Twitter for City Police Department Information Sharing

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ABSTRACT

In this paper, we examine the use of Twitter by city police departments in large U.S. cities (cities with populations greater than 300,000). The purpose of our study is to determine what types of information are shared by city police departments over Twitter and to determine how the public uses the information shared to converse with the police departments and with each other. We read and analyzed 4,915 posts authored by 30 city police departments that have active Twitter accounts. The analysis shows that city police departments in large U.S. cities primarily use Twitter to disseminate crime and incident related information. City police departments also use Twitter to share information about their departments, events, traffic, safety awareness, and crime prevention. To a lesser extent, city police departments use Twitter to converse directly with the public and news media. We also sampled four weeks of public-authored tweets, totaling 1,984 tweets, that contained police department Twitter usernames and found that a majority of these tweets were retweets of police authored tweets; public-authored tweets also mentioned police departments in discussions or were used to send direct messages. This paper furthers our understanding of information sharing by city police departments as well as public redistribution of this information through the use of social media tools.

Keywords

Twitter, microblogging, law enforcement, social media, user generated content, communication patterns, content analysis

INTRODUCTION

Traditionally, government agencies have utilized a one-way communication model: sending information to the public either directly or through news media and not receiving communications back from the public via this channel. Social media tools are changing the communication model between government agencies and the public as well as with news

media. Social media tools now create possibilities for interpersonal, participatory, and interactive communications (Pascu, Osimo, Ulbrich, Turlea, & Burgelman, 2007). In this paper, we focus on the use of one social media tool, Twitter, and one type of government agency, city police departments. By analyzing the content of messages sent on Twitter by city police departments, we further our understanding of police information sharing through the use of social media tools. Based on our analysis, we show that city police departments use Twitter primarily to disseminate crime and incident information. City police departments also use Twitter to share information about the department, events or meetings of interest, traffic updates, and safety awareness. We also find that some city police departments use Twitter to interact directly with the public.

We sampled four weeks of public-authored tweets that contained the names of city police department Twitter accounts to analyze how the public uses this social media tool in regards to police communications. We found that the public primarily uses Twitter to redistribute information shared by police departments. To a lesser extent the public uses Twitter to mention police departments and to send direct messages to them.

BACKGROUND

Twitter Use

Microblogging is a form of blogging that allows users to send brief updates via the web, mobile devices, and other applications. Twitter is the most popular microblogging service. Twitter was created in 2006, and membership has increased rapidly to a current level of over 100 million users. According to a recent Pew Research Center report, the number of online U.S. adults who use Twitter or a service like Twitter to share updates or to see updates of others has jumped from 11% in December 2008 to 19% in October 2009 (Lehnhar, 2009). Twitter differs from other social media sites in that it offers an easy method for sending brief, real time updates to a large audience (Zhao & Rosson, 2009).

The maximum length of a message on Twitter, a tweet, is 140 characters in length. Users send text as well as provide links to photographs, videos, blogs, and websites in their tweets. Users can tweet via the web, mobile technologies, and other applications in real time (Zhao & Rosson, 2009). Tweets are

defaulted to be publicly available. However, a user can change the profile settings and make his or her own tweets private. Twitter users select who they follow and can be followed by anyone if their profiles are public. Additionally, non-Twitter users can access publicly available tweets by going to Twitter.com or doing a search on Google.com.

People and organizations use Twitter for a variety of reasons. Java, Song, Finin, and Tseng (2007) developed a taxonomy of user intentions in Twitter and found the main user intentions to be daily chatter, conversations, sharing information/URLs, and reporting news. Zhao and Rosson (2009) conducted semi-structured interviews with 11 participants and identified various reasons for using Twitter including keeping in touch with friends and colleagues, raising visibility, gathering useful information, seeking help and opinions, and releasing emotional stress. Companies can use Twitter to interact with customers, gauge customer sentiments, and gather market information (Jansen, Zhang, Sobel, & Chowdury, 2009). In times of crises and disasters Twitter has been used by citizens for information production, broadcasting, brokering, and organization (Heverin & Zach, 2010; Hughes & Palen, 2009; Starbird, Palen, Hughes, & Vieweg, 2010).

Twitter Conventions
There are numerous conventions on Twitter that have developed over the past few years including retweeting, replying to or mentioning other users, using hashtags, and creating lists that demonstrate interactive and conversational aspects of Twitter (Boyd, Golder, & Lotan, 2010; Honeycutt & Herring, 2009).

Retweeting in Twitter involves one Twitter author retransmitting the tweet of another author word for word or almost word for word. Retweeting can be used to share information and to show others what information the retweeter finds important, interesting, or valuable. Boyd et al. (2010) conducted an analysis of retweets and solicited Twitter user comments about retweeting practices. They found users retweet for various reasons including spreading tweets to new audiences, informing a specific audience, commenting on another user's tweets, making one's presence as a listener visible, and showing support or loyalty to another user (Boyd, et al., 2010). By retweeting, Twitter users become part of larger conversation across a broad community.

Twitter users can reply to others or mention others users in their Tweets using the "@" symbol. For example, a user can create a message starting with "@Boston_Police" to send a public message to the Boston Police Department – "@Boston_Police thanks for answering my request. " Also, a user can make statement mentioning the department such as "looking at social media use the @Boston_Police." Honeycutt and Herring (2009) conducted a study on the use of the @ symbol using a sample of 200 tweets and found that on average 30% of tweets contained the @ symbol suggesting that Twitter is being used for interpersonal

interaction. This is an increase from a previous study (Java, et al., 2007) that showed that 21% of users used the @ symbol and that 13% of the messages were part of larger conversations.

Hashtags are another convention used in Twitter. Hashtags are a user-created method for categorizing tweets about a specific topic indicated by the # symbol. If a user wants to find tweets on a specific topic, then he or she can search for a hashtag. For example, #smgov tweets are tweets all focused on social media use in government and #worldcup tweets are focused on the 2010 World Cup. Finally, Twitter users can make lists of other Twitterers and give the lists a label. For example, a list could be called us-police-on-twitter. If the list is set to public, then any other Twitter user could follow the list.

Law Enforcement and Communication with the Public
Traditionally, city police departments have distributed information to the public via the news media. Police departments view working with the news media as a way of "demonstrating transparency; reassuring people; achieving publicity for unsolved crimes; projecting positive stories; and projecting a positive police image" (Mawby, 2010). As the most visible members of the criminal justice system, police recognize the power of the media and attempt to use it to promote the image of the police (Chermak & Weiss, 2005). As the public has become more technologically and media-oriented, distributing information to the public is viewed as integral to police operations (Motschall & Cao, 2002). Increasingly, police departments are instituting communication and public information programs aimed at informing the public and involving the public in law enforcement activities.

Technological developments, including the development of Twitter, have created opportunities for police departments to bypass traditional media channels and communicate directly with the public (Mawby, 2010). Social media tools can contribute to new cultures of openness (Bertot, Jaeger, & Grimes) and provide an opportunity to develop more personal relationships with citizens (Edmiston, 2003). Social media tools can promote transparency by providing information on government rules and citizen rights, disseminating information about performance, identifying civil servants under investigation, and providing information about agency plans, decisions, and actions (Bertot, et al.). Tolbert and Mossberger (2006) suggest that using information communication technologies to communicate with the public can make the government more responsive, transparent, accessible, and participatory, all which can increase the trust citizens place on government agencies. Actively seeking contact with citizens to attend to specific problems that citizens feel are important can help improve public satisfaction with police (Bridenball & Jesilow, 2008).

On the other hand, police departments may lack interest, not have time, or face barriers to social networking initiatives related to e-government challenges such as organizational

and managerial challenges (resistance to change), legal challenges (the questioning of the official communication status of social media messages) , and city communication policies (Gil-García & Pardo, 2005). These barriers may reduce the amount of police department communication with the public via social media tools.

The public has been receptive to government agency use of social media. A 2010 Pew Research Center report finds that "31% of online adults have used social tools such as blogs, social networking sites, and online video as well as email and text alerts to keep informed about government activities" (Smith, 2010). Additionally, the study reports that new social media tools appeal to population groups that have historically used online government services to a lesser extent than other groups. More specifically, African Americans and Latinos were more likely to say that it is "very important" for government agencies to distribute information on social networking sites including Twitter (Smith, 2010).

In a related study, Golbeck, Grimes, and Rogers (2010) collected 4,959 tweets authored by members of Congress and analyzed the content of the tweets to understand how members communicate through Twitter. They found that the majority (54.7%) of the tweets were informational and that a vast majority of these informational tweets (72%) contained URLs. Most of the URLs pointed to longer posts written by members of Congress. It was also found that 27% of the tweets contained location and activities information, 7.4% contained external communication or direct communications with constituents, 0.08% contained hashtags, and less than 0.01% were retweets.

RESEARCH PURPOSE
The goal of this study is to further our understanding about how city police departments communicate through Twitter. Our research questions are:

- What types of information are shared by city police departments through the use of Twitter?

- How does the public use Twitter to interact with city police departments and with each other regarding information shared by the police?

METHODS

Police Department Twitter Data Collection
In this study, Twitter use by police departments of U.S. cities with populations greater than 300,000 was analyzed. Based on a U.S. Census Bureau (2009) population estimation(Bureau, 2009)(Bureau, 2009), there are 60 U.S. cities with populations greater than 300,000. From searching Twitter and city police department websites, Twitter accounts were found for 34 out of the 60 cities. However, two cities had private accounts and two cities had one or zero tweets. Therefore 30 accounts were used in this study. The number of tweets sent, the number of followers, number of times listed, and the length of time of the open accounts were recorded. From analyzing the public Twitter profiles of 30 police departments in large U.S. cities, we found a total of

10,931 tweets, 62,226 followers of the police Twitter accounts, and 3,991 lists with the police accounts named (as of May 1, 2010). To conduct a comparative analysis of Twitter usage across city police departments, a maximum of 300 tweets were pulled from each account, starting with the most current tweets. If police accounts had less than 300 tweets, all tweets were used. The initial data set used for the content analysis consisted of 4915 tweets.

Coding
The 4915 tweets chosen for analysis were coded using an open coding approach (Strauss & Corbin, 1998). Non-exclusive categories of tweets were identified, revised, and described while reading the contents of the tweets. Ten major categories of tweets evolved from the coding and are described below in Table 1. We found that 202 tweets contained two types of content. Therefore, the final analysis was conducted a sample of 5117 messages.

Category	Description	# of Tweets
Crime/Incident Information	reporting crime or incident; providing updates about a crime or incident	2320
Department Information	sending information about the police department	718
Event Information	informing others about upcoming or planned event	511
Traffic Information	reporting traffic problems, road closures, and parking for major events	413
Prevention Information	offering safety tips and awareness	327
Person Identification	distributing suspect or missing person information or requesting help in identifying suspect or missing person	287
Reply/Mention	replying to other Twitter users publicly on Twitter or mentioning other Twitter users' usernames	210
Retweet	retransmitting word for word of other Twitterers' messages	149
Data	providing statistics or data	93
Other	unknown, tweet is only a URL, URL does not work, test messages	89
Total		5117

Table 1. Coding categories of police tweets.

Public Twitter Data Collection

Tweets generated by the general public, including citizens, organizations, and companies, were collected over a series of four weeks: one week each in February, March, April, and May 2010. A search was conducted each week for each of the 30 city police departments' Twitter profile names. We sampled a week from different months to allow for variation in events. For example, one city might host a national sports event during a particular month or be stricken with a major weather event. The sampled four weeks provided 1,984 tweets for analysis.

Public Twitter Data Coding

Using an open coding approach, four major categories of publicly authored tweets evolved as shown in Table 2.

Category	Description	# of Tweets
Direct Communication	message directed at a police department	305
Mention	mentioning a police department's username	375
Retweet	retransmitting word for word of a police department's message	759
Retweet with Comment	adding commentary to retransmitting word for word of a police department's message	545
	Total	1984

Table 2. Coding categories of public-authored tweets

FINDINGS

Profile of City Police Departments Using Twitter

Out of the 60 U.S. cities with populations greater than 300,000, 30 police departments have active publicly-available Twitter accounts. City police departments with active public Twitter accounts come from larger cities (population mean of 845,433) compared with city police departments that do not have Twitter accounts (population mean of 560,080). From an analysis of the active public police department Twitter profiles, the average department has had an account for 10 months, authored 364 tweets, has 2074 followers, and is listed in 133 lists.

Content Analysis of Police Tweets

The contents of the 4915 tweets selected for analysis were coded to reflect the ten major categories identified through open coding. Due to the non-exclusive categories, 202 tweets fell into more than one category. The percentages reported are therefore based on 5117 tweets. Figure 1 shows a summary of the frequency of each type of content found in the tweets.

Almost half (45.3%) of the tweets contain crime or incident information about shootings, stabbings, accidents, arrests, robberies, murders, abductions, as well as reports of police on scene at an incident, and investigations. The following tweets are examples of the type of content shared in crime or incident tweets:

- Boston_Police: PERSONS SHOT: 3 people shot on Winston Rd in Dorchester, homicide unit responding.

- DallasPD: Burglary/Residence, 6100 blk of Belmont, 11/26/09. Suspect entered via unlocked front door. No injuries or assaults.

- Sacpolice: Sacramento Police are at the scene of a single vehicle fatal accident near San Juan/ under I-5. Male 84 yrs old was the sole occupant.

Tweets in the Department Information category comprised 14.0% (718) of the tweets. These tweets contained information about awards given to the department, promotions, graduating police academy classes, memorials for fallen police officers, and methods of following or contacting the department via its website or other social networking sites besides Twitter.

- NYPDNews(New York City): The NYPD is over one-quarter Hispanic, with a membership most closely reflecting the City's population. More: http://tinyurl.com/divhisnypd

- LVMPD (Las Vegas): LVMPD held its 100th graduation last week. Check out the video here: http://tinyurl.com/y8c8u4s

Event tweets comprised 10.0% (511) of the tweets analyzed in this study. Event tweets consist of events that members of the police departments will attend or events that the police departments are hosting. Event examples include fundraisers, community meetings, neighborhood meetings, and crime watch meetings.

- phoenixpolice: "Wake Up" Hosts Volley Ball Camp Fund Raiser July 27 - July 30, 2009. Go to www.phoenix.gov/police for more information

- Tucson_Police: Auto Theft Detectives hosting a vehicle identification number (VIN) etching event March 3, 2010 from 9 a.m. to 12 p.m. at 6500 E. Grant Rd
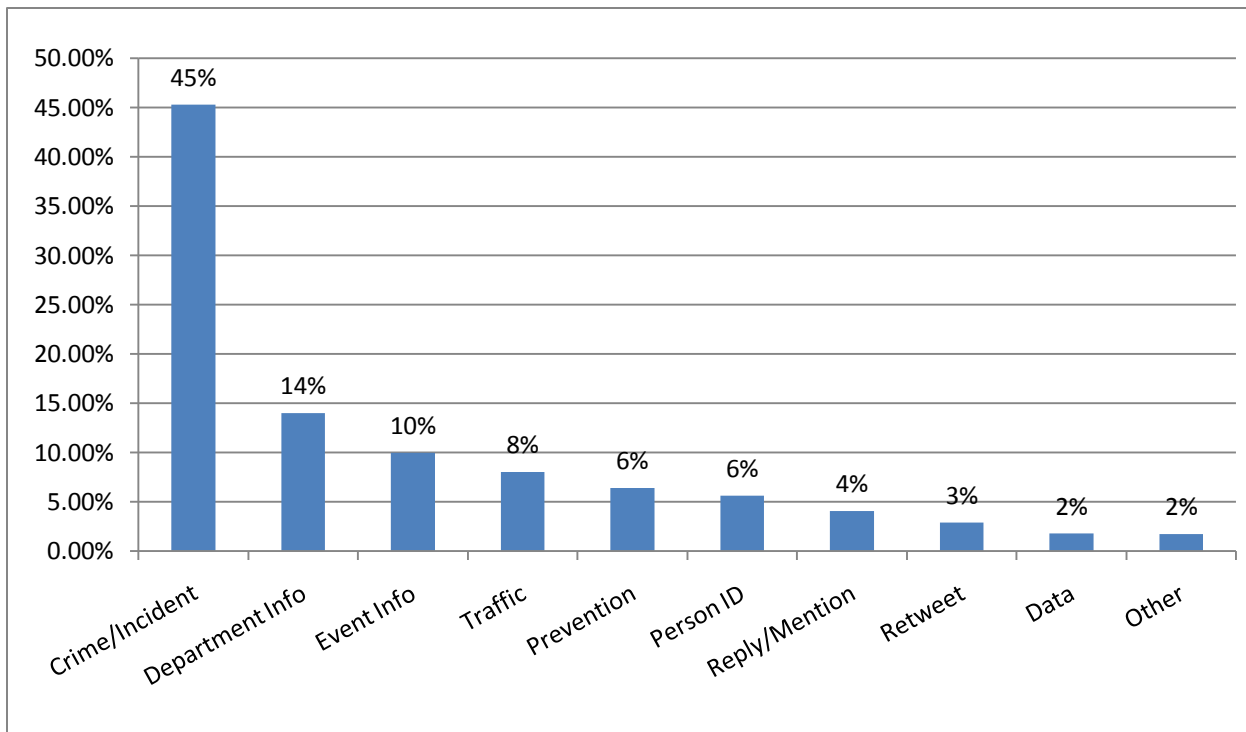
Figure 1. Percent of police department authored tweets by content type (5,117 total tweets)

Traffic tweets consisted of 8.1% (413) of the tweets and describe traffic related events such as closures of roads, heavy congestion, and options for alternate routes. Prevention tweets comprised 6.4% (327) of the tweets and contained safety tips, possible threats to communities, and crime awareness. Examples include:

- Milwaukeepolice: Milwaukee Police warn about scams that prey on the elderly. Read how to avoid being a victim at www.milwaukee.gov/police in the news box

- AuroraPD: Five things to do before leaving your home this Christmas. Full article can be found in the APD N.E.S.T. at http://bit.ly/b3IF4.

Person identification tweets (5.6%, 287 tweets) consisted of descriptions and names of suspects or missing persons and requests for assistance in identifying suspects or missing persons. These tweets often contained URLS linking to photographs, sketches, descriptions, and videos of named suspects, unnamed suspects, and missing persons.

- Philly_pd: New Composite - Philly Police need your help. View suspect composite here: http://tinyurl.com/2dnwvyq

- detroitpolice: Wanted Fugitive: Name xxx, B/M/23, 5'6", 135 lbs, is wanted for Murder 1st Degree and Assault with Intent to ... http://bit.ly/bYyEzK

Only 93 tweets (1.8%) contained crime data or police data. These type of tweets often contained URLs.

- boston_police: Boston 24- Data Includes figures from Wednesday, Wednesday 3/31/10 until Thursday, 4/1/10: Homicides: 1 Non-fatal ... http://bit.ly/b2FJtG

The amount of replies/mentions, URL, retweets and hashtags was also analyzed. 47.5% of tweets contained URLs. 4.1% contained replies or mentioning of other Twitter users, 2.5% contained hashtags, and 2.9% were retweets.

Content Analysis of Public-Authored Tweets
The contents of 1,984 public-authored tweets were coded based on the categories developed from an open coding approach. Figure 2 summarizes the results.
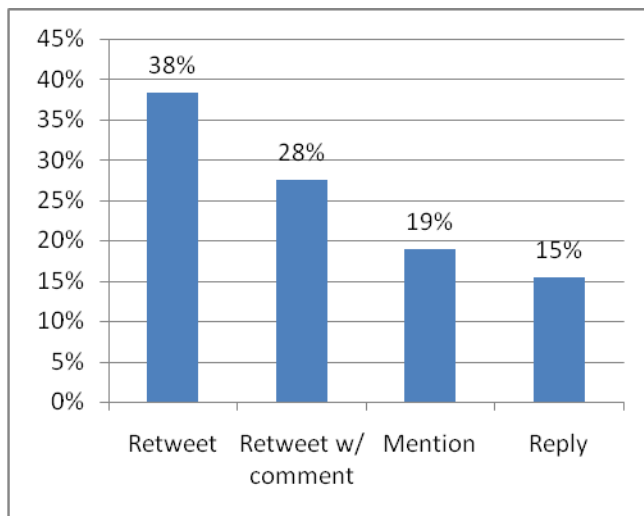
Figure 2. Percent of public-authored tweets by content type (1,984 total tweets)

The majority of the public-authored tweets that have a city police department's Twitter profile name in the tweet are retweets (66% of total after combining retweets with and without comments). Mentioning of and replying to city police departments are used to a lesser extent.

Examples of each of the categories are as following:

Retweet

- citizen: RT @SacPolice: Police/ Fire are out at 28th/ O st on an explosion from a car. No one injured at this time.

Retweet with comment

- citizen: Well that was quick RT @BaltimorePolice: UPDATE - questionable death determined to be drug overdose. No obvious signs of foul play

Mention

- tv-station: @LVMPD will have the most DUI checkpoints they've ever had this weekend. It's also the most done by any PD in the country

Direct Communication

- citzen: @Boston_Police I'm curious if you have any advice or resources for a hopeful-to-be Police officer.

DISCUSSION

Overall Twitter Usage
Overall, half of city police departments from large U.S. cities have publicly available, active Twitter accounts. We found that police departments that do not have Twitter accounts tend to come from smaller cities than those cities with active Twitter accounts. City police departments may not have active Twitter accounts for a variety of reasons. Some police

departments may be active on other social media sites such as Facebook and YouTube and have decided not to use Twitter. Possible explanations for some police departments deciding to not adopt social media may include privacy issues, security concerns, and lack of personnel to devote to using social media. Finally, police departments may feel that their websites provide information needed by the public.

From our analysis, we found that city police departments are using Twitter primarily to distribute information about crimes and incidents followed by sending information about department happenings, traffic, events, and person identification. Overall, city police departments tend to not use the conversational aspects of Twitter including retweeting, replying, or mentioning other Twitter users. The conversational aspects of Twitter can be used more by police departments to engage the public. Some police departments including Denver, Milwaukee, and Portland use these Twitter conversational aspects considerably more than the rest of the police departments included in this study. These police departments can be seen as possible models for using Twitter to converse with the public. Future research is needed to see how the use of these aspects impact police and public communications.

Each city police department with an active public Twitter profile has an average of over 2,000 followers. The fact that police departments are being followed shows that people do are receptive to the types of information that the police departments are sharing. From the analysis of public-authored tweets that include police twitter accounts in the text of the tweets, we found that the public also places value on the information that is sent by city police departments as evidenced by the large percentage of public-authored retweets of police department tweets. From our observations, a large number of these original police tweets that are retweeted are crime/incident information tweets.

Limitations of the Study
This study only focuses on Twitter and does not analyze the use of other social media tools used by police departments including blogs, Facebook, or YouTube. The analysis of the use of police departments' tweets by the public was only determined by reading publically available retweets, replies, or mentions of the police departments' tweets. This leaves out the use of the police tweets by other Twitterers who may have read the tweets and used them in a non-public way. Additionally, only a sample of the public's use of police department tweets or information was analyzed. A larger sample may produce different results.

CONCLUSION
From our analysis of the use of Twitter by police departments from large U.S. cities (cities with populations greater than 300,000) we have found that the primary use of Twitter by city police departments is disturbing crime or incident related information (45.3 % of tweets). Other uses of Twitter include sharing department, event, suspect, prevention, and traffic information. Overall, city police departments do not use Twitter to converse directly with members of the public.

From our analysis of the public's use of police department tweets, we find the main use to be retweeting followed mentioning of and replying to the police departments.

Future research will investigate the use of police authored tweets by the general public to identify what the public values and what content they determine to be useful to be sent via Twitter. Furthermore, the change or lack of change in perception of police departments based on the use of social media can be examined. Additionally, the non-adoption of Twitter for information sharing by the other 30 cities with populations greater than 300,000 will be investigated.

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