Examining Community Policing on Twitter: Precinct Use and Community Response

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Abstract. A number of high-profile incidents have highlighted tensions between citizens and police, bringing issues of police-citizen trust and community policing to the forefront of the public's attention. Efforts to mediate this tension emphasize the importance of promoting interaction and developing social relationships between citizens and police. This strategy – a critical component of community policing – may be employed in a variety of settings, including social media. While the use of social media as a community policing tool has gained attention from precincts and law enforcement oversight bodies, the ways in which police are expected to use social media to meet these goals remains an open question. This study seeks to explore how police are currently using social media as a community policing tool. It focuses on Twitter – a functionally flexible social media space – and considers whether and how law enforcement agencies are co-negotiating norms of engagement within this space, as well as how the public responds to the behavior of police accounts.

Keywords: police, community policing, social media, Twitter

1 Introduction

Current approaches to managing the relationship between citizens and police emphasize the importance of promoting police-community interaction and accommodating pathways of communication that place citizens and police on a more level playing field [8]. By facilitating communication regarding appropriate police practices and general community well-being, police have a greater chance of being viewed as legitimate and promoting citizen cooperation in law enforcement activity [4]. This communication may be particularly important for alleviating feelings of distrust toward the police among minority citizens [11], [4], [2].

Effective communication between police and citizens is the central component of a strategy known as community policing. Community policing emphasizes the importance of fostering interpersonal relationships between citizens and law enforcement, as well as training officers to take a holistic rather than incident-based approach toward evaluating community well-being [3]. The premise of this strategy is that officers should pay attention not only to instances of crime within an area but also to overall community health – including citizens' satisfaction

with their community and feelings of safety. Officers who effectively integrate themselves into the fabric of a community through community policing may also help level power dynamics between officers and citizens, thus making enforcement activity appear more just and appropriate [4].

While the interpersonal interaction central to community policing may occur through offline, face-to-face contact, it may also occur on social media sites. Social media sites provide easy-to-access common forums through which citizens can engage with law enforcement agencies by gathering information on current events or providing feedback on police activity in real time. In light of this, a recommendation from the President's Task Force on 21st Century Policing states: "Law enforcement agencies should adopt model policies and best practices for technology-based community engagement that increases community trust and access" [9].

It is unclear, however, what these intended strategies are and what best practices should be adopted. Given this deficit, this study seeks to examine community policing on social media – specifically, on Twitter – by examining the behavior and community engagement activity of law enforcement agencies, as well as reactions to these accounts from the public. Focusing on the activity of law enforcement in two cities - Seattle and New York - this study finds that a common interpretation of community policing on Twitter may still be in flux.

2 Community Policing on Twitter

There is growing interest in the adoption of social media spaces as platforms for community policing [9], however there are few common standards for how law enforcement agencies are expected to achieve this goal. This is particularly true of Twitter, which is a highly flexible and sparse social media space that many view as both a social space and a "global town square" or "microphone for the masses" designed for information collection and broadcast [1], [6], [7]. Strategies for using Twitter vary among users, and this may render it difficult to for precincts to establish standard Twitter usage practices to promote community policing.

As of yet, little published research has explored how law enforcement agencies use Twitter. Heverin and Zach (2010) provide the most comprehensive work on this topic by analyzing what information police choose to share on Twitter and how citizens respond to and share this information [5]. These authors find that law enforcement agencies generally tweet about events, traffic, safety awareness, and crime prevention, and that they sometimes engage with news media or other law enforcement agencies directly. They also note that citizens who mention law enforcement agencies often do so through direct retweets of police account activity. While this study provides valuable insight into the content of the conversation space occupied by law enforcement agencies on Twitter, further research is needed to better understand how law enforcement agencies utilize and co-negotiate the use of Twitter as a community policing tool.

Understanding how Twitter is used as a community policing tool is a multifaceted question that requires consideration of activity from both law enforce-

ment accounts and the public. In this project we consider how law enforcement agencies behave on Twitter, as well as how the public reacts and response to their behavior. Through these findings we seek to uncover whether police and/or citizens appear to use Twitter as a community policing tool, and whether common standards for how to use this space are beginning to emerge. Overall, we seek to shed light upon what community policing currently means within this space to help guide future research on this topic.

3 Data

This project uses two different samples of data from Twitter: (1) data that documents online activity from selected police accounts and (2) public tweets that contain mentions of these accounts posted over a 100 day period in 2015.

We focus on law enforcement agencies in Seattle and New York City (NYC) as case studies. NYC was selected due to the large number and diverse nature of accounts associated with the New York Police Department (NYPD). Seattle was selected due to the fact that the Seattle Police Department is known to interact frequently with citizens via social media and endorses social media engagement as a form of building community involvement and trust [10]. All precincts and oversight bodies in these two locations were enumerated by members of the research team and are expected to represent a census of the law enforcement bodies within each city. Note that these accounts include a variety of entities – including commissioners, fire departments and divisions of the NYPD's Housing Bureau's Police Service Areas. The diversity of cases included in this analysis will add dimensionality to our understanding of how users engage with the police on Twitter.

Between the two locations, a total of 135 active police accounts were identified and included in this analysis (see Appendix Table 1 for a complete list of the accounts included). Police account information – including user profile metadata, user timeline data, and network information – was collected using Twitter's public Application Programming Interface (API). Public mentions of these accounts were collected via Gnip's Historical Powertrack Twitter API. [1] These data include all public mentions, but exclude mentions that were subsequently deleted by the user.

4 Findings

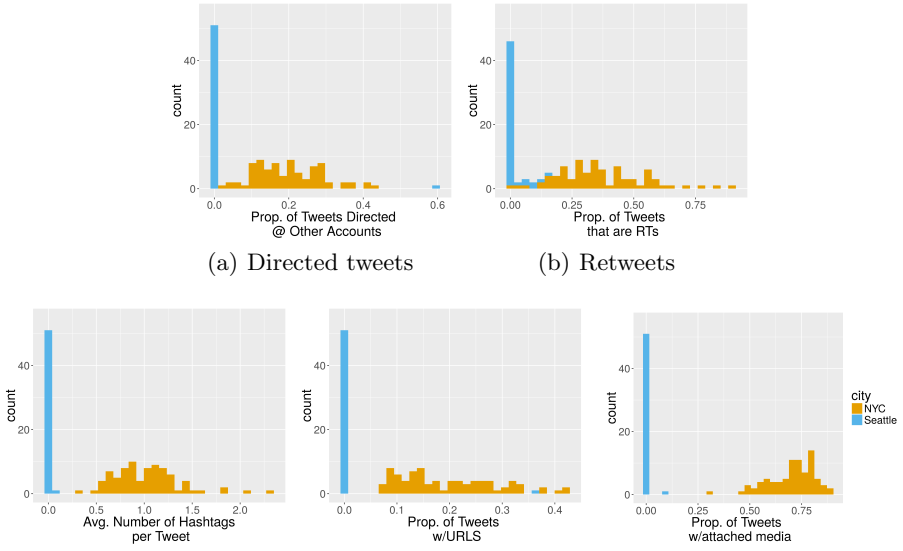
We examine Twitter behavior of both police and citizens interacting with police through the lens of community policing. Findings focus in part on the behavior of the police accounts, including connections between accounts and the extent to which accounts appear to engage with the public through the use of Twitter

[1] We would like to acknowledge the assistance of the University of Washington eScience Center for providing access to and assistance using the Gnip Historical Powertrack API

conventions. They also address how the public responds to content posted by these accounts.

4.1 Police Account Activity and Social Interaction

We begin by examining how police behave on Twitter. For this analysis we focus specifically on posting behaviors that may be used as a means of engaging with the public. Measures of community engagement considered include: the proportion of tweets that are directed at other accounts, the proportion of tweets that are retweets from other accounts, the proportion of tweets that link to outside material, the proportion of tweets that contain multimedia (such as photos of officers within a precinct, participating in community activity), and the average number of hashtags used per tweet. Each of these behaviors indicate that police accounts are making strategic use of platform conventions. Some – such as using directed messages – help to capture direct interaction between police accounts and other police accounts and/or citizens. Distributions of the proportion of police posts that contain each of these features are depicted in Figure 1.



(a) Directed tweets (b) Retweets

(c) Tweets with hashtags (d) Tweets with URLs (e) Tweets with media

Fig. 1. Proportion of police account tweets containing textual and content features by location - Seattle in blue and NYC in orange.

For the NYPD, we see a fairly normal, slightly negatively skewed distribution in activity across accounts for selected community engagement measures. Most Seattle accounts, however, participate in almost none of the engagement

activities examined. Indeed, the contrast between accounts from these two locations is striking. Closer examination reveals that Seattle accounts are often used as 'beat' accounts that keep citizens up-to-date on criminal incidents, as seen in the example tweets in Figure 2. Such posts are often formulaic and auto-generated. If we break down posting activity statistics by these designations, as seen in Table 1, we can identify these patterns clearly. The Seattle Police Department general account is highly engaged, in some respects even more so than the NYPD accounts, while the Seattle 'beat' accounts show minimal to no use of many Twitter conventions.

Fig. 2. Illustration of Seattle 'beat' accounts

Account	@Mentions	RTs	URLs	Media	Hashtags
Seattle PD	0.596	0.123	0.365	0.106	0.100
Seattle Beat Accounts	0.000	0.015	0.000	0.000	0.000
NYPD	0.199	0.367	0.197	0.703	0.033

Table 1. Interaction-based posting statistics by account designation

Next, we consider the connections between these police accounts. We may expect that as law enforcement agencies develop strategies for Twitter use, they do so by watching one another's behavior and/or co-negotiating norms of use within this space. Figure 3 displays the network of following relationships among the accounts collected. NYPD accounts - including oversight bodies and local precincts - are highly interconnected, indicating they follow one another on the platform - perhaps keeping up to date on what others are posting and how they utilize platform conventions. Most hyper-local Seattle accounts, on the other hand, are only connected to the Seattle Police Department's primary account (`@SeattlePD`). This account appears to act as a broker or bridge between the Seattle Police Department and NYPD accounts.

We see a similar pattern emerge when we consider connectedness in the form of a shared audience. To operationalize this, we consider account A and B connected if the have followers in common. A visualization of this network is displayed in Figure 4. Again, `SeattlePD` acts as a broker between disparate

clusters of Seattle PD and NYPD accounts. Despite the fact that community policing via social media is a proposed tool for national change, there seems to be little city-to-city communication regarding how this tool is intended to be used.

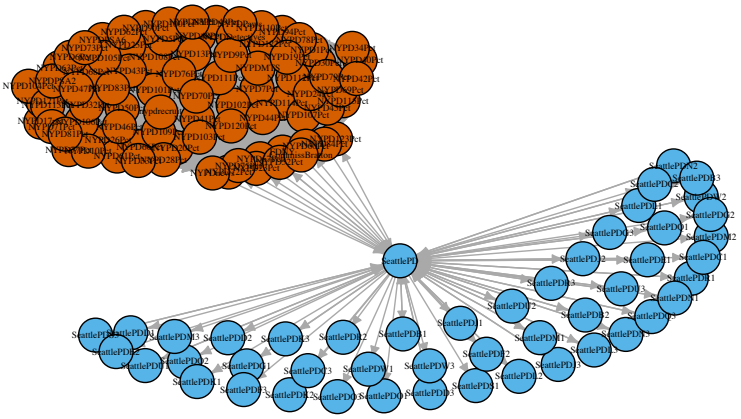


Fig. 3. Following relationships among SEA and NYC police accounts

Overall, we see highly disparate patterns of Twitter use for law enforcement agencies in Seattle and New York City. Among NYPD accounts there is somewhat strong consistency in Twitter usage and, given following connections between NYPD accounts, a possible co-negotiation of norms within this space. Casual observation of NYPD accounts indicates that most are similar visually as well. Many feature a single figurehead displayed in the profile photo and a description that lists the commanding officer, mission and/or region of oversight, and a link to the NYPD Social Media Customer Use Policy. While the Seattle PD's primary account (`@SeattlePD`) appears to focus on community engagement by utilizing Twitter conventions and connecting to both NYPD and Seattle accounts, many Seattle accounts are not connected to one another and do not seem to consider community engagement at all.

4.2 Reactions from the Public

In addition to examining how law enforcement accounts use Twitter as a community policing tool, we may also consider how the public reacts to this behavior. For instance, does including multimedia in Tweets encourage users to share or respond to this content? Do citizens use Twitter as a space to connect with police and raise topics of discussion regarding police conduct and community well-being?

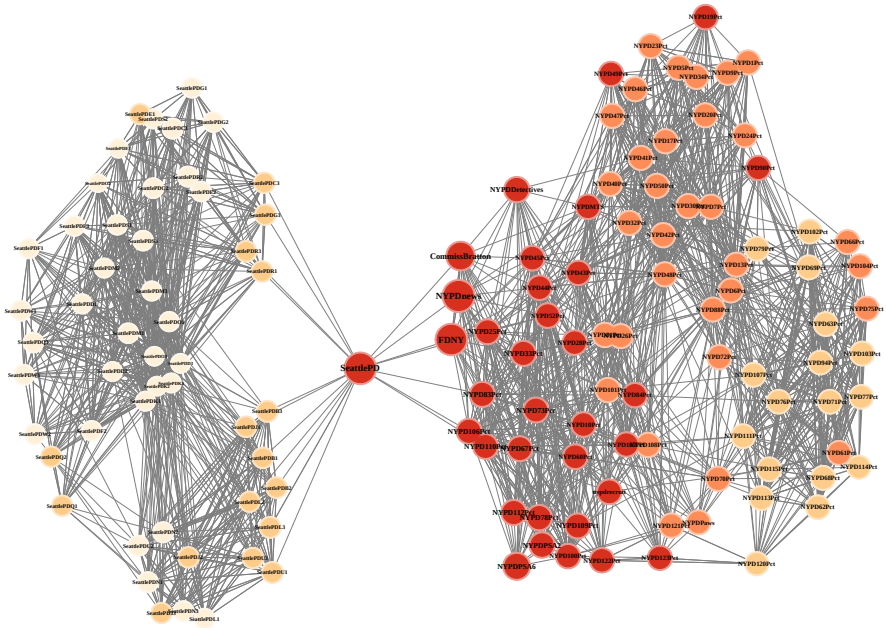


Fig. 4. Shared audience relationships among SEA and NYC police accounts

We first consider whether the proportion of URLs and multimedia included in tweets and the average number of hashtags per tweet is positively or negatively associated the volume of citizen reactions the account receives. Our outcomes of interest are the average number of retweets and favorites that an account's tweets receive (as measured by timeline content gathered via the Twitter API). Figure 5 displays predicted values from linear regression models that explore these outcomes. Models used control for the following activity measures: the proportion of tweets with URLs in the account's timeline, the proportion of tweets containing media in the account's timeline, the average number of hashtags per tweet in the account's timeline, the account's total friends and followers, and the average number of tweets issued per month. Note that for these models we exclude Seattle 'beat' accounts, as there seems to be little interaction between citizens and these accounts. In addition to this, four outliers were removed that displayed follower counts and/or average retweet values that were two to three times magnitude of other accounts. The dependent variables were logged to correct for over-dispersion.

These results indicate that including links to outside sources and/or media in tweets is a catalyst for the spread of information. The more media and URLs an account includes in their tweets, the higher their average retweet count. Overall, it seems that engagement strategies lend themselves better to information spread (retweets) than gaining popularity (favorites).

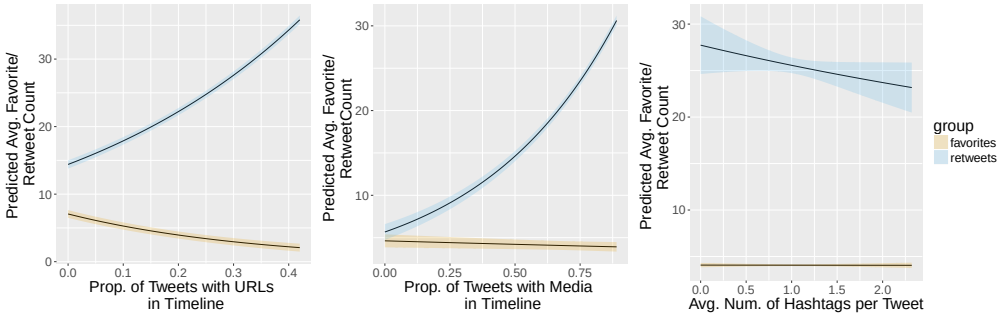


Fig. 5. Predicted average favorites/retweets given police account activity

Another critical component of the effectiveness of Twitter as a community policing tool involves the willingness of citizens to use Twitter as a platform for discussing controversial and/or important matters. Given this, we examine the overall sentiment of public posts mentioning police accounts, as well as the most frequently mentioned terms with these posts. For these analyses, we focus on mentions of the top 10 most frequently mentioned accounts - displayed in Appendix Table 2. Figure 6 displays positive/negative sentiment over time for: all mentions of high-activity accounts, mentions that are direct retweets, mentions that exclude direct retweets, and mentions that specifically exclude any retweets from NYPD accounts. While content that excludes retweets is occasionally collectively more negative than positive and direct retweet content is sometimes more positive than neutral, the overall content of tweets is fairly neutral.

Examining word frequencies helps contextualize this neutral commentary (see Table 2). Prior to analyzing word frequencies, text was lowered and stemmed and stop words, punctuations and URLs were removed. This analysis indicates that the majority of terms frequently used appear commonplace or even complementary. We see some evidence of public critique through mentions of "Blake," which refers to James Blake – a professional tennis player who accused the NYPD of use of excessive force in September of 2015 – within the corpus that excludes retweeted content. However, on the whole citizens do not seem to view Twitter as a space for public debate where controversial topics may be raised and critical police-citizen communication may occur.

5 Discussion

Social media spaces are cited by many as contexts in which police and citizens can interact with one another and establish opens lines of communication. Improving police-citizen communication – a core strategy of community policing – is cited as a possible solution to alleviating tensions between police and citizens [9]. Social media sites provide up-to-the-minute communication spaces through which citizens and police may share thoughts, form relationships and

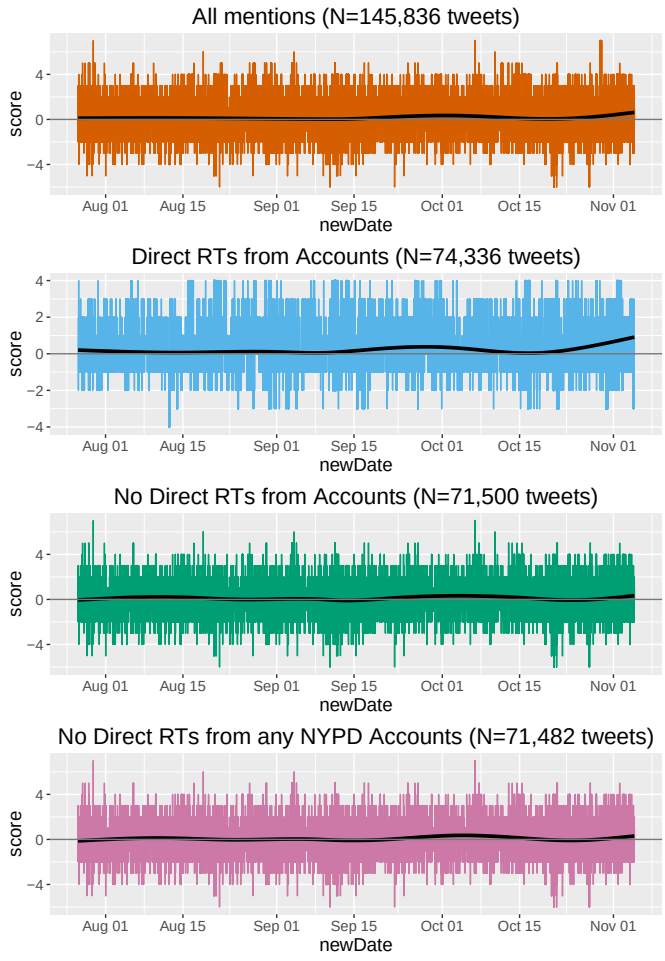


Fig. 6. Public sentiment in tweets mentioning police accoutns over time

engage in interaction. One such platform is Twitter, which offers flexible communication tools featuring microblog posts generated in real time. Promoting communication between citizens and police within this space might be an important component of making community policing online a successful reform strategy.

However, while some express enthusiasm regarding the use of Twitter as a community engagement space, it seems that this goal has yet to be reached. For one, we note highly inconsistent interpretations of effective Twitter use between cities. While the behavior of NYPD accounts - including oversight bodies and local precincts - is fairly consistent, relies on Twitter conventions that may promote engagement, and may be actively co-negotiated through connections between accounts, Seattle PD accounts are relatively disparate and many hyper-

Corpus	Most Frequently Occurring Terms
All high-activity accounts	"call", "commissbratton", "day", "fdni", "fdny", "fire", "holder", "member", "neverforget", "nyc", "nypd", "nypdnew", "nypdnews", "offic", "polic", "randolph", "seattlepd", "thank", "today", "wanted", "will"
Direct Retweets	"343", "800577tip", "call", "commissbratton", "day", "end", "fdni", "fdny", "member", "neverforget","nyc", "nypd", "nypdnews", "offic", "polic", "today", "tour", "year"
No Direct Retweets	"billdeblasio", "blake", "commissbratton", "cop", "fdni", "get", "jame", "nyc", "nypd", "nypdnew", "offic", "polic", "rememb", "seattlepd", "thank", "time", "today", "will", "wwe"
No NYPD Retweets	"billdeblasio", "blake", "commissbratton", "cop", "fdni", "get", "jame", "nyc", "nypd", "nypdnew", "offic", "polic", "seattlepd", "thank", "time", "today", "wwe"

Table 2. Frequently occurring terms in public tweets mentioning police accounts

local accounts do not appear to engage with citizens at all. A shared expression of community policing on Twitter has yet to come into focus.

Citizens do not seem to view Twitter as a space for public discussion, either. Most tweets mentioning high-activity accounts included in this study were neutral in tone and contained relatively common terms related to policing and community. There is some evidence of critical feedback – specifically, some mentions of tennis star James Blake – but this was only seen after removing retweeted content. The lack of critical conversation within this space may be a consequence of inconsistent police-citizen engagement strategies on Twitter. The broad spectrum of police engagement strategies on Twitter may make citizens feel unclear about what is or is not appropriate to say within this space. Overall, while Twitter may help level the playing field and open dialogue between these groups, it may be a long time until this goal is achieved and/or Twitter interaction may supplement face-to-face interaction as a community policing strategy.

6 Conclusion and Future Work

Twitter may provide a space where police and citizens can interact, form relationships and discuss matters of community importance. However, without clear directives regarding the appropriate use of Twitter as a community policing tool law enforcement agencies - particularly agencies within different cities - seem to be developing very different ways of using this space. There seems to be little co-negotiation between cities regarding best practices, and we note little use of Twitter as a space for critical discussion of citizen satisfaction and community well-being.

Given that Gnip's Historical Powertrack Twitter API provides access to a large volume of longitudinal data, future work may consider if and how police

behavior has evolved over time. For instance, we may ask: since citizens respond to the inclusion of multimedia in police tweets, do police accounts include more multimedia over time? Additionally, do police accounts change their profile content over time to help them appear less institutional and more personal – perhaps by making the commanding officer the 'face' of the account, as we currently see in many NYPD precinct accounts? Having this longitudinal data may help us view the nuance of normative co-negotiation that occurs within this space.

Future work may also compare the composition of law enforcement agencies' Twitter audience with that of their in-person constituents. In order to develop effective community policing strategies on Twitter, agencies must be sure they are accessing a diverse and representative group of citizens within this space. Otherwise, community policing through Twitter will do little to improve police-citizen trust, promote police legitimacy, and ensure community safety. Preliminary analyses indicate that police account audiences on Twitter may not be racially/ethnically diverse and/or representative of communities that police intend to protect. We plan to build upon our existing data to explore this possibility in greater detail.

Acknowledgements

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Appendix

Table 1: Cities and Accounts Collected	
Seattle	SeattlePDC1, SeattlePDJ3, SeattlePDC3, SeattlePD1, SeattlePDW3, SeattlePDU2, SeattlePDK1, SeattlePDF1, SeattlePDM1, SeattlePDB3, SeattlePDD3, SeattlePDS3, SeattlePDW1, SeattlePDO1, SeattlePDB2, SeattlePDW2, SeattlePDG2, SeattlePDG1, SeattlePDE3, SeattlePDN3, SeattlePDL1, SeattlePDQ3, SeattlePDU1, SeattlePDJ2, SeattlePDF3, SeattlePDM3, SeattlePDE1, SeattlePDN2, SeattlePDD2, SeattlePDM2, SeattlePDL3, SeattlePDK3, SeattlePDQ1, SeattlePDF2, SeattlePDR3, SeattlePDO3, SeattlePD, SeattlePDE2, SeattlePDC2, SeattlePDO2, SeattlePDU3, SeattlePDS1, SeattlePDL2, SeattlePDQ2, SeattlePDN1, SeattlePDK2, SeattlePDR1, SeattlePDJ1, SeattlePDS2, SeattlePDR2, SeattlePDD1,SeattlePDG3
New York City	NYPD68Pct, NYPD90Pct, NYPDPSA2, NYPD66Pct, NYPDPSA6, NYPD123Pct, NYPD102Pct, NYPD6Pct, NYPD47Pct,NYPDPaws, NYPD108Pct, NYPD19Pct,NYPD101Pct, NYPD10Pct, NYPD50Pct, NYPDnews, NYPD81Pct, CommissBratton, NYPD105Pct, NYPD110Pct, NYPD100Pct, NYPD13Pct, NYPD72Pct, NYPD84Pct, NYPD49Pct, NYPD94Pct, NYPD71Pct,NYPD67Pct, NYPDMTS, NYPD88Pct,NYPD69Pct, NYPD61Pct, NYPD33Pct,,NYPD46Pct, NYPD109Pct, NYPD75Pct,NYPD112Pct, NYPD7Pct, NYPD120Pct,nypdrecruit, NYPD32Pct, NYPD24Pct,NYPD122Pct, NYPD26Pct, NYPD5Pct,NYPD23Pct, NYPD106Pct, NYPD73Pct,NYPD78Pct, NYPD107Pct, NYPD115Pct,NYPD48Pct, NYPD103Pct, NYPD9Pct,NYPD121Pct, NYPD40Pct, NYPD17pct,NYPD60Pct, NYPDDetectives, NYPD83Pct,NYPD79Pct, NYPD52Pct, NYPD114Pct, NYPD20Pct, NYPD45Pct, NYPD77Pct,,NYPD113Pct, NYPD104Pct, NYPD25Pct, NYPD30Pct, NYPD62Pct, NYPD42Pct,,NYPD76Pct, NYPD111Pct, NYPD41Pct, NYPD63Pct, NYPD70Pct, NYPD34Pct,NYPD44Pct, NYPD1Pct, NYPD43Pct,FDNY, NYPD28Pct

Table 2: Top 10 Most Frequently Mentioned Accounts		
Account	Description	Mentions in Public Corpus
NYPDNews	The official Twitter of the New York City Police Dept.	36167
FDNY	The official New York City Fire Department feed	28912
CommissBratton	Commissioner of the New York City Police Department	12897
SeattlePD	Seattle Police news/events	8664
NYPD19Pct	Deputy Inspector James M. Grant, Commanding Officer. The official Twitter of the 19th Precinct #UpperEastSide #UES	3770
NYPD108Pct	Captain John Travaglia, Commanding Officer. The official Twitter of the 108th Precinct	2592
NYPD78Pct	Captain Frank DiGiaComo, Commanding Officer. The official Twitter of the 78th Precinct	2546
NYPD1Pct	Captain Mark Iocco, Commanding Officer. The official Twitter of the 1st Precinct	1855
NYPDDetectives	NYPD Chief of Detectives	1791
NYPD104Pct	Captain Mark Wachter, Commanding Officer. The official Twitter of the 104th Precinct	1658