

A Smarter Twitter:
Using Twitter as an Improved Measurement of Political Context

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Abstract

This paper examines the feasibility of using social media, with a focus on Twitter, as an improved tool to measure social and political context in comparison to the traditional measures used in survey-based studies. We also argue that Twitter allows for greater external validity and reliability. While not without its own issues, social media provides political scientist with rich data that cannot be observed through surveys or experiments alone. It also allows for the use of mixed methods to investigate questions concerning context. Social and political context has remained an important explanatory variable in the mass behavior literature, with no indication of diminishing use. As such, it is important to consider how we might improve and add to current measurements of context.

Political Context

When we speak of political context or of contextual effects, most political scientists might think in terms of geographical context. For example, contextual effects have been defined as "the influence of group-level factors on individual attitudes or behavior when the relevant groups are defined in spatial terms" (Hopkins et al. 2016, Wong et al. 2012). This is a broad definition that lends itself to a wide variety of applications, from identity politics to general demographic information. Most studies that focus on the contextual effect of any given area or group, have had to rely on census information to provide the context of the area of interest and have proceeded to do cluster type of analysis (Gay 2004, Newman 2012).

The most recent innovation to the measurement of context comes from Hopkins et al., in which they use Intra-Class Correlations. This may explain some variation at a cluster-level but is limited to the smallest level of analysis at the county-level (Hopkins et al. 2016). This is a considerable limitation as counties can vary wildly internally and also vary in geographical size.

The Ideal Measure

What is the ideal measurement for political context? Ideally, the perfect measurement would account, not just for things like partisanship or local demographics, but would also inform us about the social environment and the nature of the social interactions people have regarding political issues. Moreover, the perfect measure would not be solely reliant on stated information but would be observable. Observable data is preferable, as it increases the internal and external reliability of the measure. The perfect measure would account for the following:

- Geography - This accounts for the location that our population of interest resides in. It should include as granular location as possible.
- Identity of Population - This should be any identity that the population of interest identifies with, which would include, but is not limited to, race, gender, sexuality, etc.
- Network Ties – This would include information on the type of people respondents are interacting with. While census data can tell us what the demographics are of any given area, it does not necessarily mean that people who live in close proximity are part of each other's networks. The ideal measure should be able to capture the network of the context of interest.
- Partisanship - The ideal measure should be able to capture true partisanship, not just expressed partisanship. There is a growing trend of "independent" identification, however, that seems unlikely to be true. The ideal measure would be able to capture both partisanship and intensity of partisanship.
- Income - Income would be able to capture the economic context of an individual, which is the most granular data point.
- Industry - This includes the types of jobs available in a given area, as well as who is employed by those jobs. It would provide for a broader economic context.
- Education - Along with the other measures, education is a useful measure of context as it provides information on the types of knowledge a person might possess, as well as another estimate of political knowledge.

- Tone - Part of the context measurement should include the tone of dialogue, the tone of social and political environment, and the tone of attitudes.
- Priorities - Finally, the ideal measure of context would also be able to capture what is most pressing or important to individuals.

The ideal measure as described above is a tall order for any one tool to gather. Good measurement is reliant on multiple tools and data to increase the reliability of measurement and validity of that measurement. As such, we are not proposing that the ideal measure will be ever achieved by one tool, but through multiple tools and requires ingenuity. For this reason, we look to social media as an additional tool when using context as a variable in any study.

Twitter and Social Media in Political Science

The existing literature in social science is far from devoid of the effects and uses of social media. An impressively comprehensive report compiled on behalf of the Hewlett Foundation provides, in great detail, the various types of studies for which this data can be responsibly used (Tucker et al. 2018). They suggest that social media can be used to match individuals to their survey responses so that researchers can gain valuable missing information at the individual level. Additionally, surveys can be spread through social media in order to get responses in real time via the platforms' poll functionalities. Other areas of use involve direct media studies—providing external validity measures for media consumption via shares, retweets, and likes. In a similar vein, this data is the clear go-to for studies on algorithms, trolls, and bots that exists solely on social media.

We argue that while all of this is true, we can use this data for so much more than survey respondent matching. This data can add crucial context for those individual respondents

regardless of exact individual matching. Tucker et al. include a limited version of this claim when they examine studies of elites and the ability to gather increased contextual information for this group specifically (Tucker et al. 2018). A prime example of this usage is illustrated by Barberá (2014). The author takes work on estimated ideal points for legislators (Clinton, Jackman, and Rivers 2004; Poole and Rosenthal 2011) and extends it to include individuals on Twitter. The author shows how the latent attitudes of voters can be calculated with Twitter data and applied across a wide variety of locales, and across the political spectrum. Further work by Barberá et al. (2015) investigates Twitter user networks to show that social media is less homophilic than previously assumed. In other words, internet context is not solely an echo chamber, but rather, a place where context and content vary. The implications for this are many but, for our purposes, context measurement and content exposure are both paramount.

Previous work has demonstrated that tweets are an effective way for politicians to build political agendas, and provide information to journalist and other key players, but this was limited by not its failure to gather the data randomly (Parmelee 2014). Kouloumpis et al. find that while hashtags are useful in obtaining the correct data, sentiment analysis and emoticons do not leave to conclusive answers (2011). To provide a more complete understanding of our research questions when using Twitter, better empirical analysis must be developed. However, it clearly provides important initial information. This is important to note because research has found that Twitter is, in fact, a place of political importance, both for agenda setting and political deliberation (Parmelee 2014, Tumasjan 2010). Work done by Zhang et. al. finds that sentiment analysis can be more accurate by using comparison analysis among a number of other steps (Zhang et. al 2011). This is becoming increasingly important. Prior work has demonstrated that the ability of Twitter to be a place of political deliberation, agenda setting, and public discourse,

was limited to just a few users, some 4%. In present time, however, it seems that the potential for these things has only increased and has now become a forum for deeper political debate that extends to the highest office-- the Presidency. As such, it is now imperative that we have the ability to detect the nuances and subtleties of these digital discourses and contexts.

Twitter and Social Media as an Improved Measurement Tool

Information from Surveys vs. Information from Twitter

Table 1.

	Surveys	Twitter
Location	State and County	City Level/ Potential for Precinct Level Data
Demographics	Stated	Observed
Partisanship	Stated	Can be verified
Feeling Thermometers	Likert Scale	Sentiment Analysis
Social Ties	Unobserved	Social Network Analysis
Valence	Unobserved	Retweet and Replies
Time	Panel	Panel

How does Twitter get us closer? As discussed previously, the ideal measurement for context would show not only what people state their context is, but also how that manifests and whether it is accurate to what was reported by respondents. As Table 1. shows, most of the information gathered from surveys tends to be stated information that cannot be confirmed or observed. Table 1. goes through the different type of information that can be gathered from traditional surveys and the type of information that can be gathered from Twitter. In line with survey studies, Twitter can provide information on geographical location. Twitter, however, can provide more granular data than surveys, as surveys generally provide data at the state or county level. Twitter can provide city data, with potential for further granular information.

Demographics and identity information are generally stated, but with Twitter, we can observe demographics. Furthermore, upon inspection of Twitter user profiles, we can identify which identities are most salient to them.

In addition, the table shows that there are improved measurements in Twitter data that give us the ability to study three types of diffusion and context. Figure 1. below displays all the described above in action.

- Scope of Diffusion - In survey studies it is hard to establish the social networks of respondents. With Twitter we can use methods like network analysis to determine which nodes of people are connected and interacting.
- Intensity of Diffusion - Using Twitter also offers an advantage over survey data in that Twitter can provide us information on the intensity of diffusion in the following ways.
 - Likes to a tweet indicate favorability of a tweet but are not costly. One simply likes a tweet and moves on to the next tweet on the user's feed.
 - Replies indicate a need to engage with the tweet. This is more costly and indicates higher intensity of diffusion.
- Time of diffusion - not only does it provide for real-time reactions to political and social context, but it also allows for social scientists to track changes that occur throughout time.

Figure 1.



Nancy Pelosi  @NancyPelosi · Apr 24


This young man's story is a reminder of all that America's immigrants have to offer. We cannot turn our backs on America's immigrant tradition & refuse to [#ProtectDREAMers](#). [#PelosiAtGU](#)








 270  283  688 





The initial tweet sent out by the Minority Leader of the House of Representatives, Nancy Pelosi, demonstrates how politicians can engage the general public in issues that are high in saliency, like immigration. While the text of the tweet includes valuable information, we can extract more data from any single tweet. The heart icon tells us how many people viewed this tweet favorably. The icon with arrows indicates how many people retweeted or posted the tweet on their own feed. This is particularly important as it raises the tweet's level of exposure to a much larger audience than can be observed in the initial tweet. The thought icon corresponds to the number of people who have responded to the tweet. Figure 2. Shows the nature of the conversation around the initial tweet. We can use all of this rich data as a proxy for how the public engages with the issue.


Figure 2.





 **Rob Powell** @RobPowell11 · Apr 24 ▼
Replying to @NancyPelosi
No one is against immigration. We want it to be legal. We have rules to be a part of our great country. We expect them to be followed.


  1  16 

 **steven j Cowart** @stevecowart0011 · Apr 25 ▼
Replying to @NancyPelosi
Dreamers ARE not immigrants you old windbag. They have for the most part come here illigaly. They should be treated accordinally. We welcome all to our country if they come through proper legal means.

   7 

 **mister e. jondeaux** @JohnAdversary · Apr 24 ▼
Replying to @NancyPelosi
If you want an honest answer, don't ask a democrat. We all want immigration... legally. Dems had a chance to pass a pathway to citizenship for 1.8 million DACA dreamers and didnt... because they don't like Trump.

  1  7 

 **Cinder &** @CinderPugs · Apr 24 ▼
Replying to @NancyPelosi
We do not need a reminder of ILLEGALS. We actually live in the real world.

As you have forgotten, the United States is a country of LAWS which YOU have decided refused to follow for political gain.

When YOU follow all laws applicable to us, then you can speak options.

As figure 2. shows, we can discern tone in how the tweet is received. While the number of those who viewed the video favorably was relatively higher than those who responded, it does not indicate how the conversation around the issue is being had. This is resolved by engaging in content analysis of the tweets. We can further uses the replies to analyze how the responses are being evaluated by seeing the likes and retweets of the replies themselves. By looking at the type

of language used in the tweets, we could also arrive at some conclusions of level of education, through language used, and levels of political knowledge on the issue. Overall, a tweet provides us with rich contextual data, far more than can be gathered by a traditional survey.

Measurement Reliability and Validity

Twitter provides a great deal of reliability as a measure of context. Because each tweet is attached to a user ID, we can track tweets throughout time. Even if there are geographical changes, say the respondent moves or is traveling, tweets can still be obtained by user ID allowing for consistent observation. This allows for social scientists to observe the effects that context have in a cost-effective way. With panel studies there is a great deal of attrition and it quickly becomes expensive to run multiple surveys in order to gauge changes along time. Twitter allows for more reliability in our measurement of context.

Related to reliability, Twitter also increases the validity of the context variable. Twitter is used in real life and as such, we can feel confident in the external validity of the measure. Individuals are acting in real life without any expectation that they are being studied. Concerns about social desirability biases are also perhaps less significant here, since we have different levels of engagement that are observable with twitter (ie retweets, replies, etc.). Moreover, twitter users have the option of setting their twitter profiles to private, which would likely be those considered with maintaining social desirability. Internal validity is also increased by reducing any threats to validity from the following: hypothesis guessing, instrumentality, or ambiguous temporal precedence. Twitter users are not using Twitter as part of a study, therefore, they cannot engage in hypothesis guessing. Twitter is an open and public space and lends itself to the same types of practices that we might expect in observational studies. Questions over validity are also reduced when we consider that the instrument does not change. Tweets have

maintained their general layout and the platform has not changed much since its inception, resolving issues of instrumentality. Finally, because all tweets are time stamped, questions of temporal precedence can be addressed rather quickly and cleanly.

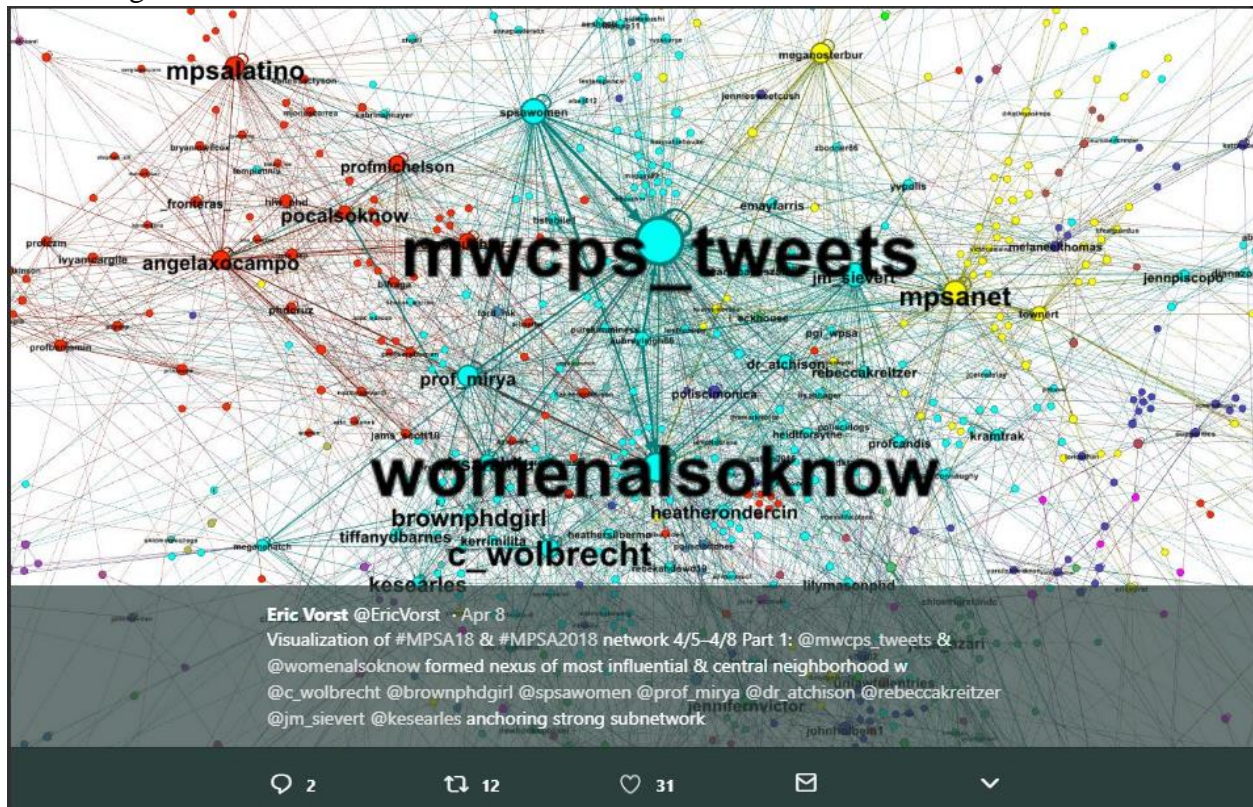
There are, of course, limitations to the use of twitter and social media. There might be significant differences between those who use social media and those that do not. Who uses social media? Who uses social media to make political points? Another issue as we investigate social and political context is that some users might have their location settings off, making our measurement of location varied. We can still gather data on geographical location based on information in bios, but is inconsistent and less precise than geocoded tweets. However, even with these challenges, twitter and social media are still an improved measure of context. By including social media data, along with more traditional measure of context, we can increase the confidence in the validity of context as our variable.

Conclusion

Twitter and social media have taken an unexpectedly important role when it comes to examining political questions. Not only has social media had the effects previously discussed in shaping political agendas, but has had enough power to sway elections, end or begin political careers, and expanded what forums constituents have to engage with their politicians. However, the questions on what social and political context people find themselves in could be the most fruitful information yet. Figure 3. is a visual of the network analysis from MPSA2018. With just the username handles, we can already obtain information of general demographics, are able to decipher what kind of work was being promoted by each person, and more generally, what the tweets pertained to. We know the exact context of the conference due to the geocoded

information, hashtags, user bios, retweets, replies, and more information saved in the tweet's metadata.

Figure 3.



The next step for this research is to test how powerful Twitter can be in helping us learn about the context that vulnerable populations find themselves in. Twitter and other social media sites are a world within themselves but also reflect the culture and debates occurring at the local level. As such, social media must be useful in deciphering the effects of context on the political socialization of hard to reach populations. Twitter is non-intrusive in that it allows researchers to freely extract information and, as a result, allows the studied communities to remain unaltered, or put at any increased risk by researchers. Future studies will specifically look at the political socialization of refugees and immigrants given the contexts in which they find themselves.

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