SOCIAL MEDIA USAGE AND TROLLING: A LONGITUDINAL INVESTIGATION OF UNDERGRADUATE BUSINESS STUDENTS

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ABSTRACT

The rise of online social media participation and, in particular, its use as a source of news, has recently brought new light upon the problems associated with trolling. Because undergraduate business students will be the managers of social media in the near future, this two-year study was undertaken to empirically examine the trends relative to student trolling. Results demonstrate that although there are variances by social media provider, both the percentage of students being trolled and the quantity of trolling incidents per student are decreasing. In addition, both gender and minutes utilizing social media were correlated with the volume of trolls received. Males were more likely to be trolled and the more minutes that the student spent on social media, the more trolls he/she would receive. These findings suggest that although trolling may be trending down overall, there are opportunities for improvement both with respect to students and social media providers.

INTRODUCTION

At the end of 2017, Facebook achieved the level of 2.13 billion monthly active users (Kirkpatrick, 2018). This is noteworthy given the January 2016 Pew Research Center survey of 4,654 U.S. adults that found 62% get news on social media (Gottfried and Shearer, 2016). In particular, 66% of Facebook users get news on the Facebook site, 59% of Twitter users get news on Twitter, and 70% of Reddit users get news on Reddit. Overall, 52% of site news viewers were male and 48% were female.

Unfortunately, this aspect of social media is seeing the effects of trolling. The Merriam-Webster dictionary defines trolling as "to antagonize (others) online by deliberately posting inflammatory, irrelevant, or offensive comments or other disruptive content" (2018). Trolls, those who commit these acts, may be classified into several types. There are insult trolls, persistent debate trolls, show-off trolls, profanity trolls, grammar trolls, and so on (Moreau, 2018).

Trolling has been problematic both internationally and domestically for the U.S. For example, over 200,000 tweets were reportedly made by Russian trolls to infiltrate the conversations of millions of U.S. citizens prior to the 2016 presidential election (Popken, 2018). In February 2018, a troll farm in St. Petersburg, Russia, known as the Internet Research Agency, was indicted by the U.S. government (Chen, 2018). The IRA was charged with creating fake social media accounts and groups during the 2016 election using fabricated U.S. identities. Through

these accounts, the IRA organized hostile political rallies in various U.S. cities, purchased antagonistic political ads, and posted derogatory information about presidential candidates. The IRA's goal was to interfere with the political opinions of U.S. voters via social media. In addition, a March 2018 report from the U.S. House of Representatives Science, Space and Technology Committee found that between 2015 and 2017, more than 9,000 posts and tweets dealt with U.S. energy policy were produced by 4,334 Facebook, Twitter, and Instagram accounts controlled by the same troll farm (Timberg and Romm, 2018).

Moreover, a December 2016 Pew Research Center survey of 1,002 U.S. adults found that 64% believe that fabricated news stories cause a great deal of confusion about the basic facts of current issues and events (Barthel, Mitchell and Holcomb, 2016). Often published with the simple click of "Tweet," the same news stories can also cost investors and companies millions of dollars, with hackers infiltrating social media accounts to post false narratives. For example, in 2013, a hacked post on the Associated Press' Twitter feed exclaimed that President Obama was injured in an explosion at the White House (Cheo, 2018). The U.S. stock market responded with a $130 billion loss, which was subsequently recovered. In another instance, on January 29, 2013, messages were posted to Twitter falsely stating that the Department of Justice was investigating the computer hardware manufacturer Audience, Inc. (Melendez, 2013). Shortly thereafter, the company's stock value dropped by more than 25%. Similarly, two days later, faked tweets about a pharmaceutical company coincided with a sudden 9% drop in its value.

Interestingly, an Omnibus survey found that although only 45% of U.S. adults have heard of the term "troll," 28% admitted to malicious online activity directed at someone that he/she did not know (Gammon, 2014). Of those who have ever posted content, 23% acknowledge to having maliciously argued over an opinion with a stranger and 23% maliciously argued over facts. Overall, males were more likely to get into a malicious argument than females and millennials were twice as likely as those aged 55+ to engage in trolling behavior.

Twitter appears to be a popular vehicle for the troll. A study analyzing 134,000 offensive social media posts found that 88% occurred on Twitter, suggesting that it may be one of the worst social media platforms for online bullying and trolling (Fearn, 2017). Twitter, however, has been making adjustments. In 2017, Twitter updated the process for users to report abusive tweets, stopped the creation of new abusive accounts, implemented safer search results, collapsed abusive or low-quality tweets, and reduced notifications from conversations started by individuals that users have been blocked or muted (Ho, 2017). In addition, in April of 2018, Mark Zuckerberg, Chairman and CEO of Facebook, announced that 20,000 individuals will be working on security and content review at Facebook by the end of 2018 (Steinmetz, 2018).

However, individuals and organizations interested in using social media may be lacking in systematically assessing the vulnerabilities in social media technologies and development of a comprehensive set of best practices describing how to address those vulnerabilities (Chamales, 2013). As a result, this study was conducted to empirically examine the trends regarding the trolling of undergraduate business students, those individuals that will be using and managing social media upon his/her entrance into and during his/her career in the business world. This research was conducted to examine several questions. What are the primary social media sites utilized and are there trends? What is the incidence of trolling within each site both in terms of

the percent of students and volume of trolls? Is there a relationship between factors such as gender, academic class, and time spent on social networking relative to the volume of trolls received? Results are important given that business students are the future business professionals that will be entrusted in protecting organizational resources. Ultimately, these findings will be helpful in determining if students are adequately prepared to face these challenges when they enter the corporate workforce. Moreover, results may be useful for social media companies in better understanding their customers' behavior.

PREVIOUS RESEARCH

Previous research studies have examined the importance of social networking and the characteristics of online comments. In addition, researchers have conducted studies that relate to mood, empathy, and online video gaming.

As a baseline to better understand undergraduate business student online attitudes and behavior, the authors conducted an exploratory study. Results showed 65% of undergraduate business students felt that social networking is either somewhat or very important to them (Case and King, 2012). A much larger percentage of females versus males, 18% versus 12%, however, indicated that social networking is very important. Within each academic class, roughly one-half of the undergraduates indicated that social sites are somewhat important to them. Although 25% of freshmen indicated that social sites are very important to them, only 10% of seniors, however, felt that social networking is very important. In terms of behavior, nine of every 10 students indicated visiting social sites with freshmen spending 20.2 hours, sophomores spending 15.7 hours, juniors spending 10.6 hours, and seniors spending 15.4 hours each week visiting social sites. Facebook was used for an average of more than 2 hours per day or 15.3 hours per week per student. In terms of Twitter, students indicate spending 11.7 hours per week sending tweets (204 tweets per week) and 13.1 hours receiving tweets (554 per week).

Another study examined the characteristics of 40 million posts made by 1.7 million users of news (CNN.com), politics (Breitbart.com), and gaming (IGN.com) sites during a period of 18 months (Pullen, 2015). Users were classified as future-banned users (FBUs), also known as trolls, and never-banned-users (NBUs). Each FBU's behavior was monitored from the time he/she signed up until the time he/she was shut out. Results demonstrated that FBUs wrote differently than others, often going off-topic, scribbling posts that were more difficult to read, and making more comments. In addition, trolls made more comments per day, posted more times on each thread, often had the most posts in a particular thread, and made more replies to other comments. Longitudinally, although NBUs had posts deleted, only a small proportion got worse over the course of the study while the trolls, on the other hand, had an increasing amount of posts deleted as time wore on.

Interestingly, utilizing three methods of research, a team at Stanford University and Cornell University found that under the right conditions, just about anyone can become an Internet troll (Kubota, 2017). First, a two-part experiment utilizing tests with varying degrees of difficulty and subsequent commenting on an article found that 35% of individuals that completed the easy test and saw neutral posts subsequently posted troll comments of his/her own. This increased to 50%

if the subject either took the hard test or saw trolling comments and posting further increased to 68% for those exposed to both the difficult test and the troll posts. Second, an analysis of CNN's comment section discussions and posts indicated that time of day and day of week correspond with mood and trolling. Incidents tend to increase late at night and early in the week, which is also when individuals are most likely to be in a bad mood. Third, a machine-learning algorithm found that the flag status of the previous post in the discussion was the strongest predictor of whether the next post would be flagged. Mood-related features, such as timing and previous flagging of the commenter, were far less predictive.

March (2017), on the other hand, examined cognitive empathy, the ability to recognize and understand other individual's emotions, and affective empathy, the ability to experience and internalize other individual's emotions, with respect to trolling. Using a sample of 415 online participants, the relationships between both forms of empathy and common trolling behaviors (for example, "although some people think my posts/comments are offensive, I think they are funny") were assessed. Findings indicated that individuals who were more likely to troll had significantly lower levels of affective empathy and those with high levels of cognitive empathy and psychopathic traits were more likely to troll. Thus, for a troll, the high level of cognitive empathy indicates he/she is very good at understanding what hurts others and the high level of psychopathy means he/she simply does not care.

Finally, Thacker and Griffiths (2014) examined trolling in online video gaming. An online survey of 125 self-selected gamers found that trolls tended to play longer gaming sessions and that frequent trolls were significantly younger and male. The most common trolling types included griefing, sexism/racism, and faking/intentional fallacy. Moreover, the primary reasons for trolling included amusement, boredom, and revenge. With respect to self-esteem, witnessing trolling was positively associated and experiencing trolling was negatively associated. Finally, researchers found that experience with trolling was positively correlated with frequency of trolling.

RESEARCH DESIGN

This study employs a survey research design. The research was conducted at a private, northeastern U.S. university. A Student Internet Troll instrument was developed by the authors and administered to undergraduate students enrolled in a School of Business course. The courses included a variety of subjects such as Business Information Systems, Introduction to Financial Accounting, Introduction to Marketing, Macroeconomics, and Business Policy. A convenience sample of class sections and faculty members was selected. The surveys were collected each semester during a two-year, four-consecutive semester period (from Fall 2016 through Spring 2018) in academic classrooms. To ensure consistency, the same questions were asked during each of the semesters.

The survey instrument was utilized to collect student demographic data such as gender and academic class. In addition, the survey examined student Internet behavior regarding online social media sites. Students were asked to estimate the average number of minutes spent daily on fourteen social media sites and list any other social networking sites used by the student. Moreover, students were prompted to estimate the number of times that he/she had been trolled on

each site during the past six months. Results were summarized by social media site and correlations were calculated to determine potential relationships between study factors (i.e., gender, academic class, and social media usage minutes) and the quantity of trolling incidences.

Because of the sensitivity of the subject and to encourage honesty, no personally-identifiable data were collected and respondents were informed that surveys were anonymous, participation was voluntary, and responses would have no effect on his/her course grade. As a result, the response rate was nearly 100 percent.

RESULTS

A sample of 764 usable surveys was obtained. Table 1 indicates that 65% of the respondents were male and 35% were female. This 65/45 ratio has remained fairly consistent over the identified four-semester period.

Table 1. Gender Response Rate by Academic Semester

	Fall 2016	**Spring 2017**	**Fall 2017**	**Spring 2018**	**Total**
Male	64%	64%	66%	65%	65%
Female	36%	36%	34%	35%	35%
Count	238	205	171	150	764

The response rate by academic class is relatively equally distributed. Table 2 illustrates that 18% of respondents were freshmen, 31% were sophomores, 24% were juniors, and 27% were seniors.

Table 2. Academic Class Response Rate by Academic Semester

	Fall 2016	**Spring 2017**	**Fall 2017**	**Spring 2018**	**Total**
Freshmen	12%	30%	11%	20%	18%
Sophomore	35%	22%	27%	43%	31%
Junior	24%	24%	20%	25%	24%
Senior	29%	24%	42%	11%	27%

Responses were first examined with respect to the percentage of students using the various social media sites per semester. Although 14 sites were provided on the survey instrument, each respondent was prompted to list any "other" social media sites that he/she utilized. The "other" sites named included WhatsApp, Barstool, Wall Street Oasis, Tinder, Trello, and VSCO. Table 3 illustrates that in the Fall of 2016, 94% of students used Snapchat, 89% used Instagram, 82% used Facebook, 76% used Twitter, 67% used YouTube, 24% used LinkedIn, 20% used Pinterest, 10% used Google+, 6% used Reddit, 5% used YikYak, 3% used Tumblr, 3% used Other, 1% used 4chan, and zero students used 8chan or Voat. In terms of social media site utilization percentage of students by semester, four social media providers decreased. Snapchat decreased from 94% to 89% of students, Facebook decreased from 82% to 68% of students, Pinterest decreased from 20%

to 14% of students, and YikYak decreased from 5% to 1% of students. Nine social media sites increased in percentage of students. Instagram increased from 89% to 90% of students, Twitter increased from 76% to 78% of students, YouTube increased from 67% to 72% of students, LinkedIn increased from 24% to 35% of students, Google+ increased from 10% to 13% of students, Reddit increased from 6% to 9% of students, Tumblr increased from 3% to 7% of students, Other increased from 3% to 4% of students, and 4chan increased from 1% to 2% of students. Overall, nearly all respondents indicated using at least one social media site during each of the study semesters.

Table 3. Percent of Students Using Social Media by Semester

Social Media Site	Fall 2016	Spring 2017	Fall 2017	Spring 2018
Snapchat	94%	91%	94%	89%
Instagram	89%	84%	89%	90%
Facebook	82%	83%	78%	68%
Twitter	76%	73%	78%	78%
YouTube	67%	72%	73%	72%
LinkedIn	24%	35%	29%	35%
Pinterest	20%	20%	15%	14%
Google+	10%	13%	11%	13%
Reddit	6%	9%	9%	9%
Tumblr	3%	5%	4%	7%
YikYak	5%	3%	1%	1%
Other	3%	1%	4%	4%
4chan	1%	1%	1%	2%
8chan	0%	0%	0%	0%
Voat	0%	0%	0%	0%
Overall Average	100%	99%	100%	99%

Table 4 presents the volume of minutes per day that a student indicated he/she used each social media site for each of the study semesters. In the Fall of 2016, for example, users of each of the social media venues reported spending 42 minutes per day on Snapchat, 43 minutes on Instagram, 32 minutes on Facebook, 44 minutes on Twitter, 38 minutes on YouTube, 12 minutes on LinkedIn, 30 minutes on Pinterest, 24 minutes on Google+, 30 minutes on Reddit, 17 minutes on Tumblr, 10 minutes on YikYak, 36 minutes on Other, and 10 minutes on 4chan. By the Spring of 2018, the number of minutes per day on Snapchat increased by 20 minutes, Instagram increased by 7 minutes, Facebook decreased by 2 minutes, Twitter increased by 4 minutes, YouTube increased by 9 minutes, LinkedIn increased by 2 minutes, Pinterest decreased by 6 minutes, Google+ remained the same, Reddit increased by 1 minute, Tumblr increased by 1 minute, YikYak decreased by 10 minutes, Other increased by 55 minutes, and 4chan increased by 23 minutes. Overall, the average minutes per day increased from 176 minutes (nearly 3 hours) to 210 minutes (3.5 hours), an increase of 19%.

Table 4. Minutes Per Day Utilizing Social Media by Semester

Social Media Site	Fall 2016	Spring 2017	Fall 2017	Spring 2018
Snapchat	42	50	50	62
Instagram	43	40	42	50
Facebook	32	37	26	30
Twitter	44	44	41	48
YouTube	38	47	39	47
LinkedIn	12	10	9	14
Pinterest	30	22	18	24
Google+	24	35	31	24
Reddit	30	30	42	31
Tumblr	17	16	10	18
YikYak	10	21	0	0
Other	36	40	56	91
4chan	10	60	100	33
8chan	0	0	0	0
Voat	0	0	0	0
Overall Average	176	190	177	210

Next, the percentage of students receiving trolls at each social media site was examined by semester (Table 5). In the Fall of 2016, the highest percentage of site users being trolled included YikYak (42% of users) and Twitter (31% of users). Lesser trolled sites included Instagram (19% of users), Facebook (14% of users), other (14% of users), and Snapchat (13% of users). The least trolled users included YouTube (7% of users), Reddit (7% of users), Google+ (4% of users), and LinkedIn (2% of users). All other users reported not being trolled. By Spring of 2018, Snapchat increased to 18%, Instagram decreased to 15%, Facebook decreased to 13%, Twitter decreased to 27%, YouTube decreased to 5%, LinkedIn decreased to 0%, Pinterest remained the same, Google+ decreased to 0%, Reddit increased to 15%, Tumblr remained the same, YikYak increased to 100%, Other increased to 17%, 4chan remained the same, 8chan remained the same, and Voat remained the same. Overall, the average of students receiving any troll decreased from 41% to 35% of students.

Table 5. Percent of Students Trolled by Semester

Social Media Site	Fall 2016	Spring 2017	Fall 2017	Spring 2018
Snapchat	13%	13%	16%	18%
Instagram	19%	14%	16%	15%
Facebook	14%	15%	17%	13%
Twitter	31%	23%	23%	27%
YouTube	7%	3%	3%	5%
LinkedIn	2%	4%	4%	0%
Pinterest	0%	8%	8%	0%
Google+	4%	8%	6%	0%
Reddit	7%	21%	19%	15%
Tumblr	0%	10%	14%	0%
YikYak	42%	67%	0%	100%
Other	14%	100%	0%	17%
4chan	0%	100%	100%	0%
8chan	0%	0%	0%	0%
Voat	0%	0%	0%	0%
Overall Average	41%	33%	35%	35%

The quantity of trolls received for only those individuals that were trolled is presented in Table 6. In Fall of 2016, the social media sites that individuals were most actively trolled included Snapchat (5.8 incidences per user during the semester), Instagram (5.8 incidences per user during the semester), Facebook (5.7 incidences per user during the semester), YouTube (5.4 incidences per user during the semester), Twitter (5.3 incidences per user during the semester), and Reddit (5.0 incidences per user during the semester). The lesser trolled sites included YikYak (3.2 incidences per user during the semester), Google+ (2.0 incidences per user during the semester), LinkedIn (1.0 incidences per user during the semester), and Other (1.0 incidences per user during the semester). There were no incidences for users of Pinterest, Tumbler, 4chan, 8chan, and Voat. By Spring of 2018, Snapchat increased to 15.2, Instagram increased to 8.4, Facebook decreased to 3.6, Twitter decreased to 5.2, YouTube increased to 8.4, LinkedIn decreased to 0, Pinterest remained the same, Google+ decreased to 0, Reddit increased to 26.0, Tumblr remained the same, YikYak increased to 5.0, Other increased to 10, 4chan remained the same, 8chan remained the same, and Voat remained the same. Overall, the number of incidences per student decreased from 19.9 to 16.7 during the study period.

Table 6. Quantity of Trolls for Only Students Trolled by Semester

Social Media Site	Fall 2016	Spring 2017	Fall 2017	Spring 2018
Snapchat	5.8	10.0	5.7	15.2
Instagram	5.8	6.3	4.8	8.4
Facebook	5.7	12.6	3.2	3.6
Twitter	5.3	8.6	6.8	5.2
YouTube	5.4	24.6	2.3	8.4
LinkedIn	1.0	3.7	10.5	0.0
Pinterest	0.0	18.0	3.5	0.0
Google+	2.0	5.0	3.0	0.0
Reddit	5.0	3.0	36.0	26.0
Tumblr	0.0	0.0	5.0	0.0
YikYak	3.2	25.5	0.0	5.0
Other	1.0	33.7	0.0	10.0
4chan	0.0	50.0	100.0	0.0
8chan	0.0	0.0	0.0	0.0
Voat	0.0	0.0	0.0	0.0
Overall Average	19.9	24.7	13.6	16.7

Finally, Spearman Rho correlations were calculated to determine if there are correlations between study factors (gender, academic class, and social media usage minutes) and the quantity of troll that each student received. As indicated in Table 7, gender and user minutes spent using social media each had a statistically significant correlation (significant at the .01 level) to the quantity of trolls that one receives. In other words, males were more likely to receive trolls and the more time spent on social media increased the likelihood of being trolled. There was no significant correlation regarding academic class and trolling volume.

Table 7. Spearman Rho Correlations Between Study Variables and Troll Volume Per Student

Study Factor	Troll Volume
Gender	.140**
Academic Class	-.015
Minutes Using Social Media	.110**

* Correlation is significant at .05 level (2-tailed).

** Correlation is significant at .01 level (2-tailed).

CONCLUSIONS, IMPLICATIONS, AND LIMITATIONS

Results illustrate that for every semester of the study, there are five sites that are used by most students. These include Snapchat (89-94% of students per semester), Instagram (84-90% of students per semester), Facebook (68-82% of students per semester), Twitter (73-78% of students per semester), and YouTube (67-73% of students per semester). LinkedIn and Pinterest are used by considerably less students, 24-35% per semester and 14-20% per semester, respectively. The remaining sites were not commonly used by undergraduates. The least utilized social media sites

are Google+ (10-13% of students per semester), Reddit (6-9% of students per semester), Tumblr (3-7% of students per semester), YikYak (1-5% of students per semester), Other (1-4% of student per semester s), 4chan (1-2% of students per semester), 8chan (0% of students per semester), and Voat (0% of student per semester). Overall, the percentage of students using social media each semester was between 99-100% of students.

The time spent using social media was relatively consistent among social media platforms. However, minutes per day varied by semester for Snapchat (42-62 minutes), Instagram (40-50 minutes), Facebook (26-37 minutes), Twitter (41-48 minutes), YouTube (38-47 minutes), LinkedIn (9-14 minutes), Pinterest (18-30 minutes), Google+ (24-35 minutes), Reddit (30-42 minutes), Tumblr (10-18 minutes), YikYak (0-21 minutes), Other (36-91 minutes), and 4 chan (10-100 minutes). Overall, the average minutes per day increased from 176 minutes to 210 minutes from Fall 2016 to Spring 2018.

An examination of trolling finds that in terms of the percent of students that were trolled, Snapchat had 13-18% of users per semester trolled, Instagram had 14-19% of users per semester trolled, Facebook had 13-17% of users per semester trolled, Twitter had 23-31% of users per semester trolled, YouTube had 3-7% of users per semester trolled, LinkedIn had 0-4% of users per semester trolled, Pinterest had 0-8% of users per semester trolled, Google+ had 0-8% of users per semester trolled, Reddit had 7-21% of users per semester trolled, Tumblr had 0-14% of users per semester trolled, YikYak had 0-100% of users per semester trolled, Other had 0-100% of users per semester trolled, and 4 chan had 0-100% of users per semester trolled. Relative to trolling volume per semester, Snapchat users had 5.7-15.2 incidences, Instagram users had 4.8-8.4 incidences, Facebook users had 3.2-12.6 incidences, Twitter users had 5.2-8.6 incidences, YouTube users had 2.3-24.6 incidences, LinkedIn users had 0-10.5 incidences, Pinterest had 0-18 incidences, Google+ had 0-5 incidences, Reddit had 3-36 incidences, Tumblr had 0-5 incidences, YikYak had 0-25.5 incidences, Other had 0-33.7 incidences, and 4 chan had 0-100 incidences. Overall, the percentage of student trolled decreased from 41% to 35% and the quantity of trolling incidents decreased from 19.9 to 16.7 from Fall 2016 to Spring 2018.

Moreover, a correlation analysis suggests that gender and minutes using social media are related to the quantity of trolls received. Males were trolled more often than females and the more minutes that one spent on social media, the more trolls one received. The gender correlation is consistent with the Omnibus study that found males were more likely to engage in malicious arguments and engage in trolling.

Implications

There are two important implications from these findings:

1. One implication is with respect to the trends in trolling. Although it is troubling that more than one-third of undergraduate business students are being trolled, the percentage of students trolled and volume of trolls received per student are both declining. Chart 1 illustrates for four of the five primarily utilized social media sites, only one platform, Snapchat, increased as a percentage of students trolled. Overall, the percentage of students that received trolls decreased by 15% during the two-year study. Given that there is a

correlation between minutes spent on social media and the likelihood of trolling and that total social media minutes are increasing per student but the percentage of students being trolled is decreased, several conclusions may be surmised. It is possible, for example, that students may be exhibiting more responsible social behavior thus not inciting another user to troll him/her. Moreover, students may be exercising more self-control when prompted to engage in a trolling war. And, students may be becoming less perceptive, numb, or ignorant to being trolled. If ignorance is found to be the issue, as may have been a factor in the 2016 U.S. presidential election, further education may need to be implemented to combat this dangerous problem.

2. A second implication relates to differences with respect to trolling volume per social media provider. Chart 2 illustrates that for three of the five primary social media sites, the quantity of trolls has increased. Snapchat troll volume increased by 162%, Instagram increased by 62%, and YouTube increased by 35%. However, the overall troll quantity for all sites decreased by 15%. On the other hand, Facebook and Twitter troll volume decreased by 33% and 2%, respectively. This suggests that trolling is platform specific and that owners of several sites need to be more vigilant. As previously described in the introduction, both Facebook and Twitter have been actively addressing negative user behavior. This study provides evidence that these efforts may be working. Consequently, there may be opportunities for other providers. Snapchat management, for example, may want to consider implementing more effective trolling policies and better enforcing controls given that the percentage of students trolled increased by an astounding 38% and the quantity of trolls received per student nearly tripled in two years.

Chart 1. Percent of Students Trolled Trends

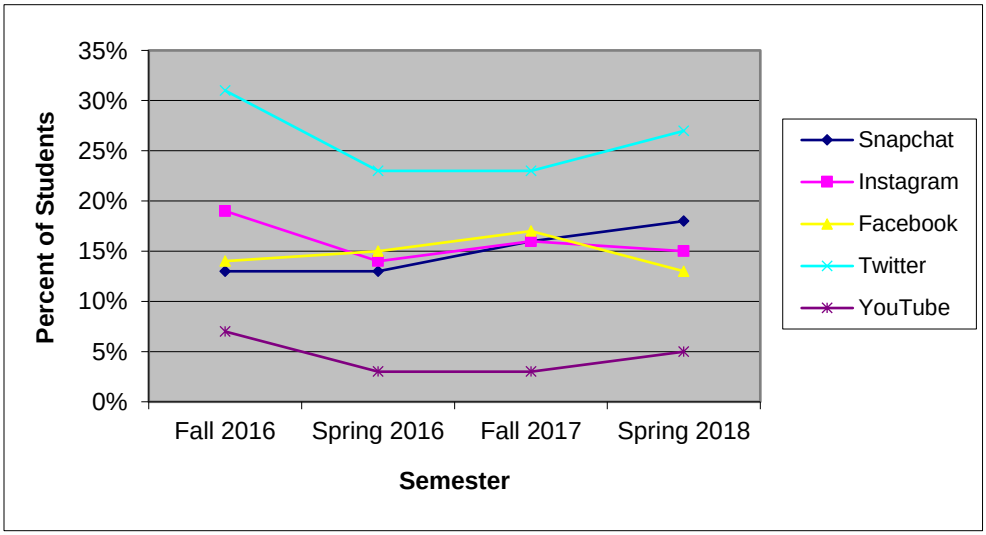
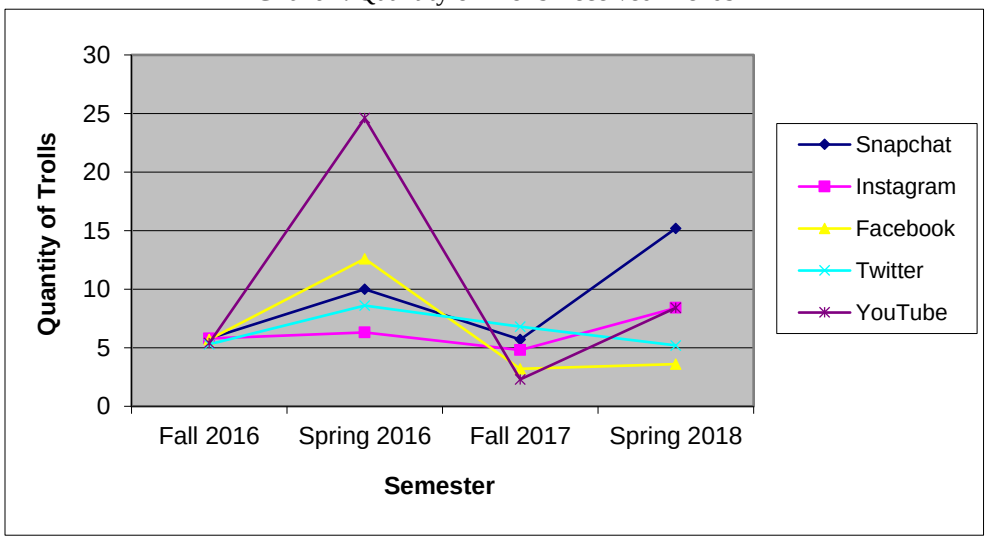


Chart 2. Quantity of Trolls Received Trends



LIMITATIONS

The limitations of this study are primarily a function of the sample, sample distribution, and type of research. The use of additional universities and more equal distribution among academic class and gender would increase the robustness of results. Another limitation relates to the self-reported nature of the survey. Future research is needed to explore how gender affects behavior and to explore which measures in the education process may be most effective in promoting positive online social network behavior. Overall, however, the study provides rich insight into social media trolling trends.

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APPENDIX (SURVEY INSTRUMENT)

This survey is designed to study the incidence of trolling. A troll is a person who sows discord on the Internet by starting arguments or upsetting people, by posting inflammatory, extraneous, or off-topic messages in an online community with the deliberate intent of provoking readers into an emotional response. It can be equated with online harassment. All responses are anonymous and will be used solely for research correlation purposes. ***You may choose not to answer any questions in the survey*** that you do not feel comfortable answering, although your full response to this survey is appreciated. By filling in this survey, you are giving your consent to act as a respondent. You must be 18 years of age or older to participate and ***you may opt out of the survey at any time***.

Class: ___ Freshman
___ Sophomore
___ Junior
___ Senior
___ Graduate

Gender: ___ Male ___ Female

School of Major: ___Business ___Education, ___Arts/Sciences, ___Comm, ___Franciscan Studies

	Average **minutes per day** using	# of times "**you**" have been trolled in past 6 months
Facebook		
Twitter		
Instagram		
Pinterest		
Snapchat		
Tumblr		
Reddit		
Google+		
LinkedIn		
Voat		
YikYak		
4chan		
8chan		
YouTube		
Other Social Media (specify)		