

## Title

Chicago Politicians on Twitter

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## Abstract

This paper uses data from 1,042 tweets posted by or mentioning Chicago Aldermen or Mayor Rahm Emanuel to examine how Chicago politicians use social media. Twitter provides a public communication medium in which constituents and their representatives can have two-way conversations that others can witness and record, and we used qualitative and social network methods to examine conversations between Chicagoans and representatives in city government. We coded the contents of each tweet over the two-week time period (e.g., official business, fundraising) and created representations of the social networks created by the users' following behaviors. These networks indicate who receives politicians' tweets and help identify the audiences for political messaging in social media. Our analysis indicates that Chicago's Aldermen and Mayor use Twitter for social conversations more often than political ones, and that only a small number of Aldermen dominate the resulting conversation networks.

## Citation

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## **Introduction**

Attention to the use of social media in political communication is increasing. Existing research has examined the role of candidates' websites in campaigning (Druckman, Kifer, and Parkin 2007; Schneider and K.A. Foot 2005; Xenos and Kirsten A. Foot 2005), Twitter use among members of the U.S. Congress (Chi and N. Yang 2011; Golbeck, Grimes, and Rogers 2010), and social media in rallying support for causes (Klotz 2007) and increasing civic engagement (Merry 2010; Xenos and Moy 2007). Most existing research focuses on national-level politics (Chi and N. Yang 2011; Hsu and Park 2012). In this paper, we analyze Twitter use among one city's elected officials. We analyze the content of two weeks of tweets from Chicago's Aldermen and the communication networks that result from their Twitter use.

Using social media as a means of communicating to the larger public effectively replaces communication that was only possible through traditional media outlets (Cook et al. 1983; Edwards III and Wood 1999; Entman 2007; Kedrowski 2000; Lee 2009) or, more recently, websites and blogs that reported statements and speeches of public officials (e.g., Gentzkow and Shapiro, 2010). Twitter allows public officials to avoid the filters of traditional media and communicate directly to their followers. This can exacerbate the negative effects of the incomplete information held by voters which already occurs via traditional media outlets (Gentzkow and J. M. Shapiro 2010). This also complicates existing models of political communication, given differences among recipients of social media-based information (Gil de Zúñiga et al. 2010) as well as differences in which type of social media is the source of information (Towner and Dulio 2011). Concerns about information accuracy and transfer are most salient, we believe, when information shortages and asymmetries negatively impact decision making by voters. What if, though, our assumptions are based on an overzealous grouping of "shortages" and "asymmetries"?

One of the key findings presented in this paper is that politicians in Chicago are using Twitter (and potentially other social media) to engage in social conversations rather than formal politicking. The implication is that (1) Twitter does not function as a formal tool of politics for Chicago Aldermen, at least in lulls of the electoral cycle, and that (2) our understanding of political communication must be expanded to account for nearly apolitical communications by our elected officials. This finding has been overlooked by existing, seminal research on the subject (e.g., Howard, 2005) although there is a documented pattern of personalized communications via online and social media (Sweetser and Lariscy 2008; Trammell et al. 2006). There has not been, though, any explanation as to why personalized (i.e., apolitical) communications tend to dominate politicians' outward social media communications. This could be a function of how followers of candidates use social media more broadly: to interact with like-minded individuals (Ancu and Cozma 2009). While this indicates that in at least one fundamental way our research is a key supplement to political communication scholarship, our findings are robust only for off- periods in the election cycle.

There is also an apparent vacuum in the literature on social media in local politics. Most studies have focused on national level politicians (e.g., Congress and the President) and/or elections, attempting to predict political candidate success (Baum and Groeling 2008) or accurately portray public sentiment about candidates ((Bryan) M. Wang, Hanna, et al., 2011). McCleod, et al. (1999) describe the differing attributes of political communication at the local level versus higher levels of government: at times, local politicians and their constituents engage in robust conversations. Their research precedes the rise of the social media phenomenon, however, so we consider this paper to be a timely bridge between studies of social media-based communication in politics and urban political communication.

## Methods

### Data Collection

First, we identified 24 Twitter accounts owned by Chicago Aldermen and Mayor Rahm Emanuel. Each Twitter account was verified to be an official politician's or public office's account by two researchers. Using the Twitter Database Server (Green, 2011) and Twitter-collectors (Hemphill, 2011), we captured tweets during the two-week period June 14, 2011 – June 29, 2011. The software used downloads both all tweets posted by a given list of users and tweets written by any user that mention a user from the list using the “@screen\_name” convention; it also downloads information users provide about themselves on their Twitter profiles. All data was accessed through the Twitter Streaming API<sup>1</sup>.

We used NodeXL (Smith et al., 2010) to collect information on all the Aldermen's followers (i.e., Twitter accounts who follow the Aldermen) and friends (i.e., Twitter accounts the Alderman follows). Their followers are the primary audience for the Aldermen's tweets. Twitter follower and friend lists are moving targets because Twitter users follow and unfollow each other every day. We were not able to store follower/friend history, and so our network analysis uses only a snapshot of this dynamic data. On February 21, 2012, we extracted data for network analysis, and we verified 27 Twitter accounts for Aldermen.

Analyzing tweets allows us to test the most recent developments of political communication theory, particularly the effects of micro-blogging efforts on party and social group formation. We adopt the key explanatory variables from existing research on political candidate success and public sentiment about candidates – network size and strength of ties

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<sup>1</sup> [http://dev.twitter.com/pages/streaming\\_api](http://dev.twitter.com/pages/streaming_api)

(Tumasjan, Sprenger, Sandner, & Welp, 2010) – and apply it to the unique case of Chicago Aldermen.

## **Data Analysis**

We identified a list of codes for tweet content used in existing literature about public officials' Twitter usage (Golbeck, Grimes, and Rogers 2010). The complete list of codes and their definitions is available in Table 1.

[Insert Table 3]

The authors and workers hired through Amazon's Mechanical Turk service coded tweets; at least three people coded each of 1042 tweets. Coders were instructed to choose all codes that applied for each tweet. We calculated inter-coder reliability using ReCal3 (Freelon 2008) and report percent agreement and Fleiss'  $\kappa$  in Table 2. Interpreting the results of consensus measures such as Fleiss'  $\kappa$  is difficult (Stemler, 2004) in part because the number of categories impacts the calculation. Our results fall within the "slight agreement" and "fair agreement" windows commonly used to interpret kappa results (Landis & Koch, 1977). Combined with relatively high percent agreement (except on direct communication), we are confident in the inter-coder reliability of our results. Coders did not reach consensus on which tweets included direct communication, and therefore, we instead used the presence or lack of an @screen\_name convention within the tweet to automatically code for direct communication (e.g., "1" for @screen\_name and "0" otherwise). This means only explicit "mentions" and "replies" were counted as direct communication.

[Insert Table 3]

## **Results and Discussion**

### **Content Analysis**

As shown in Table 3, “information” was by far the most common type of content in the tweets we analyzed; roughly half of all tweets were providing information. 22% of tweets contained content about non-official activities including trips, meetings with constituents, lobbyists, or activities in the home ward. These results indicate that politicians often use Twitter to provide both general and unofficial information to their constituents.

Personal communication was a popular content type that appeared in 26% of tweets, meaning that roughly a quarter of all messages were primarily personal rather than professional. These personal communications likely serve strategic purposes such as building rapport, but they were less explicit in their political purpose. Official business appeared in only 6% of tweets. The low frequency of official business may also be caused by a lull in official duties during our data collection period. The City Council met on June 8 – outside our data collection time period. However, the Committees on Finance, Workforce Development and Audit, Budget and Government Operations, Housing and Real Estate, Health and Environmental Protection, and License and Consumer Protection did meet during the two weeks we were collecting tweets. Requesting action was also rare, appearing in only 6% of tweets. High frequency of personal communication and low frequency of official business and requesting action indicate that Twitter is a space for informal communication. It is a place where Chicago politicians and constituents have informative and social conversations more often than political ones. Aldermen seem to be using Twitter to chat rather than to engage in political debates or community organizing.

Fundraising and self-promotion were both rare, but those results are not surprising since our data collection period was not during an election year. The Aldermen in our study began new terms in May 2011 and may not yet need to raise funds or aggressively promote themselves since

the next election is so far away. Coders struggled to reach agreement on what constituted “self promotion” in part because its difficult to uncouple “bragging” or very obvious self-promotion (e.g., retweeting a comment about how great the Alderman is) from implicit forms of self-promotion (e.g., expressing support for a sympathetic group) we’ve come to expect from politicians.

### **Network Analysis**

Our qualitative analysis of the Aldermen’s tweets tell us something about what messages they are trying to convey, and we used network analysis to identify the audiences for those messages. We constructed a network by identifying all of the followers and friends for each Aldermen. A network of this size lends itself to a variety analysis, but we focus here only properties of betweenness and relative connectedness. Together, those properties provide a sense of relative influence and reach within the network. A summary of the network’s characteristics are presented in Table 4. Where we mention “random” graphs, we compare the metrics of the Aldermen’s graph to a randomly-generated graph of the same number of nodes and density.

Compared to a random graph (M. E. J. Newman, Watts, and Strogatz 2002), the Aldermen network has a much higher average clustering coefficient and much smaller diameter. Clustering coefficient is a measure of how well-connected a node’s neighbors are and can range from 0 to 1 (Easley & Kleinberg, 2010, p. 49). Nodes in the Aldermen network are, on average, more well-connected than nodes in a similar random graph. Diameter refers to the maximum distance between any two nodes on the graph (Easley & Kleinberg, 2010. p. 46). A diameter of 4 means that no two nodes in this network are more than 4 nodes apart (i.e., everyone is at least a friend of a friend of a friend of a friend).

Properties of the Aldermen, specifically, are presented in Table 5. Betweenness is a measure of how many shortest paths in a network pass through a specific node (Easley & Kleinberg, 2010, p. 74). We present “normalized betweenness” because it makes it easier to compare values between networks and between nodes. Normalized betweenness is simply a node’s betweenness divided by the maximum betweenness in the network. Our results show that the Aldermen for wards 1, 2, and 7 (Joe Moreno, Bob Fioretti, and Sandi Jackson) have the highest normalized betweenness meaning that short paths in the network travel through those Aldermen. Nodes with high betweenness tend to be influential within the network because betweenness measures how much influence a node has over the spread of resources (M. Newman, 2005). Their position gives them efficiency advantages – it takes less work (in terms of steps) to get from person to person on the graph if one travels through any of these high betweenness nodes. Betweenness in this network is likely influenced by the level of twitter activity, and future work will explore that relationship.

Table 5 also shows that an Alderman’s potential audience varies widely. Joe Moreno has 2281 followers, while Emma Mitts has only 18. What we don’t know is what impact various attributes of the Alderman and his ward influence the size of his audience. Again, these are good questions for future work.

[Insert Table 5]

Visually representing a network with 14,828 nodes is challenging, but Figure 1 shows one visualization of the complete follower-friend network. In Figure 1, nodes are colored according to their group, where “group” is determined by the Clauset-Newman-Moore algorithm (Clauset, M. Newman, and Moore 2004) implemented in NodeXL. The algorithm assigns nodes to groups based on their positions in the network, and in this case has sorted nodes into 12 groups. Future



work will explore properties of those 12 groups and their members to determine the influence of things like geography or political leaning influence on the Aldermen's audiences. We have determined that the 12 groups do not overlap with committee membership and so are not likely related to specific political interest areas.

[Insert Figure 1]

Figure 1 makes a number of features of the network accessible. For instance, we see that there are many isolates in the network, indicating the majority of the Twitter users in the network have only one connection to anyone else, likely their Alderman. This indicates that the Aldermen's followers are not paying attention to one another. Given the amount of time Aldermen spend providing information, this structure makes sense – users follow Aldermen to get information but not to engage in political debate with other followers. Future work will examine the content of Aldermen's followers' tweets.

## **Future Work**

We have identified several avenues of related work to advance our understanding of social media use by Chicago politicians. It should be noted that there really is nothing which prevents our schema – or our approach from the preceding pages – from being applied to any set of local politicians who use social media. Indeed, it would provide an interesting comparative urban politics study if multi-city analysis was applied.

We must first improve our coding scheme. We suspect that there are a number of additional categories of tweets which have not yet been identified. A revised coding scheme will require a similar process to that described above in which tweet-based categories are first identified, cross-checked with at least two coders across a sub-sample of local politicians' tweets, and then finally used to generate algorithms which will be used to automatically code

much larger samples of tweets by local politicians. This will eliminate any remaining concerns about non-random sample draws. It will also help deal with any degrees-of-freedom problems which might arise in our statistical analyses, particularly when there are a large number of explanatory variables which might be used to predict Alderman- or ward-specific characteristics.

We are particularly interested in the effects caused by ward and Alderman attributes – e.g., racial breakdown of ward, education level of ward, median income level of ward, number of times Alderman has been elected, education level of Alderman, sub-committee memberships of Alderman, endorsements of Alderman. We will use these to predict Twitter-based qualities such as frequency of tweeting, propensity to use Twitter for political versus apolitical purposes, or number of friends or followers. Other potential outcome variables include those which are related to network analysis, such as betweenness. It will be important to compare these online behaviors with offline (i.e., traditional) communication strategies by Alderman.

With enough planning, we will also be able to compare the dynamics of social media in the on- and off-campaign seasons. This is especially salient given the nature of our findings above. It also would represent, to the best of our knowledge, an addendum to a very thin literature on electoral cycles and social media. There has been virtually no research on Twitter in this regard, with most cases focusing on the Obama-McCain presidential campaigns. This is likely a function of data collection and coding challenges, to which we can both sympathize and offer solutions.

Finally, our findings above are particularly salient for how messages are being communicated from Aldermen to their constituents and others, but there should also be further study to understand how followers and friends are referencing Aldermanic tweets. If we find that the tweeting public is much more approving of personalizing tweets vis-à-vis political tweets, it

would do much to explain why Chicago's politicians spend the bulk of their time communicating directly with other users and not presenting their views on political issues.

## **Conclusion**

In summary, we found that Chicago Aldermen use Twitter primarily for apolitical conversations and that the networks created by their friends and followers indicate just a few Aldermen hold most of the influence in the communication network. Though their national-level counterparts use Twitter to provide information and position themselves in relation to issues and other politicians (Golbeck, Grimes, and Rogers 2010; M. A. Shapiro, Hemphill, and Otterbacher 2012), the Aldermen spent little time promoting their political agendas. Rather, they discussed local events and sports and provided information about city services such as street cleaning and recycling. The Aldermen's follower-friend networks indicate that people following an Aldermen tend to follow only one, likely indicating that people follow their Aldermen to receive information and not to engage in political debate. Our study provides the groundwork necessary for further research on the use of Twitter and other social media in local politics.

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## Tables and Figures

Table 1. Codes for tweet contents

Code	Definition
Direct communication	a message directed at a specific person either with the @id convention or in the text of the message
Personal message	non-business oriented messages or notes, such as holiday greetings or other personal sentiments
Information	a message that provides a fact, opinion, link to an article, position on an issue, or resource
Requesting action	requests that constituents take some action like signing a petition or voting
Fundraising	requests donations or contributions
Official business	official business in City Council, including voting, committee and Council meetings
Location or Activity	non-official activities including trips, meetings with constituents, lobbyists, or activities in the home ward

Table 2. Inter-coder reliability measures

Code	Percent agreement	Fleiss' $\kappa$
Direct communication	64	.29
Information	67	.34
Location or Activity	77	.30
Personal message	70	.26
Requesting action	99	.22
Fundraising	90	.14
Official business	90	.14
Self promotion	94	.05

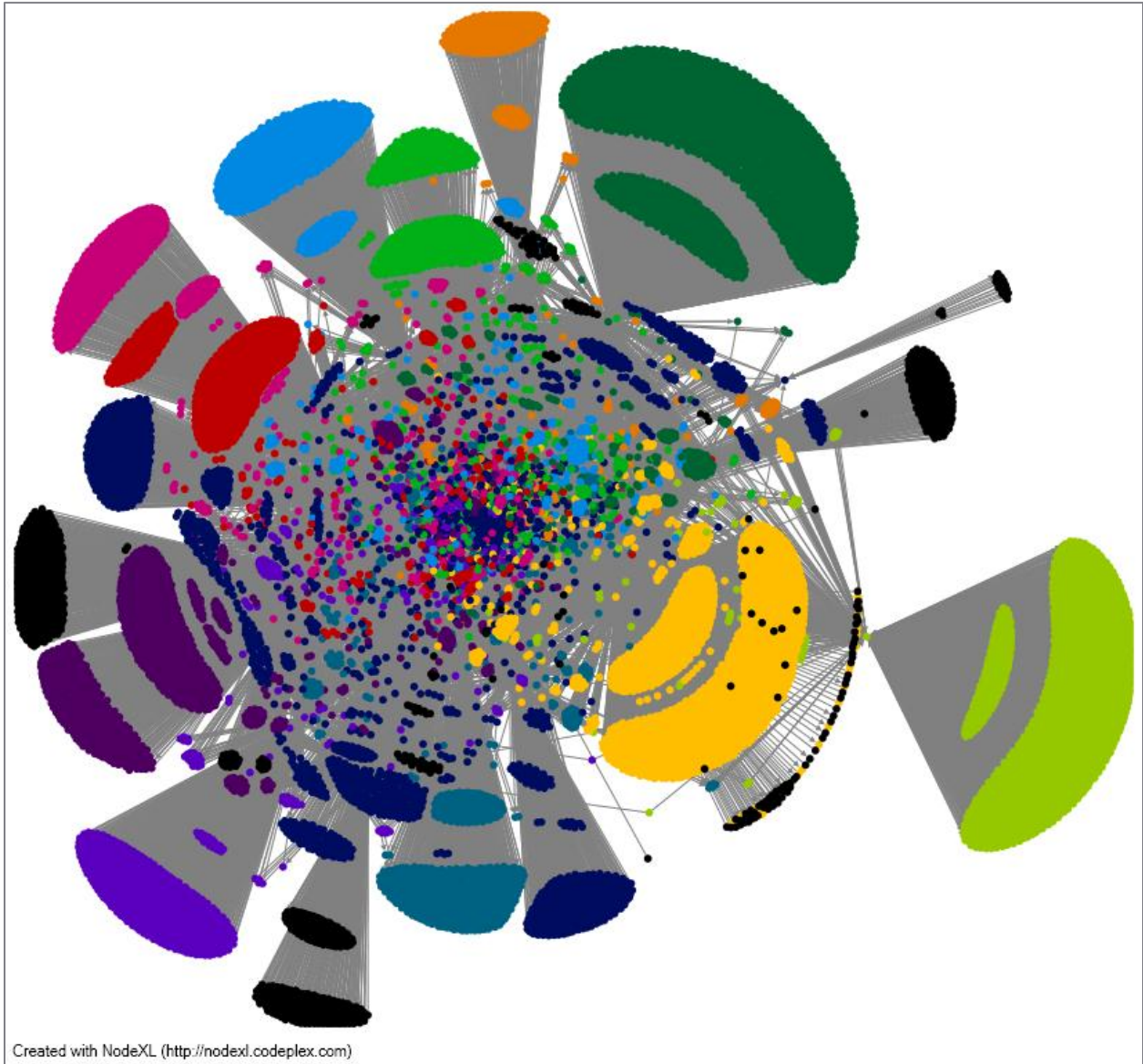
Table 3. Frequency of content types

Code	Frequency ( <i>n</i> )
Information	50% (1568)
Location or Activity	22% (694)
Personal message	26% (824)
Requesting action	6% (201)
Fundraising	1% (25)
Official business	6% (197)
Self promotion	3% (94)

Table 4. Network characteristics of the Chicago Aldermen's Follower-Friend Network	
<b>Network Characteristic</b>	<b>Chicago Aldermen's Network</b>
Nodes (Everyone)	14,828
Egos (Aldermen)	27
Alters (Everyone else)	14,821
Ratio of Egos to Alters	548.93
Edges (Total)	40,199
Edges (Reciprocal)	14,993
Edges (One-way)	25,206
Density	0.00016
Average Distance	2.87
Average Clustering Coefficient	0.226 (random = 0.00014)
Diameter	4 (random = 27)



Table 5. Followers, friends and betweenness of Chicago's Aldermen					
Twitter account	Ward	Year first elected	Followers	Friends	Normalized Betweenness
alderman moreno	1	2010	2281	2030	0.94
fioretti2ndward	2	2007	2274	2284	1.00
ald4_willburns	4	2011	1457	388	0.34
6thwardchicago	6	2011	382	426	0.07
sandijackson1	7	2007	839	1220	0.63
aldermanpoppe	10	1999	211	19	0.01
ald12	12	2003	152	56	0.00
mattoshea19	19	2011	130	0	0.01
aldermanwbc	20	2007	352	113	0.03
aldermanmunoz22	22	1993	742	23	0.10
aldermansolis	25	1996	761	744	0.21
aldermanburnett	27	1995	377	1	0.02
aldermanervin	28	2011	981	1019	0.26
ald_reboyras	30	2003	281	21	0.02
ward32chicago	32	2007	279	0	0.01
aldermansposato	36	2011	235	19	0.01
emmamittsald37	37	2000	18	165	0.00
40thward	40	1983	281	32	0.03
oconnorfor41	41	2011	79	1	0.00
aldreilly	42	2007	780	1332	0.29
altdomtunney	44	2002	1288	1514	0.34
johnarena445	45	2011	442	198	0.07
jamescappleman	46	2011	1023	96	0.26
alderman_pawar	47	2011	1257	1318	0.40
48ward	48	2011	327	180	0.06
joemoore49	49	1991	791	114	0.15
debra4alderman	50	2011	279	93	0.03



**Figure 1. Complete Network of Aldermen Friends and Followers**