of these deliberative discussions.\textsuperscript{55} Underlying the argument is the theory of persuasive arguments, which states that people are likely to move in the direction of arguments that they find compelling.\textsuperscript{56} In the previous examples about gun control and impeachment, both groups already leaned toward one side of the issue before the discussions. Thus, it seems likely that more arguments would be made in favor of these prior views during the deliberations, and hence the people taking part in the

\textsuperscript{52} Asch, Opinions and Social Pressure, 31.
\textsuperscript{54} Sunstein, The Law of Group Polarization, 176.
\textsuperscript{55} Sunstein, The Law of Group Polarization, 179.
\textsuperscript{56} ibid
deliberations will hear more arguments in favor of those sides as well.\textsuperscript{57} Simply put, the argument pool is constrained by the group’s prior disposition, which helps to explain why people would gravitate toward these views.

Persuasive argument theory also dictates that, as cited earlier in juror studies, it is often the quantity of arguments rather than their quality that plays a role in influencing the opinions of groups.\textsuperscript{58} In addition to repetition, research shows that arguments that are novel to the listeners and those that are memorable are likely to influence the opinions of the participants.\textsuperscript{59} The worrisome aspect of these results is that they imply that the very process of making logical arguments will inherently lead to opinion shift. Hence, any time there is an imbalance in the number of arguments, we should expect to see polarization.\textsuperscript{60}

**Polarization and Deliberative Polling**

Given the intuitive plausibility and empirical evidence behind the theory, it is remarkable that research into this issue has found that certain deliberative forums do not appear to have these pathologies. Deliberative polling—a method of implementing deliberative democracy that I will discuss in detail shortly—does not exhibit this systematic pattern of group shifting.\textsuperscript{61} Research has explored various ways to define these effects statistically to test for their presence in deliberative polling, yet there does not appear to be any nonrandom trend.

\textsuperscript{57} ibid
\textsuperscript{58} ibid
\textsuperscript{59} ibid
\textsuperscript{60} Manin, Bernard. Deliberation: Why We Should Focus on Debate Rather than Discussion, 6.
\textsuperscript{61} Luskin et al, Consensus and Polarization in Small Group Deliberation, 8.
For instance, research has analyzed the change in variance from prior to deliberation and after deliberation.\textsuperscript{62} Studies from ten previous deliberative polls show that there is no regular trend toward an increase or decrease in within-group variance following deliberation.\textsuperscript{63} These studies found that while 57.2\% of the 171 groups analyzed show a decrease in within-group variance following deliberative polls, the remaining 42.8\% do not.\textsuperscript{64} Similarly, the same results help to debunk the systematic trend toward an increase in variance, as 42.8\% of the groups had an increase in variance, whereas 57.2\% did not.

In addition to this finding, the research shows that the movement of the mean and median from the midpoint does not have any systematic pattern or predictability.\textsuperscript{65} For the same 171 groups across 10 deliberative polls, the researchers found that only 52.5\% of group means moved further from the midpoint, which is statistically insignificant.\textsuperscript{66} Moreover, even if the shift is taken as the magnitude of the movement toward or away from the midpoint, the research finds evidence that the systematic nature of this effect was absent from these polls.\textsuperscript{67} In fact, over the 171 small groups, the average movement was 0.003 toward the midpoint, which would be the opposite of polarization—although this number is also statistically insignificant.\textsuperscript{68} As such, there seems to be the striking conclusion that that the “regularity” that Sunstein discusses is not seen in deliberative polling.\textsuperscript{69}

\textsuperscript{62} ibid
\textsuperscript{63} ibid
\textsuperscript{64} ibid
\textsuperscript{65} ibid
\textsuperscript{66} ibid
\textsuperscript{67} ibid
\textsuperscript{68} ibid
\textsuperscript{69} Sunstein The Law of Group Polarization, 176.
Additional Benefits to Deliberative Polling

Moreover, the fear of domination by any one group does not appear to be manifested in deliberative polling. That is, while the problems may still exist within deliberative polling, the design of deliberative polling attempts to minimize many of these pathologies. For example, deliberative polls have moderators for each of the deliberative groups for the purpose of ensuring that each member of the room has an opportunity to speak. Rather than allowing one member to dominate discussions, moderators make an effort to incorporate each member’s views in the dialogue. Moreover, moderators are not participants in the poll, but rather are chosen before the poll and trained to be unbiased and fair. As such, the participants do not select a moderator as they would a jury head, which helps to ensure that no participant is perceived as more knowledgeable or authoritative than any of the others. Finally, analysis of several deliberative polls shows that there is not a statistically significant difference in the participation of men or women within the small group discussions.70

This research examined five different deliberative polls across a variety of topics and countries in an extremely robust manner and found that deliberative polling does not fall prey to the harms observed in juries and classroom studies. Regardless of whether participation is defined as the number of words or the number of reasoned arguments, gender does not appear to play a role in deliberative polls.71 The same results have been found for members of different races and socioeconomic statuses as well, suggesting that there is a protective element in the design of the polls against these negative harms.72

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71 ibid
72 ibid
Before continuing, it is important to formally define the process of deliberative polling. As such, the next two sections are dedicated to the methodology of deliberative polling and the theoretical motivations to it.

**How Deliberative Polling Works**

The origins of deliberative polling trace back to ancient Athens—a society in which citizens were randomly selected to participate in a senate for one year to adjudicate issues relevant to their society. During this time, citizens of the towns could voice their opinions and discuss the issues with others, with the goal to reach a decision that the majority of people supported. Since its inception in 1988, deliberative polling has spread to six continents worldwide.\(^{73}\) Some of the larger efforts include a poll that consisted of a random sample of all 27 European Union member nations in 2007 and a California statewide poll in 2011 of over 450 registered voters.\(^{74}\)

Throughout the history of deliberative polling, various organizations such as local and national governments, public electrical companies, and private firms have utilized the poll as a way to understand the informed opinion of the public.\(^{75}\) For example, consider an electrical company that wants to make a switch to utilizing more sources of alternative energy but has little knowledge on whether the people in their community would be willing to pay more for this cleaner energy.\(^{76}\) The company would want to ensure that the people are informed on the issues and have thought about them carefully, and it would also want to know that it is polling a representative sample of the community. Otherwise, the poll may suffer from responses of those who have an extreme view on either side and

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\(^{73}\) Center for Deliberative Democracy at Stanford University, cdd.stanford.edu  
\(^{74}\) ibid  
\(^{75}\) ibid  
\(^{76}\) This topic is from actual deliberative polls conducted across Texas in the 1990s
who probably do not reflect the society as a whole. Rather than only hearing from those that heavily support the transition and from those that are heavily sympathetic to the coal industry, the electrical company has an interest in seeing that its future action promotes the welfare of the overall community.

In an attempt to do this, a deliberative poll begins with a scientific random sampling of the society in question, which in our example is the town that the electrical company seeks to learn about. A random sample means that every resident of the town has an equal probability of being chosen, and statistically, this means that the sample chosen should generally reflect the overall characteristics of the town. For example, the average age, income, education level, and other key demographics of the randomly selected sample should be nearly the same as the traits observed in the overall population. If the town is one in which phones are prevalent, the random sampling could involve calling selected participants and asking them to complete a phone interview. This initial interview consists of a series of questions about demographic information, views on the relevant issues to the poll, and factual knowledge about the issues. At the end of the interview, participants are invited to a deliberative conference, where they are compensated for their time in participating.

The participants who accept the conference invitation are sent balanced briefing materials on the topics that they answered the initial interviews about. The goal of the briefing materials is to provide participants knowledge on both sides of the issue, and as such, interest groups on all sides of the issues vet the materials. The materials contain

79 ibid
pros and cons to the main stances on the issues, and they serve as a starting point for the
deliberations that occur over the conference weekend. In many deliberative polls, such
as the one that I analyze in this thesis, a “Time 2” questionnaire is given as well. This
questionnaire might contain more questions than the initial phone interview and is
considered a baseline measurement, since the responses are recorded before deliberations
in small groups begin.

Once at the conference, participants are split into small groups, which usually do
not exceed fifteen members. The motivation behind the small groups is to create an
environment where participants feel that their voice matters and is conducive to having a
dialogue. It is hard to imagine a productive conversation or deliberation when there are
three hundred voices competing to speak.

During these small group discussions, participants debate a series of issues based
on the briefing materials. Facilitating these discussions are trained moderators.
Moderators ensure that everyone has an opportunity to speak, that the discussions are
civil, and that all sides are heard for each topic. The last point means that if the entire
room voices affirmation on an issue, the moderator should prompt participants to
consider the negation.

In addition, participants have the opportunity to ask questions to a panel of
experts during the conference. Each small group agrees on a few questions to ask at a
plenary session, which provides participants the opportunity to hear from knowledgeable
sources on several sides of the issues that they have debated in small groups about. The
poll concludes with participants re-answering the “Time 2” survey and some additional

\[\text{\脚注} 80\text{ ibid}\]
\[\text{\脚注} 81\text{ ibid}\]
questions about how they enjoyed the deliberative poll. From these new opinions, we can
determine the “deliberative effect” that the poll had on the opinion shift of participants.

It has been observed that statistically significant net change occurs roughly half of
the time, which illustrates the effects of deliberation.\textsuperscript{82} A previous poll that helps to
illustrate the effect that deliberative polling can have was done in Denmark in 2000. Prior
to the poll, a national referendum had asked citizens their views on adopting the Euro as
the official currency, and the majority of Danes had voted against this. However, after a
representative sample of 364 Danish citizens debated the issue at the deliberative poll, the
majority of citizens wanted to adopt the Euro.\textsuperscript{83} Even in cases where there are not opinion
changes, there seems to be a benefit to the discussions, as participants almost always
improve on the answers to the knowledge questions and claim that they enjoyed the
process.\textsuperscript{84} Moreover, participants are more likely to listen to differing viewpoints
following their participation in a deliberative poll and to feel that those who disagree with
them are justified in doing so.\textsuperscript{85} For these reasons, it seems that deliberative polling is an
ideal type of deliberative forum for analyzing the reasons for group homogenization and
splitting.

**Theoretical Motivations to Deliberative Polling**

With the knowledge of how deliberative polling works, I turn my attention to the
theoretical motivation behind the design of deliberative polling. Understanding the

\textsuperscript{82} ibid
\textsuperscript{83} Andersen, VN and Hansen, Kasper. How Deliberation Makes Better Citizens: The Danish Deliberative
\textsuperscript{84} Andersen, VN and Hansen, Kasper. How Deliberation Makes Better Citizens: The Danish Deliberative
Poll on the Euro, 543.
\textsuperscript{85} Fishkin and Luskin, Experimenting with a Democratic Ideal: Deliberative Polling and Public Opinion, 288.
design helps highlight the features of deliberative polling that make it unique from other types of deliberative forums, and guides the choice of the independent variable.

When making the decision to poll the public, there are several choices that need to be made. A place to start is to determine whether the poll should be representative or not.  

The answer to the question may not be as simple as it seems, as there are benefits to both a representative and unrepresentative poll. An unrepresentative poll often may be easier and cheaper to implement. For example, a researcher might simply create an online poll that is open to anyone who wants to express his or her views on the topic. This is an example of a “self-selected listener opinion poll” or SLOP, as the researcher is not explicitly choosing respondents but rather having them self-select to respond. As a result of this, SLOPs are often not representative of the entire population. For example, it might be the case that only the younger, more technologically savvy generations participate in this hypothetical SLOP since it is hosted online.

In other cases, maybe only those who feel strongly on one side of the issue will respond to the poll. An example of a SLOP that clearly had a lack of representation was the “Citizen Briefing Book” during the Obama transition. The poll asked respondents about pressing national issues that they would like to see addressed during President Obama’s first term in office. The top two issues involved the legalization of marijuana and the legalization of online gambling, but it seems unlikely that the majority of Americans truly worried about these issues over others such as the economy or war.  

86 Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution, 612.
87 ibid
88 Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution, 613.
89 ibid
similar example is the Administrative Procedure Act of 1946, which employs a “notice and comment” method to encourage the public to participate in the rulemaking process. The problem, like with the aforementioned “Citizen’s Briefing Book,” is that well-established interest groups often dominate these forums, which make their results questionable. As such, the public is less likely to care about the results of an unrepresentative poll since it may feel that the opinions expressed are not representative of the true will of the public. With all of this in mind, if cost is not a constraint, it seems clear that the ideal choice would be a representative poll.

Another choice the designer of the poll must make is whether or not the poll will be deliberative.\textsuperscript{90} For many of the reasons discussed, there is a clear advantage to having a poll that emphasizes deliberation, as this would help to minimize the number of phantom opinions received and provide more credibility to the results. It is important to note that this design is also the first deviation of deliberative polling with more conventional public opinion polls. Many polls have focused on achieving a representative population, which include Gallup polls. The mechanism for achieving a representative group in these polls is similarly scientific random sampling.\textsuperscript{91} However, these latter polls merely ask people their opinion, which leaves doubt as to whether the people are offering opinions that reflect an attempt to understand the issues. On the contrary, deliberative polling clearly emphasizes the process of discussing and reasoning in forming opinions, which is not seen in traditional examples of polling.

\textsuperscript{90} ibid
Finally, the researcher must decide on whether the poll should aim for consensus or not.\textsuperscript{92} First, it is clear that a poll that is not deliberative cannot be consensus-driven (hence, this choice does not exist for designers of most standard public opinion polls), since the people polled have not had the chance to discuss or learn what the others polled believe on any given issue. A consensus-driven, deliberative poll would involve participants deliberating in order to reach an agreement at the end. An example of this would be a jury deliberation, in which the goal is to reach a collective verdict of innocent or guilty. A determining factor in the choice of whether to strive for consensus or not is the sample size of the polled group. A jury consists of twelve members, which makes it feasible to reach unanimity. However, it would be highly impractical to ask hundreds of people to reach unanimity on an issue.

**Why is Systematic Shifting Absent from Deliberative Polls?**

With an understanding of deliberative polling, I now turn to the question of why these harms do not appear to exist within deliberative polls. Interestingly, authors who critique deliberation even admit that deliberative polls seem immune to some of these harms.

Sunstein concedes that his law of group homogenization does not seem to apply to deliberative polling.\textsuperscript{93} According to Sunstein, the major culprit in the deviation from his theory found in Fishkin’s polls is the balanced briefing materials that participants are given.\textsuperscript{94} These materials serve to influence people’s movement in different ways than group discussions without them would, as they help shift people toward the midpoint of

\textsuperscript{92} Fishkin, Making Deliberative Democracy Practical: Public Consultation and Dispute Resolution, 613.

\textsuperscript{93} Sunstein, The Law of Group Polarization, 193.

\textsuperscript{94} Sunstein, The Law of Group Polarization, 194.
an issue before deliberation took place. As such, the lack of large majorities helps prevent the domination of only one side of any argument.

In addition to this explanation, others have offered additional reasons as to why deliberative polling may be immune to group polarization. For instance, after participants answer the initial phone survey and agree to attend the polling weekend in the future, they have time to begin paying more attention to the issues. This might increase the chance that an argument they will hear during the group discussions is not novel, which would nullify a major driver of opinion change according to persuasive argument theory. Furthermore, some argue that since participants are randomly split into small groups, there is a greater chance that they are exposed to a more diverse set of views than they would have normally been. Thus, the argument is that deliberative polling provides a check against enclaves that can form when people only discuss issues with those that share similar backgrounds and views on issues.

Lastly, it has been proposed that the plenary sessions that take place in deliberative polling play a role in countering the polarization effect. As discussed earlier, small groups work to form questions that they can ask to a group of experts on the issue. However, the balance among the selection of experts exposes participants to a balance in knowledge that they generally would not have access to. For similar reasons to the briefing material, it seems that this aspect of the deliberative polling structure might be working to help participants see compelling arguments on both sides of the issues.

95 ibid
96 ibid
97 Manin, Bernard. Deliberation: Why We Should Focus on Debate Rather than Discussion, 6.
98 Manin, Bernard. Deliberation: Why We Should Focus on Debate Rather than Discussion, 7.
99 ibid
100 ibid
101 Manin, Bernard. Deliberation: Why We Should Focus on Debate Rather than Discussion, 7.
**Previous Work on the Topic**

Much of the work done to formulate these theories has focused on examining the results of deliberation. Namely, researchers have taken the composition of groups and the direction that the group leans prior to deliberation and seen how this influences the post-deliberation composition. In essence, this treats the group’s prior disposition as the independent variable and the shift in group’s opinion following deliberation as the dependent variable.

I argue that there has been a lack of exploration into the causes of these group shifts. While deliberative polling does not appear to have these systematic shifts, the explanations presented above seem unsatisfactory for several reasons.

First, one of the explanations given for the lack of polarization is that participants have time to prepare for the poll by following the news. However, I have cited research that shows that people tend to watch news that confirms their prior viewpoints, which makes them even more radical in their views. As such, the time participants have to prepare should theoretically entrench them in their views and drive them away from the midpoint. This should cause them to argue more passionately for this side in the debates, which should homogenize or split the entire group. Clearly, however, this is not what happens, which is why I believe the research question has been underexplored.

What then happens during a deliberative poll that seems to prevent these systematic shifts? Or, rather, are there predictable shifts that previous studies have failed to uncover?

For one, there are a limited amount of studies that have rigorously analyzed the discourse that takes place within these deliberative discussions. Those that have looked at
this effect have done so on the individual level. Siu has explored the question of how balanced argumentation within rooms drives polarization.\textsuperscript{102} The conclusion found balanced, reasoned arguments on participants within these deliberative groups had a slight effect on preventing polarization. Moreover, Westwood finds that persuasive arguments that are justified and directed at a particular listener help to change the listener’s opinion towards that of the speaker.\textsuperscript{103}

While these two studies analyze transcripts from deliberative discussions, uncovering potential causes and rigorously testing for homogenization or group-splitting were not the main focus. As Manin writes, it is unclear which aspect of deliberative polling guards against systematic shifts: ultimately, “The empirical answer is not available.”\textsuperscript{104}

As such, one motivation behind this thesis is to attempt to answer this mystery.

\begin{flushright}
\textsuperscript{102} Siu, Look Who’s Talking Now: Examining Social Influence, Opinion Change, and Argument Quality in Deliberation, Chapter 4.
\textsuperscript{103} Westwood, Sean. The Role of Persuasion in Deliberative Opinion Change. Stanford University 2015.
\textsuperscript{104} Manin, Bernard. Deliberation: Why We Should Focus on Debate Rather than Discussion, 8.
\end{flushright}
Chapter 3: The Methodology of the Study

Introduction

With an understanding of the theory behind deliberation and the shifts that occur during the deliberative process, I now discuss the methodology used to answer the research question. After providing an overview of the deliberative poll that I analyzed, I discuss the process used to measure the dependent and independent variables.

Overview

On June 24, 2011, over 450 registered voters across the state of California convened in Torrance, California, to discuss issues relevant to the state.\textsuperscript{105} These issues included the statewide initiative process, legislative representation, local government, and tax and fiscal policy. My study focuses on the topic of state tax and fiscal policy. As such, two important decisions that I made in my thesis were the choices to 1) focus on one deliberative poll and 2) select one topic within the poll to analyze.

Why the California Deliberative Poll?

Rather than study a few small groups across multiple deliberative polls, I made the choice to analyze all of the small groups in a particular deliberative poll. Studying the effects of group shifts across multiple polls would be problematic, as it would lead to a tremendous amount of confounding. In particular, topics across polls vary. Analyzing small groups that discussed tax reform in California with those that debated how crime law should be altered in the United Kingdom would not make sense, as one topic may be much more salient than another.

\textsuperscript{105} After excluding participants that had missing answers or answered, “I don’t know” to the questions I was interested in analyzing, I had final sample sizes of 338 on Index 1, 329 on Index 2, and 297 on Index 3. The meaning of the indices will be explained in this chapter.
As such, I explored the relationship between the independent and dependent variable within a single poll, as this controls for regional demographics of the participants (since the participants in a poll are residents of the area) and for the differences in topics. Moreover, the statistical validity of the results remains, especially since the poll that I analyzed is the largest deliberative poll conducted to date.

**Why the Topic of State Tax and Fiscal Policy**

Each of the four topics consisted of multiple subtopics. As such, analyzing all four topics (and hence all of the subtopics within each) would produce diminishing returns and would sacrifice the depth of analysis. Given the lack of empirical work done on the research question, I chose to prioritize a rigorous methodology on the one topic that I chose.

I analyzed the topic of state tax and fiscal policy and the subtopics within it. The choice of state tax and fiscal policy over any of the other three topics had to do with the relevance of this issue, particularly in California. The past several years have been rough for businesses following the 2008 financial crisis across the US, and California has a relatively high reliance on income taxes for state revenue.\(^{106}\) This means that the income that the state generates from tax is less in years of economic downturn, which has important implications for the state’s budget. Interestingly, Proposition 13 and its stipulations about property taxes mean that Californians pay lower property taxes than the US average.\(^{107}\) Even more, the retail sales tax in California is very high relative to other states but limited in its scope, as will be discussed later. These interesting and somewhat

\(^{107}\) Participant Guide, 65.
clashing features of the economy make the results of the deliberative poll very interesting.

Moreover, recent public opinion work has explored the attitudes of Californians toward taxation and fiscal policy. For example, a 2015 Field Poll showed that 71% of Californians believe that more funds should go toward the maintenance of roads. However, when asked whether they would want to pay for this through an increase in 10 cents per gallon on the gasoline tax, only 49% voiced approval. As such, there are many interesting tradeoffs that arise in discussions of state tax.108

**Three Subtopics within State Tax and Fiscal Policy**

The topic of state tax and fiscal policy covered a number of issues pertinent to the state of California, and the briefing materials helped condense the topic into three subtopics: 1) budget stability; 2) greater equity in the taxation system; 3) the revisiting of Proposition 13. Before proceeding, it is helpful to give brief context for the types of issues that each of these subtopics entailed.

**Budget Stability**

From the briefing materials, the participants learned that there is volatility in the state budget from year to year. A significant portion of the state’s income is derived from tax revenues, which are variable based on the overall economy for the given year.109 For example, in a year of economic growth across the nation, it is likely that California businesses will earn more revenue, and hence, the overall dollar amount they will pay in

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109 Participant Guide, 64.
state taxes will be high. Conversely, in times of financial crisis, businesses might underperform and thus the state cannot generate as much revenue from taxing the businesses as they would during boom years. An important question then becomes how the state should use the revenue from years of economic boom. Namely, should the state store this money in a “rainy-day” account or invest it in public projects? The briefing materials provided the participants with several policy proposals on these issues, along with pros and cons for each issue to help start discussions.

**Greater Equity**

The second subtopic of greater equity referred to the question of whether California’s current sales tax is at the right mark. At first glance, it might appear there is room to lower the sales tax, as California has one of the highest retail sales tax rates in the US. However, Californians pay less of a percentage of their incomes in sales taxes than the average US taxpayer. One major reason for this is that California exempts goods and services from its retail sales tax, such as groceries and taxes many other goods and services at much lower rates than other states. Thus, a question that participants were encouraged to grapple with was whether to expand the sales tax to have fewer exemptions, and whether this might be done in conjunction with lowering the overall sales tax rate.

Along these lines of equity, this subtopic also expands to considering tax deductions as they relate to mortgages. One specific proposal that participants weighed was a measure to limit the state income tax deduction for mortgage interest payments to

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110 ibid
111 ibid
113 ibid
$25,000 a year.\textsuperscript{114} As an example, one argument listed in favor of this proposal is the equity that the action would create between those that make the same income but only differ in home ownership deductions. Conversely, the briefing materials explain that this proposal might disincentivize home purchases.\textsuperscript{115}

**Revisiting Proposition 13**

The third and final topic involved the revisiting of Proposition 13. Proposition 13 was designed to protect homeowners from frequent reassessment of their property valuations. This means that homeowners are shielded from paying more in property tax if their home appreciates in value. However, this provision also extended to many non-residential properties under Proposition 13’s current language, which may mean that the state is losing out on revenue from taxing corporate buildings. In addition, the topic encouraged participants to discuss the merits to modifying the voting requirements needed in the state legislature to raise taxes and to pass special taxes. Two specific proposals that participants considered were reducing the voting requirement from 67\% (two-thirds) to 55\% to increase taxes and lowering the threshold to 51\% (a simple majority) to pass general taxes from the current two-thirds requirement.\textsuperscript{116}

**Defining the Dependent Variable**

The two effects I analyze are homogenization and group-splitting. I define homogenization as the shift in the median from the midpoint following deliberation, which is consistent with the way that Sunstein describes the effect. While the shift of the

\textsuperscript{114} Participant Guide, 72.
\textsuperscript{115} Participant Guide, 77.
\textsuperscript{116} Participant Guide, 73.
mean from the midpoint would have also worked, I chose to use the median, since the mean can often be distorted due to outliers.\textsuperscript{117} Homogenization was measured at the group-level based on the participants’ answers to the questionnaires.

I define the second effect—group-splitting—as the change in variance from before and after deliberation. This measure provides an understanding of how the groups spread and divided following debates.

**Constructing the Indices**

My next goal was to determine homogenization and group-splitting for each of the twenty-four small groups on each of the three subtopics. As such, I wanted to measure group opinion on each of these three subtopics. The questionnaire that all the participants answered both before and after deliberations contained thirteen questions on topics of state tax and fiscal policy. Out of these thirteen, five related to budget stability, three to greater equity in the taxation system, and five to the revisiting of Proposition 13. To provide some context, below are three examples of questions from the actual questionnaire:

*On a 0 to 10 scale, where 0 is “extremely undesirable”, 10 is “extremely desirable,” and 5 is exactly in the middle, how desirable would you say each of the following is?*

*Question 2aa: Requiring legislation creating new programs that cost $25 million or more to indicate how they will be paid for*

*Question 2ae: Increasing the size of the State’s rainy-day fund from 5% to 10% of the State’s budget*

*Question 2ah: Limiting the current California state income tax deduction for home mortgage interest payments to $25,000 per year*\textsuperscript{118}

\textsuperscript{117} However, for thoroughness, I do include some analysis analyzing the shift in mean as well.

\textsuperscript{118} Please see the appendix for a full list of the thirteen relevant questions
Based on the discussion of the briefing materials, it is clear that 2aa corresponds to the budget stability group, 2ae to the equity group, and 2ah to the Proposition 13 group. However, the difficult part of the methodology is determining how to treat the fact that there were multiple questions for each subtopic on the questionnaire.

I wanted to create indices—that is, combine the questions for each subtopic into a singular measure—for several reasons. For example, rather than keeping Questions 2aa, 2ab, 2ac, 2ad, and 2ae as independent, it seemed wise to merge these into one measure of group opinion on the subtopic of budget stability.

The first reason for combining the questions under each subtopic is that given the limited amount of time that groups had to discuss state tax and fiscal policy, there was even less time to discuss the three subtopics within it. As such, there was the strong possibility that while one small group’s discussion might have centered on the issues relevant to Question 2b while discussing budget stability, another small group’s dialogue could be focused on Question 2a. Thus, it would be problematic to keep each individual question as its own dependent variable, since random statistical noise—rather than group discussion—might have driven the movement. Secondly, testing thirteen dependent variables creates the statistical problem of multiple testing, which could result in a Type I error. Third and finally, the results are much easier to interpret when indices are formed. For example, it is much clearer to explain movement on the index of budget stability than to discuss the shift on five individual questions relating to budget stability. After all, many of these dependent variables would be highly correlated with each other, since they are all hinting at the same overall issue.
This last point about questions within each subtopic having a relationship is particularly important. Before merging multiple questions into single measures, I had to ensure that there was statistical justification in doing so.

**Cronbach’s Alpha**

A first step in this process is to ask whether multiple survey questions can be condensed into a unidimensional measurement. One coefficient that helps guide this decision is Cronbach’s alpha, which is a measure of internal consistency.\(^{119}\)

To determine whether a scale is reliable, there are varying views as to how high the value of this coefficient must be. Nunnaly proposed an acceptable threshold of 0.7 (the coefficient is bounded between 0 and 1), but lower thresholds have been used in the academic literature.\(^{120,121}\) While a high value of alpha is a necessary but insufficient condition to determine whether questions can indeed be merged into a singular measure, it is often a good start. Below are the results of the calculation for the three respective subtopics in my study:

**Table 1. Initial Index Composition with Cronbach’s Alpha Coefficient**\(^{122}\)

<table>
<thead>
<tr>
<th></th>
<th>Index 1</th>
<th>Index 2</th>
<th>Index 3</th>
</tr>
</thead>
<tbody>
<tr>
<td># of questions</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>questions</td>
<td>2aa-2ae</td>
<td>2af-2ah</td>
<td>2ai-2am</td>
</tr>
<tr>
<td>alpha</td>
<td>0.79</td>
<td>0.62</td>
<td>0.86</td>
</tr>
</tbody>
</table>

\(^{119}\) SPSS FAQ. What does Cronbach’s alpha mean? Institute for Digital Research and Education. UCLA. Web.  
\(^{122}\) All statistical analyses presented in this thesis were generated using the programming language/package R.
The threshold that Nunnaly suggests is met in the first and third indices, while the alpha for the second index is slightly below. However, as stated before, there is some subjectivity in this threshold, and many do not view this as absolute. Moreover, it is certainly possible to achieve a higher alpha value on Index 2 by omitting one of the questions. For example, if I omit question 2ah, the alpha value increases to 0.70. However, dropping a question out of the index means losing information about responses and opinions. As such, it does not seem that this tradeoff makes sense, especially given that Index 2 only has three questions.

Given these results, I proceeded with constructing the indices, as the alpha coefficients did not prove reason to believe that a unidimensional measure was unachievable in the dataset.

**Principal Component Analysis**

The next step was to determine how to weight each of the questions within a subtopic. Rather than weighting questions within each subtopic equally, I decided to take a more nuanced approach through principal component analysis (PCA). I applied PCA on the questions that comprised all three of the subtopics. The table below shows the factor loadings from the analysis carried out on the five questions that comprise Index 1 (Budget Stability), which I use as a paradigmatic example. Chart 1 below shows the proportion of variance explained by the respective principal components for Index 1, which justifies the choice to keep only the first principal component and to use these factors as the weightings.

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123 Santos, J. Cronbach’s Alpha: A Tool for Assessing the Reliability of Scales
<table>
<thead>
<tr>
<th></th>
<th>Comp. 1</th>
<th>Comp. 2</th>
<th>Comp. 3</th>
<th>Comp. 4</th>
<th>Comp. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>2aa</td>
<td>0.438</td>
<td>-0.027</td>
<td>-0.876</td>
<td>-0.195</td>
<td>-0.047</td>
</tr>
<tr>
<td>2ab</td>
<td>0.505</td>
<td>0.435</td>
<td>0.292</td>
<td>-0.071</td>
<td>-0.682</td>
</tr>
<tr>
<td>2ac</td>
<td>0.527</td>
<td>0.386</td>
<td>0.212</td>
<td>0.005</td>
<td>0.727</td>
</tr>
<tr>
<td>2ad</td>
<td>0.404</td>
<td>-0.470</td>
<td>0.046</td>
<td>0.781</td>
<td>-0.062</td>
</tr>
<tr>
<td>2ae</td>
<td>0.334</td>
<td>-0.663</td>
<td>0.318</td>
<td>-0.589</td>
<td>0.022</td>
</tr>
</tbody>
</table>

Moreover, the choice in selecting only one component is further justified in that all of the questions have loadings with the same sign for factor one. The loadings represent the correlation between the questions and the principal components, so in this case, all of the questions are correlated in the same direction with the first principal component. Furthermore, this pattern held true for the questions that related to Index 2.
and Index 3 as well. Namely, each of the questions that corresponded to these indices had the same sign for the first factor.

It is worth noting that weighting the five questions by the factor loadings under component one in Table 2 would not result in a variable on a 0-10, which was the scale of the original questions. This is due to the fact that these loadings/weights add up to more than one. In order to keep the 0-10 scale for reasons of interpretability, I standardized the weights above to add up to 1. Thus, the same procedure is applied to the two remaining indices, and the tables below show some of the results.

**Table 3: PCA Factor Loadings and Standardized Weights for Index 1**

<table>
<thead>
<tr>
<th></th>
<th>Original Weight</th>
<th>Standardized Weight</th>
</tr>
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<tbody>
<tr>
<td>2aa</td>
<td>0.438</td>
<td>0.198</td>
</tr>
<tr>
<td>2ab</td>
<td>0.505</td>
<td>0.229</td>
</tr>
<tr>
<td>2ac</td>
<td>0.527</td>
<td>0.239</td>
</tr>
<tr>
<td>2ad</td>
<td>0.404</td>
<td>0.183</td>
</tr>
<tr>
<td>2ae</td>
<td>0.334</td>
<td>0.151</td>
</tr>
<tr>
<td>Sum</td>
<td>2.208</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 4: PCA Factor Loadings and Standardized Weights for Index 2**

<table>
<thead>
<tr>
<th></th>
<th>Original Weight</th>
<th>Standardized Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2ad</td>
<td>0.623</td>
<td>0.364</td>
</tr>
<tr>
<td>2ae</td>
<td>0.642</td>
<td>0.375</td>
</tr>
<tr>
<td>2af</td>
<td>0.447</td>
<td>0.261</td>
</tr>
<tr>
<td>Sum</td>
<td>1.712</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 5: PCA Factor Loadings and Standardized Weights for Index 3**

<table>
<thead>
<tr>
<th></th>
<th>Original Weight</th>
<th>Standardized Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2ag</td>
<td>0.410</td>
<td>0.184</td>
</tr>
<tr>
<td>2ah</td>
<td>0.435</td>
<td>0.195</td>
</tr>
<tr>
<td>2ai</td>
<td>0.458</td>
<td>0.205</td>
</tr>
<tr>
<td>2aj</td>
<td>0.464</td>
<td>0.208</td>
</tr>
<tr>
<td>2ak</td>
<td>0.467</td>
<td>0.209</td>
</tr>
<tr>
<td>Sum</td>
<td>2.234</td>
<td>1</td>
</tr>
</tbody>
</table>
While it appears that a naïve strategy of equally weighting each of the questions within each subtopic to form the indices would have given almost the same results as the PCA strategy for indices 1 and 3, there is a deviation from the equal weighting in index 2. As such, using the PCA weightings makes the results presented in Chapter 4 more robust and valid.\textsuperscript{124}

\textbf{Constructing the Independent Variable}

The independent variable in the analysis was the balance of argumentation, which was specific to each group for each index. As motivated by Chapter 2, the basis of choosing the independent variable was rooted in Sunstein’s homogenization theory—namely, the more times that people hear an argument may increase the persuasiveness of that argument. As such, the theory would indicate that a group that leans on one side of an issue prior to deliberation would make more arguments in favor of this prior viewpoint.

To test this probing question in greater detail, I examined the transcripts from all twenty-four small groups during discussions of state tax and fiscal policy from the 2011 California statewide deliberative poll. Prior to coding the transcripts, I had formed the three indices using the methodology described above. I proceeded to read through all of the transcripts on each of the three subtopics for each of the twenty-four small groups. When reading the transcripts, I tracked the number of arguments made “for” and

\textsuperscript{124} Please see the appendix for histograms of the complete pre and post-deliberation responses on each of these indices
“against” each side of each of the indices. As such, for each of the indices, I defined the following binary system of coding prior to reading the transcripts:

**Budget Stability**

“Budget Stability For” was coded if a participant supported a conservative approach to the budget. Arguments included those that advocated expanding the rainy-day fund, creating more accountability from politicians creating new spending programs or tax cuts, and spending spikes in revenue on paying off debt or one-time expense projects.

“Budget Stability Against” was coded if the participant supported a more aggressive approach to the budget. These entail arguments included ones that supported maintaining or decreasing the current rainy-day fund and ensuring flexibility for politicians to create new, potentially expensive programs.

**Greater Equity**

“Greater Equity For” was coded if a participant supported expanding the existing sales tax. This included advocating for the sales tax to expand to services as well as goods, either while maintaining the current sales tax rate or reducing this rate. In addition, an argument supporting limiting the state income tax deduction for mortgage interest payments was coded into this side.

---

125 The transcripts were hand-coded rather than through a computer program. As such, while it is possible to identify key arguments or key words that would fall under one side of our binary indices, the arguments are not restricted to these. Prior to coding the transcripts, I developed a coding scheme that identified arguments based on the briefing materials to serve as examples, which helped keep the process less arbitrary. Please see the appendix for the coding scheme.
“Greater Equity Against” was coded if the participant was against expanding the sales tax to services, regardless of how they felt about the current sales tax rates. Moreover, arguments against limiting state tax deductions for mortgage interest payments fell under this coding.

Revisiting Proposition 13

“Revisiting Proposition 13 For” was coded if participants argued for reassessing non-residential property more frequently in any manner or making it easier for politicians to raise property taxes or increase other taxes.

“Revisiting Proposition 13 Against” was coded for arguments that referred to maintaining the status quo on these issues. This included arguments against more frequent reassessment of non-residential property and arguments about either maintaining or even strengthening laws that represent hurdles for politicians to raise taxes.

Unwarranted Arguments

In the regression models, I treat warranted and unwarranted arguments as distinct. The basis for doing this also stems from persuasive argument theory, as the theory suggests that arguments that are particularly memorable, new, or weighty might hold particular weight. Moreover, intuition would suggest that an argument based in fact or reasoning would be more compelling than unwarranted exclamations. The tricky part becomes finding an objective and consistent way to differentiate between a warranted and
unwarranted argument. For example, is an argument that appeals to a personal story warranted or not?

I decided to code any argument that referenced the briefing materials as a justification or appealed to personal stories as warranted. Examples of unwarranted arguments included those such as, “We should raise taxes” and “I agree with his/her statement about raising taxes.” However, these arguments are also coded following the binary coding system. As such, there are “Unwarranted Budget Stability For,” “Unwarranted Budget Stability Against,” and so on for the other indices.

A Note on the Methodology

While I present the results of the exploratory analysis on the dependent variable prior to discussing the independent variable, the process was reversed in reality. Namely, I first coded the transcripts before calculating the shift in the mean, median, and variance for each group. This step was important to ensure that I was “blind” to the post-deliberation movement of the group I was analyzing. As mentioned previously, I attempted to make the process of coding as objective and consistent as possible through a detailed coding scheme. In order to protect the coding scheme from bias, I developed the coding scheme prior to reading the transcripts. As such, the coding scheme was entirely based on the briefing materials and the arguments presented in it. Therefore, the transcripts did not influence the coding scheme, and equally as important, the results of whether the group polarized or not did not affect the coding process.
Conclusion

In conclusion, I formed three indices—each scaled from 0-10—as a way to measure group opinion on the topics of budget stability, greater equity in the taxation system, and the revisiting of Proposition 13. Moreover, I hand-coded the discussions of each of the twenty-four small groups to calculate the balance of argumentation for each of these indices. Having formulated and computed both the independent and dependent variables, I now proceed to discuss the results of my study.
Chapter 4: Results and Discussion

Introduction

This chapter presents the results of the thesis and provides the quantitative answer to the research question posed in Chapter 1. Before using multiple linear regressions to discern the relationship between the independent and dependent variables, I first conducted an exploratory analysis. The exploratory analysis below discusses issues such as the number of groups that homogenized and split, the number of groups that leaned to one side of an issue prior to an issue, and the proportion of groups that showed a skew in argumentation. From here, I present the regression models and discuss my findings.

Exploratory Analysis for Homogenization (Dependent Variable I)

The first effect I studied was that of homogenization, which I defined in the last chapter as the shift in the median from the midpoint in each group. Tables 1 and 2 below show this average shift from the midpoint of the mean and median respectively for the three indices. A positive value indicates a shift in the direction of homogenization. As such, if a group median started at 3 and shifted to 1, it received a value of 2 (rather than -2) to keep the values consistent. Thus, a negative value for the average increase in of the mean or median indicates a shift toward the midpoint, which is the opposite of what homogenization theory would suggest.
Table 1: Average shift of Mean from Midpoint

<table>
<thead>
<tr>
<th></th>
<th>Index 1</th>
<th>Index 2</th>
<th>Index 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average shift of the mean in</td>
<td>0.119</td>
<td>-0.114 (toward the midpoint)</td>
<td>-0.513 (toward the midpoint)</td>
</tr>
<tr>
<td>direction of homogenization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of groups that homogenized</td>
<td>62.5%</td>
<td>33.33%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Table 2: Average Shift of the Median from Midpoint

<table>
<thead>
<tr>
<th></th>
<th>Index 1</th>
<th>Index 2</th>
<th>Index 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average shift of the median in</td>
<td>0.113</td>
<td>-0.039 (toward the midpoint)</td>
<td>-0.563 (toward midpoint)</td>
</tr>
<tr>
<td>direction of homogenization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of groups that homogenized</td>
<td>66.67%</td>
<td>37.5%</td>
<td>29.17%</td>
</tr>
</tbody>
</table>

For both the mean and the median, there is shift toward the midpoint after deliberation for indices 2 and 3. The second row of each of the tables refers to the proportion of the twenty-four groups that polarized. Roughly two-thirds of the groups homogenized on index 1, but the majority of groups moved against homogenization for indices 2 and 3.

What can we conclude about the overall presence of Sunstein’s polarization? It is important to remember that what Sunstein describes is systematic homogenization. By statistical change, some groups will certainly homogenize, but what I was interested in determining was whether this pattern was predictable and consistent. Clearly, this pattern is not present in the results above, since the majority of groups moved toward the midpoint. It appears that if anything, there is an anti-homogenization effect occurring in
these polls, as groups seem to trend toward the midpoint after discussions. This exploratory result does not say anything about how the balance of argumentation affects these shifts, but it does bode well for proponents of deliberation.

**Exploratory Analysis for Group-Splitting (Dependent Variable II)**

The second effect I analyzed is that of group-splitting, which as I defined in Chapter 3 as the change in variance from before to after deliberation. Again, while statistical chance would have the variance increase some of the time, I wanted to determine whether there was a consistent pattern to this increase.

<table>
<thead>
<tr>
<th>Table 3: Average Increase in Variance on the Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Increase in Variance</td>
</tr>
<tr>
<td>% of groups with increase in variance</td>
</tr>
</tbody>
</table>

As shown in Table 3, I find that across the three indices, the majority of the groups actually show a *decrease in variance*. Similarly, the average variance shift is a decrease on all three indices. Thus, from this high-level analysis, it seems that there is not a pattern toward group-splitting in deliberative polls. Rather, it appears that the groups became more similar.
A Brief Discussion on the Exploratory Analysis of the Dependent Variables

This last statement underscores the importance of analyzing both the effects of homogenization and group-splitting. For instance, if I had chosen to analyze only the variance, I would have noted that it generally decreased. A decrease in variance could theoretically be associated with homogenization, since it might imply that the groups became more similar after deliberation. As such, I might have erroneously concluded that Sunstein’s homogenization effect was seen in these small groups, whereas the discussion above of the median and mean clearly showed that this was not the case. Thus, while it is helpful to look at each of these tables independently, it is even more helpful to view them in relation to each other.

A final note on this exploratory analysis is that it is done at the poll-wide level. Namely, I computed the shift of each of the twenty-four groups on each of the indices and then added these values up to generate the preceding tables. As such, outlying groups might have distorted the results in the tables. For example, if most groups moved slightly in the direction of homogenization but one group dramatically shifted toward the midpoint, the average might still indicate a shift toward the midpoint. However, in this hypothetical example, there would have been a trend toward homogenization, as twenty-three out of the twenty-four groups experienced small shifts away from the center. To help prevent a situation like this from going unnoticed, I also included the analysis of the percentage of groups that homogenized. As Tables 1, 2 and 3 show, for each index that there is an average of shift away the midpoint, the percentage of groups that shifted away from the midpoint is greater than 50%. Similarly, for each index that experienced an
average move toward the center, the percentage of total groups that shifted toward the center was greater than 50%.

**Exploratory Analysis for Balance of Argumentation (Independent Variable)**

This next section discusses the same type of exploratory analysis for the independent variable. Table 4 shows the imbalance of both warranted and unwarranted argumentation across the three indices for the twenty-four small groups. The table shows that across all twenty-four small groups and on each of the three indices, there is a slight imbalance, where imbalance is defined as

\[
\text{Imbalance on Index} = \text{Arguments in Favor} - \text{Arguments Against}
\]

Across the twenty-four small groups, thirty-five more arguments were made in favor than against on index 1, fifteen more in favor than against on index 2, and 15 more against than in favor on index 3.\(^{126}\) However, given the large number of total arguments made, it seems that on a poll-wide level, the argumentation was fairly balanced. The bottom row of the table confirms this intuition, as the p-values for the imbalance in warranted arguments are not statistically significant for any of the three indices.

Similar to the discussion of the exploratory analysis on the dependent variable, it is important to note that the results of Table 4 do not necessarily mean that each individual group had balance. For example, if one group had fifteen arguments for Index 1 and zero against, while another had zero arguments for Index 1 and fifteen against, the

\(^{126}\) The sign corresponds to the scheme of coding arguments “for” and “against,” where “for” denotes a positive value and “against” has a negative value.
overall sum would be balanced. Thus, more in-depth analysis at the group level is needed, which I perform through the regression models presented later in the chapter.

Table 4: Summary of the Independent Variable Across the Three Indices

<table>
<thead>
<tr>
<th></th>
<th>Index 1 (Budget Stability)</th>
<th>Index 2 (Equity)</th>
<th>Index 3 (Revisiting Proposition 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imbalance in Warranted Arguments</td>
<td>35</td>
<td>15</td>
<td>-15</td>
</tr>
<tr>
<td>Imbalance in Unwarranted Arguments</td>
<td>8</td>
<td>0</td>
<td>-11</td>
</tr>
<tr>
<td>Total Warranted Arguments</td>
<td>277</td>
<td>258</td>
<td>198</td>
</tr>
<tr>
<td>Total Unwarranted Arguments</td>
<td>93</td>
<td>94</td>
<td>74</td>
</tr>
<tr>
<td>Difference (p-value)</td>
<td>0.459</td>
<td>0.926</td>
<td>0.904</td>
</tr>
</tbody>
</table>

Table 5 shows the number of imbalanced groups. This is calculated by determining how many of the groups have Imbalance ≠ 0 out of the twenty-four total groups. A significant majority of the twenty-four small groups were imbalanced in both warranted and unwarranted arguments on all three of the indices. While these percentages seem high, it is important to note that the values below are simply the percentage of all groups that did not have an imbalance of 0. Thus, even if the imbalance on a given group were only 1 or -1, the group would be counted as imbalanced for the sake of the measure in Table 5.
Table 5: Percentage of Imbalanced Groups for Across the Three Indices

<table>
<thead>
<tr>
<th></th>
<th>Index 1 (Budget Stability)</th>
<th>Index 2 (Equity)</th>
<th>Index 3 (Revisiting Proposition 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imbalanced Groups (Warranted)</td>
<td>95.83%</td>
<td>91.67%</td>
<td>100%</td>
</tr>
<tr>
<td>Imbalance Groups (Unwarranted)</td>
<td>87.50%</td>
<td>83.33%</td>
<td>91.67%</td>
</tr>
</tbody>
</table>

Persuasive Argument Hypothesis

Finally, I conclude the exploratory analysis of the independent variable by looking at Sunstein’s persuasive argument theory. In accordance with the theory, we expect that a group that leans toward a side prior to deliberation should argue for that side more frequently in the discussions. I use the median as the metric to define group opinion and define a group’s prior lean as which side of the center (i.e. a median of 5) the median lies on. \(^{127}\)

From here, I analyzed whether the group’s argumentation was biased in the direction of this prior lean. Note that this does not depend on the final opinion of the group. Rather, I looked at the prior leaning and how that affected the tilt of the group’s warranted argumentation.

---

\(^{127}\) If a group had a median between 5.00 and 5.99, it was excluded from this analysis. The second row of the table shows how many groups were left after this exclusion.
Table 6: Persuasive Argument Hypothesis for the Three Indices

<table>
<thead>
<tr>
<th></th>
<th>Index 1 (Budget Stability)</th>
<th>Index 2 (Equity)</th>
<th>Index 3 (Revisiting Proposition 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persuasive Argument</td>
<td>75%</td>
<td>33.33%</td>
<td>41.67%</td>
</tr>
<tr>
<td>Hypothesis (Median)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of Groups Included</td>
<td>95.83%</td>
<td>66.67%</td>
<td>83.33%</td>
</tr>
<tr>
<td>in Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interestingly, there does not seem to be a consistent pattern in the direction of the persuasive argument hypothesis. Namely, on the latter two indices, less than half of the twenty-four small groups showed a bias toward arguing for the side that they leaned toward prior to deliberation. As such, it does not appear that the group’s prior leanings are biasing the groups or ruining their chances of deliberating on an equal playing field.

The second row of the table shows the number of groups that had a significant view on an index prior to deliberation—defined as a median of less than four or a median of greater than six. The fact that these groups leaned even after having read the balanced briefing materials again refutes the Sunstein/Manin claim that the briefing materials bring groups to the center. Many of these groups leaned very far to either pole. For example, the groups furthest from the midpoint on the three indices had medians of 9.547, 2.566, and 2.547 respectively. Thus, there certainly was strong skew in some groups prior to deliberation, but this skew did not seem to influence the argumentation that was made.
Regression Modeling

Without further delay, I now turn to the method to answer the main research question: What is the effect of the balance of argumentation on shift of group opinion? I attempt to answer this question through multiple linear regressions.

As stated before, I am interested in looking at two phenomena of group shifting: Sunstein’s polarization and what I call group-splitting. As such, the two linear regression models are:

\[
\text{Shift in Median on Index } i = \beta_0 + \beta_1 \times \text{Balance of Warranted Arguments on Index } i + \beta_2 \times \text{Balance of Unwarranted Arguments on Index } i + \beta_3 \times \text{Gain in Knowledge} + \varepsilon
\]

\[
\text{Change in Variance on Index } i = \beta_0 + \beta_1 \times \text{Balance of Warranted Arguments on Index } i + \beta_2 \times \text{Balance of Unwarranted Arguments on Index } i + \beta_3 \times \text{Gain in Knowledge} + \varepsilon
\]

Each regression is run on a particular index, and as there are two regression and three indices, the total number of regressions run is six.

For the regression models, I slightly changed the definition of “balance/imbalance” from before. In the earlier tables, I defined the variable as: Balance in Arguments = Arguments in Favor – Arguments Against for each indices. For the regression models, I define balance of argumentation, for both the warranted and unwarranted cases, as

\[
(\text{Arguments in Favor} – \text{Arguments Against})/(\text{Total Arguments Made})
\]

The denominator helps provide the regression model more information on what happened in the groups. For example, if I did not include the denominator, then a group
that had 1 argument in favor and 0 arguments against would get a value of “1”, and a group with 15 arguments in favor and 14 arguments against would also get a value of “1.” Thus, I would lose what could be potentially valuable information, which is why I include the term.\textsuperscript{128}

\textbf{Knowledge Variable}

The third variable in the model is the gain in knowledge from the pre-deliberation survey to the post-deliberation survey. In addition to asking participants their views on a 0-10 scale about various policy issues, the survey also has objective questions to gauge knowledge. Examples of these questions include “Which political party holds the majority in the California State Senate?” and “Which state has the most residents per member of the state legislature?”\textsuperscript{129}

This gain in knowledge could be a potential source of confounding for the main effect that we are looking at. For example, it might be the case that a group moves toward the center simply because its participants gain more knowledge on the issues.

There were eight questions from the survey that gauged knowledge.\textsuperscript{130} To compute the variable, I calculated the percentage of participants in each of the small groups that answered each of the questions correctly prior to deliberation. Rather than modeling the variable as eight separate increases in knowledge at the group level, I weighted each of these percentages by 0.125 (1/8) and combined. While the variables of balance of warranted argumentation and balance of unwarranted argumentation are

\textsuperscript{128} Note that adjusting for the total arguments made would not have changed the conclusions from the previous exploratory analysis but is just a way of standardizing.

\textsuperscript{129} From the questionnaire

\textsuperscript{130} Questions 27-34
different for each index, the variable of gain in knowledge is the same for all of the regression models.

**Results**

**Homogenization vs. Balance of Argumentation**

The tables below represent the result of the regression of the dependent variable of homogenization against the independent variable of the balance of argumentation for each of the three indices.

<table>
<thead>
<tr>
<th>Table 7: Regression Model for Median Change on Index 1</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-0.1388</td>
<td>0.2363</td>
<td>-0.587</td>
<td>0.5635</td>
</tr>
<tr>
<td>Warranted Arguments</td>
<td>1.1256</td>
<td>0.5277</td>
<td>2.133</td>
<td>0.0455*</td>
</tr>
<tr>
<td>Unwarranted Arguments</td>
<td>-0.2891</td>
<td>0.3363</td>
<td>-0.860</td>
<td>0.4001</td>
</tr>
<tr>
<td>Knowledge Gain</td>
<td>1.1237</td>
<td>1.5822</td>
<td>0.710</td>
<td>0.4857</td>
</tr>
</tbody>
</table>

Multiple R-squared 0.2541

p-value 0.1114
Table 8: Regression Model for Median Change on Index 2

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.2811</td>
<td>0.3448</td>
<td>0.815</td>
<td>0.4245</td>
</tr>
<tr>
<td>Warranted Arguments</td>
<td>1.2397</td>
<td>0.5801</td>
<td>2.137</td>
<td>0.0451*</td>
</tr>
<tr>
<td>Unwarranted Arguments</td>
<td>0.2833</td>
<td>0.3603</td>
<td>0.786</td>
<td>0.4408</td>
</tr>
<tr>
<td>Knowledge Gain</td>
<td>-1.2473</td>
<td>2.1988</td>
<td>-0.567</td>
<td>0.5768</td>
</tr>
<tr>
<td>Multiple R-squared</td>
<td></td>
<td></td>
<td></td>
<td>0.2485</td>
</tr>
<tr>
<td>p-value</td>
<td></td>
<td></td>
<td></td>
<td>0.1191</td>
</tr>
</tbody>
</table>

Table 9: Regression Model for Median Change on Index 3

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.5365</td>
<td>0.4526</td>
<td>1.185</td>
<td>0.250</td>
</tr>
<tr>
<td>Warranted Arguments</td>
<td>-0.6047</td>
<td>0.5966</td>
<td>-1.014</td>
<td>0.323</td>
</tr>
<tr>
<td>Unwarranted Arguments</td>
<td>-0.1323</td>
<td>0.4475</td>
<td>-0.296</td>
<td>0.771</td>
</tr>
<tr>
<td>Knowledge Gain</td>
<td>0.8500</td>
<td>2.7699</td>
<td>0.307</td>
<td>0.762</td>
</tr>
<tr>
<td>Multiple R-squared</td>
<td></td>
<td></td>
<td></td>
<td>0.05545</td>
</tr>
<tr>
<td>p-value</td>
<td></td>
<td></td>
<td></td>
<td>0.7605</td>
</tr>
</tbody>
</table>

Discussion

The regression models illustrate that there is a significant effect (at $\alpha = 0.05$) for the balance of justified arguments on indices 1 and 2. This helps provide support for the hypothesis that the balance of argumentation does have an effect on the shift in the median. Even for index 3, which does not have a significant effect at $\alpha = 0.05$, the p-value is still lower for the balance of warranted arguments variable than it is for the other
variables, balance of unwarranted arguments and knowledge gain, lending further support to the hypothesis.

While it is tough to construct meaning for the $\beta$ coefficients after all of the transformations I have applied to ensure the statistical rigor of the study, I offer the following interpretation: The vast majority of group medians on index 1 started at a level greater than 5, and arguments toward the side of 5-10 on the scale corresponded to arguments “in favor” on the coding scheme. As such, a positive $\beta$ coefficient might indicate the trend that a tilt toward arguments made on this side of the scale corresponds the group median shifting more radically toward this end of the scale—as indicated by an “increasing” median. Essentially, there is homogenization when the skew of arguments favors the prior direction that the groups leaned. Similarly, when the argumentation is balanced or skewed in the opposite direction of the prior leaning of the group, the model predicts a movement of the median toward the midpoint—in other words, away from homogenization. This interpretation is certainly consistent with the hypothesis presented in Chapter 1.

Lastly, an important issue that came up during my research was the arbitrariness of a midpoint.\footnote{Special thanks to Professor Fukuyama for raising this issue} More specifically, a “5” out of “10” on the scale is dependent on how the “0” and “10” are defined. Consider Fukuyama’s example of a deliberation on the topic of the legality of abortion. One possible scale could be that a 0 corresponds to “abortion illegal after 3 months” and a 10 to “abortion always legal.” The midpoint of this scale would then be that “abortion is legal after 6 months.” However, if the scale were defined such that a 0 was “abortion illegal after 6 months” and a 10 was “abortion always legal,” the midpoint would certainly be different than in the prior case. Thus, in
the first case, movement away from the median could correspond to movement toward
the median in the second case, even though the actual views of the participants were the
same in both instances.

As such, it is important to recognize that the definition of the scales could
influence the homogenization effect that I measure. I argue that the scales in this study do
not suffer from this problem, since there were no explicit policy actions corresponding to
the ends of the scales in the questionnaire. However, it is worth noting that a “5” for
some participants might still be different than a “5” for others, which does put a
qualification on the results. A final important note is that this criticism would not apply to
the second effect that I measure of “group-splitting,” since I analyze the variance rather
than movement relative to the midpoint.

**Group-Splitting vs. Balance of Argumentation**

The second effect I analyzed was that of the balance of argumentation on the
change in the variance, which I have called group-splitting. In this case, only the
dependent variable changes, as the independent variable is the same as that in the
regression models above. The outputs of the regression models for each index are listed
below.
Table 10: Regression Model for Variance Change on Index 1

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T value</th>
<th>p-value</th>
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<tr>
<td>(Intercept)</td>
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<td>0.6013</td>
<td>1.401</td>
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<td>Warranted Arguments</td>
<td>1.2113</td>
<td>1.3427</td>
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<td>Knowledge Gain</td>
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<td>-1.525</td>
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</thead>
<tbody>
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<td>Multiple R-squared</td>
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<td></td>
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<tr>
<td>p-value</td>
<td>0.4278</td>
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Table 11: Regression Model for Variance Change on Index 2

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<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
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<td>0.6455</td>
<td>-1.755</td>
<td>0.0946</td>
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<tr>
<td>Warranted Arguments</td>
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<td>1.0862</td>
<td>2.330</td>
<td>0.0304*</td>
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<tr>
<td>Unwarranted Arguments</td>
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<td>0.463</td>
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<td>0.4376</td>
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<tbody>
<tr>
<td>Multiple R-squared</td>
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<td>p-value</td>
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Table 12: Regression Model for Variance Change on Index 3

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</thead>
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<tr>
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<tr>
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<td>-0.098</td>
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<td>p-value</td>
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Discussion

The regression outputs show that there is a significant effect for the variable of interest on the variance change of indices 2 and 3. On index 2, the p-value for the balance in warranted argumentation is 0.0304. For index 3, the balance of warranted argumentation variable has a p-value of 0.0382. As the tables above show, these p-values are adjusted for the effects of the balance of unwarranted arguments and the knowledge gains of the groups. As such, the results provide evidence that the balance of argumentation has a significant effect on the change in variance of group opinion.

Similar to my interpretation of the homogenization model, one way to interpret the meaning of the coefficients might be the following: The β coefficient is negative in value for the regression model on index 3. Since the majority of group medians began below 5 on this index, a decrease in variance could be seen as the group becoming more similar. The direction below five also corresponds to “arguments against” in the coding scheme, and as such, a bias in this direction would correspond to a negative value for the balance of warranted argumentation variable. As such, the result does seem to match
intuition: As there is a tilt in the direction of “arguments against,” the variance decreases since the groups started in this direction. Similarly, as the groups tilted toward the other end of the scale, the variance increases to represent group-splitting.

Conclusion

This chapter has presented a number of results to test a question that has been grossly underexplored in the academic literature. The chapter established that for each of the three indices, there was no systematic shift toward homogenization or group-splitting. This means that groups did not show a trend toward becoming more similar or divided following deliberations, which is noteworthy given fears that deliberation furthers polarization.

Exploratory analysis of the independent variable showed that across the twenty-four small groups, there was not a statistically significant skew in the balance of argumentation on any of the indices. To not miss any hidden effects at the group level, I also tested the persuasive argument hypothesis on the independent variable. The results showed that even when groups leaned one way on an issue prior to deliberation, there was not evidence to indicate that they made more arguments in favor of this view during the debates. As far as I know, this is the first time that the persuasive argument theory has been tested in this manner empirically, and the results are quite surprising.

After the exploratory analyses, I proceeded to conducting multivariate linear regression to help answer the research question. I modeled the two respective shifts as a function of the balance of warranted and unwarranted argumentation, while controlling for the gain in knowledge of each group from before to after deliberation. The results show that the balance of warranted argumentation carries significant explanatory power
in the regression models. In short, increased consideration of multiple sides of issues leads to a decrease in homogenization and political division.
Chapter 5: Conclusions and Policy Recommendations

Introduction

I have established a significant relationship between the balance of argumentation and the shift in groups. While the results were observed in deliberative polling, the implications are numerous to both deliberative polling, and to a broader literature base. With that said, I will start with the applications to the field of deliberative polling and deliberative democracy. I will conclude with several policy recommendations based on the results of the study. These recommendations illustrate the wide variety of areas that the thesis extends to.

Deliberative Polling Literature

Numerous individuals and organizations around the world have recognized the benefits of deliberative polling, as evidenced by its spread to six continents. All levels of governments and private actors have sponsored deliberative polls to help make important decisions in their respective communities. Even non-democratic governments have utilized deliberative polling as ways to consult the public and provide legitimacy for their actions.

As I explained in Chapter 2, previous work has shown that deliberative polling does not have systematic shifts toward homogenization or group-splitting. The results of my study validate these prior findings by analyzing a deliberative poll that had yet to be studied, which also was the largest poll to date.

Deliberative polling is clearly more meticulous than other forms of polling, but it also is more methodical than other forms of deliberation. As explained in Chapter 1, deliberative polling involves a random sample of the community in question and the
distribution of briefing materials that various interest groups vet. In addition, participants have the chance to ask experts from all sides of the issues as they discuss questions to learn about the topics before they answer surveys at the end of the polls.

While Sunstein and Manin suggest that all of these unique aspects contribute to the lack of systematic shifts seen in deliberative polling, my study isolated a particular explanatory variable. In suggesting that the briefing materials may prevent individuals from radicalizing in their views, Sunstein and Manin appeal to the notion that the *balance* in the briefing materials is the driving factor in this movement toward the center. Namely, the more that people read into the pros and cons to an issue, the less likely they are to have strong views in either direction.

While there is no way to quantify the effect that reading the briefing materials had on participants—and also no way to know whether the participants even read the briefing materials prior to deliberation, the sentiment of this is captured through the dialogue that took place within the actual discussions.

An important point is that my study controlled for the effects of the briefing materials in establishing the relationship between the balance of argumentation and the shift of the group. Namely, the “pre-deliberation” responses I use are the responses of the participants once they arrived at the poll, at which point they had already had the opportunity to read the briefing materials. Thus, any shift toward the midpoint that the briefing materials might have causes would have been incorporated at this time point. This means the only measurable “exposure” the participants had before filling out the post-deliberation survey was the discussions, which strengthens the association that I established.
Additionally, the results of my thesis help answer a critical question in the deliberation literature regarding the role of moderators. Trained moderators facilitate the small groups discussions in deliberative polls. These moderators are not participants, but rather, they ensure that participants maintain decorum and consider multiple views. An interesting question in the academic literature is comparing the styles of moderators and determining which type produces better deliberation.\textsuperscript{132}

While my study does not directly answer this question, it certainly sheds light on the issue. For instance, my study illustrates that many of the groups showed a relative balance in argumentation, which is at least in some part due to the role of moderators. An important step going forward would be to analyze the role of moderators in a more formal study. This could involve directly testing various styles of moderating against each other and determining which leads to more balance.

**Policy Recommendations: Beyond Deliberative Polling**

The results of my study have significance in the field of deliberative polling, but the implications extend beyond this particular area. As I stated in Chapter 1, political polarization is rampant in the US across party lines. The thesis shows that deliberation—when conducted properly—could counter this polarization and help the public gain knowledge on political issues.

Unfortunately, deliberative polls are very expensive and time-consuming to implement, and as such, it is not always feasible to design all deliberative forums with this detail. More specifically, deliberation does not have to entail a detailed random sample, balanced briefing materials, and small groups that are moderated. As such, I now

turn my focus to generalizing the results and prescribing recommendations based on my results. I have argued throughout the thesis, deliberation can be a useful tool for combating political polarization in the US and ensuring more proper deliberation.

**Civic Education**

The striking conclusion from the study is that when people consider multiple sides of issues, they are less likely to polarize. One way that the public can take part in deliberation that forces them to consider multiple viewpoints is through classroom deliberation in schools. More specifically, schools can simulate deliberative polls in classrooms. Often in secondary school, teachers ask students to have “mock debates” and assign students to particular sides of these issues. The goal of these debates is usually to show students that there are pros and cons to almost any side of an issue.

My research shows that this is the mentality needed to combat polarization. In these classroom simulations, teachers could serve as the moderators. Their roles would be to ensure that all students have the chance to speak, and to push students to think about the various sides of the issues. In fact, Fishkin and others have already begun to conduct these simulations at several high schools and colleges in the California Bay Area, and there exists the potential to expand this across the US—even to the elementary school level. From an early age, students could learn to view issues through multiple lenses and refrain from watching only certain customized news sources.

**Congressional Committees**

My second policy recommendation relates to congressional committees in the US. Much of the lawmaking and deliberation in the US Congress occurs in these committees,
which are responsible for learning about particular issues and drafting legislation accordingly. Unfortunately for proponents of deliberation, the current structure of these committees is inherently polarizing in nature. For instance, under the current system, senior party leaders appoint members of their respective parties to committees, and usually the appointees are at the extremes of both parties. Moreover, the chairs of these committees are also members of Congress and thus have political leanings. As such, it is difficult to call the debates that happen within these rooms “deliberation.”

In line with the findings of the thesis, I argue that an increase in the balance of argumentation could reduce polarization. One way to ensure that the dialogue becomes more balanced is to increase the role that non-party members play in these committees. Washington bureaucrats currently help the committees by preparing research and recommendations. I argue that this role could be expanded. These non-party members could serve as moderators of the debates and encourage the committee members to weigh the multiple sides of the issues.

Additionally, restricting the influence of lobbyists could go a long way in ensuring a more balanced dialogue in these committees. There have been examples of politicians simply outsourcing the drafting of legislation to lobbyists, who often themselves are very radical on issues. In addition to restricting the influence of lobbyists, the government can work to hire more bureaucrats, so that they are more readily available to politicians. This way, if work is outsourced, it can be sent to people who are more neutral than lobbyists.

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Increased Funding to Neutral Purveyors of the News

As stated in Chapter 1, people watch news that they agree with, which only further polarizes our citizenry. While it would be easy to recommend that customized news sources such as FOX News and MSNBC should present a more balanced view on issues, it is clear that these news outlets have little incentive to do so.

An issue that came up frequently during the 2012 US Presidential Election was federal funding of news sources such as National Public Radio (NPR). While some may argue that NPR is not the most balanced news source, it is hard to argue that it is less balanced than the aforementioned, customized sources. Given the results of the thesis, I recommend increasing funding for unbiased news sources. This policy could give federally funded sources an incentive to shed light on multiple viewpoints, which I have shown leads to better deliberation and less polarization. The results of the thesis imply that if unbiased news sources gain market share, political polarization could decrease in the US.

Concluding Thoughts

In short, the results of the thesis have a number of applications. In the field of deliberative democracy, the thesis has helped provide an overdue answer to an important question about the causes of polarization. Moreover, the results indirectly shed light on the role of moderators in deliberative settings. The results also provide recommendations for policy in the US and ways to decrease the political polarization. The first recommendation is that schools teach students to research all sides of issues through classroom simulations, which have already started to take place. At a more national level,
I recommend that the government take steps to decrease partisanship in congressional committees. One way that this could be done is through hiring more bureaucrats for politicians to consult and allowing these bureaucrats a more active role in committees. Finally, the government should do more to incentive federally funded news sources to promote balance in news.
Bibliography


Center for Deliberative Democracy at Stanford University, cdd.stanford.edu


SPSS FAQ. What does Cronbach’s alpha mean? Institute for Digital Research and Education. UCLA. Web.


Appendix

Part I. Relevant Questions from Questionnaire

Below are the 13 “policy” questions from the questionnaire relating to the topic of state tax and fiscal policy.\textsuperscript{134}

On a 0 to 10 scale, where 0 is “extremely undesirable”, 10 is “extremely desirable,” and 5 is exactly in the middle, how desirable or undesirable would you say each of the following is?

2aa. Requiring legislation creating \textbf{new programs} that cost $25 million or more to indicate how they will be paid for

2ab. Requiring legislation creating \textbf{tax cuts} that cost $25 million or more to indicate how they will be paid for

2ac. Requiring legislation creating \textbf{new programs or tax cuts} that cost $25 million or more to indicate how they will be paid for

2ad. Requiring that one-time revenue spikes only be spent on one-time projects, paying off debt, and filling the state rainy-day fund

2ae. Increasing the size of the State’s rainy-day fund from 5% to 10 % of the State budget

2af. Applying the sales tax to services as well as goods while reducing the sales tax rate

2ag. Applying the sales tax to services as well as goods while keeping the current sales tax rate

2ah. Limiting the current California state income tax deduction for home mortgage interest payments to $25,000 per year

2ai. Reassessing non-residential property more frequently than now

2aj. Reassessing all property values more frequently while adjusting the current property tax exemption for inflation to about $28,000 \textit{and} allowing exemption to rise with property values going forward

2ak. Allowing local electorates to raise the property tax rate above the current 1% rate cap

\textsuperscript{134} The full questionnaire can be accessed at http://cdd.stanford.edu/mm/2011/nextca-final-report.pdf
2al. Lowering local vote requirement to adopt taxes dedicated to specific purposes, to a simple majority so that it is the same as the vote requirement to adopt taxes for general purposes

2am. Decreasing the super-majority vote required in the Legislature to raise taxes (about 67%) to 55%
Part II. Coding Scheme

Below is the coding scheme I used to hand-code the transcripts for the independent variable of the balance of argumentation.

**This coding scheme represents examples of arguments that that are “justified,” and states which side of the index a respective argument should be classified under. It uses the pros and cons under the proposals in the briefing materials. It should be noted that personal stories/warrants not in the briefing materials could also count as well as “justified.”**

**When coding, a frequency count is used, and “in favor” is coded as “1” whereas “against” is coded as “0”. The frequency count comes from the fact that I add up all the instances of 1’s and 0’s at the end of the process. **

Index 1 – Budget Stability

In favor of closely managing the budget/being wary of overspending

Reasoning about:

“Pay as you go” being necessary in times of boom and deficit, such as the dot com bubble

The need to check legislators and governors and the spending measures that they pass

Arguments about the need for fiscal discipline and how the current balanced budget requirement does not provide this.

Arguments about overspending that have happened in the past

Arguments about the need to address short-term needs as opposed to long-term commitments with a rise in revenue

Limiting the short-term revenue spike spending to paying down debt or one-time expenses as opposed to committing to long-term projects

In opposition to closely managing the budget/being wary of overspending

There are already reasonable safeguards against overspending in the budget

Legislators need to decide on an ad hoc basis

Limited ability to use surges in revenue to address previous cuts
Vague definition of “revenue spike” since there is always volatility

There are other reforms that could be used. Other states do not have as large of reserves.

Creating funding sources might involve cutting from the least advantaged groups, since the money from revenue spikes is not eligible

**Index 2 – Greater Equity**

**In favor of expanding the sales tax / limiting the California state income tax deduction for home mortgage interest payments to 25k per year**

Takes into account the economic changes about which industries are performing better

State could rely less on capital gains and income taxes, which reduces volatility

Applying sales tax to other areas would raise revenue for the state

There is greater fairness for households in that the only difference is the way that they spend their income.

Proposals would reduce the decline in retail transactions that are taxable

Current policies reduce the state’s income base.

There is greater fairness in the system since households aren’t rewarded or punished for owning a house versus renting an apartment.

Current policies incentivize people to buy homes, even when this isn’t the wise choice for some households

The current policies go beyond simply encouraging people to own a residence

The current proposal (limit deduction) would not affect those who own inexpensive homes

**Against expanding the sales tax / limiting the California state income tax deduction for home mortgage interest payments to 25k per year**

There are time and cost considerations to implementing new tax.

New taxes could discourage job creation.
The tax would expand to non-discretionary spending, such as food and prescription drugs.

Either: not raising taxes on currently taxed items would miss an opportunity to raise revenue which could anger voters, or if tax is raised, the burden could be unfairly shifted onto lower-income households

This could reduce the incentive to own homes.

This would be unfair to those who have planned for a deduction in their personal budgets for the next 15-30 years

There would be a disconnect between federal government tax deductions and state deductions.

There are other alternatives to this action.

**Index 3 – Proposition 13**

**In favor of either a) removing protection for non-residential property, b) reassess all property values more frequently while adjusting current exemption for inflation and allowing it to rise with property values as they are reassessed, c) maintain current reassessment rules but allowing the local electorate to raise property taxes above one percent cap. 6) replacing the state legislative supermajority vote requirement of two-thirds for increasing taxes to 55%, and 7) lowering the vote required to pass special taxes to 50% +1.**

There is greater equity to reassessing non-residential property more frequently since currently, it is only assessed when majority ownership is changed (which is less frequent for businesses than for residential properties).

This would allow more revenue for local governments.

This would increase local government reliance on property taxes, which is good since these are more reliable in times of economic bust.

Consistent with Proposition 13 aim to protect citizens from having to sell homes from rising property values.

Changing prop 13 to reassess property values more frequently means that new owners and existing owners pay more similar taxes

There is an increase in local government revenue

Local governments have an incentive to invest in programs that increase property valuation (since they’re gaining from taxing these more often).
There is easier mobility since current taxes that are very high when homes are bought and sold are reduced.

Local governments are able to be more self-sufficient.

Lower property taxes might offset real estate prices, which means families aren’t saving from lower taxes.

Puts control over tax increases into the hands of around the same number as required to lower taxes.

Makes the budget-balancing easier.

Would prevent a minority of legislators from blocking the increases in taxes.

Leads to an increase in accountability of local government.

**Against**

Discourages investment because of increased tax burden.

Harms small businesses.

Increases administrative costs at the local level.

Difficulty drawing lines between when “change of ownership” will occur.

Increases volatility of property tax revenue.

Residents on fixed-incomes could be hurt by rising property values—need to be protected by a large rise in property exemption

Taxes residents on potential value of homes rather than what they can afford to pay.

Inconsistent with aim of Prop 13.

Making it easier to raise taxes could erode checks and balances.

Making it easier to raise taxes could discourage bipartisanship efforts on fiscal policy. Especially relevant with Democratic control currently, which might lead to bigger government and higher taxes.

Efforts to lower requirements to pass special taxes might allow a small majority to make the tax burden more unbearable for a large majority.
Part III. Distribution of Responses for Each Index

As explained in the thesis, I created indices by combining the relevant questions for each subtopic from the questionnaire into a unidimensional measure. The histograms below help visualize the distribution of the responses both before and after deliberation for each of the three indices.

Index 1 Pre and Post Deliberation

Index 2 Pre and Post Deliberation
Index 3 Pre and Post Deliberation

Histogram of Index3Pre

Histogram of Index3Post