

DIVIDED WE STAND: POLITICAL POLARIZATION AND
ORIGINAL CO-SPONSORSHIP IN THE U.S. SENATE

by

Audrey Payne

Submitted in partial fulfillment of the
requirements for Departmental Honors in
the Department of Political Science

Texas Christian University

Fort Worth, Texas

May 3, 2021

DIVIDED WE STAND: POLITICAL POLARIZATION AND
ORIGINAL CO-SPONSORSHIP IN THE U.S. SENATE

Project Approved

Supervising Professor: James Riddlesperger, Ph.D.

Department of Political Science

James Scott, Ph.D.

Department of Political Science

John Harvey, Ph.D.

Department of Economics

ABSTRACT

Political polarization has become a central topic of discussion for observers of United States politics in recent decades. Over the past fifty years, political scientists have observed a steady increase in polarization, especially among members of the United States Congress. Many studies claim that this phenomenon has caused factors in Congress such as divisive rollcall voting and legislative gridlock. However, some studies neglect to analyze its indirect, long-term effects on legislative productivity and cooperation on the formulation of legislation in Congress. In an effort to address these issues, this paper begins by discussing the standard perspectives of polarization and its impacts on the legislative branch. It then looks at legislative norms and the tradition of co-sponsorship as a baseline of congressional cooperation. Next, it gathers original co-sponsorship and party affiliation data from three sessions of the Senate from 1991 to 2016 to analyze the prevalence of co-sponsorship and to test whether a growth in polarization affects original co-sponsorship levels within a twenty-five-year period. The essay then concludes by suggesting that an increase in polarization does cause a change in co-sponsorship trends, showing divisiveness through an increase in single-party co-sponsored legislation. However, bills that are co-sponsored across party lines are more likely to pass through the Senate than bills without bipartisan support during these periods, so senators may be able to overcome legislative gridlock through seeking original bipartisan cosponsors.

Introduction

On June 2, 2019, Republican Senator John Kennedy of Louisiana addressed his Democratic peers in an interview on the CBS news segment *Face the Nation*. He asserted that the House of Representatives must make a firm decision about whether or not to move forward with the impeachment of President Donald Trump. Senator Kennedy dared the Democrats in the House of Representatives to “go hard or go home,” telling them that they needed to “go to Amazon” and “buy a spine” if they wanted to impeach the president (Zhao, 2019). This instance of a member of Congress verbally challenging his peers in a news interview is just one of many examples of the effects of modern political polarization. Polarization appears to have significant impacts on modern political life. From accusatory language between political elites to shifts in roll-call voting behavior to legislative gridlock, polarization has been an influential factor in several facets of government and politics. Congress is one of the bodies of government in the United States that is most impacted by polarization. In order to realize the definite impacts of polarization on congressional productivity, we must ask this question: *What is the impact of polarization on the level of cooperation in public policymaking?*

Previous studies on partisan polarization indicate that deep ideological divisions have steadily increased in Congress over the past fifty years. Although there is debate in the literature about whether or not this steady increase in the ideological divide among members of Congress is reflected in the electorate, the prominence of polarization has led to significant trends in voting behavior among members of Congress. Over time, ideological divisions have become more consistently correlated with the roll-call voting patterns of Republican and Democratic members of Congress. Research indicates that polarization may be a contributing factor to phenomena such as divisive roll-call voting, legislative gridlock, decreasing amounts of legislation that

passes, and limited abilities of members of Congress to be cordial and cooperate with one another (Desilver, 2019; Jones, 2001; Poole and Rosenthal, 2001).

In this study I explore the effects of an increase in political polarization on legislative behavior of members of Congress by focusing on its impact on the levels of cross-party cooperation. I do so by analyzing bills and resolutions introduced on the floor of the Senate in three distinct congressional sessions to determine if the instance of bipartisan co-sponsorship decreases with heightened polarization. I will demonstrate that, while the number of bipartisan co-sponsored pieces of legislation does not significantly change across congressional sessions, the number of single-sponsored pieces of legislation decreases and the number of within-party co-sponsored pieces of legislation increases as polarization rises. Furthermore, the higher the level of bipartisan co-sponsorship on a piece of legislation, the more likely the legislation will pass through the Senate. Discovering the answers to these questions aids us in determining whether the institutional norms that form the basis of congressional functions have been broken down by polarization and suggests means by which members of Congress can overcome the hindering effects of polarization.

In this research paper, I first discuss the phenomenon of political polarization, the trends of polarization in Congress, and how polarization impacts legislative productivity and cooperation in the Senate in particular. I then gather data on sponsorship, co-sponsorship, and party affiliations in the Senate across two congressional periods. Finally, I compare the two congressional periods to analyze the impact of polarization on legislative productivity and cooperation in the Senate, as well as discover the impact of bipartisan co-sponsorship on the passage of legislation.

Polarization as a Political Phenomenon

Polarization is a political phenomenon that occurs when two groups become increasingly ideologically distant from each other. In the case of United States politics, polarization manifests when the existing political parties ideologically separate from each other and elected officials increasingly sort themselves along party lines. One study suggests that elected officials in the United States “appear to represent relatively extreme support coalitions” in periods of polarization (Poole and Rosenthal, 1984). When this occurs, the preferences of the overall constituencies of the elected officials may not be well-represented, especially if the official is elected to represent a group of people that have more moderate ideological preferences and voting behaviors.

Political scientists frequently debate about whether the electorate in the United States is as deeply polarized as their elected officials. Some argue that, due to factors such as an increase in the ability of the electorate to obtain secondary education and the growing ideological conflict among political elites, the electorate has become increasingly and more deeply divided by polarization (Abramowitz and Saunders, 2008). Others argue that the electorate is much less consistently or deeply divided and that distributions of policy views among the electorate have not significantly changed over the past few decades (Fiorina, Abrams, and Pope, 2008; Fiorina, 2014). However, these researchers do agree that polarization is becoming a steadily increasing phenomenon among political officials. According to a recent study, polarization among political elites has been increasing in the United States and is more polarized now than it has been in the past fifty years (Poole and Rosenthal, 2001; Fiorina, Abrams, and Pope, 2008). One of the facets of American politics where polarization is the most evident is in the United States legislative branch – Congress.

Trends of Polarization in Congress

Research indicates that Congress has grown steadily more polarized since the 1970s (Farina, 2015). Congress is increasingly split along the liberal-conservative ideological divide that is coming to define the platforms of the Democratic and Republican political parties. This ideological divide impacts how members of Congress vote and the productivity levels of the legislatures themselves. One study found that the liberal-conservative ideological divide accounted for 93 percent of roll-call voting choices that were not unanimous in the 109th House and Senate (Poole and Rosenthal, 2007). Some researchers created a more specific definition of polarization to fit the narrative that is present in Congress: “the average distance between preferences of the median Democratic and Republican members” (Farina, 2015).

There are several trends in Congress that impact partisan conflict and ideological polarization. Researcher Cynthia Farina (2015) describes three observations that indicate polarization in Congress. The first observation, ideological coherence, occurs when the two major political parties become more ideologically consistent across a variety of political issues. The second observation, partisan sorting, occurs when members become sorted by party. The last observation, ideological divergence, occurs when the distance between median party preferences significantly increases. Over the past few decades, Congress has fulfilled all three observations described by Farina (2015).

Roll-call voting behavior is one of the most frequently analyzed measures of partisan splits and ideological divergence in Congress. One study showed that the nature of party control has a “stronger direct effect” on a member of Congress’s roll-call voting behavior than any other variable (Bullock III and Brady, 1983). However, polarization affects more than just roll-call

voting behavior in Congress, and those implications may affect other norms and behaviors of the legislative branch.

Implications of Congressional Polarization

According to research, political polarization may contribute to issues with legislative productivity. One study found that in both the Senate and the House of Representatives, when neither political party is close to having a veto-proof majority, highly polarized parties are the most likely to cause legislative gridlock (Jones, 2001). This may lead to a decrease in the number of significant bills that the legislature is able to successfully pass and turn into law. Although recent Congresses have been able to pass more legislation than the 112th Congress, which enacted a record-low 284 bills, a recent study by the Pew Research Center revealed that the proportion of ceremonial to substantive legislation has increased, suggesting that Congress is not increasing legislative productivity levels when it comes to passing substantive legislation (Desilver, 2019). One study stated that the existence of high levels of polarization in Congress while public opinion seeks a reasonable compromise “raises essential questions about the ability of institutions to represent voters and function properly” (La Raja and Schaffner, 2015).

Furthermore, polarization may impede on the ability of members of Congress to cooperate with one another, including reaching compromises or engaging in vote trading, such as logrolling. Despite the fact that members of the House and Senate are expected to follow the norms of the legislature, including establishing friendly relationships with their peers, polarization may contribute to a breakdown of these institutional norms. One study in 1973 asked non-freshman members of the House of Representatives for their opinions about the importance of a variety of congressional norms. Ninety-seven percent of non-freshman

representatives agreed that friendly relationships are important, the highest level of agreement of all the norms in the study (Asher, 1973). However, with increasing levels of partisan division in Congress, it is possible that the tradition of friendly relationships may diminish with the increase of polarization. As the political parties become more ideologically separated, some researchers claim that “opportunities for coalition building appear to have disappeared” (Farina, 2015). The public rhetoric has already become meaner spirited, making it increasingly difficult for members of Congress to build and maintain friendships.

Co-sponsorship and Polarization

One facet of congressional behavior that may be impacted by polarization is the tradition of sponsorship and co-sponsorship of bills. According to Mark Oleszek (2018), a sponsor is “a senator who introduces a bill or resolution in the Senate” and a cosponsor is any other senator whose name appears on the bill after the sponsor’s name is listed.

As one of the many traditions of Congress, the act of cosponsoring a bill contributes to the maintaining of friendly relationships that is deemed crucial to members of the House and the Senate. Co-sponsorship is generally understood to signify a Senator’s support for the proposal (Oleszek, 2018). Members of Congress view co-sponsorship as a means of demonstrating the level of support among peers for the bill or resolution (Oleszek, 2018). By contacting their peers through a letter or soliciting them in person, senators can advocate for their bill or resolution in an effort to increase support for the legislation and, hopefully, increase the likelihood that their bill or resolution will pass through the Senate.

Ideology affects the positions members of Congress take on issues and bills and can affect a senator’s choice about whether or not to cosponsor a bill. According to a recent study,

senators are more likely to cosponsor bills if their political views differ from the Senate median and are closer to the views of the bill's sponsor (Harward and Moffett, 2011). However, if the bill is ideologically distant from a senator's views, he/she becomes much less likely to sign his/her name as a cosponsor on the bill. According to the study, ideologically extreme senators may tend to cosponsor bills more often than more moderate senators because they "want to take clearly defined positions that differ from the status quo and move the status quo toward their own preferences" (Harward and Moffett, 2011).

Like many other areas of cooperation in Congress, polarization may impact the ability of members of Congress to convince other members to serve as a cosponsor on their bills and resolutions. However, the observations stated above imply conflicting impacts of polarization on co-sponsorship. Because polarization in Congress indicates an increase in the distance of median ideological preferences between Democratic and Republican members of Congress (Farina, 2015), polarization may cause a decrease in the number of bills that are co-sponsored across party lines because senators are not likely to sponsor bills and resolutions that are ideologically distant from their views. However, because polarization indicates an increase in ideological extremism on both sides of the political spectrum, it is possible that the number of instances of co-sponsorship along party lines increase as members of Congress become more polarized. In addition, co-sponsorship may also be a potential solution to polarization's negative effects on Congress. If a bill is able to receive bipartisan support and cross-party co-sponsorships despite the fact that the two political parties are distant from each other in Congress, it may be able to overcome the legislative gridlock effects of polarization and pass through the Senate. If this is the case, co-sponsorship may be a potential answer to Congress's concerns about the negative implications of polarization on legislative productivity. However, it is important to note that the

Senate is only one chamber of Congress. Studying the Senate alone may technically be an imperfect study of Congress as a whole, but studying one chamber still provides the ability to capture the general impact of polarization.

This information implies three testable hypotheses:

H1. The higher the level of polarization in the Senate, the fewer the number of cross-party co-sponsored pieces of legislation that will be introduced in the Senate.

H2. The higher the level of polarization in the Senate, the more likely a cross-party co-sponsored piece of legislation will pass through the Senate.

H3. The higher the level of bipartisan co-sponsorship on a piece of legislation, the more likely that piece of legislation will pass through the Senate.

The rest of this article tests these hypotheses by examining Senate bills and amendments from three congressional periods and comparing the output and rates of passage of the legislation generated.

Research Design

In order to statistically examine the impact of polarization on cross-party co-sponsorship in the United States Senate, I gathered cross-sectional data for the 1991-1992 congressional session (the 102nd Congress), the 2007-2008 congressional session (the 110th Congress), and the 2015-2016 congressional session (the 114th Congress) in order to compare the three time periods. The bill is the unit of analysis. Each data point represents a piece of legislation in a given congressional session.

I collected data for the 4,245 pieces of legislation that were introduced in the Senate during the 102nd congressional session, the 4,623 pieces of legislation that were introduced in the Senate during the 110th congressional session, and the 4,289 pieces of legislation that were introduced in the Senate during the 114th congressional session. These pieces of legislation include bills, Senate resolutions, concurrent resolutions, and joint resolutions. I selected these congressional sessions because the three Congresses each represent a progressively higher and higher polarization rates over the years, according to the information from Voteview.com depicting differences in political party means (Lewis, 2018). The 102nd Congress occurred before the trend of rapidly increasing polarization began, so it serves as a baseline to compare across differing levels of polarization.

In an effort to remove potential complications due to different balances of power between the two political parties, I selected the 102nd, 110th, and the 114th Congresses because they occur during instances of divided government (in these two cases, the president's political party is different from the majority party in the Senate). I selected three divided government Senates because unified governments may face fewer consequences of polarization. Since unified governments have the ability to pass legislation with zero bipartisan support, there may be fewer instances of bipartisan sponsorship under those circumstances, which would likely hinder the relevance of the data collected. I also chose Congresses that occur during the last two years of the incumbent president's term in office in order to remain consistent and possibly account for any changes in senator behavior that might occur in different parts of a presidential term. Furthermore, I chose the 110th and 114th congressional sessions because the evidence will reveal whether the short-term effects of an increase in polarization on the Senate in ten years or less has affected Senate action. Finally, I studied the 102nd Congress to compare the effects of

polarization across the ten-year time span between the 110th and 114th Congresses to the effects of increasing polarization across a longer time period of twenty-five years. The data analysis includes all introduced bills and amendments from the congressional periods that I selected.

I only collected data for original cosponsors. Original cosponsors are involved in the original discussion and formulation of the bill, which represents the levels of cooperation I am choosing to study. Senators that become cosponsors after the bill has been introduced may choose to add their names to make a political statement or other ulterior motives that would hinder the relevance of the information I collect.

Outcome Variables: Output and Passage Rates of Co-Sponsored Legislation

I use data on legislative output, instances of co-sponsorship, and latest actions on legislation from the official Legislation Record of the United States Congress, accessed through www.congress.gov. Legislation is defined in this study as any bill, act, or amendment to a previous bill that is introduced to the Senate, either to a committee or on the Senate floor. The data set recorded by the Legislation Record of the United States Congress is ideal because it codes valuable information about each piece of legislation. The data include the name and political party affiliation of the original sponsor of the introduced legislation,¹ the number of cosponsors and their party affiliations,² and a list of all Senate actions on the legislation, including the latest recorded action. I also incorporated the data from the Congressional Bills Project, accessed through <http://www.congressionalbills.org/research.html>, into my research.

¹ The senators that label themselves as “independent” or “independent Democrat” (Senators Sanders, Lieberman, and King) are labeled Democrats in the data because they caucused with the Democratic Party during the elections pertaining to the time period of the data collection.

² Even if an original cosponsor later withdrew his or her name from the bill, I included his or her name in my data collection because I am using the number of instances of original co-sponsorship as the measure of levels of cooperation in Congress.

This data set includes an organized list of each piece of legislation from the 93rd to the 114th Congress. The data set documents each piece of legislation's bill ID, whether or not the bill passed through the House and Senate, the type of legislation, the name and party identification of the original sponsor, and more.³

Each piece of legislation was sorted into one of three categories - single-sponsored, co-sponsored within a single political party, or co-sponsored across party lines. I then recorded the number of cosponsors for each piece of legislation, marked whether or not the legislation passed through the Senate, and marked whether or not the legislation passed through both chambers of Congress.⁴ Next, I calculated the percentage of the total pieces of legislation that fit into each of the three co-sponsorship categories, the percentage of legislation from each category that passed through the Senate,⁵ and the percentage that did not pass through either chamber. Finally, I calculated the percentage of the total pieces of legislation that are not co-sponsored, single-co-sponsored, and co-sponsored by multiple senators and the passage rates of each.

Methodological Approach

I measured and analyzed the data by comparing the percentages collected from the 102nd Congress, the 110th Congress, and the 114th Congress. Tests of statistical significance were used to determine the passage rates of cross-party co-sponsored bills compared to single-party co-sponsored bills and single sponsored bills within a single Congress. In addition, I ran tests of

³ Senator Arlen Specter was a declared Republican during the 102nd and 110th congressional sessions and later switched his identification to Democrat after the 110th congressional session ended. He is listed as a Republican whenever he sponsored or co-sponsored a bill in the 110th congressional session because the Republican Party was his party of identification at the time.

⁴ Any piece of legislation that initially passed through both chambers of Congress is included in the "passed both chambers" category, even if one of the chambers later passed a motion to reconsider the legislation.

⁵ If a piece of legislation passed through the Senate with a preamble or amendment added, I included the legislation in the "passed through the Senate" category.

statistical significance to compare the passage rates of cross-party and single-party co-sponsored bills between the three Congresses. Tests of statistical significance also helped to determine the differences among levels of bipartisan co-sponsorship between the three congressional sessions. Doing these tests allowed me to discover if the number of instances of cross-party co-sponsorship increased or decreased with increasing polarization. I also assessed whether the legislation co-sponsored across party lines was statistically more effective and more likely to pass through the Senate during times of heightened polarization.⁶

Analysis

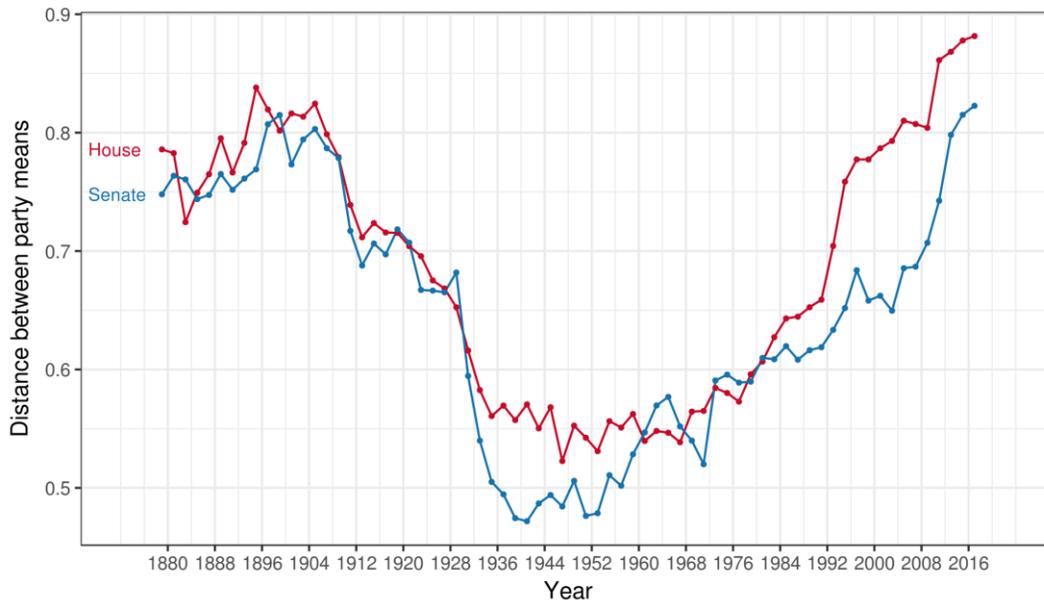
My research addresses three hypotheses, including predictions that the higher the level of polarization in the Senate, the fewer the number of cross-party co-sponsored bills will be introduced, but the more likely those bills that have higher levels of cross-party co-sponsorship will pass through the Senate. When analyzing the data, I expected to observe a decrease in the percentage of bills that are co-sponsored across party lines from the 102nd to the 114th congressional sessions and a higher passage rate among bills with bipartisan cosponsors than those without.

Co-Sponsorship Across Congressional Sessions

In order to determine if co-sponsorship impacts the passage of legislation during periods of polarization in Congress, I needed to confirm that the 114th Senate was more polarized than the 110th and that the 110th Senate was more polarized than the 102nd. This table from

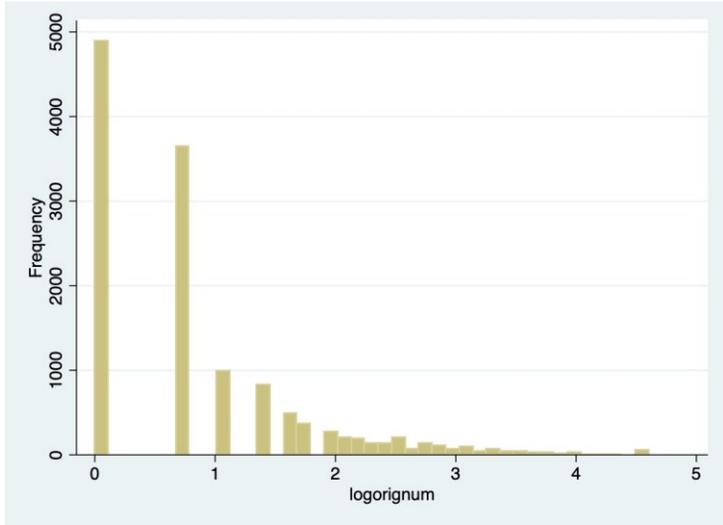
⁶ I chose to leave out analysis regarding the relationships between the different types of co-sponsorship and passage through the House of Representatives. The House is an independent legislative body with different rules and processes from the Senate, which may skew the data if I attempted to establish connections across the two bodies.

Voteview.com depicts the difference between party means in each chamber of Congress over time, which is a frequently used measure of polarization. The difference of party means in the Senate, marked in blue, increases between 1991, 2007, and 2015. Therefore, polarization increases in the Senate between the 102nd and 114th Congresses (Lewis, 2018).



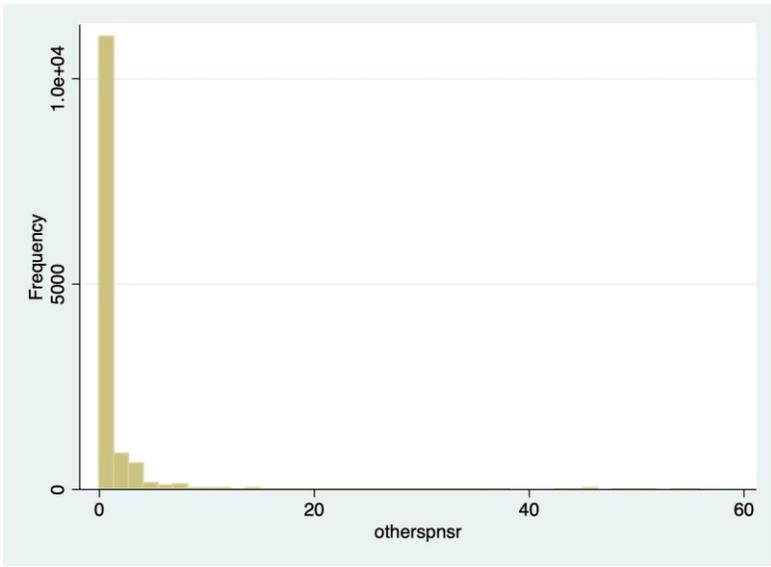
The results from the initial organization of the co-sponsorship data are depicted below in Figures 1 and 2. The frequency of bills that have instances of original co-sponsorship, marked logorignum, are depicted in the Figure 1 histogram (in a log form to reduce the impact of outliers and normalize the distribution). According to the histogram, the majority of the bills and resolutions passed across the three congressional sessions have either a single author with no co-sponsors or one original co-sponsor in addition to the author of the bill. From there, the number of original co-sponsors per piece of legislation greatly decreases.

Figure 1. Instances of Co-Sponsorship Across the 102nd, 110th, and 114th Senates



An additional figure to examine in the initial data is the frequency of instances in which the original co-sponsors are members of the opposite political party from the sponsor of the bill. Figure 2 is a histogram depicting the frequency of these instances across the three congressional sessions. The number of instances of cross-party co-sponsorship is, as expected, much lower than the frequency of original cosponsors in general.

Figure 2. Instances of Cross-Party Co-Sponsorship Across the 102nd, 110th, and 114th Senates



One of the key results is the significance of the relationship between the types of original co-sponsorship and the likelihood that a bill passes through the Senate. The independent variables include single-sponsored, sponsored within party lines, and sponsored across party lines (labeled Single, Within, and Across respectively). Establishing the baseline for the strength of the relationships between these variables and the likelihood of a bill passing through the Senate helps determine if these relationships strengthen or weaken during periods of heightened polarization in the Senate. Below are three tables documenting the total number of bills in the 102nd, 110th, and 114th senatorial sessions that fit each category and the relationships between the variables and the passage rates of those bills through the Senate.

Table 1. Single Sponsorship and Bill Passage

	Did Not Pass Senate	Passed Senate	Total
Bills Not Single-Sponsored	6,477 (59.44%)	1,788 (79.12%)	8,265 (62.82%)
Single-Sponsored	4,420 (40.56%)	472 (20.88%)	4,892 (37.18%)
Total	10,897 (100.00%)	2,260 (100.00%)	13,157 (100.00%)

Pearson $\chi^2(1) = 310.2745$ Pr = 0.000 Cramer's V = -0.1536

Table 2. Within-Party Co-Sponsorship and Bill Passage

	Did Not Pass Senate	Passed Senate	Total
Bills Not Within-Party Co-Sponsored	8,117 (74.49%)	1,968 (87.08%)	10,085 (76.65%)
Within-Party Co-Sponsored	2,780 (25.51%)	292 (12.92%)	3,072 (23.35%)
Total	10,897 (100.00%)	2,260 (100.00%)	13,157 (100.00%)

Pearson $\chi^2(1) = 165.8109$ Pr = 0.000 Cramer's V = -0.1123

Table 3. Across-Party Co-Sponsorship and Bill Passage

	Did Not Pass Senate	Passed Senate	Total
Bills Not Across-Party Co-Sponsored	7,200 (66.07%)	764 (33.81%)	7,964 (60.53%)
Across-Party Co-Sponsored	3,697 (33.93%)	1,496 (66.19%)	5,193 (39.47%)
Total	10,897 (100.00%)	2,260 (100.00%)	13,157 (100.00%)

Pearson $\chi^2(1) = 815.7643$ Pr = 0.000 Cramer's V = 0.2490

All three relationships are statistically significant – single-sponsored and within-party co-sponsored bills have a negative relationship with bill passage. Although these inverse relationships are technically statistically significant, it is likely they are guaranteed statistical

significance because of the large sample size of 13,157 bills. These are relatively weak relationships, since their Cramer's V tests both fall short of reaching .2. However, the Cramer's V for cross-party co-sponsored bills is 0.2490, demonstrating a moderately strong relationship. This suggests that cross-party co-sponsorship increases the likelihood of Senate passage compared to the other types of co-sponsorship. However, these relationships may vary across the 102nd, 110th, and 114th Senates. Employing comparative analysis between the three congressional sessions will help determine if the presence of increasing polarization impacts the strength of the relationships between single sponsorship, within-party co-sponsorship, across-party co-sponsorship, and bill passage.

Co-Sponsorship and Polarization Between Congresses

As previously discussed, the Senates of the 102nd, 110th, and 114th congressional sessions faced increasing levels of polarization over time (Lewis, 2018). Comparatively analyzing the data among the three congressional sessions will reveal how the increasing polarization affects the levels of original co-sponsorship. Below are three figures that depict the frequency of original co-sponsorship. Figure 3 depicts the instances of original co-sponsorship in the 102nd Senate, Figure 4 depicts the instances in the 110th Senate, while Figure 4 depicts the instances in the 114th Senate (in a log form to reduce the impact of outliers and normalize the distribution). An interesting factor to note is that the number of bills with no original cosponsors decreases from the 102nd to the 110th Senate and the 110th to the 114th Senate. This suggests that instances of original co-sponsorship increased across the three congressional sessions.

Figure 3. Instances of Co-Sponsorship in the 102nd Senate

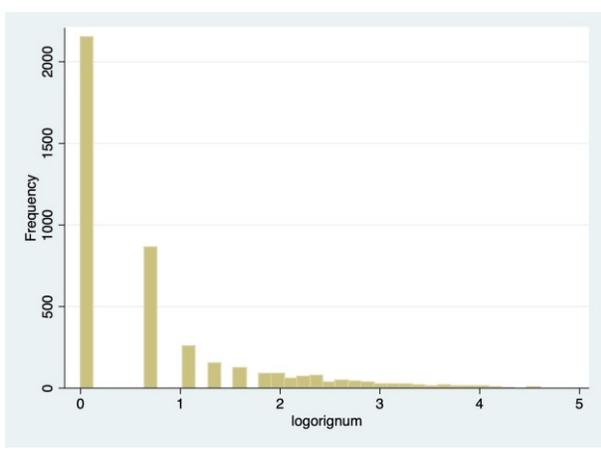


Figure 4. Instances of Co-Sponsorship in the 110th Senate

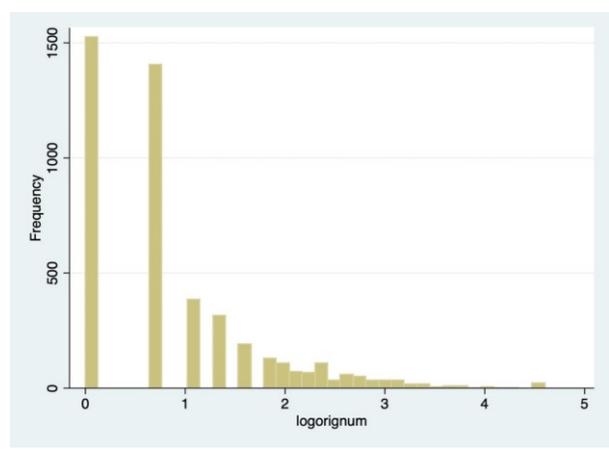
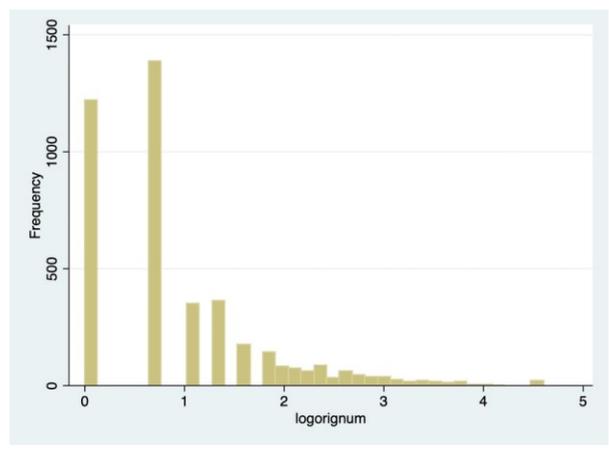


Figure 5. Instances of Co-Sponsorship in the 114th Senate



The table below represents these findings in a different way. It demonstrates that there is a statistically significant difference in the total number of cosponsors between the 102nd, 110th, and 114th Senates. Moreover, there are more instances of total co-sponsorship in the 114th Senate than in the 110th Senate and in the 110th Senate than in the 102nd, but the histograms and the table do not reveal which type of co-sponsorship each co-sponsor falls under. Are there actually more

across-party cosponsors in the 110th and 114th Senates than in the 102nd, or is the increase in co-sponsorship caused by an increase of within-party cosponsors?

Table 4. Average Number of Cosponsors by Congress

Congress	Average Sponsorship
102 (4245 obs)	0.73
110 (4623 obs)	0.89
114 (4289 obs)	0.96

Chi2(2) = 30.0538 Prob>chi2 = 0.000

Figures 6, 7 and 8 clarify the patterns of co-sponsorship to answer the questions raised by Figures 3-5 and Table 4. The histograms depict the frequency of instances of cross-party co-sponsorship in the 102nd, 110th, and the 114th Senates, respectively. These histograms suggest that the 110th Senate contains more instances of cross-party co-sponsorship than the 114th, but they seem to imply that the 102nd Senate has fewer instances of cross-party co-sponsorship than the 110th Senate. Table 5 further confirms this observation, revealing that there is a statistically significant decrease in the instances of bipartisan co-sponsorship between the 110th and the 114th Senates. This means that the increase in overall original co-sponsorship in the 114th Congress likely comes from an increase in within-party co-sponsorship. However, the 102nd Senate has fewer instances of bipartisan co-sponsorship, despite the fact that it has a lower level of polarization than either of the two other Senate sessions. What does this mean for how significantly the number of bills in each type changed between congressional sessions?

Figure 6. Instances of Cross-Party
Co-Sponsorship in the 102nd Senate

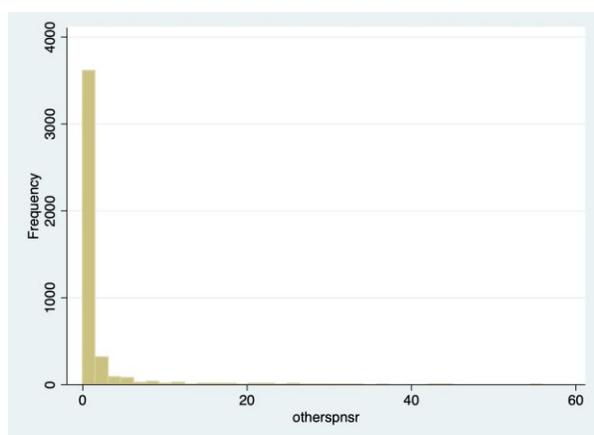


Figure 7. Instances of Cross-Party
Co-Sponsorship in the 110th Senate

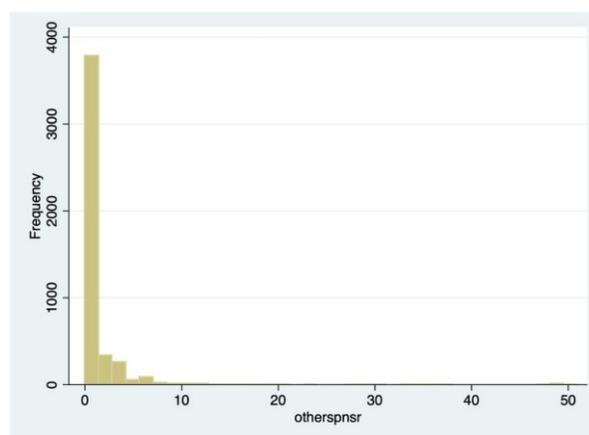


Figure 8. Instances of Cross-Party Co-Sponsorship in the 114th Senate

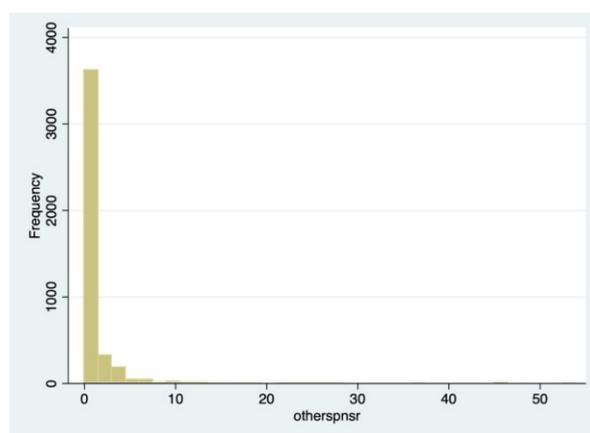


Table 5. Average Number of Bipartisan Cosponsors by Congress

Congress	Average Sponsorship by Other Party
102 (4245 obs)	1.11
110 (4623 obs)	1.22
114 (4289 obs)	1.09

Chi2(2) = 27.9410 Prob>chi2 = 0.000

By running tabulations, we can determine the significance of the changes in each type of co-sponsorship between the three congressional sessions. The tabulations yielded surprising results. I predicted in hypothesis H1 that the higher the level of polarization, the fewer the number of cross-party co-sponsored bills will be introduced in the Senate. According to Table 8, the percentage of cross-party co-sponsored bills did decrease from 44.4 percent to 41.7 percent between the 110th and the 114th Senates, but the percentage of cross-party co-sponsored bills increased from 31.9 percent to 44.4 percent between the 102nd and 114th Senates. While the 110th and 114th Senates appear to confirm the hypothesis, the low frequency of bipartisan co-sponsored bills in the 102nd Senate results in a rejection of the hypothesis. Polarization does not cause a significant change in the percentage of legislation introduced within a congressional session that has original bipartisan cosponsors.

Although H1 is disproven by the data, the findings in Tables 6 and 7 may help provide an alternative explanation for the decline in bipartisan co-sponsorship as Congress becomes increasingly more polarized. Table 6 shows that the number of single-sponsored bills did not follow the anticipated increase. Rather, over 50 percent of the bills and resolutions introduced on the Senate floor during the 102nd Congress had no original cosponsors.⁷ In fact, the number of bills without any original cosponsors decreased from 50.7 percent in the 102nd Senate to 33 percent in the 110th Senate and 28.4 percent in the 11th Senate. In addition, the percentage of legislation that is within-party co-sponsored steadily increases across the three congressional sessions. Table 7 shows that 17.5 percent of the legislation introduced in the 102nd Senate is

⁷ Part of the high frequency of single-sponsored bills can be explained by efforts made by President George H.W. Bush and Senator John McCain to broaden the president's rescission power. On March 20th, 1992, Senator McCain proposed separate 68 bills attempting to allow President Bush to remove individual pork barrel projects from appropriations bills under the Budget and Impoundment Act. The bills were ruled out of order and never voted on. On April 9th, 1992, Senator McCain introduced an additional 25 bills to approve the president's new rescission proposals. However, these 93 bills alone are not sufficient to account for the frequency of single-sponsored bills introduced in the 102nd Senate.

co-sponsored solely by senators within the sponsor's own party, while 22.7 percent of the 110th Senate's legislation and 29.9 of the 114th Senate's legislation falls in that category. Together, these percentages could mean that as Congress becomes increasingly more polarized, senators are more likely to adopt formal co-sponsorship relationships with people in their own political party. The senators may choose to prove their bill's attractiveness to their party by seeking original cosponsors for their bill instead of introducing it to the Senate without any cosponsors. This alternative explanation aligns with a possible explanation mentioned earlier in the paper.

Table 6. Single-Sponsorship Between Congresses

	102 nd Congress	110 th Congress	114 th Congress	Total
Bills Not Single-Sponsored	2,095 (49.35%)	3,099 (67.03%)	3,071 (71.60%)	8,265 (62.82%)
Single-Sponsored	2,150 (50.65%)	1,524 (32.97%)	1,218 (28.40%)	4,892 (37.18%)
Total	4,245 (100.00%)	4,623 (100.00%)	4,289 (100.00%)	13,157 (100.00%)

Pearson $\chi^2(1) = 506.4207$ Pr = 0.000 Cramer's V = 0.1962

Table 7. Within-Party Co-Sponsorship Between Congresses

	102 nd Congress	110 th Congress	114 th Congress	Total
Bills Not Within-Party Co-Sponsored	3,502 (82.50%)	3,575 (77.33%)	3,008 (70.13%)	10,085 (76.65%)
Within-Party Co-Sponsored	743 (17.50%)	1,048 (22.67%)	1,281 (29.87%)	3,072 (23.35%)
Total	4,245 (100.00%)	4,623 (100.00%)	4,289 (100.00%)	13,157 (100.00%)

Pearson $\chi^2(1) = 184.0718$ Pr = 0.000 Cramer's V = 0.1183

Table 8. Cross-Party Co-Sponsorship Between Congresses

	102 nd Congress	110 th Congress	114 th Congress	Total
Bills Not Across-Party Co-Sponsored	2,893 (68.15%)	2,572 (55.63%)	2,499 (58.27%)	7,964 (60.53%)
Across-Party Co- Sponsored	1,352 (31.85%)	2,051 (44.37%)	1,790 (41.73%)	5,193 (39.47%)
Total	4,245 (100.00%)	4,623 (100.00%)	4,289 (100.00%)	13,157 (100.00%)

Pearson $\chi^2(1) = 158.7654$ Pr = 0.000 Cramer's V = 0.1098

Co-Sponsorship and Legislative Outcomes

Finally, we must observe the relationships between co-sponsorship and legislative outcomes by congressional session in order to determine how polarization impacts legislative output. Below are several tables that depict the relationship between the types of co-sponsored bills and their legislative outcomes, divided by Congress. Each set of three tables depicts the relationships from the 102nd Senate first, the 110th Senate second, and the relationships from the 114th Senate third.

Tables 9, 10, and 11 depict the change in the relationship between single-sponsored bills and passage in the Senate. In all three Congresses, single-sponsored bills are less likely to pass through the Senate.

Table 9. Single Sponsorship and Bill Passage in the 102nd Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Single-Sponsored	1,595 (46.25%)	500 (62.81%)	2,095 (67.03%)
Single-Sponsored	1,854 (53.75%)	296 (37.19%)	2,150 (32.97%)
Total	3,449 (100.00%)	796 (100.00%)	4,245 (100.00%)

Pearson $\chi^2(1) = 71.0301$ Pr = 0.000 Cramer's V = -0.1294

Table 10. Single Sponsorship and Bill Passage in the 110th Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Single-Sponsored	2,407 (63.06%)	692 (85.86%)	3,099 (67.03%)
Single-Sponsored	1,410 (36.94%)	114 (14.14%)	1,524 (32.97%)
Total	3,817 (100.00%)	806 (100.00%)	4,623 (100.00%)

Pearson chi2(1) = 156.4931 Pr = 0.000 Cramer's V = -0.1840

Table 11. Single Sponsorship and Bill Passage in the 114th Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Single-Sponsored	2,475 (68.16%)	596 (90.58%)	3,071 (71.60%)
Single-Sponsored	1,156 (31.84%)	62 (9.42%)	1,218 (28.40%)
Total	3,361 (100.00%)	658 (100.00%)	4,289 (100.00%)

Pearson chi2(1) = 137.6379 Pr = 0.000 Cramer's V = -0.1791

Tables 12, 13, and 14 depict the relationship between within-party co-sponsorship and bill passage in the Senate. The figures depict a modest, but statistically significant relationship between within-party co-sponsorship and passing through the Senate in the 102nd Congress. The

strength of this negative correlation decreases by about .04 between the 102nd and 110th Congress, but then increases by almost .1 between the 110th and 114th Congress. This means that bills that lacked bipartisan cosponsors became less likely to pass through the Senate during the 114th congressional session.

Table 12. Within-Party Co-Sponsorship and Bill Passage in the 102nd Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Single-Sponsored	2,782 (80.66%)	720 (90.45%)	3,502 (67.03%)
Single-Sponsored	667 (19.34%)	76 (9.55%)	743 (17.50%)
Total	3,449 (100.00%)	796 (100.00%)	4,245 (100.00%)

Pearson $\chi^2(1) = 42.9389$ Pr = 0.000 Cramer's V = -0.1006

Table 13. Within-Party Co-Sponsorship and Bill Passage in the 110th Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Within-Party Co-Sponsored	2,903 (76.05%)	672 (83.37%)	3,575 (77.33%)
Within-Party Co-Sponsored	914 (23.95%)	134 (16.63%)	1,048 (22.67%)
Total	3,817 (100.00%)	806 (100.00%)	4,623 (100.00%)

Pearson $\chi^2(1) = 20.3418$ Pr = 0.000 Cramer's V = -0.0663

Table 14. Within-Party Co-Sponsorship and Bill Passage in the 114th Congress.

	Did Not Pass Senate	Passed Senate	Total
Bills Not Within-Party Co-Sponsored	2,432 (66.98%)	576 (87.54%)	3,008 (70.13%)
Within-Party Co-Sponsored	1,199 (33.02%)	82 (12.46%)	1,281 (29.87%)
Total	3,631 (100.00%)	658 (100.00%)	4,289 (100.00%)

Pearson $\chi^2(1) = 112.4071$ Pr = 0.000 Cramer's V = -0.1619

The relationship between cross-party co-sponsorship and passing through the Senate is shown in Tables 15, 16 and 17. Table 15 reveals that that the relationship between cross-party co-sponsorship and passing through the Senate in the 102nd Senate is a statistically significant relationship. Unlike the other two variables, cross-party co-sponsorship has a moderately strong correlation with Senate passage. Tables 16 and 17 reveals that the strength of this correlation increases from 0.22 in the 102nd Senate, to 0.23 in the 110th Senate, to 0.3141 in the 114th Senate. Over the course of twenty-five years (1991 to 2016), the percentage bills that passed through the Senate falling into the bipartisan co-sponsored category increased from 53.3 percent to 78.1 percent, which is a 24.8 percent increase. This does not necessarily prove hypothesis H2, which claims that the higher the level of polarization in the Senate, the more likely an individual piece of legislation with bipartisan cosponsors will pass through the Senate. However, it does suggest

that having bipartisan cosponsors is increasingly important in order to move legislation through the Senate. Some might argue that this data does not prove that cooperation before introducing legislation on the senate floor overcomes polarization, but that the only bills that can pass through the Senate are those that gain bipartisan support. However, since these pieces of legislation in the data are coded with original cosponsors, rather than including senators who sign their name after the bill has been introduced on the floor, we can reject the idea that these bills are only being passed through bargaining or political compromise in order to move legislation through the Senate. These are bills that have legitimate cooperation between parties at the outset. Therefore, I suggest that it is more likely that these bills with legitimate cooperation have a better chance of passing when polarization is high. We can still draw conclusions from this research that cooperation at the basic level of drafting legislation can be an effective strategy to overcome the challenges of gridlock introduced by heightened levels of polarization.

Table 15. Cross-Party Co-Sponsorship and Bill Passage in the 102nd Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Cross-Party	2,521	372	2,893
Co-Sponsored	(73.09%)	(46.73%)	(68.15%)
Cross-Party	928	424	1,352
Co-Sponsored	(26.91%)	(53.27%)	(31.85%)
Total	3,449	796	4,245
	(100.00%)	(100.00%)	(100.00%)

Pearson $\chi^2(1) = 207.0375$ Pr = 0.000 Cramer's V = 0.2208

Table 16. Cross-Party Co-Sponsorship and Bill Passage in the 110th Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Cross-Party Co-Sponsored	2,324 (60.89%)	248 (30.77%)	2,572 (55.63%)
Cross-Party Co-Sponsored	1,493 (39.11%)	558 (69.23%)	2,051 (44.37%)
Total	3,817 (100.00%)	806 (100.00%)	4,623 (100.00%)

Pearson $\chi^2(1) = 244.5385$ Pr = 0.000 Cramer's V = 0.2300

Table 17. Cross-Party Co-Sponsorship and Bill Passage in the 114th Congress

	Did Not Pass Senate	Passed Senate	Total
Bills Not Cross-Party Co-Sponsored	2,355 (64.86%)	144 (21.88%)	2,499 (58.27%)
Cross-Party Co-Sponsored	1,276 (35.14%)	514 (78.12%)	1,790 (41.73%)
Total	3,631 (100.00%)	658 (100.00%)	4,289 (100.00%)

Pearson $\chi^2(1) = 423.0520$ Pr = 0.000 Cramer's V = 0.3141

We can check this claim from another perspective by observing the correlation between number of cross-party original cosponsors for each bill and passage rates in the Senate. By observing this correlation, we can determine if the relationship stated above holds true. Tables 18 and 19 below show the correlation between number of cosponsors, number of bipartisan

cosponsors, and bill passage by Congress. There is an increase in the correlation between the number of bipartisan cosponsors and passage through the Senate from 0.19 to 0.24 between the 102nd and 110th Congresses and an increase to 0.30 in the 114th Congress. Tables 18 and 19 confirm hypothesis H3, which suggests that the higher the level of bipartisan co-sponsorship on a piece of legislation, the more likely the piece of legislation will pass through the Senate. In both tables, the number of bipartisan cosponsors shows a modest and statistically significant correlation with passage through the Senate, and this correlation only increases as the Senate becomes more polarized.

Table 18. Number of Cosponsors and Correlation with Passage

Congress	Correlation with Passage
102 nd Congress	0.16
110 th Congress	0.22
114 th Congress	0.24

Table 19. Number of Bipartisan Cosponsors and Correlation with Passage

Congress	Correlation with Passage
102 nd Congress	0.19
110 th Congress	0.24
114 th Congress	0.30

According to the results of my analysis, hypothesis H1 is rejected, hypothesis H2 requires further study, and H3 is confirmed. All three hypotheses have statistically significant results.

Although the data did not provide the expected results for H1, there is a possibility that the data provides an alternate explanation for how polarization affects how many bills and resolutions fall into each co-sponsorship category. Even if an increase in polarization does not directly cause a decrease in the number of bills that have original bipartisan cosponsors, senators might be abandoning informal bipartisan negotiation processes that take place after a bill has been introduced on the floor, choosing instead to seek within-party cosponsors to encourage their partisan colleagues to adopt their legislation in a more formalized competition. H2 shows that a moderate level of correlation between bipartisan cosponsors and bill passage increases over the twenty-five-year timespan the data encapsulates. Finally, H3 shows a statistically significant correlation between the level of bipartisan co-sponsorship and bill passage.

CONCLUSION

In this paper, I aimed to examine the impact of polarization on legislative productivity and levels of cooperation among members of Congress. In order to explore these issues, I collected sponsorship and co-sponsorship data for each piece of legislation introduced on the Senate floor in the 102nd, 110th, and 114th senatorial sessions. I compared single-sponsored, within-party co-sponsored, and cross-party co-sponsored bills to examine if the type of co-sponsorship impacted the ability of legislation to pass through the Senate, as well as if the number of bills in each category shifted as Congress became more polarized.

Hypothesis H2 revealed an important relationship and hypothesis H3 is confirmed. As the level of polarization increases in the Senate, the number cross-party co-sponsored pieces of legislation that are introduced in the Senate are not necessarily affected. However, the number of single-sponsored pieces of legislation decreases and the number of within-party co-sponsored

pieces of legislation increases as polarization rises. This discovery reveals that senators are more likely to cooperate with senators of their own political party on the formulation of legislation when Congress is increasingly polarized. However, the data also shows that the higher the level of polarization in the Senate, the more likely bills that are passed have bipartisan cosponsors. Furthermore, the higher the level of bipartisan co-sponsorship on a piece of legislation, the more likely the legislation will pass through the Senate. These discoveries reveal a potential solution to the issue of legislative productivity. Senators may be able to overcome the decline in bill passage by finding enough original bipartisan cosponsors to encourage parties from both sides to consider their legislation. This becomes even more prevalent with the realization that I drew these conclusions by merely counting bills in three different Senates. Not all bills are equally important when it comes to public policy, so statistical analysis cannot fully capture the significance of this issue. If only a few major bills are fostered to success through cross-party cooperation, those bills could make a crucial difference in the productivity of a congressional session.

This paper provides an introduction to the method of employing co-sponsorship as a measure of legislative productivity during periods of polarization in Congress. However, there are several factors that may impact the results of this data. For instance, this paper covered legislation in the Senate within a twenty-five-year timeframe, but it only covered data in three congressional sessions. A potential topic for further study could be to study co-sponsorship and collect data for more congressional sessions within this timeframe. In addition, this research paper includes every piece of legislation that was introduced on the floor of the Senate during the 102nd, 110th, and 114th Congresses, including bills that are ceremonial in nature (such as naming a federal building after a former president, etc.). It is possible that removing ceremonial bills

from the equation and solely focusing on bills that impact public policy may impact the data. An additional note to consider is the possibility that other branches of government may impact the behavior of senators and whether or not they choose to cosponsor a bill. For instance, if a president belongs to the majority political party and disapproves of a bill, will that make the senators in his same political party less likely to cosponsor the bill? Does the president's opinion of a bill limit the chance of a bill to receive bipartisan support? Furthermore, do senators that share a political party with the president cosponsor bills more often than senators of the opposite political party? A similar issue may also occur with majority and minority leaders. If senators are considering cosponsoring a bill sponsored by a member of the opposite party, might they be discouraged to cosponsor if their party leader in the Senate disapproves of it? Finally, this paper only covers co-sponsorship in the Senate. Would a House of Representatives study yield entirely different results, or would it show an even stronger correlation among the variables?

This research paper provides a new approach to analyzing the impact of polarization that focuses on long-term cooperation and legislative productivity rather than the directly impacted voting patterns. Furthermore, the results of this paper reveal a potential solution to the inhibitions placed on policymaking by the development of polarization in Congress. Because polarization breaks down the behavioral traditions in the Senate, cooperation and peaceful communication with other legislators appear to be on the decline. However, if legislators realize that bills are more likely to pass through a polarized legislative body with greater numbers of original bipartisan cosponsors, they might be encouraged to overcome the pressures of polarization and cooperate with one another to achieve their policymaking goals in Congress.

References

- Abramowitz, Alan I., & Saunders, Kyle L. (2008). Is Polarization a Myth? *The Journal of Politics*, 70(2), 542-555. doi:10.1017/s0022381608080493
- Adler, Scott E. & Wilkerson, John. *Congressional Bills Project (1991-2016)*, NSF 00880066 and 00880061.
- Asher, Herbert B. (1973). The Learning of Legislative Norms. *The American Political Science Review*, 67(2), 499-513. doi:10.2307/1958780
- Bullock, C. S., & Brady, D. W. (1983). Party, Constituency, and Roll-Call Voting in the U. S. Senate. *Legislative Studies Quarterly*, 8(1), 29-43. doi:10.2307/439469
- Desilver, Drew. (2019). A productivity scorecard for the 115th Congress: More laws than before, but not more substance. Retrieved from <https://www.pewresearch.org/fact-tank/2019/01/25/a-productivity-scorecard-for-115th-congress/>
- Farina, Cynthia R. (2015). CONGRESSIONAL POLARIZATION: TERMINAL CONSTITUTIONAL DYSFUNCTION? *Columbia Law Review*, 115(7), 1689-1738. Retrieved from <http://www.jstor.org/stable/43631703>
- Fiorina, Morris P. (2014). Are Independents Truly "Closet Partisans"? Some Facts about Political Independents. Retrieved from https://www.uniteamerica.org/fiorina_independents
- Fiorina, Morris P., Abrams, Samuel A., & Pope, Jeremy C. (2008). Polarization in the American Public: Misconceptions and Misreadings. *The Journal of Politics*, 70(2), 556-560. doi:10.1017/s002238160808050x

- Harward, B. M., & Moffett, K. W. (2010). The Calculus of Cosponsorship in the U.S. Senate. *Legislative Studies Quarterly*, 35(1), 117-143. Retrieved from <http://www.jstor.org/stable/20680267>
- Jones, David R. (2001). Party Polarization and Legislative Gridlock. *Political Research Quarterly*, 54(1), 125-141. doi:10.2307/449211
- La Raja, Raymond J., & Schaffner, Brian F. (2015). Ideological polarization in state legislatures. *Campaign finance and political polarization* (pp. 87-107). University of Michigan Press. Retrieved from <http://www.jstor.org/stable/j.ctvdtpj2w.8>
- Lewis, Jeff. (2018). Polarization in Congress. Retrieved from https://voteview.com/articles/party_polarization
- Oleszek, Mark. (2018). Sponsorship and Cosponsorship of Senate Bills. *Congressional Research Service*. Retrieved from <https://fas.org/sgp/crs/misc/98-279.pdf>
- Poole, Keith T., & Rosenthal, Howard. (1984). The Polarization of American Politics. *The Journal of Politics*, 46(4), 1061-1079. doi:10.2307/2131242
- Poole, Keith T., & Rosenthal, Howard. (2001). D-Nominate after 10 Years: A Comparative Update to Congress: A Political-Economic History of Roll-call Voting. *Legislative Studies Quarterly*, 26(1), 5-29. doi:10.2307/440401
- Poole, Keith T., & Rosenthal, Howard. (2007). On Party Polarization in Congress. *Daedalus*, 136(3, On Capitalism & Democracy), 104-107. Retrieved from <http://www.jstor.org/stable/20028136>

Zhao, Christina. (2019, Jun 2,). GOP SENATOR SAYS DEMOCRATS WANTING TO IMPEACH TRUMP SHOULD 'BUY A SPINE' AND DO IT: 'GO HARD OR GO HOME'. *Newsweek* Retrieved from <https://www.newsweek.com/gop-senator-says-democrats-wanting-impeach-trump-should-buy-spine-and-do-it-1441684>.