

# Tweet or publish: A comparison of 395 professors on Twitter.

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## Introduction

Twitter is increasingly accepted as a venue to consume and disseminate information (Gruzd et al., 2012) and is used by scholars to share information about (a) professional discussions, (b) network with others, (c) offer help/request help, (d) call attention to other social media involvement, (e) personal discussions, and (f) impression management (Veletsianos, 2012). It is also seen as one of the most promising sources to measure broader research impact in the context of “altmetrics” (Priem et al., 2010)

The idea of examining scholars’ interactions and output on the web to understand how events affected societal impact and influence of scholarly work was discussed by Cronin (Cronin, 2005, p. 196) early on, who argued that there would “soon be a critical mass of web-based digital objects and usage statistics on which to model scholars’ communication behaviours... and with which to track their scholarly influence and impact.”

It is unclear what types of effect tweets have on scholarly production and scholarly impact. To examine whether there is an impact, this work contrasts the tweeting behaviour with the publication activity of 395 professors on Twitter.

## Dataset and Methods

### *Survey of Professors*

A survey was sent to 16,862 assistant, associate, and full professors from eight disciplines (Physics, Biology, Chemistry, Computer Science, Philosophy, English, Sociology, and Anthropology) at 62 Association of American Universities-member institutions. The survey asked professors about their a) Twitter use, b) type of account, c) affordance use, and d) demographics. Affordance (Gibson, 1977) is a term used to identify the functional attributes of an object. The primary affordances available in tweets are: mentions, hashtags, URLs, and re-tweets.

Data from 1,910 respondents was collected. It was found that 32% (613) of the respondents reported having at least one Twitter account. Of the 613 scholars with a Twitter account, 445 account handles were verified for 391 of the professors.

### *Tweet Collection*

A sample of tweets from each account was collected using a PHP script on May 19, 2014. A total of 289,934 tweets were collected. Information retrieved included the tweet text, affordance use, the number of total tweets, followers, friends, profile information, and when the account was created.

### *Research Article Collection*

In order to compare tweeting to publication behaviour, the names of the 391 professors with Twitter accounts were used to search a local Web of Science (WoS) database to retrieve their publication and average citation rates. Using a query based on author last name and first name initial(s), 321,033 publication records published during a five-year period from 2009-2013 were retrieved. A final set of 7,734 articles published by the 391 scholars was retained after a manual author name disambiguation was performed.

## Results

### *Comparison of Survey Results*

Professors having a Twitter account (n=613; 32%) were compared against those without an account by department, academic age, academic title, ethnicity, and gender. Results show that there were statistically significant relationships between all of these factors. Professors from computer science (50%) had the highest proportion of scholars with account, as compared to those from chemistry (21%) who had the lowest.

Professors who had been at their faculty position from nine to seven years had the highest proportion (41%) and those reporting being at their position six years or less were just below at 39%, whereas only 25% of professors at their positions 10 years or more reported having a Twitter account.

There were 24% of white/Caucasian professors with accounts compared to only 8% for non-whites, and 42% of full professors had an account as compared to 29% of both assistant and associate professors. Gender comparisons found that 28% of males reported being on Twitter compared with 33% of females.

### Twitter Use Type

Personal, professional, and mixed use (personal and professional) of Twitter did not differ significantly by ethnicity, academic age, gender, and academic title, however, it was found that there was a significant relationship between Twitter account type and both age and department. Philosophy professors (44%) had the highest number of personal-only accounts, while English professors (60%) had the highest number of mixed accounts. Sociology and computer science professors reported the highest number of professional-only accounts (34%). Professors who identified their age as 35 and under had more professional accounts than expected and professors in the 36 to 45 age range chose the mixed accounts more than expected. Professors who identified as over 46 years old had a higher number of personal accounts than expected.

### Tweet Analysis

English professors were found to have a higher median of friends (150), followers (294), and total tweets (410) than all others. Philosophy professors had the lowest median number of total tweets (39), Chemistry professors had the lowest median number of followers (43), and physics professors had the lowest median number of friends (33). Sociology professors had the most occurrences of hashtags (7.4%) and user mentions (20%) in their tweets, whereas professors from philosophy had the highest use of URLs (1.7%). English professors had the highest number of retweets (291). Philosophy professors (1.96) had the highest average of mean tweets-per-day (TPD) as compared to professors from chemistry (0.52) and physics (0.52) who were found to have the lowest.

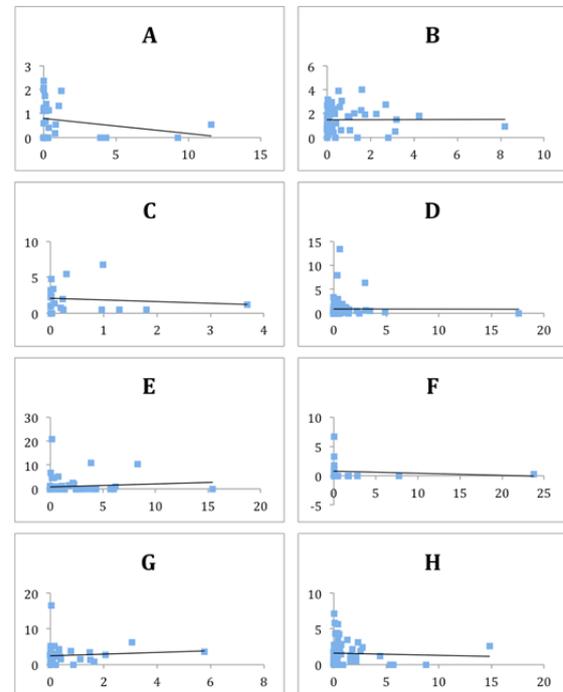
### Tweet and Publication Activity Comparison

Professors who have a high number of publications had a very low TPD average, whereas those who had a high TPD average tended not to have many publications. In addition, the average citation impact was compared with the mean TPD per scholar (as shown in Figure 1) and there was no relationship found between the two activities.

### Discussion and Future Work

Twitter use between scholars in the natural science and social science domains differed. There were also differences in tweet activity by academic title, department, academic age, gender, and age. Looking at impact on publication behaviour, it was found that those professors who had a higher average TPD tended to not publish and those who published quite a bit tended to not tweet very often. Tweeting seemed to have little impact on the citation rate of publications.

Future work should focus on identifying other indicators of scholarly communication and metrics on Twitter and examine the affordance use in tweets in order to better understand how scholars are using the functionality of Twitter to communicate in a professional manner.



**Figure 1. Average citation impact [y-axis] and average mean tweets-per-day [x-axis] for 395 professors in Anthropology [A], Biology [B], Chemistry [C], Computer Science [D], English [E], Philosophy [F], Physics [G], & Sociology [H].**

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