

Partisan Reacts Only: An analysis of responses to tweets from senators

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Abstract

Much of the political research concerning Twitter in the United States has been related to partisanship or campaigns. Recently, more attention has been paid to Twitter metrics such as replies, retweets, and favorites. Retweets and favorites are generally affirmations of a tweet while replies have been shown to express disagreement with a tweet. As such, a tweet with a higher retweet to reply ratio or a higher favorite to reply ratio shows approval of the message in the tweet. Our data assessed tweets from US senators in 2017. We found that the ratio of retweets to replies and favorites to replies was higher for Democrats compared to Republicans and that the difference is greater when comparing more ideologically extreme people of both parties.

Introduction

Last year, FiveThirtyEight published an article titled "The Worst Tweeter in Politics Isn't Trump" where they compared Donald Trump's tweets to other politicians using a metric known as "The Ratio". The term, coined by political commentators, refers to the ratios of retweets to replies and favorites to replies - the idea being that a large ratio indicates approval of the tweet and a small ratio indicates disapproval. In this project, we extend the FiveThirtyEight analysis by answering the following questions:

Do Twitter users react differently to tweets from Senators according to the Senator's party? Additionally, do extremism and gender have moderating effects on ideology?

What we Know

Twitter has played a significant role in US politics since its inception in 2006. Research on Twitter's effects on American politics has largely focused on its contribution to increased partisanship of the country. In terms of Twitter use and US politicians, Twitter use is hard to predict. However, there is evidence to suggest that members of a minority party are more likely to tweet than those in the majority (Lassen & Brown, 2011). In addition to the research on the effect of Twitter, there is a growing body of research dedicated to Twitter metrics such as retweets, favorites, and replies and what each of these actions could reflect.

Data

We use a data set from FiveThirtyEight containing the last 3200 tweets (as of October 17th, 2017) from all 100 senators in the 115th Congress. We merged this data set with another from govtrack.us that assigns an ideological score to each senator. Govtrack uses a continuous scale from 0 to 1 where 0 is extremely liberal and 1 is extremely conservative. Using this ideology score, we create a variable called extremism where we measured each senator's ideological distance from the median. Finally, we added demographic variables for every senator. We use the large data set containing all tweets to create our first two models. For the remaining four, we created a consolidated data set containing 100 data points (one for every senator) that included averaged ratios.

Hypotheses

We define reaction in terms of the ratios of retweets to replies and favorites to replies. Ratios that are higher in retweets and favorites are considered better than lower ones.

- H_1 : Tweets from Republican Senators will have worse reactions than tweets from democratic senators (Model 1 and 2)
- H_2 : Tweets from more politically conservative senators will have worse reactions than tweets sent by liberal senators (Model 3 and 4)
- H_3 : Female senators will have better reactions to their tweets than male senators (Model 3 and 4)
- H_4 : Politically conservative female senators will have better reactions to their tweets than politically conservative male senators (Model 3 and 4)
- H_5 : The more ideologically extreme senators will have worse reactions to their tweets (Model 5 and 6)
- H_6 : On average, tweets from Republican senators will have worse reactions than tweets from Democratic senators (Model 5 and 6)
- H_7 : Republican extremists will have worse reactions to their tweets than Democratic extremists (Model 5 and 6)

Models

$$\text{Retweets/Replies} = \beta_0 + \beta_1(\text{Party}) + \beta_2(\text{hashtag}) + \beta_3(\text{tag}) + \beta_4(\text{link}) + \varepsilon$$

$$\text{Favorites/Replies} = \beta_0 + \beta_1(\text{Party}) + \beta_2(\text{hashtag}) + \beta_3(\text{tag}) + \beta_4(\text{link}) + \varepsilon$$

Female and Ideology Interaction

$$\text{Retweets/Replies} = \beta_0 + \beta_1(\text{Female}) + \beta_2(\text{White}) + \beta_3(\text{Age}) + \beta_4(\text{Follower Ratio}) + \beta_5(\text{Ideology}) + \beta_6(\text{Tweet Count}) + \beta_7(\text{Female*Ideology}) + \varepsilon$$

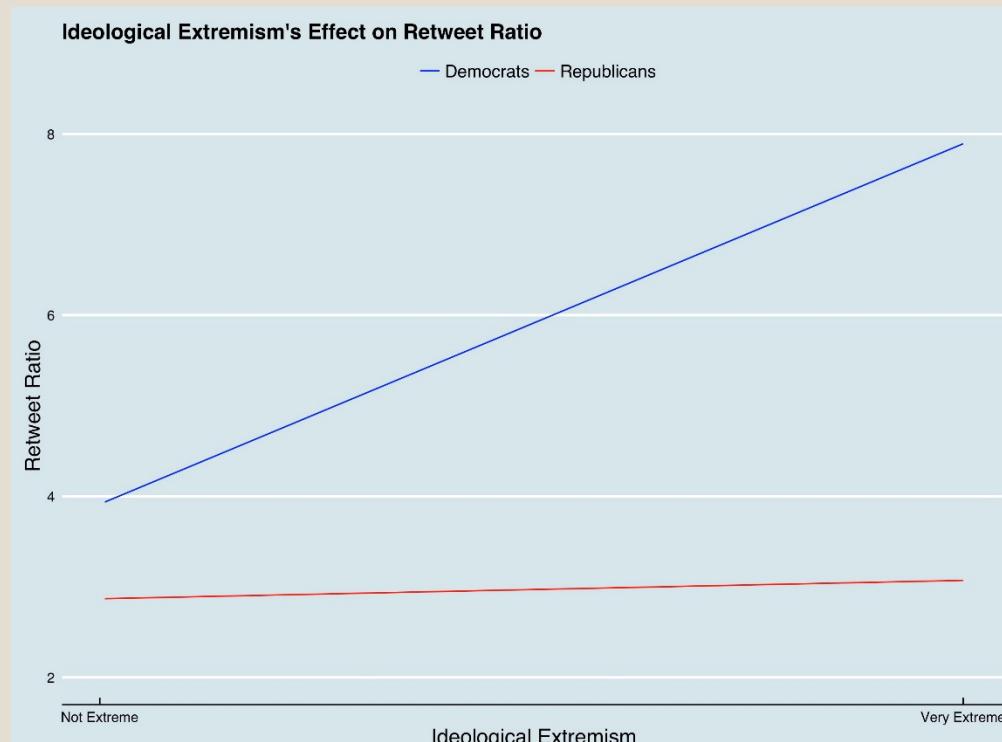
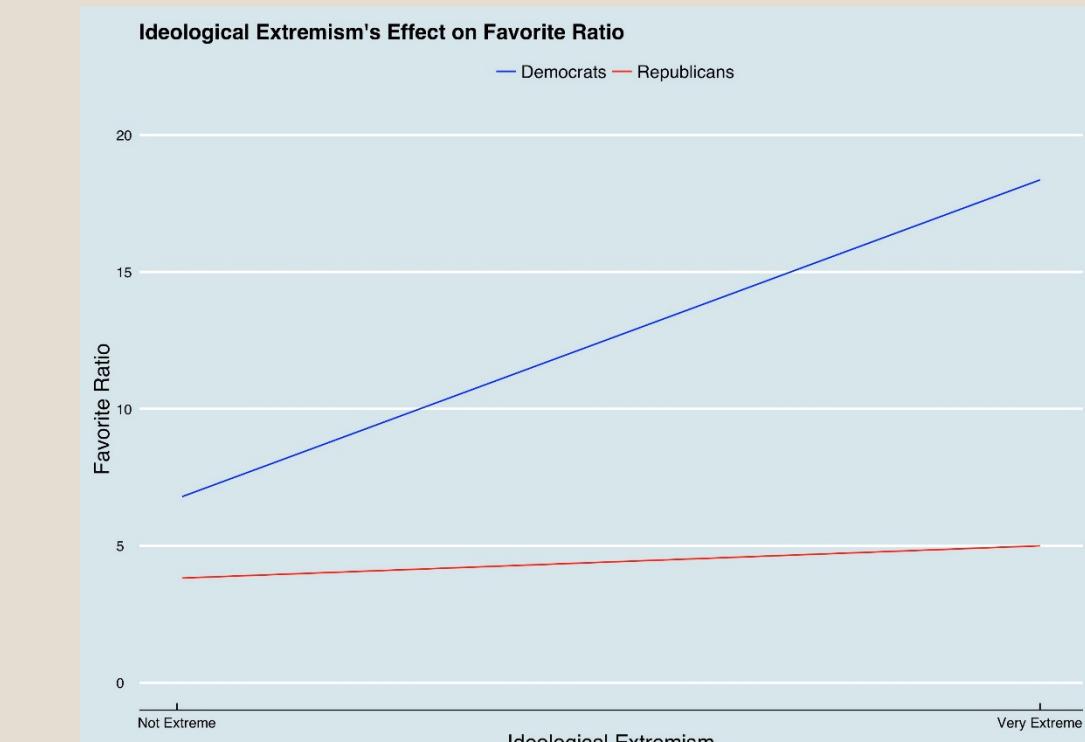
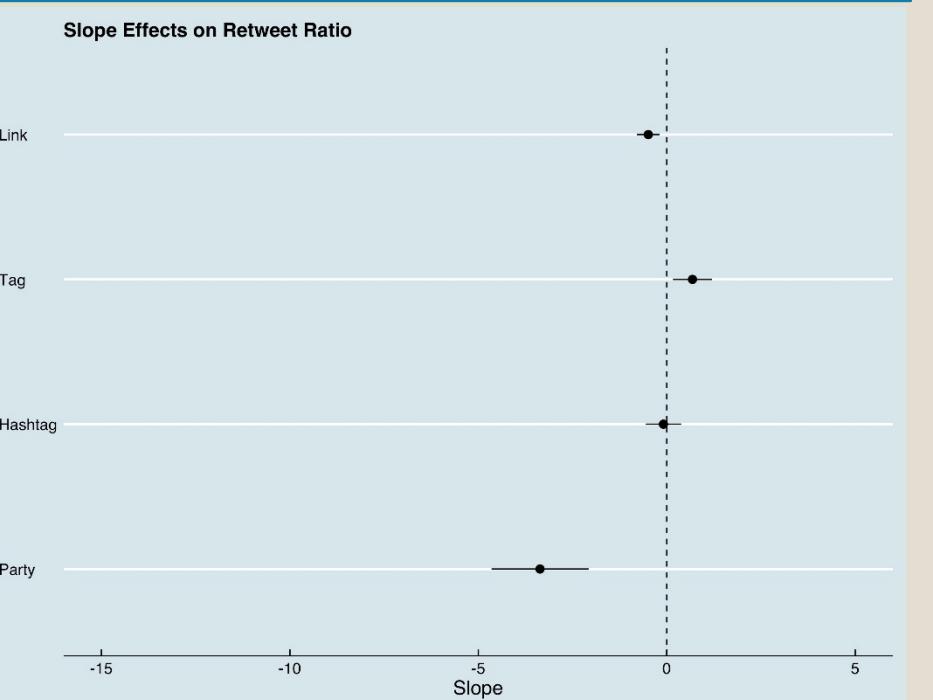
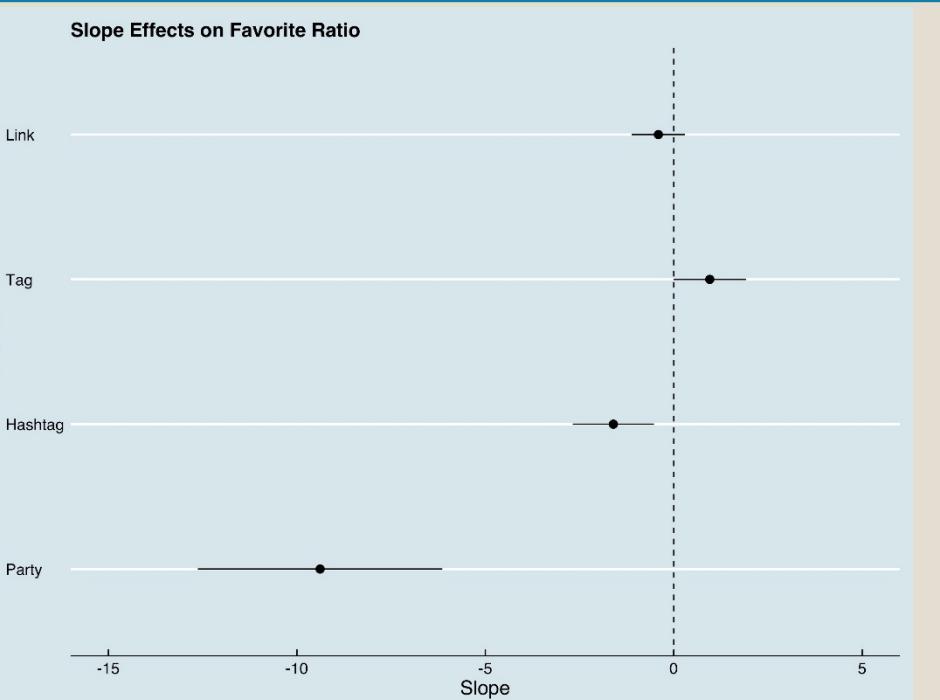
$$\text{Favorites/Replies} = \beta_0 + \beta_1(\text{Female}) + \beta_2(\text{White}) + \beta_3(\text{Age}) + \beta_4(\text{Follower Ratio}) + \beta_5(\text{Ideology}) + \beta_6(\text{Tweet Count}) + \beta_7(\text{Female*Ideology}) + \varepsilon$$

Party and Extreme Interaction

$$\text{Retweets/Replies} = \beta_0 + \beta_1(\text{Female}) + \beta_2(\text{White}) + \beta_3(\text{Age}) + \beta_4(\text{Follower Ratio}) + \beta_5(\text{Extreme}) + \beta_6(\text{Tweet Count}) + \beta_7(\text{Party*Extreme}) + \varepsilon$$

$$\text{Favorites/Replies} = \beta_0 + \beta_1(\text{Female}) + \beta_2(\text{White}) + \beta_3(\text{Age}) + \beta_4(\text{Follower Ratio}) + \beta_5(\text{Extreme}) + \beta_6(\text{Tweet Count}) + \beta_7(\text{Party*Extreme}) + \varepsilon$$

Results



Our results confirm our first hypothesis that tweets from Republicans have smaller ratios than tweets sent by Democrat senators. Of all the variables in this model, party of the tweeter was the largest predictor of the favorite to reply and retweet to reply ratios. Party was the only variable that was statistically significant in predicting both the favorite and retweet ratios. The effect of party was much larger in predicting the favorite model with a slope effect of -9, meaning that on average Republicans have favorite ratios that are 9 less than Democrats. For predicting retweet ratio, the effect is less dramatic with a slope effect of -3, meaning that retweet ratios for tweets sent by Republicans is on average 3 less than for Democrats.

We cannot confirm our third hypothesis that being female has a moderating effect on ideology. The interaction term between party and female in our third and fourth model failed to reach statistical significance, so we cannot say that there are any differences between reactions to tweets sent by female senators according to their ideology.

The interaction between ideology and extremism proved to be statistically significant, but was not in the direction we hypothesized. Our analysis indicates that ideologically extreme Democrats have significantly higher favorite and retweet ratios than less extreme Democrats. Similarly, ideologically extreme Republicans have slightly *higher* ratios than less extreme Republicans. Overall, Democrats had higher ratios than Republicans.

Discussion & Further Research

The fact that ideological extremism increases a senator's retweet ratio is perhaps a reflection of the ideologically polarized world we live in. As previous research shows, people tend to follow others with the same beliefs, creating an echo chamber effect. It could be the case that Democratic senators and their followers are more prone to this effect, since the ideology effect is magnified for the most liberal senators. It is also possible that ideologically extreme Democratic senators use their platform to criticize Donald Trump, who remains very unpopular with the majority of the electorate. The large ratios could reflect public disapproval of the president and his agenda. On the other end of the ideological spectrum, users appear to be more reactive and receptive to tweets by conservatives who are more ideologically extreme.

The role of Twitter in politics is vastly understudied, especially focusing on reactions to tweets in the form of favorites, likes and replies. Further research in this topic could be fruitful because reactions to tweets quickly and accurately encapsulate the general public opinion about an event or action. In light of Donald Trump's presidency and Twitter habits, Twitter has become an even more popular forum for both politicians and citizens to respond to the President. Further research in this topic could combine ratio measurement with text analysis to see what specific topics elicit support or dissent.

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