



Received: 11 September 2017  
Accepted: 03 April 2018  
First Published: 10 April 2018

\*Corresponding author: Andrew G. Selepak, Department of Telecommunication, University of Florida, Gainesville, FL, USA  
E-mail: [aselepak@ufl.edu](mailto:aselepak@ufl.edu)

Reviewing editor:  
Govert Valkenburg, Leiden University, Netherlands

Additional information is available at the end of the article

## POLITICS & INTERNATIONAL RELATIONS | RESEARCH ARTICLE

# Exploring anti-science attitudes among political and Christian conservatives through an examination of American universities on Twitter

Andrew G. Selepak<sup>1\*</sup>

**Abstract:** The purpose of this study was to investigate an unexplored factor as to why some Republicans and conservatives have less trust in science and academia than those on the political left. Twitter accounts for 25 elite American universities were examined for political and religious sentiment and then compared to results from 25 lower ranked schools. The aim was to examine the extent universities post politically liberal or anti-Christian messaging through Twitter. Results suggest elite universities promote more liberal messages than conservative or Republican messages and more liberal messages than lower ranked schools. Overall, the sample of schools made few tweets containing pro-Christianity messaging despite some of the schools having strong connections to Christian denominations or having been founded as religious institutions to train Christian clergy. The findings add additional insight as to why discussions on scientific issues may be influenced by political partisanship.

**Subjects:** Politics & the Media; U.S. Politics; Mass Communication; Political Communication; Higher Education; Education Policy & Politics

**Keywords:** Twitter; academia; politics; anti-science; bias

### ABOUT THE AUTHORS

The impact of political partisanship extends beyond elections and can affect public trust of the core institutions of society. Current political partisanship impacts the public trust of such institutions as law enforcement, the news media, government, and higher education. This study is an attempt to better understand how outward marketing and communication by American universities may play a role in exacerbating partisan discourse specifically related to academia. A decrease in public trust among segments of the population can damage credibility and may impact how some partisans perceive science and the scientists attempting to solve significant problems like Climate Change. As a university professor, this topic has personal importance as it could impact the perceived credibility of the author's research and teaching. Before an institution can improve its credibility, it must first understand the possible causes behind the decreased credibility. This study is part of a larger investigation of those causes.

### PUBLIC INTEREST STATEMENT

This study examined tweets from American universities for political and religious messaging. Tweets from the top 25 universities in the United States were then compared to tweets from universities ranked 175 to 200 according to US News and World Report. The results suggest elite universities tweeted more messages that were politically pro-liberal than pro-conservative, and more pro-liberal than tweets from lower ranked universities. Few of the tweets included religious messaging despite many of the universities having been founded as religious institutions. The results suggest that through their social media marketing, universities may be outwardly promoting a pro-liberal bias which could impact how Republicans and political and Christian conservatives view universities and academia. A perceived political and religious bias from university marketing could explain why segments of the population regard academia and scientific discovery as being jaded by partisanship, leading to a distrust in the science produced by these universities.

## 1. Introduction

The problem is not mistrust of science so much as it is mistrust of scientists (Moreno 2011, p. 14).

Political polarization in the United States has intensified in recent years impacting more than elections and public discord (Pew Research Center U.S. Politics & Policy, 2017). The statement by Moreno (2011) articulates the troubling idea that some Americans distrust scientists not based on their scientific findings but because of perceived political partisanship on the part of the scientists. To support this point, a 2004 survey by the *Chronicle of Higher Education* found a majority of Americans believed university faculty incorporate their ideologies into the classroom (Zipp & Fenwick, 2006). This distrust may explain why some Americans do not believe the science behind issues like Climate Change, evolution, or that vaccinations do not cause autism (Jacoby, 2016). The dismissal of science because of a distrust of scientists can have disastrous ramifications such as the United States withdrawing from the Paris Agreement, evolution being removed from science textbooks, or parents unwilling to protect a child because of discredited studies on vaccines.

Political polarization, exacerbated through social media and political news outlets, has had a negative impact on public perceptions of the core institutions of society including academia, organized religion, the news media, and financial institutions (Pew Research Center U.S. Politics & Policy, 2017). The schism between Republicans and Democrats attitudes concerning these institutions has only gotten worse since the 2016 Presidential election (Pew Research Center U.S. Politics & Policy, 2017). While a growing negative perception of any of these institutions is troubling, a negative perception of colleges and universities can lead to a lack of public trust of academia and impact the perceived credibility of scientists who work, research and study at American universities (Duarte et al., 2015). If a large segment of the population perceives academia negatively, and the science produced by academics as partisan, this can impact how parts of the population views science and the scientific discovery being conducted at American universities. Especially troubling is the political component to the growing distrust of academia. Although a majority of Americans surveyed (55%) by the Pew Research Center U.S. Politics and Policy (2017) said colleges and universities have a positive effect on the way things are going in the country, 72% of Democrats and Democratic leaners saw academia as positive, while only 36% of Republicans and Republican-leaning independents saw academia as positive. More striking was that 65% of conservative Republicans indicated colleges were having a negative impact on the country compared to 43% of moderate and more liberal Republicans (Pew Research Center U.S. Politics & Policy, 2017).

But this was not always true. From the 1970s through the 1990s, American liberals and conservatives trusted science, and scientists, at roughly equal levels, but since the 1990s, while liberals' trust in science has gone up, conservatives' trust has gone down (Duarte et al., 2015). This disparity has increased in recent years as Republicans have moved more to the political right in their beliefs, coinciding with an anti-science sentiment, leading to condemnations of science and higher education among some Republicans (Jacoby, 2016; Moreno, 2011).

Although trust in science among Republicans and conservatives has decreased since the 1990s, political and Christian conservatives have long been critical of academia and an overt liberalism on college campuses against right of center political and social ideals. Going back to 1951, conservative commentator William F. Buckley Jr., complained university professors had contempt for organized religion and capitalism (Maranto, Redding, & Hess, 2009). More recently, former conservative television host Bill O'Reilly discussed "out of control college professors" during a 14 December 2016 episode of *The O'Reilly Factor* on FOX News, adding "many colleges across the country are dominated by far-left teachers" (Fox News Insider, 2016). On his radio show in 2017, conservative host Mark Levin said, "We have parents who go into debt sending their kids to college and they come out as radical Marxists, or democratic socialists—completely different from when they went in," adding,

“Too often universities turn out people who hate their own country and despise their own faith” (The Mark Levin Show, 2017).

The belief of bias against political conservatives, Christianity, and Republicans in academia is significant because of its far-reaching implications, or as Zipp and Fenwick remarked, if universities are seen as the “exclusive enclaves of leftists and places where faculty use classrooms to push their ideology, public trust would dissipate” (2006, p. 305). This decrease in public trust appears to be occurring among at least among conservative Republicans (Pew Research Center U.S. Politics & Policy, 2017).

Previous examinations of bias in academia have focused on anecdotal evidence (Hebel, 2004; Yancey, 2012), professor surveys of political ideology (Klein & Stern, 2005, 2009; Klein, Stern, & Western, 2004), or student surveys investigating if the political ideologies of professors impacted student beliefs (Kelly-Woessner & Woessner, 2006). This study focuses on institutional bias to better understand if universities are outwardly projecting a liberal ideology and anti-Christian sentiment in their marketing and public communication on Twitter. Many Americans will never attend college, much less elite universities, yet all Americans are impacted by the discoveries and research at these universities. This is significant as public projections of a liberal or anti-Christian bias through university marketing could impact public perceptions of institutes of higher learning, and with it science, particularly among those with no firsthand experience of academia, at a time when these institutions are needed to be scientifically rigorous and ideologically neutral to maintain the public trust. A decrease in public trust among those on the political right could lead to denouncements of academia from Republicans and conservatives, and more significantly, budget cuts for higher education from Republican-controlled state legislatures or Congress (Jacoby, 2016).

To better understand if universities are complicit in a potential diminishing public trust of academia and science through their marketing using social media, specifically Twitter, this study examines if elite American universities promote a negative message toward political conservatives and conservative Christians, and if this negative messaging is more prominent among elite universities than lower ranked universities.

## 2. The politics of science

In a free society, few fields will have evenly proportional representation of any characteristic such as race, gender, or politics (Haidt, 2016). But when the ratio of one group becomes overly disproportionate in any organization, problems can occur including internal and external hostility toward under-represented groups, which can impact overall credibility as minority groups become silenced or discouraged from having their voices heard. This can occur in an organization when any gender, race, religion, or other dividing characteristic dominates. Sociopolitical values and beliefs are a core aspect of self-identity which impact interpersonal relationships (Redding, 2012). A sociopolitical majority tends to marginalize a sociopolitical “other” as different, and necessarily wrong, which can lead to an accepted discrimination based on a belief in the inherent morality of the in-group majority (Iyengar & Westwood, 2015; Redding, 2012).

Political affiliation is an important social identity and form of tribalism where individuals identify with members of their own group creating a sense of positive evaluation of those of a similar political persuasion and feelings of negativity and potentially outright hostility against those with opposing views (Haidt, 2016; Iyengar & Westwood, 2015). Whereas social norms prevent outward expressions of negative evaluations of racial and gender out-groups, such pressures do not exist for political opponents (Iyengar & Westwood, 2015). Hostility and discrimination against political others, unlike with race, is seen as acceptable as individuals can chose their political affiliation and can therefore be blamed for their decision (Iyengar & Westwood, 2015). Research on political prejudice has shown that strong partisans show little reservation toward expressing overt hostility toward their political opposites and in fact see any hostility as justified (Duarte et al., 2015). The impact of a

lack of political diversity can be quite significant, and according to Inbar and Lammers (2012), lead to biased research and discrimination against conservative students and faculty.

Academia however is not exclusively populated by liberal partisans. But, as Haidt (2016) argues, when the ratio of liberals to conservatives among faculty and administrators becomes too disproportional, members assume everyone shares their political or religious beliefs and outwardly express support for their views and hostility against opposing views. While some critics deny claims of a liberal bias in academia, not up for dispute is the overabundance of liberals and the non-religious faculty on college campuses well-beyond the national average (Yancey, 2012).

### **2.1. University politics**

According to Rothman, Lichter, and Nevitte (2005), research on the political orientations of American university professors began during the 1960s as college campuses became the focal points of political and social protest. Since the 1960s, numerous studies have examined the political ideologies of university professors. Research by the Carnegie Commission on Higher Education in 1969 and 1975 and the Carnegie Foundation for the Advancement of Teaching in 1984 all showed American professors were more liberal than the general public (Rothman et al., 2005).

Zipp and Fenwick (2006) examined results from the 1989 and 1997 National Surveys of Faculty by the Carnegie Foundation for the Advancement of Teaching, and found the ratio of left-of-center faculty to right-of-center faculty in 1989 to be 2:1 and in 1997 to be 2.3:1. The study also found that in 1997 while 68.1% of faculty at Research I institutes were liberal only 13.8% were conservative and at elite liberal arts schools 78.2% of faculty were liberal compared to 9.6% conservative, while at two-year colleges 44.3% were liberal compared to 35% conservative (Zipp & Fenwick, 2006).

Results from a 1999 North American Academic Study Survey of 1,643 full-time American faculty members from 183 universities and colleges showed 72% of respondents identified as left of center and 18% identified as strongly left while only 15% described themselves as right of center and only 3% identified as strongly right (Rothman et al., 2005). At the time of the 1999 study, 18% of the general public identified as left/liberal and 37% identified as right/conservative placing faculty at nearly four times as liberal as the general public (Rothman et al., 2005). Results from the same survey showed nearly 50% of faculty identified as Democrats while only 11% identified as Republican, while among the general public, 36% identified as Democrat and 29% as Republican (Rothman et al., 2005).

The ideological imbalance is even greater in individual departments on university campuses (Maranto & Woessner, 2012). In 2003, Klein et al. (2004) surveyed US members in six social science and humanities associations. Among the academics who returned their survey, when asked which political party respondents had voted for in the past ten years, 79.6% of respondents indicated Democratic and 9.3% said Republican (Klein et al., 2004).

### **2.2. Anti-Christian academia**

According to Gross and Simmons (2009), academia is particularly guarded against those who would bring religious perspectives into the educational space. Yancey concludes that educational achievement is positively correlated toward disdain for religiosity as a competitor to science, and therefore “it stands to reason that highly educated individuals in academia are relatively likely to disdain religious conservatives” (2012, p. 273). To continue this point, Duarte et al. (2015, p. 6) contend that although conservatives are prejudiced against liberal organizations and institutions, that “liberals are prejudiced against stereotypically Right-leaning targets (e.g. religious Christians)”. In fact, the Pew Research Center U.S. Politics and Policy (2017) reported that while 73% of Republicans and Republican-leaning independents said churches and religious organizations had a positive effect on the country, only 50% of Democrats and Democratic leaners agreed and 36% said churches and religious organizations had a negative effect on the country. Among liberal Democrats, 44% viewed churches and religious organizations as negative, and only 40% said positive. This is not entirely

surprising. According to the Pew Research Center (2015), 68% of white evangelical Protestants identify as Republican or lean Republican, compared to only 22% who identify as Democrat or lean Democrat. Meanwhile, 61% of those religiously unaffiliated identify as Democrat or lean Democrat compared to only 25% who identify as Republican or lean Republican (Pew Research Center U.S. Politics & Policy, 2015). Being a white evangelical Protestant was the second biggest predictor of Republican identification behind being Mormon, while being religiously unaffiliated was the third biggest predictor of Democrat identification behind being black or Asian (Pew Research Center U.S. Politics & Policy, 2015). In effect, conservative Christian identification goes hand-in-hand with Republican affiliation, while skepticism of religion is associated with Democrats.

But being religiously unaffiliated is a recent trend among Democrats and academia. Between 1969 and 1984, the proportion of academics who self-identified as having no religious identity increased from 19 to 30.5% (Gross & Simmons, 2009). Based on data from a 2006 survey of full-time college and university professors in the United States, Gross and Simmons (2009) found 9.8% of respondents indicated they don't believe in God while 13.1% responded they were unsure if there was a God and that there was no way to make sure. These numbers were even more striking among faculty at elite universities where 36.5% identified as atheist or agnostic compared to 22.7% at non-elite doctoral granting universities, 22.0% at teaching universities, and 15.3% at community colleges (Gross & Simmons, 2009). By comparison, at that time, only 3% of all Americans identified as atheist and only 4.1% identified as agnostic (Gross & Simmons, 2009). Among professors at elite universities, only 1% self-identified as born-again Christians or conservative Christians compared to 18.6% of community college professors and 24.6% of professors at non-elite universities (Gross & Simmons, 2009).

A lack of conservative Christians in academia is significant. While religious beliefs may not influence research and teaching in the hard sciences, in research on human behavior, a lack of researchers who incorporate a belief of God into their examinations of how humans interact and live, limits these investigations including questions asked and results found (Gross & Simmons, 2009; Marsden, 2015). At the same time, any perceived hostility toward Christianity may turn off some religious individuals, leading to a distrust in the science produced by academia, or as Moreno concludes, "Americans admire science but also treasure traditional values, which are in some ways threatened more by science than any other institution" (2011, p. 14). Thus for religious Christian conservatives, who tend to identify as Republican (Pew Research Center U.S. Politics & Policy, 2015), academia and science are seen as antagonistic to their core beliefs.

### **2.3. Elite universities**

Often the focus of conservative ire of academia falls on elite and research-intensive universities (Dahlgren, 2009; Maranto & Woessner, 2012; Rothman et al., 2005). According to Maranto et al., anecdotal and quantitative evidence supports the position that "there is a decided leftist bent to colleges and universities, particularly the most prestigious institutions" (2009, p. 4).

In studies conducted by David Horowitz, president of the California-based Center for the Study of Popular Culture and outspoken critic of liberal academia, he found Democratic professors and administrators outnumbered Republican colleagues by more than 10 to 1 at 32 elite universities based on voter registration (Hebel, 2004; Zipp & Fenwick, 2006). Langbert, Quain, and Klein (2016) looked at voter and party registration at 40 of the top 60 universities in the United States among faculty in the Economics, History, Journalism/Communications, Law and Psychology departments and found many departments had zero Republicans with the overall ratio of Democrats to Republicans at 11.5 to 1, and at Brown University it was as high as 60 to 1.

Inbar and Lammers (2012) contend socially liberal faculty hold more prestigious posts in academia than conservative faculty and these leadership positions are often in charge of hiring. For this reason, some have argued conservatives are forced to teach at lower ranked universities where they can get hired as there are more conservatives (Redding, 2012; Rothman et al., 2005; Yancey, 2012;

Zipp & Fenwick, 2006). To support this point, when Rothman et al. (2005) examined faculty for academic achievement, they found political ideology was the second most powerful predictor of the universities where academics taught and professors who indicated more liberal views on controversial social issues were statistically more likely to teach at a more elite university after controlling for scholarly achievement. In addition, Rothman et al. (2005) found religiosity was negatively related to quality of institutional affiliation among practicing Christian faculty, although the same was not true among practicing Jewish faculty, indicating a hostility not toward all religions but Christianity. Thus, being a Republican/conservative, or practicing Christian “significantly reduces the predicted quality of the college or university where he or she teaches, after taking scholarly achievement into account” (Rothman et al., 2005, p. 12). The researchers concluded politics and religion were more significant factors in determining academic affiliation than race, sexual orientation, or marital status (Rothman et al., 2005).

According to Maranto and Woessner (2012), elite universities dominate national and media conversations on academia and research. Therefore, a significant reason to examine elite universities is due to the amount of media attention and research money awarded to these institutions by the federal government. For example, in 2011 the federal government awarded more than \$40-billion for research to American universities (Huffington Post, 2013). Among the 896 universities that received federal funding, 20% of the money went to ten universities and Johns Hopkins alone received almost \$1.9-billion. Interestingly, Langbert et al. (2016) found the Democrat to Republican ratio was 35 to 1 among the departments examined at Johns Hopkins including 6 to 0 in economics, 14 to 0 in history, and 15 to 1 in psychology. Among the other top ten universities for government funding in 2011 were Duke, Columbia, Stanford, and the University of Pennsylvania (Huffington Post, 2013), all Top 10 elite universities. In addition, elite universities often have the top departments producing many of the PhDs who go on to teach at other elite universities. This creates a self-perpetuating system of liberal faculty from elite universities teaching scholars who go on to teach at other elite universities or hold powerful positions in government that grant money to these universities (Langbert et al., 2016; Rothman et al., 2005). For example, between 1970 and 2016, of the six chairs of the Federal Reserve Bank, three came from the economics departments at elite universities (Langbert et al., 2016).

#### **2.4. Theory of academic bias**

Yancey’s (2012) proposed theory of academic bias concludes bias in academia is more likely to take place under certain conditions. According to the theory, liberal academic bias occurs most often in the social sciences and humanities, is directed more toward cultural and Christian conservatives than moderate Republican faculty, and is more likely to occur early in a scholar’s career thus leading them to self-select out of academia (Yancey, 2012). In addition, according to the theory, while liberal academics create a screening mechanism that limits political diversity, it does allow for a select few conservative outliers as a viable defense against critics of a liberal and anti-Christian academia (Yancey, 2012). Thus, while elite universities may hold a liberal and anti-conservative Christian bias, they also make a deliberate showing of a tolerant environment so as their bias does not appear publicly overt. The theory concludes however that the few cultural conservatives in academia are marginalized while more moderate Republican academics are unlikely to challenge the dominant hegemony (Yancey, 2012).

#### **2.5. Twitter and academia**

Previous research on Twitter messages focused on investigating sentiment expressed in tweets (Lansdall-Welfare, Lampos, & Cristianini, 2012; Sylwester & Purver, 2015). In an analysis of sentiment, words and/or phrases related to a topic can be labelled positive, negative or neutral by examining the positive and/or negative elements of the tweet (Sylwester & Purver, 2015). Sentiment analysis is a valuable method to better understand mood in a geographic area, during a select timeframe, or on a specific topic (Lansdall-Welfare et al., 2012). As a marketing tool, Twitter is a form of owned media with messages wholly controlled by an organization. Thus, Twitter allows a university

to present a public message of the values and ideals of the university, its faculty, alumni, and students, in so much as the university controls the message.

No previous study has used Twitter sentiment to examine if “elite universities” in the United States outwardly project an unwelcoming environment for Republicans/conservatives and Christians compared to “lower ranked universities.” For this examination, elite universities are those ranked in the top 25 by U.S. News and World Report (2016) while lower ranked universities are those ranked 175–200. U.S. News and World Report (2016) does not rank universities beyond the top 200 and instead all universities after this rank are only given an “RNP” designation for Rank Not Published. Previous studies have used U.S. News and World Report as a systematic way to rank universities (Gross & Simmons, 2009; Inbar & Lammers, 2012; Langbert et al., 2016; Rothman et al., 2005).

To examine if elite universities outwardly project a more liberal ideology compared to lower ranked universities, the following Research Questions are proposed:

RQ1a: Do elite universities promote more Democratic/liberal issues and speakers than Republican/conservative issues and speakers?

RQ1b: Do elite universities promote more Democratic/liberal issues and speakers than lower ranked universities?

RQ1c: Do lower ranked universities promote more Republican/conservative issues and speakers than Democratic/liberal issues and speakers?

To examine if elite universities promote an anti-Christian bias compared to lower ranked universities, the following Research Questions are proposed:

RQ2a: Will elite universities promote more non-Christian religions than Christian denominations including Catholicism?

RQ2b: Will lower ranked universities promote more religious events/research than elite universities?

RQ2c: Will lower ranked universities promote more Christian denominations including Catholicism than non-Christian religions?

### 3. Methodology

To examine the marketing messaging of elite universities in the United States compared to lower ranked universities, a content analysis was conducted using the main Twitter accounts of 50 universities. Content analysis is an appropriate method for this type of examination as it allows the researcher to study message content (Lombard, Snyder-Duch, & Bracken, 2002). Data was obtained from each university’s main Twitter handles using Twitter’s Advanced Search option which allows users to search Twitter for specific words and phrases, hashtags, tweets from Twitter accounts, tweets to Twitter accounts, tweets that mention an account, and the ability to search by date and location.

Universities often have multiple accounts for different academic units, athletic teams, and university-sponsored organizations. For the purpose of this examination, only the main accounts for the 50 universities were examined. These account handles were obtained from the website for each university. It should be noted Western Michigan University changed Twitter handles since coding began from @wmunews to @WesternMichU; @wmunews is now an individual account for a user in Wyoming who first tweeted on 26 July 2016. In addition, some universities have official Twitter handles indicated by a white checkmark in a blue badge. Twitter determines when an account becomes official and a university cannot request or purchase an official handle.

#### 3.1. Sampling

To analyze the outward marketing of American universities through Twitter and how this may potentially create a negative perception for Republicans, political conservatives, and/or conservative

Christians, and thus impact how these groups view academia and science, the top 25 universities in the United States and universities ranked from 175 to 200 by U.S. News and World Report (2016) were included in the final sample. The content analysis for this examination was conducted between 18 July 2016 and 12 August 2016. The specific dates for the analysis are significant as it is possible to delete older tweets, and because a tweet may receive additional favorites or retweets after the content analysis timeframe.

Twitter is an appropriate social channel to study because unlike other social media platforms, such as Facebook, most Twitter accounts are public and use few privacy measures. In addition, Twitter is searchable and free to examine thus making it a useful social platform for analysis. U.S. News and World Report's (2016) annual rankings of universities is an appropriate sample as these rankings are frequently touted by universities in their marketing.

In order to examine a sample of the each university's tweets during the spring 2016 semester, one constructed week (seven days) was created and analyzed. Based on previous research of online news articles, similar to tweets, a constructed week is an effective sampling method when dealing with a large number of data points (Hester & Dougall, 2007).

Using a random date generator, all dates from 1 January 2016 through 31 May 2016 were identified as possible dates to sample for the constructed week. First, Sundays were selected as a first day of the constructed week to obtain a randomized day. The procedure was repeated for each day until a constructed week was created. The constructed week included: Sunday, 14 February 2016; Monday, 30 May 2016; Tuesday, 12 April 2016; Wednesday, 2 March 2016; Thursday, 25 February 2016; Friday, 13 May 2016; and Saturday, 30 January 2016. The final sample consisted of 1,069 tweets from 50 universities.

### **3.2. Coding procedures and intercoder reliability**

For the purpose of this examination, the spring 2016 academic semester was selected. As political polarization has a significant impact on this discussion (Duarte et al., 2015), the spring 2016 academic semester proved a valuable timeframe for examination as it occurred before the highly polarized 2016 Presidential election while nominees for both parties were still in doubt, and prior to the election of President Donald Trump.

Tweets were first coded into one of six categories: Administrative, Athletic, Events, Students, Political, or Academic. Administrative was a catchall category and includes tweets about registration dates, security alerts, recent hires, holidays, responses to questions, inclement weather, important dates, or tweets to notify of an upcoming event. Athletic covered any tweets about the university's athletic teams including scores, tickets, or games. Events covered any event indicated to be ongoing or currently occurring on campus including club meetings, guest speakers on the university's campus, tweets during graduation, exhibits, and speakers. Tweets sent during a holiday, when the university tweeted a message wishing students well but which did not include an event, were coded as Administrative. Students covered any mention of student awards, research, or recognition. However, graduation tweets were coded as Events if the tweet occurred during the graduation, or as Administrative if it mentioned something related to graduation such as parking but did not occur during the event. Political tweets mentioned a political cause or a specific politician not speaking on campus, or if it was not part of any political research. Finally, Academic covered tweets concerning faculty research or promotion of faculty members but did not mention a political issue or event.

Tweets were also coded for political sentiment. Tweets that positively presented a liberal or Democratic speaker at a campus event, in relation to academic research, or a general positive mention of a liberal or Democratic politician or political group were coded as liberal. Tweets that positively presented a conservative or Republican speaker at a campus event, in relation to academic research, or a general positive mention of a conservative or Republican politician or political group were coded as conservative. Tweets were coded as pro-liberal if they positively mentioned a liberal or Democratic issue or speaker, or negatively mentioned a conservative or Republican issue or



speaker. Coding was based on previous research of issues and causes most likely to be supported by liberals/Democrats including suspicion of big business, permissiveness of drugs, belief the government can combat societal issues such as racism, pacifist in sentiment, support gun control, want increased government regulation on the environment including the issue of Climate Change, support increased immigration or show support for illegal immigrants, support abortion, want government intervention to reduce income inequality, support homosexuality, or promote racial, sexual, or religious diversity (Klein & Stern, 2005; Rothman et al., 2005; Zell & Bernstein, 2014). Tweets were coded as pro-conservative if they included a positive mention of conservative or Republican issues or speakers or a negative mention of a liberal or Democratic issues or speaker. Coding was based on research indicating conservatives are more supportive of capitalism over government intervention in the market, support gun ownership, favorable to the military and police, want restriction on immigration (Klein & Stern, 2005), or against abortion, labor unions, or government assistance programs (Zell & Bernstein, 2014). Any tweets where no mention of a politician or political issue were coded as neutral. Previous research on sentiment guided this examination (Sylwester & Purver, 2015).

In addition, as universities are seen as hostile to conservative Christians (Yancey, 2012), tweets were examined for positive or negative messages concerning any religious denomination or sect, and the specific religion was coded. The positive or negative tone was determined based on whether the tweet promoted a religious event or religious leader coded as positive as it showed support for the event or individual, or if the tweet was critical of a religion or religious leader coded as negative.

Finally, tweets were examined for number of retweets and favorites. A favorite indicates the tweet and message was liked by a follower of the university's account or someone who saw the tweet on their timeline after it has been retweeted or liked. Retweets were also coded. A retweet does not indicate support or disagreement with a tweet as a user could quote the tweet and include a message disagreeing with tweet. However, even if the quoted tweet did not support the message, the message was still promoted to additional members of the Twitter community who may not follow the university's account but develop an opinion about the university based on the tweet.

A co-coder who was not part of this investigation, co-coded a random sample of 10% ( $n = 107$ ) of the tweets using the same coding sheets and coding instructions. According to Lacy and Riffe (1996), using multiple coders to analyze a sample of the overall population helps ensure results do not reflect the bias of any one coder or researcher. The sample was co-coded and tested for intercoder agreement using the Cohen's kappa statistic. The 107 tweet sample meets the standard 10% subsample (Lombard et al., 2002). Testing for intercoder agreement yielded a result of  $k = 0.823$  for political sentiment in the co-coded sample. According to previous research (Landis & Koch, 1977) this demonstrates substantial agreement between the two coders.

Data analysis was conducted with SPSS and GraphPad.

#### 4. Results

To address the research questions, 1,069 tweets were collected from 50 universities sampled during the constructed week. The number of tweets from all universities ranged from 52 from Harvard University to two tweets from the University of South Dakota and Ashland University ( $M = 21.4$ ). Elite universities tweeted 651 times ( $M = 26.04$ ) and lower ranked universities tweeted 418 times ( $M = 16.72$ ). Tweets by elite universities on average received 15.05 retweets and 27.63 favorites. Tweets by lower ranked universities on average received 13.19 retweets and 20.29 favorites. Some tweets greatly impacted these averages such as a tweet from Notre Dame on Memorial Day which included the hashtag #GodCountryNotreDame and received 244 retweets and 503 favorites at the time of the data collection (Notre Dame, 2016).

Each tweet was coded into one of six categories: Administration, Athletic, Event, Student, Political, and Academic (See Table 1). Only 21 total tweets from elite and lower ranked universities were coded as Political. An example of a tweet from an elite university coded as Political and with a

**Table 1. Tweet categories for elite and lower ranked universities**

Universities	Admin	Athletic	Event	Student	Political	Academic	Total
Elite	169 (26.0%)	21 (3.2%)	141 (21.7%)	74 (11.4%)	20 (3.1%)	226 (34.7%)	651
Lower ranked	250 (59.8%)	19 (4.5%)	88 (21.1%)	43 (10.3%)	1 (0.2%)	17 (4.1%)	418

pro-liberal sentiment was from Columbia University which linked to an article written by Lee C. Bollinger, the president of Columbia University, and called for increased diversity on college campuses through affirmative action (Columbia University, 2016).

Each tweet was coded for political orientation and if the tweet was neutral, favored liberal/Democrat politicians or issues, or if it favored conservative/Republican politicians or issues (See Table 2). An example of a tweet coded as Political and pro-liberal from ninth ranked University of Pennsylvania linked to an article to debunk false claims on Climate Change (University of Pennsylvania, 2016). A tweet coded as Student and pro-Conservative from Pace University, ranked 180th along with four other universities, mentioned a United States Marine Corps veteran who was attending Pace (Pace University, 2016).

For elite universities, tweets coded as liberal occurred most often as Academic tweets, and tweets coded as conservative occurred most often as Event tweets (See Table 3). An example of a tweet coded as Event and pro-conservative from Stanford included a video of former US Secretary of State Condoleezza Rice speaking at the university on international issues (Stanford University, 2016). A tweet coded as Academic and pro-liberal from eighth ranked Duke University included a sound file from Duke Professor Joseph Winters critiquing the rhetoric of then presidential candidate Donald Trump (Duke University, 2016).

For lower ranked universities, tweets coded as liberal occurred most often as Event tweets, and tweets coded as conservative occurred most often as Administrative tweets (See Table 4). For example, University of Missouri—Kansas City had five tweets coded as Event and pro-liberal for a talk

**Table 2. Tweets based on political sentiment**

Universities	Neutral	Pro-liberal	Pro-conservative	Total
Elite	534 (82.0%)	87 (13.4%)	30 (4.6%)	651
Lower ranked	353 (84.4%)	35 (8.4%)	30 (7.2%)	418

**Table 3. Tweets by category and sentiment for elite universities**

	Administrative	Athletic	Event	Students	Political	Academic	Total
Pro-liberal	9 (10.3%)	1 (1.1%)	23 (26.4%)	4 (4.6%)	14 (16.1%)	36 (41.4%)	87
Neutral	150 (28.1%)	20 (3.7%)	105 (19.7%)	68 (12.7%)	6 (1.1%)	185 (34.6%)	534
Pro-conservative	10 (33.3%)	0 (0%)	13 (43.3%)	2 (6.7%)	0 (0%)	5 (16.7%)	30

**Table 4. Tweets by category and sentiment for lower ranked universities**

	Administrative	Athletic	Event	Students	Political	Academic	Total
Pro-liberal	6 (17.1%)	1 (2.9%)	21 (60%)	4 (11.4%)	1 (2.9%)	2 (5.7%)	35
Neutral	224 (63.5%)	17 (4.8%)	62 (17.6%)	37 (10.5%)	0 (0%)	13 (3.7)	353
Pro-conservative	20 (66.7%)	1 (3.3%)	5 (16.7%)	2 (6.7%)	0 (0%)	2 (6.7%)	30

given by Voto Latino President Maria Teresa Kumar one of which included the hashtags #CesarChavez and #UMKCdiversity (University of Missouri – Kansas City, 2016). An example of a tweet coded as Administrative and pro-conservative from the University of North Carolina at Greensboro promoted the opportunity for students to build relationships with the police (University of North Carolina at Greensboro, 2016).

Tweets were then examined for religious sentiment. Tweets were first examined to determine if the mentioned any religion and then if the sentiment expressed was positive or negative (see Table 5).

Elite and lower ranked universities were coded as having tweeted more positive tweets about religion than negative tweets, but the religious denominations varied (See Tables 6 and 7).

Elite universities made 10 overall positive tweets concerning religion, however three were pro-Jewish, one was supportive of all religions, two were supportive of Hinduism, one showed support for African-American churches, and three were pro-Catholicism with two of the pro-Catholicism tweets from Notre Dame. Among lower ranked universities, of the seven tweets coded as positive, three showed support for 7th Day Adventists, one supported the coexistence of all religions, one was for an interfaith meeting, one was supportive of Catholicism, and one was supportive of Christianity. A tweet coded as Administrative and pro-religion from 187th ranked University of Nevada—Reno announced a partnership between the school and Catholic Charities of Northern Nevada to provide food to low-income families (University of Nevada – Reno, 2016).

Among the elite universities, two tweets were coded as negative toward Christianity and one tweet was coded as negative toward Catholicism. Among lower ranked universities, the one negative religious tweet was directed at Mormonism. Only tweets mentioning Christian and Catholic religious denominations were coded as negative from any universities. For example, a tweet from 20th ranked UC Berkeley coded as Academic linked to a story on a Berkley anthropology professor critical of the Catholic Church (UC Berkeley, 2016).

During the period of analysis, 20 of the 25 elite universities had an account verified by Twitter, while only 7 of the universities ranked between 175 and 200 had verified accounts. This indicates a preference by an outside vendor for elite universities.

**Table 5. Tweets based on religious sentiment**

Universities	Positive	Negative	None	Total
Elite	10 (1.5%)	3 (0.5%)	638 (98.0%)	651
Lower ranked	7 (1.7%)	1 (0.2%)	410 (98.1%)	418

**Table 6. Tweets based on religious sentiment of Christian and Catholic denominations**

Universities	Positive	Negative	None	Total
Elite	5 (0.8%)	3 (0.5%)	643 (98.8%)	651
Lower Ranked	7 (1.7%)	1 (0.2%)	410 (98.1%)	418

**Table 7. Tweets based on religious sentiment of non-Christian religions**

Universities	Positive	Negative	None	Total
Elite	4 (0.6%)	0 (0.0%)	647 (99.4%)	651
Lower Ranked	0 (0.0%)	0 (0.0%)	418 (100.0%)	418

#### 4.1. RQ1A

Research Question 1A asked if elite universities promoted more Democratic/liberal issues and speakers than Republican/conservative issues on Twitter. Of the 651 tweets from elite universities, 87 were coded as pro-Liberal and 30 were coded as pro-Conservative for a total of 117 tweets coded as containing a non-neutral message. A binomial test indicated that the proportion of tweets supporting Democratic/liberal issues and speakers of 0.76 was higher than the expected 0.5,  $p < 0.01$  (1-sided). Results indicate elite universities were more likely to tweet pro-Liberal messages than pro-Conservative messages.

#### 4.2. RQ1B

Research Question 1B asked if elite universities promoted more Democratic/liberal issues and speakers than lower ranked universities. Of the 418 tweets from lower ranked universities, 35 were coded as pro-Liberal and 30 were coded as pro-Conservative for a total of 65 tweets coded as containing a non-neutral message. A chi-square test was performed to examine the relationship between universities and Twitter political sentiment. The relation between these variables was significant,  $X^2(2, N = 1069) = 8.728, p = 0.013$ . Elite universities were more likely to post tweets supporting Democratic/liberal issues and speakers than lower ranked universities.

#### 4.3. RQ1C

Research Question 1C asked if lower ranked universities promoted more Republican/conservative issues and speakers than Democratic/liberal issues. A binomial test indicated that the proportion of tweets supporting Republican/conservative issues and speakers of 0.46 was lower than the expected 0.5,  $p = 0.31$  (1-sided). Thus, results indicate lower ranked universities were not more likely to tweet pro-Conservative messages than pro-Liberal messages.

#### 4.4. RQ2A

Research Question 2A asked if elite universities promoted more non-Christian events/research than Christian events/research. Of the 651 tweets from elite universities, 10 were coded as pro-Religion and three were coded as negative toward religion for a total of 13 tweets. Among the 10 pro-religion tweets, five were non-Christian or Catholic, and five were positive toward Christianity, Catholicism, or all religions which includes Christianity. The three negative tweets included two toward Christianity and one toward Catholicism. When the three negative tweets were balanced out with the 10 positive tweets, five positive non-Christian tweets remain along with two positive Christian or all religions tweets. A binomial test indicated that the proportion of tweets supporting non-Christian events and research of 0.71 was higher than the expected 0.5, but not significant  $p = 0.23$  (1-sided). Results did not show elite universities were statistically more likely to promote non-Christian events and research over Christian events and research.

#### 4.5. RQ2B

Research Question 2B asked if lower ranked universities promoted more religious events/research than elite universities. A chi-square test was attempted to examine the relationship between the two groups of universities and religious sentiment expressed on Twitter but no relationship was found due to the insufficient number of observations to perform the test.

#### 4.6. RQ2C

Research Question 2C asked if lower ranked universities promote more Christian events/research than non-Christian events/research. Of the 418 tweets from lower ranked universities, seven were coded as pro-Religion and one was coded as negative toward religion for a total of eight tweets. Among the seven pro-religion tweets, four were positive toward Christian denominations, one for all religions which includes Christianity, one that included an interfaith message which would also include Christianity, and one about Catholicism. The one negative tweet concerned Mormonism and the play *The Book of Mormon*. No tweets from lower ranked universities specifically mentioned non-Christian religions. A binomial test indicated that the proportion of tweets supporting Christian or Catholic events and research of 0.875 was higher than the expected 0.5,  $p = 0.04$  (1-sided).

## 5. Discussion

Results to this study were mixed. In the sample, while elite universities did tweet more liberal messages than conservative messages (RQ1A) and elite universities were more likely to tweet liberal messages than lower ranked universities (RQ1B), lower ranked universities were not more likely to tweet more conservative messages than liberal messages (RQ1C). In fact, although not statistically significant, lower ranked universities were coded as having sent more liberal tweets ( $n = 35$ ) than conservative tweets ( $n = 30$ ). Results indicate that in their outward marketing through Twitter, when universities posted tweets containing political sentiments, elite universities and lower ranked universities were more likely promote liberal messages than conservative messages.

Overall, elite universities were more likely to promote liberal causes and Democrat politicians when they posted tweets that contained a political message. This is significant because elite universities often receive the most media attention including coverage of their scientific research, are awarded the most government funding (Huffington Post, 2013), are touted as the universities young people should want to attend (U.S. News & World Report, 2016), and graduates of elite universities often work at other elite universities (Langbert et al., 2016) or in high-ranking positions in government. For example, every U.S. President since George H. W. Bush attended an elite university as well as John F. Kennedy, Lyndon B. Johnson, Richard Nixon, and Gerald Ford. Elite universities also have influential Twitter accounts with many followers to spread their message. In July of 2017, the Harvard Twitter account had over 749,000 followers, the highest among elite universities, while West Virginia University had only around 150,000 followers, the highest among lower ranked universities, despite West Virginia having a higher enrollment than Harvard.

On religious sentiment, neither elite universities nor lower ranked universities tweeted very often with messages mentioning religion. Only 2% of elite university tweets contained any mention of religion, and only 1.9% of lower ranked universities tweets contained any mention of religion. The relatively few religious tweets prevented an examination of whether lower ranked universities promoted more religious events and research than elite universities (RQ2B). Elite universities were also not found to have statistically promoted more non-Christian events and research than Christian events and research (RQ2A). However, lower ranked universities were more likely to promote Christian and Catholic events and research than non-Christian events and research (RQ2C). But this result must be put into the context due to the small number of tweets from lower ranked universities mentioning religion positively or negatively ( $n = 8$ ). While the few tweets mentioning religion provided little to study statistically, anecdotally it should be noted many of the elite universities were founded as religious institutions to train Christian clergy. The growth of the modern American research university at the start of the twentieth century coincided with severing of ties between universities and the religious denominations that founded or supported them such as Harvard, Yale, Princeton, and Brown (Gross & Simmons, 2009). The secularization and de-Christianization of academia created an environment where Gross and Simmons (2009) argued the only way for science and research to advance was for universities to become independent of religion to pursue scientific inquiry which coincided with the study and proliferation of the works of Marx, Nietzsche, and Darwin (Gross & Simmons, 2009). Such works promoting communism, atheism, and evolution could be perceived negatively by conservatives and Christians. This points to an argument by Yancey (2012) that conservative Christian faculty perceive greater hostility at secular universities than politically conservative faculty. Religious belief is higher among Republican professors at 90% while lower among non-Republican academics at 46%, making the lack of Republican academics on college campuses even more significant for conservative Christians who tend to be political conservatives as well (Marsden, 2015).

### 5.1. Limitations

Only 21 of the 1,069 tweets coded contained religious sentiment. The small number prevented a deeper evaluation of religious messaging in the marketing at elite or lower ranked universities. The few tweets containing religious sentiment is surprising as some of the universities were at least at one time religious training schools such as Harvard or maintain strong religious connections such as

Notre Dame. However, no tweets from Harvard were coded as containing religious sentiment, while Notre Dame had only two tweets mentioning religion with both coded as positive toward Catholicism. In fact, 15 elite universities and 19 lower ranked universities posted zero tweets containing religious sentiment. Andrews University, tied for 175th highest ranked university, with an enrollment under 3,500 posted the most religious tweets with all three coded as positive. Andrews University however is a religious institution founded by members of the Seventh-day Adventists denomination. Despite the results, it is worth noting so few universities tweeted messages containing religious sentiment, particularly related to research, even though religion and a belief in God are important factors in human behavior and interaction worthy of being examined in academic research (Gross & Simmons, 2009; Marsden, 2015).

Social media marketing is typically outside of the duties of faculty and administration, and instead it is university staff not responsible for teaching or research but for university communication, who post tweets and create marketing messages. While faculty may conduct research that is pro-liberal, or faculty and administrators may invite pro-liberal and non-Christian speakers to campus, ultimately the messages from the universities are posted by employees of the university responsible for marketing. Therefore, while at elite universities 36.5% of faculty identify as atheist or agnostic (Gross & Simmons, 2009; Marsden, 2015), and Democratic professors and administrators may outnumber Republican colleagues in some departments by as much as 11.5 to 1 (Langbert et al., 2016), the same may not be true of individuals at universities in charge of marketing and public relations. However, while research has not looked into the political ideologies of non-academic staff at universities, many elite universities are located in states that tend to vote Democratic and it is plausible that university and non-academic staff might favor more liberal messaging and ideology (Langbert et al., 2016). Yet, as marketing through social media like Twitter is seen as representative of the universities as official communication between the university and the public, all tweets would be seen as representing the views and ideology of the academic institution and its faculty and staff.

About 1,069 tweets coded during a constructed week only provide a glimpse into any potential pro-liberal and anti-Christian sentiment in academia. Computer programs exist that measure political sentiment in tweets and could examine a larger sample, but would be unable to recognize the promotion of liberal or conservative ideology from the tweet alone, as only human coders would be able to determine any bias in tweets that linked to pages outside of Twitter or based on individuals and organizations mentioned. For example, a 2 March 2016 tweet from Columbia University on Zika outbreaks in Latin America linked to an article from Columbia University's Mailman School of Public Health advocating contraception and abortion as a means of combating Zika (Columbia University, 2016). Thus, not using human coders would have limited the ability to fully examine such messages.

Finally, pro-military tweets were coded as pro-conservative but one of the days in the constructed week included 30 May 2016, Memorial Day. As an example, a 30 May 2016 tweet from the University of South Dakota read "Honoring all who served" and included an image of American flags with the caption, "Honor—Remember Memorial Day 2016" (University of South Dakota, 2016). Elite universities made 21 tweets coded as pro-conservative on Memorial Day, while lower ranked universities made 14 tweets coded as pro-conservative on Memorial Day. While including these tweets would not have impacted the results to RQ1, when removed, elite universities made 87 pro-liberal tweets and 9 pro-conservative tweets, while lower ranked universities made 35 pro-liberal tweets and 16 pro-conservative tweets, giving lower ranked universities more overall pro-conservative tweets than elite universities despite tweeting 233 less times.

## 5.2. Future research

Future studies could include content analysis of Twitter accounts for university presidents and faculty for religious and political sentiment. Faculty from different departments could also be studied as previous research indicates faculty from the social sciences and humanities are more liberal than their peers in other departments (Langbert et al., 2016; Yancey, 2012). Faculty and university

accounts could also be examined during an election to investigate which parties and candidates receive more positive or negative mentions and support. Additional social media accounts could also be examined. While not searchable like Twitter, university Facebook, Instagram, YouTube, and Snapchat accounts could be examined using similar methods to those in this study.

## 6. Conclusions

Science is viewed as the means to solve and explain serious and complicated problems. Issues like Climate Change, Creation, health care, and vaccines are too complicated for the average person to investigate. This requires scientists to evaluate mankind's most pressing questions. But this in turn also requires mankind to trust those answers and the scientists who discover them. Without trust there is no credibility and a lack of trust leads to the pseudoscience of anti-vaxers and Intelligent Design, Climate Change deniers, and anti-science advocates. Scientists and academics must be free of the political polarization that has gridlocked government and created an environment of inaction. When issues are difficult to understand, truth is evaluated by the credibility of those delivering it and not its merit alone. Science and academia must rise above the polarization of politics and be seen as neutral to maintain public trust and credibility.

When academia is seen by large groups of people as biased and partisan, trust in institutions of higher learning falters (Pew Research Center U.S. Politics & Policy, 2017), and with it, trust in science. Previous research has shown academics are overwhelmingly liberal (Klein et al., 2004; Rothman et al., 2005; Zipp & Fenwick, 2006) potentially limiting their credibility among political and Christian conservatives and Republicans, even if this erosion is exacerbated by conservative critics. This study however suggests the issue may be deeper than the academics themselves, and instead the academic institutions and their outward marketing may also be partially to blame. The 2017 report by the Pew Research Center U.S. Politics and Policy (2017) and Zipp and Fenwick (2006) support this supposition as a majority of Republicans believe colleges and universities have a negative effect on the country potentially due to a belief that these institutions and faculty are unduly influenced by political partisanship rather than the pure pursuit of science.

A perceived institutional liberal bias is potentially more harmful than an academic liberal bias among faculty. If political and Christian conservatives and Republicans see academic institutions as biased, pro-liberal, and anti-Christian, this could impact how they view the science produced at these universities, the faculty, and graduates. The negative views could expand beyond the institutions and science, and into interpersonal relationships leading to mistrust and division. This possibility is not entirely farfetched (Pew Research Center U.S. Politics & Policy, 2017). During the 2016 Presidential Campaign, Senator Marco Rubio of Florida referred to liberal arts colleges as "indoctrination camps" of liberal professors teaching young people liberal ideology (Barbaro, 2015). Such a sentiment stated publicly has the potential to further jade individuals against the institutions already perceived as biased. Senator Rubio did not attend an elite university, but did attend a community college, and earned a Bachelor of Arts and a law degree from two universities not ranked in the top 25.

On the issue of liberal bias in academia, perception matters and explains why anecdotal evidence is so persuasive. But political and Christian conservative and Republican views of academia won't change if universities simply tweet more conservative or Christian messages. Political and Christian conservatives and Republicans will not trust science more based on a few tweets. To change their negative view of academia and science, colleges and universities, and specifically elite institutions, must become a true marketplace of ideas where conservative voices are heard among faculty, students, and in the media, to counter the persuasive narrative from Republican politicians and conservative news outlets that universities are liberal indoctrination camps.

Academia must therefore embrace diversity, but a diversity beyond its current incarnation to include ideological diversity (Duarte et al., 2015; Redding, 2012). Universities must recognize the value of ideological diversity of thought to enhance creativity, discovery and problem solving with research

that examines conservative political thought and governance, and a neutral view of the influence of God on human behavior (Duarte et al., 2015). An increased and visible ideological diversity would also be the best weapon against critics arguing academia, and science, have a bias against political conservatives and conservative Christians.

At the same time, while public universities should not proselytize religion, they should also not proselytize secularism, or even worse, attitudes negative toward any religion. A true marketplace of ideas allows all voices to be heard for debate, without ridicule, so as to achieve truth—the goal of science. Leaving voices out of this debate, or marginalizing any such views, is the antithesis of science and not worthy of academia and potentially dangerous for all of us.

#### Funding

The author received no direct funding for this research.

#### Author details

Andrew G. Selepak<sup>1</sup>

E-mail: [aselepak@ufl.edu](mailto:aselepak@ufl.edu)

ORCID ID: <http://orcid.org/0000-0002-5228-3669>

<sup>1</sup> Department of Telecommunication, University of Florida, Gainesville, FL, USA.

#### Citation information

Cite this article as: Exploring anti-science attitudes among political and Christian conservatives through an examination of American universities on Twitter, Andrew G. Selepak, *Cogent Social Sciences* (2018), 4: 1462134.

#### References

- Barbaro, M. (2015, December 31). *Chris Christie's punch lines vs. Marco Rubio's Polish on Iowa Campaign Trail*. Retrieved from <https://www.nytimes.com/2016/01/01/us/politics/chris-christie-marco-rubio-iowa-campaign.html>
- Columbia University. (2016, March 2). *Will the #Zika outbreak lead to broader reproductive rights in Latin America? Activists hope so*: <http://bit.ly/1QJwLSC#ZikaScience> Retrieved from <https://twitter.com/Columbia/status/705157035877392388>
- Columbia University. (2016, April 12). *President Bollinger: Past #SCOTUS decisions on affirmative action were made with reason divorced from reality*. Retrieved from <http://ow.ly/10AAAb5>, <https://twitter.com/Columbia/status/719971313490731008>
- Dahlgren, R. L. (2009). The myth of academic bias. *Theory & Research in Social Education*, 37(3), 406–411. <https://doi.org/10.1080/00933104.2009.10473403>
- Duarte, J. L., Crawford, J. T., Stern, C., Haidt, J., Jussim, L., & Tetlock, P. E. (2015). Political diversity will improve social psychological science. *Behavioral and Brain Sciences*, 38, e130.
- Duke University. (2016, April 12). *LISTEN: Trump is "saying things in public that often people say in private spaces," says @DukeU's Joseph Winters*. Retrieved from <https://twitter.com/DukeU/status/719965941933744128>
- Fox News Insider. (2016, December 14). *O'Reilly: How to oppose the "totalitarian left" on college campuses*. Retrieved from <http://insider.foxnews.com/2016/12/14/bill-oreilly-talking-points-memo-far-left-college-professors-campus>
- Gross, N., & Simmons, S. (2009). The religiosity of American college and university professors. *Sociology of Religion*, 70(2), 101–129. <https://doi.org/10.1093/socrel/srp026>
- Haidt, J. (2016). Why concepts creep to the left. *Psychological Inquiry*, 27(1), 40–45. <https://doi.org/10.1080/1047840X.2016.1115713>
- Hebel, S. (2004). Patrolling professors' politics. *Chronicle of Higher Education*, 50(23), A18–A19.
- Hester, J. B., & Dougall, E. (2007). The efficiency of constructed week sampling for content analysis of online news. *Journalism & Mass Communication Quarterly*, 84(4), 811–824. <https://doi.org/10.1177/107769900708400410>
- Huffington Post. (2013, April 29). *10 universities that receive the most government money: 24/7 Wall St*. Retrieved from [http://www.huffingtonpost.com/2013/04/27/universities-government-money\\_n\\_3165186.html](http://www.huffingtonpost.com/2013/04/27/universities-government-money_n_3165186.html)
- Inbar, Y., & Lammers, J. (2012). Political diversity in social and personality psychology. *Perspectives on Psychological Science*, 7(5), 496–503. <https://doi.org/10.1177/1745691612448792>
- Iyengar, S., & Westwood, S. J. (2015). Fear and loathing across party lines: New evidence on group polarization. *American Journal of Political Science*, 59(3), 690–707. <https://doi.org/10.1111/ajps.12152>
- Jacoby, R. (2016, April 1). *Academe is overrun by liberals. So what?* The Chronicle of Higher Education. Retrieved from <http://www.chronicle.com/article/Academe-Is-Overrun-by/235898>
- Kelly-Woessner, A., & Woessner, M. C. (2006). My professor is a partisan hack: How perceptions of a professor's political views affect student course evaluations. *PS: Political Science & Politics*, 39(3), 495–501. <https://doi.org/10.1017/S104909650606080X>
- Klein, D. B., & Stern, C. (2005). Professors and their politics: The policy views of social scientists. *Critical Review*, 17(3–4), 257–303. <https://doi.org/10.1080/08913810508443640>
- Klein, D. B., & Stern, C. (2009). By the numbers: The ideological profile of professors. In R. Maranto, R. E. Redding, & F. M. Hess (Eds.), *The politically correct university: Problems, scope, and reforms* (pp. 15–37). Washington, DC: The AEI Press.
- Klein, D. B., Stern, C., & Western, A. (2004). Documenting the one-party campus. *Academic Questions*, 18(1), 5.
- Lacy, S., & Riffe, D. (1996). Sampling error and selecting intercoder reliability samples for nominal content categories. *Journalism & Mass Communication Quarterly*, 73, 963–973. <https://doi.org/10.1177/107769909607300414>
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159–174. <https://doi.org/10.2307/2529310>
- Langbert, M., Quain, A. J., & Klein, D. B. (2016). Faculty voter registration in economics, history, journalism, law, and psychology. *Econ Journal Watch*, 13(3), 422–451.
- Lansdall-Welfare, T., Lampos, V., & Cristianini, N. (2012, April). Effects of the recession on public mood in the UK. In *Proceedings of the 21st International Conference on World Wide Web* (pp. 1221–1226). ACM.
- Lombard, M., Snyder-Duch, J., & Bracken, C. (2002). Content analysis in mass communication: assessment and reporting of intercoder reliability. *Human Communication Research*, 28(4), 587–604. <https://doi.org/10.1111/hcre.2002.28.issue-4>
- The Mark Levin Show. (2017, February 16). *Daily Recap*. Retrieved from <http://www.marklevinshow.com/2017/02/16/february-16-2017/>



- Maranto, R., Redding, R. E., & Hess, F. M. (2009). The PC academy debate: Questions not asked. In R. Maranto, R. E. Redding, & F. M. Hess (Eds.), *The politically correct university: Problems, scope, and reforms* (pp. 3–14). Washington, DC: The AEI Press.
- Maranto, R., & Woessner, M. (2012). Diversifying the academy: How conservative academics can thrive in liberal academia. *PS. Political Science & Politics*, 45(03), 469–474. <https://doi.org/10.1017/S1049096512000352>
- Marsden, G. M. (2015). *Religious discrimination in academia. Society*, 52(1), 19–22.
- Moreno, J. D. (2011). The body politic: An introduction. *Theoretical and Applied Ethics*, 1(2), 13–22.
- Notre Dame. (2016, May 30). *Today, we remember the men and women who made the ultimate sacrifice serving our country. #GodCountryNotreDame*. Retrieved from <https://twitter.com/NotreDame/status/737267404682629122>
- Pace University. (2016, April 12). @USMC vet & #PaceU student Matt Mainzer talks about his experiences in the field and in the classroom. Retrieved from <http://bit.ly/23BbqtW>, <https://twitter.com/PaceUniversity/status/719901642641027072>
- Pew Research Center U.S. Politics and Policy. (2015, April 7). *A deep dive into party affiliation: Sharp differences by race, gender, generation, education*. Retrieved from <http://www.people-press.org/2015/04/07/a-deep-dive-into-party-affiliation/>
- Pew Research Center U.S. Politics and Policy. (2017, July 10). *Sharp partisan divisions in views of national institutions*. Retrieved from <http://www.people-press.org/2017/07/10/sharp-partisan-divisions-in-views-of-national-institutions/>
- Redding, R. E. (2012). Likes attract: The sociopolitical groupthink of (social) psychologists. *Perspectives on Psychological Science*, 7(5), 512–515. <https://doi.org/10.1177/1745691612455206>
- Rothman, S., Lichter, S. R., & Nevitte, N. (2005). Politics and professional advancement among college faculty. *The Forum*, 3(1), 1–16.
- Stanford University. (2016, March 2). @CondoleezzaRice: *Recognize that international issues are complex. Spend time with people who don't agree with you*. Retrieved from <https://twitter.com/Stanford/status/704896170196205568>
- Sylwester, K., & Purver, M. (2015). Twitter language use reflects psychological differences between democrats and republicans. *PLoS One*, 10(9), e0137422. <https://doi.org/10.1371/journal.pone.0137422>
- UC Berkeley. (2016, February 14). *Pope Francis gives disenchanting #Catholic anthropologist hope*. Retrieved from <https://twitter.com/UCBerkeley/status/699066652726583296>
- University of Missouri – Kansas City. (2016, April 12). *In the spirit of #CesarChavez, @mariateresa1 tells us: "We don't want our past to eat up our future". #UMKCdiversity*. Retrieved from <https://twitter.com/UMKansasCity/status/720029806910435329>
- University of Nevada – Reno. (2016, February 16). *New hoop houses to provide fresh produce year-round to low-income families. #UCReno*. Retrieved from <https://twitter.com/unevadareno/status/702948621344329728>
- University of North Carolina at Greensboro. (2016, April 12). *Students have an opportunity to build relationships with @UNCGPolice at this April 19 workshop*. Retrieved from <https://twitter.com/UNCG/status/719934365304639489>
- University of Pennsylvania. (2016, February 14). *Following the U.N. historic climate pact, @SciCheck separated truth from fiction in 2015 global warming claims*. <http://bit.ly/20J5Dkp> Retrieved from: <https://twitter.com/Penn/status/698885658786402305>
- University of South Dakota. (2016, May 30). *Honoring all who served*. Retrieved from <https://twitter.com/usd/status/737253344612220929>
- U.S. News and World Report. (2016). *National University Rankings*. Retrieved from <http://colleges.usnews.rankingsandreviews.com/best-colleges/rankings/national-universities/data>
- Yancey, G. (2012). Recalibrating academic bias. *Academic Questions*, 25, 267–278. <https://doi.org/10.1007/s12129-012-9282-y>
- Zell, E., & Bernstein, M. J. (2014). You may think you're right? Young adults are more liberal than they realize. *Social Psychological and Personality Science*, 5(3), 326–333.
- Zipp, J. F., & Fenwick, R. (2006). Is the academy a liberal hegemony?: The political orientations and educational values of professors. *Public Opinion Quarterly*, 70(3), 304–326. <https://doi.org/10.1093/poq/nfj009>



© 2018 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format

Adapt — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

