

Social Media and Trust in Government



**Phase I Final Report
prepared for:
InterPARES Trust
by the members of the
Social Media & Trust in Government
Project Committee
May 27, 2016**

This research project was conducted under the research agenda of InterPARES Trust (ITrust 2013-2018), a multi-national, interdisciplinary research project exploring issues concerning digital records and data entrusted to the Internet. Its goal is to generate theoretical and methodological frameworks to develop local, national and international policies, procedures, regulations, standards and legislation, in order to ensure public trust grounded on evidence of good governance, a strong digital economy, and a persistent digital memory.

InterPARES Trust, directed by Dr. Luciana Duranti, is based at the Centre for the International Study of Contemporary Records and Archives of the School of Library, Archival and Information Studies at the University of British Columbia, in Vancouver, British Columbia, Canada. Major funding for The InterPARES Trust Project is provided by a Social Sciences and Humanities Research Council of Canada Partnership Grant.

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Social Media and Trust in Government

Phase 1

1.0 Introduction

The Social Media and Trust in Government research project is being conducted under the research agenda of InterPARES Trust (iTrust 2013-2018), a multi-national, interdisciplinary research initiative exploring issues concerning digital records and data entrusted to the Internet. The ultimate goal of InterPARES Trust is to generate theoretical and methodological frameworks to develop local, national and international policies, procedures, regulations, standards and legislation, in order to ensure public trust grounded on evidence of good governance, a strong digital economy, and a persistent digital memory.

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The **goal** of the Social Media and Trust in Government research project is to develop two or more case studies that analyze the citizen experience with government social media tools and use, with respect to issues of trust, including concepts of openness, transparency, accountability, and authenticity.

During the first phase, the project explored the types of social media initiatives undertaken by ten government organizations in the US and an equal number in Canada to determine how they utilize social media to engage citizens and provide customer service, as well as how the public reacts to those initiatives. This report provides a summary of those research activities.

2.0 Purpose and Scope

Globally, trust in government fell 14 percent between 2013 and 2014 to an historic low of 44 percent. But trust in information shared through social media rose to 47 percent (Edelman 2014). This prompted the research committee to ask two questions:

- Question one: Can social media be used by government to increase citizen trust?
- Question two: Is there a statistically significant relationship between trust in government and social media initiatives and, if so, what can we learn about the administration of social media that results in an increase of trust in government that can be shared through guidelines and case studies with public

administrators to improve their social media strategies and increase social capital?

During the first phase, the research team gained insight into how social media is being used in the U.S. and Canada to facilitate interactions between the government and the community and to evaluate citizen reaction to those efforts through their online interactions.

During the second phase, researchers will identify and interview representatives from a smaller number of government organizations selected from those participating in phase 1 to explore the relationship between the citizen experience and levels of trust in government. Working with the local governments, the researchers will also conduct a survey of citizens who use social media to engage.

The results of the use of social media from phase 1 and the case studies from phase 2 will be shared with local government administrators to improve their social media strategies.

Before we could look at the use of social media as it relates to trust or mistrust in government, we needed a deeper understanding of the actions and behaviors citizens take, both individually and in group settings, that demonstrate trust in government. We are also interested in the government side of the equation—the steps the local governments take to develop and support a trust-based relationship with citizens.

3.0 Literature Review (ver. 2, October 12, 2015)

3.1 Introduction

In a literature review published May 21, 2014 (Franks and Driskill 2014), the issue of trust was explored in detail. Definitions of trust were examined, and it was agreed that trust should be considered as a conceptual application of a belief system based on reciprocity and a willingness to be vulnerable. As Valenzuela, Park, and Kee (2009) understand trust, it is “a belief that others will not knowingly or willingly harm us” (p. 878). It was determined that identifying the sociological components of trust relationships requires a separation of the different types of trust users apply while in group settings. Investigating the trust bonds between governments and citizens, Thomas (1998) identified three types of trust: mutual, social, and fiduciary. Kelton, Fleischmann, and Wallace (2008) listed four types of trust: individual, interpersonal, relational, and societal (p. 364). At first glance these seven types of trust seem ambiguous. However, with some alignment among common social behaviors, and an identification of processes that encourage trust bonds among individuals, the list identified by Kelton, Fleischmann, and Wallace (2008) is reconcilable with Thomas’s three types (1998). The first version of the Social Media and Trust in Government Literature Review, which is publicly available on the InterPARES Trust website, describes

the various types of trust in detail, including trust in information, trust in digital information, and trust in government.

Four theories were determined to form the basis of our model to move government, through the use of technology, from a state of e-government (i.e., online services) to one of e-governance (social engagement, openness, and transparency): the Social Capital Theory, the Behavioral Trust Theory, the Social Network Theory, and the Resource-based Theory (see Figure 1).

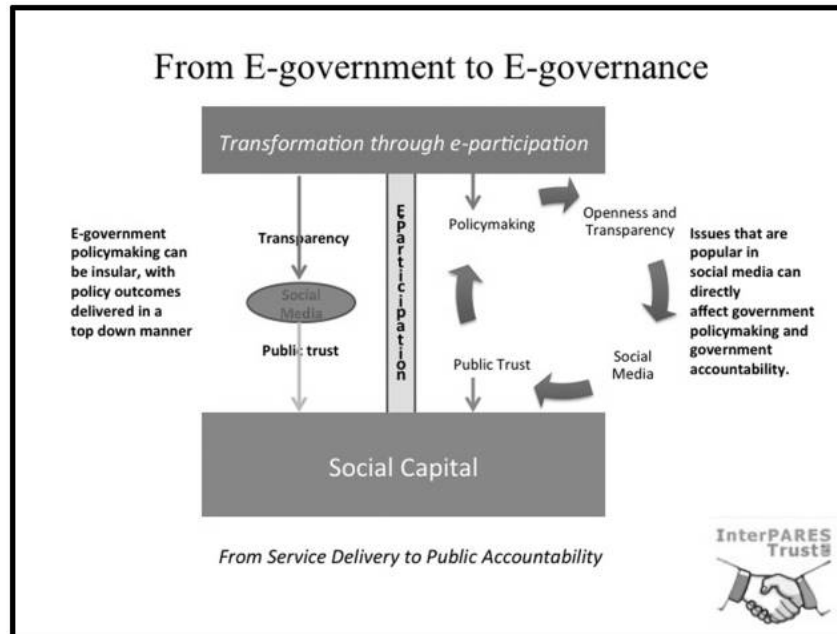


Figure 1: Research framework for Social Media and Trust in Government.

However, a deeper understanding of how and why people trust their government requires that we identify individual sociological and behavioral components of citizen/government relationships.

3.2 Research into Trust in Government

Pew Research for the People and the Press started looking at trust in government in 1958. In that year, *Pew* cites an American National Election Study that found 73 percent of Americans trusted their government. Trust in government increased slightly until the mid-sixties. Then the turmoil of Vietnam and the Counterculture revolution began a steady decline in trust. In 2013, *Pew* found trust in government at 19 percent. A survey conducted by the Pew Research Center in August 2015 revealed trust in the US federal government remains at 19 percent, the lowest level in the last fifty years.

For statistics related to trust in government in Canada, we turned to a second source, the Edelman Trust Barometer. According to the 2014 Edelman Trust Barometer, government experienced the largest decline in trust of any institution in 2013. The most

significant drops were in the U.S., France, and Hong Kong, where levels of trust fell below 50 percent (Edelman, 2014). The 2016 Edelman Trust Barometer based on surveys conducted between October 13 and November 19, 2015, reveals that the general population in Canada continues to exhibit higher levels of trust in government than the United States, 53 percent and 39 percent respectively.

The 2016 Edelman Trust Barometer revealed two important findings: 1) trust in government, business, media and NGOs (non-governmental organizations) is rising and 2) that rise is driven by an increase in the level of trust by an informed public. A growing inequality of trust in institutions, including government, can be viewed when the 33,000 global respondents are examined through one of the following three lenses: General Online Population, Informed Public, and Mass Population as described in figure 2.

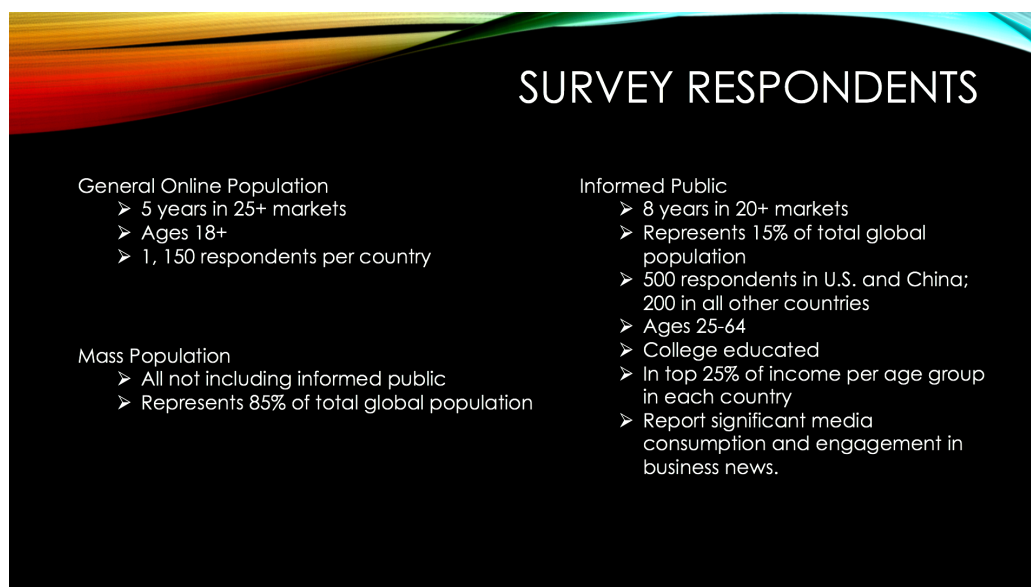


Figure 2: Description of the three categories used for reporting purposes (Edelman, 2016).

Between 2015 and 2016, trust in government among the general population worldwide rose from 41 to 42 percent for a 1 percent increase; however, trust among the informed public rose from 48 to 51 percent for a 3 percent increase (Edelman, 2016). The gap between the general population and the informed public revealed a 7 percent inequality of trust in the 2015 report rose to a 9 percent gap for the 2016 report.

3.3 Sociological and Behavioral Perspective

When all three categories are compared for trust in institutions (government, business, media, and NGOs), there is an alarming disparity in results. Among the informed public, respondents in both Canada (63 percent) and the U.S. (64 percent) would be considered trusters; among the general population, respondents in Canada (56 percent) would be considered neutral but respondents in the U.S. (49 percent) would be considered distrusters. When reviewing trust among the mass population, the global index falls into distruster territory, with Canadian respondents staying within the neutral category with

only a one percent difference (55 percent) and the U.S. falling to 45 percent and within the distruster category. In 2016, the U.S. led the countries that exhibit the greatest trust gap (19 percent) between the mass population and the informed public.

3.3.1 Perception of Future Well-being

The perception that individuals and their families will be better off in two years' time differs among the mass population and the informed public. In the U.S., 63 percent of the informed public believes they will be better off while only 45 percent of the mass population feel that way for an 18 percent differential. In Canada, 50 percent of the informed public believes they will be better off, but only 37 percent of the mass population feels that way, for a 13 percent differential.

3.3.2 Income Inequality

The disparity between the levels of trust among the mass population and the informed population is linked to income inequality according to Edelman (2016). The U.S. is among 18 of the 28 countries that have a double-digit trust gap (31 percent) when high-income respondents are compared to low-income respondents. Canada, on the other hand, reveals a 6 percent gap between high-income and low-income respondents.

3.3.3 Trust in Media

When asked which source of general news and information was most trusted, the general population ranked search engines highest at 63 percent, followed by traditional media at 58 percent and online-only media at 53 percent. Owned media came in fourth at 46 percent followed by social media at 44 percent. The figures for owned media and social media were reversed since 2015, indicating a rise of 3 percent for owned media and a drop of 1 percent for social media. However, millennials rated both owned media and social media at 51 percent, for a rise of 5 percent and 7 percent respectively. Millennials were more trusting of digital media than the general population (Edelman, 2016).

3.3.4 Trust in Information based on authors or content creators

Elected officials fared poorly when ranked by the general population as trusted sources of information, ranked only slightly higher than celebrities and companies they do not use. At 37 percent in 2016, elected officials trailed, among others, friends and family (78 percent), academic experts (65 percent), companies they use (62 percent), and employees of a company (55 percent). Elected officials even trail journalists (44 percent) by 7 percent.

3.3.5 Inversion of Influence

According to the study (Edelman, 2016), elites (high-income earners) yielded the most influence over the masses because of their access to better information, the fact that their interests were interconnected with those of the masses, and the perception that "becoming an elite" was open to all. Now, peer-to-peer influence is more powerful due to a distrust of elites among the masses based on dissatisfaction with income equality,

high profile revelations of greed and misbehavior, and the growth and democratization of information.

Leaders can engender trust in their constituents or clients by taking positive actions to improve society; expressing their values through honest, ethical, engagement; enlisting employees to engage with the constituents or clients on behalf of the organization, and engaging with stakeholders when they are on a topic that interests or concerns them (Edelman, 2016).

3.4 Social Media and Trust in Government

The premise of this research project is that trust can be engendered through the use of social media by government officials who engage with their citizens in an open and transparent manner. One method to gauge the attitude of citizens in response to government use of social media is sentiment analysis. The original literature review was updated in October 2015 to reflect research and writings on sentiment analysis to lay the foundation for the methodology described in this document. The rationale for sentiment analysis using Twitter as a source of data for this study is described as follows:

Given the prevalence of microblogging for communication among social groups in recent years, the steady increase in empirical work surrounding Twitter is unsurprising. Sentiment analysis (SA) and opinion mining constitute a number of methodological approaches to extract sentiment (e.g., mood) from text to measure fluctuations and patterns in the perceptions, moods or opinions of social groups over time (Bollen, et. al., 2011). In terms of Twitter, tweets become the source of data or text from which positive, negative or neutral sentiments (or variations thereof) are determined. As such, Twitter is an abundant source of data relevant to measuring recent public attitudes toward government (SM&T, 2015).

The second version of the Social Media and Trust in Government literature review is publicly available on the InterPARES Trust website.

4.0 Methodology

4.1 Research Design

The multi-faceted research design for this project combines both qualitative and quantitative methods, including exploratory research, correlational research, and case study design. During phase 1 (the object of this report), the methods of data collection and analysis include: content analysis of websites, policy documents and reports; sentiment analysis of social media content; and semi-structured interviews. During phase 2, case studies will be developed for four of the twenty cities selected based on the information gathered in phase 1.

This first phase is exploratory in nature. An iterative approach was used to develop the research design and to select subjects. During phase one:

- Ten cities from the US and ten from Canada were selected using information available online to ensure geographic and demographic diversity while meeting the minimum requirement for social media accounts (i.e., Facebook accounts for the city and Twitter accounts for the city, mayor, and police). The cities that met these criteria, shown in figure 3, were all within the top 100 cities in each country based on population as reported in table 1.

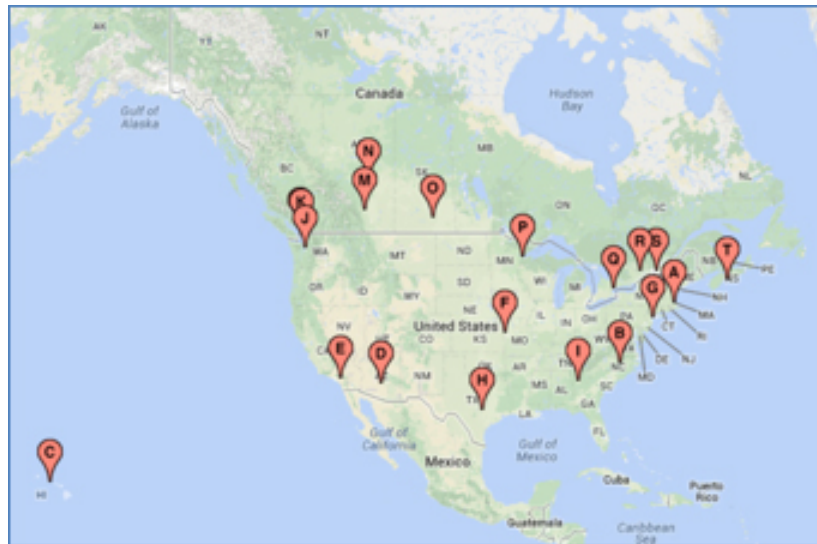


Figure 2: Geographic location of cities under review.

Table 1: 10 US Cities & 10 Canadian Cities, Map Placement, and Population Size & Rank

Population and rank of 20 Cities Selected for Investigation							
United States (2012 estimates)				Canada (2011 census)			
Letter	City	Population	Rank	Letter	City	Population	Rank
A	Boston, MA	636,479	21	K	Vancouver, BC	603,502	8
B	Raleigh, NC	423,179	52	L	Surrey, BC	468,251	12
C	Honolulu, HI	345,610	48	M	Calgary, AB	1,096,833	3
D	Mesa, AZ	452,084	40	N	Edmonton, AB	812,201	5
E	Riverside, CA	313,673	61	O	Regina, SK	193,100	24
F	Kansas City, MO	464,310	35	P	Winnipeg, MN	663,617	7
G	New York City, NY	8,336,697	1	Q	Toronto, ON	2,615,060	1
H	Austin, TX	842,592	15	R	Ottawa, ON	883,391	4
I	Atlanta, GA	443,775	33	S	Fredericton, NB	56,224	90
J	Seattle, WA	634,535	26	T	Halifax Region Municipality, NS	390,096	14

- Twenty months of content was gathered from three city-sponsored government Twitter accounts (city, mayor, police) for each municipality. Sentiment analysis tools were applied to identify citizens' attitudes when interacting within government

social media accounts. The methodology used for the sentiment analysis is provided in detail in a separate section of this report.

4.2 Profiles

4.2.1 City Profiles

A profile for each city was developed based on publicly available information that includes statistics related to the size of the population, the location, and demographics describing the citizens (e.g., race, education, age, and income levels).

4.2.2 Social Media Profiles

The social media profile for each city was constructed from publicly available information and through interviews with representatives of the local governments.

Research of publicly available information revealed the type of government-sponsored social media tools in use, the types of activities engaged in through social media, and the amount of participation indicated by social media figures (e.g., followers, friends, subscribers). In some cases, social media policies and adherence to freedom of information requests were also discovered.

To fill in the gaps, interviews were conducted when possible with individuals within each government using a structured interview form. Some cities completed the form prior to the interview. Others participated in the interview first and then were sent a copy of the information gathered for their review and modification. Questions on the interview form attempted to glean information not publicly available related to policy, allocation of resources, and legal concerns and attempted to reveal the results of the social media initiatives and identify best practices.

4.3 Sentiment Analysis

4.3.1 Introduction

With its growing popularity and prevalence, social media is considered a platform on which human opinions, comments, thoughts, and attitudes are expressed, shared, exchanged, or influenced. For example, Twitter users build social relationships with friends and strangers by sharing short messages of interests and activities. This user-generated content on social media has become valuable asset to organizations and businesses, as it often contains significant information that can contribute to better strategies and decision-making. Many businesses, cultural organizations, and social institutions are leveraging social media to achieve their own strategic goals. According to research that has assessed the social media activity of the top 100 most valuable global brands, the brands that were the most socially active saw an 18 percent increase in their revenue for the previous year, while the least active experienced a 6 percent revenue decrease during the same period (Factiva, 2009).

One of the most effective approaches for exploring and understanding these opinions is sentiment analysis. Sentiment analysis is a technique that uses natural language

processing, statistics, or machine learning methods to extract, identify, or characterize the sentiment content of a specific text unit (Pang & Lee, 2008; Vinodhini & Chandrasekaran, 2012), in terms of feelings, attitudes, emotions, and opinions. Sentiment analysis has been widely applied in a variety of disciplines, ranging from business, politics, law or policy-making, and sociology and psychology to better understand online user sentiments and provide appropriate and timely responses (e.g., Kale et al., 2007; Calderon et al., 2015).

The effect and accuracy of sentiment analysis, however, relies heavily on the context in which it is conducted. Both local and global contextual information affects sentiment analysis and the approaches to modeling complex linguistic structures in sentences often can result in a failure to interpret sentiment through capturing of contextual cues (Yang & Cardie, 2014). Therefore, how different sentiment analysis techniques perform in different contexts is an important research issue with both academic and practical impacts. In this project, we conduct an investigation of sentiment analysis techniques for the use of Twitter by governmental bodies. In particular, we examine and compare three main types of sentiment analysis approaches through the lens of how citizens respond to government-posted messages on Twitter, using a lexicon-based approach, a machine learning-based approach, and a hybrid approach called SentiStrength (Thelwall et al., 2010). The application of these techniques to the selected, specific context considered two concepts. First, local and federal governments use Twitter for different purposes that range from crime prevention and police assistance, emergency alerts and severe weather updates, activities and class registration, to public service announcements (CivicPlus 2016). How citizens respond to these messages can significantly determine how effective these government social media efforts are, and how these efforts may potentially affect the ongoing relationship between a government and its citizens. Sentiment analysis is one of the first attempts used to address this important issue by exploring and better understanding citizen attitudes, opinions, and thoughts toward government-posted messages. Second, the selected three techniques cover the broad spectrum of sentiment analysis methods to provide a fair, representative comparison of the three different sentiment analysis techniques for the selected context.

4.3.2 User Opinions and Attitudes

One of the most popular and effective approaches for facilitating two-way interactions on social media is gaining a better understanding of user opinions and attitudes. The technique of mining opinions, also commonly known as sentiment analysis, refers to an automated method of extracting, identifying, or characterizing attitudes, opinions, and emotions from text, speech and database sources into categories like “positive,” “negative,” or “neutral,” using natural language processing, machine learning, and statistical methods (Pang & Lee, 2008). This process of sentiment analysis can be divided into three stages (Balahur et al., 2010). First, the input text is divided into smaller units, such as words. Next, these words are analyzed either through lexicon matching or machine-learning classification to detect their sentiment polarity (Pang & Lee, 2008).

Finally, the overall sentiment of a text unit is extracted (Gamon et al., 2005). As mentioned, two main approaches can be used to complete this three-stage process: the machine learning-based approach and lexicon-based approach. A lexicon-based approach uses a lexicon (or a dictionary) that contains already pre-classified “positive” and “negative” words for matching with the data and identifying the sentiments (Stone et al., 1966; Strapparava & Valitutti, 2004; Esuli & Sebastiani, 2006; Agerri & García-Serrano, 2010). A sentiment score is usually calculated based on the statistical distribution of positive and negative words matched in a text unit, leading to a classification of a positive, negative, or neutral sentiment. A machine learning-based method, on the other hand, develops a classification model using training data with pre-labeled sentiments. The machine learning algorithms are then used to identify the general features associated with positive and negative sentiments, where these features are a subset of the words in the text unit or n-grams (e.g., Abbasi et al., 2008; Ng et al., 2006; Tang et al., 2009; Koto & Adriani, 2015). The model is further applied to classify future data into pre-defined categories, such as positive or negative. There are also more advanced, hybrid techniques that integrate methods from lexicon-based and machine learning-based approaches, with linguistic knowledge then added. For example, SentiStrength (Thelwall et al., 2010) employs novel methods to simultaneously extract positive and negative sentiment strength from short informal electronic text. This technique uses a dictionary of sentiment words with associated strength measures and a range of recognized non-standard spellings and other common textual methods for expressing sentiment.

4.3.3 Data Analysis

In this project, we collected Twitter data from 20 city government Twitter accounts and their associated police department and mayor accounts, totaling 60 accounts. The collection period was from January 1, 2013 to August 25, 2014. The 20 cities included 10 from the U.S. and 10 from Canada, chosen with the objective of diversity in both geographic location and population. All re-tweets were considered as normal tweets for this analysis. Table 2 presents a descriptive summary of the collected data set for the 20 city accounts.

Table 2: Descriptive Summary of the 20 City Accounts on Twitter (as of 8/25/14).

City Name	Twitter Account	Date Joined	Number of Days' Presence	Number of Posts between 1/1/13 & 8/25/14	Number of Followers	Number of Citizen Responses between 1/1/13 & 8/25/14
U.S.						
Atlanta, GA	@cityofatlanta	2/19/09	2,013	319	44,600	10,064
Austin, TX	@austintexasgov	5/18/09	1,925	3,637	43,400	27,816
Boston, MA	@notifyboston	3/19/10	1,620	5,941	77,900	35,643
Honolulu, HI	@honolulu.gov	10/7/10	1,418	4,198	9,772	1,255
Kansas City,	@kcmo	5/21/09	1,922	6,040	28,500	25,747

MO						
Mesa, AZ	@mesaazgov	7/29/08	2,218	2,228	4,422	1,925
New York City, NY	@nycgov	2/11/11	1,291	7,311	191,000	69,497
Raleigh, NC	@raleighgov	1/13/09	2,050	1,125	16,200	7,053
Riverside, CA	@riversidecagov	1/20/09	2,043	4,230	7,401	5,679
Seattle, WA	@cityofseattle	1/14/09	2,049	159	22,100	7,350
Canada						
Calgary	@cityofcalgary	8/21/08	2,195	6,967	104,000	53,441
Edmonton	@cityofedmonton	2/5/09	2,027	5,096	68,700	64,837
Fredericton	@cityfredgov	11/15/11	1,014	1,599	7,896	6,817
Halifax	@hfxgov	6/4/10	1,543	2,340	11,800	13,659
Ottawa	@ottawacity	12/5/08	2,089	5,119	42,700	48,615
Regina	@cityofregina	9/18/09	1,802	477	24,100	18,939
Surrey	@cityofsurrey	9/27/10	1,428	3,686	9,689	21,942
Toronto	@torontocomms	1/22/09	2,041	1,368	56,100	18,969
Vancouver	@cityofvancouver	7/9/09	1,873	4,906	48,400	42,748
Winnipeg	@cityofwinnipeg	10/5/09	1,785	4,807	15,700	19,521

The data for the 60 Twitter accounts were retrieved through Twitter Python API's (get_user_timeline) and included both tweets and re-tweets made as responses to the government accounts. The data collected were saved in the JSON format, done in Python, to retrieve the list of tweets and save them in a tabular format. The tabular data was used for sentiment analysis of the content field, which contained the actual tweet text. Finally, the retrieved data was cleansed by removing symbols, punctuation, special characters, URLs, and numbers for precise sentiment analysis.

Figure 4 depicts the overall methodology and the flow of each analysis step used in this project.

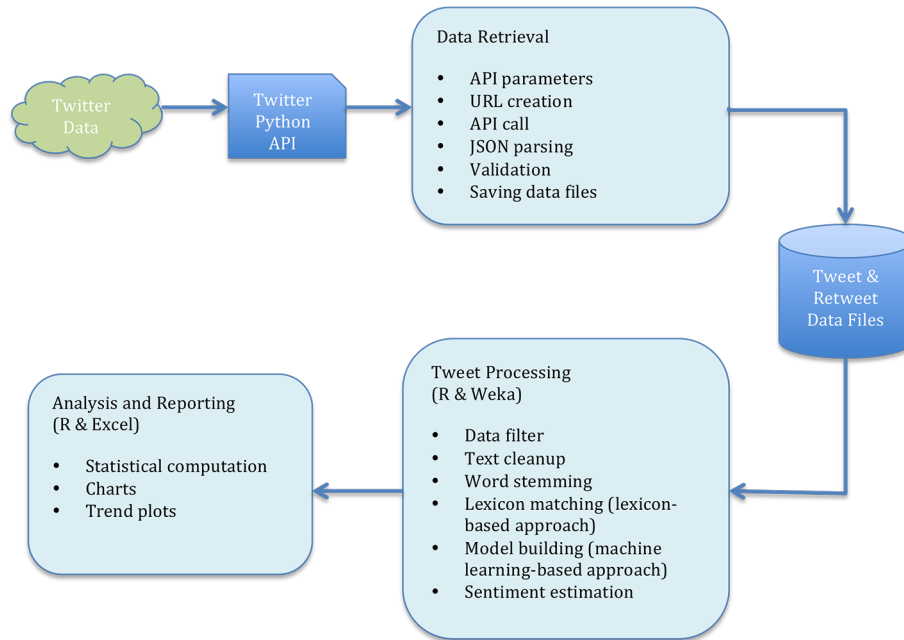


Figure 4: The Flow of Sentiment Analysis Process.

4.3.3.1 Lexicon-Based Techniques

In this project, we adopted a basic “bag of words” approach as the lexicon-based technique. Using this approach, the collected tweets and re-tweets corresponding to a certain government account are matched word-by-word against a lexicon that contains words from an English dictionary pre-classified into positive or negative sentiment words. For example, the English word “great” is usually used in the context of positive sentiments (e.g., *I had a great day*) and hence is tagged as a positive sentiment word. Similarly, negative words are also marked in this lexicon database. The lexicon contains a total of 6,135 words, with 2,230 of the words positive and 3,905 of the words negative. Table 3 provides a snapshot of the lexicon used.

Table 3: A Snapshot of the Lexicon – Positive and Negative Words.

word	polarity	word	polarity
abilities	positive	abrupt	negative
ability	positive	absence	negative
able	positive	absent-minded	negative
above	positive	absurd	negative
above-average	positive	absurdity	negative
abundant	positive	absurdly	negative
abundance	positive	absurdness	negative
acceptance	positive	abuse	negative

After each word was matched against the lexicon and classified as either “positive” or “negative” sentiment, a sentiment score was calculated based on the number of positive and negative words found in a tweet. Words not found in the lexicon were assumed to have a neutral sentiment. (Note that before being matched with the lexicon, each tweet was first stemmed into the group of English words.) Finally, positive and negative matches were summed to define a score for each tweet. For example, a tweet text was split into its separate words. These words were then matched against the lexicon database to identify each word as a positive, negative or neutral sentiment word. Finally, the total sum of positives, negatives and neutrals were constituted to achieve the overall sentiment score.

4.3.3.2 Machine Learning-Based Techniques

To examine the robustness of the sentiment analysis results from the lexicon-based technique and further understand the citizens’ sentiments, we developed a machine learning-based model for sentiment prediction and classification. We used the data mining software, Weka, to conduct sentiment analysis on the collected Twitter data (Hall et al., 2009). Weka is an open source platform that provides tools for various machine-learning algorithms. It has become a widely adopted, standard tool in the data mining and machine-learning community. Our sentiment analysis task was based on the tools provided by Weka using the following processes and configurations.

Training data: An essential first step for building a predictive model is to prepare a training data set. In our study, we adopted the corpus provided by Sentiment140 (Go et al., 2009), which has already been used in several prior studies and publications (e.g., Friedrich et al., 2015; Kiritchenko et al., 2014). This corpus consists of 1.6 million tweets, is balanced, and also captures emotion icons.

Text preprocessing: To prepare our collected Twitter data for the machine learning task, we conducted text preprocessing, including word parsing and tokenization, stop-words removal, and lemmatization and stemming. This process helps the transformation of each textual unit into a vector form, in which each document is further represented by the presence (or frequency) of the terms declared important. Term selection and feature extraction were further performed to filter the terms with poor prediction ability or strongly corrected to other terms.

Weka configuration: To perform preprocessing in Weka, we used the StringToWordVector filter from the package `weka.filters.unsupervised.attribute` and configured the tokenizer, specified as a stop-words list, and chose a stemmer (Scerra, 2014).

Classifier selection: We chose three different algorithms to build our predictive model, i.e., NaïveBayes, K-nearest Neighbors, and Random Forest. We considered their different requirements on bias and variance for training data sets (Zou et al., 2015). We then applied the three classifiers to the training data with 10-fold cross-validation and

evaluated the different classifiers with standard accuracy features, including a true positive rate and a false positive rate.

4.3.3.3 Hybrid Techniques

To provide a fair and comprehensive comparison of our sentiment analysis techniques, we further expanded this study by including a third method, SentiStrength (Thelwall et al., 2010), which has been described and evaluated in academic articles (e.g., Thelwall et al., 2013; Calderon et al., 2015). We consider it a hybrid technique. SentiStrength provides estimates of positive and negative sentiments in short or even informal texts. A unique feature of SentiStrength is that it reports binary (positive/negative), trinary (positive/negative/neutral) and single scale (-4 to +4) results, which complements our previous methods in which only binary sentiments were identified.

4.4 Content Analysis

In our phase 1 study, we conducted a qualitative research interview for two main purposes: 1) rather than surveying the local government social media landscape, we sought to explore and understand the social media usage in specific instances, and furthermore, to get the story behind a participant city's actual experiences; 2) we sought to describe and understand the "real-life" meanings of social media initiatives, efforts, and uses in the selected cities. We used a general interview guide approach to ensure that the same general areas of information were collected from each interviewee. We also designed our interview to be standardized and open-ended, so that the same open-ended questions were asked to all interviewees and that interviews could be facilitated more quickly and analyzed and compared more easily. In addition to the interviews and transcripts, content analyzed included websites and social media "home pages" and policies and reports.

Content analysis included three rounds of coding, designed to identify categories and dimensions, identify themes, and validation. In total, over 75 categories and 150 dimensions were identified.

4.4.1 Interviews and Transcripts

The Interview Questionnaire consisted of 27 questions pre-approved by the San Jose State University's Institutional Review Board. The questions were in part based on the City Profile research, and covered six areas of investigation: online presence; social media context; social media and records policies; social media resources; social media results; and legal challenges. The questions presented a balance of topics such as in knowledge (to get facts about the cities), behaviors (what the interviewed city has done or is doing in terms of social media initiatives and efforts), opinions and values (what the interviewee thinks about the city's social media use), and background and demographics. Example questions from each area of investigation are as follows.

- Background: *Please comment on the city's adoption of social media. When did this occur? Which software products were adopted first?*

- Local government context: *What are the purposes, mandate, and goals of the city's social media efforts?*
- Policy: *Please provide a copy of (or link to) the city's record policies and guidelines. Does the policy address social media?*
- Results and best practices: *What is your most effective social media initiative to date? Please describe.*
- Staff resources: *How many people work solely on social media efforts? What are their titles and responsibilities? Who do they report to?*
- Legal concerns: *How are Freedom of Information requests that include social media responded to?*

The research collaborator reviewed the questionnaire which was then submitted to the participants in digital format two to three weeks prior to the proposed submission date or interview. About a third of the participants completed the questionnaire in writing and participated in a short interview to clarify any outstanding questions, while the remaining two-thirds provide all answers in telephone interviews that lasted from 75 to 90 minutes. In total, seventeen interviews were completed over a nine-month period, including seven American cities and ten Canadian cities.

Following the interview, the researcher's notes were reviewed and expanded to form an interview transcript. Each transcript was submitted to the interviewee as a digital file for member checking with the "track changes" function turned on. The final version of the transcript with changes was reviewed by the researcher and any questions regarding changes were addressed with the interviewee.

4.4.2 Websites and Social Media

The researchers also gathered documentation through the cities' websites, including information about advanced transactional services, mobile applications, the number and type of social media accounts held across the cities, announcement of social media awards, and indications of social media user in citizen engagement projects. The researchers noted whether or not the social media policies and guidelines for employees, the terms of engagement for citizens, and the records policies were available through the website, and downloaded these documents for analysis where available. Finally, the researchers noted whether or not the social media policies or terms of engagement were announced on the social media accounts (i.e., as text or as a link back to the website).

4.4.3 Policies and Reports

Where policies were not available on the websites, they were requested of interviewees or other city staff either during the interviews or via phone or email. Researchers also requested any reports relating to social media, and received a variety of materials, including account lists, time- or campaign reports of results, newsletters, audit

reports, and other materials the interviewees believed to be of value or were available through the cities' websites.

5.0 City Profiles

To develop a successful social media strategy, government agencies must understand their target audience. A profile was developed for each city under review which includes a description of the city and statistics reflecting the demographics of the population that comprises the city, including race, median income, and level of education. These profiles provide the context for the social media profile shared in the next section.

5.1 United States

5.1.1 Atlanta, Georgia

Description: Atlanta was established in 1837 as the termination points of the Western and Atlantic railroad lines. Still a transportation hub, Atlanta now has a global reach via one of the busiest airports in the nation, Hartsfield Atlanta International Airport. With direct flights to Asia, Europe and South America, metro Atlanta is home to more than 1,000 international businesses. More than 50 countries have a base in the city through various trade offices, chambers of commerce and consulates.

Since the 1990's, the city population has remained stable at 420,000 (420,003 according to the 2010 U.S. Census), but the metro inhabitants have grown by almost 40 percent from 2.9 million to 4.1 million residents (from <https://en.wikipedia.org/wiki/Atlanta> and <http://www.atlantaga.gov/index.aspx/index.aspx?page=1064>). In 2012, Atlanta was ranked the 33rd most populous city in the United States.

Demographics: In 1970, Non-Hispanic whites made up 47.3 percent of the population, by 2010 this number dropped to 36.3 percent. Black and African Americans during this same time frame had a slight increase from 51.3 percent to 54 percent, in addition Hispanic or Latinos also had a jump in numbers from 1.5 percent to 5.2 percent. The median age of Atlanta's population is 32.9, the median annual income is \$46,146, and the portion of the population with some form of post-secondary education is 50.3 percent.

5.1.2 Austin, Texas

Description: Called Waterloo by its first settlers, Austin was founded in 1837 by Anglo-Americans. In 1839, the name Austin was adopted in honor of Texas colonist Stephen F. Austin and has long been known as the capital for the Republic of Texas. The late 19th century saw the establishment of the University of Texas making Austin the regional hub for higher education (from https://en.wikipedia.org/wiki/Austin,_Texas). In 2010, Austin's population was 790,390, and by 2012, Austin was ranked the 15th most populous city in the United States. Between 2013 and 2014, Austin was the third fastest growing large city in the nation, making it the 11th largest with 1.9 million people living in the metro area.

Austin is known for its eclectic music scene, earning it the nickname “Live Music Capital of the World”. Austin City Limits, the longest running music show on television, spawned a festival by the same named which attracts 75,000 people each day over two weekends each October. The festival contributed \$182 million to Austin’s economy in 2013 alone (from https://res-2.cloudinary.com/simpleview/image/upload/v1/clients/austin/ACVB-Austin-Fact-Sheet_07c8d3ba-19b1-4453-a744-15e78d751eb2.pdf).

Demographics: In 1970, Non-Hispanic whites made up 73.4 percent of the population, by 2010 this number dropped to 48.7 percent. Black and African Americans during this same time frame also dropped from 11.8 percent to 8.1 percent; however Hispanic or Latinos made the largest jump from 14.5 percent to 35.1 percent. Asians also have had a large increase in population from 0.2 percent in 1970 to 6.3 percent in 2010. The median age of Austin’s population is 31.0, the median annual income is \$52,431, and the portion of the population with some form of post-secondary education is 50.2 percent.

5.1.3 Boston, Massachusetts

Description: One of the oldest towns in New England, Boston was first incorporated as a town in 1630 and as a city in 1822. The city itself has an estimated population of 617,594 (2010 census) with over 8.1 million people living in the Greater Boston metropolitan area. In 2012, Boston was ranked 21 on a list of most populous cities in the United States. The city is an important port and manufacturing center, and well known for its educational institutions, cultural centers and professional sports. Boston’s main economic foundation includes biotechnology, information technology, finance, professional and business services (from <https://en.wikipedia.org/wiki/Boston> & <http://www.cityofboston.gov/visitors/about/>).

Demographics: In 1970, Non-Hispanic whites made up 79.5 percent of the population, by 2013 this number dropped to 45.9 percent. Black and African Americans during this same time frame had an increase from 16.3 percent to 24.1 percent, in addition Hispanic or Latinos also had a jump in numbers from 2.8 percent to 18.8 percent. In addition, the Asian community also rose from 1.3 percent to 9.0 percent. The median age of Boston’s population is 30.8 percent, the median annual income is \$53,136, and the portion of the population with some form of secondary education is 48.00 percent.

5.1.4 Honolulu, Hawaii

Description: Honolulu, meaning ‘sheltered harbor’, is the state capital and most populated city in Hawaii. Garnering most of its revenue from tourism, over \$10 billion annually, Honolulu is located on the island of Oahu and is the main entry to Hawaii and its islands. Because of its diverse population, the city is a key hub for international businesses, military defense and well known for its varied Pacific Islander culture and foods. With a population of 337,256 (2010 census), Honolulu is the second most populated city in the Polynesian islands after Auckland (from <https://en.wikipedia.org/>

[wiki/Honolulu#History](#)). In 2012, Honolulu was ranked 48 on a list of most populous cities in the United States.

Demographics: In 1970, Non-Hispanic whites made up 33.9 percent of the population and Asians & Pacific Islanders made up 53.7 percent. In 2010, Non-Hispanic whites dropped to 17.9 percent while Asians and Pacific Islanders stayed steady at 54.8 percent. Black and African Americans made up a small percentage at 1.5 percent, while 16.3 percent identified as two or more races. The median age of Honolulu's population is 41.3 percent, the median annual income is \$58,397, and the portion of the population with some form of secondary education is 42.6 percent.

5.1.5 Kansas City, Missouri

Description: Established in the 1830's Kansas City is the largest city in the state of Missouri, and began as a port town straddling two rivers, the Kansas and Missouri. The city area incorporates 316 square miles with a population of 459,787 in 2010. By 2012, Kansas City was ranked 35th most populous city in the United States. The city has neighborhoods with their own unique musical styles of jazz and blues, and is also known for Kansas City barbeque. The federal government remains the largest employer in the Kansas City, but is also the site of headquarters of large manufacturing and agricultural conglomerates (from https://en.wikipedia.org/wiki/Kansas_City,_Missouri).

Demographics: In 1970, Non-Hispanic whites made up 75 percent of the population; by 2010 this number dropped to 54.9 percent. Black and African Americans during this same time frame had an increase from 22.1 percent to 29.9 percent, in addition Hispanic or Latinos also had a significant jump in numbers from 2.7 percent to 10.0 percent. The median age of Kansas City's population is 34.6, the median annual income is \$45,150, and the portion of the population with some form of post-secondary education is 37.6 percent.

5.1.6. Mesa, Arizona

Description: Founded in 1878, Mesa is the third most populous city in Arizona and covers 132 square miles of land. Although located only 15 miles from the capital city of Phoenix, Mesa is itself a metropolitan center for the state, with a population of 439,041 (2010 US Census). In 2012, Mesa was ranked 40th on a list of most populous cities in the United States. Mesa is home to a number of higher learning institutions, sports facilities, and historic and cultural attractions. The top employers of the city are in the health, education, and transportation sectors. (<http://mesaaz.gov/about-us>)

Demographics: According to the 2010 US Census, 77.1 percent of the population was white and the largest minority groups were Hispanic or Latino, with 26.5 percent of the population. Black or African Americans made up 3.5 percent of the population, and Native Americans were 2.4 percent. The median age of Mesa was 34.6, the median annual income was \$49,233, and 32.6 percent of the population had some post-secondary education.

5.1.7. New York City, New York

Description: New York City (NYC) is the largest city in the US, and one of the most populous cities in the world with a population of 8,175,133 in 2010. New York is widely considered to be an international center of cultural and economic activity and home to the largest stock exchange, NYSE. NYC was founded by Dutch colonists in 1624 as New Amsterdam, but was renamed New York after coming under British control in 1664. NYC is comprised of five boroughs: Manhattan, The Bronx, Brooklyn, Queens, and Staten Island. Several prestigious universities are located in NYC including Columbia University and NYU. <http://www1.nyc.gov/>

Demographics: According to the US Census, Non-Hispanic Whites comprised 33.3 percent of the population. 25.5 percent were Black or African American, 28.6 percent were Hispanic or Latino, 12.7 percent were Asian, and 0.7 percent were Native American. NYC has a large immigrant population, with approximately 37 percent foreign-born residents. The median age of the city is 35.5. There is a large disparity in annual income for NYC. The median annual income in 2012 was \$51,865 and 40.1 percent of the population has some level of post-secondary education.

5.1.8. Raleigh, North Carolina

Description: Raleigh is the capital and second largest city of North Carolina and had a population of 403,892 in 2010. The city was ranked 52nd in size in 2012. The city was founded in 1792 as a planned city, meaning that the site was chosen to be the capital and the city was subsequently built on that location. Raleigh is home to several cultural institutions including performing arts centers, art museums, and historical locations. North Carolina State University is located in Raleigh, as well as Shaw University, the first African American university to be established in the Southern US. Economically, Raleigh is a center for textiles, telecommunications, pharmaceuticals, and biotech development. <http://www.raleighnc.gov/>

Demographics: Non-Hispanic Whites are the largest ethnic group of the city, making up 57.5 percent of the population in 2010. 29.3 percent of the population was African American, 4.3 percent was Asian, and 0.5 percent was Native American. The median age of Raleigh residents was 31.9 and the median annual income was \$53,699 and 54 percent of the population had some post-secondary education.

5.1.9 Riverside, California

Description: Riverside is located in Southern California in the Inland Empire region and adjacent to the Santa Ana River. The city is the 12th largest in California, having a population of 303,871 in 2010 and covering 81.44 square miles. In 2012, the City of Riverside was ranked 61st on a list of most populous cities in the U.S. Riverside was founded in 1883 as a citrus farming community. Today, Riverside has a diverse economy consisting of manufacturing areas, technology firms, and retail, among other key industries. <http://www.riversideca.gov/>

Demographics: The largest demographic group in Riverside according to the 2010 Census was Hispanic or Latino, making up 49 percent of the population. Non-Hispanic Whites were 34 percent of the population, 3.4 percent of the population were Asian and 7 percent were Black or African American. The median age of Riverside residents was 30, and the median annual income was \$56,403 in 2012 and 29.9 percent of the population has a form of post-secondary education.

5.1.10 Seattle, Washington

Description: Seattle is the largest city in Washington and the Pacific Northwest region, having a population of 608,660 in 2010 and a ranking of 26 on the list of most populous cities in the U.S. in 2012. Seattle was incorporated in 1869 and was known for its logging industry. Present-day Seattle is a center for technology companies ranging from internet, telecommunications, and software developers to biomedical researchers. The city is considered a cultural hub of the region, with a vibrant music scene and many performing arts facilities. <http://www.seattle.gov/>

Demographics: Non-Hispanic Whites were the largest ethnic group in Seattle according to the 2010 Census, comprising 66.3 percent of the population. The second-most represented group was Asian with 13.8 percent, followed by Black or African American at 7.9 percent of the population. Hispanic or Latino residents were 6.6 percent of the population. The median age of the population was 36.1, and 63.5 percent of the population has some post-secondary education. The median annual income was \$59,374.

5.1.11 Profile Discussion

The United States is becoming an increasingly racially diverse nation, which is reflected in the cities investigated for this research project. Although the largest segment of the population in 7 of the 10 cities is non-Hispanic white, the percentages are falling and the percentages of other races are rising. Non-whites were the majority in three of the cities: Atlanta (majority African-American); Riverside (majority Latino or Hispanic); and Honolulu (majority Asian and Pacific Islanders).

The cities were ranked according to population from New York City, the largest city in the United States with more than 8 million inhabitants, to Riverside, California, the 61st largest city in the United States with a little more than 300,000 inhabitants.

Seven of the ten cities studied were founded in the 19th century while two had earlier beginnings: New York City, was founded in 1624; and Raleigh, North Carolina, in 1792. The third, Honolulu, despite its earlier beginnings, became incorporated as a city in 1907.

In 2012, the median household income across the United States was \$51,759. The median annual income of cities included in this survey ranged from a low of \$45,150 in Kansas City, Missouri, to a high of \$59,374 in Seattle, Washington.

The statistics used in our survey reflects a range in the percentage of the population with some postsecondary education. The figures range from a low of 29 percent in Riverside, California, to a high of 63.5 percent in Seattle, Washington. According to government data, 28.5 percent of U.S. residents 25 or older had at least a bachelor's degree in 2011.

5.2 Canada

5.2.1 Calgary, Alberta

Description: The city is named after a small village in Scotland. It was incorporated as a town in 1884 and became the City of Calgary in 1894. The city had a population of 1,096,833 as of 2011, and is known for its oil and gas industry with a high GDP per capita and personal incomes, and low unemployment. It was also the first Canadian city to host the Olympic Winter Games in 1988. The area around Calgary has become widely recognized through films such as *Dances with Wolves*, *Brokeback Mountain*, *Inception*, and *Legends of the Fall* (from <https://en.wikipedia.org/wiki/Calgary>).

Demographics: People of English descent form the largest single ethnic group in Calgary, making up 24.12 percent of the population, followed by Canadians at 19.96 percent of the population. In 2006, whites made up 73.8 percent of the population, but by 2011 that segment was 67.3 percent of the population. Black Canadians rose from 2.1 percent to 2.9 percent during that timeframe, and Hispanic or Latinos rose from 1.3 percent to 1.8 percent during the same timeframe (from https://en.wikipedia.org/wiki/Demographics_of_Calgary#Ethnicity). The median age of Calgary's population is 36.4, the average income is \$55,203, and the portion of the post-secondary education is 60 percent.

5.2.2 Edmonton, Alberta

Description: Edmonton is the capital city of the Province of Alberta. The city was established in 1795, and had a population of 812,201 in 2011. From 1981 to 2004, Edmonton was known to have the largest shopping mall in the world (now the largest mall in North America) and was named the Cultural Capital of Canada in 2007. Economically, the city is closely associated with fossil energy since the 1940's, and revenues from oil and natural gas extraction have increased a series of economic booms.

Demographics: People of English descent form the largest single ethnic group in Edmonton, making up 19.25 percent of the population, followed by Canadians at 17.52 percent of the population. In 2006, whites made up 71.8 percent of the population, dropping to 64.7 percent of the population by 2011. Black Canadians rose from 2.6 percent to 3.8 percent, and Hispanic or Latinos rose from 1.2 percent to 1.7 percent during the same timeframe (from https://en.wikipedia.org/wiki/Demographics_of_Edmonton). The median age of Edmonton's population is 36, the average income is

\$46,571, and the portion of the population with some form of post-secondary education is 56 percent.

5.2.3 Fredericton, New Brunswick

Description: Fredericton was established in 1785, with the French being the first Europeans to arrive, and had a population of 56,224 as of 2011. The city is known to have an outstanding quality of life and potential for business development. In 2012, *MoneySense* magazine named Fredericton as the seventh best place to live of 200 Canadian communities. Fredericton also has 12 out of 62 historical sites in New Brunswick.

Demographics: In 2006, people of English descent formed the largest single ethnic group in Edmonton, making up 78 percent of the population, followed by English and French at 22 percent of the population (from <http://www.teamfredericton.ca/en/communityprofile/Statistics.asp>). Today, Fredericton's population is still predominantly [white](#). However, a [black](#) minority has had a long presence in the city. The largest non-white segment of Fredericton's population is made up of First Nations people. According to the 2011 Census, the median age of Fredericton's population was 38.7, the average income was \$38,214, and the portion of the population with some form of post-secondary education was 61 percent.

5.2.4 Halifax Regional Municipality, Nova Scotia

Description: Halifax is the capital city of Nova Scotia and was founded in 1841. The four towns surrounding the area were independent to one another until 1996 when they combined to become the Halifax Regional Municipality. The population was 390,096 in 2011. Halifax is considered a global city and was ranked by *MoneySense* magazine as the fourth best place to live in Canada in 2012. The city and its surrounding areas have also been in films, with many of it being a stand in for other cities; the film *Titanic* shot several scenes in the city as well (came from https://en.wikipedia.org/wiki/Halifax,_Nova_Scotia)

Demographics: The phrase "not a visible minority" is used to describe 90.9 percent of the population in 2011. Arabs were the second-largest minority (1.4 percent), with the first being the African Nova Scotian community (3.6 percent). The median age of Halifax's population was 39.9, the average income was \$40,461, and the portion of the population with some form of post-secondary education was 60 percent.

5.2.5 Ottawa, Ontario

Description: Ottawa is the capital city of Canada, and was founded in 1855. In 2001, five metropolitan areas merged, making Ottawa the fourth largest in the country. Ottawa's population was 883,391 in 2011, and it has the highest standard living in the nation. *MoneySense* magazine ranked Ottawa the best community in Canada to live in three years in a row (from <https://en.wikipedia.org/wiki/Ottawa>).

Demographics: People of Canadian descent form the largest single ethnic in Ottawa, making up 28.4 percent of the population, followed by the English at 24.3 percent. In 2006, whites 78.3 percent of the population, and segment was 74.2 percent of the population in 2011. Black Canadians rose from 4.9 percent to 5.7 percent during that timeframe, and Hispanic or Latinos rose from 1 percent to 1.2 percent during the same timeframe. The median age of Ottawa's population is 39.2, the average income is \$49,826, and the portion of the population with some form of post-secondary education is 67 percent.

5.2.6 Regina, Saskatchewan

Description: Named after Queen Victoria, Regina was incorporated in 1882 and is the capital city of the prairie Province of Saskatchewan and the second largest with a population of 193,100 in 2011. Known as a cultural and educational center, the city has a university, a regional museum of natural history, a conservatory and a science center. Recently, agricultural and mineral booms have occurred, creating a new time of robust economic development for the city (from https://en.wikipedia.org/wiki/Regina,_Saskatchewan).

Demographics: According to the 2011 National Household Survey, the racial demographics of Regina comprises mainly of whites (78.6 percent), aboriginals (9.9 percent), Asians (8.3 percent) and blacks (1.6 percent). The median age of Regina's population is 37.1, the average income is \$45,698, and the portion of the population with some form of post-secondary education is 61.6 percent.

5.2.7 Surrey, British Columbia

Description: Incorporated in 1879, Surrey is the second largest city in the Province of British Columbia, with a population reaching 468,351 in 2010. The largest municipality in BC based on land area, Surrey is known for its agricultural land reserve and over 6,000 acres of parks and green spaces. However, the municipality has six urban areas, including Surrey Centre which supports manufacturing, education and clean energy sectors (from <http://www.tourismsurrey.com/media/surrey-facts/>).

Demographics: According to the 2011 Canadian Census, Surrey's population is comprised of Whites (45 percent), Asians (30.7 percent), First Nations (1.4 percent) and Blacks (1.4 percent). The median age of Surrey's population is 37.5, the average income is \$26,243, and the portion of the population with some form of post-secondary education is 50 percent.

5.2.8 Toronto, Ontario

Description: Incorporated in 1834, Toronto was the capital of Ontario and the most populated city in Canada in 2011 with a populace of 2,615,060. Diverse and multiethnic, Toronto is the Canadian center of international business and finance and home to the Toronto Stock Exchange. The city is the headquarters for the national broadcast

networks and media institutions and the has over 12 professional and amateur sports teams (from <https://en.wikipedia.org/wiki/Toronto>).

Demographics: Based on the 2011 Canadian Census, Toronto is comprised of Whites (50.2 percent), Asians (34 percent), Blacks (8.5 percent), Latin Americans (2.8 percent) and Aboriginals (0.7 percent). The median age of Toronto's population is 39.2, the average income is \$44,517, and the portion of the population with some form of post-secondary education is 58 percent.

5.2.9 Vancouver, British Columbia

Description: Incorporated in 1886, Vancouver is the third most populated metropolitan city in Canada, with 603,502 people in the city and over 2.4 million in the Greater Vancouver area in 2011. A busy seaport in its early days with trade routes to Asia and Europe, the city now has the largest and most active port in Canada. Forestry remains Vancouver's largest industry, although natural scenery and quaint landmarks make tourism its second largest source of revenue. Vancouver is regularly named one of the top five international cities for quality of life and livability (from <https://en.wikipedia.org/wiki/Vancouver>).

Demographics: Based on the 2006 Canadian Census, the racial demographics of Vancouver comprise of Whites (46.2 percent), Asians (43.1 percent), Aboriginals (2 percent) and Blacks (1 percent). The median age of Vancouver's population is 39.7, the average income is \$45,058, and the portion of the population with some form of post-secondary education is 63 percent.

5.2.10. Winnipeg, Manitoba

Description: Incorporated as a city in 1873, Winnipeg is the seventh most populated municipality in Canada with a population of 663,617 in 2011. A railway and transportation hub, Winnipeg is the "Gateway to the West." Known as a culturally diverse city with 100 languages and nationalities represented, Winnipeg features many festivals including the Festival du Voyageur, the Winnipeg Folk Festival, the Jazz Winnipeg Festival and Folklorama resulting in tourism revenue for the city (from <http://www.tourismwinnipeg.com/media/media-kit/winnipeg-facts> & <https://en.wikipedia.org/wiki/Winnipeg>).

Demographics: The demographics of Winnipeg consist of Whites (67.5 percent), Aboriginals (11.7 percent), and Filipino (8.7 percent). The median age of Winnipeg's population is 39, the average income is \$38,159, and the portion of the population with some form of post-secondary education is 51 percent.

5.2.11 Profile Discussion

Whites made up the largest segment of the populations in of each of the 10 Canadian cities in 2011, from 45 percent in Surrey to 90.9 percent in the Halifax Regional Municipality. Vancouver is home to the largest majority of Asians at 43.1 percent, only

slightly less than the white population at 46.2 percent. One of the cities, Winnipeg, is the home of the largest Aboriginal population in Canada.

The size of the cities grew ranged from a low of 56,224 in the City of Fredericton (ranked 90th most populous city in Canada) to a high of 2,615,060 in the City of Toronto (ranked first in terms of population).

Eight of the ten cities studies were founded in the 19th century. Two were founded earlier: the City of Edmonton in 1795; and the City of Fredericton in 1785.

in 2011, the median family income in Canada was \$72,240. Among the cities investigated, the median family income ranged from a low of \$68,970 in Vancouver to a high of \$97,010 in Ottawa.

The statistics used in our survey reflects the percentage of the population with some postsecondary education. They range from a low of 5 percent in the City of Surrey to a high of 67 percent in Ottawa. The Canadian average is 54 percent.

6.0 Social Media Profiles

In terms of the social media activities of the 20 cities in our study, we found that local governments’ adoption of social media had increased rapidly over the last few years. In the United States, in the adoption rate was estimated at 67.5 percent in 2011 (Norris and Redick 2012), rising to 92 percent by 2013 (Oliveira and Welch 2013). Following along with world-wide trends, Facebook was the most popular social network used by local governments overall, followed by Twitter (Norris and Reddick 2012; Oliveira and Welch 2013).

6.1. United States

6.1.1 Audience Statistics

Audience data for the 10 American cities was collected from September 10 to 11, 2014 (see Table 4). At this time, the cities’ social media channels had been in place for roughly

Table 4: American City Social Media Statistics, September 10-11, 2014.

CITY	Start Date	City FB Likes	City		Mayor		Police	
			Followers	Tweets	Followers	Twts	Followers	Twts
Atlanta, GA	2009	3,941	45,600	2,024	63,800	3,693	9,833	3,721
Austin, TX	2009	7,494	41,900	9,405	5,855	1,349	24,700	5,799
Boston, MA	2008	23,916	74,000	8,786	43,000	2,805	282,000	9,017
Honolulu, HI	2010	2,912	9,715	4,184	2,145	1,455	8,925	5,767
Kansas City, MO	2009	1,917	24,900	8,412	27,500	11,600	42,600	7,189
Mesa, AZ	2008	4,654	5,235	2,787	6,066	3,620	4,971	2,319
New York, NY	2008	246,383	197,000	12,400	197,000	8,668	115,000	4,816
Raleigh, NC	2009	2,585	16,800	3,274	5,133	1,306	1,762	396

Riverside, CA	2009	11,335	7,032	5,966	723	1,261	3,813	242
Seattle, WA	2009	424	28,400	2,428	7,312	1,718	74,000	12,400

five years, and there was an array of audience sizes. Based on Facebook “likes” and Twitter “follows,” most of the cities’ “corporate” accounts (i.e. “/City of Name” or “@cityname”) appeared to have larger audience on Twitter than Facebook, with the exception of New York and Riverside. In most of the cities, the number of Twitter users represented 5 percent or less of the total population, with Atlanta and Boston at around 10 percent.

In four of the cities (i.e. Atlanta, Kansas City, Mesa, and New York), the Mayors’ accounts had more Twitter follows than the cities’ main accounts. These cities represented both Strong-Mayor forms of government (i.e. Atlanta, New York) and Council-Manager forms (i.e. Kansas City, Mesa).

In three of the cities (i.e. Boston, Kansas City, Seattle), the police Twitter audience exceeded that of the cities’ main accounts. In the case of Boston, the audience size was perceived to be as a result of the 2013 Boston bombing.

6.1.2 Accounts

The number of accounts for each city was difficult to determine. While a number of cities have social media “hubs” listing and linking to their accounts, the hubs often did not include more recent links and/or included non-city links considered to be of interest to their audiences. In addition, some interviewees provided lists of accounts that differed significantly from their social media hub listings. While significant time was spent attempting to confirm the total number of accounts, in the end, the numbers remain approximate (see Figure 5). In addition, it proved impossible to estimate the number of accounts for New York, given the size and scope of their social media activities.

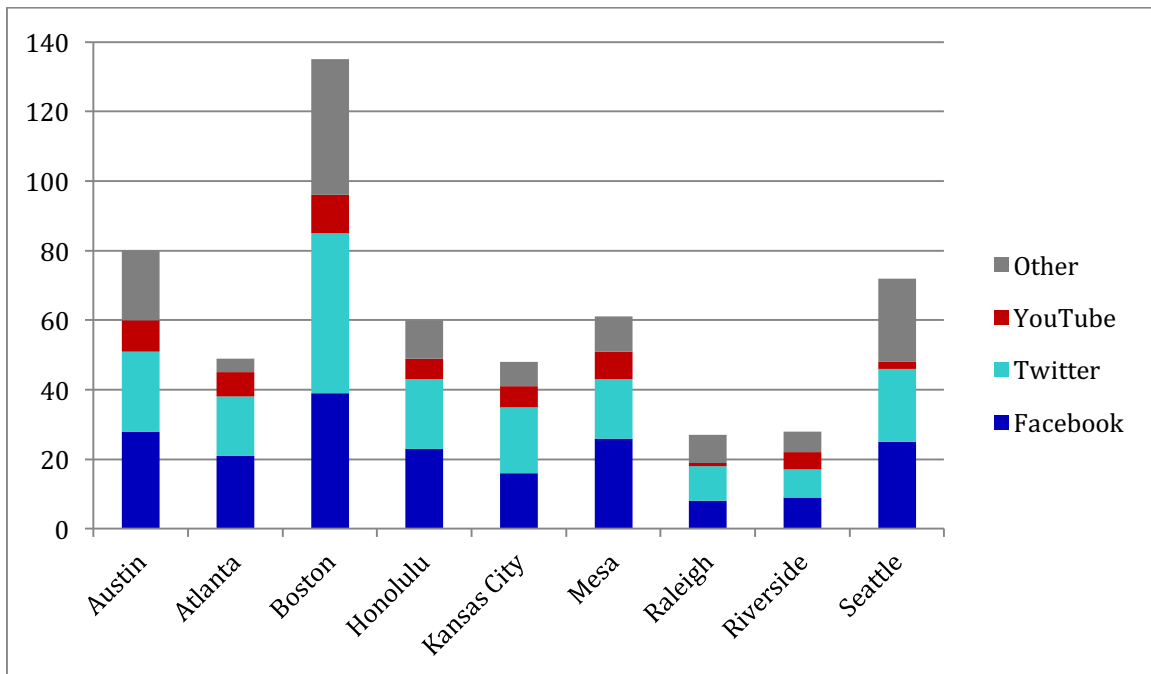


Figure 5: Approximate Number of Social Media Accounts by City (December 2015).

Overall, the cities’ social media programs extended beyond “corporate” or city accounts to support many other business unit initiatives. Although difficult to categorize, Facebook and Twitter accounts clustered around: protective services (i.e. police, fire, ambulance); 311 services; traffic, roads, and transit; cultural activities, facilities and events; and niche audiences, like youth, cyclists, or animal adoption. YouTube playlists reflected similar clusters, as well as messaging from Mayor, Council, and other city executives. “Other” social media accounts supported by the cities typically included: LinkedIn for recruiting; Flickr, Pinterest, and/or Instagram for photographs; and newsletter-style services including blogs, email subscriptions and RSS feeds.

6.2 Canada

6.2.1 Audience Statistics

Audience data for the 10 Canadian cities was collected on September 18, 2014, with the exception of Fredericton on November 13, 2014. As with the American cities, the Canadian cities had adopted social media from 2008 to 2010, with most social media programs in place for at least five years. Based on Facebook “likes” and Twitter “follows,” nine of the ten cities appeared to have larger audiences on Twitter than Facebook, with the exception of Regina which was about on par. The number of Twitter users as a percent of the total population represented a wider range, from about 2 to 14 percent, with Regina at the high point (see Table 5).

In three of the cities (i.e. Calgary, Surrey, Toronto), the Mayors’ accounts had more Twitter follows than the cities’ main accounts. Mayor Naheed Nenshi of Calgary is an exceptionally popular politician in Canada, following his successful “Purple Revolution”

social media election campaign as well as his leadership during the 2013 Calgary Floods when he live-tweeted for 48-hours (resulting in the trending hashtag “#nap4nenshi”). Mayor Nenshi was awarded the title of World Mayor in 2014. At the other end of the spectrum, Mayor Rob Ford achieved worldwide infamy for his behavior during office. Although Surrey Mayor Diane Watts’ account outperformed the city’s, the metrics for both are comparatively quite low.

Table 5: Social Media Statistics for the 10 Canadian Cities (September 18, 2014 except for Fredericton, November 13, 2014).

CITY	Start Date	City FB Likes	City		Mayor		Police	
			Follows	Twts	Follows	Twts	Follows	Twts
Calgary, AB	2008	33,757	107,000	15,300	186,000	30,600	68,900	16,800
Edmonton, AB	2008	29,703	71,200	17,900	38,200	9,152	26,000	3,683
Fredericton, NB	2008	4,409	5,933	1,832	16,300	2,288	1,438	64
Halifax RM, NS	2010	5,581	13,700	5,995	12,100	1,718	13,200	6,177
Ottawa, ON	2010	3,582	47,200	9,598	39,300	45,100	26,300	11,400
Regina, SK	2009	29,151	26,500	8,466	4,118	709	22,100	19,100
Surrey, BC	2008	5,869	9,476	9,003	12,000	5,089	4,899	1,541
Toronto, ON	2008	N/A	65,300	8,605	175,000	2,479	93,300	50,000
Vancouver, BC	2008	26,385	51,200	12,200	9,066	6,243	52,800	8,196
Winnipeg, MN	2009	5,056	16,100	7,892	1,471	750	10,900	2,589

Police audiences on social media were smaller than the cities’, with the exception of Vancouver which was slightly larger. (Although Vancouver Police and Calgary Police were noted for using social media during the 2012 Hockey Riot and the 2013 Alberta Floods, the cities social media audiences also increased.)

6.2.2 Accounts

The number of accounts for each Canadian city was again somewhat difficult to determine. While a number of cities had social media “hubs” listing and linking to their accounts, the hubs did not include more recent links and also included non-city links of interest to their audiences. In addition, the numbers of accounts provided by some interviewees were at times higher or lower than expected. (For example, one city noted that about half of their accounts were dormant or inactive and were gradually being closed down). On the other hand, one interviewee provided a completely current account inventory list and another could list the accounts from memory due to the tight controls in place for new accounts. While significant time was spent attempting to confirm the total number of accounts, in the end, the numbers were approximate (see Figure 6).

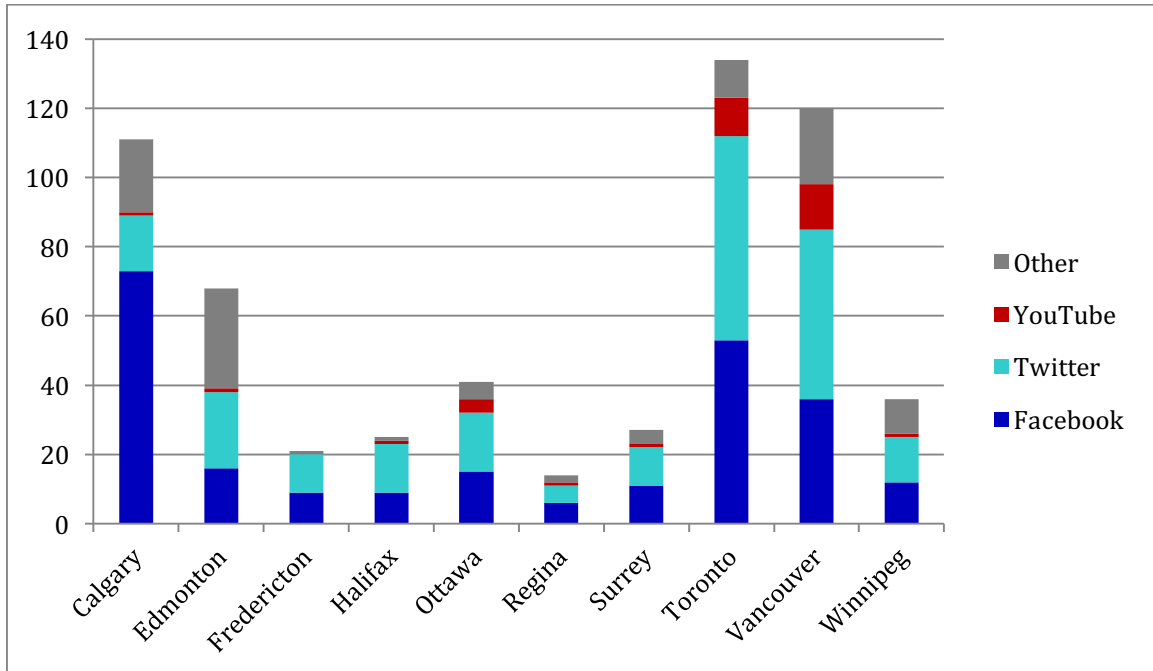


Figure 6: Approximate Number of Social Media Accounts by Canadian City (December 2015).

Overall, the cities' social media programs extended beyond "corporate" or city accounts to support many other business unit initiatives. Although difficult to categorize, the Canadian Facebook and Twitter accounts clustered around the same general topics as the American accounts: protective services (i.e., police, fire, ambulance); 311 services; traffic, roads, and transit; cultural activities, facilities and events; and niche audiences, like youth, cyclists, and animal adoption. YouTube accounts were more general, although playlists reflected similar clusters, as well as messaging from Mayor, Council, and other city executives, with one city recording and uploading six regular public meetings. The "other" accounts again included LinkedIn for recruiting, channels devoted to photographs (e.g. Flickr, Pinterest, Instagram), and newsletter-style services (e.g., blogs, email subscriptions, RSS feeds).

6.3 Discussion

Based on the audiences and accounts metrics, the social media profiles appear relatively consistent across the 20 cities and two countries. The cities tend to have their largest audiences on Twitter, followed by Facebook. They also have multiple accounts, on different social networks. In fact, over the course of the data collection and interview phases of this study, many of the cities ramped up their social media use with different business units within the organization using social media networks to address their own niche audiences. Although the cities were selected on the basis of five accounts, by the end of 2015 most had at least 20 and some had close to 140 accounts. While the number of accounts appears to increase with city size, given what we know of the resources assigned to social media, the scope of social media activity was still unexpected.

7.0 Sentiment Analysis Findings

In this section, we provide a comparison of sentiment analysis results using the three sentiment analysis techniques. The results include an overall comparison of Twitter posts for all cities, followed by a case study of one chosen city for an in-depth comparison of the three techniques.

To understand the overall picture of sentiment analysis for all Twitter messages collected using the three techniques and to statistically examine the distribution of the sentiments, we first code the sentiments using the following scheme:

0: neutral sentiment

+1: positive sentiment

-1: negative sentiment

The sentiment means and standard deviations from these three techniques, respectively, are then calculated. Tables 6 and 7 present the percentages of positive, negative, and neutral sentiments from all city accounts, followed by the means and standard deviations of the sentiments.

Table 6: Percentages of Positive, Negative, and Neutral Sentiments using Three Techniques for 20 City Accounts

Twitter Account	Lexicon-Based Approach			Machine Learning-Based Approach			SentiStrength		
	Sentiment Percentage (percent)								
	Pos.	Neg.	Neutral	Pos.	Neg.	Neutral	Pos.	Neg.	Neutral
@cityofatlanta	26.0	6.0	68.0	18.4	6.4	75.2	20.0	7.0	73.0
@austintexasgov	23.0	8.0	69.0	24.8	5.0	70.2	19.1	3.0	77.9
@notifyboston	28.0	12.0	60.0	25.8	6.8	67.4	20.7	4.0	75.3
@honolulu.gov	26.0	7.0	67.0	24.3	7.8	67.9	22.5	12.0	65.5
@kcmo	35.0	8.0	57.0	24.3	11.6	64.1	29.0	3.0	68.0
@mesaazgov	20.0	4.0	76.0	31.8	6.5	61.7	19.5	7.0	73.5
@nycgov	32.0	7.0	61.0	30.0	5.0	65.0	18.6	4.0	77.4
@raleighgov	23.0	4.0	73.0	27.0	6.9	66.1	21.5	7.0	71.5
@riversidecagov	26.0	4.0	70.0	17.8	12.5	69.7	27.1	3.0	69.9
@cityofseattle	33.0	10.0	57.0	21.4	8.8	69.8	26.3	12.0	61.7
@cityofcalgary	31.0	10.0	59.0	22.3	7.0	70.7	23.7	8.0	68.3
@cityofedmonton	31.0	12.0	57.0	27.4	4.5	68.1	18.6	12.0	69.4
@hfxgov	32.0	11.0	57.0	25.0	2.3	72.7	11.5	5.0	83.5
@mtl_ville	8.0	4.0	88.0	8.4	2.3	89.3	16.8	10.0	73.2
@ottawacity	32.0	12.0	56.0	16.6	12.7	70.7	28.5	10.0	61.5
@cityofregina	29.0	16.0	55.0	23.9	5.1	71.0	18.1	3.0	78.9
@cityofsurrey	31.0	7.0	62.0	23.0	6.7	70.3	21.1	3.0	75.9
@torontocomms	25.0	10.0	65.0	24.2	3.4	72.4	15.2	4.0	80.8
@cityofvancouver	32.0	10.0	58.0	30.0	2.7	67.3	11.6	5.0	83.4
@cityofwinnipeg	25.0	17.0	58.0	17.3	6.5	76.2	21.3	8.0	70.7

Table 7: Sentiment Means and Standard Deviations Using Three Techniques for 20 City Accounts

Twitter Account	Lexicon-Based Approach	Machine Learning-Based Approach	SentiStrength
	Mean (Std. dev.)	Mean (Std. dev.)	Mean (Std. dev.)
@cityofatlanta	0.19 (0.06)	0.12 (0.48)	0.13 (0.40)
@austintexasgov	0.16 (0.05)	0.20 (0.51)	0.16 (0.39)
@notifyboston	0.15 (0.08)	0.19 (0.54)	0.17 (0.41)
@honolulu.gov	0.18 (0.12)	0.17 (0.54)	0.10 (0.42)
@kcmo	0.27 (0.08)	0.13 (0.59)	0.26 (0.46)
@mesaazgov	0.16 (0.08)	0.25 (0.56)	0.13 (0.40)
@nycgov	0.25 (0.06)	0.25 (0.54)	0.15 (0.39)
@raleighgov	0.18 (0.06)	0.20 (0.55)	0.14 (0.41)
@riversidecagov	0.20 (0.06)	0.05 (0.55)	0.24 (0.45)
@cityofseattle	0.23 (0.09)	0.13 (0.53)	0.14 (0.44)
@cityofcalgary	0.22 (0.05)	0.15 (0.52)	0.16 (0.43)
@cityofedmonton	0.18 (0.04)	0.23 (0.52)	0.07 (0.39)
@hfxgov	0.22 (0.06)	0.23 (0.47)	0.06 (0.32)
@mtl_ville	0.03 (0.04)	0.06 (0.32)	0.07 (0.37)
@ottawacity	0.20 (0.05)	0.04 (0.54)	0.19 (0.45)
@cityofregina	0.14 (0.06)	0.19 (0.51)	0.15 (0.40)
@cityofsurrey	0.24 (0.04)	0.16 (0.52)	0.18 (0.41)
@torontocomms	0.14 (0.06)	0.21 (0.48)	0.11 (0.36)
@cityofvancouver	0.22 (0.04)	0.27 (0.50)	0.07 (0.32)
@cityofwinnipeg	0.10 (0.07)	0.11 (0.48)	0.13 (0.41)

To statistically investigate whether the results of the three sentiment analysis techniques differed significantly or not, we performed an ANOVA test on the sentiments. The results are given in Table 8 and Figure 7.

Table 8: One-Way ANOVA Test for Sentiment Analysis (SA) Techniques

Source	df	SS	MS	F	P-value
SA techniques	2	0.018	0.009	2.6271	0.0810
Error	57	0.200	0.004		
Total	59	0.218			

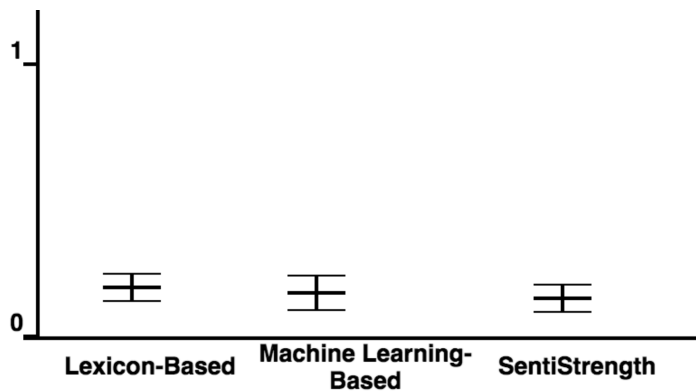


Figure 7: The Mean for Each Sentiment Analysis Technique and a Vertical Error Bar Containing Values within One Standard Deviation of the Mean

The ANOVA test shows that, at an aggregate-level, the three sentiment analysis techniques, while functioning based on different rationales and algorithms, provide a statistically consistent and robust result.

To further explore how these three sentiment analysis techniques perform at a finer level, we randomly selected 10 Twitter messages in response to the selected “@austintexasgov” Twitter account for the city of Austin, Texas. The table below presents the findings, in which the actual message and the estimated sentiments from all three techniques are given in Table 9.

Table 9: Randomly Selected 10 Twitter Messages and Their Sentiment Predictions by Three Techniques.

#	Tweets/Re-tweets	[A]	[B]	[C]
1	It's beautiful out at Austin's New Year! It's not too late to get down to Auditorium Shores for fireworks, Del Casti ...	+	+	n
2	Traffic signals not working at: Koenig at Shoal Creek, Koenig at Marilyn, 290 at Berkman. Plan ur commute. #wind #ATX	-	-	-
3	I'm at Lady Bird Lake Trail - @austintexasgov (Austin, TX) http://t.co/I3IIRrJUhy	n	n	n
4	@TheaGood @JohnCornyn @google @austintexasgov Thea, broadband via Google Fiber will be free. https://t.co/FRGEZigyrx	+	+	+
5	Thank You! Thank You! @WellsFargo @RepLloydDoggett @UT_DDCE @CapMetroATX @austintexasgov Austin Revitalization Authority for your	+	+	+

	support!			
6	@austintexasgov: Do you buy local? Today is your last day to be vocal! Tell the City how you feel about locally grown foods here:	n	n	-
7	HA! Love this city. RT @austintexasgov #48 %œÛÖ NANANANANA, BAT FEST! This Aug. 24 fee-paid event just got its permit wings. #ATXcouncil	+	+	+
8	I'm at Austin, TX - @austintexasgov (Austin, TX) w/ 4 others http://t.co/Xnh6EiXbBo	n	n	n
9	@EddieforTexas: @austintexasgov Thank you to City Council for putting \$65 million affordable housing bond package on Nov. ballot. http://%œÛ_	n	n	n
10	Austin, TX wins the '2013 Best of the Web' Award for government sites. Way-2Go @AustinTexasGov http://t.co/0Cw64p8pke #Austin	+	+	+

[A]: Sentiment prediction from the lexicon-based approach

[B]: Sentiment prediction from the machine learning-based approach

[C]: Sentiment prediction from SentiStrength

+: positive sentiment

-: negative sentiment

n: neutral sentiment

The results show that, for these randomly selected 10 messages, the sentiment predictions from the lexicon-based approach and the machine-learning approach are identical. There were some slight differences in sentiment predictions between SentiStrength and the other two approaches, specifically for tweets #1 and #6. If we take a closer look at the tweet contents, we may conclude that it is largely because SentiStrength approach reports sentiments in a wider (-4 to +4) scale rather than a more binary classification.

We also conducted a sentiment analysis to better understand the trends and patterns in how citizens responded to governments' use of social media—in this case, Twitter. To achieve this goal, we created two visual displays based on the lexicon-based approach results for each city account: the Twitter Sentiment Trends (see Figure 8) and the Comparison Word Cloud (see Figure 9). The Twitter Sentiment Trends graph can be used to explore the changes in citizen sentiments over time, which may correspond to unique events, new policies, important government announcements, etc. The Comparison Word Cloud can be a powerful tool to understand the discussion interest of citizens on Twitter within a given period of time. We choose Austin, Texas (Twitter account: @austintexasgov) as an example to discuss these two graphs further. A complete set of graphs can be found in the InterPARES Trust folder.

Figure 8 presents the Twitter sentiment trends for @austintexasgov by showing the percentages of positive, negative, and neutral tweets per month, respectively, within the research period January 1, 2013 to August 25, 2014. The peaks and valleys in trends may reveal how citizen sentiment changed along with significant city events, announcements, activities, etc. For example, we noticed a spike in positive sentiments in February 2014. We found that February was the month in which the Austin city government was promoting the upcoming world-famous SXSW (South by Southwest)

festival, along with several cultural and art events (e.g., “We’re now accepting applications for #ATX Creative Ambassadors”; “City of Austin announces new public art opportunity at Montopolis Neighborhood Center”). On the other hand, we noticed a spike in negative sentiments in March 2013, which might have resulted from arguments and discussions about the panelists selected for the redistricting commission (e.g., “There were actually more women in the pool than men. Very few racial minorities to choose from, though”; “... Hopefully the applicant pool for the commission will be more diverse”). These observations indicate how citizen sentiments can be driven by events, and that the government should value citizens’ social media responses for policy and decision making.

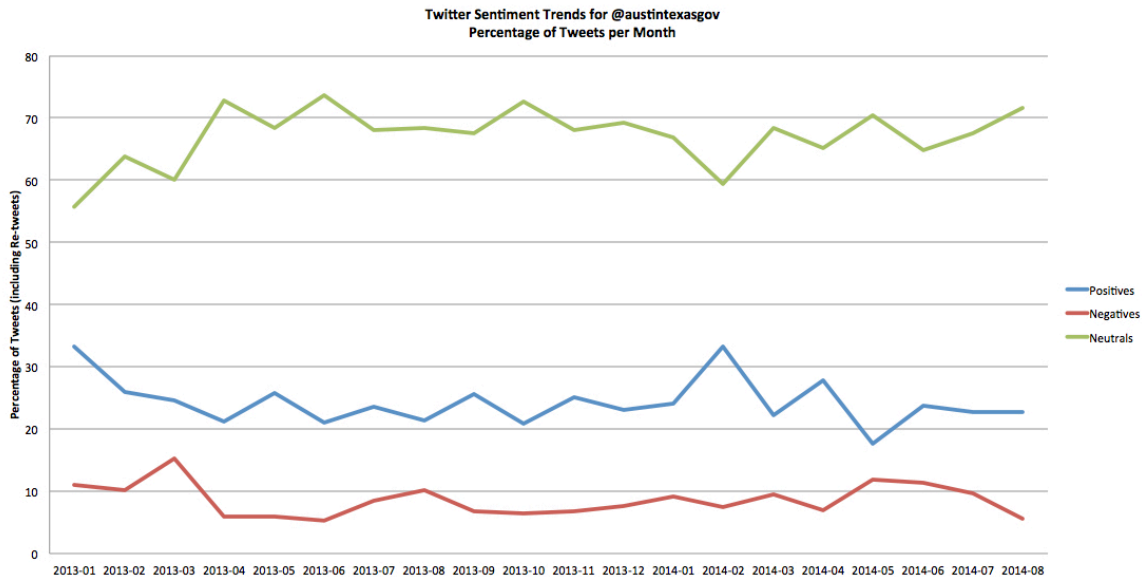


Figure 8: Twitter Sentiment Trends (@austintexasgov).

Finally, Figure 9 represents the word cloud of all tweets and re-tweets for @austintexasgov between January 1, 2013 and August 25, 2014. The cloud serves as an informative snapshot to understand what topics citizens cared about and became interested in within a given timeframe. The topics are color-coded neutral for neutral, green for positive and red for negative, and sized according to the prevalence of the topic. The cloud suggests the importance of context and possible surprises: while disgraced athlete Lance Armstrong’s “Livestrong” charity appears in red, then indicted Governor Perry appears in green, and “updatesattexas flood” as neutral.

8.2 United States

8.2.1 Municipal Context

According to the US Census Bureau, in 2007 there were 19,492 municipal governments and 16,519 town or township governments in the United States. Municipal governments are “the political sub-division within which a municipal corporation has been established to provide local government for a specific population concentration in a defined area.” Municipal governments were largely established after the American Revolution when state governments issued municipal charters in response to pressures for local control over land use in with respect to zoning, property taxes, and public parks. In 1894, the National Civic Leagues published the first *Model City Charter*; the eighth edition remains a source of guidance to municipalities today (Frederickson Wood Logan 2001).

Since the Tenth Amendment to the US Constitution makes local government a matter of state rather than federal jurisdiction, “[t]he scope of government services... varies widely from one state to another and even within the same state” (US Census Bureau 2007). In some states, local government powers are strictly defined by law while in others cities are given “home rule authority” and can enact ordinances. American municipal governments exist in a number of forms, the most popular being the Mayor-Council and the Council-Manager. The Mayor-Council form is often referred to as the “Strong Mayor” form, where the Mayor and the Council are elected by the citizens, with the Mayor holding executive responsibility and the Council holding legislative powers. In the Council-Manager form, the elected Council holds both legislative and executive powers and appoints a City Manager to run the city administration (Moulder 2008). In both forms, the administration of local government activities is supported by a number of departments, the number and functions of which vary depending on the size of the city and the services provided. In the Strong Mayor form, these departments are often managed by Mayor-appointed Commissioners. By coincidence, five of the cities selected for this study were the Council-Manager form (i.e. Austin, Kansas City, Mesa, Raleigh, Riverside) while the other five were the Strong-Mayor form (i.e. Atlanta, Boston, Honolulu, New York, Seattle). While all five of the Council-Manager cities participated in the interview portion of the study, only two of the Strong-Mayor cities participated.

As noted earlier, many of these cities implemented social media shortly after President Obama issued the memorandum on “Transparency and Open Government” in 2009. Governments saw themselves as responding to citizen expectations for wider participation in the decision-making process using the social networks supported by these new tools.

8.2.2 Website Integration

Social media exists within existing, advanced local government information communication technology (ICT) systems, which include specialized database systems, electronic records management systems, and web content management systems. In this study, all 10 of the American cities have web sites, some established as early as 1995, but more commonly in the 2000s. Most cities in the study had refreshed or redesigned their website within the last three years. All of the websites provide a wide array of information, typically organized into views reflecting their audiences' interests and expected approach to website navigation (i.e. government, residents, visitors, services).

All 10 cities provided citizens with numerous points of contact and used webmail and online forms to support specific services. All of the websites featured advanced online services, supported by in-house or third-party database systems with varying degrees of integration (i.e. seamless to patchwork). Many of the websites supported some level of citizen participation through online surveys or blog featuring audience comments.

In addition to the websites, all 10 American municipalities were aligned with public television channels, providing varying levels of financial support and programming involvement from intermittent to fully owned and operated.

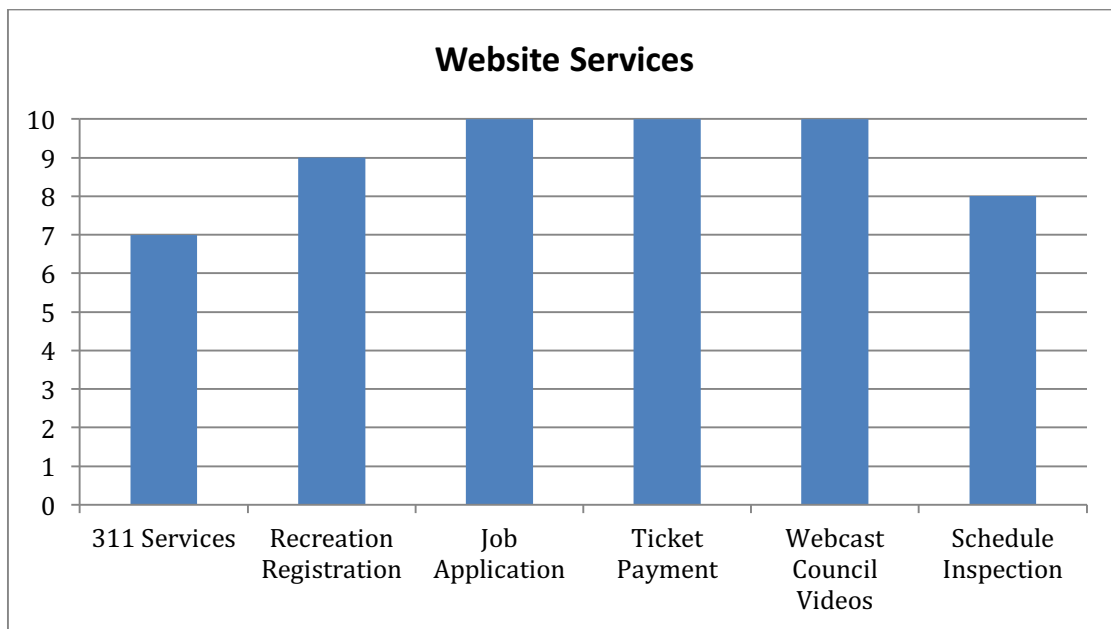


Figure 10: Advanced Web Services Offered by American Cities (of ten cities).

Overall, the 10 websites demonstrated the cities' organization-wide approach, and advanced online capabilities and capacities (see Figure 10). The websites also represented the main springboard for each city's social media efforts. All of the cities featured social media icons on their home page, and six had "hub" pages where all of the social media channels were listed in linked. Some cities also featured social media icons or "share" buttons on all content pages.

In addition, many of the American cities have adopted mobile applications (apps). The apps range from “my city,” to 311, news, events, sustainability, traffic, cycling, walking or nature tours, library, art, parking, and police services. The majority of respondents partnered with third-parties to develop apps, while others built applications in-house. A number had hosted “hackathons” in support of open data initiatives and to encourage local app development. Two cities also noted that their next web redesign would include consideration for mobile device delivery.

8.2.3 Adoption

Seven of the cities opened Facebook or Twitter accounts in 2009 or 2010. One city launched their first account in 2008, and the remainder in 2011 and 2012. Unlike the Canadian cities where social media was often adopted in response to major emergency, American cities typically adopted social media either as resources became available, at the request of Council, or in the regular course of business (see Figure 11).

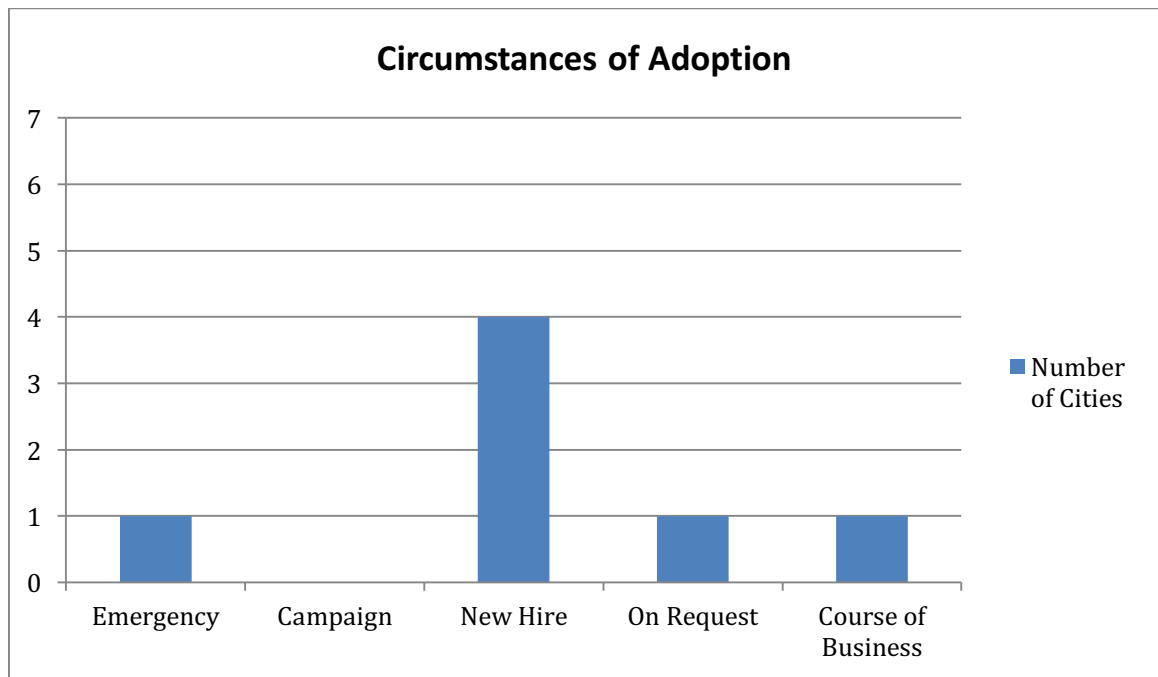


Figure 11: Circumstances Under Which Social Media Was Adopted (of seven cities).

8.2.4 Policy

Of the ten cities studied, four provided online access to their social media policies and guidelines while two provided digital copies on request. Four did not appear to have stand-alone policy documents; although two cities’ privacy policies mentioned social media. All six of the policy documents were administrative in nature, with the intended audience being employees. Three were approved by the City Manager and one by the

Chief Technology Officer while two were issued by the Communications unit or social media strategist.

Account Controls (see Figure 12): The responsibility for social media management typically resided with the Communications unit (a.k.a. Media Relations, Public Affairs or Public Relations), which reported to the Mayor or City Manager.

Based on the social media policy documents, the cities' social media accounts were subject to a variety of controls implemented by this unit, including: approval of social media accounts (five of six respondents); approval of employees' participation in social media activities (six of six); and approval of posts (two of six).

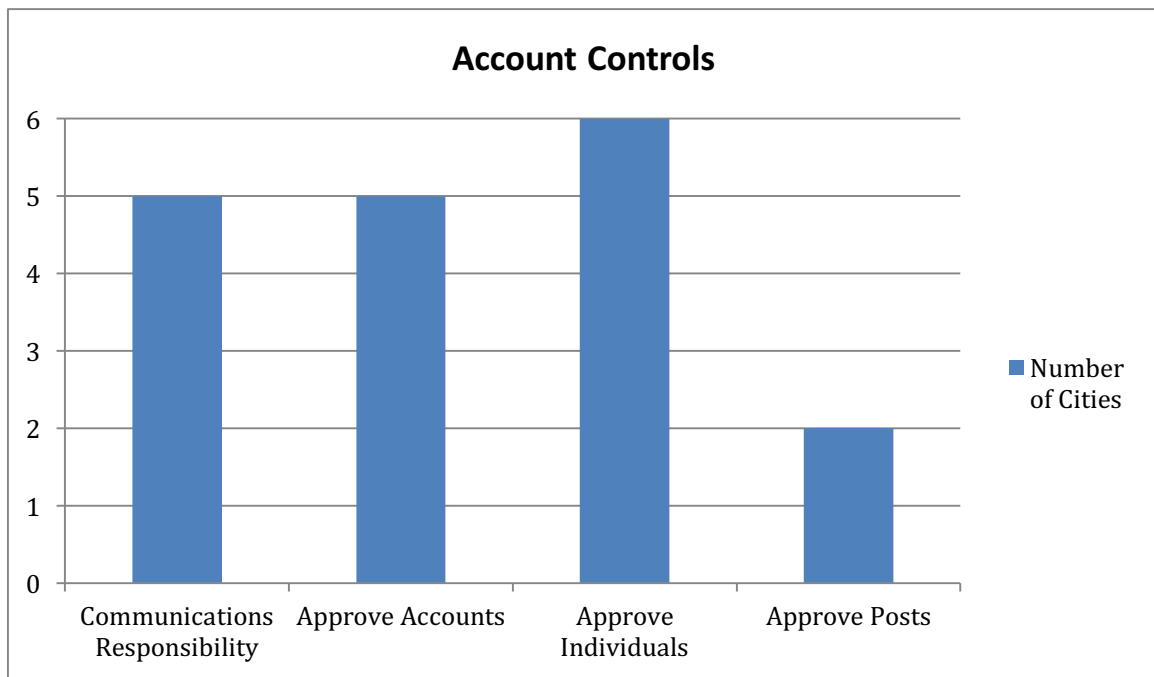


Figure 12: Responsibility for Account Controls and Controls in Place (of seven cities).

Directives to Employees (see Figure 13): The policy documents provide specific direction regarding employees' social media activities that reflect concerns can around appropriate use, legal compliance, and the right to remove certain types of specified content.

Statements around appropriate use focused on maintaining the cities' reputations and "speaking with a consistent voice." Related policies such as personnel policies around codes of conduct or acceptable use of technology were often referenced.

Statements around legal compliance focused on avoidance of improper disclosure of confidential or financial information, and, in some cases, intellectual property rights of copyrighted or trademarked materials.

All policies included statements advising employees of the types of external content that should be identified and removed under listed conditions.

Two indicated that employees required training prior to use and four of the policies indicated that employees would be subject to consequences for inappropriate use of social media.

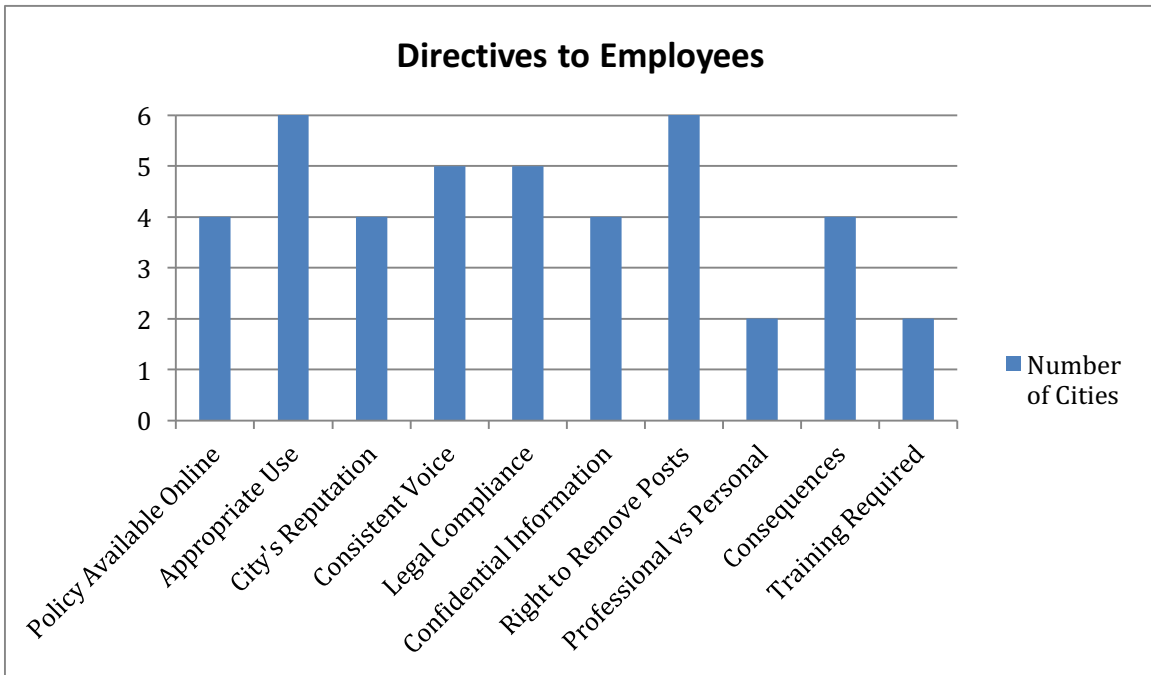


Figure 13: Availability of Internal Social Media Policy and An Overview of Contents (of six cities).

American policies did not address the distinction between professional and personal use of social media. This may be due to requirements around freedom of speech for public service employees (Tappendorf and Glink 2013).

Directives to Citizens (see Figure 14): Many of the cities had terms of use for citizens. Three cities had stand-alone policies, two cities had incorporated the terms of engagement into their employee social media policies, and in another two cases the terms were included in privacy policies.

While all of these documents were available online, the availability of the terms of engagement on social media channels was mixed. Seven of the cities had made some effort to include the website link to the terms on their Facebook page or to provide some information about their monitoring activities. Only one city included this type of information on their Twitter page while six advised the audience this was the “official” account for the city. Only one city included terms of use on their YouTube account, and one city noted it was their “official” account.

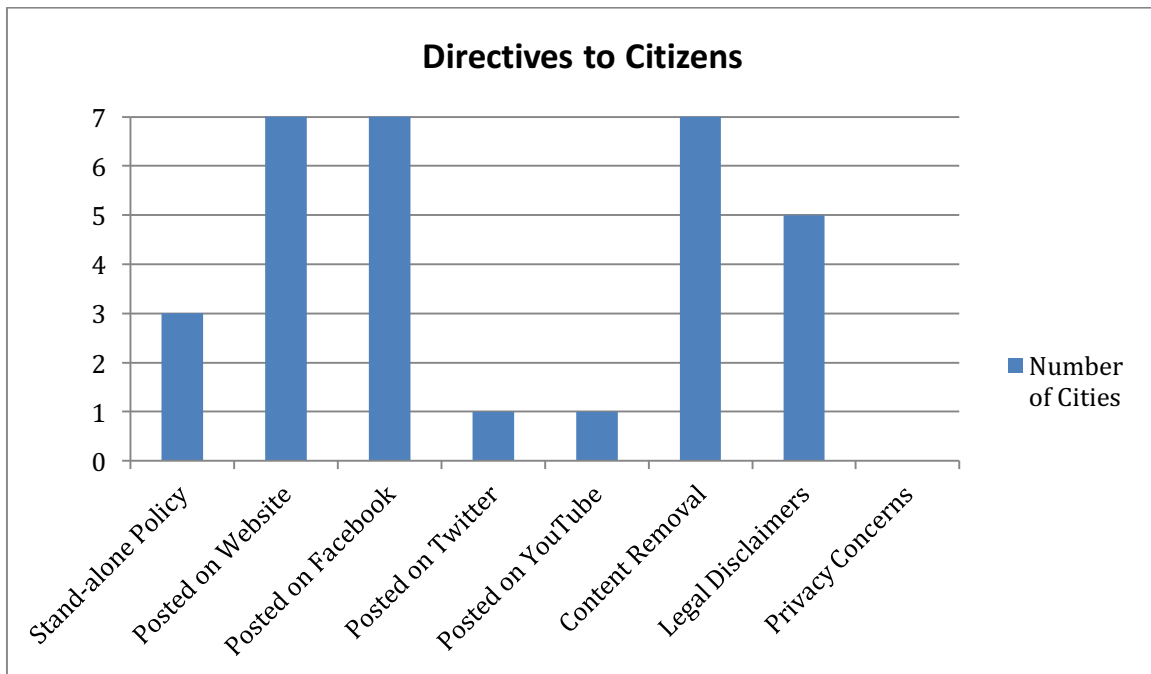


Figure 14: Citizen Terms of Engagement (of seven cities).

The citizens’ terms of engagement focused largely on two areas: rules under which citizens’ content would be removed or ignored; and disclaimers around liability for third-party sites. None of the social media sites used by the American cities included posted statements about data privacy.

8.2.5 Management

Reporting Relationship and Resources: In most cases, the cities’ primary or “corporate” social media team worked within the Communications unit, with the Director of Communications reporting directly to the City Manager or Mayor, which indicates the relative importance of the units. The human resources assigned to social media work ranged from two full-time employees to one full-time employee (with some additional support), one intern, or zero dedicated employees with existing staff supporting social media. The employees were typically responsible for posting content on the main city accounts, scheduling content, and monitoring the corporate accounts and responding to audiences.

Monitoring Business Unit Activity (see Figure 15): Participants differentiated between the city or “corporate” accounts managed by Communications, and the departmental accounts set up by business units to address more specialized activities (e.g. events, transportation, police).

While the social media teams retained tight controls over creation of new departmental accounts and access by business unit staff, they took a more relaxed approach to oversight following these approvals (see Figure 15). In general, posts by the business

units did not require pre-approval, were monitored in less than half the cities, and were seldom required to provide administrative access to social media team.

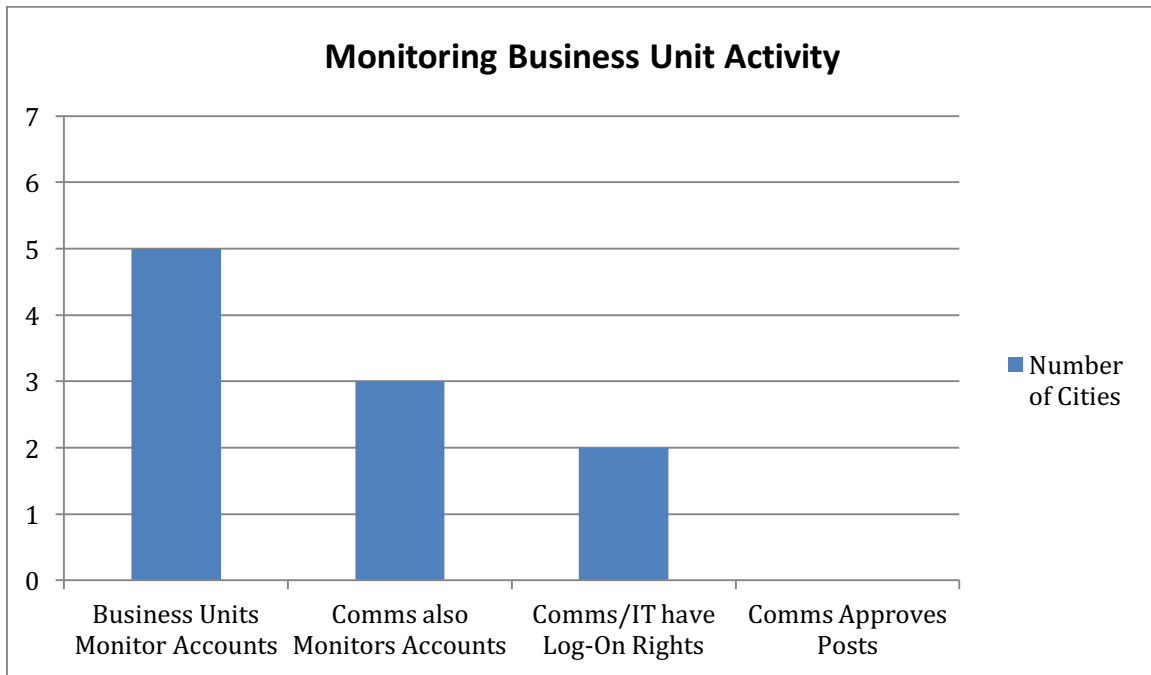


Figure 15: Controls over Departmental Accounts (of seven cities).

On the other hand, the social media team retained complete control over the corporate (i.e. city) accounts, with very few staff having administrative access and all posts being created and/or approved by the social media staff (see Figure 12). Only one participant described the process around deleting employee posts considered inaccurate or inappropriate.

In terms of integration with other areas, in the five Council-Manager cities, the social media team did not provide direct support to the Mayor’s Office, while in the two Strong-Mayor cities the social media team was embedded in the Mayor’s Office and provided direct support.

Four cities noted their social media team actively posted and retweeted police content and one reported working with police on joint campaigns.

In general, few reported interactions with other business units who typically have a stake in social media (i.e. senior executive, legal, IT, records).

Monitoring Citizen Conversations (see Figure 16): All seven cities interviewed stated that they monitored corporate accounts and six participants said user content was removed if it conflicted with the citizens' terms of engagement. None of the participants acknowledged banning users.

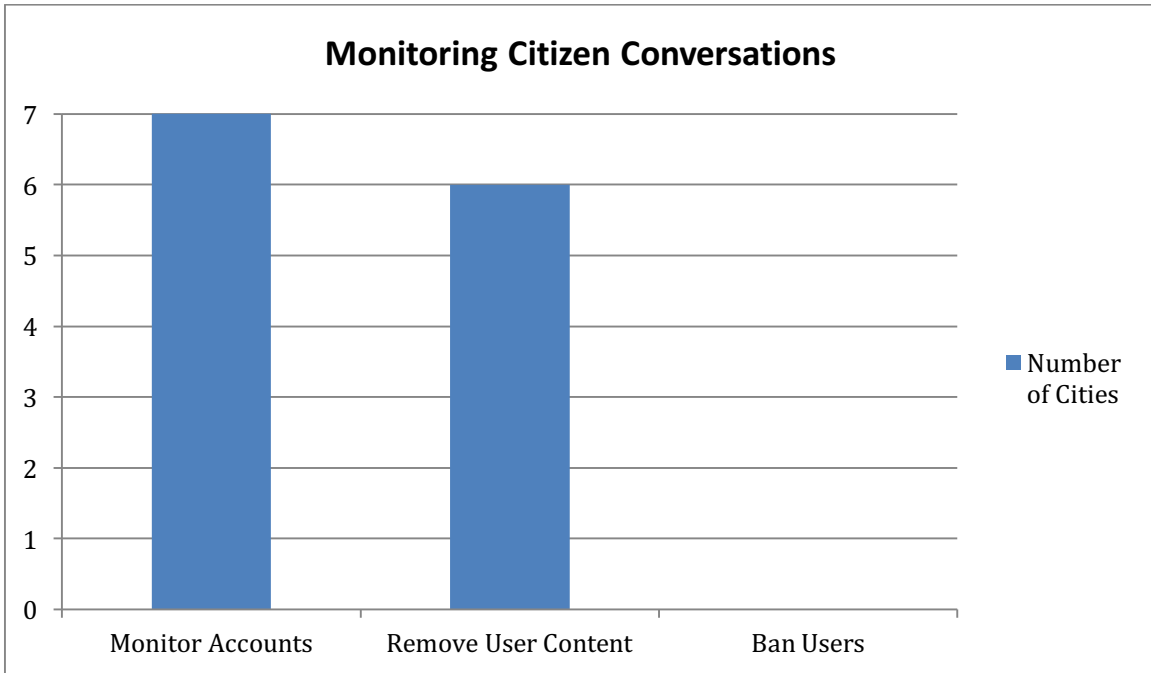


Figure 16: Activities Around Monitoring Citizen Input (of seven cities).

8.2.6 Use

In general, the American cities saw social media as a way to provide information, communicate with citizens, and promote events (see Figure 17). Social media appeared to be used more to broadcast information than to provide services or elicit feedback. One participant noted, “Social media functions a lot like college papers or news releases, Twitter being instant news ads with hyperlinks to deeper content, Facebook as a way to share the same message virally; and WordPress for longer works.”

The cities referred to any two-way communication as “participation” or “engagement.” Four of the seven respondents noted that one of their uses of social media included “transparency.”

While all of the cities had one or more LinkedIn accounts primarily used for recruiting staff, only two participants mentioned this use.

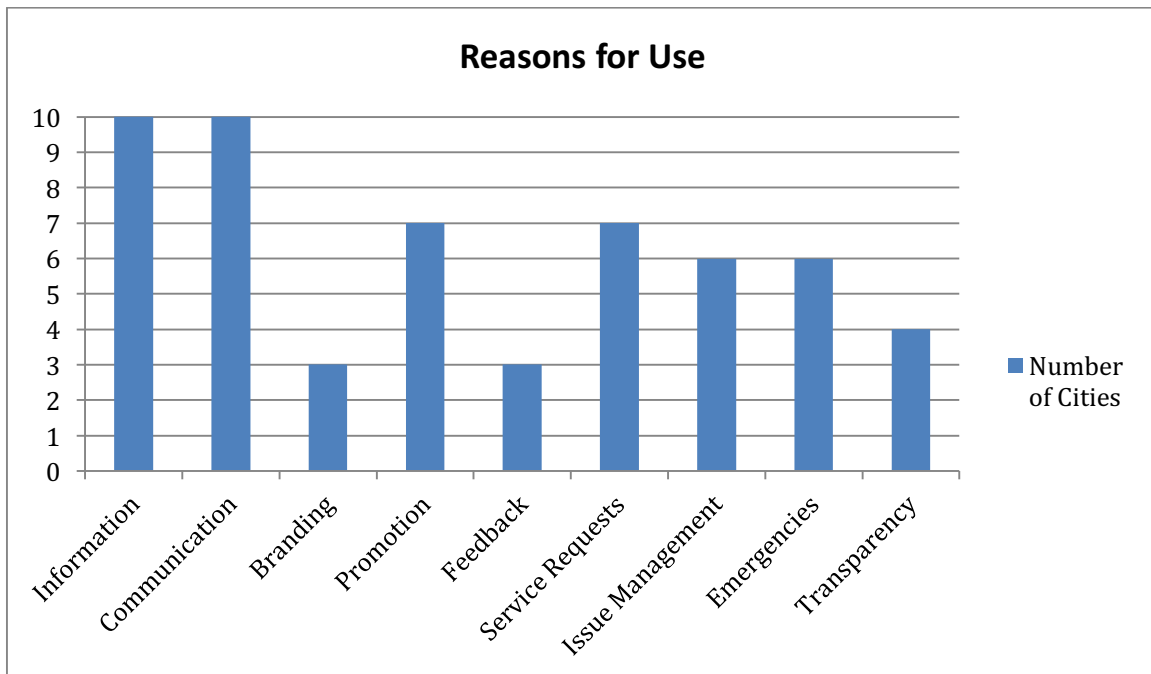


Figure 17: Reasons cities gave for using social media (of the ten studied).

Despite extensive involvement in social media across the cities, only one participant mentioned that social media was a channel to communicate with staff.

8.2.7 Risk

Overall, the participants did not express high concern about risks associated with social media, although there were indications that this confidence might be misplaced. One participant noted that the mayor’s account was hacked; another mentioned that two citizens had falsely represented themselves as city employees; and another noted they depended on IT to combat viruses.

Five of seven participants expressed concern around content risks associated with employee use, including misinformation, inappropriate comments, and other mistakes (i.e. inaccurate information, grammatical errors, incorrect tone).

Three cities had responded to public information requests that included social media, and one had responded to at least one legal issue (see Figure 18). A few teams noted that they were not aware of legal issues but that any such occurrences would be referred to the City Attorney; given that the American cities did not generally appear to be in close contact with their legal teams, there is a possibility that legal issues faced by the cities were unknown to the participants. In the wider business environment, there is every indication that legal cases involving social media are increasing: an e-discovery software vendor notes cases involving social media have increased from two or three a month to as many per day (Patzakis 2012).

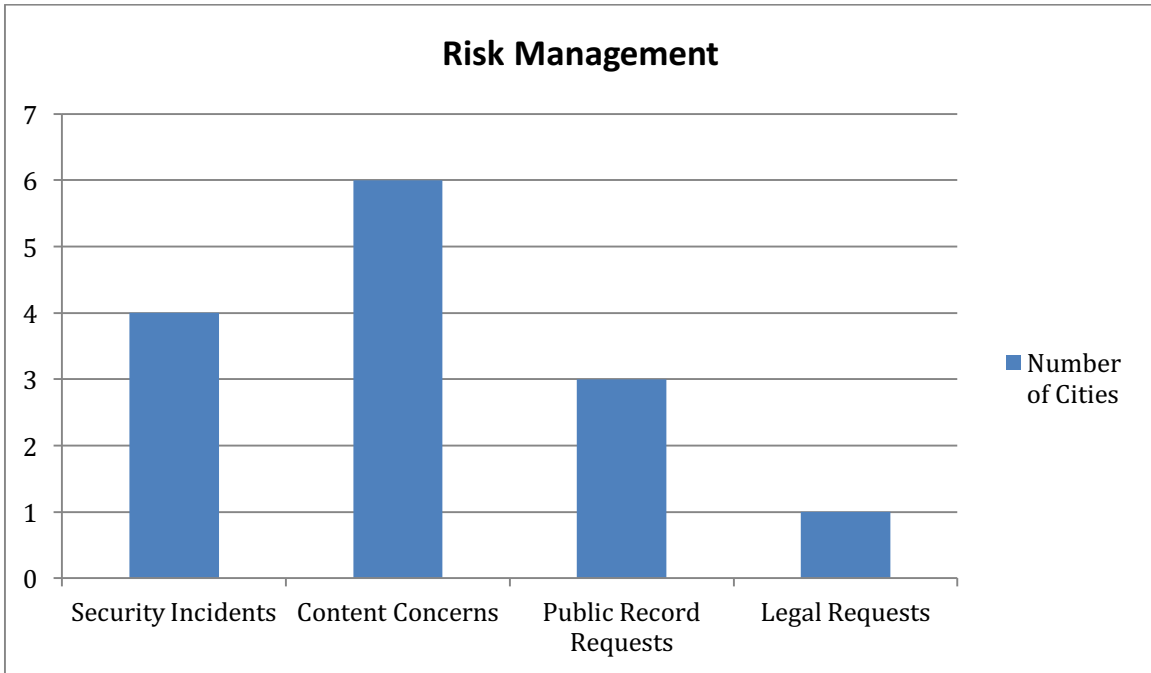


Figure 18 Perceived Threats and Compliance-Related Activities (of seven cities).

8.2.8 Results

When asked what they saw to be results of the local governments' use of social media results, only five participants responded. Four of five respondents noted increased citizen awareness, two reported message amplification, and two noted they learned about issues or emergencies (see Figure 19).

When asked about their most effective initiatives, the five participants most often talked about spikes in traffic resulting from day-to-day or ad hoc initiatives rather than formal campaigns. These included: three weather events; a sports event; and a "hot topic." Two cities did report on the success civic pride campaigns.

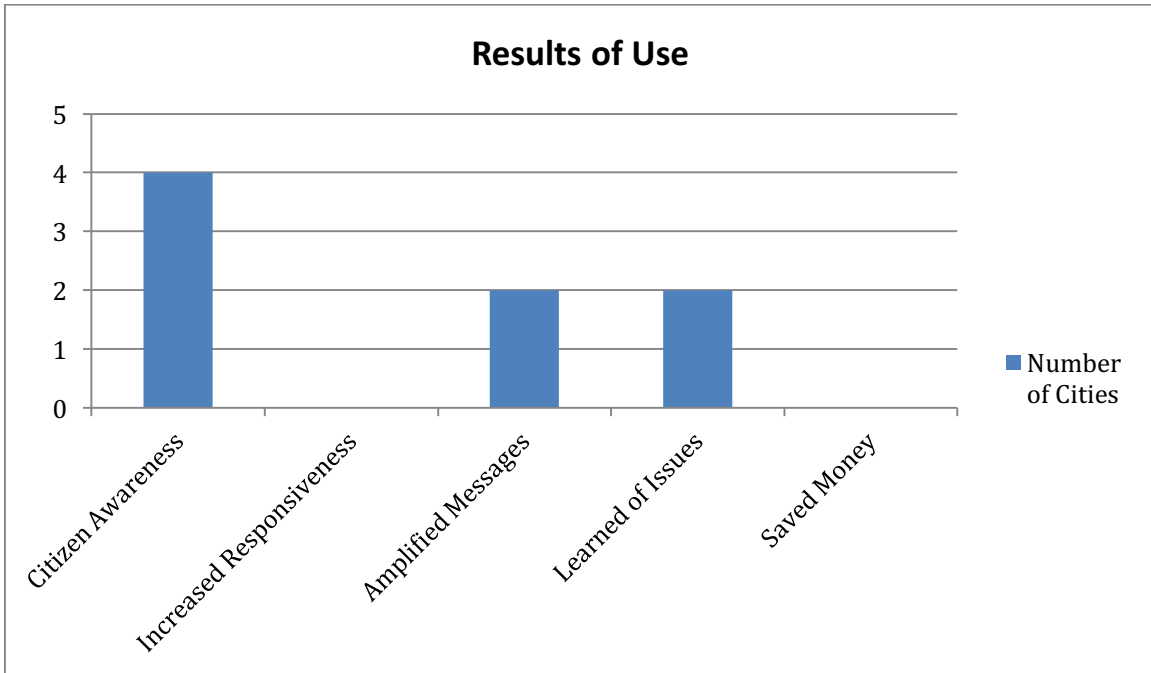


Figure 19: Participants' Perceived Results from Social Media Use (of five cities).

In terms of other measures of success, at least five of the ten cities in the study had won awards for digital initiatives (e.g. digital cities, web) and at least two had won social media awards.

8.2.9 Measurement

Five of the seven cities interviewed used Hootsuite for scheduling and monitoring content. The benefits of the Hootsuite dashboard were mentioned by three respondents in terms of staff collaboration and the ability of “multiple users... to see multiple accounts,” “flag important information for the departments,” and “track hashtags and tags.”

Facebook Insights, and Twitter Analytics were identified as measurement tools, and one city also mentioned using YouTube Analytics and bitly. Google Analytics was mentioned in the context of tracking web URLs and click-throughs (see Figure 20).

Two participants mentioned they measured audience growth of Facebook and Twitter metrics directly from the accounts pages’ “follows” and “likes.”

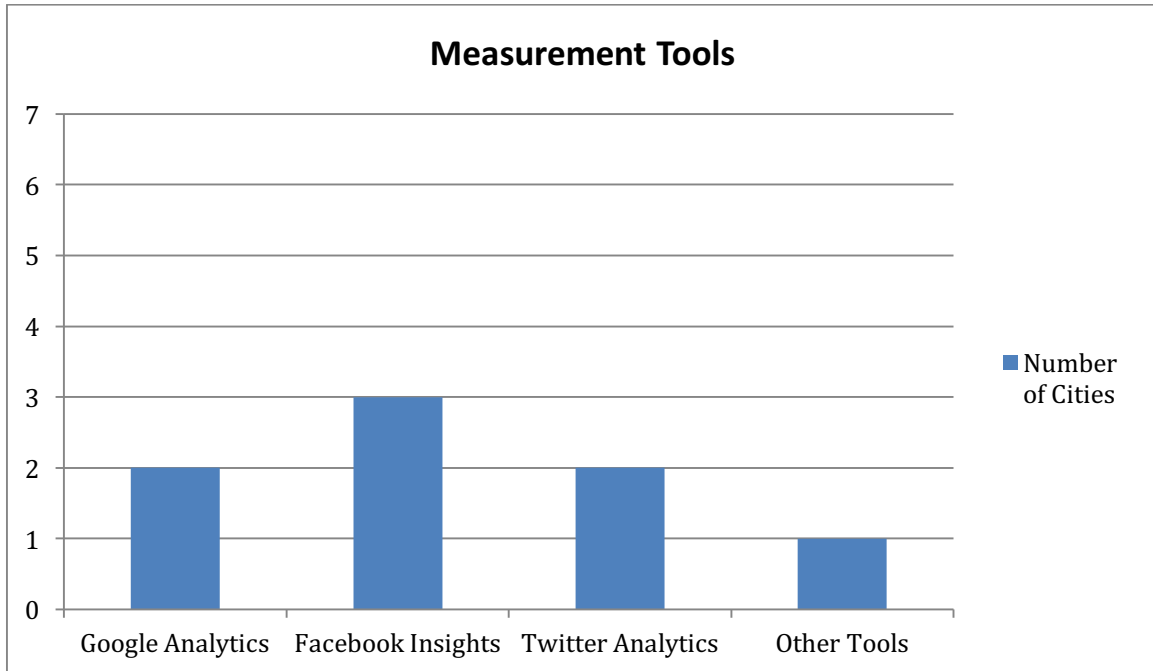


Figure 20: Number of Cities Using Specific Social Media Tools To Measure Activity (of seven cities).

Three of the participants provided details describing what they measured:

- a. Audience Growth – basic metrics (i.e. “likes,” “follows,” etc.);
- b. Content Performance – top posts and tweets for topics gathering the most interest;
- c. Impressions and Reach/Referral Measurement – tracking popular and retweeted content; and
- d. Use Patterns – high and low points for engagement in terms of the best time of day and week for posting content and communicating with audiences.

Participants mentioned that that the growth of their audiences reflected the increasing popularity of social media in general. One participant commented that they had “grown their audience with very little paid subscription.”

Only one city confirmed that social media data was compiled and distributed in a report format. In this case, the city’s economic development unit included social media statistics in their “Monthly Dashboard,” a newsletter-style report available to the public and employees via the website (see Figure 21).

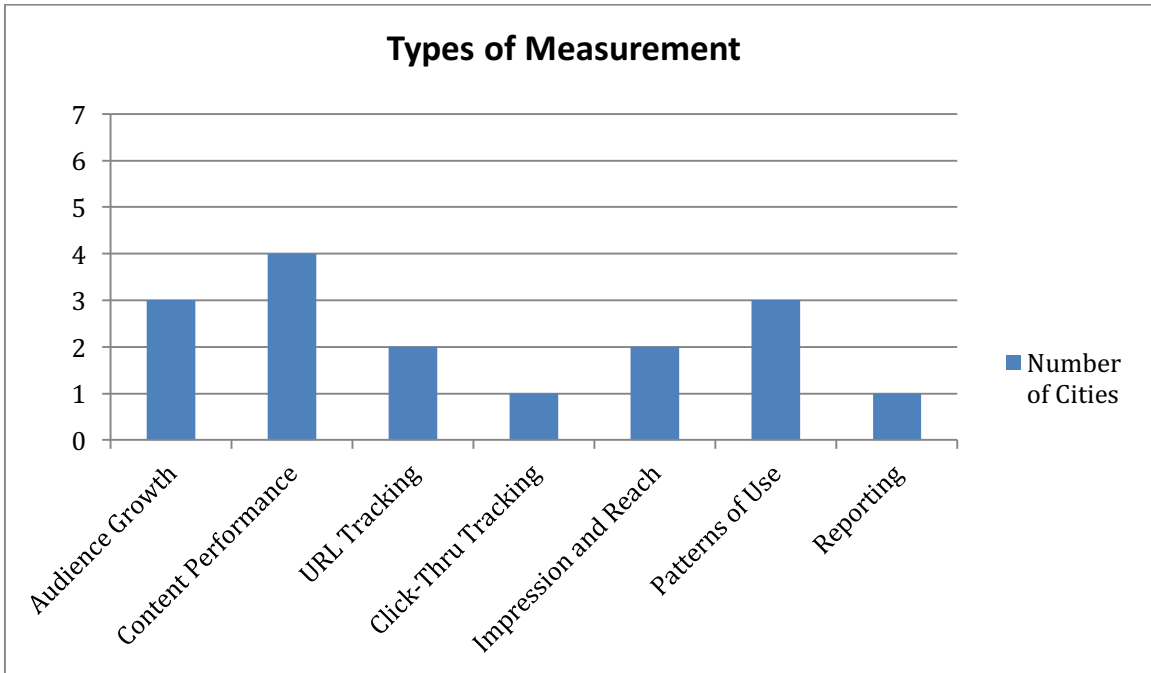


Figure 21: Types of Measurement (of seven cities).

8.2.10 Accountability

Accountability is discussed in terms of the extent to which social media content is managed as a record based on social media policies, record policies, and the procedures in place for capturing content in response to a public or legal request.

Social Media as Records: The seven cities having social media policy documents treated these as administrative policies subject to staff (rather than Council) approval. Four of the policy documents were formally approved either by the City Manager (3) or by the Chief Technology Officer and two were not formally approved before distribution by the social media team or strategist.

The cities' social media policies reflected aspects of accountability in that they: referenced the state law for public records; defined social media as public records; and assigned responsibility for records management to departments, including scheduling and retention in an accessible format in some cases. Only one of the cities' social media policies referenced their records policy (see Figure 22).

Interestingly, the social media team did not appear to understand that under these self-created policies, they themselves were responsible for providing the same level of records management and accountability for the corporate accounts.

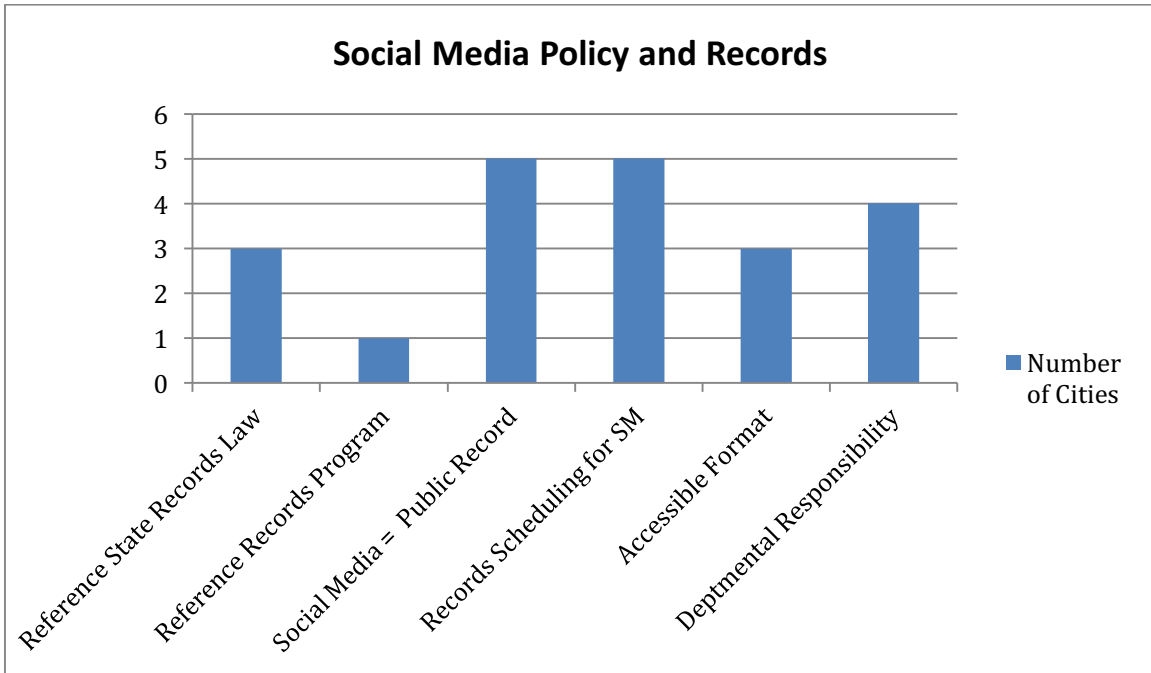


Figure 22: Directives for Social Media as Records Contained in Social Media Policies (of six cities).

Records Policy: The level of approval for records policy was much higher than for the social media policy (see Figure 23); nine of the cities included requirements for records in their city charter or code of ordinances, or had presented policies for Council approval. In terms of responsibility for records, in one city, a Department Commissioner was responsible for the records program while in another six cities, the City Clerk was wholly or in part responsible. Two cities had record committees of which the City Clerk was a member.

Eight of the cities referenced state public records laws in their legislative policy. Five indicated that employees must comply and three clearly defined departmental responsibilities for records management and/or scheduling.

The one city that did not post their records requirements was clearly subject to state law. The State (rather than the city) provided clear direction on records requirements on an expansive website, including procedure manuals, training videos, and records retention scheduling and disposition forms.

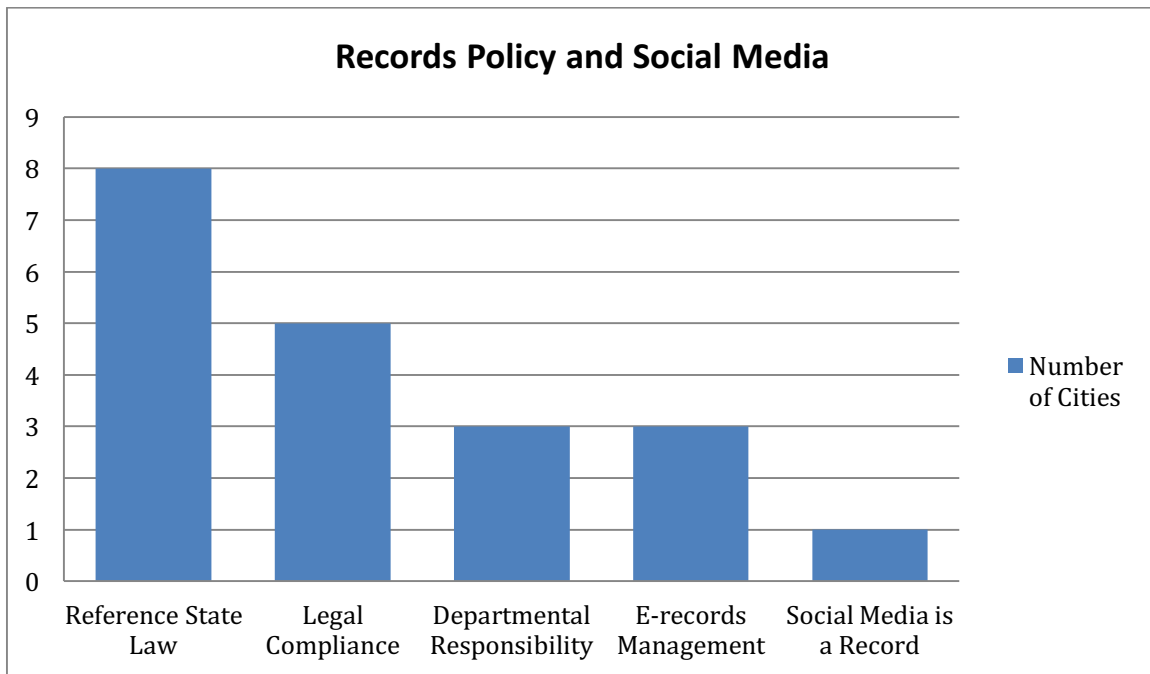


Figure 23: Records Policy Requirements for Records, Social Media and E-Records (of nine cities).

While four cities had updated their records policy very recently (i.e., the last three years), and another four had updated their policy somewhat recently (i.e., within the last ten years), the policies did not reflect in any significant way the new realities of electronic or digital records. While six of the nine cities included some reference to electronic or “machine readable” records, only one included “social networks” in their examples and only three cities included any reference to managing electronic or digital records in the same way as their paper counterparts. Notably, two of the cities had not updated their records policies since the 1970s when they were first implemented.

8.2.11 Transparency

While the cities’ social media posts were clearly subject to state public records laws, and all seven cities in some way indicated that social media qualified as records, there were very few procedures in place for managing social media as records (see Figure 24). The cities make little effort to collect their social media feeds or develop formal procedure for collecting posts and threads of a possibly legal nature.

When asked about their procedures for retaining social media as records, four participants disclaimed the need to do so, noting “the content that we post is not currently something that the City Attorney’s office has determined has to be archived,” “per our City Attorney, social media does not fall within the guidelines for our current records retention policy,” or “we haven’t reached this point yet.” Interestingly, despite these comments and without a formal procedure in place, these four cities did take screen shots of any content that they removed or hid.

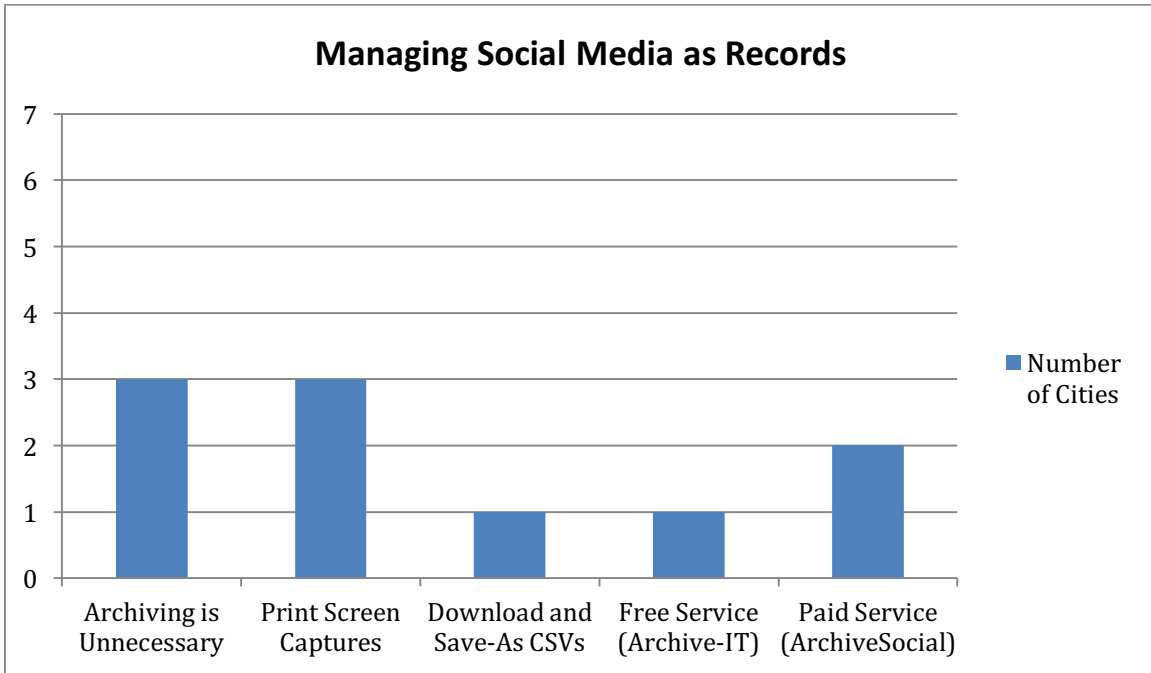


Figure 24: Procedures for Managing Social Media Posts as Records (of five cities).

Two cities had begun some type of social media archiving. One used a paid service, and one was archiving some accounts using a paid service for some and a free service for others. In both cases, the content collected was from the city only and did not include audience responses. In one of the two cases, the archived posts were made available to the public on the city’s own website.

Regarding policy documents, while the citizens’ terms of engagement were largely available on the cities’ websites, they were less available in situ on the social media networks. The policies directed at employees were less available as previously noted (see iv Policy). A number of the cities noted receiving FIPPA requests for their policies, and one had included a request form for the policy on their website presumably due to requests.

Since these social media policies dictate the controls applied to the social media accounts (i.e., the extent of channel monitoring and content removal, employee rights), posting these policies on the cities’ websites and linking on social media channels would increase transparency around social media management.

8.2.12 Engagement

With a few exceptions, social media did not appear to be used for citizen engagement initiatives (i.e. participatory democracy). Although some participants noted that the purpose of social media efforts was to “increase transparency and civil engagement,”

this was largely limited to providing “insight into city government business and inform[ing] residents about city events that may influence their lives on a daily basis.”

There were indications that the cities were beginning to think about ways that social media could support wider citizen participation. One city live-tweeted all Council meetings and election results and held online town halls for some community planning projects prior to Council decisions. Another city held a live-tweet during a consultation on transit fare changes, and two cities retweeted “ride-along” live tweets during community policing initiatives. As well, a number of cities noted that they consistently used social media to promote citizen engagement initiatives.

8.2.13 Advice

Advice provided by the seven interview participants was largely directed to the practitioner level and included the following:

- Platforms
 - "Chose the right platform."
 - "Keep an eye out for the next product to use."
- Accounts
 - "Too many accounts... create confusion for customers on which account to follow."
 - "Unify the voices."
 - "Changes to tools throughout the years [means you need a] better way to administer several accounts at once."
- Measurement
 - "Really look at what your goals are."
 - "Use analytics to measure success. Keep track of the number of times a post is liked or retweeted."
- People
 - "Identify those individuals who are not only interested in social but have the time to dedicate to it."
- Audience
 - "Build a relationship, engage as much as possible. Be reliable."
 - "Tie in a human element. Speak as if you were fact-to-face... yet still maintain professionalism."
 - "Be engaging. Adhere to the principles of authority and transparency."
 - "Be willing to engage with residents. It can feel scary at first being transparent, but people feel more connected with their City when they know they can reach out... and get a response."
 - "Don't let Negative Nancy's get to you. Use basic customer service skills. Combat with helpfulness and positivity."
 - "Learn from others!"

- Content
 - "Give them a reason to read your content... information that isn't easy to get anywhere else."
 - "Make the posts interesting with well-written content."
 - "Find your voice and make it apparent throughout."
 - "Use a photo with every post. It's more sharable and eye-catching."
 - "Make sure your contact info and disclaimer is updated."
- Timing
 - "Stay relevant, post real-time or close to. Keep a pulse. Don't go days or weeks without a post/tweet."
 - "Market daily. And post frequently."
 - "Use a schedule to avoid becoming overwhelmed."
 - "Planning makes perfect."

8.3 Canada

8.3.1 Municipal Context

As of 2006, there were 3,664 municipalities in Canada, including both urban and rural local governments (Federation of Canadian Municipalities 2010). As legal entities, Canadian municipalities under the jurisdiction of the province in which they are located, just as most American cities are largely responsible to their State. However, in Canada, the relationship between the provinces and local governments are more clearly defined as subordinate: section 92 of the *Canadian Constitution* of 1982 states that municipalities are "creatures of the provinces" and that each province determines the relationship to the municipalities within their boundaries and the delegation of powers. At the same time, Canadian municipalities can act autonomously in areas of local concern that are not specifically governed by federal or provincial statutes, a situation seen largely analogous to that of American cities with "home rule" (Bish and Clemens 2008).

Canadian municipalities follow the Council-Manager form of government, with Council holding both legislative and executive powers. While Canadian municipal politics are largely non-partisan, Councils may represent local parties formed around economic or social issues. The Mayor and Council members are elected to four-year terms on a direct-representation basis, either by ward or as members-at-large. The Mayor chairs Council meetings, contributing one vote and holding no veto power. Typically, each Council appoints a City Manager (sometimes called the Chief Administrative Officer) who administers Council decisions with the support of Departmental Managers. The relationship between Council and the management team and staff is typically arms' length, with staff formally presenting information to Council at weekly or bi-weekly meetings that are open to the public, except in a few clearly defined exceptions.

In terms of policy, municipalities tend to look to higher levels of government to frame their approaches. For records management, this may include the federal Treasury Board of Canada Secretariat (TBS) and the provincial archives and records divisions. With

regards to social media, the TBS's advice highlights federal legislation and codes, including: the *Access to Information Act* and *Privacy Act*; the *Charter of Human Rights and Freedoms* and the *Canadian Human Rights Act*; the *Copyright Act*; the *Values and Ethics Code for the Public Sector*; and the *Official Languages Act*. Essentially, the federal government's approach includes designating social media posts as records, subject to information management requirements including the protection of personal and sensitive information and procedures for security incident management. Content posted on social media must comply with human rights legislation including freedom of speech, and meet accessibility requirements for the disabled. Intellectual property rights must be protected, and appropriate licenses maintained. Finally, in areas with significant French-speaking populations, the government must support bilingualism by launching accounts for each official language (i.e. English and French) and responding in the appropriate official language (Treasury Board Secretariat 2013).

8.3.2 Website Integration

All 10 Canadian cities have web sites, most established from 1995 to 1999, with three established around 2001 or 2002. In most cases, the website had been upgraded or even redesigned within the last five years, with another two cities in the planning and development phase of a redesign.

All of the websites provide a wide array of information, typically organized into views reflecting their audiences' interests (i.e. government, residents, visitors, services), although one city's website is oriented to a search rather than browse navigation.

All 10 cities' websites featured advanced and well-integrated online services, supported by in-house or third-party database systems (see Figure 25). All 10 cities provided citizens with numerous points of contact and used webmail and online forms to support services.

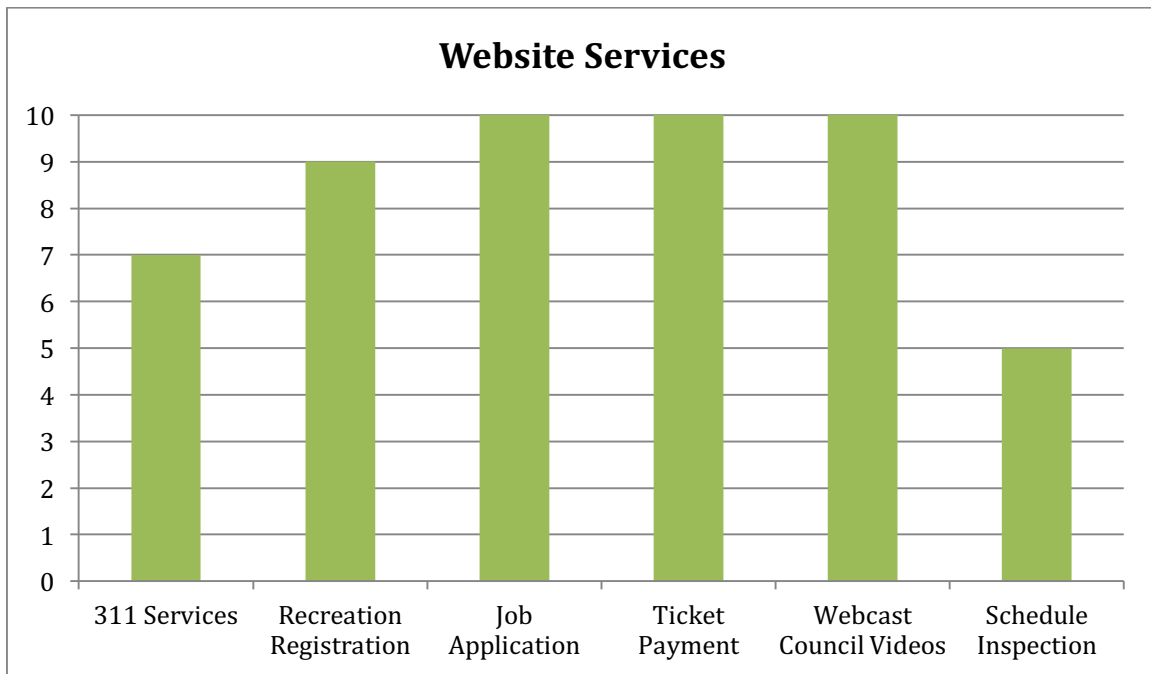


Figure 25: Advanced Web Services Offered by Canadian Cities (of ten cities).

While the Canadian municipalities were not closely aligned with public television channels, eight cities provided webcasting of Council and other meetings via their website.

Like the American cities, the Canadian websites were a springboard for the cities' social media efforts. Most websites featured social media icons either on the home page, dedicated social media "hub" pages, and/or all web pages.

All 10 Canadian cities listed mobile applications on their website. About half of the cities had created apps for 311 services. Other popular topics included roads and traffic, parking, "my city," library, events, recreation, golf, news, shelter animals and employment.

Although three cities noted they were moving to outsource mobile application development due to costs, one city noted that they had decided to build the applications in-house as the cost of updating applications and creating alternative versions for additional applications had proved prohibitive. At least one city had hosted a "hackathon" to encourage local app development.

Seven of the 10 Canadian participants were able to provide statistics on the extent of their website as the result of redesigns focused on discontinuing outdated and unused content. Most had reduced their website extent to 20,000 pages, although the city with 40,000 web pages interpreted their higher count as working proof of their open

government policy. Another city noted they had 5,800 web pages linking to a further 30,000 documents in PDF format (see Figure 26).

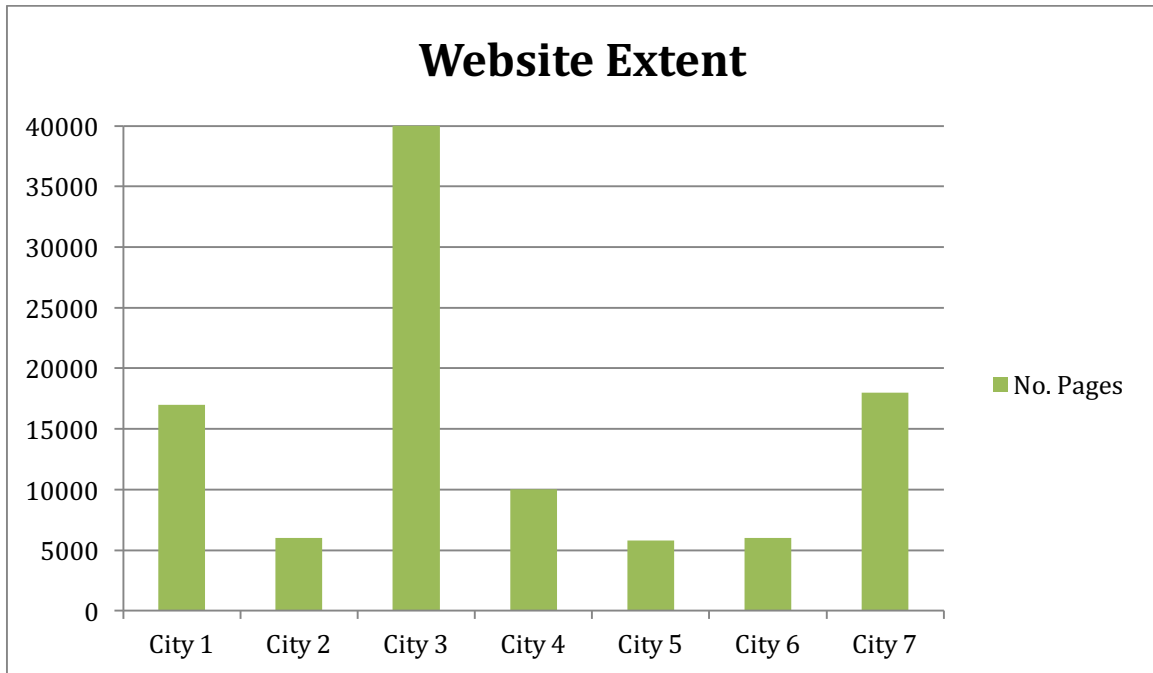


Figure 26: Extent of Canadian Cities' Websites, Based on the Number of Pages (of seven cities).

8.3.3 Adoption

Eight of the 10 Canadian cities adopted Facebook or Twitter in 2008 or 2009, with one adopting in 2010 and another in 2011. Most of the cities adopted social media as a result of emergency, a major initiative or both. Only three adopted social media during the course of business or as a result of an internal organization (see Figure 27).

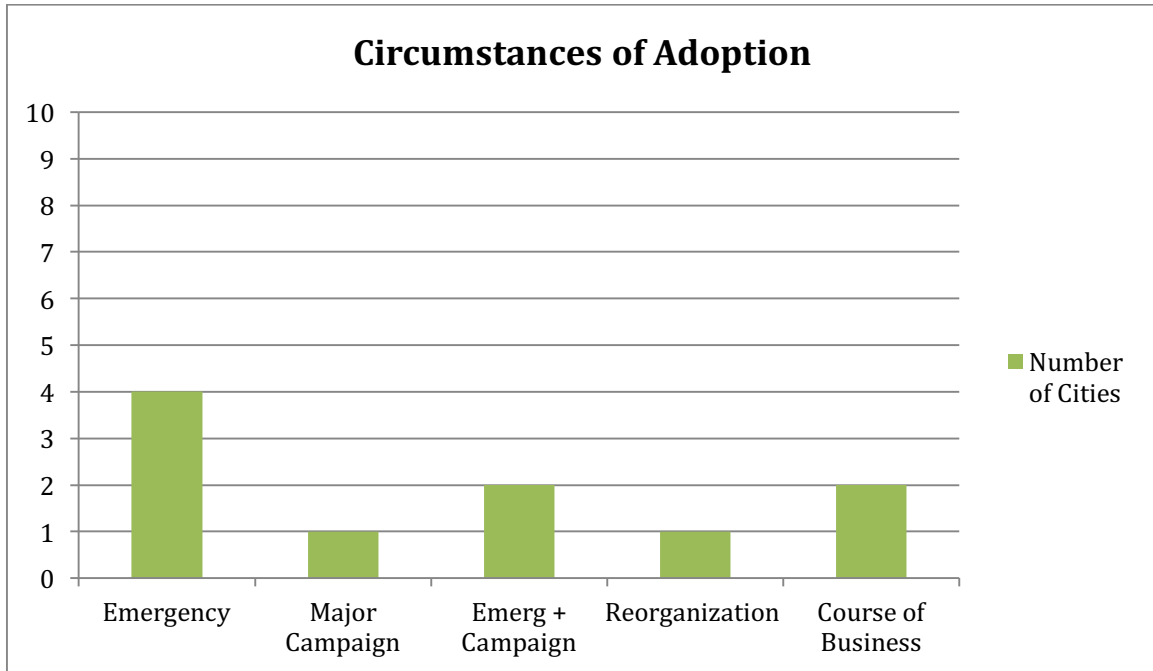


Figure 27: Circumstances of Social Media Adoption (of ten cities).

8.3.4 Policy

Nine of the 10 Canadian cities had implemented a social media policy, guideline, procedure, or standard, one of which was contained within a larger communications policy. The tenth city was in the process of finalizing and adopting their policy. In five of the cities, the social media policies were available online.

Account Controls (see Figure 28): In eight of the ten cities, responsibility for social media rested with Communications. One city created a new Web and New Media unit, and in another city, a business unit manager was responsible for social media.

The social media teams were largely responsible for approving all social media accounts (seven of nine respondents), approving all employee participation in social media activities (eight of nine), and approving posts to city accounts (nine of nine). This represented an even high degree of control than that seen in the American cities.

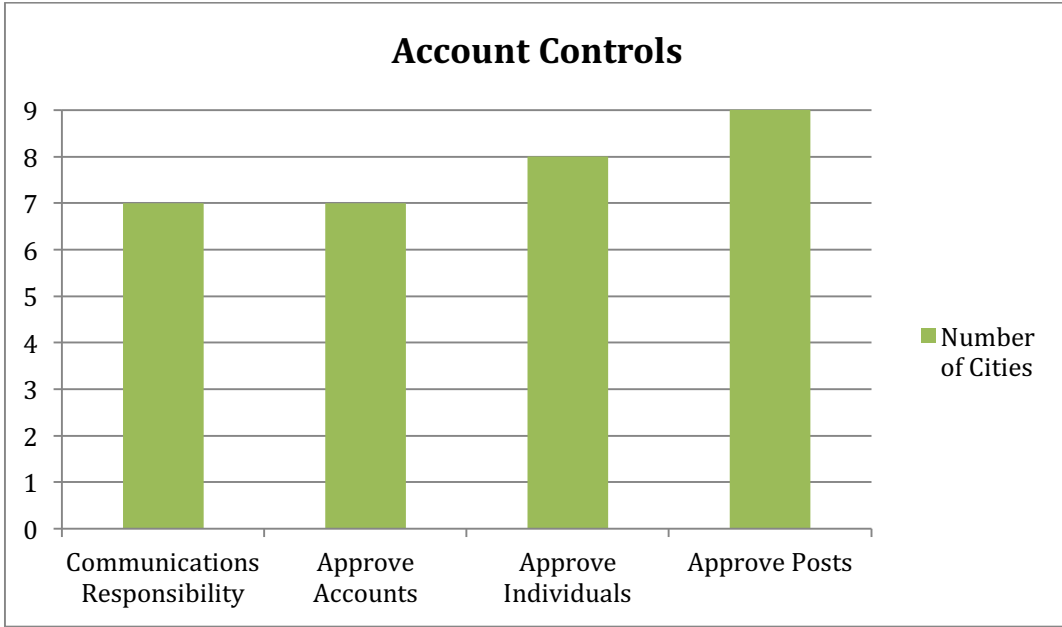


Figure 28: Responsibility for Account Controls and Controls in Place (of nine cities).

Directives to Employees (see Figure 29): In directing employees’ social media activities, the Canadian cities appeared most concerned with appropriate use, professional versus personal use, and protecting confidential information. While this was similar to the American results, the Canadian focus appeared to be minimizing mistakes and appropriate employee behavior. The Canadian policies referenced codes of conduct and respectful workplace policies rather than appropriate use of technology.

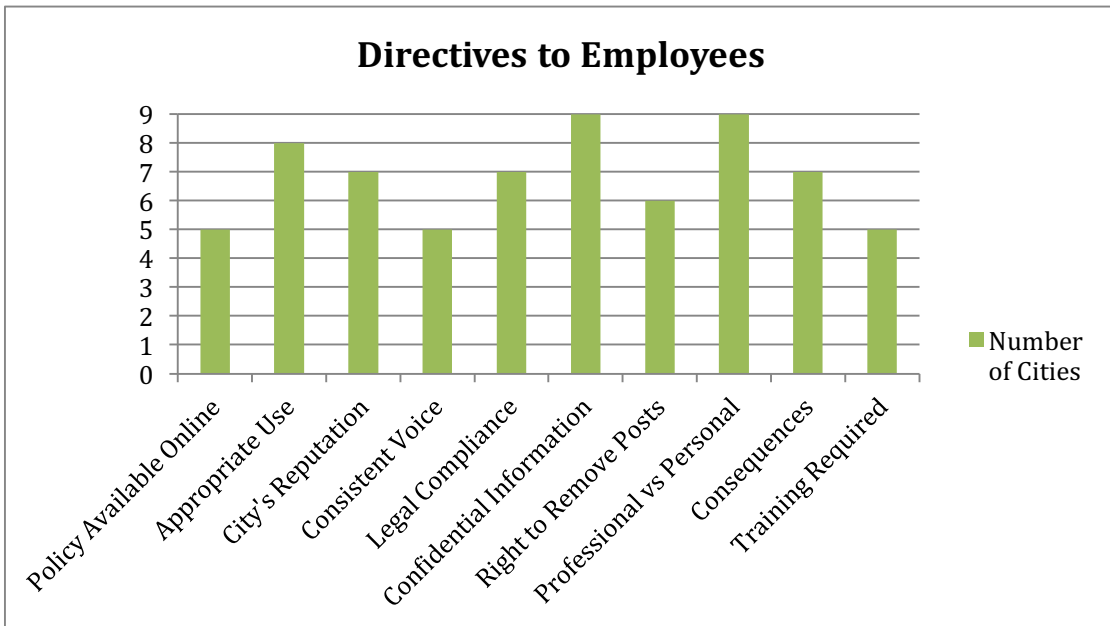


Figure 29: Availability of Internal Social Media Policy and Contents (of nine cities).

Directives to Citizens (see Figure 30): Eight of the cities published terms of use for citizens. All eight were stand-alone policies available on the websites.

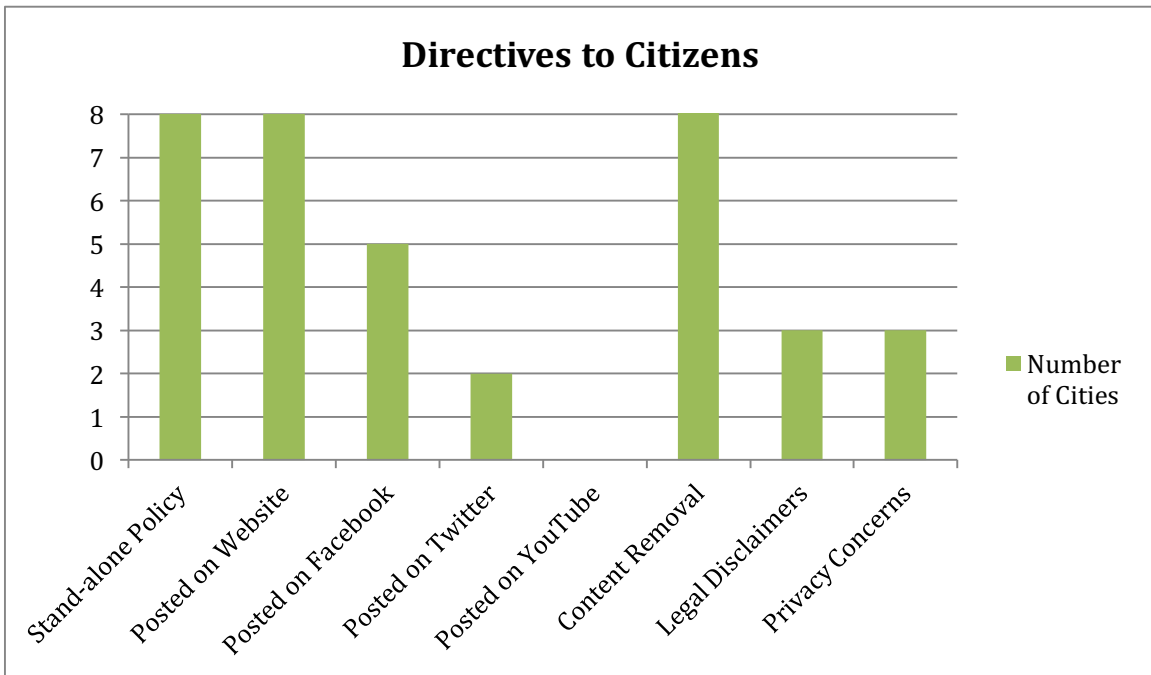


Figure 30: Citizen Terms of Engagement (of eight cities).

The terms of engagement focused on advising the audiences of conditions for content removal. Three of the terms of engagement included legal disclaimers and three noted privacy concerns around the use of third-party social media sites.

Five of the cities included information about their terms of engagement on Facebook, two on Twitter, and none on YouTube.

8.3.5 Management

Reporting Relationship and Resources: In most cases, the cities’ social media team was located within the Communications unit, with the Director of Communications, reporting directly to the City Manager or Mayor. Staffing resources dedicated to city accounts ranged from one or two full-time employees working exclusively on social media (4 cities) to no exclusive resources for social media and communications staff devoting a component of their time to social media activities (six cities). The employees were responsible for posting content, scheduling content, and monitoring the corporate accounts and responding to the audience.

Monitoring Business Unit Activity (see Figure 31): As with the American participants, the Canadians differentiated between city or “corporate” accounts

managed by Communications, and “departmental” accounts set up by business units to address more specialized interests (e.g. events, transportation, police).

Like the Americans, the Canadian corporate teams kept tight controls over account creation and access by the business units but seemingly took a more relaxed approach once the accounts and personnel were approved. In general, there was no process for pre-approving posts by the business units and minimal monitoring, although participants did mention ways the social media team supported the business units’ programs through consultation, planning, and training.

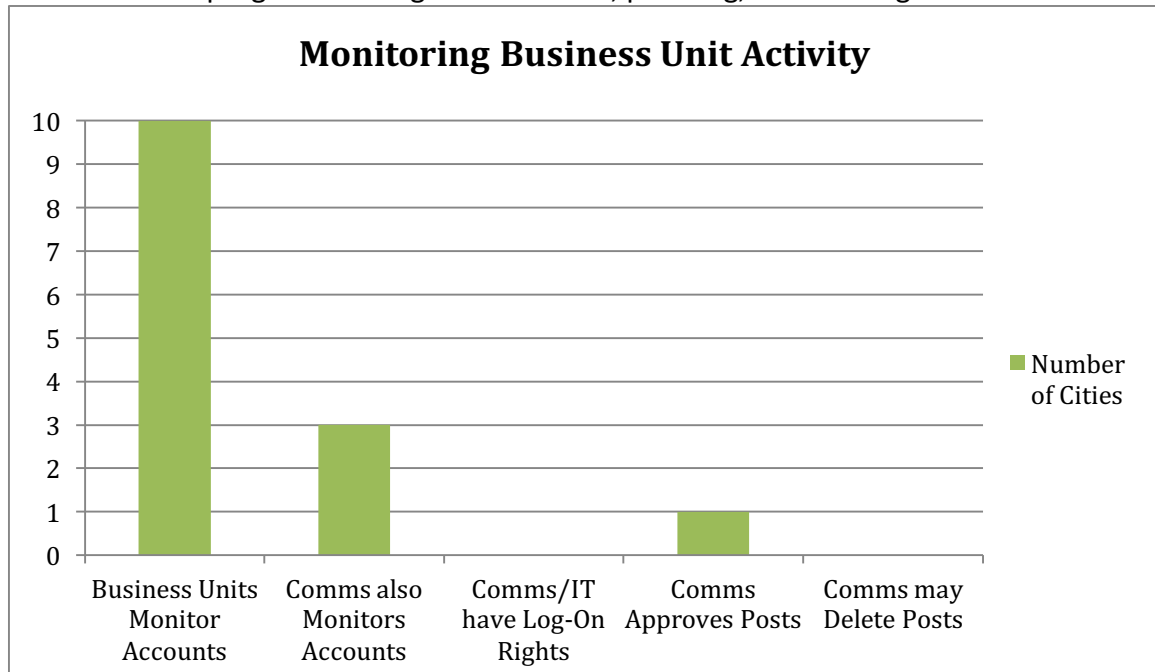


Figure 31: Monitoring of Departmental Accounts by Business Units (of ten cities).

In terms of integration with other areas, only two teams provided direct support to the Mayor’s Office. While five cities noted that they regularly traded content with the Mayor’s Office, a number noted the importance of "a clear line between Council and city work," the autonomous nature of the Council, and the need to maintain neutral given that "the Mayor and Councilors often have differing opinions." This neutral approach on the part of Canadian participants stood out in comparison with the American participants working in the Council-Manager form of cities.

All ten cities reported an arms-length relationship with their police departments, with efforts mainly limited to sharing public safety announcements. A number of participants noted that they had a well-developed emergency plan where the social media team would be designated to the Emergency Operations Centre in the case of a designated local emergency.

The Canadian teams appeared to consult with other corporate business units more often than their American counterparts. Eight of the social media teams indicated that they had consulted their legal team and IT in the course of their activities, five had consulted their records team, four noted the involvement of their senior management team or City Manager, and two had worked with human resources.

Monitoring Citizen Conversations (see Figure 32): All ten cities interviewed stated that they monitored city accounts and removed users' content if it conflicted with the citizens' terms of engagement. A number of the participants underlined the importance of not removing negative feedback. One participant noted, "We are very diligent about any removal we do, the last thing we want to do is censor opinions. The audience does self-regulate and respond to and correct misinformation as well." Another noted that "negative comments provide important feedback."

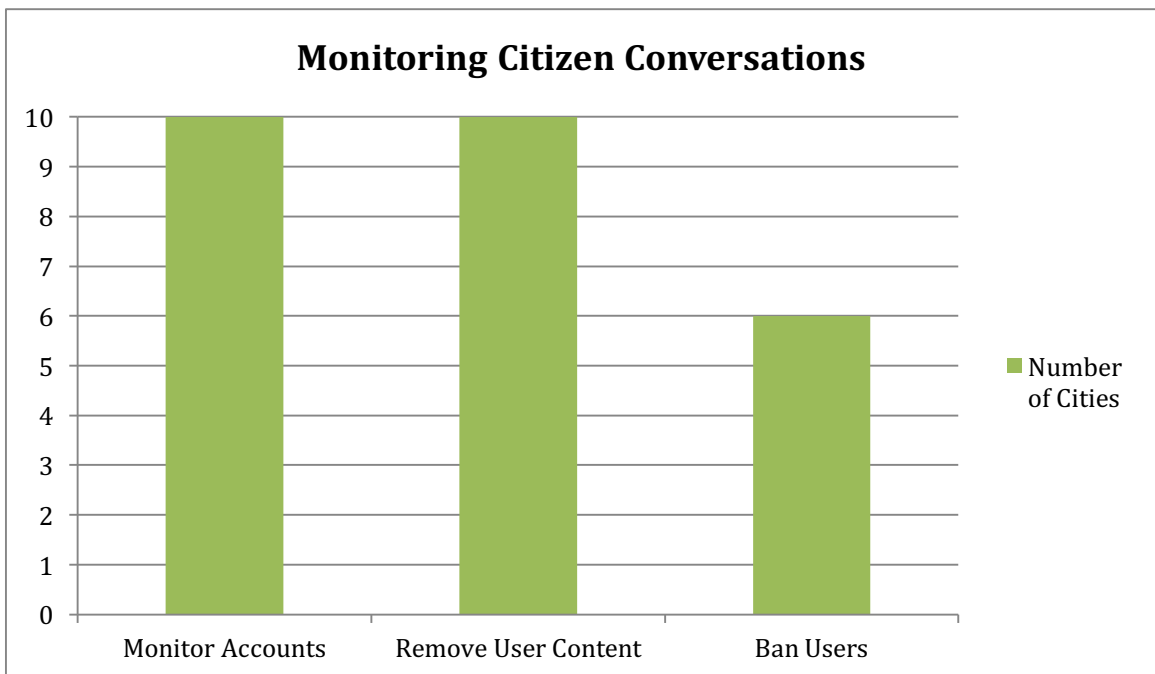


Figure 32: Cities' Activities Around Monitoring Citizen Input (of ten cities).

Six cities stated that they had banned or blocked users due to repeated postings of irrelevant or offensive content, although all noted this was an infrequent occurrence of "last resort." One participant noted the ratio was perhaps two or three in 3,000 users, and another noted that they very seldom needed to resort to banning users as the audience had become increasingly self-monitoring.

The participants said they seldom deleted their own posts, except in a few cases (e.g. grammatical errors realized seconds after posting). The standard approach was to follow up with a second post acknowledging the error and correcting misinformation, with participants noting that "we do a corrected tweet explaining the

update and apologizing for the inconvenience” and “we focus on prevention but if we were wrong we would admit and correct.”

8.3.6 Use

The Canadian participants saw social media as a way to provide information, communicate with citizens, and promote events (see Figure 27). Canadian cities appeared more interested than the Americans in building a brand and reputation online. Only three cities noted emergency use (see Figure 33), despite the fact that six cities had adopted social media at least in part to respond to an emergency (see Figure 27).

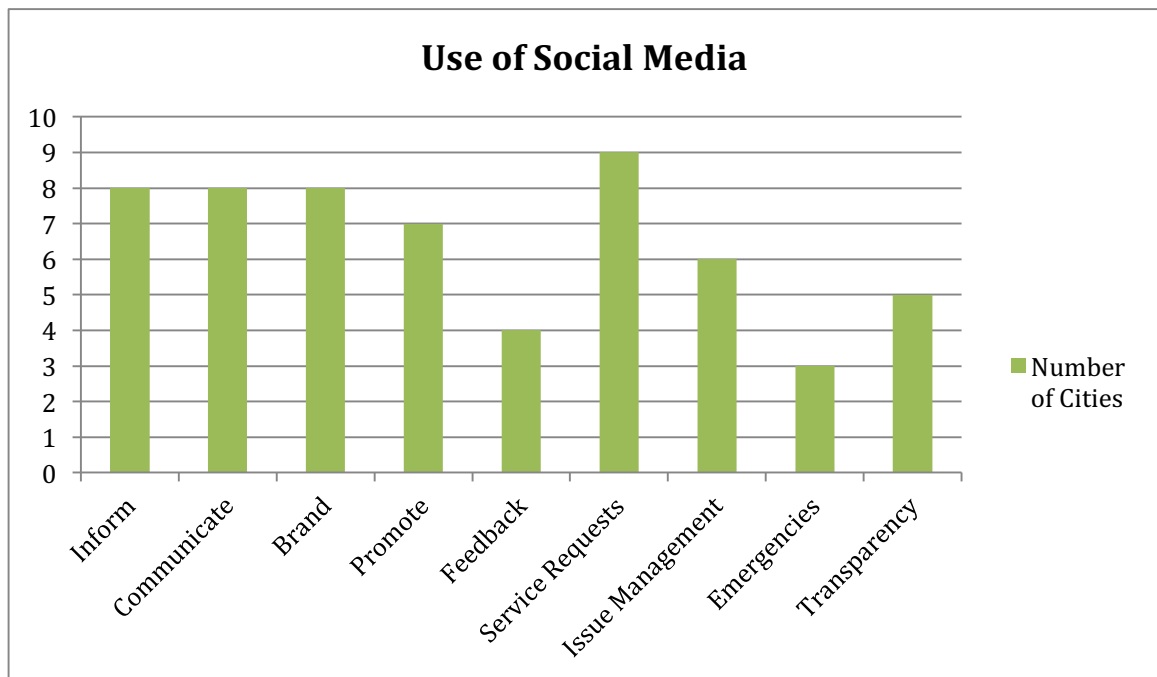


Figure 33: Reasons cities gave for using social media (based on ten participants).

8.3.7 Risk

Overall, the participants express moderate concern about risks associated with social media. In terms of security, four participants noted issues around access controls, passwords, and employee attrition (i.e. employees who had left the organization were not removed as contributors in a timely fashion). Two reported having accounts hacked and two had experienced viruses associated with free analytic software or suspicious links. One reported an issue where a city employee was physically threatened. Conversely, two participants said they had no concerns about security due to their “great IT department” and “having redundancies in place.”

Nine of the ten participants expressed concerns around risk relating to content. These included risks to reputation from city posts that included misinformation, were not

provided in a timely manner, were not consistent with the city’s brand, or included confidential information. Perceived risks from the audience included negative contents or other statements against the city causing reputational damage. Three of the participants noted that despite the risks, their cities felt obligated to participate in social media since the conversation would take place regardless of their participation (see Figure 34).

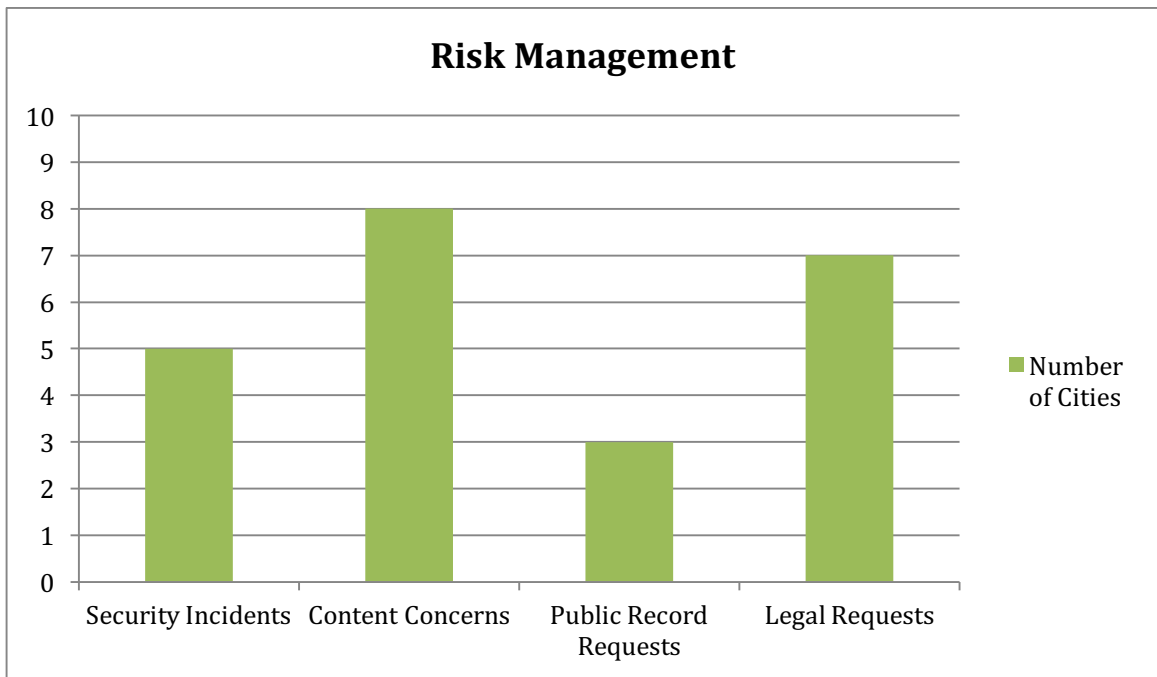


Figure 34: Perceived Threats and Compliance-Related Activities (of ten cities).

Four of the cities had responded to public information requests that included social media, although two of these requests were other cities asking for copies of social media policies. One noted that they had not received any requests but expected to as they further developed transparency and access initiatives. Seven of the cities noted that their legal departments had asked for social media content due to a number of issues, including claims for damage, parody accounts (2), release of confidential information (2), and a request for a proof-of-mention by a sponsor for an event to which they had contributed.

8.3.8 Results

Most of the Canadian participants noted that using social media had increased both citizen awareness and their own responsiveness. A number credited social media with amplifying important messages, and a few noted they had learned of issues that might have otherwise gone unreported. One city noted that they had reduced their paid advertising by using social media (see Figure 35).

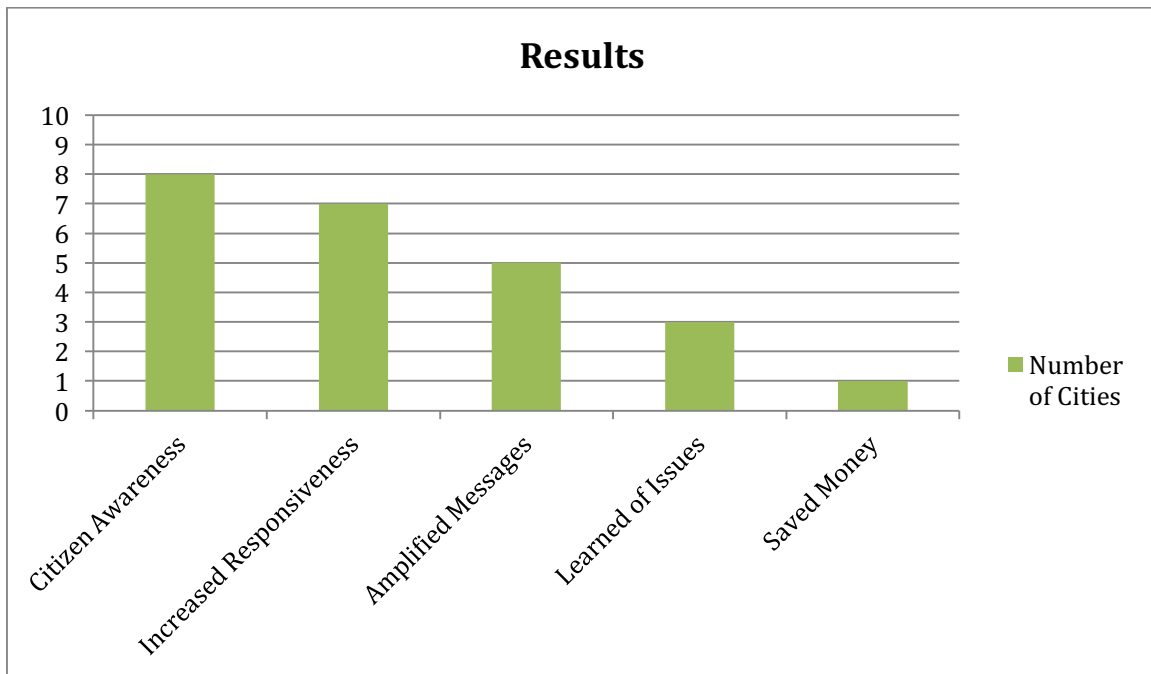


Figure 35: Participants' Perceived Results from Social Media Use (of ten cities).

About half of the participants noted that their best responses from social media were for campaigns on specific initiatives, including one city that had a successful campaign resulting in increased voter turnout during an election campaign. A few noted emergencies as peak events.

Five of the cities had won awards for digital initiatives and social media, including one city that had won nineteen awards, including fifteen international awards.

8.3.9 Measurement

All ten of the Canadian cities used Hootsuite for scheduling and monitoring content. Hootsuite was seen as “the most economical” and “had servers located in Canada,” key for provinces that have legislation prohibiting the hosting of government data outside of the country. One city used Hootsuite Enterprise, and others expressed a desire to use the Enterprise version but cited cost as a barrier. A few cities had tried other monitoring and measurement software suites but had found them “too expensive” and/or “too time consuming.”

In terms of measurement tools, just under half of the cities reported using the “native” analytic tools in Google, Facebook Twitter, and YouTube (see Figure 36). A number of cities noted they were tracking mobile users—one city used UberSocial to track mobile activity.

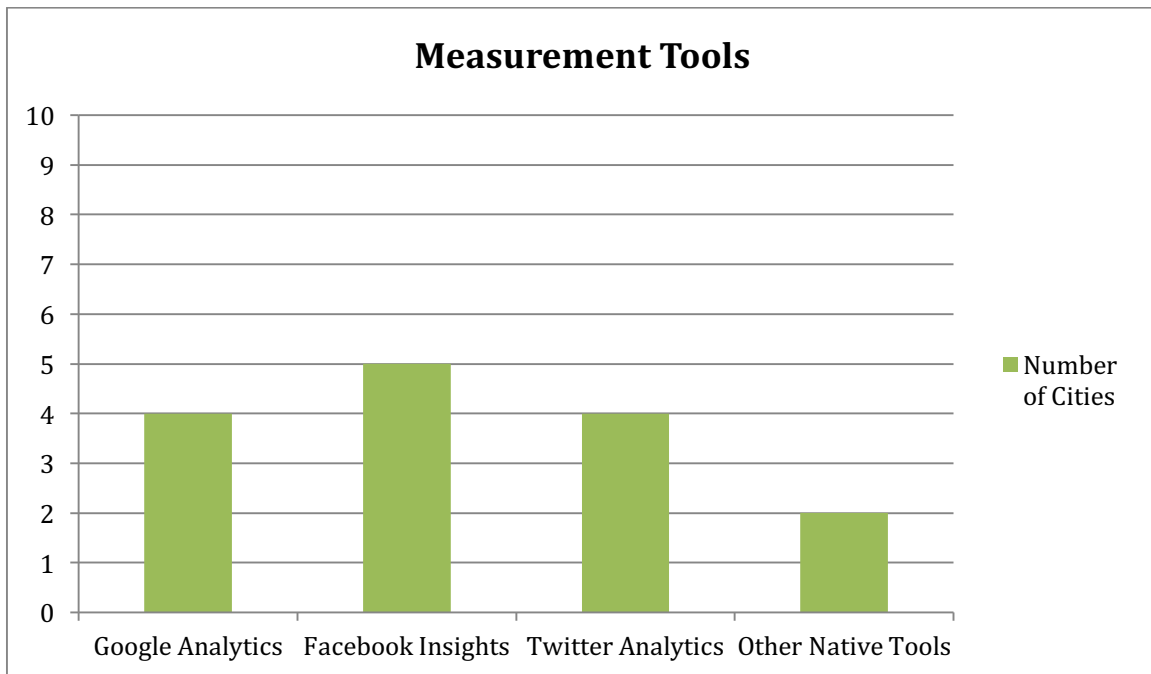


Figure 36: Social Media Tools Used to Measure Activity (of ten cities).

A number of the participants provided details describing what they measured:

- a. Audience Growth – basic metrics (e.g. likes, follows), including “advanced growth statistics” (e.g. new followers, follower rank) and “audience metrics” (e.g. gender and age);
- b. Content Performance – content that gathered the most interest, including campaign and hashtag performance and individual posts;
- c. Impressions and Reach – referral measurement, including shares, retweets, replies, and favorites;
- d. Sentiment – feelings and opinions observed in conversation and the tone of comments; and
- e. Conversion Rate – how much traffic was directed to the website and measures of effectiveness indicating that users found what they accessed or searched for and how long this took.

In terms of content performance, one participant noted that “four to five thousand shares is fairly normal, with 10 to 11,000 shares for weather events and 20,000 for popular campaigns.” Another commented that, “more shares doesn't mean more effective—sometimes four to five hundred is good... we're interested in a budgeting-for-results approach.”

At least half of the Canadian cities were focused on website measurement and especially conversion to the website in terms of whether users were able to find the information or service they were seeking. At least two of the websites used surveys embedded in web pages to ask users one to three questions about their experience. These comments are congruent with the comments made by the six cities about reducing website content to improve performance (see Figure 26).

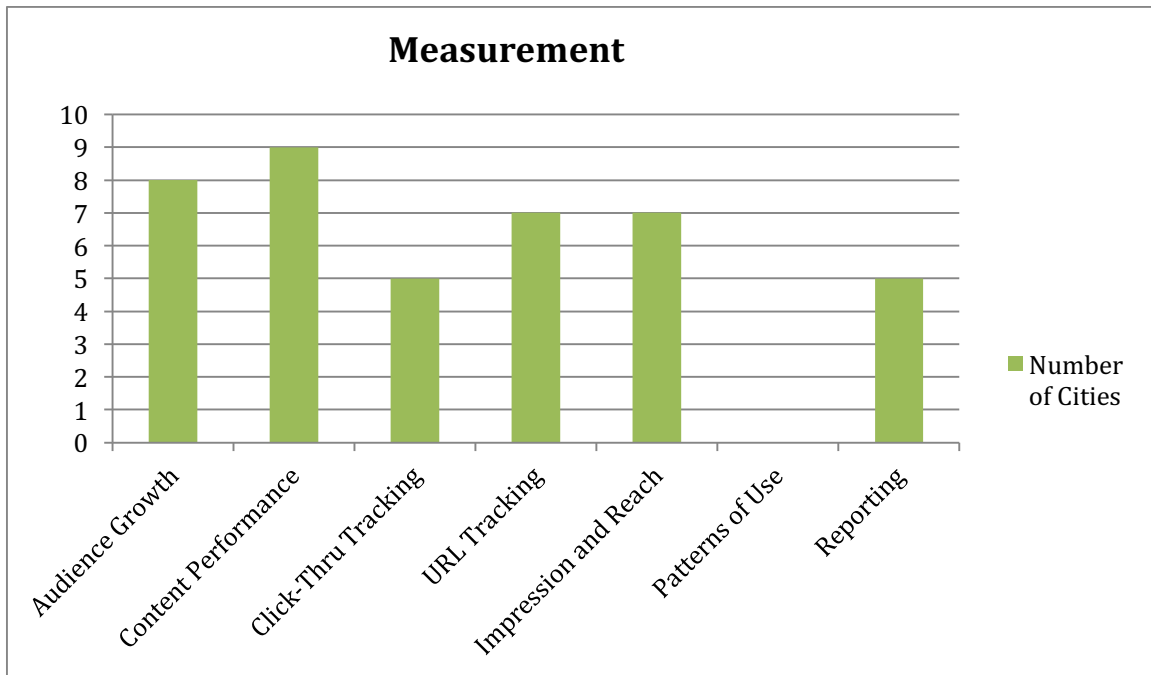


Figure 37: Types of Social Media Measurements (of ten cities).

Unlike the American cities, Canadian cities appeared less interested in determining the best time of week or day to post content. A few noted that they only posted during business hours except in exceptional circumstances. A number of participants commented on the challenges they faced in terms of obtaining information from other units and subject experts in a timely fashion.

About half of the participants provided some form of reporting on social media to Communications and/or their executive, either as a stand-alone format or part of a Communications report. Two contributed data to an annual report, two provided monthly reports, three created campaign or custom reports, and two provided weekly reports and held face-to-face group meetings on Communications activities, including social media.

8.3.10 Accountability

This section reviews the extent to which social media content is managed as records by looking at social media policies, record policies, and the procedures for capturing content in response to a public record or legal requests.

Social Media as Records (see Figure 38): Eight of the cities’ social media policies included statements around social media as records: three referenced Freedom of

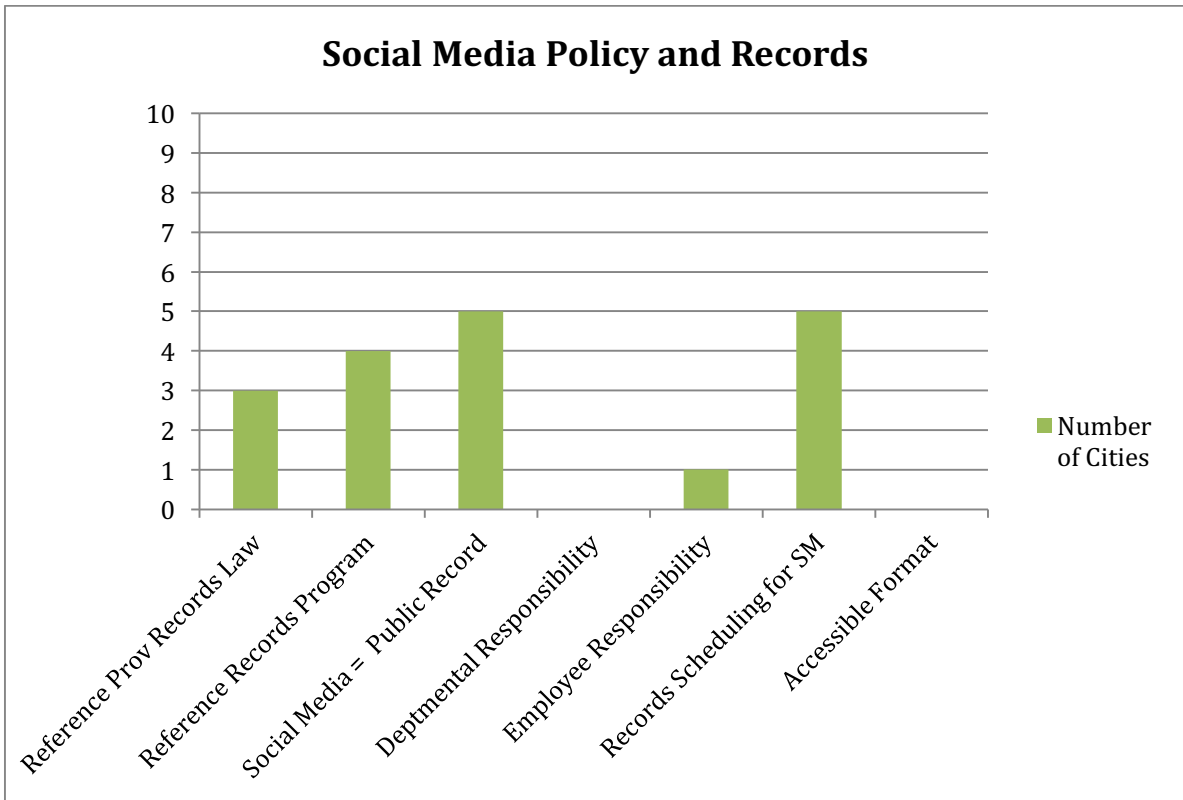


Figure 38: Summary of Policy Directives for Social media as Records (of ten cities).

Information and Protection of Privacy laws; four referenced the cities’ records management program or policy; five included indications that social media was a public record; and five indicated that social media records should be scheduled as per existing record policies. In general, the policies did not indicate who was responsible for managing social media as records, although one policy noted that "The duties of the moderator include... tracking and archiving all messages and user comments, in accordance with the Records Management Policy."

Records Policy (see Figure 39): All ten cities had adopted official policies for managing records: six as by-laws; two as administrative policies; and two as administrative orders or codes. Seven of the cities had revised their policies in the time period from 2010 to 2015; one had updated their policy in 2005; and two had not updated policies since 1999. Seven of the policies were available on the cities’ websites, although one city posting was subject to a broken link.

Six of the policies cited provincial Freedom of Information and Protection of Privacy legislation and four referenced their city charter. Five included statements around legal compliance and four provided statements around employee responsibilities.

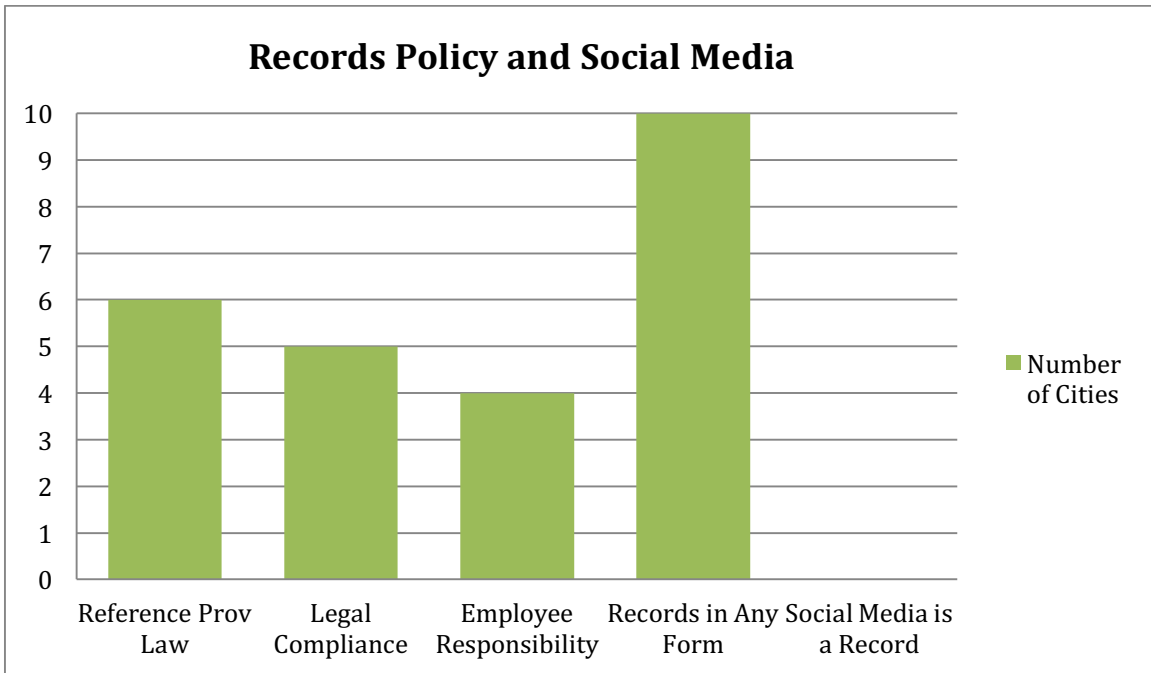


Figure 39: Records Policy Requirements Relating to Records, Social Media, and E-Records (of nine cities).

Despite the currency of the majority of the policies, none of the policies or related procedure documents included much information about digital records management, beyond two that had general statements around the need to manage both paper and electronic records. The Canadian definitions of a record relied on the inclusive phrases “records in any form” and “anything on which information is recorded or stored.” Although this definition is inclusive of e-records and therefore social media, the lack of specificity and the need to prioritize record efforts appears to mean that social media as records remains largely unaddressed.

8.3.11 Transparency

Procedures for Managing Social Media as Records (see Figure 40): Few of the cities had more than minimal procedures in place for capturing or managing social media as records. However, three cities downloaded and saved all posts from city accounts to spreadsheets, and three stated they printed screen captures in response to requests from legal, business units or citizens. None of the cities used free or paid services to capture their social media as records.

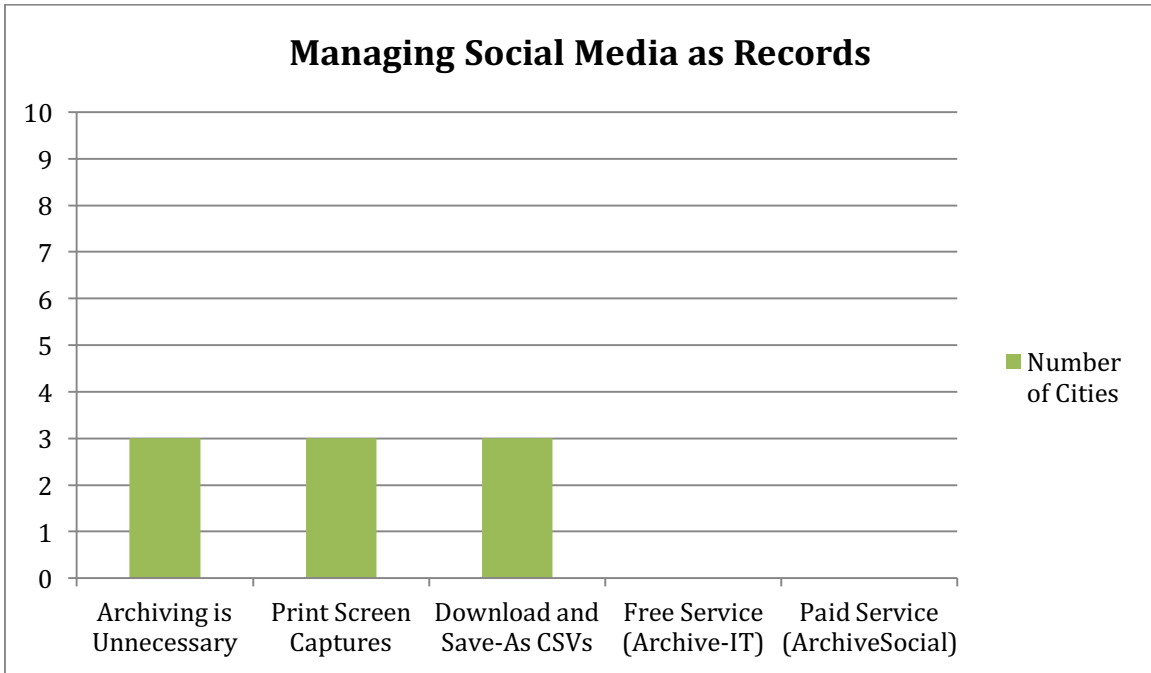


Figure 40: Procedures for Managing Social Media Posts as Records (of ten cities).

Like the American respondents, a number of Canadian participants said they did not need to manage social media as records as the public could access the social media channels themselves, and at two noted that some only some of the posts were records. Another participant noted that most of their content was available in “long form” through the website. There was a sense that the social media teams did not consider managing social media as records of high importance. Part of this appeared to be that the respondents did not consider this within their area of responsibility, or that there were procedures in place for doing so. As one respondent pointed out, “the [city] archives is active on social media but is not archiving their posts or the city’s posts.”

Five of the ten cities noted that social media increased transparency. Examples included four cities that reported live-tweeting at events (i.e. Council meetings, town halls, Mayor’s activities), using social media feedback to improve services, using social media to promote planning activities or provide feedback on specific projects, and involving citizens in decision making through surveys (e.g. budget, transit). One participant said that social media had been used to collect input on a Council decision and another noted they were developing a process for doing so.

8.3.12 Engagement

About half of the Canadian cities indicated that they were beginning to use social media for citizen engagement initiatives (i.e. participatory democracy). Four regularly tweeted at live events; four had used social media for planning or zoning initiatives; five had used social media for consultation around budgets, transit, or other purposes; and one had used social media to help Council make a decision. In general, the social media teams described their use of social media for citizen engagement in terms of “broadcast opportunities” and as being “more reactive than proactive.”

8.3.13 Advice

Advice provided by the seven interview participants included the following:

- Platforms
 - “Social media is best for real-time sharing and supporting planned announcements.”
 - “We should not have different approaches for different channels.”
- Accounts
 - “Centralize accounts and use the base to build traction for smaller initiatives.”
 - “Before launching an account, ensure you have enough resources to create engaging content, keep it fresh, and support indefinitely.”
 - “Our job is to instruct staff so that they are consistent, responsible and accountable.”
- Measurement
 - “Measure and then measure.”
- Resources
 - “Social media is not free. You must invest time and money.”
 - “Having well-defined goals, desired outcomes, policies, and resources are critical elements to sustain a social media presence.”
 - “There must be significant investment in order to be strategic and successful.”
 - “Resource social media appropriately; the program should not be run by a student.”
- Audience
 - “If anyone engages with you, engage back!”
 - “Be strategic about responding to negative posts.”
- Content
 - “Plan how to respond inquiries to remain consistent within social media and also traditional media and support services.”
- Timing
 - “We were cautious [at the beginning], but going slow was a good idea for us.”

9.0 Conclusions

The use of social media by local governments in the United States and Canada is quite comparable. In both places, social media was adopted between 2008 and 2010 and is now supported by staff, policies, and audiences.

In both countries, significant care was taken to implement controls around account creation, access, and content. City accounts were highly monitored, with the Canadian participants more readily acknowledging that they remove content and ban users where activity does not comply with policies. There were also controls with respect to social media adoption by business units, again in terms of account creation and access but less so with regards to content. Overall, transparency could be improved by making internal policies available online and providing notification of these policies on social media sites for both city and departmental accounts.

While participants generally acknowledged that social media were records, little effort was made to manage social media content. There were few procedures in place for capturing even problematic internal posts or audience posts, or applying retention and disposition to these records. Reasons for this lack of management included the belief that content was readily available from the third-party social media sites and that the content was reproduced elsewhere. Even where policies assigned responsibilities for managing social media as records, the key participants (i.e. social media, records management, information technology) had yet to develop procedures to support such directives. However, given responses around risk relating to social media in terms of both technology and content and growing litigation involving social media, local governments need to address the records issues in order to ensure accountability and compliance with state and provincial records laws.

Overall, the measurement and reporting of social media was somewhat inadequate. Measurement focused on a closed loop of audience metrics for use by the social media team. On the positive side, this allowed staff to develop better strategies for individual posts and campaigns and to grow audiences, but most cities lacked mechanisms to push citizen issues and feedback through to senior management or to departments, except on a case-by-case basis. Realizing the relatively low staffing levels in place for social media, and the growing number of channels and departmental accounts in play, this was understandable; at the same time, measurement and reporting remain key to leveraging social media for real citizen engagement and participation. Municipal associations at the federal and state/province level may be a possible focal point for social media experts to work together to develop measurement and reporting toolkits and resolve these issues.

10. Related Research Documents and Publications

10.1 Work Products

- Annotated Bibliography (Mark, Pat) May 21, 2014; Oct 13, 2015

- Literature Review (Mark, Pat, GRAs) Jul 21, 2015; Oct 13, 2015
- Sample Identification of 20 cities (Pat, Michelle, Lois) 2014
- City Profiles for 20 (Pat, Michelle, Lois, GRAs) Oct 2014
- Questionnaires (Pat, Lois) 2014
- Institutional Research Board Application (Pat) 2014-2015
- Sentiment Analysis (Michelle) 2014-2015
- Police Case Studies (Pat, Lois) 2015
- Literature Review for Sentiment Analysis (Michelle) 2015
- Questionnaires and Interviews (Pat, Michelle, Lois) Jun 2015 to Jan 2016
- Questionnaire and Interview Data Entry (Lois) Dec 2015 to Feb 2016

10.2 Dissemination

Chen, M., Franks, P. and Evans, L. (2016). "A Comparative Study of Sentiment Analysis Techniques: The Case of Government Use of Twitter." [Unpublished manuscript].

Evans, L. and Franks, P. (2015). "Social Media and Trust in North American Local Government Law Enforcement." *Second European Conference on Social Media ECSM 2015*. School of Accounting and Administration at the Polytechnic Institute of Porto, Portugal, July 9-10, 2015.

Banks, L. R. and Franks, P. C. (2014, December 3). *Social Media and Trust in Government*. [MARA Guest Lecture, SJSU iSchool Colloquium]. Webcast available from: <http://ischool.sjsu.edu/about/colloquia/Fall%202014>

Franks, P. C. (2014, August 15). "Managing Social Media as Official Records." [Panel moderator]. *COSA, SAA, NAGARA Joint Annual Meeting: 2014 Archives & Records: Ensuring Success*, Washington, DC.

Franks, P. C. and Driskill, M. (2014). "Building Trust in Government through Social Media: An InterPARES Trust Research Project." *European Conference on Social Media ECSM 2014*, University of Brighton, UK, July 10-11, 2014.

Franks, P.C. (2014). "Transforming Interactions Between Government and Communities through Social Media." [Conference Presentation]. *Memories, Identities and Communities Conference*, Dundee, Scotland, April 24-25, 2015.

10.3 Related Research

The popularity of social media as a tool for government and citizens to influence one another is evident in the international attention given the topic. In addition to the Social

Media and Trust in Government study of North America (Canadian and United States) local governments, related studies by InterPARES Trust project teams have been undertaken in China, Malaysia, and the Ukraine. The titles of the studies are:

- Disclosure of Chinese Government Information (AS10)
- Factors that Influence Access to Digital Government Information in Malaysia (AS11)
- Role of Cyber Tools and Social Media in the Development of the Ukraine Crisis (NA20)

11.0 Further Research, Phase II

This report concludes Phase I of the study. During Phase II, we will:

- Prepare an executive report to reframe Phase I findings in terms of our next research endeavor.
- Identify two Canadian and two U.S. cities to be the focus of four case studies.
- Gather data from the citizens of the four selected cities to gauge their level of trust in government and trust in information received through social media. The survey instrument will be an electronic survey form posted online. Personal information will not be gathered unless the subject elects to share their email address for follow up questions. The level of trust in government and in social media measured by responses to questions will be compared with the levels of trust citizens have in federal government as measured by the Edelman Trust Barometer 2014. (<http://www.edelman.com/insights/intellectual-property/2014-edelman-trust-barometer/>).
- Interviews will be held with three to four individuals from each of the four cities identified. They will be representatives from the Police Department, City Council, Mayor's Office, and Records/Information Management. The interviews will be semi-structured. The primary purpose of these interviews is to learn about their social media strategies and their perceptions of impact on citizen trust and social capital. A secondary purpose is to determine if the cities believe they have social media records and, if so, what polices they have in place to govern them.
- Complete the four Case Studies from the information gathered and share the findings with those who participated in the study as well as those who did not. The dissemination will take place through print publications and presentations.

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