

Original research article

Finding the Twitter users who stood with Wendy

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Abstract

Objective: I examine Twitter discussion regarding the Texas omnibus abortion restriction bill before, during and after Wendy Davis' filibuster in summer 2013. This critical moment precipitated wide public discussion of abortion. Digital records allow me to characterize the spatial distribution of participants in Texas and the United States and estimate the proportion of participants who were Texans.

Study design: Building a dataset based on all hashtags associated with the bill between June 19th and July 14th, 2013, I use GPS locations and text descriptions of locations to classify users by county of residence. Mapping tweets from accounts within the continental United States by day, I describe the residential composition of the conversation in total and over time. Using indirect estimation, I compute an estimate of the number of Texans who participated.

Results: About 1.66 million tweets were sent using hashtags associated with the bill from 399,081 user accounts. I estimate counties of residence for 160,954 participants (40.3%). An estimated 115,500 participants (29%) were Texans, and Texans sent an estimated 48.8% of all tweets. Tweets were sent from users estimated to live in every region of Texas, including 189 of Texas' 254 counties. Texans tweeted more than non-Texans on every day except the filibuster and the day after.

Conclusion: The analysis measures real-life responses to proposed abortion restrictions from people across Texas and the United States. It demonstrates that Twitter users from across Texas counties opposed HB2 by describing the geographical range of US and Texan abortion rights supporters on Twitter.

Implications: The Twitter discussion surrounding Wendy Davis' filibuster revealed a geographically diverse population of individuals who strongly oppose abortion restrictions. Texans from across the state were among those who actively voiced opposition. Identifying rights supporters through online behavior may present a new way of classifying individuals' orientations regarding abortion rights.

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1. Introduction

On June 25, 2013, Wendy Davis stood on the floor of the Texas Senate for 11 hours to filibuster HB2, an omnibus abortion bill that promised to dramatically decrease the number of clinics providing abortion care in Texas, ban abortions after 20 weeks "postfertilization," require all physicians providing abortion care to have admitting privileges at a hospital within 30 miles of the facility where they worked, and impose restrictions on the provision of medication abortion. As she spoke, the Texas Capitol filled with thousands of supporters and opponents of

abortion rights, while 180,000 watched via livestream. Supporters of abortion rights had been rallying in the days before Davis' filibuster, and they returned day after day to oppose the bill. A hashtag, #StandWithWendy, arose on Twitter as supporters online expressed their outrage with the bill and their support for Davis.

Tweets about the bill and the filibuster represent real-world responses to the proposed restrictions. Johnson-Hanks and coauthors [1] propose a theory of action situating individuals' behaviors within conjunctures, or short-term sets of conditions under which action occurs. Wendy Davis' filibuster and the prospect of HB2's passage presented Twitter users in Texas with a conjuncture. How they responded to that conjuncture reveals the orientation and degree of their reaction to the prospect of their very large state being left with only six or seven abortion clinics. Texans living in or near Austin had the option of marching

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on the Capitol to express their opposition to the bill, but those living far away were likely less able to express themselves this way. While tweeting is not equivalent to marching in the streets, it is something more than privately holding an opinion, and thus measuring tweets from the conjuncture during which HB2 was being debated measures an avenue of action available to all Texans who used Twitter. Taking this interpretation, tweets in support of abortion rights provide data for describing a population of particularly impassioned abortion rights supporters without relying on responses to survey questions. This approach obviates design effects because it measures responses to real-world events rather than hypothetical vignettes, but the fact that Twitter users are substantially different from the general population means that generalization beyond the description of the discussion is impossible [2–5]. Thus, this analysis describes the spatial range of the Twitter conversation around HB2 and Davis' filibuster, not the distribution of abortion opinions in general in Texas.

The theory and method for analyzing social media data are in their infancy, so I therefore ask simple, basic questions about how many people participated, where they lived and which side they supported. Whether Texans were among the Twitter users who supported abortion rights in the conversation can help us interpret the outpouring on Twitter as either local resistance or outside resistance to the proposed law. Estimating where users lived within Texas could combat a perception that the protests at the Capitol reflected Austin's liberal population, not a broad base of Texans from across the state. While election results indicate that Democrats live throughout Texas, not all Democrats support abortion rights. Thus, I use the Twitter data to investigate whether or not a geographically diverse population of Texans participated in the digital resistance to HB2. If Texans from across the state participated in the discussion and expressed their outrage with the bill, the long-term prospects of abortion access in the state may be more malleable than if the resistance was concentrated in Austin and outside the state.

2. Materials and methods

2.1. Data sources

I formulated an initial list of hashtags — which are used on Twitter to build conversations and identify positions — by reviewing Twitter activity during HB2's proposal, debate and passage. I validated the list through interviews with key informants (journalists, bloggers and social media managers) and checked it against the Twitter feeds of organizations and politicians on both sides. Hashtags used at least five times in reference to the filibuster and HB2 on a given side were included. The final list included the following: neutral bill name hashtags (#sb1 #hb2, #hb60 and #sb5), hashtags used by supporters of abortion rights (#StandWithWendy, #prochoice, #StandWithTXWomen,

#SWTW and #feministarmy) and hashtags used by opponents of abortion rights (#SitDownWendy and #prolife).

Based on this list of hashtags, I purchased a comprehensive dataset of tweets with any of the hashtags from June 19 through July 14, 2013, from TweetReach. The dataset includes both tweets and retweets. The dates covered include all major events involved in the bill's passage through the Texas legislature. June 19 was the day before the bill's first large public hearing, and July 13 was the day the bill finally passed. Wendy Davis' filibuster was June 25. The tweet data include tweet text, user name, tweet day and time, and other technical information.

2.2. Measures and analysis

The tweets themselves do not have locations. In order to build the dataset needed to estimate a location for each user account, I used the Twitter Application Programming Interface (Twitter REST API v1.1) to collect data on user accounts. The Twitter API is a feature of the Twitter website that allows direct access to some Twitter data from a computer. For each account whose tweets had GPS data, I collected 100 tweets from the Twitter REST API v1.1. For all accounts, I collected location data from user profiles in the form of text strings. The text strings sometimes included latitude and longitude coordinates. Using geocoded text strings in addition to a sample of GPS encoded tweets, this method generates location estimates for about four times as many Twitter user accounts as typical analyses that rely solely on GPS data [6,7].

I estimated counties of residence in up to two ways, first using GPS encoded tweets and second by geocoding text strings from the user profiles. For user accounts with GPS coded tweets, I determined the county of each of the 100 tweets by joining the tweet's GPS coordinates with a shapefile of the United States. I estimated the user's residence as the most frequent county of tweet origin, as long as more than 50 tweets originated in it. When GPS locations were outside the United States, I coded them as outside Texas for the purposes of this analysis. I performed these processes with Python and the *geopy* package.

For all user accounts with non-missing text location data, I geocoded text strings at the county level using the Google Maps API v3, which uses *gazetteer* as well as map data to code location names like "The Big Apple" as well as names of cities, counties and states. Location data from user profiles were predominately user-generated text strings like "Austin, TX." Some users reported their location whimsically, such as "between a rock and a hard place" or "Milky Way." Some valid locations were outside the United States and thus had no county, and some valid locations were identifiably inside the United States but had insufficient precision to determine a county. I coded these with a binary indicator for outside or inside Texas.

When user accounts had only one residential location estimate based on GPS data or based on text string data, I

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