#CongressTweets: Who Uses Twitter the Most in the Senate

by

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This study explores how Senators communicate with their constituents through press releases and Twitter as social media becomes a popular communication tactic. Previous research has found that Senators use traditional media platforms and Twitter as a supplement to provide direct, responsive communication, but not how much they use each platform. I suggest that traditional and social media usage depends on partisanship, strength of ideology, age, and seniority in the Senate. I also hypothesize that Senator spending on communication staff increases as social media is implemented, and greater communications spending results in more Twitter activity. Evidence about these claims is shown through graphical evidence and a series of t-tests. Results suggest that strength of ideology greatly determines media usage, while partisanship, age, and seniority show little association with media usage. Results also suggest that spending on communication staff does increase as Twitter is implemented, but spending is not associated with increased media usage. This research will improve overall understanding of how social and traditional media link constituents with their Senators, and how dramatically social media has changed the constituent-representative relationship.

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Introduction

One hundred forty characters have never been so important. Twitter has revolutionized how we communicate. It has created immediate channels where anyone can communicate with a broader world. This evolution of communication has changed how members of Congress (MC) communicate with their constituents. Social media's rising prominence has gravitated MC attention to social media platforms, especially Twitter. The Twitter community, made up of users who communicate with short messages, hashtags, and retweets, became a popular communication tool in 2011. In response to Twitter's popularity, MC's implemented Twitter as a supplemental method to communicate with constituents.

This thesis explores how MC's, particularly Senators, communicate and what affects Senator communication. Senator Twitter usage demonstrates an effort to modernize outreach to state and national constituents. As a popular communication tool, Twitter helps Senators remain communicative with constituents, aware of constituent interests, and ultimately, politically relevant.

How do Senators use their Twitter to remain communicative and politically relevant? The nature of Twitter messages are direct and immediate, intended to summarize an idea and broadcast it to a broad audience. A sample of Senator tweets show this direct nature of Twitter communication.

Senator Thune tweeted directly at a constituent and demonstrated that social media can connect members with their constituents much more directly:

> @sarahsmom1 --Tweets are limited to 140 characters. You can read more about why I voted no on the budget at http . . .

Publishing a message that is directed at a specific audience shows that the Senator is acknowledging followers and constituents alike. Tweets make it evident that Senators are listening and addressing constituents. While Senator Thune addressed a constituent directly, while Senator Warner addressed a wider constituency:

> "Got your message - have a minute" @markwarner calls constituents to answer
> their questions about #sequestration.

Direct dialogue, whether it be a response to an individual or a response to an entire constituency, can be counted as efforts to appear responsive. Being responsive implies that the Senator is concerned with representing constituent interests and open to feedback and policy discussion. Representing constituent interests is a Senator's main goal, assuming all congressmen are interested in getting reelected (Mayhew, 1974). Position-taking through tweets is another method to seem responsive and aware of constituent interests. Many Senators use tweets to encapsulate an ideology into a memorable phrase. Senator Sanders did so in just 138 characters:

> It is time to end corporate tax loopholes and use this money to reduce the deficit
> and create jobs, not lower corporate tax rates. #budget

Directly communicating with constituents, showing responsiveness and position-taking are ways in which Senators use their Twitter. Twitter gaining prominence as a communication tool has changed how Senators publish ideology and interact with constituents.

Communicating with constituents occurs on two platforms: traditional and social media. The amount Senators use both platforms is now in question. How much Senators use traditional and social media may be influenced by Senator characteristics. The tweets in the previous paragraph were from Senators of different age, seniority, partisanship, and ideological extremeness. Senators Thune was the youngest Senator from 2008-2015, Sanders was the most

liberal, and Warner was the least senior. On the surface, all Senators publish press releases and tweets. Senator Inhofe, both the oldest and most conservative, was utilizing Twitter in the same way as the others:

> Sen. Inhofe is holding a press conference in Tulsa, Oklahoma today announcing provisions of the #DRIVEAct

However, the Senators' actual usage rates may vary. It is imperative to understand not only *if* Senators are using media, but *how* they are using media. *How often* do Senators use traditional and social media? Does their usage of media depend on their age, seniority, partisanship, or ideological extremeness? Does social media make constituent communication more efficient? These questions will highlight what platforms Senators prefer or find most effective. Answers will also show if Twitter has shifted communication away from traditional media or if it makes traditional media stronger. Finally, we will have an understanding of how well media platforms link constituents with their representatives and how social media has changed this linkage. Does more connectedness between constituents and Senators enhance the quality of our representative government? Does more social media usage efficiently connect representatives with constituents, or does more connectedness create more work for representatives and their staff?

Literature Review

Thus far, I have described the need to research how Senators communicate with their constituents. In the following Literature Review, I will explain why Senators value communication and how Senators rely on traditional and social media as communication platforms to connect with constituents. This information will make a case for my research on the usage of media platforms and how well they link representatives and constituents.

Communication helps an MC's ultimate goal of remaining in office. MC communication vocalizes and responds to constituent interests, which renews MC relevance to their constituents. Relevance and favorability to constituents are of utmost importance to MC's since they are primarily concerned with re-election (Gainous & Wagner, 2014). By pursuing communication through traditional media (television, newscasts, radio, print, and press releases) and then later adopting social networking sites (SNS), MCs are continuing and intensifying communication presence to better their chances at re-election.

The implementation of SNS in congressional offices marks a shift from local to national media. Prior to social media, congressional communication focused on local media. National media outlets were incredibly difficult to pursue. Attaining national media attention was difficult unless a member was a national spokesman for a certain policy or spent excessive time attracting the national media (Cook, 1988). National media was generally disinterested in most MCs, so MCs pursued local media in which they were more relevant (Cook, 1988). Pursuing local media meant that members hired communication staff with specialized media experience and district ties to help the member get local media attention (Hammond, 1984). Emphasis on local media persisted up until the social media era, which this study will define as 2011 and onward. From 2008 to 2011, the percent of internet users using SNS increased from 29%-64% (Pew Research Center, 2012). That year, 2011, marks the point at which social networks allowed MCs to attract broader and more national media attention. Social media implementation allowed MCs to bypass what Fortunato and Martin (2016) refer to as the "media decision-making process," in which the member relies on the local or national media's interest and willingness to acknowledge the member. With SNS, a member can reach a national audience without the input or delay of any media association: "SNS have recreated the information market so that it is the user . . . solicits

the content" (Gainous & Wagner, 2014). SNS creates a direct linkage between MCs and constituents: it forms an outlet where MCs can broadcast the information they choose and communicate on a much broader scale.

SNS usage broadens communication by providing channels to publicize widely and communicate individually. MCs can routinely reach national audience with relatively little cost (Straus, Glassman, Shogan, & Smelcer, 2013). Publicizing an opinion, idea, or activity can provide "opportunities for people with similar interests, opinions, and concerns, who may be geographically separated, to interact and share information" (Seifert, 2003). SNS provides an open platform that allows members to attract and interact with like-minded followers. Direct communication between MC's and SNS users, whether they be constituents, followers, or neither, can also occur. MC's can "appear concerned about an individual with very little resource cost. Politicians, or their staff can respond directly to constituents" (Gainous & Wagner, 2014). Responding and publishing constituent-relevant content over SNS can tighten the relationship between MC and constituent. Learning more about constituent interests can also strengthen constituent communication: MC's can "collect and transmit real time information to and from constituents [that] could be influential for issue prioritization, policy decisions, or voting behavior" (Glassman, Straus, & Shogan, 2013). With an active audience of both constituents and like-minded followers, members are able to increase their political relevance and communicate directly with constituents. Publishing information and directly communicating with constituents is possible at a relatively low cost thanks to SNS.

SNS provide communication at a low cost, high speed, and broad scope. It also presents "challenges in the areas of office operations, communications strategies, and constituent representation" (Straus & Glassman, 2016). Shogan (2010) emphasizes that the "impact of

technology on Congress is that constant communication requires constant work . . . members and staff are expected to respond to questions and negotiations outside regular office hours" (233). Because SNS facilitates communication through comments and feedback mechanisms, constituents have an "expectation that members will use electronic communications to rapidly respond. In the past members may have had days to consider how they would present issues . . . Today in many cases they may be expected to provide the same in a matter of hours" (Straus & Glassman, 2016). This expectation implies an increased workload for communication staff.

SNS's instantaneousness creates additional tasks for members. They must continue pursuing local media while maintaining a responsive, active presence on SNS. Traditional communication requires staffers to mainly pursue local media, but SNS provides a much broader audience. MC's may prefer one platform over another, or may intersperse communication efforts between the two. Member tweets often provide links to traditional media, prompting followers to the MCs latest press release, television, or radio activity. Including traditional media in tweets demonstrates a member's efforts to increase communication on both social and traditional platforms (Shogan, 2010). Members and their staff are therefore continually pursuing "traditional modes of constituent communication [while the] use of new communications technology is increasing" (Glassman, Straus, & Shogan, 2013). MC's are increasing their presence with constituents by pursuing active media on both traditional and social platforms.

The amount of communication work within an office has increased significantly since the implementation of SNS. Aside from the time required to produce traditional media, communications work with SNS takes "time to strategize how to communicate a member's message in such a short, restricted format. Staff members also must monitor the account and respond to inquiries from followers. . . . failing to respond to such inquiries, such as replies to

tweets, exposes members to the risk of seeming 'out of touch' or 'unresponsive'" (Straus, Glassman, Shogan, & Smelcer, 2013). Increasing SNS usage leads to increasing need to respond in order to remain responsive and politically relevant. The massive national increase in SNS use and electronic communication "has put increased pressure on these [staff] allocation decisions. To the degree that more staff time needs to be allocated to the collections, processing, and responding tasks associated with communications, less time can be allocated to policy or other work" (Straus & Glassman, 2016). Constant communication increases demands for MCs and their staff, as they strive to appear relevant and responsive.

Twitter has been found to be an effective form of SNS to reach a diverse and broad audience. Peterson (2012) describes that constituent effects, such as median income, proportion of college educated constituents, proportion of constituents over the age of sixty-four, and the proportion of rural districts, all have little effect on whether an MC uses Twitter. This suggests that Twitter is widely accessible and a method for most members of a constituency to communicate with their representative. Since Twitter is not strongly associated with any specific demographic, it is an ideal form of SNS for members to remain relevant to a broad constituency. If members are not being drawn to Twitter because of their constituent's Twitter usage, they are being drawn to it because communication as a whole is shifting to social media. As an across-the-board communication tool, the question is no longer *if* a member uses Twitter, but *how* they use it to remain relevant to constituents.

Remaining politically relevant implies different efforts for different members. While members supplement traditional media with SNS usage, they are doing so at different rates. Straus, Glassman, Shogan, and Smelcer (2013) describe that minority party members and members with extreme ideologies register with Twitter in order to "engage with a broader

political constituency" (62). In addition to minority party membership and ideological extremeness, age of member was also significant with regard to Twitter adoption, older members being less likely to have registered with Twitter (Straus et al., 2013). Re-election percentages were found to not be good predictors of Twitter adoption (Straus et al., 2013). Member seniority was also found not be associated with Twitter adoption because "more senior members of Congress have greater access to traditional press coverage than those with less tenure" (Straus et al., 2013). Members who seek a broader constituency therefore are more likely to register for Twitter because they want to expand constituent outreach efforts beyond traditional media.

Research has not yet determined how social media has changed Senator communication on traditional and social media platforms. Straus et al (2013) finds that members in the minority or are ideologically extreme start to use social media before other groups. This research does not have data on how much these groups utilize social media once they create an account. Popularity of social media, along with Senator's desire for a broader constituency and re-election may change Senator communication tactics on traditional and social media. Senator communication may be split between press releases and Twitter, or Senators may shift most messages to Twitter altogether. Studying Senator media usage will highlight what communication platforms are preferred by different types of Senators. As discussed above, Senator characteristics may determine how much they use traditional and social media. Understanding how different Senators use media platforms will better explain how well Senators connect with their constituents.

Theory

So far, I have described why researching Senator communication usage is pertinent to understand the linkage between representatives and constituents. With press releases (my measure of traditional means of communication in this study), Senators are limited to an audience that is both politically aware and engaged with said Senator. Average constituents usually do not seek out Senator press releases unless they are more engaged in state or local matters. People who share ideological values the same as a Senator also rarely seek out press releases, as that takes time and effort to find Senators (other than their own) and consciously seek out their press releases.

Other forms of traditional media, TV, radio, news, etc., are more restricted mainly due to the "media decision process" previously discussed. Editors and producers determine what content is discussed and presented on their platform. Senators therefore have to both attract and maintain media attention to even have an opportunity to be featured on traditional media. Attracting the media means having communication staff that double-task with creating and shaping content and also fostering strong relationships with both state and local media. Attracting national media attention serves as an even bigger challenge and requires stronger media relationships and more dramatic content. Even the strongest relationships between Senators and traditional media do not allow Senators to control how the content is presented. Being featured on a traditional media platform does not allow Senators to control the amount of content nor the tone in which it is presented.

Implementing social media dramatically changes the manner by which Senators communicate. Twitter immediately changes the scope and breadth of Senator communication efforts. Instead of being limited by media outlets, Senators and their staff can directly control

what content is released and in what tone it is presented. They can also control the rate by which they communicate, whether it be regular or sporadic, without delay from media outlets. Twitter also allows the limited audience that seeks out press releases to expand. Press releases can be summarized and linked in a tweet of one hundred forty characters, and can be both read and accessed by a far greater audience than those who regularly (or even infrequently) seek out Senator press releases.

Twitter provides an ever-growing and more national audience. A Senator's journey from local to national Twitter following varies. Using popular hashtags, retweeting popular tweets or creating original tweets that gain both local and national attention are all methods to increase following. Twitter does not guarantee a broad national audience for every Senator, but it does give equal opportunity to attain and grow a national following. Strategies between Senators will vary and have varying success rates in gaining national attention, whether attention be measured in likes, retweets, views, or Twitter content that is presented on traditional media.

Using Twitter makes a Senator appear more communicative and more responsive. Twitter users, both followers and non-followers alike, can not only see the messages a Senator publishes, but also their other Twitter activity, such as likes, comments, and retweets. Twitter's open forum allows for more open and streamlined communication between constituents, users with similar or contrasting ideologies, or even average Twitter users with little interest in politics or politicians. Dialogue between these groups and a Senator can happen immediately and dramatically change how responsive and communicative a Senator appears. Direct dialogue also provides Senators a channel to determine constituent sentiment and policy preferences.

It is clear why implementing Twitter as a communication tool is helpful for Senators. Twitter broadens a Senators audience and allows them to appear more communicative and

responsive. Senators have found Twitter to be a helpful political communication tool, evident in all Senators registering with Twitter by 2013 (Toor).

As discussed in the literature review, Straus, Glassman, Shogan, and Smelcer (2013) show evidence that Twitter is implemented to engage with a broader audience. Intuition suggests that the majority party registers for Twitter at higher rates than the minority because the majority has a larger constituency. Instead, Straus et al. (2013) find that the minority party is more likely to register for Twitter. Additionally, they establish that extreme ideology (both liberal and conservative) are more likely to register for Twitter. Both findings strongly support the idea that Twitter is implemented in order to broaden an audience with which a Senator communicates. With communication dramatically shifting to social media from 2010 and onward [2010 being the year Straus et al. (2013) conducted their study], Senators, especially those in the minority and those with extreme ideologies, see Twitter implementation as necessary to enhance their communication methods and ultimately remain politically relevant.

Majority and Minority Party:

What is the difference between the majority and minority in terms of media usage? The majority (Democrats from 2008-2015) had been preferred by younger constituents, evident by younger voters favoring Obama in 2008 and 2012 ("President Exit Polls"). The minority is more likely to implement Twitter as supplemental to press releases to broaden their communication efforts (Straus et al., 2013). The pressure to reach a broader constituency may not be strong if a majority creates a sense of stagnation in communication usage. The majority may mainly communicate through press releases and utilize Twitter less frequently than those in the minority. Democrats held the Senate majority from the end of 2008 to 2015.

Hypothesis 1a: *Impact of Majority Partisanship on Traditional Media*
Democrats will publish more press releases than Republicans because Democrats have a majority and a larger constituency with whom they routinely communicate.

Hypothesis 1b: *Impact of Majority Partisanship on Social Media*
Democrats will publish less tweets than Republicans because Republicans, being in the minority, adopt Twitter to reach a broader constituency.

Ideology:

Segments of different ideologies emerge within the majority and minority. This study separates each party into three segments: extremists, party moderates, and true moderates. True moderates are the most conservative Democrats and the most liberal Republicans, and those who may communicate more through press releases than the rest of the majority. True moderate Senators are the closest to representing the median voter because true moderates make up the median of Senate ideology. We can assume that true moderates from the majority party have the broadest constituency, since true moderates attract the median voter and the majority party provides a larger constituency. True moderates of the majority party therefore may rely much more on traditional media, and have less usage of Twitter.

Hypothesis 2a: *Impact of Extreme Ideology on Traditional Media*
Conservative Democrats will publish more press releases in 2008, 2011, and 2015 than other Democrats and all Republicans because Democrats are the majority party and conservative Democrats are more likely to attract the median voter.

Ideologically extreme Senators, on the other hand, may rely more on Twitter usage in order to broaden their audience and constituency. While extreme ideology has been shown to increase Twitter registration rates, the impact on actual Twitter usage must be tested. Extreme members of both parties likely desire to reach a broad audience to publicize themselves and their ideas. Twitter, a supplement to press releases, may give ideologically extreme members a broader audience to which they communicate more.

Hypothesis 2b: *Impact of Extreme Ideology on Social Media*
Extreme Republicans will publish more tweets in 2011 and 2015 than other Republicans and all Democrats because Republicans want to reach a broader constituency through Twitter and extreme ideologies are more likely to have registered with Twitter.

Age:

Senator age may affect media usage. Straus, Glassman (2013) describe that age also affects member Twitter registration. Since I previously hypothesize that press release usage depends on the size of a constituency, age does not determine a Senator's traditional media.

Hypothesis 3a: *Impact of Age on Traditional Media*
Age is not associated with average monthly press releases because traditional media usage is routine for all Senators and does not require new technology, which older people are less likely to use.

Twitter usage, on the other hand, may be more associated with age. The older the member, the less likely they are to register for Twitter (Straus et al., 2013). This is relevant when discussing Twitter registration, but not actual Twitter usage rates. Since all Senators registered with Twitter by 2013, the relationship between age and Twitter use frequency must be tested. Older Senators may utilize Twitter less than younger Senators, assuming that older members being less likely to use newer technology.

Hypothesis 3b: *Impact of Age on Social Media*
Older Senators will have lower average monthly tweets than younger Senators, as younger Senators are more likely to utilize newer technology

Seniority:

Senator's seniority may impact press release usage. Straus et al. (2013) explain that previous research has shown that more senior members of Congress have greater access to press coverage through traditional media (64). Traditional media requires more effort to attract and communication staff with ties to the constituency media outlets. More tenured Senators establish

stronger ties with media outlets, and stronger ties implies more routine usage and frequent press releases to be used by media outlets.

> Hypothesis 4a: *Impact of Seniority on Traditional Media*
> More senior Senators have higher average monthly press releases than less senior Senators because more senior members have greater access to traditional media.

Twitter usage may also be associated with Senator seniority. More senior Senators tend to be older, implying that they may not publish as many messages on Twitter because older members are less likely to use newer technology. More senior Senators also have been re-elected one to many times, implying that they have the incumbent advantage in the next election. Since being an incumbent generally increases likelihood of winning their next election, more senior Senators may rely on Twitter communication less because they are less concerned with communicating with their constituents to help them get re-elected.

> Hypothesis 4b: *Impact of Seniority on Social Media*
> More senior Senators (more tenure in Senate office) have lower average monthly tweets than less senior Senators, as more experience implies incumbent advantage, less motivation to adopt new communication efforts, and more senior members have greater access to traditional media.

Communication Staff Budgeting:

Aside from majority, ideology, age, and seniority, the amount of staff budget Senators allocate to communication staff is pertinent to understand Senator communication efforts. The amount staffers receive is a direct indication of the value of their work. Measuring the change in budget allocation is necessary to gauge any changes in workload for communication staff. It also illustrates how much a Senator values communication as social media is used regularly. The larger proportion allocated to communication staffers as Senators adapt Twitter may suggest that using Twitter creates more work for staffers and is more valuable to a Senator's success.

Hypothesis 5a: *Impact of Implementing Twitter on Communication Staff Budgeting*
Between 2008 and 2015, Senators will increase the amount of their staffing budget to communication staff because utilizing social media in addition to traditional media will require more work for staff.

Hypothesis 5b: *Impact of Communication Staff Budgeting on Traditional and Social Media*
Spending more on communication staff from 2008 to 2015, presumably to utilize Twitter, will lead Senate offices to publish more tweets. Press releases are traditional media and are not associated with communication staff budgeting changes that occur when Twitter is being implemented.

Methodology

I conducted several quantitative tests to analyze my theories about Congressional communication patterns. I tested the relationship between traditional and social medias with Senator age, seniority, majority/minority, ideological extremeness, and communication staff budgeting. Traditional media is measured by average monthly press releases and social media by average monthly tweets. Press releases act as a constant measurement of communication efforts, as it was used before and after Twitter became an additional communication method.

Data collection on these variables were specified by Congressional chamber, time period, and tenure. I limited this study to the Senate. Data collection was limited to a span of five months, April through September, in 2008, 2011, and 2015. It was also limited to Senators that held office over all three years. The year 2008 represents when Senators utilized traditional communication methods. The transition period, 2011, marks a transition in communication tactics from traditional to social media: by 2011, 83.4% of Representatives and Senators were registered with Twitter (Glassman, Straus, & Shogan, 2013). By 2015, all Senators were actively using Twitter as a social communication tool. Selecting these three years to observe communication trends helped specify at what point change occurred and if it correlates with changing communication methods and Twitter usage.

First, I consulted official Senate expenditure documents to understand communication spending. I examined Senate Disbursement Records, entitled "Report of the Secretary of the Senate," that contain office staffing with staff names, titles, and salaries. Staffers with titles containing terms "press," "comm," "correspondence," "media," "digital," "spokesperson" were recorded from the April-September Report of each year studied. From that, the sum of all communication staff salaries was found and then divided by the total expenditure on staff salaries. This measures what proportion of funds was designated to communication staff each year.

Next, press releases were measured monthly and then averaged per year. Press releases were counted in each month (April-September) and then averaged to produce the monthly average press release for each year. Press release data were found in two ways. First, I consulted current Senator websites. If press releases were not archived on a Senators' website, or if a Senator was no longer in office, I utilized data purchased from LegiStorm, a private research firm which archives data on congressional staff. The LegiStorm dataset includes member, press releases in entirety, and date released. Press releases represent a Senator's traditional means of communication with constituents and were collected to determine if and how much traditional communication was used before and once Senators started to use Twitter as an additional communication method.

Tweets were also measured monthly and then averaged per year to determine to what extent social communication was implemented. Twitter data was only recorded for 2011 and 2015, as few Senators were actively using Twitter in 2008. Archived Twitter data from LegiStorm was used in order to count monthly tweet averages for each Senator. The LegiStorm

dataset included the Senator's screenname, tweets, and date published. Both original tweets and retweets were counted, with retweets denoted with "RT" in the beginning of each message.

I created histograms and scatter plots to illustrate relationships between all of the major variables explained above (percent allocated to communication staff, yearly average press releases, average yearly tweets), in addition to Senator age, partisanship, and seniority.

Lastly, ideological data were collected to test differences between and within different parties. Data from voteview.com assign each Senator a numerical value to indicate how conservative or liberal they were, with zero being the most moderate. The voteview.com ideological value is determined by Senator voting records and is plotted by economic/redistributive and social/radical values. Negative values designate liberals while positive values designate conservatives, the most negative and positive values representing the most extreme Senators.

To accurately analyze differing ideologies, I split each party into three segments: extremists, party moderates, and true moderates. Previous research has suggested that extremists adopt Twitter to broaden their constituency. That research does not shed light on how non-extremists can be segmented and analyzed for communication patterns. Therefore I created the party moderate and true moderate segments to analyze ideological trends on a deeper level. Party moderates are the Senators in the middle segment of their party ideology, while true moderates are the most conservative Democrats and the most liberal Republicans.

I used two methods to split the group of Senators into six segments, three segments per party. One method, which is classified as Ideology 1, split each party into three equal segments. Ideology 1 was based less on the ideological values that each Senator held and more on how many Senators with tenure from 2008-2015 were in each party. Ideology 2 split each party into

three segments based off the most extreme value. This second method was based on the
ideological values entirely, dividing the most extreme value by three and sorting Senators into
the three segments according to the ⅓ and ⅔ of the most extreme value. Both methods are
featured below.
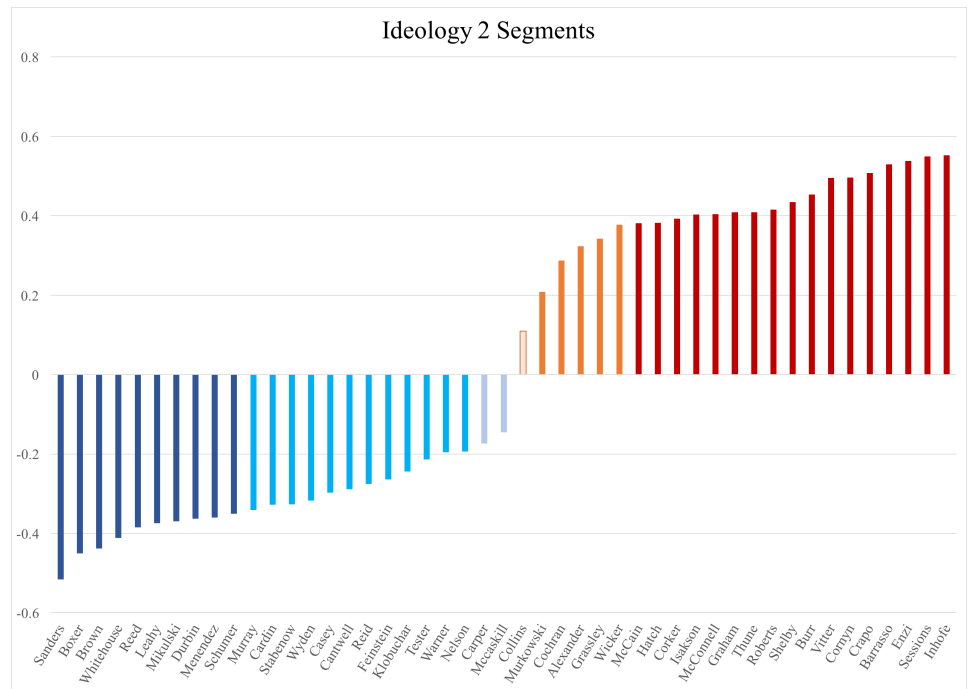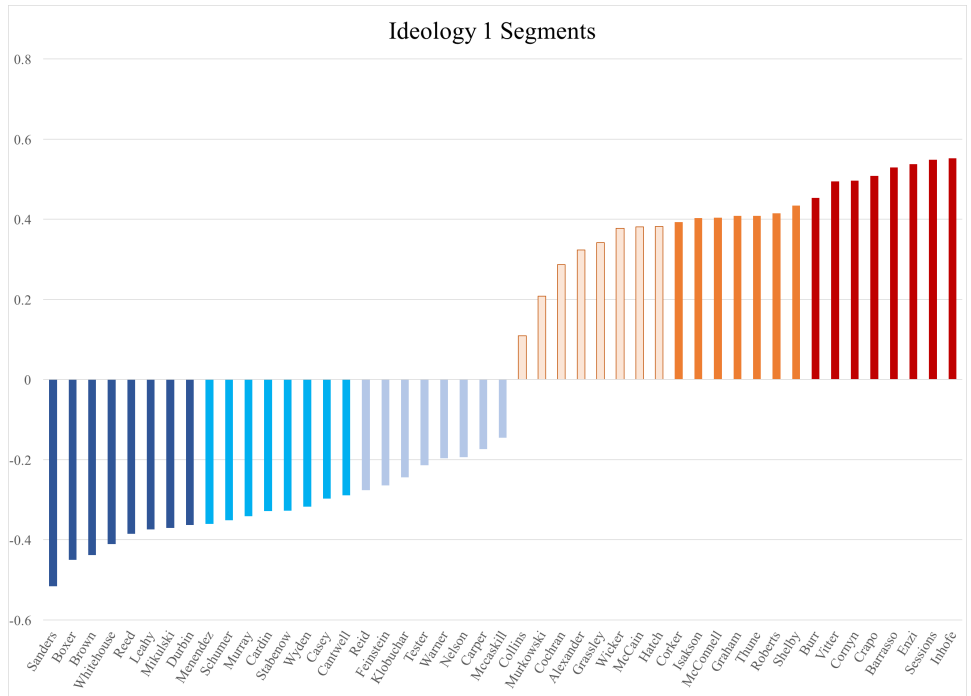
I then created scatter plots and conducted t-tests to illustrate communication trends within the ideological segments. Democratic ideology and Republican ideology were plotted versus the budget allocation, average yearly press releases, and yearly average tweets. Then I conducted a series of t-tests between the same variables and the ideological segments.

To do so, I separated budget allocation, press releases, and Twitter data by Democrats, Republicans, and all. Within each of these, I split the data segment of interest (extremists, party moderates, or true moderates) of Ideology 1 and Ideology 2. I denoted the segment of interest (extremists, party moderates, and true moderates) of each Ideology with 1's and denoted the comparison groups with 0's. When running tests in R Console, using 1's for segments of interest and 0's for comparison groups clarified the two groups for the Welch two sample t-tests. Ideology 1 data was represented by capital letters (DemExtPR) and Ideology 2 with lowercase letters (demExtPr). Each segment was tested against the other segments in the party. For example, Democratic extremists in Ideology 1 (DemExtPR) and Ideology 2 (demExtPr) were tested against the rest of the Democrats. A sample R t-test command is located in the Appendix for reference.

Then extremists, party moderates, and true moderates from both parties were combined to examine bi-partisan segment trends by each Ideology. All t-value and p-values, means, and number of cases were recorded in Table 1 in the Appendix. P-values of .05 and below are denoted with a * to demonstrate significance in a ninety-five percent confidence interval.

All significant t-tests (p-value <.05), plus those close to significant (p-value<.07), were then tested against all other segments in both parties. For example, if Democratic extremist allocation was found to be significant, I would conduct another t-test comparing Democratic

extremists to all other Democrats and all other Republicans. These t and p-values, means, and number of cases are recorded in Table 2 in the Appendix.
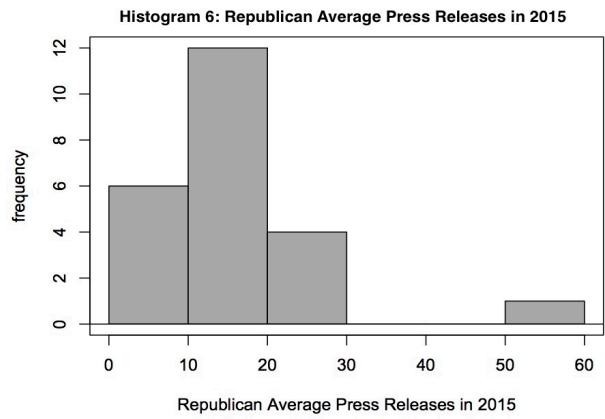
Results

I examined basic communication frequencies to begin analysis of my five hypotheses. First, I separated Senators by partisanship. H1a hypothesizes that the Democrats, the majority party, published more press releases due to their larger constituency with whom they routinely communicated. To test H1a, I created the table and histograms below to illustrate any patterns between press release usage and majority and minority partisanship.

Table 1: Total and Average Press Releases Published by Republicans and Democrats from 2008-2015

Party Press Releases	2008 Sum	2008 Avg	2011 Sum	2011 Avg	2015 Sum	2015 Avg
Democrats (24)	289.16	12.57	484.81	20.2	700.81	29.17
Republicans (23)	450.82	18.78	354.99	15.43	362.15	15.74
Difference	-161.66	-6.21	129.82	4.77	388.66	13.43

As indicated above, the Democratic majority published more press releases in 2011 and 2015 (Table 1). Being the majority party and having a broader constituency may have motivated Democrats to publish more press releases to communicate with constituents. However, Democrats did not publish more press releases in 2008. This is because Democrats took the majority in November 2008, while I collected data from April-September.

Histogram 1: Democrat Average Press Releases in 2008

Histogram 2: Republican Average Press Releases in 2008

Histogram 3: Democrat Average Press Releases in 2011

Histogram 4: Republican Average Press Releases in 2011

Histogram 5: Democrat Average Press Releases in 2015

Histogram 6: Republican Average Press Releases in 2015
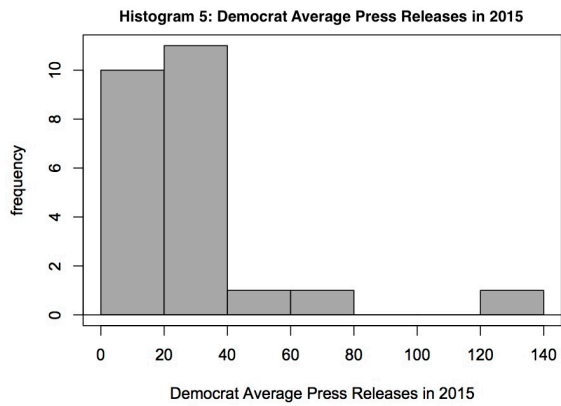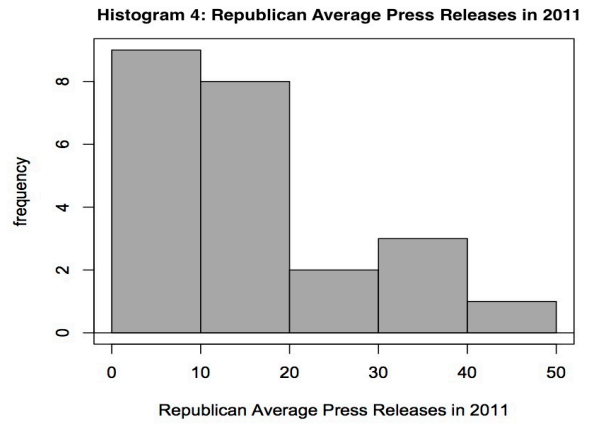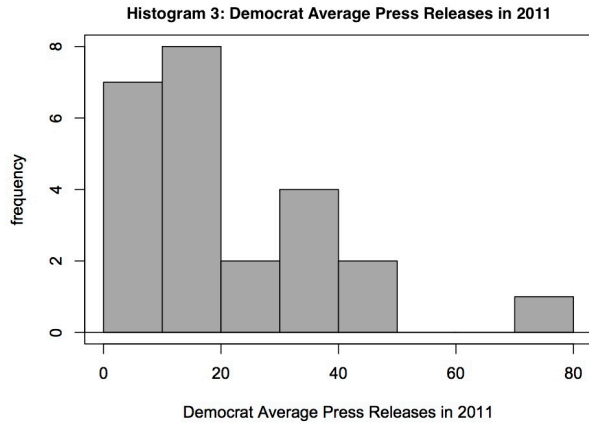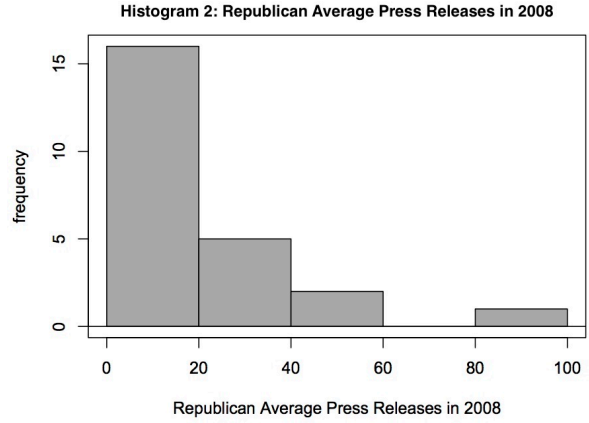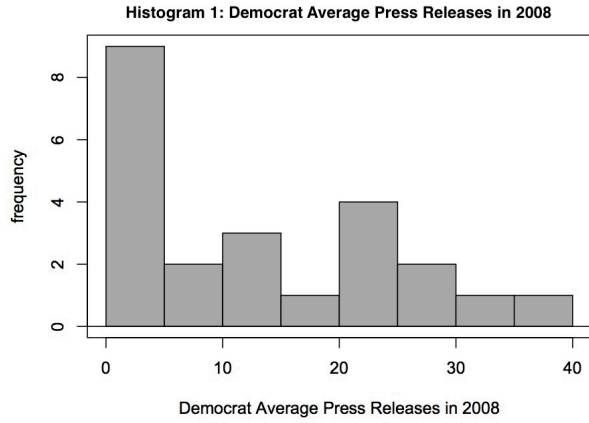
Histograms of party usage of press releases show that there is little graphical evidence that Democrats release significantly more press releases than Republicans on average. In 2008, most Democrats and Republicans published up to twenty press releases a month. In 2011 and 2015, Democrats and Republicans published up to forty press releases a month. These histograms show that press release usage between 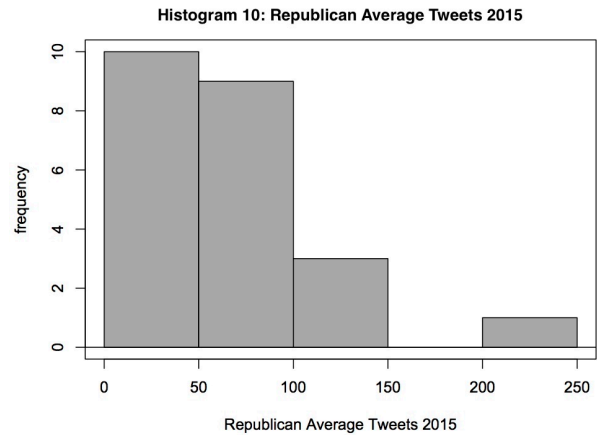the majority and minority parties is similar. The outliers shown in the histograms explain the usage differences in Table 1. Democrats have higher press release usage in 2011 and 2015 in Table 1 because of their large outliers highlighted in the histograms. H1a, therefore, incorrectly predicts that the majority publish significantly more press releases than the minority.

Analyzing majority and minority trends with Twitter usage led to a similar trend as press release usage. In H1b, I hypothesized that the majority Democrats would publish less tweets than minority Republicans because minorities adopt Twitter to reach a broader audience. Democrats tweeted less than Republicans in 2011, but tweeted more than Republicans in 2015 (Table 2). Republicans had one outlier, Senator John Cornyn, who tweeted far more than any other Senator in 2011, which explains the higher Republican Twitter usage rate (Histogram 8). Democrats took the lead in Twitter usage in 2015, with six Senators tweeting more than one hundred fifty times a month on average. Republicans, on the other hand, only had John McCain tweeting more than one hundred fifty times a month on average.

Table 2:Total and Average Tweets Published by Republicans and Democrats from 2008-2015

Party Tweet	2011 Sum	2011 Avg	2015 Sum	2015 Avg
Democrats (24)	597.39	24.89	2047.19	85.3
Republicans (23)	658.95	28.65	1570.44	68.28
Difference	61.56	3.76	-476.75	-17.02

Histogram 7: Democrat Average Tweets in 2011

Histogram 8: Republican Average Tweets in 2011

Histogram 9: Democrat Average Tweets in 2015

Histogram 10: Republican Average Tweets 2015
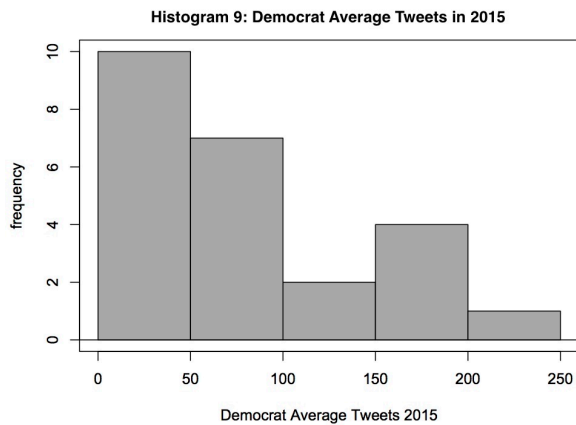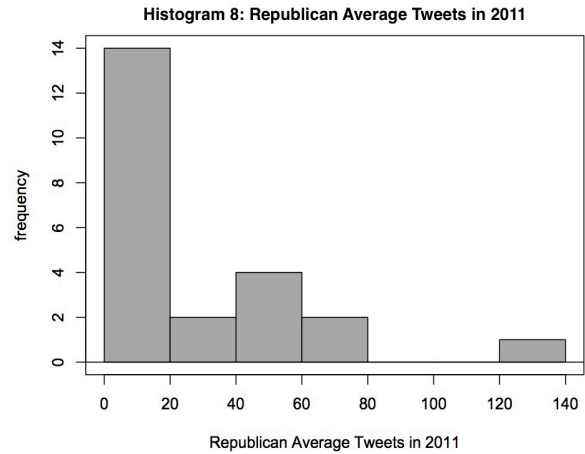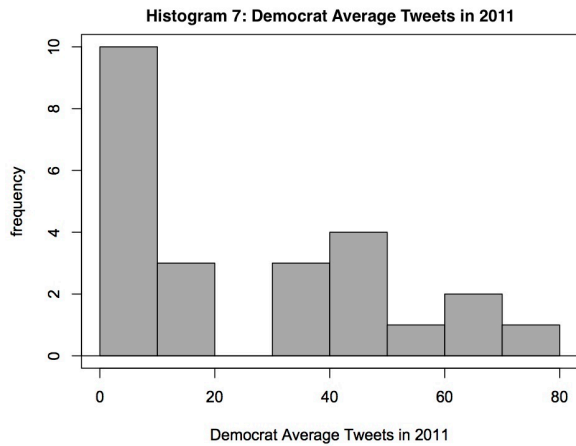
The histograms show that majority and minority Twitter usage is similar. The differences shown in Table 2 are made possible by the Republican outlier shown in Histogram 8 and the four Democrats Tweeting one hundred fifty to two hundred times a month in Histogram 9. Differences swayed by outliers suggests that Twitter use also is not influenced by majority or minority party membership. These findings suggest that minority Twitter usage is dissimilar to Twitter registration that was studied by Straus et al. (2013). As social media usage reaches its all time high in this study in 2015, Republicans in the minority do not utilize Twitter significantly more than Democrats in the majority. In this study, being in the minority does not appear to

encourage greater Twitter usage to broaden a constituency. In contrast to Hypothesis 1b, Twitter may not be a method to reach a broader constituency once it is regularly used by a Senator.

Next, I discuss the impact of extreme ideology on press release and Twitter usage. Hypotheses 2a and 2b have the most significance in this study and shed the most light on communication patterns within and between parties as social media was implemented. This portion of the study separated Senators by ideological extremeness values into Ideology 1 and Ideology 2. In Hypothesis 2a, I propose that Conservative Democrats publish more press releases because of their majority status and their likelihood to attract the median voter. Conservative Democrats are considered true moderates in this study, since they are the members closest to the middle of the Republican and Democrat ideology.

Analysis of the press release data when segmented by ideology led to the following results, all of which are illustrated in the Bar Plots below. Conservative Democrats (DemConsPr) did published significantly more press releases in 2011 than their other Democratic peers (t-value=2.258), in accordance with my prediction. However, Conservative Democrats did not release significantly more press releases than Republicans combined with their Democratic peers, illustrated in Bar Plot 1. Extremist Republicans (RepExtPr) published significantly more press releases in 2015 than their Republican peers (t-value=3.21) and more than the combination of Democrats and Republicans (t-value=4.078), illustrated in Bar Plot 2. Liberal Republicans (RepLibPr) published significantly less press releases than their Republican peers (t-value=-2.738). Note that these significant ideological segments were measured in Ideology 1 (as explained in Methodology, splits each party equally into three segments).

Bar Plot 1:

T-values of Senator Press Releases in 2011 by Ideology 1 Segments

Bar Plot 2:

T-values of Senator Press Releases in 2015 by Ideology 1 Segments
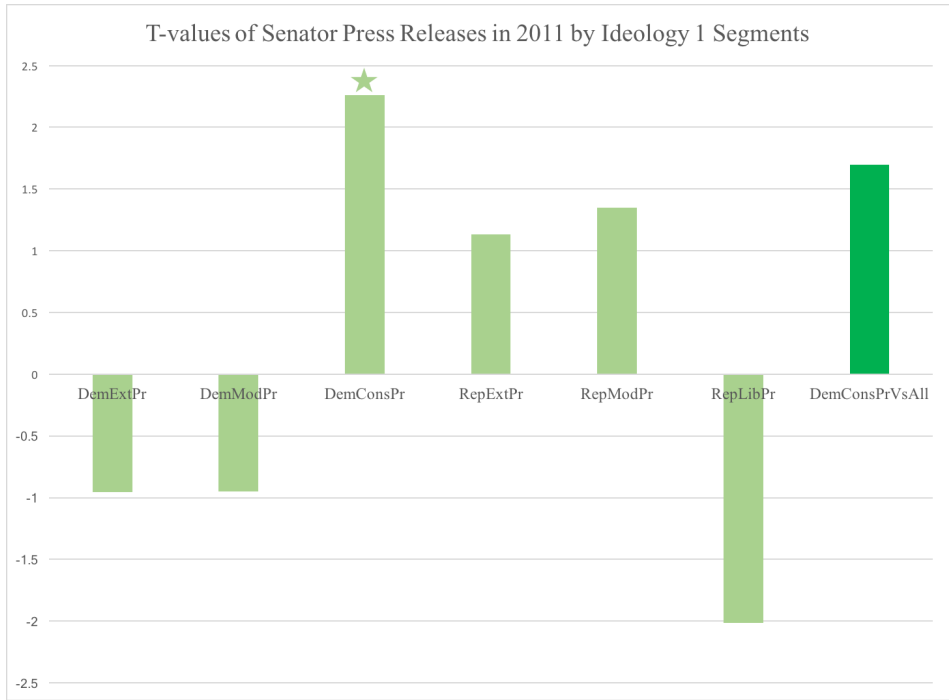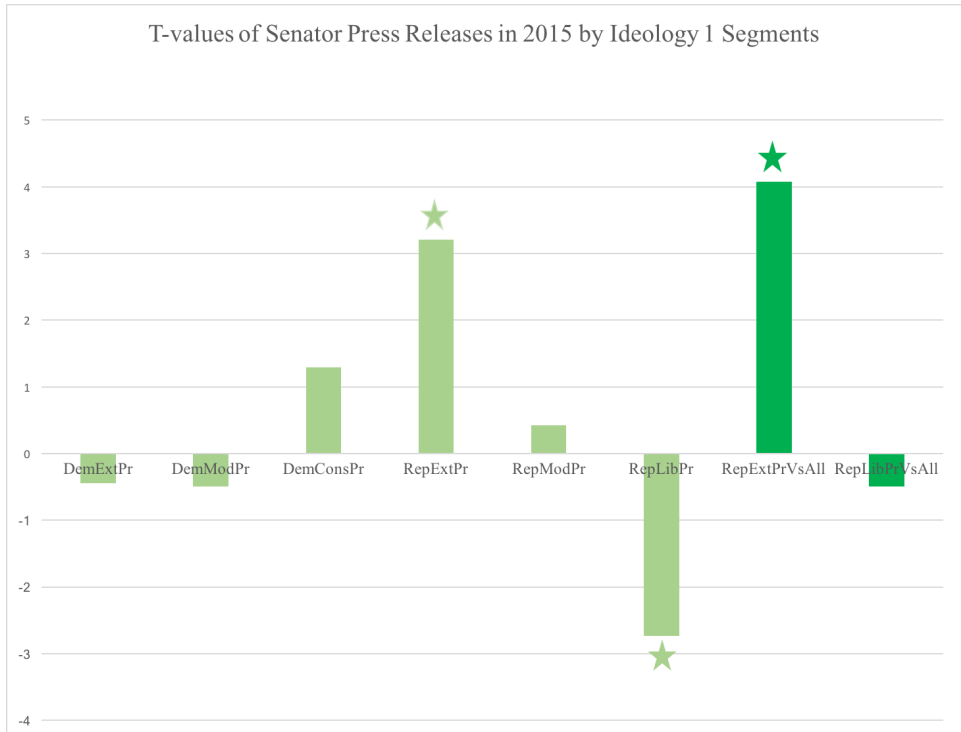
Note that significant t-statistics are marked with a ★. Light colored bars test the segment against the other two segments in that party. Dark colored bars test the segment against all other segments.

These data mostly contradict H2a. In 2011, Conservative Democrats utilized press releases significantly more than their Democratic peers but not more than Republicans. Extreme Republicans published more than Democrats and Republicans combined in 2015. Conservative Democrats were not the leading users of press releases, despite their majority status and their proximity to the median voter as true moderates. Proximity to the median voter did not lead the other true moderates, the liberal Republicans, to increase their press release usage either. Dividing into ideological segments like extremists, party, and true moderates shows that the ideas from H2a, like having the majority and close proximity to the median voter, do not lead to greater press release usage. Analysis through ideological segments does highlight specific segments, like extreme Republicans, who lead in press release usage but do not have the majority or a broad constituency. Extreme Republicans' significant usage of press releases raises a question of whether their specific segment followed a similar trend with Twitter usage.

In Hypothesis 2b, I speculate that extreme Republicans will use Twitter more than other segments in order to reach a broader constituency. Results for Twitter usage followed a similar trend as press release usage explained in the previous paragraph. Instead of conservative Democrats leading the way in usage in 2011, moderate Democrats (demModTw, this time measuring in Ideology 2) began the Twitter usage push in 2011. Moderate Democrats published more tweets than both their Democratic peers (t-value=2.433) and all Republicans and Democrats combined (t-value=2.372), illustrated in Bar Plot 3. Extreme Republicans (measured by Ideology 1) take the lead in Twitter usage in 2015, with a t-value of 1.973 compared with

their Republican peers, and a t-value of 2.569 when compared with Republicans and Democrats combined, shown in Bar Plot 4. This supports the findings of Straus et al. (2013) that those with extreme ideologies register with Twitter in order to reach a broader constituency. My findings back this even further, showing that extreme Republicans not only register with Twitter more, but actually utilize it more, too.

Bar Plot 3:

Bar Plot 4:

T-values of Senator Tweets in 2015 by Ideology 1 Segments
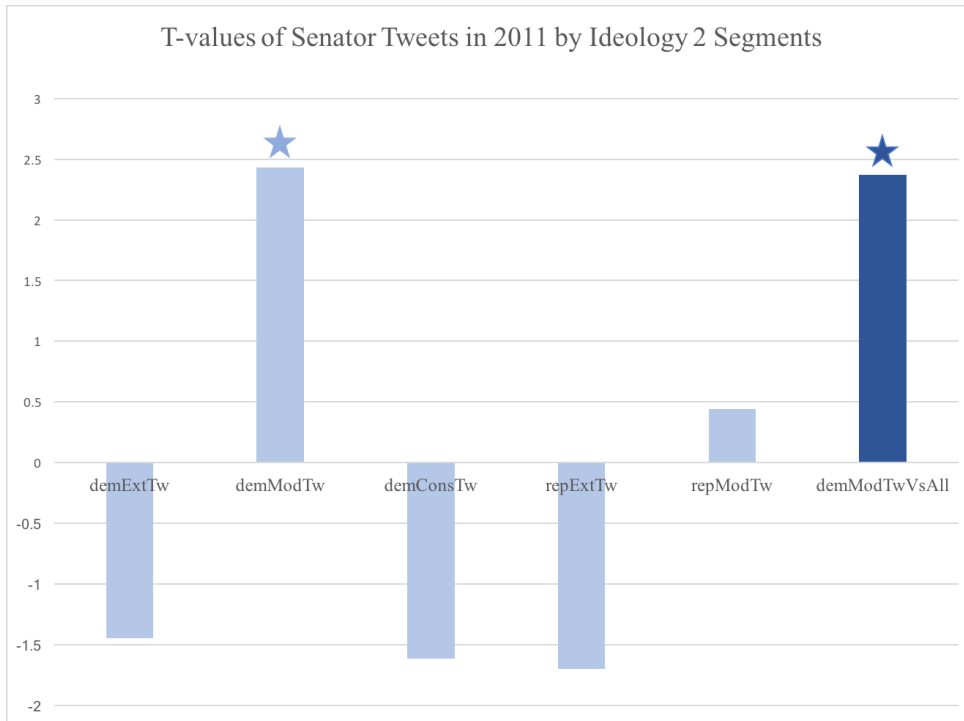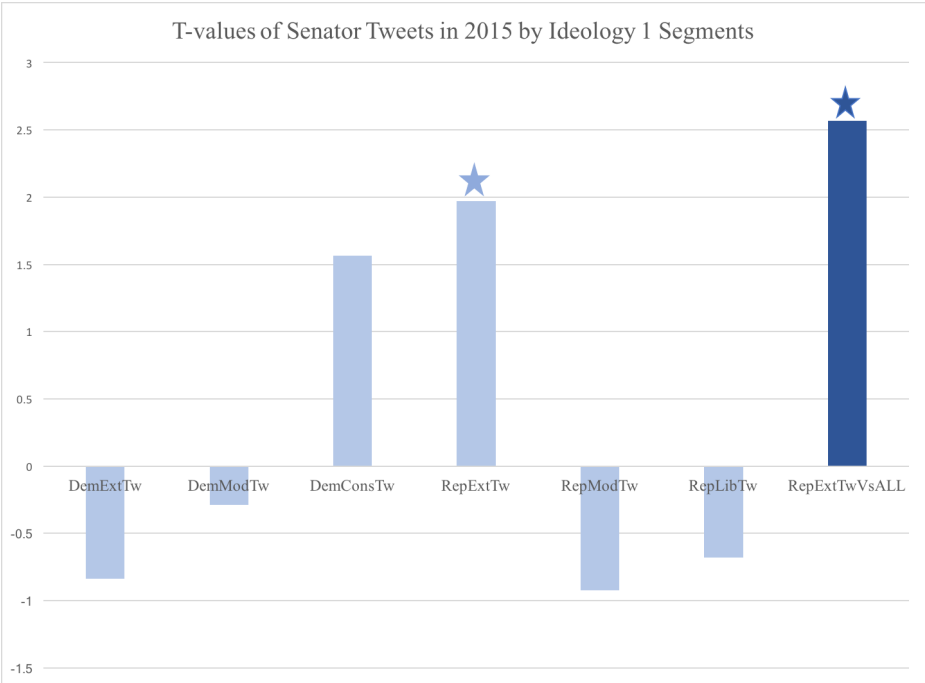
Next, I explore the impact of Senator age on press release usage. I hypothesize in H3a that age is not associated with average monthly press releases because traditional media usage is routine for all Senators and does not require new technology, which older people are less likely to use. I used scatter plots, presented below, to illustrate press release usage by age demographic. As hypothesized, age has little to no association with Senator press release publication. Disregarding the few outliers in each scatter plot, press release usage remains rather constant as age increases. From 2008 to 2015, there are general increases in how many press releases most Senators publish, regardless of age. In 2008 and 2011, most published zero to approximately twenty press releases a month on average. In 2015, most Senators published zero to forty.

Scatterplot 1: Age and Average Press Releases in 2008

Scatterplot 2: Age and Average Press Releases in 2011

Scatterplot 3: Age and Average Press Releases in 2015
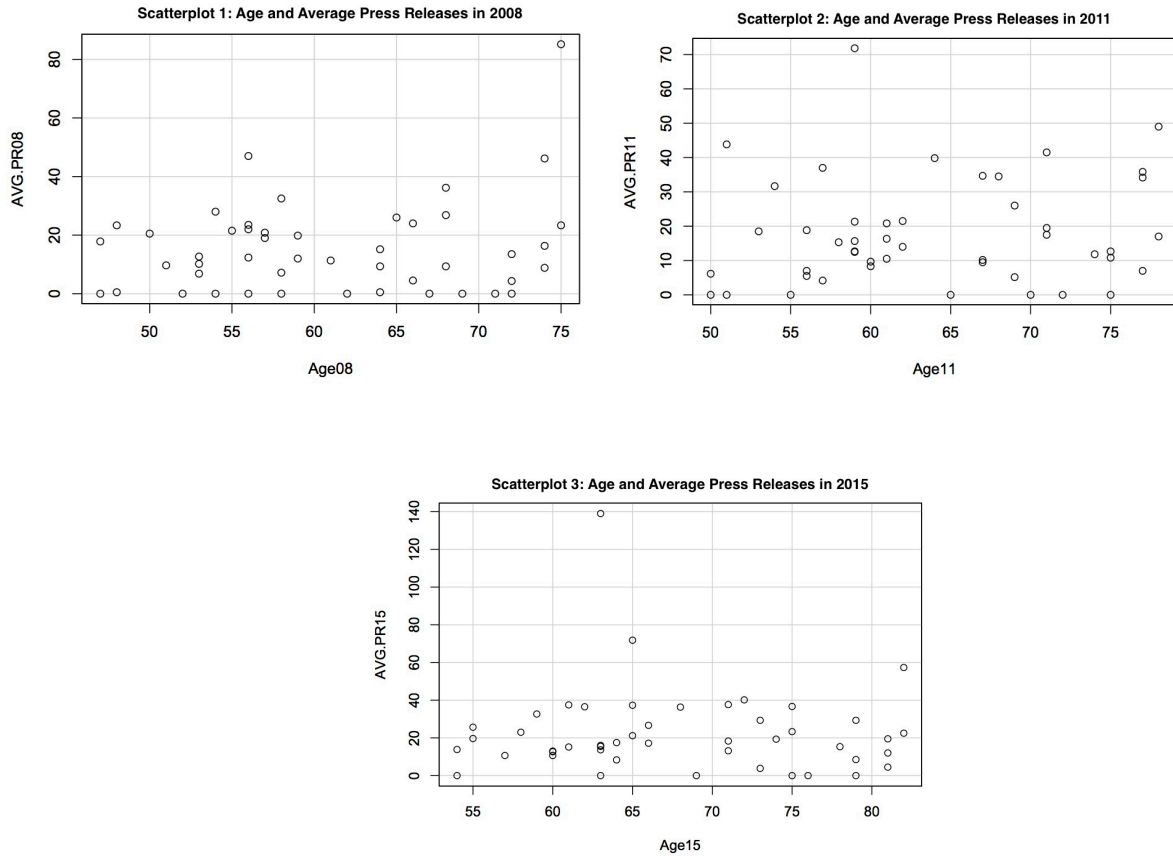
Age and Twitter usage has a less uniform and compelling graphical relationship. There is no graphical support for H3b, where I hypothesize that older Senators tweet less than younger Senators. Again disregarding the outliers, Twitter usage is rather constant regardless of age, up to eighty tweets a month in 2011 and up to one hundred tweets a month in 2015. The outliers in 2015 are of particular interest, as most of them are over the age of sixty-five and tweeting far more than Senators under the age of sixty. Senators like John McCain, Bernie Sanders, Patrick Leahy, and Dick Durbin make up this group of older, yet active tweeting Senators.

Scatterplot 4: Age and Average Tweets in 2011

Scatterplot 5: Age and Average Tweets in 2015
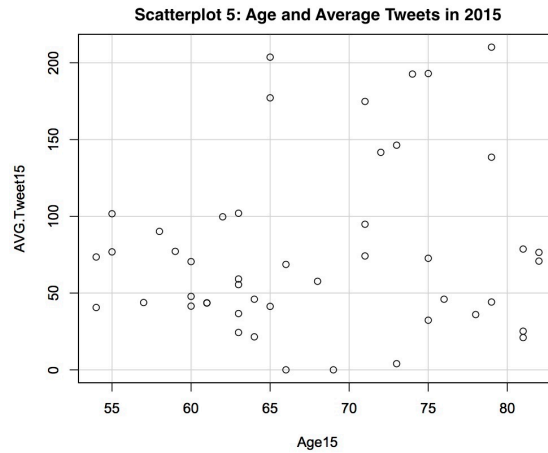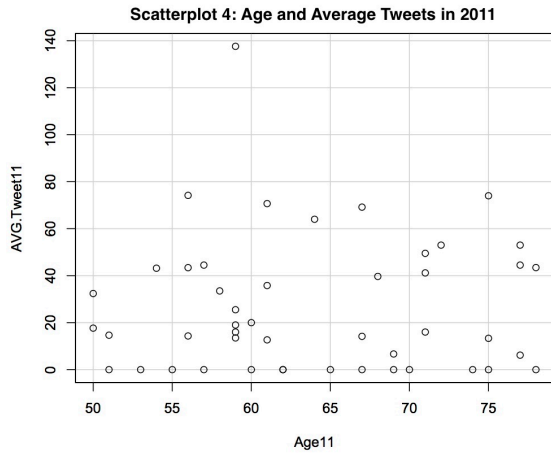
After exploring how age impacts media usage, I tested seniority in the Senate for similar patterns. Hypothesis 4a predicts that Senators with more seniority use press releases more than Senators that are less senior. The scatter plots below reveal that seniority and communication through press releases have very little association. Disregarding the outliers, the majority of Senators are within twenty years of tenure and release up to forty average press releases. There is little positive slope to support H4a. More senior members, who make up most of the outliers in the scatter plot, have press release usage that is consistent with the least senior Senators. Seniority therefore seems to have very little association with how much Senators utilize traditional media, despite other research that has shown that more senior members have greater access to the traditional media. Greater access to traditional media may not actually increase the amount of press releases tenured Senators publish. More senior Senators thus do not communicate through press releases significantly more than less senior Senators.

Scatterplot 6: Years in Office and Average Press Releases in 2008

Scatterplot 7: Years in Office and Average Press Releases in 2011

Scatterplot 8: Years in Office and Average Press Releases in 2015
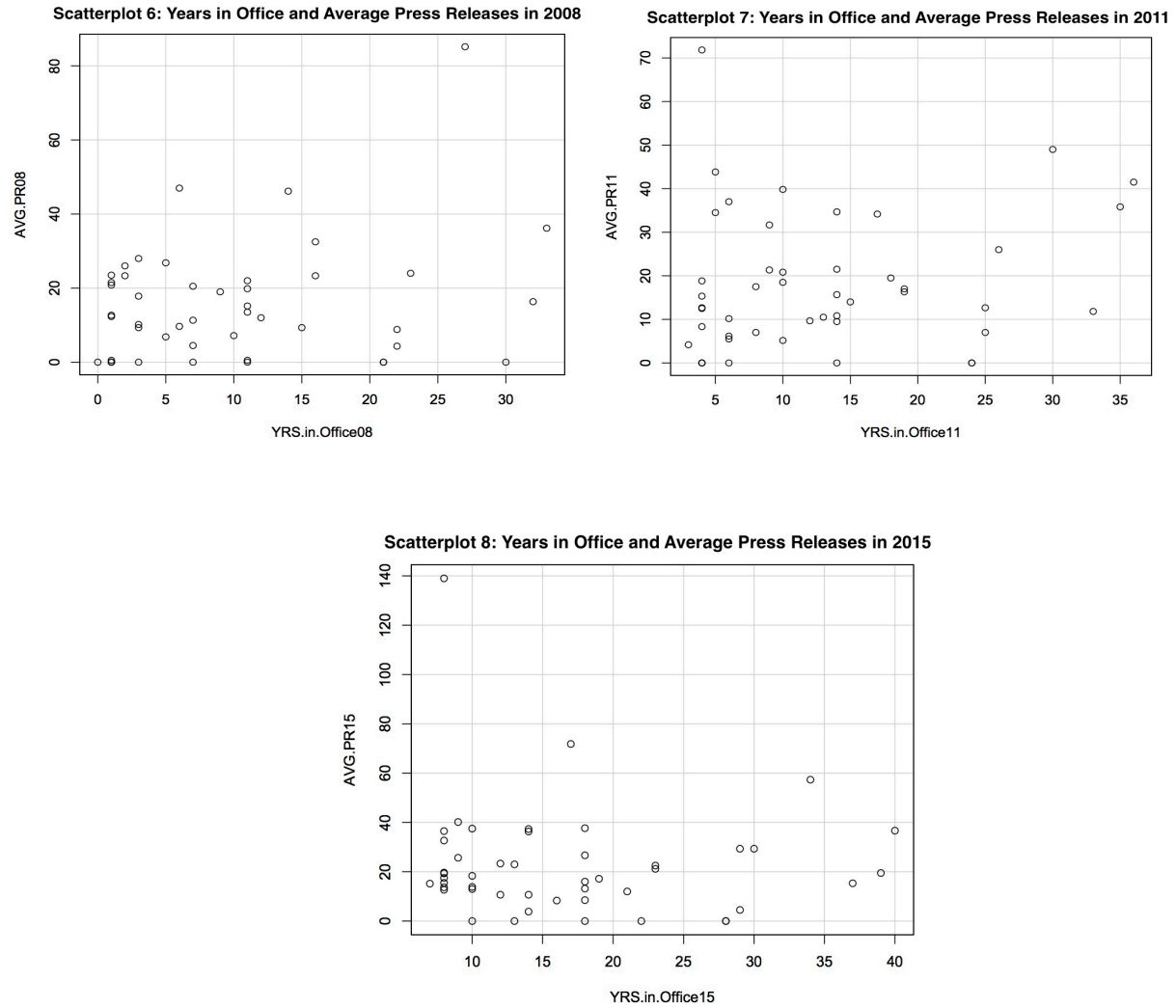
The impact of Senator seniority on Twitter usage is less clear than the relationship between seniority and press releases. As demonstrated by the green least squares regression lines, the positive slope is slightly steeper by 2015, suggesting that more seniority and Twitter usage may have a greater association than in 2011. However, the large spread of data points on both scatter plots strongly support a conclusion of no association. The estimated correlation coefficients resulted in an adjusted r-squared of -0.016 in 2011 and 0.001 in 2015 (N=47). In reference to H4b, there is no evidence to support that more senior Senators tweet less than less senior

Senators. The more senior Senators, especially in 2015, are tweeting at the same or higher rate than their less experienced peers. Seniority, just like age, does not determine Twitter usage.
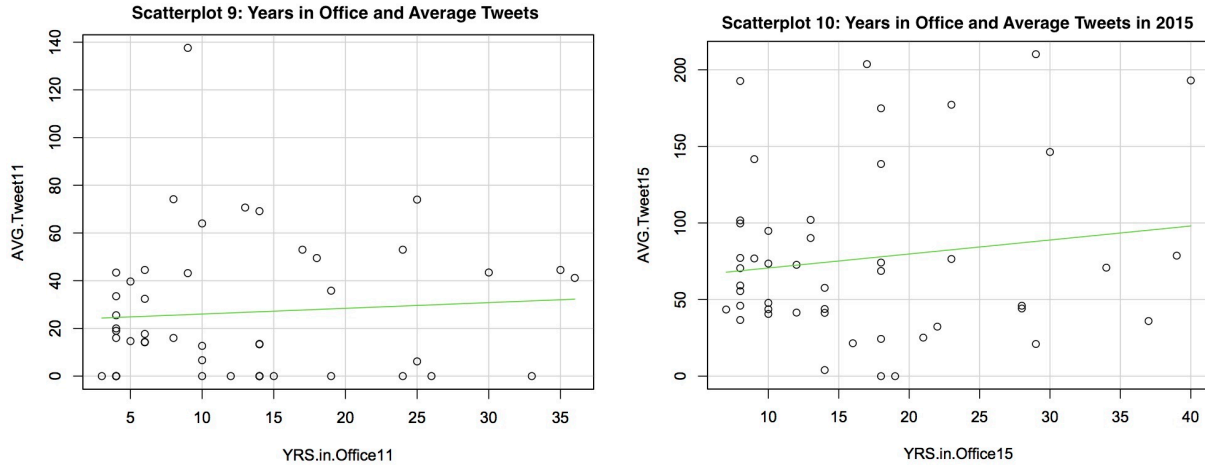
The data above has shed light on what attributes impact Senator communication. Next, I analyze how Senator communication impacts communication staff. It is clear that Senators spend more in the social media era. Out of forty-seven Senators in office 2008-2015, twenty-four of them increased their spending on communication staff from 2008 to 2015 (see Table 3 in Appendix), in accordance with H5a. Adopting and utilizing social media in addition to traditional media may increase communication staff workload. Using both types of media may make Senators value their communication staff more than they did when they just used traditional media.

More spending on communication staff in the social media era does not necessarily imply greater press release or Twitter publication. I hypothesize in H5b that greater spending on staff keeps press releases constant and tweets increasing in frequency. The scatter plots below show that there is little association between the allocation of budget to communication staff and press releases. The majority of Senators allocated five to ten percent of their staff budget to communication staff in 2008 and released up to forty press releases a month on average. In 2011

and 2015, the majority of Senators increased allocation, spanning from five to fifteen percent of their staff budget. While this allocation span increased, the press release rates remained similar, with Senators publishing up to forty press releases a month on average.

The general increase in the span of allocation from 2008 to 2011-2015 brings a general increase in Twitter usage. The scatter plots show no strong positive slopes suggesting that the more a Senator spends, the more tweets they publish. However, the majority of Senators do increase their Twitter usage as a whole between 2011 and 2015. Most Senators tweeted up to eighty times a month on average in 2011, and tweeted up to one hundred times a month on average in 2015. While there is no linear evidence to show relationships between budget allocation and communication frequency, there is graphical evidence to show overall trends amongst the Senators in office from 2008-2015.

Scatterplot 11: Allocation to Staff and Press Releases in 2008

Scatterplot 12: Allocation to Staff and Press Releases in 2011

Scatterplot 13: Allocation to Staff and Press Releases in 2015

Scatterplot 14: Allocation to Staff and Tweets in 2011

Scatterplot 15: Allocation to Staff and Tweets in 2015
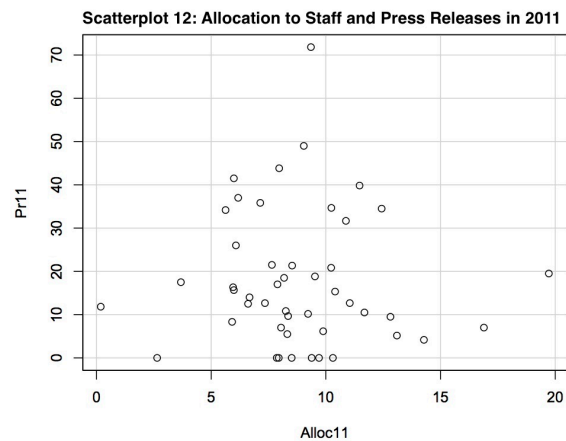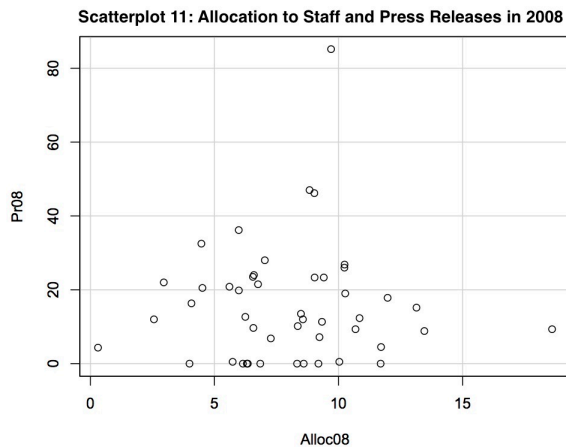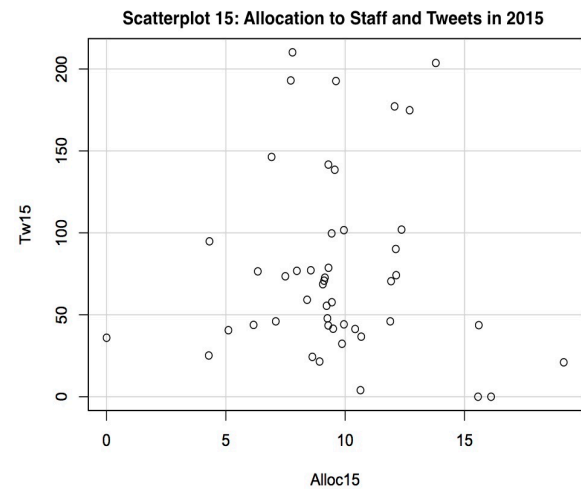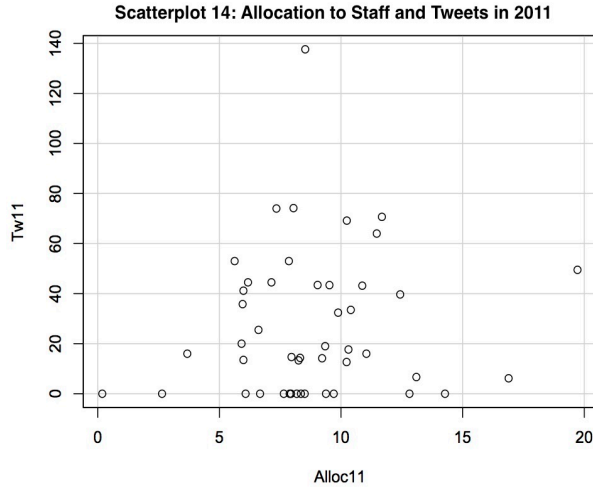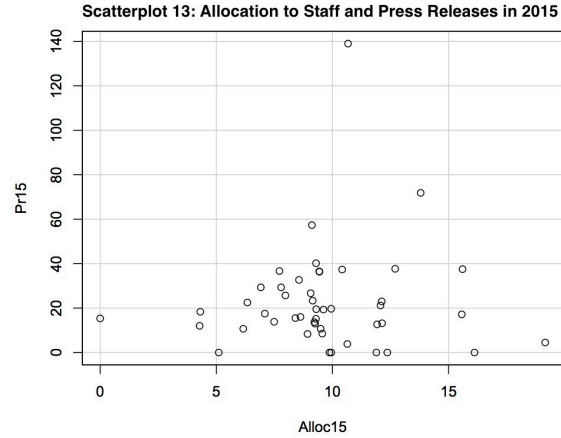
Implications and Conclusion

It is pertinent to understand how different Senators communicate and how social media has changed Senator-constituent communication. In this study, partisanship is first investigated to determine communication trends. As a whole, the majority Democrats had higher usage rates for both traditional media in the social media era (2011-2015). However, histograms highlighted that Democrat's higher usage rates were driven by outliers who used traditional media more than the rest of their peers. Therefore it was not the majority's broader constituency that increased

traditional media usage, but rather the extensive usage by particular members of the majority. As a whole, Republicans led in Twitter usage in 2011 while Democrats led in 2015. Again, total usage was influenced by increased Twitter usage by a few Senators. Histograms showed that on average, Twitter usage amongst the minority and majority were similar. This is contrary to Straus et al. (2013) who suggest that the minority party is more likely to adopt Twitter to reach a broader constituency. While the minority party is more likely to register with Twitter, the majority tends to utilize Twitter more.

With this look at partisanship comes a more in-depth investigation of ideological differences in traditional and social media communication. Conservative Democrats (the Democratic "true moderates") published more press releases that their Democratic peers in 2011. While Conservative Democrats appear to communicate more to attract the median voter in 2011, the liberal Republicans (the other "true moderates") publishing significantly less press releases than their Republican peers in 2015. Liberal Republicans did not communicate more to attract the median voter. The liberal Republicans utilizing press releases less than their peers suggests that true moderates do not always communicate more to attract the median voter. In this case, conservative Democrats publishing more press releases may be because of their majority status leading them to communicate more with a broader constituency. A conclusion on whether conservative Democrats actually attract more of the median voter through more communication is something to be further explored in future research.

The greatest impact of ideological segments on communication is seen in extreme Republicans in 2015. While moderate Democrats (this time measured by Ideology 2) published significantly more tweets than their peers and Republicans in 2011, extreme Republicans released significantly more press releases and tweets than their peers and Democrats in 2015.

This demonstrates how a segment of the minority Republicans push ahead of the majority in communication efforts, presumably in an attempt to gain a broader constituency (Straus et al., 2013). Republicans therefore not only adopted Twitter at a higher rate, but also utilized it in greater frequencies. This media push by extreme Republicans may foreshadow the Republican political climate and elections in 2016. Extreme Republicans communicating more than their Republican peers and all Democrats in the social media era hints at the alt-right movements that have shaped our contemporary political climate.

While ideology has shown to be an important factor in how Senators communicate, age and seniority do not show any association with communication. Contrary to common belief, age has no association with how much a Senator communicates on either traditional or social media. 2015 does have a greater spread of tweets, especially amongst older members as well as those with more seniority. One may deduce that older and more experienced members are by no means behind the times with regard to communication and social media. No association between age, seniority, and media usage simply suggests that we cannot assume communication trends from societal perceptions that older and more tenured Senators are less capable of communicating via social media.

It is clear that Senators, regardless of partisanship, ideology, age, and seniority, value their communication staff and all communication efforts between 2008 and 2015. More than half of the Senators in office from 2008 to 2015 increased their spending on communication staff, strongly suggesting that staff duties change drastically and demand an increase in the amount of a staffing budget dedicated to communication staff. This is in accordance with previous literature described in the Literature Review. While scatter plots did not reveal any significant association between staff spending and actual press releases or tweets published, the increase in the majority

of Senator's allocation demonstrates that they are more invested in constituent communication by 2015, amidst the rise of social media.

Finally, the increased spending on communication staff throughout the Senate suggests that Twitter usage does not make communication more cost efficient. Twitter seems to be a method to reach a broad audience, communicate efficiently, and decrease communication costs. While tweets reach a broad audience, more Twitter usage from 2011 to 2015 does not decrease the amount a Senator allocates to communication staff. This study shows that press release usage also increases, suggesting that Twitter does not replace traditional media. More press releases and Twitter usage show that social media is not as efficient as it seems. Twitter does not replace press releases, and more messages on both platforms is inefficient and results in increased staff spending. Spending more on staff, with spending not relating to increased press releases or Twitter usage, implies that increasing traditional and social media presence is creating more constituent messages and more work for staffers to respond. The cost of remaining responsive on Twitter is high: efficiency in communication technology therefore has led to more communication costs in Senate office.

Knowing what influences Senators to publish press releases or to tweet in one hundred forty characters has never been so important. Understanding what drives Senators to communicate and how that communication has changed in the social media era helps us grasp how communication and politics are rapidly changing. Senators, most notably those with extreme ideology, increasingly use social media to converse with constituents instead of presenting through traditional media. How much communication has evolved from a presentation to a conversation has yet to be studied. While press release and Twitter usage increases in this study, it is unclear whether the actual content in media messages is more conversational and

responsive to constituents. While Twitter supports conversation and responsiveness, it does not guarantee that Senators (especially the extreme segments) use Twitter to better hear and communicate with their constituents. Twitter, despite its promotion of dialogue, may not improve the linkage between representatives and constituents. While the quality of representation through social media is yet to be understood, it is clear that Senators have taken the opportunity to increase communication on social media.

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Appendix:

Table 1:

Allocation		tvalue08	pvalue08	N	meanX	meanY	tvalue11	tvalue11	N	meanX	meanY	tvalue15	pvalue15	N	meanX	meanY
DemExtAlloc	GDemExtAlloc	0.131	0.898	23	8.505	8.29	-0.315	0.759	24	9.512	10.016	0.237	0.815	24	10.402	10.188
DemModAlloc	GDemModAlloc	0.666	0.513	23	8.666	7.89	1.262	0.222	24	10.188	8.662	-1.189	0.267	24	9.816	11.361
DemConsAlloc	GDemsConsAllo c	-0.764	0.454	23	8.108	9.035	-0.85	0.406	24	9.339	10.361	1.512	0.146	24	10.775	9.443
RepExtAlloc	GRepExtAlloc	-1.036	0.317	24	7.175	8.649	-0.53	0.603	23	7.678	8.455	-0.643	0.53	23	8.569	9.676
RepModAlloc	GRepModAlloc	-1.028	0.32	24	7.18	8.637	-1.203	0.225	23	7.363	9.284	-0.273	0.79	23	8.788	9.334
RepLibAlloc	GRepLibAlloc	2.09	0.056	24	8.643	5.711	1.793	0.0939	23	8.842	6.271	0.988	0.337	23	9.517	7.899
ExtAlloc	GExtAlloc	-0.614	0.545	47	7.819	8.47	-0.564	0.577	47	8.624	9.236	-0.436	0.665	47	9.515	9.932
ModAlloc	GModAlloc	-0.406	0.687	47	7.922	8.293	-0.178	0.86	47	8.776	8.952	-0.953	0.351	47	9.302	10.415
MidAlloc	GMidAlloc	1.012	0.319	47	8.384	7.373	0.742	0.463	47	9.098	8.316	1.611	0.116	47	10.166	8.671
demExtAlloc	gdemExtAlloc	0.22	0.829	23	8.563	8.26	-0.145	0.887	24	9.595	9.798	-1.314	0.204	24	9.788	11.091
demModAlloc	gdemModAlloc	-0.451	0.657	23	8.123	8.713	0.482	0.635	24	9.988	9.371	0.974	0.341	24	10.816	9.846
demConsAlloc	gdemsConsAlloc	na	na	23	na	na	-1.584	0.163	24	9.565	10.937	1.806	0.085	24	10.412	9.437
repExtAlloc	grepExtAlloc	-1.243	0.233	24	6.482	8.153	-1.568	0.158	23	5.947	8.653	-0.894	0.396	23	7.684	9.403
repModAlloc	grepModAlloc	0.428	0.68	24	7.796	7.171	1.262	0.26	23	8.505	5.939	0.838	0.436	23	9.359	7.496
repLibAlloc	grepLibAlloc	1.628	0.301	24	7.93	4.764	NA	NA	23	NA	NA	n	na	23	na	na
extAlloc	gExtAlloc	-0.392	0.696	47	7.835	8.193	-0.583	0.563	47	8.5	0.563	-0.914	0.366	47	9.157	10.028
modAlloc	gModAlloc	-0.517	0.608	47	7.744	8.259	0.36	0.72	47	8.749	8.361	0.187	0.853	47	9.367	9.155
midAlloc	gMidAlloc	2.102	0.138	47	8.218	5.428	-0.277	0.804	47	8.801	9.288	0.905	0.374	47	9.691	9.167

Press Releases		tvalue08	pvalue08	N	meanX	meanY	tvalue11	tvalue11	N	meanX	meanY	tvalue15	pvalue15	N	meanX	meanY
DemExtPr	GDemExtPr	0.777	0.453	23	14.044	9.813	-0.954	0.363	24	17.311	25.979	-0.44	0.671	24	26.761	34.001
DemModPr	GDemModPr	-1.9	0.077	23	9.311	18.688	-0.951	0.352	24	18.083	24.436	-0.497	0.625	24	27.418	32.689
DemConsPr	GDemsConsPr	1.11	0.286	23	14.25	8.737	2.258	0.037*	24	25.208	10.186	1.29	0.211	24	33.345	20.834
RepExtPr	GRepExtPr	-0.277	0.785	24	18.061	20.23	1.131	0.275	23	17.477	11.605	3.21	0.004**	23	20.132	7.521
RepModPr	GRepModPr	0.946	0.355	24	20.411	14.831	1.349	0.192	23	17.208	11.38	0.427	0.674	23	16.343	14.38
RepLibPr	GRepLibPr	-0.306	0.766	24	17.712	20.573	-2.014	0.071	23	11.5	22.811	-2.738	0.022*	23	10.722	25.165
ExtPr	GExtPr	0.225	0.824	47	16.117	15.021	-0.258	0.789	47	17.391	18.792	0.314	0.757	47	23.554	20.761
ModPr	GModPr	-0.416	0.679	47	15.208	16.888	-0.162	0.872	47	17.645	18.343	-0.357	0.722	47	21.88	24.145
MidPr	GMidPr	0.092	0.927	47	15.924	15.395	0.439	0.664	47	18.575	16.498	-0.102	0.919	47	22.398	22.999
demExtPr	gdemExtPr	0.41	0.686	23	13.499	11.36	-1.159	0.265	24	16.391	25.533	-1.137	0.281	24	22.775	38.134
demModPr	gdemModPr	-0.106	0.916	23	12.288	12.832	1.593	0.127	24	25.874	14.527	1.526	0.15	24	34.847	20.502

		tvalue08	pvalue08	N	meanX	meanY	tvalue11	tvalue11	N	meanX	meanY	tvalue15	pvalue15	N	meanX	meanY
demConsPr	gdemsConsPr	na	na	23	na	na	-0.626	0.628	24	19.529	27.58	-1.24	0.228	24	28.516	36.415
repExtPr	grepExtPr	0.58	0.58	24	23.5	16.842	1.383	0.211	23	22.333	12.999	1.903	0.105	23	25.415	12.333
repModPr	grepModPr	-0.619	0.568	24	16.736	26.566	-1.338	0.24	23	13.148	0.24	-1.862	0.127	23	12.537	27.298
repLibPr	grepLibPr	0.433	0.706	24	19.052	15.835	na	na	23	na	na	na	na	23	na	na
extPr	gExtPr	0.436	0.665	47	16.999	14.814	0.117	0.907	47	18.174	17.641	0.27	0.789	47	23.567	21.889
modPr	gModPr	-0.316	0.754	47	15.105	16.871	-0.594	0.557	47	14.591	17.215	0.0269	0.978	47	22.661	22.501
midPr	gMidPr	-0.447	0.679	47	15.609	17.723	-0.726	0.533	47	17.477	23.61	-0.975	0.397	47	22.125	29.61

Tweets		tvalue08	pvalue08	N	meanX	meanY	tvalue11	tvalue11	N	meanX	meanY	tvalue15	pvalue15	N	meanX	meanY
DemExtTw	GDemExtTw						-0.381	0.709	24	23.447	27.78	-0.838	0.419	24	77.147	101.605
DemModTw	GDemModTw						-0.324	0.75	24	23.713	27.248	-0.288	0.778	24	82.439	91.021
DemConsTw	GDemsConsTw						0.696	0.498	24	27.514	19.646	1.567	0.131	24	96.313	63.273
RepExtTw	GRepExtTw						-0.102	0.921	23	28.023	29.825	1.973	0.062	23	80.245	45.846
RepModTw	GRepModTw						0.551	0.589	23	30.826	23.677	-0.922	0.375	23	62.226	82.119
RepLibTw	GRepLibTw						-0.383	0.706	23	26.956	31.826	-0.682	0.509	23	62.773	78.605
ExtTw	GExtTw						-0.308	0.761	47	25.661	28.802	0.273	0.787	47	78.646	73.725
ModTw	GModTw						0.204	0.839	47	27.269	25.581	-0.794	0.435	47	72.332	86.867
MidTw	GMidTw						0.18	0.858	47	27.243	25.736	0.579	0.566	47	80.084	70.939
demExtTw	gdemExtTw						-1.442	0.168	24	18.57	33.741	-1.32	0.208	24	70.501	106.018
demModTw	gdemModTw						2.433	0.025*	24	36.243	13.54	1.298	0.209	24	101.46	69.139
demConsTw	gdemsConsTw						-1.613	0.315	24	22.722	48.75	0.288	0.8	24	85.902	78.67
repExtTw	grepExtTw						-1.7	0.486	23	22.685	30.755	-0.948	0.355	23	56.667	72.379
repModTw	grepModTw						0.444	0.664	23	29.797	24.522	0.413	0.684	23	69.709	63.134
repLibTw	grepLibTw						na	na	23	na	na	na	na	23	na	na
extTw	gExtTw						-1.537	0.132	47	19.805	31.861	-1.197	0.238	47	66.351	84.838
modTw	gModTw						1.655	0.108	47	31.692	16.77	0.206	0.838	47	70.606	67.373
midTw	gMidTw						-0.715	0.538	47	26.03	37	0.749	0.515	47	78.09	60.557

Generated with R
Welch Two Sample T-Tests
95% Confidence Intervals
*p<.05, **p<.01, ***p<.001

Table 2:

Allocation		t-value08	p-value08	N	Mean of X	Mean of Y	t-valueAll	p-valueAll	N	Mean of X	Mean of Y
RepLibAlloc	GRepLibAlloc	2.09	0.056	24	8.643	5.711	2.211	0.053	47	8.518	5.711

Press Releases		t-value11	p-value11	N	Mean of X	Mean of Y	t-valueAll	p-valueAll	N	Mean of X	Mean of Y
DemConsPr	GDemsConsPr	2.258	0.037*	24	25.208	10.186	1.695	0.118	47	19.443	10.186

Press Releases		t-value15	p-value15	N	Mean of X	Mean of Y	t-valueAll	p-valueAll	N	Mean of X	Mean of Y
RepExtPr	GRepExtPr	3.21	0.004**	23	20.132	7.521	4.078	0.0003***	47	26.697	7.521
RepLibPr	GRepLibPr	-2.738	0.022*	23	10.722	25.165	-0.493	0.628	47	22.077	25.165

Tweets		t-value11	p-value11	N	Mean of X	Mean of Y	t-valueAll	p-valueAll	N	Mean of X	Mean of Y
demModTw	gdemModTw	2.433	0.025*	24	36.243	13.54	2.372	0.024*	47	31.253	13.54

Tweets		t-value15	p-value15	N	Mean of X	Mean of Y	t-valueAll	p-valueAll	N	Mean of X	Mean of Y
RepExtTw	GRepExtTw	1.973	0.062	23	80.245	45.846	2.569	0.019*	47	83.355	45.846

Generated with R
Welch Two Sample T-Tests
95% Confidence Intervals
*p<.05, **p<.01, ***p<.001

Table 3

SEN	YEAR	% ALLOCATED

SEN	YEAR	% ALLOCATED		SEN	YEAR	% ALLOCATED
Alexander	2008	10.24484246		Corker	2008	6.551512711
Alexander	2011	3.68102082		Corker	2011	6.608601075
Alexander	2015	9.150848902		Corker	2015	8.404502509
Barrasso	2008	10.84919609		Cornyn	2008	8.834475663
Barrasso	2011	11.04410368		Cornyn	2011	8.529477067
Barrasso	2015	9.221741865		Cornyn	2015	12.36289199
Boxer	2008	18.60885341		Crapo	2008	10.27188594
Boxer	2011	19.72297135		Crapo	2011	8.353760185
Boxer	2015	9.868141899		Crapo	2015	8.927874494
Brown	2008	8.598715588		Durbin	2008	5.7346023
Brown	2011	9.349849647		Durbin	2011	10.24041777
Brown	2015	10.67316352		Durbin	2015	12.70170355
Burr	2008	8.357721099		Enzi	2008	13.14342181
Burr	2011	8.319442279		Enzi	2011	12.81681385
Burr	2015	9.254796491		Enzi	2015	12.13793325
Cantwell	2008	4.516504425		Feinstein	2008	9.037817592
Cantwell	2011	8.180070055		Feinstein	2011	7.891314793
Cantwell	2015	6.160328421		Feinstein	2015	6.338854325
Cardin	2008	10.23876988		Graham	2008	7.272329341
Cardin	2011	12.43326517		Graham	2011	8.046896559
Cardin	2015	9.295046985		Graham	2015	9.495329666
Carper	2008	9.334393972		Grassley	2008	9.701096224
Carper	2011	11.47013275		Grassley	2011	9.03906313
Carper	2015	9.441576908		Grassley	2015	9.116290766
Casey	2008	9.408489473		Hatch	2008	4.074340839
Casey	2011	7.964880088		Hatch	2011	7.140436951
Casey	2015	7.974379034		Hatch	2015	9.301523635
Cochran	2008	3.995703664		Inhofe	2008	9.027113024
Cochran	2011	0.1862911821		Inhofe	2011	5.627406322
Cochran	2015	0		Inhofe	2015	4.283602813
Collins	2008	2.958860957		Isakson	2008	10.68594337
Collins	2011	5.989658501		Isakson	2011	9.222972869
Collins	2015	8.624472192		Isakson	2015	4.311344059

Klobuchar	2008	10.03367676	Reid	2015	11.89068286
Klobuchar	2011	9.381782027	Roberts	2008	8.487070691
Klobuchar	2015	9.94668707	Roberts	2011	8.256047437
Leahy	2008	5.980428957	Roberts	2015	9.563124524
Leahy	2011	5.989652001	Sanders	2008	8.331822475
Leahy	2015	7.719812668	Sanders	2011	9.703342631
McCain	2008	0.3075029637	Sanders	2015	9.614612041
McCain	2011	7.345605815	Schumer	2008	9.233633176
McCain	2015	7.791356555	Schumer	2011	11.68227932
Mccaskill	2008	6.757639924	Schumer	2015	13.79974948
Mccaskill	2011	10.4037419	Sessions	2008	6.147803612
Mccaskill	2015	9.433613125	Sessions	2011	2.643455064
McConnell	2008	6.591727847	Sessions	2015	16.1156475
McConnell	2011	6.079642113	Shelby	2008	13.46070551
McConnell	2015	6.91587677	Shelby	2011	16.89149032
Menendez	2008	7.03082119	Shelby	2015	19.16063374
Menendez	2011	6.176925655	Stabenow	2008	6.344727552
Menendez	2015	15.6006936	Stabenow	2011	10.23112041
Mikulski	2008	6.847315703	Stabenow	2015	10.4176547
Mikulski	2011	7.946999384	Tester	2008	9.191201688
Mikulski	2015	9.947568583	Tester	2011	8.510735376
Murkowski	2008	6.569882143	Tester	2015	8.559162555
Murkowski	2011	10.87486941	Thune	2008	11.98011956
Murkowski	2015	12.1220443	Thune	2011	9.883135721
Murray	2008	4.474491849	Thune	2015	7.491135588
Murray	2011	5.955924261	Vitter	2008	2.562983271
Murray	2015	12.07038725	Vitter	2011	10.30768416
Nelson	2008	11.71619915	Vitter	2015	5.105933766
Nelson	2011	13.09845733	Warner	2008	6.307168575
Nelson	2015	10.64143088	Warner	2011	14.27675666
Reed	2008	5.984296828	Warner	2015	9.290194425
Reed	2011	7.648084259	Whitehouse	2008	6.245491731
Reed	2015	9.063123369	Whitehouse	2011	9.525622652
Reid	2008	11.69887961	Whitehouse	2015	11.92298415
Reid	2011	7.858185472	Wicker	2008	5.605070985

Wicker	2011	5.912499841
Wicker	2015	7.091631234
Wyden	2008	8.567528975
Wyden	2011	6.673087754
Wyden	2015	15.56899894

Sample R T-Test Code: To test extreme Democrats (by Ideology 1) allocation of budget in 2011 to other Democrats looked like the following:
with(Dataset11,
t.test(DemExtAlloc[GDemExtAlloc ==0],
DemExtAlloc[GDemExtAlloc ==1])).