Stockholm School of Economics
Department of Economics
Master Thesis

The effects of politicians' social media activity on voting behavior

Twitter usage during the 2010 U.S. House of Representative Election

Jonathan Gromark 20890

Michael Schliesmann 40036

Tutor: Magnus Johannesson

ABSTRACT

There are many studies that examine the effects of campaigning on voting behavior. However, there are no studies on the effects of social media campaigning on voting behavior. This study fills the gap by investigating the impact of social media activity on voter turnout and voting preferences in the 2010 U.S. House of Representatives election. Data on Twitter activity has been collected and used in a regression analysis to determine the effect of social media on voting behavior. Standard OLS and fixed effects have been used. There is evidence to show that Republicans' social media activity has a positive effect on voting preferences, while the Democrats' activity has an insignificant effect. Although the sign of the coefficient is positive and similar in size in all regressions, the result does not survive all robustness tests. Likewise, there is evidence that the total social media activity has a positive effect on voter turnout. However, the result is sensitive to the specification used.

Keywords: social media, voter turnout, voting preferences, voting behavior

Table of Contents

1. Introduction

In 2008, Barrack Obama used online outlets, such as Facebook, Twitter, and Youtube during his campaign to become President of the United States (Galloway and Guthrie, 2010). His use of social media is widely considered one successful aspect of his campaign, since it helped him mobilize voting bases that typically had low voter turnout (Carr, 2008). Many consider his campaign the blueprint for successful use of social media and observe it being emulated in the U.S. and abroad.

Not only Democrats are taking advantage of the benefits of social media, the Tea Party, a conservative portion of the Republican Party, was also lauded for their successful social media campaign prior to the 2010 election. Sarah Palin, a tea party favorite, trailed only Barrack Obama in number of total Facebook followers among politicians.

The use of social media among politicians has increased drastically. During the 2010 midterm election, social media came to the forefront of political campaigning. In January 2009, only 13% of congressmen had a Twitter account, many of which were inactive (Milian, 2009). By November 2010, for the midterm elections, the portion of major party candidates using Twitter rose to 56% for the House Representatives, and over 90% for the Senate. Thus, it is clear that politicians are utilizing social media in their campaigns believing that it can affect voting behavior[1]. However, it is still unclear whether the usage of social media has a real effect on voting behavior or if its effects are negligible or non-existent.

This paper tries to find an answer to that question by examining the effect of political social media activity on voting behavior. The study tests the accuracy of the perceptions that social media can be used as an effective campaigning tool. The effects of social media on voting preferences and voter turnout are investigated. By doing this, the paper attempts to provide a better understanding of how social media affects people and their voting behavior.

[1] Voting behavior in this study refers to individuals´ decision to vote and decision whom to vote for. Thus, changes in voting behavior affect both voter turnout and voting preferences.

This paper initially presents a background of the U.S. election process and social media. Then, section 3 reviews previous research and discusses the possible theories that could explain a positive relationship between social media and votes. The research questions and the hypotheses of the paper are proposed in the following two sections. Section 6 provides the empirical model used in the study. The methodology and the variables considered are discussed in section 7. The result is revealed in section 8. The final two sections of the paper discuss the results and present the final conclusion.

2. Background

This section contains general information about the U.S. election system and social media.

2.1 The U.S. election system

In the United States, congressional elections are held every two years. During these elections, senators and representatives are elected. These two groups comprise the Legislative Branch of the U.S. government. Senators have 6-year terms, with roughly 1/3 of the Senate elected every second year. Representatives serve two-year terms, so all 435 seats are up for election during every congressional election. Elections for the House of Representatives were held 2006, 2008 and 2010. The population determines the number of representatives from each state.

Many elections are held on the same ballot. For example, candidates for president, senator, governor and representative can appear on the same ballot. Very few people abstain from voting in an election if they are already voting in another election on the same ballot (McDonald, 2011). Since voting for the highest offices typically attract more voters, the amount of votes cast in the congressional elections is higher during presidential election years than midterm elections.

There are two major parties in the United States, the Democratic Party and the Republican Party. Currently, there are only two members of Congress who are not officially members of a major party. Almost all elections are essentially between the two parties and rarely does a third party member garner more than a few percent of the votes. An estimated 43% of the U.S. electorate is Democratic versus 33% for the Republicans (Neuharth, 2004).

Voter turnout in the United States has varied over time. Since 1968, when African Americans were allowed to vote throughout the entire United States, voter turnout has varied between 60.8% and 49.1% in presidential elections. In the last two presidential elections, the United States has experienced the highest voter turnout since 1968. Since 1974, voter turnout in the midterm elections has remained between 39.8 and 36.4. The history of voter turnout during presidential election and the midterm election are presented in Figure 2.3.1 and Figure 2.3.2. (International IDEA, 2010)

Figure 2.3.1

The voter turnout for presidential elections between 1960 and 2008

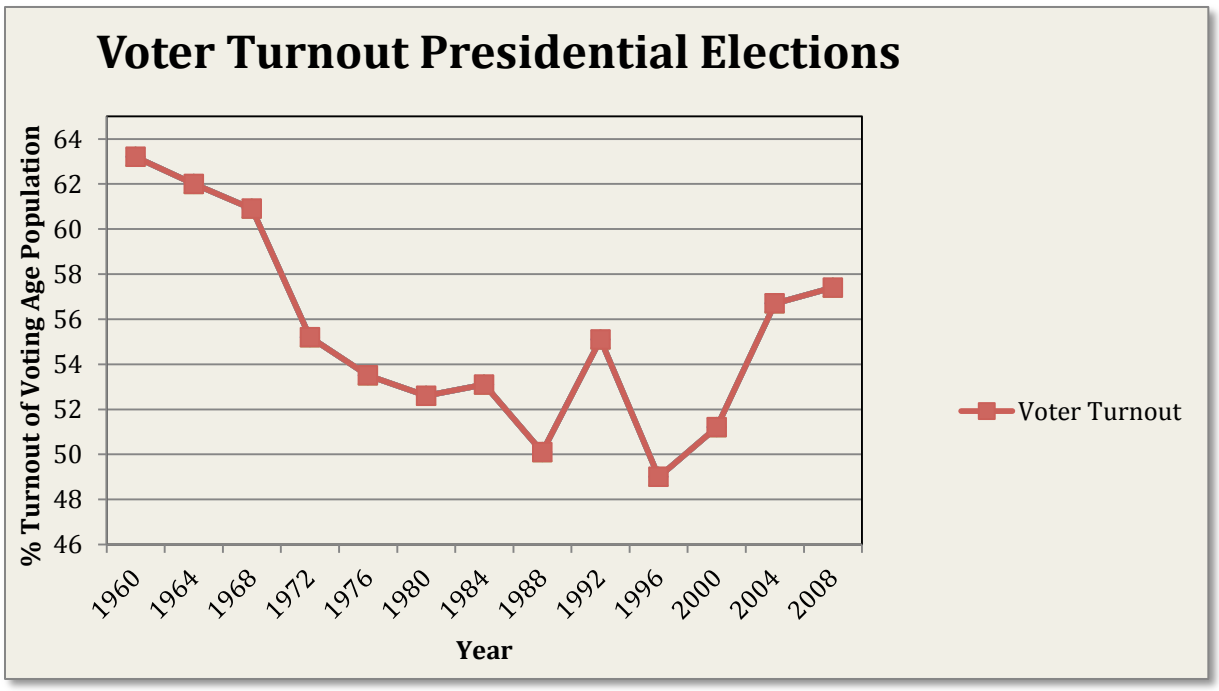
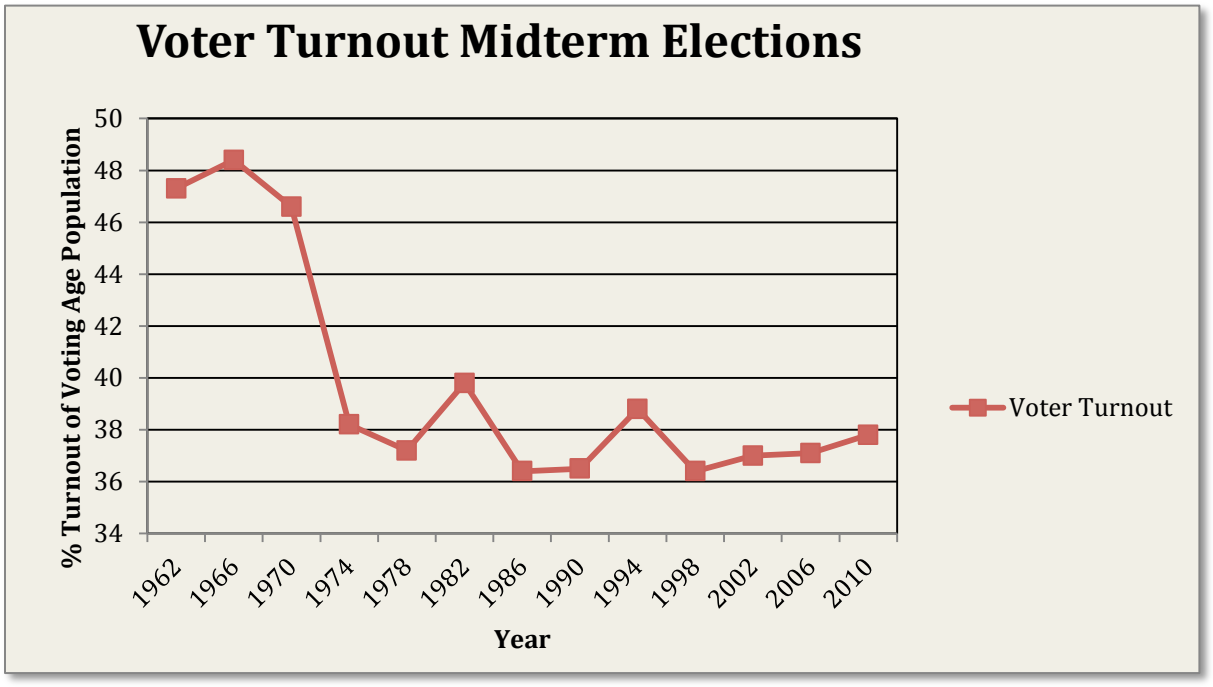


Figure 1.3.2

The voter turnout for the midterm elections between 1962 and 2010



2.2 Social media

Communications expert, Joseph Thornley (2008), defines social media as, "online communications in which individuals shift fluidly and flexibly between the role of audience and author. To do this, they use social software that enables anyone without knowledge of coding, to post, comment on, share or mash up content and to form communities around shared interests." Social media is different than traditional media because it is relatively inexpensive, accessible to anyone wanting to publish information and interactive. While some version of social media has existed for decades, it took a huge step forward with the creation of social networking sites, myspace.com in 2003 and facebook.com in 2004. These sites allow individuals to connect their friends and families through their own profile on a common platform and allow them to broadcast information that they find appealing. Since 2004, these sites have had rapid growth.

There are many social media sites, but 3 are the most popular:

Facebook, the largest social media site, allows individuals, businesses, or groups to create personal profiles or pages. People connect with each other by becoming "friends" and connect with pages by *liking* them. Once connected, the information shared by a *friend* or *liked* page appears on the user's Facebook home page or *news feed*. Users or businesses can freely develop applications that allow for further custom functions. Politicians use both profiles and pages to disperse information. Currently, there are more than 500 million global Facebook users (Facebook, n.d.). In America alone, there are over 130 million Facebook users, which is a 43 percent penetration rate (Internet World Statistics, 2010).

Twitter is a microblogging website. This site allows users to *tweet* information to other users who are *following* them. A tweet is a short message, 140 characters or less, that appears on the followers´ *timeline.* Twitter has become a favorite platform for politicians (Dugan, 2010). Politicians often share links to other webpages. Twitter is a quick and easy way for politicians to answer specific questions from their constituency. There is an estimated 225 million Twitter users. In the last year, 100 million accounts have been opened and 25 billion tweets have been sent (Bullas, 2011).

Youtube is a video sharing website. Users can upload and host videos that are self-made or are from another source. After uploading videos, a *channel* is created and users can *subscribe* to that channel. Under the videos, users can comment on the content. Comments made by the uploader are highlighted at the top of the discussion. Politicians primarily use Youtube as a video hosting site and not as a discussion site. Twitter and Facebook both allow Youtube to be embedded in their pages through simply pasting the url into a post.

Social media may be best utilized when integrating each platform along with the traditional website. Each platform targets a different demographic and the

consumers use each platform for different purposes. Some politicians use other platforms such as, LinkedIn, Flickr, and Foursquare, but the three sites discussed have the furthest reach. Politicians who use the smaller sites most often also have a presence on the three big platforms.

3. Previous research and theoretical framework

This section is divided into three parts. The first part presents the current existing literature in regards to the effects of different campaigning tools on voting behavior. The second part discusses existing theories and explanations on voting behavior. The last part suggests the reasons why social media could affect voting behavior.

3.1 Previous research on the effects of campaigning

Throughout U.S. history, American politicians have used campaigning activities to capture more votes. As time has passed, campaigns have moved from shaking hands and kissing babies to a multi-billion dollar industry. Campaigns have used many methods to spread information and gain exposure. Extensive research has been conducted on how voting behavior is affected by different campaigning activities.

The types of methods used to communicate information are important when determining the impact of campaigns. In their 2004 study, Gerber and Green ranked the effectiveness of various types of campaign activities on voter turnout. They concluded that personal canvassing was the most effective campaigning tool, followed by professionally crafted direct mail, and then phone calls by a third party phone bank. The phone calls were largely scripted and impersonal. Using the same methods as Gerber and Green, another study found television ads to be the least effective method of campaigning. They are impersonal and relatively expensive (Kranso and Green, 2008).

Thus, the effectiveness of different campaigning tools seems to depend on the degree of personal interaction. Further supporting this finding, several studies found that personal appearances have larger effects than television ads (Green and Kranso, 2008; Shaw, 1999; Herr, 2002). Herr argued that this is because personal

connections are made and media coverage is often favorable during a politician's visit.

Even though the effectiveness of television ads compared to that of other campaigning tools has been disputed, extensive research has been conducted on the impact of television advertising. Freedman, Franz, and Goldstein (2004) studied the effect of advertising on knowledge about the candidates. They state, "(Americans') political views are peripatetic, hastily assembled, unconstrained by ideology, and unencumbered by data (Freedman, Franz and Goldstein, 2004, 724)." Many think that political advertising only exacerbates this problem. However in their study, they found that voters who were exposed to more campaign advertisement had a higher understanding of the issues. Using surveys, they were able to estimate the amount of political advertising that individuals were exposed to. They were able to find a correlation between the number of ads viewed and the extent of one's knowledge about the election. They also found that individuals exposed to more ads were more likely to vote.

Another study by Ansolabehere and Iyengar (1994) found that negative advertising had a negative effect on voter turnout. They ran an experiment, exposing potential voters to political ads. The control group was exposed to a real political advertisement, the treatment group was exposed to the same ad except the tone became negative. Doing this they were able to show a negative correlation of being exposed to negative ads and intention to vote. In the same study, they validated these results using aggregated voting data.

The paper of Ansolabehere and Iyengar (1994) has come under great scrutiny; voters seem to be more resilient than what is implied in this paper (Brooks, 2006). Contrary to Ansolabehere and Iyengar's results, other studies found no effect of advertising on voter turnout, but did find a significant positive effect on persuading the electorate (Krasno and Green, 2008; Huber and Arceneaux, 2007). The studies compared regions with different densities of ads to investigate whether advertising had an effect on the voting behavior. When examining the tone of these ads, they

still found no effect on voter turnout. Interestingly, they discovered that political ads had little effect on the knowledge about the politicians' campaigns, which could explain the lack of impact on voter turnout.

The research on the persuasive effect of advertising also found mixed results. Most studies that ran experiments on persuasion showed little effect. On the other hand, studies that looked at surveys or aggregate data tended to conclude that there was a significant effect of advertising on votes for the particular candidate, albeit a small one. (Franz and Ridout, 2010)

Although studies on the effects of campaigning on voter turnout and voting preferences have been extensive, no study has specifically examined the effect of social media on voting behavior. Given the characteristics and prevalence of social media in the political landscape such a study is warranted.

3.2 Theoretical explanations for why people vote

Both political scientists and economists have studied the factors influencing voting behavior. Since Downs developed the rational voter theorem in 1956, the reasons why people vote have been debated. In Downs´ model, a voter participates only when the reward (R) is larger than zero which depends on the probability of casting the decisive vote (P), the benefit of one candidate over the other (B) and the cost of voting (C) according to the equation below:

$$R=B*P-C$$

Downs came to the conclusion that in most major elections the probability of a voter casting the decisive vote is very low, therefore it is irrational for people to vote at the rate they do.

Since the introduction of the rational voter theorem, many different explanations for the contradictory results have been developed. One explanation is that if the voter is even weakly altruistic and their utility is a weighted function of the utility of others, it could be rational to vote. Their benefit of voting for one candidate over another could be large enough to make even a miniscule probability of deciding the outcome

become significant (Jankowski, 2007). In this case, the greater the perceived difference is between the candidates´ political platforms, the higher the voter turnout will be. The voter will not have enough incentives to vote if there is only a small difference between the two candidates. This could explain why primary elections typically have less voter turnout than the general elections. Additionally, voters do not only take into account the rational probability, but also emotional factors. Voting might work as an emotional release or outlet (Cebula & Meads, 2008). As an example, Cebula (2008a) finds evidence that the number of emotionally charged issues highlighted previously to an election affects the voter turnout.

Thus, there might be several reasons that the expected benefit of voting is larger than what Downs´ theory foretells. A voter may have reasons to vote even though the effect on the outcome will be minuscule. Accordingly, changing the voters´ benefit of participating should affect voting behavior.

Researchers have also tried to explain Downs' contradictory results by introducing a variable (D) that captures an individuals´ sense of duty to participate, satisfaction from participating, or a desire to affirm ones partisanship (Riker and Ordeshook, 1968). Downs included a similar measure, but it only contained the voter's desire to maintain democracy. However, there can be many factors that determine the duty to vote. Research has shown that the voter´s degree of anonymity has a significant effect on the duty to vote. The studies show that voter turnout is linked to social setting. Voters are more likely to vote if they are in a setting where the participants are known (Funk 2008; Gerber, Green and Larimer, 2008).

A person's social network is also an important determinant for the voting behavior. Berelson et al. (1968) and Fowler (2005) found that an individual's voting behavior is strongly influenced by family and friends. Berelson et al. describes the main influences on voting preferences as family, religion and friends. Fowler describes a "turnout cascade", when one person votes it helps influence people in their social

network to vote. Thus, changing the preferences of one voter may have an amplified effect as the voter might change the preferences of her close ones.

According to Downs´ model, the cost of voting should also affect voting behavior. In this theory, the cost of voting is determined by the time spent acquiring information and the physical costs. Examples of physical costs are the time spent travelling to and waiting at the polling place. The importance of the cost associated with acquiring information on voter turnout has also been studied in recent literature. Cebula (2008b) argues that information transaction costs associated with getting adequately informed about the election is the reason that direct democracy does not increase voter turnout. Lassen (2004) found that people in regions with more information about an issue were more probable to vote in an election pertaining to that issue. Several studies argue that informing voters increases their knowledge, interest, and sense of stakes involved (Franz, Freeman, and Goldstein, 2004; Baek, 2009; Lassen, 2004).

In conclusion, the initial theory by Downs on voting behavior may not completely explain the reasons people vote. The benefit of voting is perhaps larger than what Downs thought and should not be underestimated. The literature on the issue emphasizes several different ways in which voting behavior can be affected. The accessibility to information, the social setting, the degree of anonymity and the strength of emotion a person feels for a certain issue are factors theorists have emphasized as important in explaining voting behavior. There might be other theories explaining voting behavior, but the ones presented in this section are sufficient to explain why social media could affect voting behavior.

3.3 How social media could affect voting behavior

Social media may affect voting behavior through the different mechanisms mentioned in section 3.2. More specifically, Twitter, which is used as a proxy for social media in this study, possesses several features that can help affect voting behavior.

Twitter can affect the voting behavior by lowering the cost of acquiring information. Twitter provides politicians with the ability to send links and videos to their followers. Followers do not need to return to the candidate's web page for updates. Instead, they see them when using Twitter for any purpose. Twitter is also concise. Tweets are limited to 140 characters, so politicians don't have to read a longwinded email and can respond quickly. Thus, Twitter forces the users to send efficient messages to the followers, which further reduces the cost of acquiring information. The platform can also make the process of finding important information about the voters more efficient as it makes it possible for politicians to see which questions and issues are most frequently asked and discussed. The politician can use this information to more effectively inform the voters on issues they think are important.

Twitter can affect voting behavior by being more personal than other kinds of media. As was mentioned in section 3.1, research seems to conclude that campaigning tools that involve a significant amount of personal interaction are more effective. Twitter allows users a personal interaction with the politicians by making it possible to have a dialogue with them. This makes social media more personal than watching television ads or receiving direct mail. Thus, social media could cause a user to become more emotionally engaged and perhaps even sway a potential voter's opinion. When a politician takes time to personally respond to a potential voter, the voter may feel some sense of obligation to the candidate. Television ads do not invoke this sense of reciprocity because the information is given unsolicited. By engaging in dialogue the voter may feel their issue is important since it warranted a response.

Twitter can make it easier for voters to affect the opinions of their close ones by making it easier to redistribute information from politicians. Social media platforms enable people to keep in contact with many friends and efficiently redistribute information and opinions to them. Since many people are strongly affected by friends and family, targeting people on social media platforms might be very

effective. This is because the impact can be amplified if the politician's followers retweet the politician's messages, so that their friends and family can see it.

The mentioned effects should be possible to observe in aggregated data because of the large reach. Twitter will have 225 million registered users in 2011, many of whom use it to gather information about politics (Smith, 2011a).

4. Aim and research question

The aim of the paper is to examine the effect of politicians´ social media activity on voting behavior. The paper has two research questions:

-Did social media campaigning affect voting preferences in the United States 2010 House of Representative Election?

-Did social media campaigning affect voter turnout in the United States 2010 House of Representatives Election?

5. Hypotheses

The hypotheses used to investigate the research questions are:

Hypothesis 1: Increases in activity on Twitter by a candidate for the United States House of Representatives will increase their percentage votes compared to that of their opponent.

Hypothesis 2: Increases in activity on Twitter by the two major party candidates for the United States House of Representatives increases the two party voter turnout in that district.

6. Empirical model

In this section the empirical models used to test the two hypotheses are presented. To evaluate the research questions a regression analysis is used. A normal standard OLS and a fixed effects model are used to test the hypotheses. The variables included in the models are briefly described in this section. A more detailed

description of the variables and how they have been collected are presented in the next section.

6.1 Regression used to test Hypothesis 1

The model used to investigate whether social media has effect on voting preferences can be written as:

$$Rep.Votes_{i,k,t} = \beta_0 + \alpha_1 Rep.Votes_{i,k,t-1} + \beta_R \, log \, \Delta Rep.SMA_{i,k,t} \quad (1)$$

$$+\beta_D \, log \Delta Dem.SMA_{i,k,t} + \delta_l A_{i,k,t} + u_k + \varepsilon_{i,t}$$

$Rep.Votes_{i,k,t}$ denotes the relative votes for the Republican candidate in district i in state k at election t. Relative votes are defined as the votes for a candidate over the total votes cast for the Democratic and the Republican candidate[2]. In this study, t always denotes year 2010.

$Rep.Votes_{i,k,t-1}$ denotes the relative votes for the Republican candidate in district i in state k at a previous election, t-1. The relative votes in the previous election used in this study are the presidential election in 2008 or the midterm election in 2006. They are included to control for the baseline voting preferences before campaigning. Controlling for the votes previous election will account for the preexisting political lean of the specific district. The political lean may depend on demographic factors such as the population over 65 years old, the percent urban population and the percent of different minority groups. During a short period of time, these kinds of variables change insignificantly and can thereby be assumed to be time-invariant. Therefore, these variables are controlled for by including the relative votes in the previous election.

[2] The measure relative votes is specified according to:

$$Relative\ Republican\ Votes = \frac{\text{Republican candidate's Votes}}{\text{Democrat candidate's votes+ Republican candidate's votes}}$$

A further description of the variable will be made in section 7.2.

$\Delta\, Rep.SMA_{i,k,t}$ represents the change in the amount of social media activity of the Republican candidate in district i in state k between election t and t-1. β_D denotes the percentage unit effect on relative votes of a 1 percent increase in social media.

$\Delta Dem.SMA_{i,k,t+n}$ represents the change in the amount of social media used by the Democrat in the same district i and state k between election t and t-1 with β_R denoting the effect of social media on the Republican candidate's relative votes.

According to Hypothesis 1, $\beta_R$is expected to be positive and β_D is expected to be negative.[3]

The log of the social media variables is used to account for a decreasing marginal product[4]. It is reasonable to think that social media usage is most efficient in the beginning and is decreasing as the usage gets larger. The effect of increasing the amount of tweets from zero to two per day should be larger than going from 48 to 50. Furthermore, an additional advantage of using the log is that it limits the impact of potential outliers[5].

A is a matrix of the control-variables and δ_l is the coefficients for these controls.

u_k is the unobserved time constant variables that affect the voting preferences in each state. The effects of these variables are controlled for by using state fixed effects. By focusing on within state variation, a possible distortion caused by statewide variables is limited. An example of a variable that state fixed effects

[3] Running the same regression on the Democratic candidates would be redundant, as it would provide the same estimates, but with the opposite signs. This is because the same variables are included and that the measure of votes consists of the relative votes between the Republican and the Democratic candidates.

[4] Since the log of zero is undefined, all observations have been added one tweet to avoid losing observations with zero tweets.

[5] No outliers appear when the log of the social media activity is used. Outliers are defined as observations larger than 1.5 * (Q3-Q1) where Q3 is the value of the third quartile in the data set and Q1 the value of the first quartile in the dataset.

control for is campaigning conducted by the candidates for other state offices, such as governor or senator.

Finally, $\varepsilon_{i,t}$ is the error term and is assumed to be random and normally distributed[6].

6.2 Regression used to test Hypothesis 2

The model used to test Hypothesis 2, whether the level of social media in a district has effect on voter turnout, can be written as:

$$VT_{i,k,t} = \beta_0 + \alpha_1 VT_{i,k,t-1} + \beta_1 \, log\, \Delta Tot.SMA_{i,k,t} + \delta_l A_{i,k,t} + u_k + \varepsilon_{i,t} \qquad (2)$$

$VT_{i,k,t}$ represents the voter turnout in district i and in state k in the election t. In every regression made in this study t denotes the year 2010.

$VT_{i,k,t-1}$ denotes the voter turnout in the same district and state during the previous election. The voter turnout in the previous election used in this study is the voter turnout in the presidential election 2008 or in the midterm election 2006. Previous voter turnout is included to control for the baseline voter turnout before campaigning. Similarly to the empirical model for voting preferences, voter turnout can depend on several demographic factors. However, these variables change insignificantly during a few years and can be assumed to be constant between the two elections. Therefore, these variables are controlled for by including the voter turnout of the previous election in the regression.

$\Delta Tot.SMA_{i,k,t}$ denotes the total change in social media activity in election t. The variable is in log form to account for a decreasing marginal effect of social media on voter turnout. . β_1 denotes the percentage unit effect on voter turnout due to a one percent change in social media. Hypothesis 2 is true if the sign of β_1 is positive.

As previously stated, $A_{i,k,t}$ denotes a matrix of controls and δ_l the coefficient of these controls.

[6] A Skewness/Kurtosis test for normality has been conducted and the test shows evidence of the residuals being normally distributed.

u_k denotes the unobserved effects in each state. Similarly to equation (1) the regression is run with state dummies to control for unobserved effects in each state. This controls for specific characteristics of the state in which the election is held.

Finally, $\varepsilon_{i,t}$ is the error term and is assumed to be random and normally distributed[7].

7. Method and data

The following section includes descriptions of the variables used and how the data has been collected. The data on percentage of votes prior to 2010 and the total expenditures of campaigns have been collected from the United States Federal Election Commission website. Election results for 2010 as reported on AOL News have been used. The voting age population has been collected from US Census webpage. Data on Social media activity has been gathered manually from Twitter and Facebook.

7.1 The social media measure

The candidates´ tweets and retweets have been used as a proxy for their social media activity. The measure used reflects the effort or investment in social media of the specific candidate. Since Twitter limits the number of characters, every tweet should take relatively the same amount of time to form. It gives a good estimate of time spent on the platform. On the other hand, Facebook allows politicians to develop applications, write notes, and include posts that vary in length. Counting Facebook posts could be done, but it would not accurately reflect the time sent on the platform. Hence, the number of tweets is preferred due to the ease of quantifying the effort made by the politicians. Also, observations from Facebook have been collected and the correlation of the activity between the two platforms is

[7] A Skewness/Kurtosis test for normality has been conducted and the test shows evidence of the residuals being normally distributed

strong[8]. Thus, the number of tweets seems to be a good indicator of social media activity among politicians.

As the empirical model implies, the change in social media should be used in the regression. Unfortunately, the data of the politicians´ Twitter use in previous elections is unavailable. Fortunately, even though social media was used in the 2008 election, few politicians used it for campaigning (Milian, 2009). For this reason, the study assumes social media activity to be zero in 2008. Therefore, the change in social media is simply the total social media activity in 2010. The assumption that social media was zero the previous election is even more plausible when controlling for the previous midterm election in 2006.

The politicians´ Twitter pages were found by searching the candidates name manually and by using a list of political Twitter users, provided by Josh Shpayher (2011). When the candidates had two or more accounts, only the account actively used for campaigning was considered. Accounts that appeared to be deleted were omitted from the sample. Of 870 observations, 101 were dropped due to that reason.

The number of tweets and retweets made by the candidates between August 3, and November 2, 2010, the 3 months prior to the midterm election, have been collected. The amount of tweets during this period has been chosen because it is believed to roughly represent the period when campaigning has the largest impact on the voting behavior. During this time, the traditional media reports on the election and voters gather information about the election and candidates[9].

Several methods to compile the number of tweets were tried. One way of to compiling the data is to work with a company that supplies Twitter data.

[8] The activity on Facebook has been quantified by counting the number of posts on the candidates´ profile wall. The correlation between the Facebook activity and the Twitter activity is 0.6996. The correlation is based on 144 observations.

[9] A study on the effect of television advertisement used data from the three weeks ahead of the Election Day (Krasno and Green, 2004). A longer period when investigating the effect of social media is preferred because it might affect voting behavior through other mechanisms than television ads. Social media may require an even longer period to have an effect. However, the activity during the period collected should work as a reliable proxy for the activity during a longer period.

Unfortunately, large discrepancies appeared between the data provided by these companies and the politicians'´ real profiles. Another possible method is to access the data through Twitter's application developer page and write a program to compile the data. Unfortunately, Twitter only supplies the last 100 tweets. Thus, using this method, it would not have been possible to gather the necessary data.

Due to the difficulties and disadvantages of the other methods, the data was collected manually. Every candidates´ Twitter page was visited and the number of tweets and retweets was counted during the specific period. The method should be more accurate than the other methods because every candidates´ Twitter page was visited to assure its existence and accessibility.

Below is a table of summary statistics of the Twitter activity of the candidates for the House of Representatives. The table includes the observations, mean and standard deviation of the candidates. Users are candidates who have at least one tweet. The table shows that the amount of Twitter users among the representatives in the Republican Party is 17 percent more than the Democrats. The Republicans using Twitter also make more frequent tweets, averaging about 50 more posts during the campaign than a typical Democrat.

Table 7.1.1

Descriptive Statistics of Twitter activity of the candidates for the 2010 U.S. House of Representatives

Twitter usage in the sample			
	Total Sample	**Republican candidates**	**Democratic candidates**
Average tweets	69	93	45
Average tweets of the users	118	139	90
Percentage of users	58%	67%	50%
Observations	782	393	389

7.2 Relative votes

The relative votes between the Democratic candidate and the Republican candidate are used as the measure of votes, according to the equation below:

$$Relative\ Republican\ Votes = \frac{\text{Republican candidate's Votes}}{\text{Democrat candidate's votes+ Republican candidate's votes}} \quad (3)$$

This measure is used for several reasons. First, the measure is used to compare districts of different sizes. Absolute votes could vary widely between districts, but all districts´ relative votes sum to one. Also, since almost every major candidate is from one of the two major parties, omitting third party candidates is done to show the impact on the viable candidates. This measure can capture both the effect of mobilizing the existing voting base and the effect of persuading undecided voters.

Observations of races with unopposed candidates or races where there were not both a Democratic and a Republican candidate have been omitted. Of the 870 districts studied, 31 observations from the 2010 election, 56 observations from the 2008 election and 57 from the 2006 election have been omitted. This is due to the reasons above or that the data has not been available.

7.3 Voter turnout

Official voter turnout numbers for 2010 were not accessible when conducting this study. Therefore, the voter turnout on the congressional level is estimated using the sum of votes of the main Democratic candidate and the main Republican candidate, divided by the voting age population in the district according to the equation below.

$$\text{Voter turnout} = \frac{\text{Democratic candidate votes +Republican candidate votes}}{\text{Voting age population}} \quad (4)$$

The correlation between the official voter turnout 2008 and the measure used in this study has been shown to be strong[10]. This measure has the advantage of more accurately linking the social media activity of the main candidates with the voter

[10] Voter turnout on the district level in 2008 has been collected from the United States Federal Election Commission´s (FEC) website. The correlation between the voter turnout in 2008 and the measure used in this paper is 0.9585.

turnout measure. It is likely that an increase in votes caused by social media will be given to the candidates providing the social media activity.

This measure is not able to take into account a potential increase in voter turnout due to the social media activity by a third candidate. Nor is it accounting for the case when third party candidates are present in one election, but not another. However, third party candidates are rarely competitive and their presence should not affect the result significantly.

7.4 Selecting baseline voting behavior

As is presented in section 6, the relative votes during the previous election are included in the regression that tests Hypothesis 1. Additionally, voter turnout during the previous election is included in the regression that tests Hypothesis 2. These variables are included to control for the baseline voting behavior before campaigning. However, it is not self-evident which previous election to use. The argument for using the presidential election in 2008 instead of the mid-term election in 2006 is that the changes in the variables between two years are smaller than the changes over four years. By using the election two years earlier instead of four, it is less necessary to control for other variables that may have changed during the longer period. On the other hand, an advantage of controlling for the election in 2006 is that social media campaigning during this election was practically nonexistent. Although social media campaigning was very low in 2008, the activity cannot be said to be completely nonexistent. Additionally, as emphasized previously, a midterm election may differ from a presidential election. The voter turnout and the relative votes during a presidential election may not be comparable to a midterm election because the characteristics of the voters are different (Krasno and Green, 2008). However, a specification that uses the election 2008 should still be accurate if the decrease in votes during mid-term elections is uniform between all districts.

Nevertheless, since there are arguments for using both elections, this paper uses two different specifications, one including the outcome in the election in 2008 and

one with the outcome in the election in 2006. This is done, both for testing Hypotheses 1 and 2.

There are arguments for including both election outcomes in the same regression. Therefore, the results from regressions that include the voting preferences or voter turnout from both previous elections can be found in Appendix A. However, according to the specification used it is not obvious which other variables to control for when doing this. Since, the empirical model controls for the change in variables it is not clear whether to take the change between two or four years.

7.5 Controls, total expenditures and closeness of the race

This study uses the change variables between two elections instead of using the level of the variables. This is because the voting behavior in the previous election is assumed to control for the level of all variables during that election. Since, many variables, such as demographic factors change slowly, their impact on voting behavior can be accounted for by controlling for the previous election. Therefore, only variables that are believed to have changed substantially between the elections have been controlled for. The change in those variables has been used because the impact of their level at the time of the previous election is already accounted for.

7.5.1 Total expenditures

Campaigning may affect the voting behavior and the level may differ significantly between two elections. Therefore the difference in campaigning must be controlled for. A proxy for the amount of campaigning or information disseminated through means other than social media has therefore been included in the regressions. The proxy used for this is the amount of expenditures made by the candidate during the campaign cycle. The social media campaigning should not be included in this measure because it is free to use and only requires a minimum investment of a few minutes a day to remain active. The amount of money spent on other campaign methods dwarfs any cost associated with social media.

When testing Hypothesis 1, the expenditures made by each candidate will be controlled for, while the sum of both candidates´ expenditures will be used when testing Hypothesis 2.

Additionally, total expenditures are used as a control to decrease the effect of a possible endogeneity problem. An argument is that social media usage is correlated with the competence of the politician. If that is the case, the estimated coefficient of social media will be biased. By controlling for total expenditures this omitted variable is partly controlled for, making the estimates less biased. This is because the amount of expenditures is likely correlated to the competence or viability of the politician.

7.5.2 Closeness of the race

As studies show, the closeness of an election is correlated with voter turnout (Cox and Munger, 1989; Cebula and Meads, 2008). The closeness may also change substantially between elections. In addition, the variable is probably correlated to voter turnout and the social media activity making the estimates biased if not controlled for. Therefore, the change in the closeness of the race is controlled for when testing Hypothesis 2. The measure of closeness of race in this study is the absolute value of the difference in relative votes between the two candidates. As the race gets closer and the relative votes approaches 50 percent, the closeness of race becomes zero.

8. Results

The following section contains the results of this study. The first part presents and analyzes the results from testing the effect of social media activity on voting preferences. The next part covers the results found on the effect of social media activity on voter turnout.

8.1 The effect of social media on voting preferences

Table 8.1.1

The effects of Twitter activity on voting preferences for the 2010 election of the U.S. House of Representatives

Voting Preferences[11]			
Variables	**OLS (1)**	**OLS + controls (2)**	**Fixed Effects[12] (3)**
Republican Relative Votes 2008	0.9046323***	0.9086668***	0.8684619***
	(27.17)	(27.03)	(17.45)
Log Republican Social Media	0.0090503**	0.0086234**	0.0082016**
	(2.57)	(2.52)	(2.66)
Log Democrat Social Media	-0.0045104	-0.0033538	-0.003448
	(-1.03)	(-0.77)	(-0.70)
Δ Log Republican Tot. Expenditures		0.0049932***	0.0036638
		(2.84)	(1.45)
Δ Log Democrat Tot. Expenditures		-0.0050517***	-0.0056434**
		(-2.76)	(-2.05)
R-squared	0.8457	0.8525	0.8521
Obs.	292	292	292
***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level t-values given inside the parentheses			

In all of the regressions above, the coefficients of the Twitter activity of both candidates have the expected sign. The coefficient of the Republican candidates´ Twitter activity is positive and significant on a five percent level, indicating that social media activity has a positive effect on the Republicans´ relative votes. The coefficient of around 0.008 suggests that if a Republican candidate´s social media

[11] Breusch-Pagan / Cook-Weisberg test for heteroskedasticity test has been conducted. The test strongly indicates problems with heteroskedasticity. Robust standard errors have therefore been used in all regressions.

[12] The Random Effects Model has also been used and the results can be found in Appendix A table 11.1.1 and 11.1.2. The results from using random effects have not been included in the main results due to the necessity to assume that the unobserved individual state variables are not correlated with the control variables.

activity increased by one percent, their relative votes will increase by 0.008 percentage units.

The coefficient of the Twitter activity of the Democratic candidates is negative, as expected, but never significant even on a 10 percent level. Thus, it is difficult to make a conclusion of the effect of using social media for candidates of this party. Also, the coefficient is about half the size of the Republicans and the standard error is larger.

Table 8.3.1

The effects of Twitter activity on voting preferences for the 2010 election of the U.S. House of Representatives, controlling for relative votes 2006

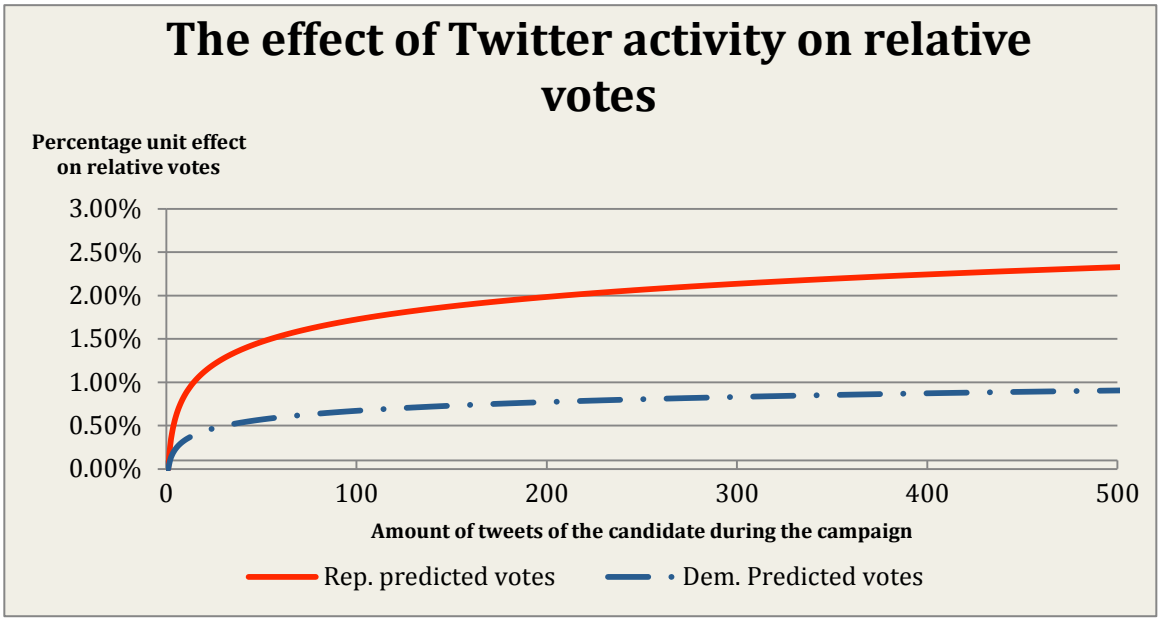
Voting Preferences			
	OLS (4)	**OLS + Controls (5)**	**Fixed Effect (6)**
Republican Relative Votes 2006	0.851726*** (21.1)	0.842104*** (18.20)	0.7964725*** (13.02)
Log Republican Twitter	0.0037051 (0.71)	0. 005347 (1.01)	0.0058633 (1.03)
Log Democrat Twitter	-0.0019658 (-0.33)	0.0015746 (0.28)	-0.0023039 (-0.49)
Δ Log Republican Expenditures		-0.0047314 (1.23)	0.0024337 (0.61)
Δ Log Democrat Expenditures		-0.013862*** (-5.43)	-0.0134197*** (-4.69)
R-squared	0.7375	0. 7627	0.7617
Obs.	288	288	288
***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level t-values given inside the parentheses			

When controlling for 2006 the coefficients of the Republicans gets smaller, but stay similar. The previously insignificant coefficient of the Democratic candidate is still smaller and insignificant. The standard errors increase and make the coefficients lose significance. This may be because of the larger changes within the districts between the elections four years apart versus two years apart. The fact that the coefficient stays similar in size provides some evidence that the previously found results are valid. An additional indication that the results found when controlling for

2008 are valid is that the R-squared is larger when controlling for 2008. The alternative specifications, found in Appendices A and B, further support the result.

Figure 8.1.1

The impact of Twitter activity on relative votes according to the fixed effects model



The graph above shows the possible impact Twitter activity can have on relative votes[13]. As shown in the graph, the difference in relative votes between a person having the average number of tweets, about 120, and a person who does not use Twitter is about 1.8 percentage units for a Republicans and 0.7 percentage units for a Democrat. By construction, a 1.8 percentage unit change in Republican relative votes will generate a 3.6 percentage unit change in the total race. This is because a percentage change in relative votes of one candidate will change the opponents´ relative votes by the same amount in the opposite direction.

To get an indication of the potential effect of social media on the results in the 2010 election, the expected votes if neither of the candidates had been using Twitter, has been calculated. To get the expected votes, the effects of the two candidates´ Twitter

[13] The coefficients from regression (3) have been used to draw the graph

usage have been subtracted from the votes in 2010[14]. By looking at this measure, it is possible to identify 10 races that would have had a different winner if no social media had been used[15].

Lastly, it is interesting to highlight the effect of total expenditures on relative votes. Unlike social media, the Democrats´ expenditures have a significant effect on voting preferences, while the effect is insignificant for the Republicans. As can be observed in both tables, the coefficients often have the correct signs, but the coefficient of the Democratic candidate is always considerably larger and more significant. Contrary to what is found for social media activity, this indicates that the Democrats are using their money more efficiently.

[14] The expected votes for candidate i without any Twitter usage has been calculated according to the following equation:

$$Expected\ Votes\ (if\ SMA = 0)_i$$

The coefficients from the fixed effects regression have been used.

[15] The amount of races in which the outcome would change if no Twitter had been used, has been found by comparing the actual votes with the expected votes. In 10 observations, the actual winner differs from the expected winner if no Twitter had been used. A list of these races can be found in Appendix C.

8.2 Effect of social media on voter turnout

Table 8.2.1

The effect of total Twitter activity on voter turnout using OLS and fixed effects controlling for relative votes 2008

Voter Turnout			
Variables	**OLS (7)**	**OLS + Controls (8)**	**Fixed Effects (9)**
Voter Turnout 2008	0.5743945*** (11.41)	0.5769987*** (11.21)	0.6177675 *** (15.73)
Log Social Media Activity	0.008315** (2.06)	0.0090613** (2.14)	0.0061397 (0.76)
Δ Closeness of Race		-0.0173586 (-0.53)	-0.0064766 (-0.62)
Δ Log Tot. Expenditures		-0.0019779 (-1.39)	-.0022299 (-1.48)
R-squared	0.4434	0.4482	0.4439
Obs.	284	282	282
***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level t-value given inside the parentheses			

The coefficient of total social media activity is significant and positive in the first two regressions, but loses significance when using state fixed effects. Additionally, when controlling for state fixed effects the coefficient gets smaller. The fact that the coefficient loses significance and size when state fixed effects are used may be an indication of a problem of omitted variable bias. However, the result is strengthened when controlling for the voter turnout 2006, as can be seen below.

Table 8.3.2

The effect of total Twitter activity on voter turnout using OLS and fixed effects, controlling for voter turnout 2006

Voter Turnout			
Variables	**OLS (10)**	**OLS + controls (11)**	**Fixed effect (12)**
Voter Turnout 2006	0.6538697*** (12.65)	0.6133094*** (12.29)	0.8826097*** (12.47)
Log Social Media Activity	0.0113467*** (2.59)	0.0105408** (2.02)	0.008886** (2.06)
Δ Closeness of Race		0.0072961 (0.31)	-0,0187124 (-.096)
Δ Log Tot. Expenditures		0.0012433 (0.64)	-0.0013596 (-0.79)
R-squared	0.4541	0.4678	0.4617
Obs.	288	286	286
***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level t-values are given in the parentheses			

When running the regression without state fixed effects and controlling for voter turnout 2006, the result is similar to when controlling for voter turnout 2008. The coefficient has a similar size and is significant on a 5 percent level. In contrast to the specifications with the voter turnout in 2008, the coefficient stays significant even when controlling for state fixed effect. Also, the R-squared becomes slightly larger, which may indicate that the regression with voter turnout 2006 is a better specification.

According to the result, a one percent increase, in social media causes an increase in voter turnout of about 0.009 percent. The difference in voter turnout between a district with candidates that use zero social media and a district were the two candidates use the average amount of 120 tweets each, is around 2 percent[16].

Surprisingly, the change in expenditures and the closeness of the race is never significant in any specification. However, previous research has found evidence that campaigning does not necessarily increase voter turnout even though it can affect voting preferences (Huber and Arceneaux, 2007; Krasno and Green, 2008). The

[16] $\beta_1 \; log \; \Delta Tot.SMA_{i,k,t}$=0.009*log(120+120) ≈ 2%

closeness of the race is perhaps not significant because the variable only affects voter turnout by developing an active electorate over several elections. If that is the case, a change in the closeness of race over a short period of time would not have a visible effect on voter turnout.

9. Discussion

The aim of this paper was to investigate the effects of political social media activity on voting behavior. First, the paper investigated, the effects of political social media activity on voting preferences. Next, the paper examined the effects of political social media activity on voter turnout. The aim of this study was not to evaluate the difference in the effectiveness of the Republicans´ and Democrats´ social media use. However, the data clearly indicates a difference between the use of social media for Democrats and Republicans. By looking at the summary statistics of the data on social media activity, it becomes clear that the Republican Party is more engaged in using social media.

The data also indicates that the Republicans use social media more effectively than the Democrats. When controlling for relative votes in 2008 a significant correlation was found between the number of Republican tweets and voting preferences. The coefficient of the social media activity of the Democrats is never significant and considerably smaller than the coefficient of the Republicans. The coefficients of both parties are insignificant when controlling for relative votes in 2006 making the results less convincing. The similar size of the coefficients of the social media activity in the different specifications indicates that the result should not be rejected. Also, when controlling for the relative votes 2006 instead of 2008, the change in variables that are not controlled for might be larger and have a greater effect on voting behavior. What further supports the result that Republicans´ social media activity affects voting preferences positively, is that the R-squared is substantially larger when controlling for relative votes in 2008 than when controlling for relative votes in 2006. The alternative specifications conducted and presented in the Appendices A and B further support the result.

Having significant results for the Republicans and not the Democrats is interesting considering Obama´s perceived dominance in the social media realm. Furthermore, the result may seem counter intuitive because social media is usually associated with a younger demographic, who lean more Democratic. However, the average age of a social media user on Facebook, Twitter, and LinkedIn is unexpectedly over 40 years (Senak, 2010).

That Republicans are more competent users of social media is supported in the literature. One study rated the politicians' Digital IQ, with social media comprising 75 percent of the score. On average, Republicans scored significantly higher than Democrats (Senak, 2011). Another report showed that Republicans are more likely to follow other people on Twitter. This shows a higher level of engagement (Smith, 2010b). Also, many Tea Party candidates had more followers than their Democratic Party opponents prior to the 2010 midterm election (Joseph, 2010).

Another possible explanation for the difference in significance between Republicans and Democrats is not that the parties use different strategies, but that Democrats might be more difficult to motivate through campaigning. This could have been a factor in 2010 when the Republicans had the momentum and gained 69 seats in Congress. Democrats might have become impervious to social media activity, so no amount of activity could have affected their voting behavior. On the other hand, Republicans may have been more interested in the election and were susceptible to motivation.

The fact that the coefficient is significant for one party, but not the other, may actually strengthen the argument that social media has an effect on voting preferences. If there was an omitted variable that was causing social media to appear significant when it actually was not, such as competence of the politician, the variable should affect both Republicans and Democrats. Thus, the fact that only one of the coefficients is significant could indicate that there is less of a problem of omitted variable bias.

Worth mentioning is that total expenditures had an opposite relationship to that of social media. The coefficient for the Democrats' expenditures is larger and more significant than the coefficient of the Republicans. This could have several interesting implications. First, it could mean that Democrats were more proficient when campaigning outside of social media. It could also be explained by the Republican voters being more responsive to social media campaigning and less to other forms of campaigning. Additionally, it could indicate a possible endogeneity problem in the study. It might be that the Republicans´ Twitter usage is strongly correlated with the politicians´ ability to identify the most effective campaigning tools. In that case, it is difficult to distinguish the effect of social media from the effect of other campaigning tools.

Furthermore, social media activity has been shown to positively affect voter turnout. A significant positive effect of social media activity on voter turnout is found in all but one specification. However, the fact that the results do not stay significant when controlling for state fixed effects and the voter turnout in 2008, makes the result less reliable. On the other hand, the slightly larger R-squared in the specification with voter turnout in 2006 supports the result that social media has a positive effect on voter turnout.

A potential problem with the results is that it is difficult to believe that controlling for the voting behavior in 2006 is better when investigating turnout and that voting behavior in 2008 is better when investigating voting preferences. However, an argument for this being reasonable is that the factors affecting the decision to vote is slower changing than the variables affecting voting preferences. In that case, it would be more important to control for the more current election when investigating the effect on voting preferences, while it would be better to control for the same type of election when looking at voter turnout. However, testing this theory is beyond the scope of this paper and the fact that the results do not stay consistent when changing the controls makes the results less reliable.

Nevertheless, the majority of the results show evidence that social media has an effect on voting preferences and voter turnout. Based on the evidence that both hypotheses are true, it follows that there is also truth to the perception that social media affected voting behavior in the 2010 election.

There are many directions that could be explored in future studies on the relationship between social media and voting behavior. Today, social media is in its nascent stage and the data is limited. Therefore, a time series analysis is premature. However, in the future a time-series analysis could provide further insights into the effects of social media. Furthermore, the aggregated data used in this study may have difficulty capturing more specific effects of social media. To get a better understanding of how exactly political social media affects voting behavior, a survey of the people using it may be necessary.

10. Conclusion

There are two research questions in this study. First, did social media campaigning affect voting preferences in the 2010 United States House of Representatives election? The study finds evidence that social media activity of the Republican candidates had a positive and significant effect on voting preferences. However the result is not significant in every specification used. The effect of the social media activity of the Democratic candidates is insignificant and no clear conclusions can be made.

The second question was, did social media campaigning affect voter turnout in the 2010 United States House of Representatives election? There is evidence to suggest that there is a positive correlation between total social media campaigning and voter turnout. However, the result is not significant in all specifications, which makes the result less reliable.

12. References

12.1 Books

Bardes, B.A.,Shelley, M.C. and Schmidt, S.W., 1986. *Instructor's Manual with Test Bank to Accompany: American Government and Politics Today: the Essentials*. St. Paul, MN: West Pub., pp.173-75.

Berelson, B. Lazarsfeld, P.F. and McPhee, W.M., 1968. *Voting: a Study of Opinion Formation in a Presidential Campaign*. Chicago: University of Chicago.

Fowler, J.H., 2005. Turnout in a Small World. *Social Logic of Politics*. Ed. Zuckerman A. Philadelphia: Temple UP. pp. 269-87.

12.2 Journal Articles

Ansolabehere, S. Iyengar, S. Simon, A. and Valentino, N., 1994. Does Attack Advertising Demobilize the Electorate? *American Political Science Review,* 88(4), pp.829-38. Available through ABI Inform [Accessed 1 April 2011].

Arceneaux, K. and Nickerson, D., 2010. From Two Field Experiments Comparing Negative and Positive Campaign Messages: Evidence From Two Field Experiments. *American Politics Research,* 38(2), pp.54-83. Available through ABI Inform [Accessed 1 April 2011].

Baek, M., 2009. A Comparative Analysis of Political Communication System and Vote Turnout. *American Journal of Political Science,* 53(2), pp.376-93. Available through ABI Inform [Accessed 1 April 2011].

Brooks, D.J., 2006. The Resilient Voter: Moving Toward Closure in the Debate over Negative Campaigning and Turnout. *Journal of Politics,* 68(3), pp.684-96. Available through ABI Inform [Accessed 01 May 2011].

Cebula, R.J. and Meads, H., 2008. The Electoral College System, Political Party Dominance, and Voter Turnout, With Evidence from the 2004 Presidential Election. *Atlantic Economic Journal,* 36(1), pp.53-64. Available through EBSCO Host [Accessed 15 March 2011].

Cebula, R.J., 2008a. Does Direct Democracy Increase Voter Turnout? Evidence from the 2004 General Election. *American Journal of Economics and Sociology,* 67(4), pp.629-44. Available through EBSCO Host [Accessed 15 March 2011].

Cebula, R.J., 2008b. Influence of the Number of Statewide Referenda Involving Emotionally-Charged Issues on Voter Turnout, 2006. *Atlantic Economic Journal,* 36(4), pp.383-93. . Available through EBSCO Host [Accessed 15 March 2011].

Cox, G.W. and Munger, M.C., 1989. Closeness, Expedenitures, and Turnout in the 1982 U.S. House Elections. *American Political Science Review,* 83, pp. 217-31. Available through ABI Inform [Accessed 08 March 2011].

Franz, M.M. and Ridout T.N., 2008. Political Advertising and Persuasion in the 2004 and 2008 Presidetial Elections. *American Politics Research,* 38(2), pp.303-29. Available through ABI Inform [Accessed 1 April 2011].

Funk, P., 2010. Social Incentives and Voter Turnout: Evidence from the Swiss Mail Ballot System. *Journal of the European Economic Association,* 8(5), pp.1077-1103, [online] Available at: <http://ideas.repec.org/a/tpr/jeurec/v8y2010i5p1077-1103.html#provider> [Accessed 02 May 2011].

Gerber, A.S., and Green, D.P., 2000. The Effects of Canvassing, Telephone Calls, and Direct Mail on Voter Turnout: A Field Experiment *American Political Science Review,* 94(3), pp.653-63. Available through ABI Inform [Accessed 1 April 2011].

Gerber, A.S. Green, D.P. and Larimer, C.W., 2008. Social Pressure and Voter Turnout: Evidence from a Large-Scale Field Experiment. *American Political Science*

Review, 102(1), pp.33-48. Available through ABI Inform [Accessed 21 April 2011].

Herr, J. P., 2002. The Impact of Campaign Appearances in the 1996 Election *Journal of Politics,* 63, pp.904-13. Available through ABI Inform [Accessed 15 April 2011].

Huber, G.A., and Arceneaux, K., 2007. Identifying the Persuasive Effects of Presidential Advertising. *American Journal of Political Science,* 51(4), pp.957-77. Available through ABI Inform [Accessed 15 April 2011].

Jackson, R.A., 1996. The Mobilization of Congressional Electorate. *Legislative Studies Quarterly,* 21(3), pp.425-45. Available through ABI Inform [Accessed 16 April 2011].

Jankowski, R., 2007. Altruism and the Decision to Vote: Explaining and Testing High Voter Turnout. *Rationality and Society,* 19(1), pp.5-34. [online] Available at: <http://rss.sagepub.com/content/19/1/5.full.pdf> [Accessed 30 April 2011]

Krasno, J.S., and Green, D.P., 2008. Do Televised Presidential Ads Increase Voter Turnout? Evidence from a Natural Experiment. *The Journal of Politics,* 70(1), pp.245-61. Available through ABI Inform [Accessed 16 April 2011].

Riker, W.H. and Ordeshook, P.C., 1968. A Theory of Calculus Voting. *The American Political Science Review,* 62(1), pp.25-42.

Shaw, D.R. 1999. The Effect of TV Ads and Candidate Appearances on Statewide Presidental Votes 1988-1996. *American Political Science Review,* 93(2), pp.345-61. Available through ABI Inform [Accessed 16 April 2011].

Strandberg, K., 2009. Online Campaigning: an Opening for the Outsiders? An Analysis of Finnish Parliamentary Candidates' Websites in the 2003 Election Campaign. *New Media and Society,* 11(5), pp.835-54. Available through ABI Inform [Accessed 25 April 2011].

12.3 Newspapers & Online Sources

Bullas, J., 2011. 30 Terrific Twitter Facts And Figures. *Jeffbullas.com,* Web log post [online] 04 May. Available at: <http://www.jeffbullas.com/2011/05/02/30-terrific-twitter-facts-and-figures/> [Accessed 07 May 2011].

Carr, D., 2008. The Media Equation: How Obama Tapped Into Social Networks. *The New York*, [online] 09 November. Available at: <http://www.nytimes.com/2008/11/10/business/media/10carr.html> [Accessed 03 April 2011].

Dugan, L., 2011. Why Twitter Is The Best Social Network For Politicians. *Mediabistro,* [online] 08 May. Available at: <http://www.mediabistro.com/alltwitter/why-twitter-is-the-best-social-network-for-politicians_b314> [Accessed 13 May 2011].

Dugen, L., 2010. Social Media in the 2010 US Midterm Election: What Worked (And What Didn't). *SocialTimes* [online] 03 November. Available at: <http://socialtimes.com/social-media-in-the-2010-us-midterm-election-what-worked-and-what-didnt_b27242> [Accessed 28 February 2011].

Facebook (n.d.). Statistics. [online]. Available at: <http://www.facebook.com/press/info.php?statistics> [Accessed 20 February 2011].

Galloway, S. and Guthrie, D., 2010. Digital IQ: U.S. Senate. *L2*, 18 August. Available at: <http://l2thinktank.com/digital-iq/digital-iq-u-s-senate/> [Accessed 03 March 2011].

Internet World Statistics, 2010. United States Internet and Facebook User Statistics. *Internet World Statistics*, [online]. Available at: <http://www.internetworldstats.com/stats26.htm> [Accessed 08 May 2011].

Joseph, C., 2010. Tea Party Triumphs on Twitter, Facebook. *The National Journal*, [online] 24 September. Available at: <http://hotlineoncall.nationaljournal.com/archives/2010/09/tea_party_trium.php> [Accessed 26 April, 2011]

McDonald, M. 2011, What Is the "Vote for Highest Office" and "Total Ballots Cast"? *United States Elections Project*, [online]. Available at: <http://elections.gmu.edu/FAQ.html> [Accessed 20 February 2011].

Milian, M., 2009. Tweet Congress Tracks Politicians on Twitter, Heckles Ones Who Aren't. *LA Times*, [online] 31 January. Available at: <http://latimesblogs.latimes.com/technology/2009/01/tweet-congress.html> [Accessed 15 April 2011].

Neuharth, A. 2004. Why Politics Is Fun from Catbirds' Seats. *USA Today*, [online] 22 January. Available at: <http://www.usatoday.com/news/opinion/columnist/neuharth/2004-01-22-neuharth_x.htm> [Accesses 30 April 2011].

Senak, M., 2010. Twongress: The Power of Twitter in Congress. *Eye on FDA*, [online] 14 January. Available at: <http://www.eyeonfda.com/eye_on_fda/2010/01/twongress-the-power-of-twitter-in-congress.html> [Accessed 03 March 2011].

Shpayher, J., 2011. *Government & Social Media Wiki.* Available at: <http://govsm.com/w/House_Campaigns> [Accessed 20 May 2011].

Smith, A. 2011. In Social Media Battle, Republicans Catch Up in Time for 2012. *Pew Research Center*, [online] 27 January. Available at: <http://www.pewinternet.org/Media-Mentions/2011/In-Social-Media-Battle-Republicans-Catch-Up-in-Time-for-2012.aspx> [Accessed 15 March 2011].

Smith, A., 2011. *The Internet and Campaign 2010*. *Pew Research Center*, [online] 17 March. Available at: <http://www.pewinternet.org/Reports/2011/The-Internet-and-Campaign-2010.aspx> [Accessed 15 March 2011].

Thornley, J., 2008. What is "social media?". *ProPR,* Web log post [online] 08 April. Available at: <http://propr.ca/2008/what-is-social-media/> [Accessed 05 May 2011].

12.4 Statistics

Politics Daily, 2011. 2010 House Races. *AOL News,* [online]. Available at: <http://www.politicsdaily.com/tag/2010-House-Elections/> [Accessed 15 March 2011].

International Institute For Democracy and Electoral Assistance, 2010. Voter turnout data for United States. *International Institute For Democracy and Electoral Assistance,* [online]. Available at: <http://www.idea.int/vt/country_view.cfm?CountryCode=US> [Accessed 07 May 2011].

U.S. Census Bureau, 2007. 2006 American Community Survey 1-Year Estimates. *U.S. Census Bureau*, [online]. Available at: <http://factfinder.census.gov/servlet/DownloadDatasetServlet?_lang=en> [Accessed 15 February 2011].

US. Census Bureau, 2009. 2008 American Community Survey 1-Year Estimates. *U.S. Census Bureau,* [online]. Available at: <http://factfinder.census.gov/servlet/DownloadDatasetServlet?_lang=en> [Accessed 15 February 2011].

U.S. Census Bureau, 2011. Profile of General Population and Housing Characteristics: 2010. *U.S. Census Bureau*, [online]. Available at: <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_DP_DPDP1&prodType=table> [Accessed 07 May 2011].

U.S.A. Federal Elections Commission, 2011. Candidate Financial Summaries (All Candidates). *U.S.A. Federal Elections Commission,* [online]. Available at: <http://www.fec.gov/finance/disclosure/ftpsum.shtml> [Accessed 01 March 2011].

U.S.A. Federal Elections Commission, 2011. Election Results. *U.S.A. Federal Election Commission,* [online]. Available at: <http://www.fec.gov/pubrec/electionresults.shtml> [Accessed 01 March].

11.1 Appendix A

Table 11.1.1

The effects of Twitter activity on voting preferences for the 2010 election of the U.S. House of Representatives, controlling for relative votes 2006 and 2008

Voting Preferences			
Variables	**OLS**	**OLS + controls**	**Fixed effect**
Republican Relative Votes 2008	0.6929693***	0.6621555***	0.5954462***
	(5.07)	(4.85)	(9.82)
Republican Relative Votes 2006	0.2409976*	0.255803**	0.2753636***
	(1.82)	(1.97)	(5.92)
Log Republican Social Media	0.0079519**	0.0093343**	0.0086339**
	(2.02)	(2.43)	(2.11)
Log Democrat Social Media	-0.005258	-0.0032682	-0.0042086
	(-1.14)	(-0.73)	(-0.84)
Δ Log Republican Tot. Expenditures (2010-2006)		0.0001804***	0.0003842
		(-0.07)	(-0.11)
Δ Log Democrat Tot. Expenditures (2010-2006)		-0.006803***	-0.0077563**
		(-3.15)	(-2.85)
R-squared	0.8541	0.8604	0.8598
Obs.	265	265	265
***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level t-values given inside the parentheses			

Table 11.1.2

The effect of total Twitter activity on voter turnout using OLS and fixed effects, controlling for voter turnout 2006 and 2008

Voter Turnout			
Variables	**OLS**	**OLS + controls**	**Fixed effect**
Voter Turnout 2008	0.1840783**	0.1880382***	0.2156052**
	(2.55)	(2.60)	(2.07)
Voter Turnout 2006	0.4949209***	0.4992398***	0.705864***
	(6.04)	(6.40)	(4.35)
Log Social Media Activity	0.0071579**	0.0061799	0.002392
	(1.98)	(1.31)	(.70)
Δ Closeness of Race		-0.0171506	-0,0213927
		(-0.73)	(-0.96)
Δ Log Tot. Expenditures		0.0000624	-0.0004193
		(0.03)	(-0.21)
R-squared	0.5196	0.5206	0.5178
Obs.	257	256	256
***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level t-values are given in the parentheses			

11.2 Appendix B

Table 11.2.1

The effects of Twitter activity on voting preferences for the 2010 election of the U.S. House of Representatives, using random effects

Voting Preferences			
Variables	**Random effect**	**Random effect**	**Random effect**
Republican Relative Votes 2008	0.8924467 (24.04)		0.5954462*** (9.82)
Republican Relative Votes 2006		0. 80033*** (14.39)	0. 2753636*** (5.92)
Log Republican Social Media	0.0082398*** (2.86)	0. 0045855 (0.84)	0.0086339** (2.11)
Log Democrat Social Media	0.0030649 (0.73)	-0. 0000931 (-0.02)	-0.0042086 (-0.84)
Δ Log Republican Tot. Expenditures	0.00444** (2.11)	0. 0032433 (0.82)	0.0003842 (-0.11)
Δ Log Democrat Tot. Expenditures	-0.00506** (2.29)	-0.0136394*** (-4.97)	-0.0077563*** (-2.85)
R-squared	0.8524	0. 7624	0.8598
Obs.	292	288	265

***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level
t-values given inside the parentheses

Table 11.2.2

The effect of total Twitter activity on voter turnout 2010 using random effects

Voter Turnout			
Variables	**Random effect**	**Random effect**	**Random effect**
Voter Turnout 2008	0.6067052*** (12.03)		0.143493 (1.52)
Voter Turnout 2006		0.683284*** (10.54)	0. 616451*** (5.05)
Log Social Media Activity	0.0052028 (1.29)	0.0093026** (2.20)	0.0049108 (1.19)
Δ Closeness of Race	0.0271237 (0.76)	-0. 0247157 (-1.03)	-0.0136652 (-0.69)
Δ Log Tot. Expenditures	0.0016643 (-1.01)	-0.0001719 (-0.12)	-9.94e-06 (-0.996)
R-squared	0.4456	0. 4715	0.5192
Obs.	282	287	257

***=significant on a 1% level, **= significant on a 5% level, *= significant on a 10% level
t-values given inside the parentheses

11.4 Appendix C

The following table presents the races that would have had a different outcome if no Twitter had been used in the election according to the estimates found in the fixed effects model.

Table 11.4.1

District	Relative votes 2010	Tweets	Opponent´s tweets	Party	Predicted relative Votes if no one use Twitter
AL2	48.90%	0	374	D	51.01%
AL2	51.10%	374	0	R	48.99%
CA11	49.95%	80	199	D	51.18%
CA11	50.05%	199	80	R	48.82%
CT4	50.10%	89	0	D	49.43%
CT4	49.90%	0	89	R	50.57%
IN3	50.74%	26	1	R	49.67%
IN3	49.26%	1	26	D	50.33%
MN8	49.16%	0	49	D	50.55%
MN8	50.84%	49	0	R	49.45%
NV3	49.58%	131	169	D	50.68%
NV3	50.42%	169	131	R	49.32%
NC2	49.44%	0	512	D	51.66%
NC2	50.56%	512	0	R	48.34%
TX27	49.58%	0	272	D	51.58%
TX27	50.42%	272	0	R	48.42%
WA2	49.60%	277	70	D	50.28%
WA2	50.40%	70	277	R	49.72%
WV1	49.60%	2	82	D	51.01%
WV1	50.40%	82	2	R	48.99%

Predicted relative Votes 2010 if no one use Twitter:

$$Expected\ Rel.Votes\ (if\ SMA = 0)_i = Rel.Votes2010_i - \beta_1\ log\ SMA_i\ - \beta_2\ log.opp.SMA_i,$$

Where $\beta_{1,D}$ =0.003448, $\beta_{2,D}$ =0.008202 for Democrats

and

$\beta_{1,R}$ =0.008202, $\beta_{2,R}$ =0.003448 for Republicans

The estimates used are the estimates found when conducting fixed state effects

Acknowledgements

We would like to thank our advisor, Magnus Johannesson, for his assistance during the writing process. We would also like to thank Sue Schliesmann for her notes on the paper.