Final Report

How Social Media Moves New York

Performing Organization: New York University

December 2012

University Transportation Research Center - Region 2

The Region 2 University Transportation Research Center (UTRC) is one of ten original University Transportation Centers established in 1987 by the U.S. Congress. These Centers were established with the recognition that transportation plays a key role in the nation's economy and the quality of life of its citizens. University faculty members provide a critical link in resolving our national and regional transportation problems while training the professionals who address our transportation systems and their customers on a daily basis.

The UTRC was established in order to support research, education and the transfer of technology in the field of transportation. The theme of the Center is "Planning and Managing Regional Transportation Systems in a Changing World." Presently, under the direction of Dr. Camille Kamga, the UTRC represents USDOT Region II, including New York, New Jersey, Puerto Rico and the U.S. Virgin Islands. Functioning as a consortium of twelve major Universities throughout the region, UTRC is located at the CUNY Institute for Transportation Systems at The City College of New York, the lead institution of the consortium. The Center, through its consortium, an Agency-Industry Council and its Director and Staff, supports research, education, and technology transfer under its theme. UTRC's three main goals are:

Research

The research program objectives are (1) to develop a theme based transportation research program that is responsive to the needs of regional transportation organizations and stakeholders, and (2) to conduct that program in cooperation with the partners. The program includes both studies that are identified with research partners of projects targeted to the theme, and targeted, short-term projects. The program develops competitive proposals, which are evaluated to insure the mostresponsive UTRC team conducts the work. The research program is responsive to the UTRC theme: "Planning and Managing Regional Transportation Systems in a Changing World." The complex transportation system of transit and infrastructure, and the rapidly changing environment impacts the nation's largest city and metropolitan area. The New York/New Jersey Metropolitan has over 19 million people, 600,000 businesses and 9 million workers. The Region's intermodal and multimodal systems must serve all customers and stakeholders within the region and globally.Under the current grant, the new research projects and the ongoing research projects concentrate the program efforts on the categories of Transportation Systems Performance and Information Infrastructure to provide needed services to the New Jersey Department of Transportation, New York City Department of Transportation, New York Metropolitan Transportation Council , New York State Department of Transportation, and the New York State Energy and Research Development Authorityand others, all while enhancing the center's theme.

Education and Workforce Development

The modern professional must combine the technical skills of engineering and planning with knowledge of economics, environmental science, management, finance, and law as well as negotiation skills, psychology and sociology. And, she/he must be computer literate, wired to the web, and knowledgeable about advances in information technology. UTRC's education and training efforts provide a multidisciplinary program of course work and experiential learning to train students and provide advanced training or retraining of practitioners to plan and manage regional transportation systems. UTRC must meet the need to educate the undergraduate and graduate student with a foundation of transportation fundamentals that allows for solving complex problems in a world much more dynamic than even a decade ago. Simultaneously, the demand for continuing education is growing – either because of professional license requirements or because the workplace demands it – and provides the opportunity to combine State of Practice education with tailored ways of delivering content.

Technology Transfer

UTRC's Technology Transfer Program goes beyond what might be considered "traditional" technology transfer activities. Its main objectives are (1) to increase the awareness and level of information concerning transportation issues facing Region 2; (2) to improve the knowledge base and approach to problem solving of the region's transportation workforce, from those operating the systems to those at the most senior level of managing the system; and by doing so, to improve the overall professional capability of the transportation workforce; (3) to stimulate discussion and debate concerning the integration of new technologies into our culture, our work and our transportation systems; (4) to provide the more traditional but extremely important job of disseminating research and project reports, studies, analysis and use of tools to the education, research and practicing community both nationally and internationally; and (5) to provide unbiased information and testimony to decision-makers concerning regional transportation issues consistent with the UTRC theme.

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16. Abstract

Social media networks are valuable tools for the public outreach needs of transportation providers: they are free, instantaneous, reach large numbers of people simultaneously, and allow for sideline discussions. When transportation providers are trying to notify large numbers of passengers about delays, drivers about construction work, or bus riders about re-routes, they can "blast" messages through social media channels to reach their intended audience immediately (the audience accesses these networks far more frequently than the websites of their local transportation agencies1). The goals of social media in transportation are to inform (alert riders of a situation), motivate (to opt for an alternate route), and engage (amplify the message to their friends and neighbors). Ideally, these actions would occur within minutes of an incident.

This report analyzes the use of social media tools by the New York region's major transportation providers. It is focused on the effectiveness of their Twitter feeds, which were chosen for their immediacy and simplicity in messaging, and provided a common denominator for comparison between the various transportation providers considered, both public and private. Based on this analysis, recommendations are outlined for improving social media outreach. A subsequent report will propose policies and recommendations for enhanced information and engagement with users.

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University Transportation Research Center

Final Report

How Social Media Moves New York

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How Social Media Moves New York:
Twitter Use by Transportation Providers in the New York Region

Introduction

Social media networks are valuable tools for the public outreach needs of transportation providers: they are free, instantaneous, reach large numbers of people simultaneously, and allow for sideline discussions. When transportation providers are trying to notify large numbers of passengers about delays, drivers about construction work, or bus riders about re-routes, they can "blast" messages through social media channels to reach their intended audience immediately (the audience accesses these networks far more frequently than the websites of their local transportation agencies[1]). The goals of social media in transportation are to inform (alert riders of a situation), motivate (to opt for an alternate route), and engage (amplify the message to their friends and neighbors). Ideally, these actions would occur within minutes of an incident.

This report analyzes the use of social media tools by the New York region's major transportation providers. It is focused on the effectiveness of their Twitter feeds, which were chosen for their immediacy and simplicity in messaging, and provided a common denominator for comparison between the various transportation providers considered, both public and private. Based on this analysis, recommendations are outlined for improving social media outreach. A subsequent report will propose policies and recommendations for enhanced information and engagement with users.

Key Findings

- **Private sector transportation providers reach far more customers, proportionately, than those in the public sector**: For example, for every 1,000 subway passengers NYCT receives a single Facebook "Like," while for every 1 JetBlue passenger, there are 7.58 Likes. Similarly, while PATH has approximately 1 Twitter follow for every 20 riders, American Airlines has more than three times that ratio. These numbers are important because they

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[1] "How People Learn About Their Local Community," Pew Internet and American Life, Sept. 26, 2011. http://pewresearch.org/docs/?DocID=140

show audience engagement and amplification of the message, which help travelers to move more efficiently and safely.

- **Few transportation providers maximized Twitter's potential** with hashtags, dialogues, and dynamic content, which adds substance to the conversation and improves customer feedback. Furthermore, **most transportation agencies over-marketed and under-informed**, resulting in limited value of their social media presence.

- **A focus on non-English speakers is lacking**: Only two public transportation providers tweeted in non-English (6 tweets total), even though nearly half of all New Yorkers speak a language other than English at home. Clearly transportation providers should pay more attention to the non-English speaking population.

- **Public transportation providers lagged far behind private providers in terms of accountability**; specifically, the airlines apologized substantially more than public transportation providers for delays and cancellations, while the public transportation providers accepted 'thanks' at a greater rate than they issued apologies (on average 17.7 "thanks" versus 12.6 "sorry").

Social Media Networks and Their Use in New York City

New Yorkers are at the forefront of social media communications, using a variety of channels in large numbers and with great frequency[2]. They are extremely reachable through social media, including Twitter, Facebook, YouTube, FourSquare, Flickr and Tumblr. With smartphones currently comprising 47 percent of all subscribed phones in the United States[3], it is increasingly easy to reach New Yorkers through a variety of channels.

Facebook

Millions of New Yorkers appear on Facebook. As of September 21, 2012, the number of Facebook accounts self-reported as based in New York City is 5, 597,420. The by-borough breakdown is below; note that accounts can be owned by individuals or organizations, so the numbers may not necessarily indicate residential usage (as seen in Manhattan, where figures exceed population counts).

- 3,487,280 reporting as "New York, NY"
- 1,075,040 in Brooklyn
- 619,960 in Bronx
- 252,900 in Queens
- 162,240 in Staten Island[4]

    With more than half of New York City's population using Facebook, and growing by the day, it is reasonable to assume that the technology will reach many New Yorkers needing transportation information. Although Facebook may not be the best source for urgent information, due to its constantly streaming feed, the network is a great tool for engaging customers and posting dynamic content.

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[2] "NYC's top social-networking sites," Crain's New York Business, June 2012.
http://mycrains.crainsnewyork.com/stats-and-the-city/2012/social-media/nycs-top-social-networking-sites

[3] Rainie, Lee. "Smartphone Ownership Update: September 2012," Pew Internet & American Life. September 11, 2012. http://pewinternet.org/Reports/2012/Smartphone-Update-Sept-2012/Findings.aspx

[4] Numbers generated from Facebook target advertising software.
https://www.facebook.com/help/?page=175624025825871

Twitter

New York is a "tweeting town;" according to Twitter founder Jack Dorsey, "New York City has more Twitter users than any other city in the world and the second most Twitter developers."[5] Not only are 2,618,000 New York-based accounts socializing via the network[6], but local users are also creating a large number of software applications for interaction with Twitter. Even further, New Yorkers are extremely active on Twitter: in 2009, while the region's users owned only 1.44% of accounts, they created 2.37% of all tweets; they are collaborating in more complex ways than in other locations.

> 2,618,000
> New York City-based
> Twitter accounts

Finally, New Yorkers tweet from all parts of the metropolitan region. As shown in the display of tweets below by data analyst Eric Fisher, the New York City population using Twitter is widespread across the region, and although concentrated in Manhattan (like the workforce population), users are not limited to one borough.[7] In the image below, blue dots represent tweets, red dots represent photos posted to Flickr, and white dots indicate a combination of the two. Note the vastness of blue and white, indicating the breadth of the New York regional audience on Twitter.

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[5] Myers, Courtney Boyd, "New York City has more Twitter users than any other city in the world," The Next Web, October 6, 2011. http://thenextweb.com/twitter/2011/10/06/new-york-city-has-more-twitter-users-than-any-other-city-in-the-world/

[6] "NYC's top social-networking sites"

[7] Fischer, Eric. "See something or say something: New York," July 11, 2011. http://www.flickr.com/photos/walkingsf/5926359544/in/set-72157627140310742
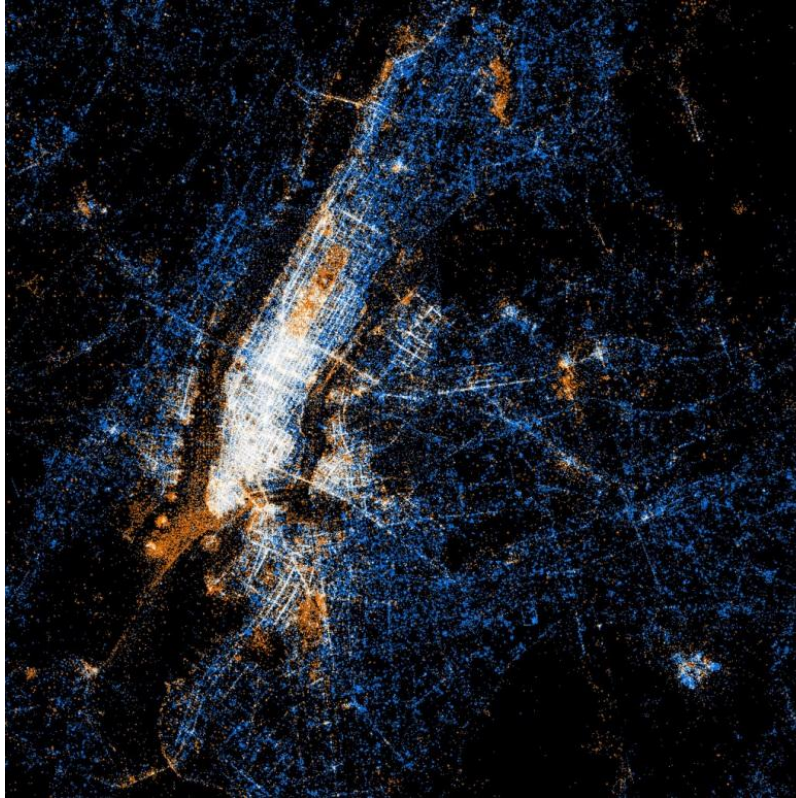
Figure 1 Geo-located Tweets in New York City, by Eric Fischer

YouTube, FourSquare and Flickr

Although localized account information is not available for YouTube, FourSquare and Flickr, these sites' wide reach is well-documented. It is estimated that more than 30% of all internet users visit YouTube at least once per day (or view its content embedded on other websites), with 20% of the site's traffic coming from within the United States.[8] It is probable that many, if not most, New Yorkers are able to view content on and from YouTube.

The location-based check-in software, with 15 million users worldwide,[9] is headquartered in New York. Its base audience could greatly benefit from location-based information services, such as automated service information at transit station entrances.

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[8] Alexa.com: http://www.alexa.com/siteinfo/youtube.com#
[9] About FourSquare: https://foursquare.com/about/

Flickr is heavily used in New York City (a recent search for "New York" resulted in more than 13 million photos)[10]. It is often assumed that Flickr is used more heavily among tourists, but according to the map at right by Eric Fisher[11], the photos taken in locations other than Manhattan's central business district were primarily taken by locals. On this map, photos marked in blue were taken by local residents, in red by tourists, and yellow are indeterminate. In light of this distribution, it is clear that Flickr users in New York are heavily concentrated throughout Manhattan and in parts of Brooklyn and Queens, but not evenly distributed across the city. To that end, Flickr may not be the ideal social network
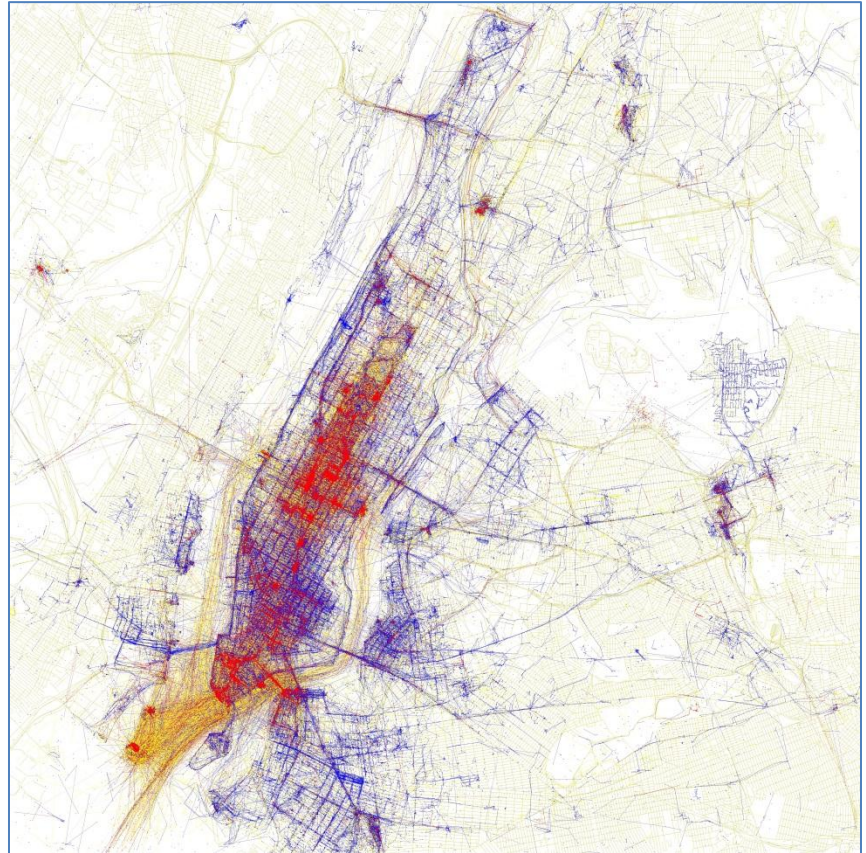

Figure 2 Geo-located Flickr photos in New York City

for sharing information with a broad audience of New Yorkers. However, some local transportation providers, including the Metropolitan Transportation Authority, have been able to illustrate important messages, like flooded tracks, with pictorial information.

Blogging Platforms

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[10] Flickr search for "New York:" http://www.flickr.com/search/?q=New%20York

[11] http://www.flickr.com/photos/walkingsf/4671594023/in/set-72157624209158632

Numerous blog platforms provide potential space for non-immediate, long-form discussions about events, policies and other topics.

Tumblr, an increasingly popular blogging platform, is headquartered in New York City, where it has an estimated 888,952 users.[12] With simple tools for posting dynamic content including text, photos and video, Tumblr may become an integral means of communication with New Yorkers going forward. Other blogging tools, including Posterous and Wordpress, are also free and equally useful.

> ## 888,952
> New York City-based
> Tumblr accounts

In short, New Yorkers frequent all mainstream social media networks, but are most reachable, both in immediacy and numbers, on Facebook and Twitter. It is there that transportation agencies should focus when delivering both urgent and dynamic information, augmenting existing updates and direct notifications through email and text message, and posting longer-form discussions on blogs. Maximizing use of Facebook and Twitter will help transportation providers to reach the most New Yorkers through a diversity of channels.

Presence of Transportation Providers in the New York City Region on Social Media

The chart on the following page showcases social media in use by the transportation providers in the New York City region, both public and private, both transit and car-based, and those outside of New York who are considered models for customer communications. The two airlines, American Airlines and JetBlue, were chosen both as businesses with hubs in New York and as transportation providers needing to provide 24/7 assistance.

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[12] Quantcast Geography for Tumblr.com: http://www.quantcast.com/tumblr.com#cities

Presence of Transportation Providers in the New York City Region on Social Media

Transportation Service	Avg. Weekday Passengers**	Facebook likes*	FB likes per rider	Twitter followers*	Followers per rider	Youtube uploads*	Flickr photos*	Blog since
Transit								
MTA Headquarters	n/a	12,522	---	24,564	---	178	2,268	---
NYC Transit	7,446,734	7,722	.001	33,595	.005	---	201	---
Metro-North Railroad	281,446	2,832	.01	6,107	.022	---	---	---
Long Island Railroad	283,415	3,453	.01	6,046	.021	42	---	---
NJ Transit	940,877	1,925	.002	11,442	.012	13	---	---
PATH	262,400	---	---	14,260	.054	---	---	---
Traffic								
NYC Dept. of Transportation	n/a	4,239	---	17,105	---	48	1,843	02/2011
NYC Taxi & Limousine Commission	471,200[13]	846	.002	3,807	.008	---	---	---
511 NYC	n/a	1,432	---	1,035	---	8	78	---
Aviation								
Port Authority Airports	290,194[14]	2,375	.008	7,918	.027	---	---	---
American Airlines	275,000[15]	375,150	1.36	402,246	1.46	184	---	---
JetBlue	82,760[16]	627,382	7.58	1,678,624	20.28	39	16,487	2009
Outside NY Region								
BART (San Francisco)	347,700	18,051	.052	25,062	.072	209	---	11/2008
MBTA (Boston)	496,200	950	.002	15,785	.032	9	---	---

*recorded on 8/6/12
** Self-reported by agencies on own websites and to American Public Transportation Association, except where otherwise noted

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[13] http://www.komanoff.net/cars_II/Komanoff_Taxi_Analysis.pdf

[14] http://www.panynj.gov/airports/pdf-traffic/ATR2011.pdf

[15] http://www.aa.com/i18n/amrcorp/corporateInformation/facts/amr.jsp

[16] http://investor.jetblue.com/phoenix.zhtml?c=131045&p=irol-newsArticle&ID=1682059&highlight=

As shown in the table, transportation providers in the New York region use a diversity of social media tools and networks, with Facebook and Twitter prevailing as the most popular choices. These providers are all using the social tools similarly, essentially posting more timely information to Twitter, holding announcements and brief discussions on Facebook, and using YouTube and other tools more illustration of their work. Some findings of note from this chart:

- Average weekday ridership did not correlate to number of social media outlets being used. JetBlue, for example, has fewer weekday passengers than many of the public transit providers, but uses every social media outlet considered in this study. Metro-North, on the other hand, uses only Facebook and Twitter, despite its relatively high ridership. Although ridership numbers should not dictate use of every tool (risking spreading resources too thin across many tools), it is worthwhile to note that JetBlue often wins awards for its customer service, which is likely due to its quick responsiveness on a multitude of channels.

- Facebook "Likes" and Twitter followers indicate users' willingness to receive information and marketing posts from that organization. The columns "Facebook Likes per Rider" and "Followers per Rider" show the relationship between ridership numbers and fans of the organization and/or its brand (an important distinction, since fans of the organization may be regular commuters, while fans of the brand may be tourists or otherwise irregular users). The difference between public and private fans is remarkable: For every 1,000 subway passengers NYCT receives a single Facebook "Like," while for every 1 JetBlue passenger, there are 7.58 Likes. Similarly, while PATH has approximately 1 Twitter follow for every 20 riders, American Airlines has more than three times that ratio. JetBlue and American Airlines demonstrate that although they likely have very few daily users, it is essential

> It is essential for both public and private transportation providers to promote their brands online, as it results in a heightened ability to perpetuate their messaging among users and fans.

for both public and private transportation providers to promote their brands online, as it results in a heightened ability to perpetuate their messaging among users and fans.

- YouTube and Flickr have become useful tools for agencies looking to better illustrate their work, narrate a visual representation, or explain topics more in-depth. MTA Headquarters, BART and American Airlines are the most prolific video uploaders, and MTA Headquarters, NYC DOT and JetBlue share the most photos. Not only are these videos and photos beneficial to their audience, but they are also highly shareable content, meaning that the agency's message can perpetuate far beyond their direct audience. These tools, and/or others providing homes for multimedia content, are essential to agencies moving forward.

- Blogs help agencies hold longer-form discussions about topics of interest to their customers, such as controversial policies, explaining budgetary items, and requesting feedback on projects. Locally, blogs are best used by NYC DOT in The Daily Pothole, tracking pothole repairs[17], and JetBlue, exploring airline news[18].

- Although New Yorkers are heavily using FourSquare, BART was the only provider in this list with a FourSquare presence on its home page. In fact, BART works with the company to provide "badges," essentially in-game achievements, for checking-in at its stations. This arrangement benefits users who are being entertained, but also BART itself in being able to disseminate location-based information, build a ridership community, and boost marketing and ridership.

- BART excels beyond all the other providers on this list by providing links to both social media and alerts in one location on its home page, showing that they understand the inextricable link between service information and customer interactions. (See Appendix A)

Analysis of Local Twitter Use

For this study, data was collected on the usage of regional transportation providers' use of Twitter over the period of two months, May and June, 2012. Twitter was chosen because it is

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[17] http://thedailypothole.tumblr.com/

[18] http://blog.jetblue.com/

the simplest, fastest and most low-maintenance tool available for the immediate customer messaging often needed in local transportation systems, which can be delayed, canceled or otherwise affected at any moment, affecting thousands of people. With all local transportation providers at least having a presence on Twitter, an analysis of customer communications using this medium provided numerous insights about their messaging practices, goals and tones. The NYU Rudin Center evaluated seven local transportation providers' tweets over a two-month period (May and June, 2012), including both headquarters-based accounts and separate, service line-based accounts. Two airlines, American Airlines and JetBlue, were also evaluated in order to contrast the public and private sectors. The transportation providers and their Twitter account names evaluated in this study are:

Organization	Twitter Name
American Airlines	AMERICANAIR
JetBlue	JETBLUE
NJ Transit	NJ_TRANSIT
NJT Northeast Corridor	NJTRANSIT_NEC
NYS DOT - 511	511NYC
NYC Taxi and Limo Service	NYC_TAXI_LIMO
PATH Airports	NY_NJAIRPORTS
PATH	PATHTWEET
NYC DOT	NYC_DOT
MTA	MTAINSIDER
NYC Transit	NYCTSUBWAYSCOOP
LIRR	LIRRSCOOP
Metro North	METRONORTHTWEET

The tweets were automatically loaded into a database and categorized by their perceived goal: information (such as service alerts or look-ahead travel information), marketing (including the advertising of company services), and engagement (including responses to comments and re-tweets, or the re-posting of others' tweets). The tweets were granularly separated into the following categories (into more than one category as necessary):

1. Service information – current travel information, including look-aheads of up to an hour, for example: "Delays on I-87 Major Deegan Expy south btw ex 8 - West 179th St (NY) and ex 7N-7S 7N & - I-95-Cross Bronx Expy (NY)" - @511NYC

2. Transportation look-ahead information, such as weekend construction previews: "#ServAdv: #M suspended b/t Metropolitan Ave & Myrtle Ave this weekend. Plan ahead with #MTAWeekender available 24/7 http://bit.ly/MnieRs" - @NYCTSubwayScoop

3. General information, marketing, and administrative, such as advertising of new transit services: "We love out [sic] littlest customers so we posted some of our kids travel tips http://bit.ly/JBKIDS to help families (and those around them!)." - @JetBlue

4. Customer engagement, including replies and re-tweets: "@ohanggyee Should you experience this issue in the future, tweet station & machine ID num so we can dispatch staff to address the issue. ^RJ" - @PATHTweet

5. Entertainment, such as posts related to news, cultural or sports events: "We're proud to sponsor over 30 #Broadway & off-Broadway Theaters in #NYC! Tell us: what's your favorite #musical? http://bit.ly/AABway" - @AmericanAir

6. Non-English posts: "@lion05 Nos da gusto!" - @AmericanAir

7. Photo/video content, including links to external sites with original content: "Photos: This weekend, we repaired tracks in Brooklyn and Manhattan on the 3, 4, 5, 6, B, D, F, M and Q Lines. http://flic.kr/s/aHsjBxswhs" - @MTAInsider
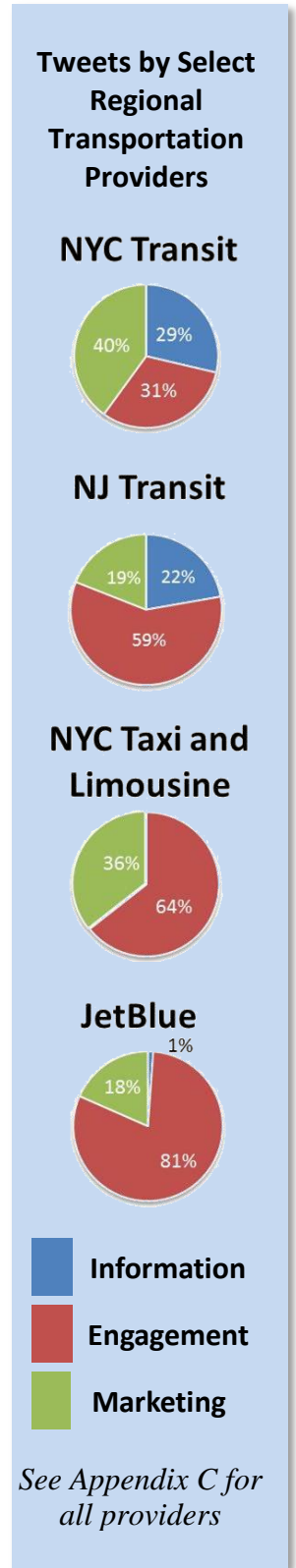
For analysis, broader categorizations were used: service information (1 and 2), marketing (3) and engagement (4, 5, 6 and 7). The chart of all results is summarized in Appendix B. Several major patterns emerged:

All transportation providers varied widely in their proportions of service information, engagement and marketing. For example, 511NY provided almost solely information, while the airlines focused primarily on engagement. The airlines' use of engagement is appropriate, as large-scale accounts need not provide information about specific flights to all followers. On the other hand, accounts like NYCTSubwayScoop lack sufficient information posts; although they tweet large-scale delays and disruptions, these posts are often quickly superceded by marketing messages, a major drawback during the rush hour commute, and quite possibly the reason for their relatively low number of followers.

The actual proportions for each provider are shown in Appendix C. No public transit provider seems to have perfected the proper proportions of information, marketing and engagement, as proposed later in this report.

Many transportation providers are over-marketing and under-informing. This trend is most prevalent in the NYCT Subways account, which posted 40% marketing and 29% information messages to its 32,545 followers, but maintains more than 76,000 users of its service information-only email system[19]. The account also posted only 556 current service information-based tweets over the two month period, while the average two-month stretch has 763 service alerts.[20] Clearly the subway-riding audience is seeking more service information than is currently being provided via Twitter. Other transportation service providers that marketed more than informed are NYC DOT (35% marketing, 9% information) and NYC Taxi & Limousine (36% marketing, 0% information). The airlines also marketed more than informed, however, they are catering to audiences that are using more diversified resources, and so universal service information posts would not be useful to

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Tweets by Select Regional Transportation Providers

NYC Transit

29% Information
31% Engagement
40% Marketing

NJ Transit

22% Information
59% Engagement
19% Marketing

NYC Taxi and Limousine

64% Engagement
36% Marketing

JetBlue

1% Information
81% Engagement
18% Marketing

🟦 **Information**

🟥 **Engagement**

🟩 **Marketing**

See Appendix C for all providers

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[19] http://www.straphangers.org/alerts/methodology.pdf

[20] http://www.straphangers.org/alerts/

the vast majority of their followers.

Few transportation providers use Twitter to its maximum potential, particularly concerning hashtags and dynamic content. Twitter hashtags, used to designate specific keywords for user searches and third-party application imports, should be used widely and uniformly. Rather than using jargon-filled hashtags as NYCTSubwayScoop does, such as #ServAdv for Service Advisory, they should use #Alert. Further, although train routes on some accounts are assigned hashtags, they should actually be separate accounts. For example, the Wassaic Branch should have its own Twitter handle, rather than a hashtag, which requires LIRR customers to read about irrelevant service information. New Jersey Transit does provide separate accounts for each line, which seems to be a popular feature among its users.

However, New Jersey Transit, and most regional transportation providers, are **lacking dynamic content**, such as photos and videos, that help illustrate concepts like construction work, explain policies through discussion, and demonstrate use of the system. With interesting and powerful content, users will be informed, engaged, potentially inspired to change their behaviors, and may share the content with others. Although the MTA network and both airlines studied are regularly posting dynamic

> **Dynamic Content on Twitter:**
> Hashtags
> Photos
> Videos
> Questions
> Contests

content, the vast majority of transportation providers have not embraced the inherent information and marketing potential of shareable content.

Several transportation providers **asked few questions of their audience**, neglecting a tool that would be useful for both engaging customers and gathering information. Although the airlines, NYC Transit and NJ Transit asked large numbers of questions, other providers, like Metro-North, LIRR and PATH, have not realized the two-way conversation potential on Twitter. Conversely, some questions were posted rhetorically, such as NYC Transit's "Want to learn more about the art in the system? Download our Arts for Transit app." This question may have fared better as a tool for audience polling, such as asking "What's your favorite subway art?" which would have stimulated audience engagement. By not asking questions, transportation

providers are missing opportunities to learn from their audiences where information is needed, and to foster positive relationships.

Private transportation providers focus on customer service far more than public providers. Specifically, the airlines apologized far more than public transportation providers for delays and cancellations: in the two months studied, American Airlines wrote "sorry" and its synonyms 3,949 times; PATH, 62 times; Metro-North, 39 times; NJ Transit, 25 times; and the others, three or fewer times. Similarly, while customer engagement dominated both airlines' Twitter accounts (85% on average), demonstrating their need to be constantly responsive to and direct with customers, public transportation providers communicated less directly with their customers (34%). These patterns indicate a universal orientation toward customer service throughout the private companies, which must earn and maintain customer loyalty. However, public transportation providers, which often have a monopoly on customers, likely do not feel the same need to focus on them.

In contrast, the public transportation providers accepted 'thanks' at a greater rate than they issued apologies (on average 17.7 "thanks" versus 12.6 "sorry"). This pattern was most pronounced in NYC Transit's feed, which posted 26 "thanks" and variants, but only 3 "sorry" and variants, and NJ Transit, which posted 73 thanks and 25 apologies. See the chart below for all Sorry/Thanks comparisons. This diversion may result from the typically thankless work of transit management, making compliments especially meaningful.

Instances of "Sorry" and "Thanks" in Tweets
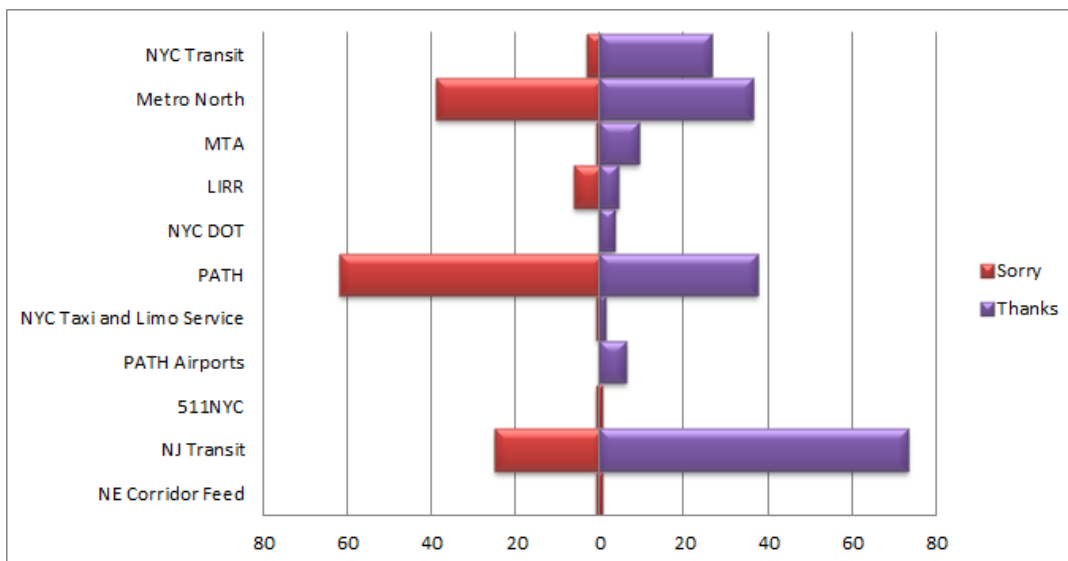
The tone used on Twitter trends toward the negative. Both public and private transportation providers used "yes" and "no" frequently, but each sector used "no" at three times the rate as "yes," with an average of 15 yeses and 48 no's. While a "no" may not necessarily indicate negativity (and could indicate a lack of service or a correction of misinformation), the difference is profound. All providers posted more no's, with the single exception of Metro-North, which posted an equal number (2).

Only the airlines used Twitter extensively for non-English posts. American Airlines posted 42 non-English tweets, and JetBlue, 20. The only public-sector accounts to post non-English tweets were MTA Insider and NYC Transit, with 3 each. These numbers are extremely low for the New York Region, where 48% of the population natively speaks a language other than English[21]. Information, especially of urgent travel importance, should be provided at least in Spanish (52% of foreign-born New Yorkers have come from Latin America)[22]. Clearly there should be much more attention to the non-English speaking population by transportation providers.

Implications of Twitter Use

These findings have several implications for travelers in the New York City region. Because every Twitter account studied saw a continual increase in followers over the two months studied (which may be a function of known flaws in Twitter's counting processes), it can be assumed that an increased proportion of New Yorkers will use local transportation services more efficiently: they will be more aware of delays, diversions and alternate routes, allowing them to adjust as necessary. The increased audience reach will greatly enhance mobility throughout New York.

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[21] U.S. Census: http://quickfacts.census.gov/qfd/states/36/3651000.html

[22] U.S. Census

However, several findings in the Twitter analysis show a need for transportation providers to re-align their use of social media for better information, engagement and marketing purposes.

Nearly all local public-sector Twitter accounts primarily use the tool for one-way communication, without interacting sufficiently with their audience. Often the accounts post marketing messages just as, or more, often than direct engagement messages. The goal of marketing messages is to inform the audience about services and to garner goodwill; however, those needs are met just as well, if not exceeded, through direct communications. The downsides of over-marketing are being perceived as spammers, resulting in decreased and disinterested audience members. As seen in the analysis, information is the primary draw, and direct communication accomplishes much of marketing's goals.

The most beneficial aspect of "listening" via social media is the ability for transportation managers to learn from their customers, such as discovering conditions in the system, exceptional employees, or misinformation that may have perpetuated through the customer base. Transportation managers can potentially learn a significant amount from their audience, and should opt for engagement over marketing when attempting to reach out to customers.

A relative scarcity of information, combined with under-apologizing and over-thanking, can be perceived as a lack of accountability for service interruptions. Of the transportation providers (and not headquarters), this pattern was seen in PATH, NYC DOT and NYCT Subways accounts. When information is inadequate, and customer service is not a focus, customers may not trust the service provider, and its public reputation may not be helped, despite extensive engagement and marketing efforts. Information and accountability go hand-in-hand for informed, mobile and trusting customers.
The customer base is further limited by the fact that all regional Twitter accounts studied are conducted almost exclusively in English, with 0.2% of all posts over the two-month period appearing in a different language. However, Twitter itself supports 49 languages (Facebook

supports 70);[23] a lack of non-English posts is truly a missed opportunity for better customer information.

Finally, very few of the Twitter-based exchanges were aimed at community-building, a goal that would help keep entire communities informed, rather than reaching out to individuals. For example, the Twitter 'list' function would help residents of specific neighborhoods reach out to all feeds that apply to them, and as the typical hub of a neighborhood, the transportation providers should help supply this list, and take part in discussions around local topics (if staff resources are an issue, local station managers can be assigned this role). Furthermore, specific Twitter accounts should be set up around stations, lines, and/or neighborhoods to help communities better understand the service changes that affect them directly, and as another channel for customer service. This work would make great strides in holistically informing, engaging and marketing to customers.
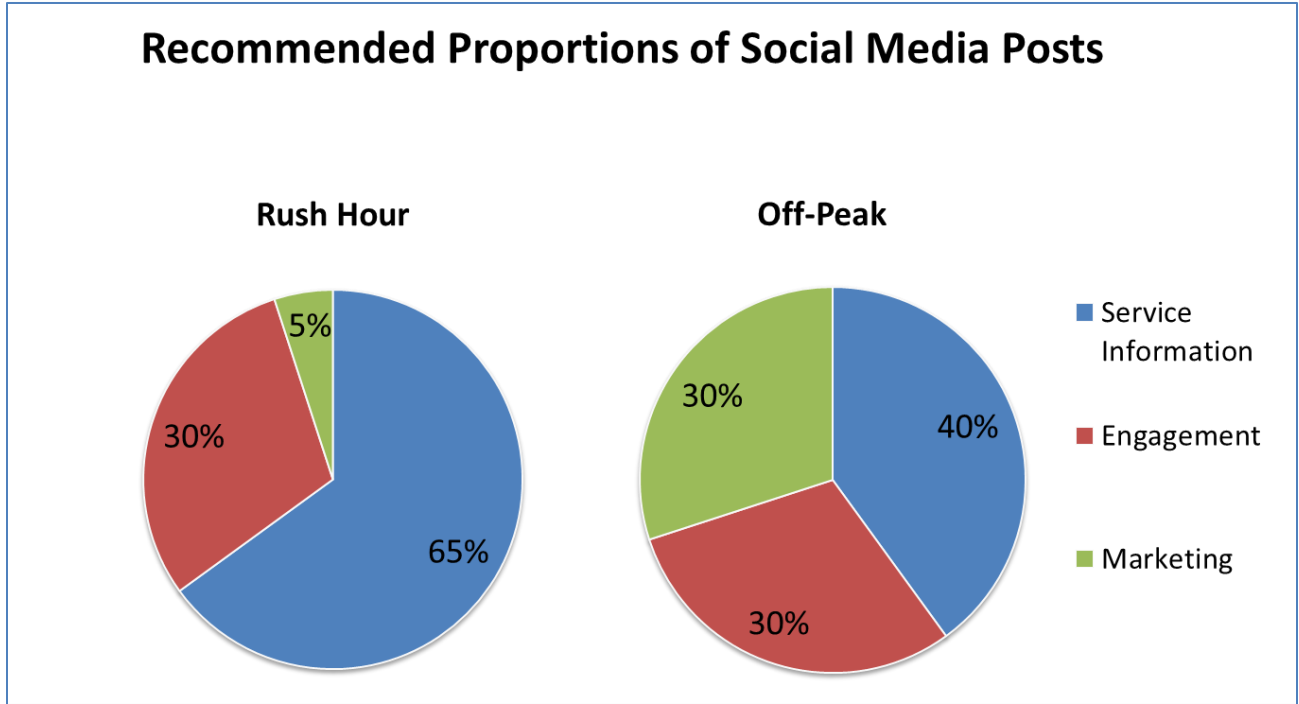
Again, the goals of social media in transportation are to inform, motivate and engage. Based on the analysis in this report, the ideal proportions for Twitter posts by public transportation agencies, that will help users be informed, motivated to change their plans as needed, and engage their network, are the following:

Rush Hour: 65% service information, 30% engagement, 5% marketing
Off-Peak: 40% service information, 30% engagement, 30% marketing

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[23] Dugan, Lauren. "Twitter To Add 16 More Languages To Its Translation Center," MediaBistro: All Twitter. September 20, 2012. http://www.mediabistro.com/alltwitter/16-new-languages-to-translation-center_b28751

Recommended Proportions of Social Media Posts

Rush Hour

Off-Peak

5%

30%

65%

30%

40%

30%

■ Service Information

■ Engagement

■ Marketing

Overall, a collaborative and inclusive approach, with more information and less chatter, would result in a better experience for transportation users on Twitter. Transportation providers should develop social media strategies for discussions across multiple social media sites, as discussed in the forthcoming companion to this report concerning policy recommendations.

Part 2
How Social Media Moves New York

Recommended Social Media Policy for Transportation Providers

Introduction

Social media networks allow transportation providers to reach large numbers of people simultaneously and without a fee, essential factors for the millions of commuters and leisure travelers moving through the New York region every day. It is based on earlier findings (from Part 1)[24], which analyzed local transportation providers' use of social media, and a seminar on the subject in the wake of Hurricane Sandy. This report recommends social media policies for transportation providers seeking to inform, engage and motivate their customers.[25]

The goals of social media in transportation are to inform (alert riders of a situation), motivate (to opt for an alternate route), and engage (amplify the message to their friends and neighbors). To accomplish these goals, transportation providers should be:

- **Accessible**: Easily discovered through multiple channels and targeted information campaigns

- **Informative**: Disseminating service information at rush hour and with longer-form discussions on blogs as needed

- **Engaging**: Responding directly to customers, marketing new services, and building community

- **Responsive**: Soliciting and internalizing feedback and self-evaluating in a continuous cycle

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[24] Kaufman, Sarah. "How Social Media Moves New York," NYU Rudin Center, October, 2012.

[25] These recommendations assume a basic working knowledge of using the social media networks, focusing on their use in transportation.

Accessible

Accessible social media presences are found on a variety of networks, and reachable by a

diverse audience. Transportation providers should especially consider the following accessibility

aspects:

Find the right network

Different social media networks have different strengths, and should be utilized according to
their reach and purpose served:

- Twitter: immediate, short-form messaging
- Facebook: non-urgent messaging with shareable content
- Flickr, YouTube and Instagram: dynamic content and illustrative information
- FourSquare: community-building and location-based information
- Blogs: long-form discussion of incidents, accomplishments and policies

The common thread among these resources is the importance of service alerts; without
adequate information, customers will not be engaged in supplementary content.
If resources are insufficient to maintain multiple networks, web-based tools like Hootsuite can
be used to automate and publish postings on various networks at once.

Connectivity

Accounts should be
easily reachable from the
agency's home page. For
transportation providers
with multiple accounts,
specialties, like specific
routes or interests,
should be described. It
may also be useful to
cross-list social media
accounts, such as links to
Twitter from Facebook,
for simplified navigation.
An example of strong
connectivity is on San
Francisco BART's
website, which links to
social media accounts
from the homepage, in
tandem with service alert tools (circled, at right). This feature allows riders to comprehend
urgent information in the context of social media's engagement, showing the complementary
nature of the different resources.
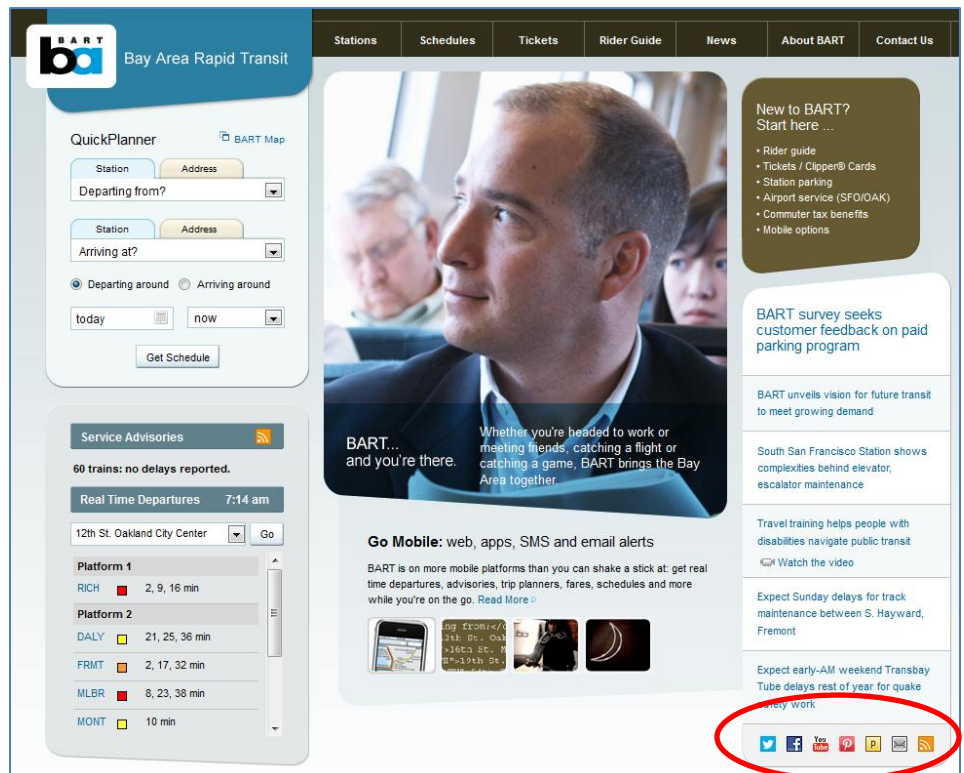
Name
Choose a name that is recognizable, descriptive and memorable. On Twitter, choose shorter names that take up fewer characters, leaving room for more text, and use Twitter's verification tool to ensure users that the account information is legitimate. Massachusetts Dept. of Transportation's @MassDOT account exemplifies a straightforward, descriptive name.
Note that it is unnecessary to include the word "tweet" in the name, as accounts are already on Twitter.

Target the Audience
Major services, such as subway lines and essential roadways, should have their own accounts, so that the information is not broadcast unnecessarily to an overly extensive audience (which would soon tire of the information and unsubscribe from the feed).
In addition, social media accounts should be advertised within their own space; for example, a train line's Twitter feed should be part of an advertisement on that train car's walls. Users will quickly learn how to find out about service information and interact with the provider.

Cater to Diverse Audiences
In Part 1 of this report, it was found that only two New York-area public transportation providers tweeted in languages other than English. In cities as diverse as New York, it is absolutely essential to provide information in multiple languages, as well as ensuring that websites meet the requirements of tools to assist the vision and hearing impaired. Transportation providers in the New York region should set up secondary accounts to replicate information in Spanish, at a minimum, and other major languages where possible. If staff resources are insufficient for this effort, agencies should partner with ethnic newspapers and community groups to ensure that important information reaches constituents.

Use Internally
Transportation staff should use social media internally, as well. Studies have shown that advanced collaboration tools improve workflow productivity[26]; important tools to consider for internal use are:
- Wikis, to assist in group project planning and shared corporate knowledge
- LinkedIn, to recruit qualified candidates for open positions
- GovLoop, to connect with peer public agencies and collaborate on shared issues
- Instagram and other photo applications, to allow field staff to document their work

These tools will improve the internal coordination necessary for better transportation services and the information required by their users.

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[26] Chui, Michael, James Manyika, Jacques Bughin, Richard Dobbs, Charles Roxburgh, Hugo Sarrazin, Geoffrey Sands and Magdalena Westergren. "The social economy: Unlocking value and productivity through social technologies," McKinsey Global Institute, July 2012.

Informative

Informing the public of irregular service is the most important function of social media in transportation. It is likewise advisable to use the dynamic content sharing provided by these networks, like maps, photos and videos, to illustrate the information more fully.

Service information should always be written clearly, and with specificity like train stations or highway exits, and link longer explanations on the agency's website when necessary.

Urgency: Timely travel information, like delays, belongs on the instantaneous networks of Twitter and Facebook, while longer-form, non-urgent discussions, like policy explanations, belong on a blog. Photo and video content, which can enhance any platform, should be posted anytime they can help illustrate a situation, and are not required to be of utmost quality, as long as they are informative, as voiced by the MTA:[27]

During Hurricane Sandy, "Timeliness [of photos] was more important than quality,"
according to MTA Press Officer Aaron Donovan

During rush hours and other peak travel times, messages should be posted frequently: incidents and service updates, as needed. Non-urgent information should be held off until off-peak travel times, when customers will be looking for current service information and ignoring impertinent chatter.
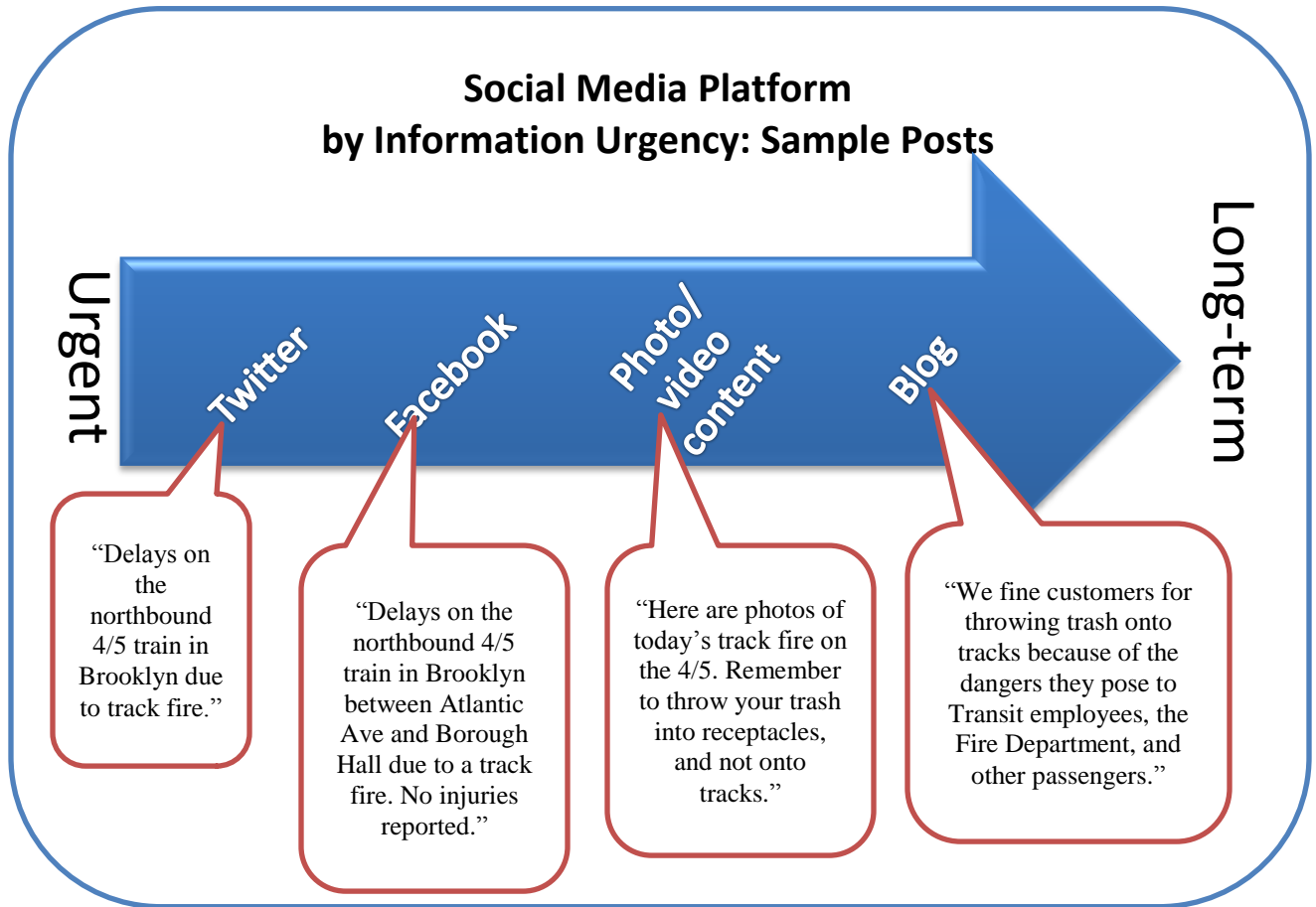
Blog: Transportation providers should maintain blogs to explain service information and policies in-depth, allowing for discussions, which will help educate customers and build communities of users. With free tools, such as Tumblr, Blogger and Wordpress, transportation providers can maintain blogs with a more casual tone than that of press releases and official statements. The Transportation Security Administration maintains a popular blog to explain policies and respond to

incidents in the media (shown at right). Los Angeles County MTA maintains five blogs to

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[27] NYU Rudin Center for Transportation Event: Social Media and Hurricane Sandy; November 27, 2012.

accommodate users of different interests (developers, planners, Spanish-speakers, and so on).[28] Through audience attention and participation across a variety of channels, LACMTA ensures a better understanding of their policies.

Most importantly, it should be easy for customers to access information pertaining to them, on the appropriate platform, and, whenever possible, in their language.

Social Media Platform by Information Urgency: Sample Posts

Urgent → Long-term

Twitter: "Delays on the northbound 4/5 train in Brooklyn due to track fire."

Facebook: "Delays on the northbound 4/5 train in Brooklyn between Atlantic Ave and Borough Hall due to a track fire. No injuries reported."

Photo/video content: "Here are photos of today's track fire on the 4/5. Remember to throw your trash into receptacles, and not onto tracks."

Blog: "We fine customers for throwing trash onto tracks because of the dangers they pose to Transit employees, the Fire Department, and other passengers."

[28] "Metro Blogs," http://www.metro.net/news/metro-web/

Engaging

Customer engagement takes many forms: re-posting news from others, responding to customer needs, asking questions, and appealing to the broader group. Engagement leads to more "likes," "fans," "followers" and "subscribers" – the numbers of which are important for perpetuating important messaging. When more travelers are informed about potential service changes, they will be motivated to change their plans as needed and amplify the message to other affected travelers, overall ensuring that as many travelers as possible are moving efficiently and safely through the system.

However, as noted in Part 1, more riders do not mean more followers; for example, for every 1,000 subway passengers NYCT receives a single Facebook "Like," while for every 1 JetBlue passenger, there are 7.58 Likes. Similarly, while PATH has approximately 1 Twitter follow for every 20 riders, American Airlines has more than three times that ratio. The large fan numbers acquired by the airlines were earned through engagement, making customers feel that they are heard and understood.

Respond

Customer questions posed during rush hours are often from customers needing on-the-go assistance, and should be responded to as soon as possible. Tweets from PATH are particularly useful to passengers needing en-route assistance, for example:

> *"@brittanygh The elevators are working at WTC. There is currently no elevator service at Exchange Place. http://ow.ly/fBROl ^RJ" - PATH Rail System @PATHTweet*

Throughout customer engagement practices, the tone should be casual and warm, even though customers may be hostile, particularly during delays. Needlessly hostile tweets will not necessarily warrant a response. Many transportation providers cannot guarantee 24-hour responses, so profiles should include hours of availability to answer questions.

Accountability

PATH is also a role model for engagement on Twitter for 'signing' tweets with the personnel who respond. This effort shows accountability for activities, allows the agency to track actions by customer service agent, and attaches a human persona to the note. PATH furthers its accountability by apologizing frequently for service issues, more than any other provider in this study. In fact, "sorry" was prevalent in the tweets of private transportation carriers, but mostly absent from public agencies' vocabulary. It is essential to show accountability by apologizing for mishaps, for example:

"@kehvt We're sorry about what you've been through. Hoping you enjoy your flight and can get some rest while in MCO." - JetBlue

Outgoing

Additional forms of customer engagement include following other agencies, to remain informed about incidents or activities, and engaging a larger group through contests, open-ended questions and user photos, as American Airlines features on its Facebook profile:

Market

Marketing educates transportation customers about new services or recent accomplishments, and is an essential tool for informing customers about using different services, new policies, or traveling safely.

Timing: Marketing messages should be pushed throughout the day (outside of rush hours), to reach large numbers of customers at different times. However, they should be posted no less than ninety minutes apart to avoid being perceived as spam by users.

Priority: If urgent service messages are being pushed out at the moment, marketing messages should be delayed until the situation is resolved.

Tone: Use a casual and informative tone, as it will be perceived as information rather than advertising. A sample marketing tweet from New York City Transit Subways effectively educates transit customers to use the system better. The casual, amiable tone is more likely to capture attention than an explicit advertisement for the service.

"Need to know what subway work is planned for the weekend? There's an app for that. The Weekender. http://bit.ly/LH1lms" - NYCT Subway Service @NYCTSubwayScoop

Balance

A healthy balance of information, engagement and marketing is vital. Based on analysis in Part 1 of this report, the ideal proportions for social media by public transportation agencies are:
Rush Hour: 65% service information, 30% engagement, 5% marketing
Off-Peak: 40% service information, 30% engagement, 30% marketing

Recommended Proportions of Social Media Posts

Rush Hour

Off-Peak

5%

30%

65%

30%

40%

30%

- Service Information
- Engagement
- Marketing

NYU Rudin Center
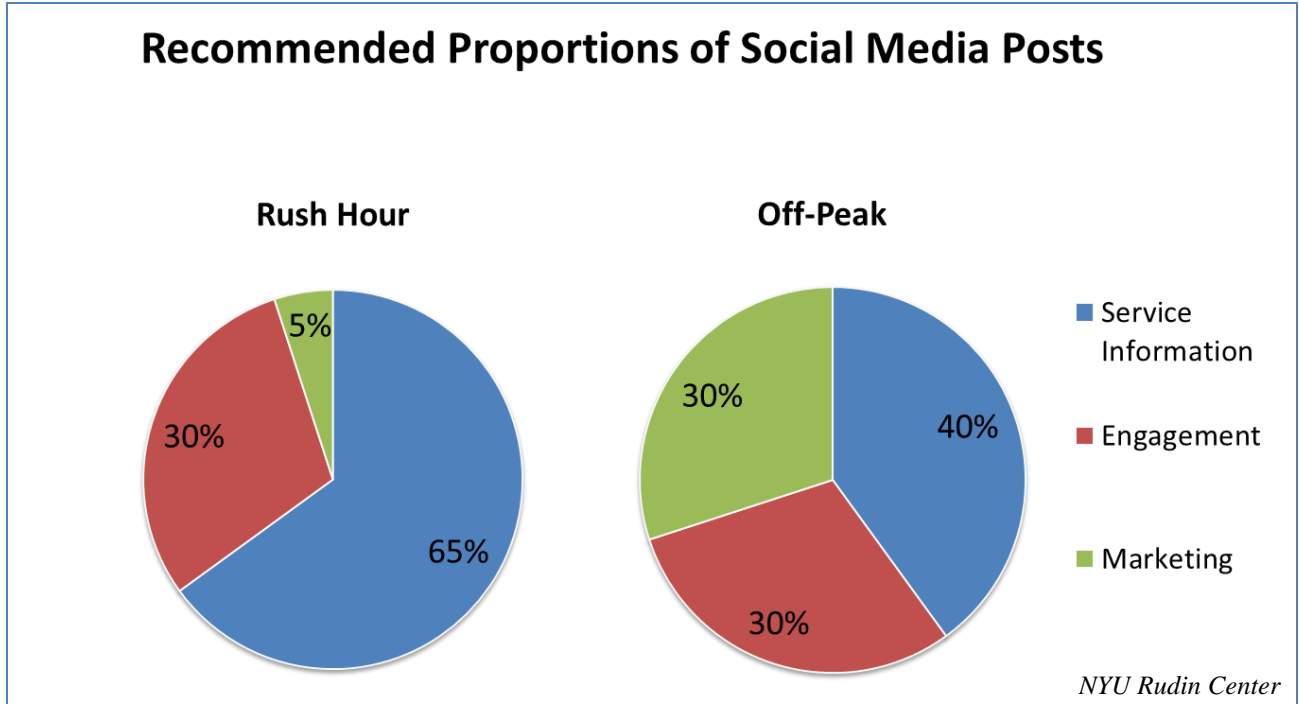
Build Community

Developing relationships both with and among customers will help disseminate information, build goodwill for the transportation provider, and establish central points of contact for large groups of people.

Online: Building an online community of riders can be as simple as developing train station pages on Facebook, which users can opt into for up-to-date service, maintenance and safety information. Transit agencies can also partner with FourSquare to develop "badges," or in-software rewards, for checking in at appropriate stations. FourSquare and similar tools should also be used to push real-time, location-based service statuses (including user-generated information, like elevator outages) to users' mobile phones as they approach transit facilities.

In-person: Community-building efforts may take transportation providers offline, where they can interact face-to-face with customers and hold longer discussions. These meetings can take place in the form of visible station agents, meet-and-greets with transit officials, or question-and-answer sessions with personnel. For example, PATH frequently posts to Twitter a version of the following: "We'll have management staff at World Trade Center Station on PATHursday, 8/23, 7:30-9:30 a.m. to answer your service questions." This regular meetup lets PATH customers take their online conversations to the next level, humanizes the agency and reminds transportation officials of their overall mission.

Collaborate: Both online and in-person, transportation providers should collaborate with the public on future developments. Using social media tools including blogs, Facebook and Twitter, customers can provide feedback on everything from proposed schedules to new technologies.

Their input is important for both developing new resources that will be used widely and helping them understand the obstacles and costs of transportation work.

For instance, Washington Metropolitan Area Transportation Authority recently requested customer feedback on several proposed revised bus maps. Noting on their blog, "Feel free to give us your feedback, and note that these maps will be revised based on feedback from customers." By requesting feedback and regularly responding in the blog comments, WMATA showed a commitment to making a usable tool based on collaborations with the public, which benefits all parties involved.[29]

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[29] "Metrobus System Map Redesign," PlanItMetro: Metro's Planning Blog, September 19, 2012. http://planitmetro.com/2012/09/19/metrobus-system-map-redesign/

Responsive

Transportation providers' responsiveness involves the two-way exchange of information between their official feed and customers' input. Public feedback can point out customer needs and field conditions to the agency. Feedback and responsiveness is an ongoing process of information, dialogue and incremental improvements:
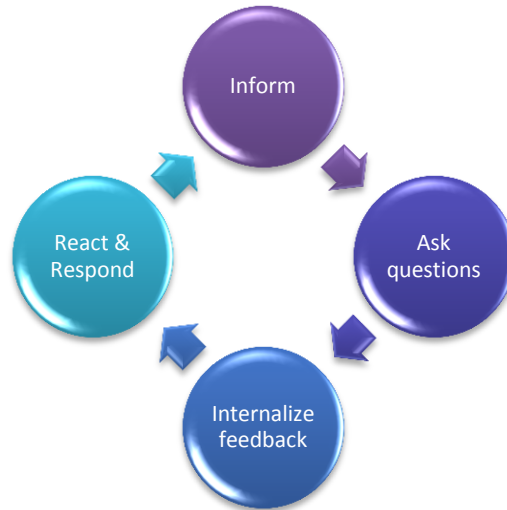
NYU Rudin Center

Listening is an Active Process

Internalize Feedback

Data received via social media, whether a complaint about a bus driver or accolades for a new service, must be internalized to the agency. This information cannot stop with the public affairs officers who manage the social media account; it should be quantified, evaluated, and passed on to appropriate organization members. Frequent complaints can pinpoint a reckless train conductor, an especially friendly bus driver, or bring to light an incident that has not yet been reported by management. Using incoming feedback for improvement is a major step in social media success.

San Francisco's BART distributes weekly comment roundups to staff, considering it to be an informal evaluation of the week's activities.[30] This method of receiving customer feedback is an authentic evaluation, nearly in real-time, that can be used for long-range analysis and improvement.

React and Respond

Use customer feedback for change as needed: reward a great employee, hone customer information, or amend a policy. Workflows should be designed to deliver the action item to the

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[30] Jordan, Melissa. "Transit 2.0 at BART.gov," Presentation at O'Reilly Gov 2.0 Summit, September, 2010. http://en.oreilly.com/gov2fall09/public/schedule/detail/11271

responsible person, follow-through on its changes (or respond about its infeasibility), then follow up with the public user who made the suggestion.

A popular tool for acting on user requests is SeeClickFix.com, which allows the public to submit problem areas, tag by location, and prioritize others' submissions. Government agencies acknowledge, act on, and close out these issues. Although they may not rank highly for public officials, these action items are often major safety and quality of life issues for local residents. In the New York region, only the NYC Department of Transportation seems to have used this tool (concerning Greenway safety). However, SeeClickFix and its competitors are worthwhile tools for internalizing and acting on customers' priorities.

Self-Evaluate

By regularly monitoring and seeking to improve their online reputations, transportation providers will increasingly be regarded as trusted sources for information and likeable sources of engagement. Performance should be evaluated on:

- numbers of followers and likes and their trends upwards/downwards
- mentions of the organization, and whether they were positive or negative
- responses to posts (shows level of clarity and/or positivity)
- how often people clicked on posted links (shows a lead-in to important information)
- who re-posted what information (shows an authoritative voice)
- most shared content (shows interesting content)

Metrics tools like Facebook Insights, Hootsuite and Bit.ly can measure the impacts of social media efforts, and where there is room for improvement. The importance of these metrics is to comprehend the success of these tools for informing, motivating and engaging customers, resulting in safer and more efficient travel.

Social Media Challenges

Investing in social media is not without its challenges for transportation providers. Recommendations to address some common concerns are:

Staff resources: Automated tools to double-post to multiple social networks and pre-program marketing messages and planned service notifications, like Hootsuite and built-in Twitter and Facebook integration, save time and resources. In addition, staff presently allocated to call centers can also provide support via social media, using tools that allow employees to write draft messages, pending managers' approval, can distribute the workload. Finally, managing audience expectations by posting 'office hours' can help mitigate off-hours requests.

Archiving/Retention requirements: Many U.S. states require retention of social media records, at least for a specific period of time. New York's laws are still indeterminate on this subject, but it is likely that records can be requested through the Freedom of information Act.[31] So social media posts, comments and dialogue should be maintained, and can be automatically recorded using one of many popular tools for this purpose, like Arkovi, Smarsh and Global Relay. Other social media management tools, like Hootsuite, have optional archiving built in, and Twitter is currently deploying a function for users to download all sent tweets.[32,33]

Digital divide: While a lack of smartphones by lower-income portions of the population is often seen as reason to avoid a heavy focus on social media, the divide is not dramatic in this setting. Because social media networks are free and open to the public, they are less restrictive than other sources of information, like cable news. Furthermore, Twitter provides the option to receive certain messages by text, which is used widely on all variety of phones.[34]

The technological divide exists in New York City infrastructure, where a lack of underground mobile phone service limits subway passengers' awareness of service changes. As more stations become wired (happening gradually, now[35]) and passengers become connected, they will travel more easily through the system, re-routing as necessary while on the go.

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[31] "Records Advisory: Preliminary Guidance on Social Media," New York State Archives, May 24, 2010.

[32] Holmes, Ryan. "Social Media Compliance Isn't Fun, But It's Necessary," *Harvard Business Review* Blog, August 23, 2012. blogs.hbr.org/cs/2012/08/social_media_compliance_isnt.html

[33] Bryant, Martin. "Twitter has started rolling out the option to download all your tweets," The Next Web, December 16, 2012.

[34] "How to Get SMS Notifications for Tweets and Interactions," http://support.twitter.com/articles/20169920-how-to-get-sms-notifications-for-tweets-and-interactions#

[35] Flegenheimer, Matt. "Cellphone and Wireless Service Coming to More Subway Stations," *The New York Times*, November 19, 2012.

Conclusion

Transportation providers in the New York region are already providing information to riders through service alerts and other services, but should be doing more in the realm of social media, including:

- More listening, leading to action and response: customers' experiences in the field can be educational to managers, especially in terms of unsafe conditions
- More languages: Urban populations are increasingly speakers of English as a second language. Transportation information, especially during major events, should be provided in multiple languages.
- More accountability: Apologizing for delays or other service interruptions is essential in customer service in order to build report with transportation users
- Timed marketing: Although marketing is essential to build an audience base, it should be timed appropriately to avoid interfering with service information, and infrequently enough to avoid irritating readers.

By following social media best practices, transportation providers can build ridership, the trust of their audience, and use their limited communications resources efficiently. In the future, the so-called "internet of things" will empower infrastructure and devices to broadcast their own status without human interference, so issues can be known and resolved with less human intervention.

The more immediate future of social media lay in crowdsourcing, which will allow transportation providers to harness the wisdom of crowds to learn about field conditions and potentially improve system management. To reach the point of productive crowdsourcing, managers need to listen actively on social media now, and implement the best practices of being accessible, informative, engaging and responsive.

Appendix A: San Francisco BART's Home Page

Appendix B: Summary of Tweets Analyzed, May 1 - June 30, 2012

Organization	Twitter Name	Followers on May 1	Followers on July 1st	Total Tweets	Transportation service info (current)	Transportation service info (look ahead, as in weekend preview)	General info/marketing/administrative	Engagement (RT or tweeting @ someone)	Entertainment (e.g. "go mets")	Non-english comments	Photo/video content	Totals – with multiple listings	Inform %	Engage %	Market %	"Sorry" or "oops" or "apologize"	"Thanks" or "Thank you" or "Thx"	"Yes"	"No"	Cancel or delay	Questions ("?")
American Airlines	AMERICANAIR	359,904	387,804	13,598	150	5	1376	13513	49	42	11	15146	1.0%	89.9%	9.1%	3949	3724	115	382	2170	880
JetBlue	JETBLUE	1,672,718	1,676,633	4,619	61	4	1076	4488	200	20	4	5853	1.1%	80.5%	18.4%	362	984	39	82	200	474
NE Corridor Feed	NJTRANSIT_NEC	2,750	2,932	263	247	9	18	0	1	0	0	275	93.1%	0.4%	6.5%	1	0	0	14	159	0
NJ Transit	NJ_TRANSIT	9,523	10,758	1,011	202	75	237	701	26	0	6	1247	22.2%	58.8%	19.0%	25	73	24	57	75	190
511NYC	511NYC	878	1,041	9,028	8374	1899	297	0	44	0	0	10614	96.8%	0.4%	2.8%	1	0	0	9	1916	0
PATH Airports	NY_NJAIRPORTS	6,722	7,684	93	19	31	38	32	4	0	2	126	39.7%	30.2%	30.2%	0	6	0	3	7	11
NYC Taxi and Limo Ser	NYC_TAXI_LIMO	3,287	3,624	52	0	0	26	20	10	0	17	73	0.0%	64.4%	35.6%	1	1	0	1	1	4
PATH	PATHTWEET	13,445	14,012	294	47	45	93	186	2	0	1	374	24.6%	50.5%	24.9%	62	37	10	14	14	17
NYC DOT	NYC_DOT	15,185	16,392	179	7	15	91	108	32	0	5	258	8.5%	56.2%	35.3%	0	3	1	4	3	2
LIRR	LIRRSCOOP	5,118	5,686	1,759	1631	58	153	7	19	0	0	1868	90.4%	1.4%	8.2%	6	4	0	12	253	2
MTA	MTAINSIDER	22,171	23,561	158	10	20	116	61	40	3	23	273	11.0%	46.5%	42.5%	1	9	2	2	1	13
Metro North	METRONORTHTWEET	5,063	5,632	242	102	15	55	99	8	0	0	279	41.9%	38.4%	19.7%	39	36	0	1	35	16
NYC Transit	NYCTSUBWAYSCOOP	30,439	32,545	1,903	556	206	1063	542	208	3	79	2657	28.7%	31.3%	40.0%	3	26	6	39	160	298
	TOTALS:			33,199	11406	2382	4639	19757	643	68	148	39043	35.3%	52.8%	11.9%	4450	4903	197	620	4994	1907
	AVERAGE:	165,169.5	168,331.1	2,553.8	877.4	183.2	356.8	1520	49	5.2	11	3003	35.3%	42.2%	22.5%	342.31	377	15	48	384	147

Appendix C: Proportions of all Tweets

■ Inform %   ■ Engage %   ■ Market %
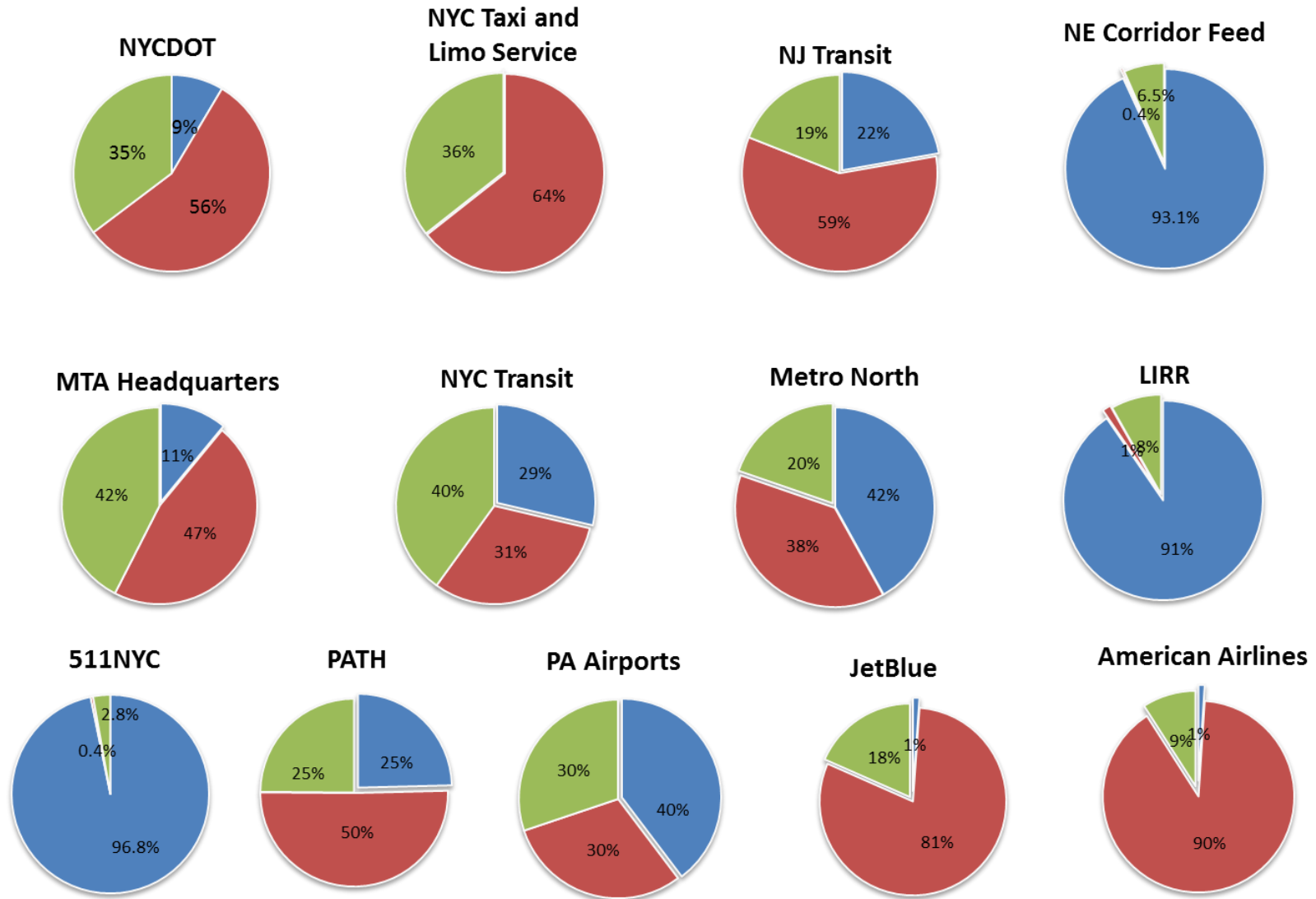
NYCDOT: 9%, 56%, 35%

NYC Taxi and Limo Service: 64%, 36%

NJ Transit: 22%, 59%, 19%

NE Corridor Feed: 93.1%, 0.4%, 6.5%

MTA Headquarters: 11%, 47%, 42%

NYC Transit: 29%, 31%, 40%

Metro North: 42%, 38%, 20%

LIRR: 91%, 1%, 8%

511NYC: 96.8%, 0.4%, 2.8%

PATH: 25%, 50%, 25%

PA Airports: 40%, 30%, 30%

JetBlue: 1%, 81%, 18%

American Airlines: 1%, 90%, 9%

Acknowledgements

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