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TWEETING THE BOSTON MARATHON BOMBINGS: A CASE STUDY OF TWITTER CONTENT IN THE IMMEDIATE AFTERMATH OF A MAJOR EVENT

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by

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TWEETING THE BOSTON MARATHON BOMBINGS: A CASE STUDY OF

TWITTER CONTENT IN THE IMMEDIATE AFTERMATH OF A MAJOR EVENT

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The project explored and analyzed the use of the social media tool Twitter in the immediate aftermath of a major event. Tweets and re-tweets from the first hour following the Boston Marathon Bombings on April 15, 2013 were collected and analyzed. The project used the application SIFTER from the company Textifer to identify the related tweets by inputting sixteen previously documented keywords related to the Boston Marathon Bombing. The tweets were then divided into several categories and subcategories to be analyzed. The company Twitter Counter was used to obtain accurate information, such as followers on, for various individual Twitter accounts. The findings showed that the majority of the tweets after the Boston Marathon Bombing were emotional reactions from Twitter users. Tweets that contained information were shared more often than tweets that were reactions or inquiries. The project showed that Twitter users were more likely to share information from the media than a witness or the average citizen. The project also showed that local media utilized several different Twitter accounts to broadcast breaking news by sending identical tweets simultaneously from each account. Users that followed specific media accounts were more likely to have shared tweets from accounts that appeared to be more related to breaking news, even when the accounts sent identical tweets at the exact same time.

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INTRODUCTION

On the afternoon of April 15, 2014, two bombs exploded at the Boston Marathon finish line in Boston, Mass. Three people were killed and over 260 people were injured. In the immediate aftermath, both witnesses and those who were not on the scene turned to social media to give information, get news and express reactions. The project explored and analyzed the use of the social media tool Twitter in the immediate aftermath of the bombings and examined the content shared by Twitter users in the form of "tweets." The focus was on the thousands of "tweets" sent by Twitter users containing information in the first hour following the Boston Marathon Bombings. The purpose of this project was to unveil what type of information was shared on social media, particularly Twitter, following a major event. The findings of this project are important because they demonstrate how social media can spread information. As social media has become a norm for delivering news, it is important for media channels to have a platform established.

LITERATURE REVIEW

Twitter

Andreas Kaplan and Michael Haenlein (2010) define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation of exchange of user-generated content." In layman terms, social media can also be described as "forms of electronic communication (including Web sites for social networking and microblogging) through which users

create online communities to share information, ideas, personal messages, and other content (including videos)," (Merriam-Webster, 2014). A key attribute of social media is community interaction. One of the main venues for social media is Twitter. On Twitter, users are encouraged to comment on the shared information, as well as spread the tweeted information to other Twitter followers. Twitter is one of the top five most popular social networks at the present time (Lunden, 2013) and will be the focus of this project. Twitter allows individuals to create accounts that are linked to a user name preceded by the @ symbol. Users are limited to 140 characters per message, which are termed "tweets" (Sanderson & Cheong, 2010). Each user can "follow" or be "followed" by other users. When a person follows another user, the followed tweets show up in the follower's timeline, which is a stream of tweets of all followed users (Twitter, 2014d). Followers can share tweets from another user by re-sending them, which are generally called "re-tweets." Tweets can be "re-tweeted" an infinite numbers of times, and therefore a very large audience can be reached by the re-tweeted information. There are Twitter users with millions of followers (Vincent, 2013).

Jack Dorsey, Biz Stone and Evan Williams thought up the concept of Twitter in 2006 as they sat in a brainstorming session at the podcast company *Odeo* (MacArthur, n.d.). Twitter (2014b) defines itself as a "real-time information network that connects (users) to the latest stories, ideas and opinions, about what (users) find interesting." All of this is done via tweets, which are 140 characters or less and can contain photos, videos and web links.

Users follow specific topics by searching for a hashtag or a keyword, which then brings up a feed of every tweet that includes the hashtag or keyword. Twitter's homepage

also shows the "trending topics" of the moment, which are comprised of the most tweeted hashtags and keywords. Twitter's Help Center (2014c) defines hashtags as being "used to mark keywords and topics and help to categorize tweets." The first hashtag was posted in a tweet on August 23, 2007 by a *Google* employee named Chris Messina. A few weeks later, in October 2007 Nate Ritter, a journalist, was tweeting updates about the San Diego wild fires. Messina asked Ritter to include #sandiegofire in all his tweets, which became the first widespread use of the hashtag to spread and share information (Zak, 2013).

Trending topics can be important, as they serve as novel or evolving sources of widespread online activity (Kairam, Morris, Teevan, Lievlin & Dumais, 2013). A trending topic can be breaking news or the season finale of a popular television show. When an earthquake struck Virginia in 2011, there was a tremendous spike in tweets that mentioned "earthquake" 15,000 in the first two minutes (Turner, 2012). Moments after the earthquake, the hashtags "#dcquake" and "#earthquake" were already trending topics (Finneran, 2011). Several hashtags associated with the Boston Marathon Bombings became trending topics, including "#bostonmarathon" and "#prayforBoston" (Kuperinsky, 2013).

Boston Marathon Bombings

Patriots' Day is a Massachusetts state holiday observed on the third Monday in April. The holiday marks the anniversary of the Battles of Lexington and Concord, the first battles of the American Revolution. The holiday has also become synonymous with the Boston Marathon, a 26.2-mile race with hundreds of thousands of runners and observers. The race begins in the suburb of Hopkinton with the finish line in the middle of the City of Boston (Applebaum, 2013). On April 15, 2013, two pressure cooker bombs

exploded at two separate locations near the Boston Marathon finish line. Three lives were lost and over 260 people were injured. Many people had severe, life-threatening injuries; 51 people were still hospitalized a week after the tragedy (Alcindor & Staglin, 2013).

The first bomb at the Boston Marathon finish line went off at 2:48 p.m. The user @DeLo posted the first tweet regarding the Boston Marathon Bombings at 2:50 p.m. The first tweet from a news organization was from *The Boston Globe*; nine minutes after the first bomb went off (Rogers, 2013). Twitter was used as a primary source of information directly after the Boston Marathon Bombings. *The Boston Globe* temporarily converted its homepage to a live blog that streamed tweets from Boston authorities, news outlets and ordinary citizens (Gilgoff & Lee, 2013).

Research Questions

The project answered three questions: 1. What types of tweets were posted on Twitter pertaining to the Boston Marathon Bombings? 2. What types of tweets are most likely to be shared or re-tweeted by users after the Boston Marathon Bombings? 3. How did the media, particularly the local media, use Twitter to broadcast information immediately after the Boston Marathon Bombings?

METHOD

Data Collection

This project analyzed the content of tweets regarding the events surrounding the Boston Marathon Bombings via a qualitative content analysis approach. Qualitative research is a method of inquiry employed in many different academic disciplines, traditionally in the social sciences, but also in market research and further contexts. Qualitative researchers aim to gather an in-depth understanding of human behavior and

the reasons that govern such behavior. The qualitative method investigates the why and how of decision making, not just what, where and when. Hence, smaller but focused samples are more often used than large samples. For this project, focusing on a small sample of tweets directly after the Boston Marathon Bombings provided a deeper understanding of the motives and objectives of tweeters. The small sample allowed the researcher to examine the tweets in a way that would not be possible with a large sample (Denzin & Lincoln, 2005). Data was collected for the one-hour period immediately following the first identified tweet that pertained to the bombings at 2:50 p.m. on April 15, 2013.

The project used already documented keywords from Gupta, Lamba and Kumaraguru's (2013) research paper "*$1.00 per RT #BostonMarathon #PrayForBoston: Analyzing Fake Content on Twitter.*" Twelve keywords were identified from the study including: #BostonStrong, #bostonbombing, #oneboston, bostonmarathon, #prayforboston, boston marathon, #bostonblasts, boston blasts, boston terrorist, boston explosions, bostonhelp, boston suspect. Four additional keywords from Gupta, Lamba and Kumaraguru's research paper (Dzhokhar Tsarnaev, #watertown, #manhunt, and Sean Collier) were omitted because they pertained to events that occurred between April 18 - 19, and therefore were not relevant in the one hour time period that this paper examined.

To collect the tweets, the company Texifter was selected for its historical search application called SIFTER, which uses Gnip's Historical PowerTrack application. Texifter sorts texts from a variety of social media sources, including Twitter. SIFTER was used as it is one of a limited number of applications that allows for historical searching of tweets. Gnip's Historical PowerTrack gives access to a complete archive of

public tweets since March 31, 2006 (Gnip, 2013). The collected tweets were then stored in Texifter's DiscoverText application. Identical tweets or re-tweets were removed through a feature in the SIFTER engine called de-duplication since one portion of the project was to analyze original tweets (Texifter, 2014). SIFTER then analyzed the duplicated tweets and place them into clusters based on data similarities.

The web-based solution DiscoverText was then used to analyze the tweets. Through human keystroke coding the overall coding process is sped up. The datasets that are not coded are then machine classified through help from the tweets that were human keystroke coded by training the program to identify what to look for when coding the un-coded tweets. Through the ActiveLearning process in SIFTER, the codes are then machine classified (Texifter, 2014).

In addition, the company Twitter Counter was used to obtain accurate information, such as followers on April 15, 2013, for various individual Twitter accounts. Twitter Counter is a service that tracks 94 million individual accounts on Twitter and provides statistics on the individual accounts to paying subscribers. Twitter Counter tracks followers, tweets and ranks the popularity of accounts (Twitter Counter, 2014).

## RESULTS AND INTERPRETATION

Data Analysis/Defining the Tweets

This project initially looked at the types of tweets that were posted on Twitter pertaining to the Boston Marathon Bombings in the immediate aftermath. The collected tweets were placed in groupings of 10-minute intervals (2:50-3:00 p.m., 3:00-3:10 p.m., and so on) in the DiscoverText interface. During the first 10 minutes a total of 3,737

tweets were posted that contained at least one of the 16 keywords. Each group was then broken down with the SIFTER de-duplication functionality, separating the re-tweets from original tweets. Of the 3,737 there were 1,706 that were non-duplicated tweets. Using the DiscoverText interface the de-duplicated tweets were then analyzed as bombing related or not bombing related. Since this project only looked at tweets related to the bombings, tweets that did not contain content related to the bombings were excluded. Of the 1,706 tweets, there were 1,192 tweets related to the bombings.

For the first 10-minute grouping all tweets were human keystroke coded so as to train the SIFTER tool to learn between bombing related and not bombing related. The bombing related tweets were then broken down by the type of tweet, into categories of information (Figure 1), reaction (Figure 2) or inquiry (Figure 3), and again were coded via human keystroke. The three categories were chosen from a study titled "*On Twitter: Anger greets the Zimmerman Verdict*" by Mark Jurkowitz and Nancy Vogt. The study showed that the four main categories in that study were "straight news," "anger at verdict," "other" and "media coverage" (Jurkowitz and Vogt 2013). For simplification the categories were renamed for this project. "Straight news" and "media coverage" became "information," "anger at verdict" became "reaction." The "other" category became "inquiry," as other studies have shown that many Twitter users actively seek information on Twitter (Holton, Baek, Coddington and Yaschur, 2014).

Figure 1
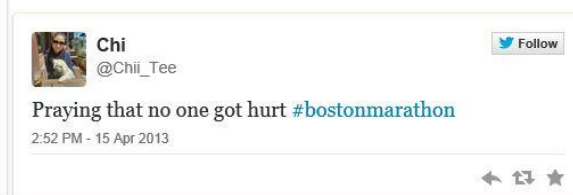
Figure 2

Figure 3

For the first 10 minutes after the bombings it was apparent that not everyone on Twitter was aware of the crisis unfolding in Boston. Greetings and well wishes went out to participants, including 57 tweets mentioning that a member of the music group New Kids on the Block, Joey McIntyre, had crossed the finish line only 10 minutes before the first bomb went off (Reed, 2013) including Twitter user @FashionDiva668 (Figure 4). Companies tweeted advertisements by local and national companies, such as @FiREiCEBoston, (Figure 5) with half-priced appetizers at 2:54 p.m., despite being just three blocks away from the bombing sites.
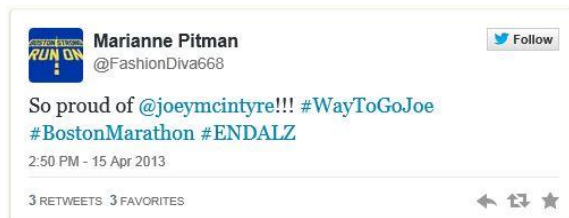
Figure 4

Figure 5

During the 3 p.m. mark the tweets turned into inquiry as to why the major news channels or even newspapers websites did not have information posted yet about the bombings. People expressed frustration as Twitter was one of the only resources for breaking news (Figures 6, 7).

Figure 6

Figure 7

As the hour ticked on, the volume of tweets that were not related to the Boston Marathon Bombings was miniscule. About five percent of tweets did not pertain to the incident. The content was mostly re-tweets from people who were most likely still unaware of the bombings. This grouping also included tweets that simply asked if a runner was from a certain town or state (Figure 8). The tweets that did not mention of the bombings were not included as bombing related. Other excluded tweets were composed in a foreign language. By the end of the 3:10 p.m. marker, all the major news channels had broadcast the incident. Tweets from users watching breaking news broadcast on television started to be posted (Figure 9).

Figure 8

Figure 9

During the 3:20 p.m. grouping the tweets increased in the "reaction" category, jumping from 46 percent in the prior 10 minute grouping to 57 percent of all tweets in the next grouping. The word "pray" was used over 2,400 times, either as the word itself or as part of a word such as prayer or prayers. Reaction tweets continued to increase for the rest of the hour. In the 3:30 p.m. grouping the tweets increased to 64 percent being reactionary and then 67 percent for the 3:40 p.m. group. While the reactionary tweets

increased the inquiry and informational tweets decreased. Informational tweets started at 63 percent during the 2:50 p.m. grouping and declined to 32 percent in the 3:40 p.m. 10 minute grouping. Inquiry tweets also decreased in half from 16 percent at the start of the hour in question to seven percent at the end of the hour (Figure 10).

Time	Tweet	Info	Info %	Reaction	React %	Inquiry	Inquiry %
2:50	491	308	63%	104	21%	80	16%
3:00	4,220	1,868	44%	1,530	36%	822	19%
3:10	19,042	7,822	41%	8,727	46%	2,493	13%
3:20	26,781	8,465	32%	15,174	57%	3,142	12%
3:30	27,891	7,631	27%	17,841	64%	2,329	9%
3:40	27,031	6,908	26%	18,155	67%	1,968	7%
Total	105,456	33,002	32%	61,531	58%	10,834	10%

Figure 10

Conspiracy theories emerged early on, but picked up with postings in the 3:30 p.m. grouping. At the time North Korea was threatening missile tests involving potential nuclear weapons (MacLeod, 2013). Tweets were littered in the 3:30 p.m. grouping that mentioned the possibility of North Korea orchestrating the bombings. Over 270 tweets listed "North Korea" in the text (Figure 11). In the 3:40 p.m. grouping there was even more with 325 tweets that contained the words "North Korea" (Figure 12).

Figure 11
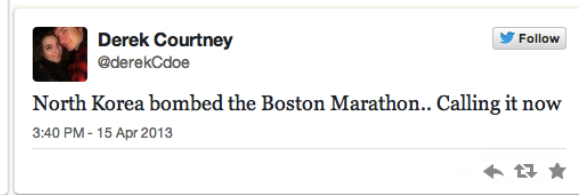
Figure 12

Analyzing Shared Tweets

After putting the tweets into categories, the project next examined the tweets that were shared, or re-tweeted by other users, in order to determine which tweets were considered the most important to share. The project analyzed the 50 most re-tweets in the "bombing-related" category of tweets (Appendix A, Table 1). This was completed by analyzing the clusters in each 10-minute grouping. If clusters of tweets were the same in different the 10 minute groupings they were put into the same grouping to combine and get a final tally of re-tweets. The sender of each original tweet was looked at and placed into three further subcategories: media, witness and unrelated citizen. These three categories were chosen after analyzing the 50 most shared tweets then looking up each individual user name on Twitter to identify the user.

The results from this exercise were clear. Out of the 50 most shared tweets related to the Boston Marathon Bombings, sent between 2:50 - 3:50 p.m. on April 15, 2013, 49 were considered to be "informational." There was only one tweet sent by @theoriginalwak at 2:54 p.m. that was considered to be "inquiry." There were no "reaction" tweets in the top 50 most re-tweets. Looking at the total numbers, 91,690 re-tweets, or 95.95% of the 50 top re-tweets were considered "informational" with only 3,903, or 4.08% of the top 50 re-tweets, were considered "inquiry" (Figure 13).

	Information	Reaction	Inquiry	Total
Total number of re-tweets	91,690 (95.92%)	0 (0%)	3,903 (4.08%)	95,593
Number of users	49 (98%)	0 (0%)	1 (2%)	50

Figure 13

The project next examined the senders of the original tweets, in order to see if Twitter users were more likely to share information from a media source, from someone on the scene who was associated with the media (categorized as "witness") or from someone who is not a member of the media, and was not on the scene of the Boston Marathon Bombings (categorized as "citizen"). The results here were also clear. The media represented 88% of the senders of the 50 most re-tweets. Only 2% of the senders of the 50 most re-tweets were witnesses to the event, and the remaining 8% of the senders were "citizens." These numbers show that Twitter users are more likely to share information from a media source than someone who was on the scene, or someone who is unrelated to the event (Figure 14).

	Media	Witness	Citizen	Total
Total number of re-tweets	82,990 (86.82%)	4,208 (4.40%)	8,395 (8.78%)	95,593
Number of users	44 (88%)	2 (4%)	4 (8%)	50

Figure 14

While the numbers show a clear preference to share a tweet from a media source, examining the top five most re-tweets paints a slightly different picture. The most shared tweet comes from @cnnbrk (Figure 15), which is a Twitter account associated with the American news channel CNN. This tweet was re-tweeted 12,562 times, and was categorized as "informational" and the sender as "media." This top re-tweet therefore accurately represents the overall findings.

The second most re-tweet was shared 10,099 times, and again, was categorized as informational. This tweet was sent by the media, *The Boston Globe,* @BostonGlobe, at 2:59:13 p.m. (Figure 16). This was the first tweet regarding the bombings from the media source (Pujol, 2013).

Figure 15   **Figure 16**

The third most re-tweet came from a sender who is not a part of the media and did not witness the Boston Marathon Bombings or any of the immediate aftermaths. The tweet was originally sent by the user @lohanthony, which belongs to a person named Anthony Quintal (Quintal, 2014). Quintal is a high-profile personality on social media known for his YouTube videos and tweets (Buzzfeed, 2014). At the time of the Boston Marathon, Quintal had roughly 500,000 followers on Twitter (Buzzfeed, 2014). Quintal's tweet fell into the "information" category. The original tweet (Figure 17) was shared 6,405 times, showing that many Twitter users are still likely to share information that comes from someone who is not considered a direct source.

The fourth most shared tweet again falls into the common subcategories of "information" and the sender is "media." The tweet was sent by *The Boston Globe*, which shows that two of the top five most re-tweets were both from a news source that was near the Boston Marathon Bombings. The tweet (Figure 18) was shared 4,494 times and was sent at 3:01:12 p.m., just 119 seconds after it's the first tweet.

Figure 17

Figure 18

Lastly, the fifth most shared tweet was sent by a witness and is not informational. The user @theoriginalwak has been identified as Tyler Wakstein (Wakstein, n.d.). Wakstein was present at the Boston Marathon Bombings and also took a widely-distributed picture at the scene (Nelson, 2013). His original tweet (Figure 19) was shared 3,905 times. The tweet was classified as an inquiry and is the only inquiry to make the top 50 re-tweets in the first hour after the Boston Marathon Bombings.
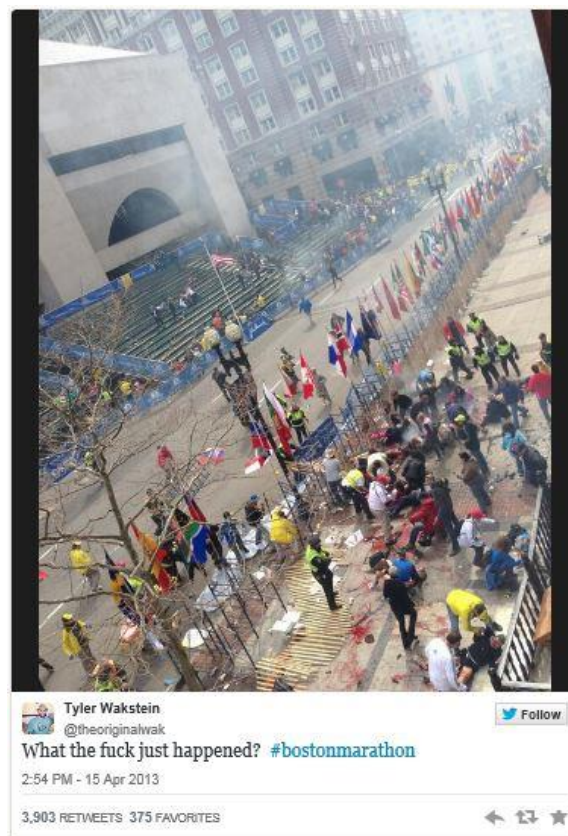
Figure 19

Twitter as a News Source

Finally, this project examined how information from the media, particularly the local media, was spread on Twitter immediately after the Boston Marathon Bombings. The project looked at several twitter accounts associated with the Boston newspaper *The Boston Globe,* which has three prominent twitter accounts associated with general news: @BostonGlobe, @BostonDotCom, and @GlobeMetro (Twitter, 2014a). These three accounts often have the exact same tweets, sent at the exact same time (or within seconds of each other), however, the rate of re-tweets varies widely.

The Boston Globe is a prominent newspaper in the Boston, Mass. area. The newspaper was founded in 1872 (Lyons, 1972) and was eventually purchased by *The New York Times*. The newspaper started a website, Boston.com, in 1995. *The Boston Globe* has won 23 Pulitzer Prizes since 1966, including winning the Pulitzer Prize on April 15, 2014, for their coverage on the Boston Marathon Bombings (Kahn, 2014). Coincidentally, the award for the Pulitzer Prize was announced on the exact one-year anniversary of the Boston Marathon Bombings. On September 12, 2011, *The Boston Globe* split its online content into two separate websites: bostonglobe.com and boston.com. The website bostonglobe.com became a paid subscription-based site, while the content on the website boston.com remained free (Sonderman, 2011). The staff for the website bostonglobe.com also runs the website boston.com, and both websites link to each other, and occasionally post the same content.

The newspaper, *The Boston Globe,* has its own Twitter account, @BostonGlobe, separate from its free content website (http://www.boston.com), @BostonDotCom. Both accounts post identical tweets (Figures 20-23) but @BostonGlobe's tweets had spread

more. The newspaper's posting was re-tweeted over ten thousand times, almost six times more than its online companion Boston.com. The two accounts tweet sharing ratios continued during the aftermath at 6:1, despite not having a 6:1 follower ratio.

Figure 20

Figure 21

Figure 22

Figure 23

In addition, the account @GlobeMetro also posted identical tweets (Figure 24) within seconds of the tweets from @BostonDotCom and @BostonGlobe. However, the rate of re-tweets was miniscule compared to the other two accounts.

Figure 24

There were four identical tweets from the three accounts (Figure 25) that all had re-tweets during the first hour after the Boston Marathon Bombings. At first glance, the numbers showed that @BostonGlobe is the most popular account, followed by @BostonDotCom and then @GlobeMetro (Figure 25).

Tweet	@BostonDotCom re-tweets	@BostonGlobe re-tweets	@GlobeMetro re-tweets	Total
BREAKING: A witness reports hearing two loud booms near the Boston Marathon finish line (2:57 p.m.)	77 (22.45%)	229 (66.76%)	37 (10.74%)	343
BREAKING NEWS: Two powerful explosions detonated in quick succession right next to the Boston Marathon finish line this afternoon (2:59 p.m.)	1964 (14.96%)	10,099 (76.95%)	1,061 (8.09%)	13,124
BREAKING NEWS: Multiple people injured near the Boston Marathon finish line after explosion (3:01 p.m.)	771 (13.94%)	4,494 (76.95%)	268 (4.84%)	5,533
Eyewitness: "Blood everywhere" after powerful explosions near Boston Marathon finish line (3:17 p.m.)	244 (12.36%)	1,647 (84.44%)	83 (4.2%)	1974

Figure 25

However, when one takes the amount of followers into account (Figure 26), it showed that @BostonGlobe is clearly the most popular and most re-tweeted followed by @GlobalMetro and then @BostonDotCom. The Twitter account @BostonGlobe had 187,633 followers on April 15, 2013. The Twitter account @BostonDotCom had 104,141 followers, and the account @GlobeMetro had only 22,066 followers on April 13, 2013. When looking at the information as a whole, it became clear that the followers for @BostonGlobe and @GlobeMetro are more likely to have shared informational tweets than the followers of @BostonDotCom (Figure 26).

| Twitter account Number of followers on 4/15	% of followers that share tweet at 2:57 p.m.	% of followers that share tweet at 2:59 p.m.	% of followers that share tweet at 3:01 p.m.	% of followers that share tweet at 3:17 p.m.	Average %
@BostonDotCom 104,141	0.074%	1.89%	0.74%	0.24%	0.74%
@BostonGlobe 187,633	0.12%	5.38%	2.4%	0.88%	2.2%
@GlobeMetro 22,066	0.17%	4.8%	1.22%	0.38%	1.64%

Figure 26

DISCUSSION

Limitations/Directions for Further Research

By using 16 keywords already used in prior research, there was potential for tweets to not show up that were relevant to the project. This was present in other research where the user DeLo's tweet was the first to actually post regarding the bombings. Since DeLo's post did not contain any of the search keywords it was omitted from this project's results. Another example is @Boston_to_a_T's tweet. The user was one of the first people to tweet about the incident with a photo that re-tweeted 2,055 times (Figure 27). Since the tweet only contained "Explosion at copy (sic)" it was not found the collected data. As the photo was shared, tweeters acknowledged @Boston_to_a_T's original post as the source of the picture. In turn the photo continuously showed up in this project's data because it was re-tweeted with text that contained one of the 16 keywords. An

addition for future research would be to add more keywords, such as "explosion," and answer this project's research questions again.
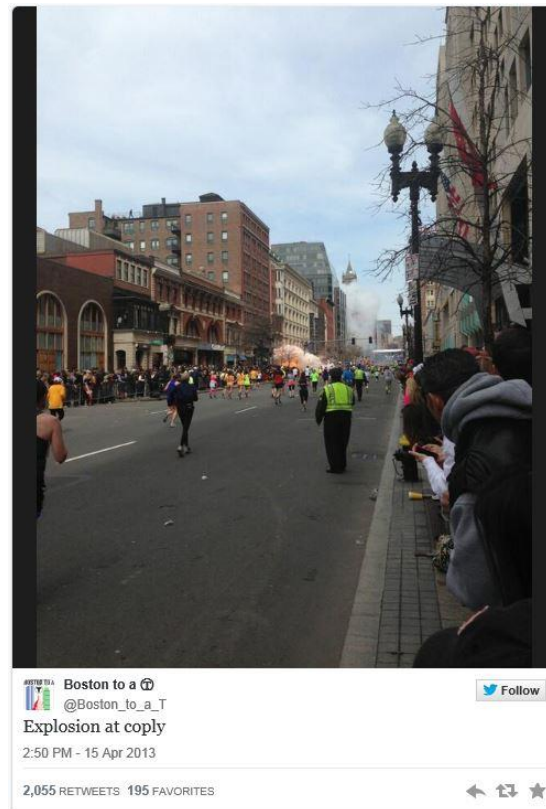
<u>Figure 27</u>

Due to the sheer volume of tweets related to the 16 keywords it was not possible to read each and every tweet posted. With help from automated and trained tool DiscoverText it was possible to classify each tweet. Although there is a chance of variance, there is no way to get tweets coded exactly unless each tweet was manually coded by hand. In the two weeks following the bombings over 11 million tweets (Figure 28) were posted related to the 16 keywords. The majority of the tweets, 6.4 million came during the first eight hours (Figure 29). A practice for future research would be to expand

the time frame from one hour to eight hours and re-answer the projects research questions.
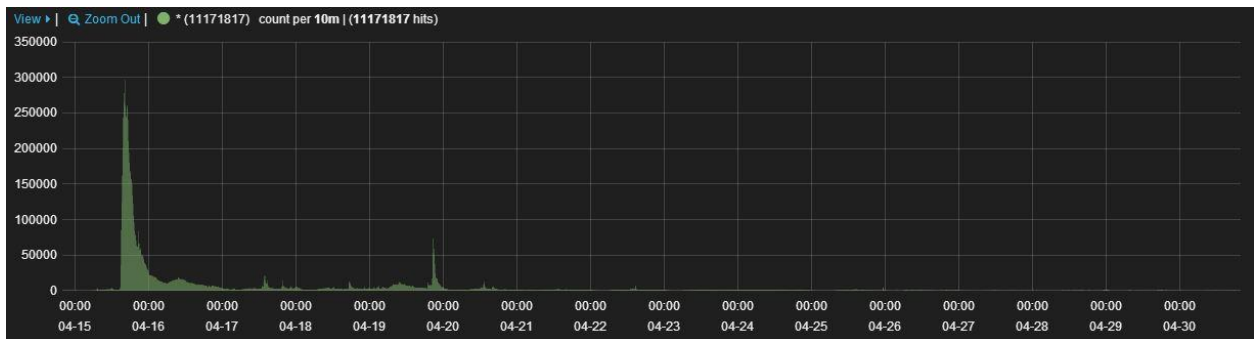
Figure 28
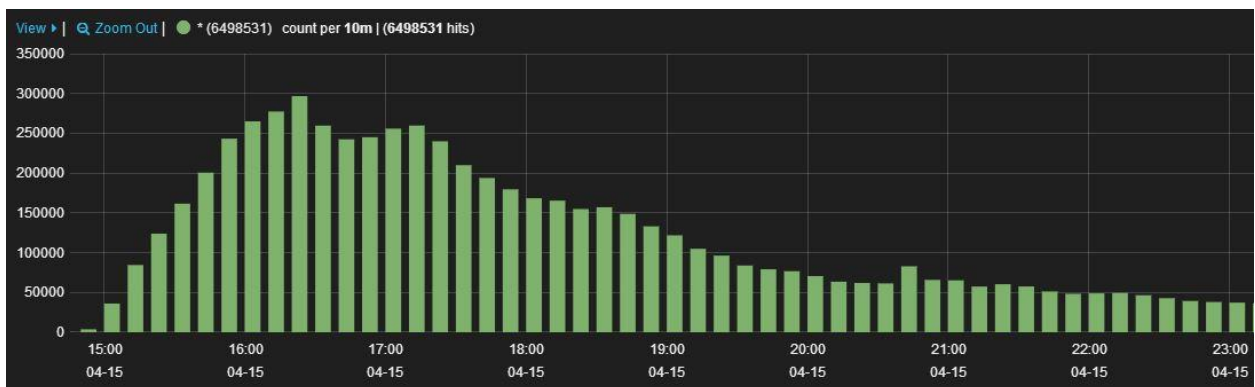
Figure 29

There were two major spikes of activity during the 4:20 and 5:10 p.m. groupings. Figure 29 emphasizes the spikes; the times along the X axis are in Greenwich Mean Time. It could be beneficial to evaluate the tweets posted during the two spikes in activity. This could help determine if updates were released by officials or news agencies and caused the increase in posts. A question to consider would be "Why did the quantity of tweets spike during the 4:20 and 5:10 p.m. groupings?"

Overall Commentary

The main purpose of this project was to examine how Twitter users utilize Twitter immediately after a major event. The project first asked the question "what types of tweets are sent immediately after a major event?" After sorting the tweets into three categories (information, reaction, and inquiry), the results show most tweets are reactionary (Figure 30). The majority of Twitter users created original texts to share their reactions to the event, whether it is shock, outrage, sadness, etc. It also shows that not many Twitter users are utilizing Twitter as a resource to request more information immediately after a major event. Instead, the users seem to be sending information, and showing their reactions to the event.

Time	Total	De-dup	Bombing Related	Original Tweets	Info	Reaction	Inquiry
2:50 p.m.	3,737	1,706	1,192	491	308	104	80
3:00 p.m.	36,224	12,737	12,176	4,220	1,868	1,530	822
3:10 p.m.	84,787	39,426	36,626	19,042	7,822	8,727	2,493
3:20 p.m.	124,323	63,145	60,191	26,781	8,465	15,174	3,142
3:30 p.m.	162,226	81,089	76,718	27,891	7,631	17,841	2,329
3:40 p.m.	201,222	96,035	90,992	27,031	6,908	18,155	1,968
Total	612,519	294,138	277,895	105,456	33,002	61,531	10,834

Figure 30

Second, the paper asked "what do Twitter users share or re-tweet immediately after a major event?" The results here were very clear. Out of the top 50 re-tweets, 49 re-tweets were informational, meaning that Twitter users considered it most important to

spread information about the event. Although the majority of original tweets are reactions, none of the top re-tweets are reactions, showing that Twitter users did not consider it worthwhile to share a reaction from a person that they are following. The project also looked at which accounts were being re-tweeted. The vast majority of the accounts that were highly re-tweeted in the first hour after the Boston Marathon Bombings where associated with the media (Appendix A, Table 1), which demonstrated that Twitter users were more likely to have shared a tweet from a (supposedly) reputable source instead of any ordinary Twitter user. There was one exception to this; the Twitter user "lohanthony" received a large amount of re-tweets, even though the Twitter account belongs to a 14-year-old boy who is celebrity of sorts (Buzzfeed, 2014). Otherwise, as 86.82% of the re-tweets were from members of the media, the results showed that Twitter users prefer to spread information directly from the media.

Last, the paper asked "how was information from the media shared on Twitter immediately after the Boston Marathon Bombings?" The project analyzed three accounts associated with *The Boston Globe* that each had a varied number of followers. The accounts re-tweeted identical tweets at the exact same time, which made them easy to compare. Unsurprisingly, the account with the most followers, @BostonGlobe, had the most re-tweets. At first glance, it seemed that the second most popular account was @BostonDotCom. However, after the rate of re-tweets are compared to the amount of followers, the tweets by @GlobeMetro had re-tweeted more than the those of @BostonDotCom. The Twitter account @GlobeMetro had an average of 1.64% of followers that re-tweeted, while @BostonDotCom had an average of 0.74% followers that re-tweeted. Part of this may have been the definitions of each Twitter account. The

account @GlobeMetro has the official name of "Boston Globe News" and is described as an account for breaking news (Twitter, 2014a). The account @BostonDotCom is described as "what's going on in Boston, from news to events to arts to sports" (Twitter, 2014a). This account tweets a wide variety of information, instead of just news. Therefore, followers may be more likely to share hard news facts from the Twitter account that is more focused on breaking news.

CONCLUSION

The project thoroughly examined Twitter content the immediate hour after the Boston Marathon Bombings. The project showed most tweets after a major event are reactionary, as many Twitter users turned to social media to express their feelings and emotions. However, the project also showed that Twitter users actively shared information immediately after the Boston Marathon Bombings, which is valuable information for media outlets in the future. The project showed that Twitter users were more likely to share information from the media than a witness or the average citizen. Users that followed specific media accounts were more likely to have shared tweets from accounts that appeared to be more breaking-news related, even when the accounts sent identical tweets simultaneously. Lastly, a strong social media presence was also highlighted as society is moving towards social media sharing devices and applications such as Twitter to source answers immediately following an event.

When looking at the third question, "how did local media use Twitter broadcast breaking news immediately following the Boston Marathon Bombings?" the findings showed that a social media strategy is an important factor for any media outlet. One could

draw the conclusion that the number of Twitter accounts a media outlet had, in this example, *The Boston Globe*, related to how much news was spread. *The Boston Globe* had a total of five Twitter accounts with over 20,000 followers each (Figure 29). Out of the top five most re-tweets, two were posted by *The Boston Globe's* @BostonGlobe username. It also had six of the top 50 most shared tweets. The *Boston Herald* has one primary Twitter account, @BostonHerald, with over 20,000 followers and had none in the top 50 most shared tweets. The newspaper organization has several spin-off accounts, namely @BosHeraldSports, @BostonHeraldENT and @BostonHeraldHS. One account associated with the Boston Herald organization and has over 20,000 followers is Jeff Howe, @jeffphowe, a Herald staff writer that covers the New England Patriots beat (Figure 31).

Media Outlet	Twitter account @	Followers
Boston Globe	@BostonGlobe	285,185
Boston.com	@BostonDotCom	174,259
Boston Globe News	@GlobeMetro	47,122
Boston Herald	@BostonHerald	43,199
Jeff Howe, covers Patriots for Herald	@jeffphowe	21,527
Boston Globe Sports	@BGlobeSports	21,096
Boston Herald High School	@BostonHeraldHS	6,795
Boston Herald Sports	@BosHeraldSports	6,574
Boston Herald Edge	@BostonHeraldENT	4,365

Figure 31

At 2:57:38 p.m. @BostonHerald re-tweeted another Twitter user's post (Figure 32). It was not until 3:11:13 p.m. that the *Boston Herald's* primary Twitter account, @BostonHerald, posted its first original tweet (Figure 33). This tweet came 14 minutes after *The Boston Globe's* first original tweet (Figure 16). In all, the *Boston Herald* only sent four tweets (Figures 32, 33, 34, 35) in the first hour, two of which were re-tweets (Figures 32, 34). All of *The Boston Globe* and the *Boston Herald's* first hour of tweets can be found in Appendix 1, Table 2.
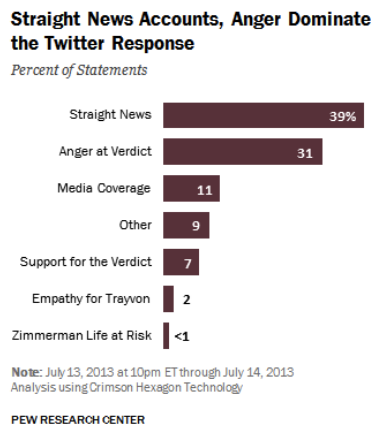

Figure 32

Figure 33

Figure 34

Figure 35

Dissimilar results were found when comparing the results to Jurkowitz and Vogt's (2013) research that looked at the type of tweets that were posted after the George Zimmerman verdict was announced. The study looked at five million tweets over 26 hours after the announcement of the verdict. While this project on the Boston Marathon Bombings found that 32 percent of the tweets shared news, the Zimmerman study found 39 percent of the tweets shared news without any opinion. The major difference between the types of tweets was this project found 58 percent of the tweets were reactionary while

the Zimmerman study found 31 percent shared anger at the verdict (Figure 36). The difference could be because the topics are two drastically different types of events. The Boston Marathon Bombings was a tragic and sudden event that encompassed a whole city, where the Zimmerman trial was one of deep controversy, involving race.

Straight News Accounts, Anger Dominate the Twitter Response
Percent of Statements

Straight News	39%
Anger at Verdict	31
Media Coverage	11
Other	9
Support for the Verdict	7
Empathy for Trayvon	2
Zimmerman Life at Risk	<1

Note: July 13, 2013 at 10pm ET through July 14, 2013
Analysis using Crimson Hexagon Technology

PEW RESEARCH CENTER

Figure 36

REFERENCES

Alcindor, Y., & Staglin, D. (2013, Apr 23). Boston one week later: Silence, bells and a funeral. *USA Today*. Retrieved on Nov 8, 2013 from http://www.usatoday.com/story/news/nation/2013/04/22/boston-bombing-silence-bells-memorial-funeral/2102745/

Applebaum, Y. (2013, Apr 17). The History of the Boston Marathon: A Perfect Way to Celebrate Patriots' Day. *The Atlantic*. Retrieved on Jan 18, 2014 http://www.theatlantic.com/national/archive/2013/04/the-history-of-the-boston-marathon-a-perfect-way-to-celebrate-patriots-day/275023/

BuzzFeed. (2013, July 8). 10 People Who Aren't Afraid To Be Who They Are. [Web log post]. Retrieved on Apr 2, 2014 from http://www.buzzfeed.com/allstateinsurance/people-who-arent-afraid-to-be-who-they-are

Denzin, N. K. & Lincoln, Y. S. (Eds.). (2005). *The Sage Handbook of Qualitative Research (3rd ed.).* Thousand Oaks, CA: Sage. ISBN 0-7619-2757-3

Finneran, K. (2011, Aug 23). The Tweet that Shook the World. *Fox News*. Retrieved on Nov 8, 2013 from www.foxnews.com/tech/2011/08/23/tweet-that-shook-world/1/4

Gilgoff, D. & Lee J. (2013, Apr 15). Social Media Shapes Boston Bombings Response. *National Geographic Daily News.* Retrieved on Sept 16, 2013 from http://news.nationalgeographic.com/news/2013/13/130415-boston-marathon-bombings-terrorism-social-media-twitter-facebook/?rptregcta=reg_free_np&rptregcampaign=20131016_rw_membership_n1p_us_dr_w#

Gnip (2013). Historical PowerTrack. Retrieved on Apr 14, 2014 from http://gnip.com/products/historical/historical-powertrack/

Gupta, A., Lamba, H. & Kumaraguru, P. (2013, Sept 17). $*1.00 per RT #BostonMarathon #PrayForBoston: Analyzing Fake Content on Twitter*. Paper presented at eCrime Research Summit 2013: Unifying the Global Response to Cybercrime. Retrieved on Dec 19, 2013 from http://precog.iiitd.edu.in/Publications_files/ecrs2013_ag_hl_pk.pdf

Holton, A.E., Baek, K., Coddington, M. & Yaschur, C. (2014). Seeking and Sharling: Motivation for Linking on Twitter. *Communications Research Reports,* 31:1, 33-40, DOI: 10.1080/08824096.2013.843165

Jurkowitz, M. & Vogt, N. (2013, July 17). On Twitter: Anger greets the Zimmerman verdict. *Pew Research Center*. Retrieved Mar 3, 2014 from http://www.pewresearch.org/fact-tank/2013/07/17/on-twitter-anger-greets-the-zimmerman-verdict/

Kahn, J.P. (2014, Apr 15). Boston Globe wins Pulitzer for Marathon bombing coverage. *The Boston Globe.* Retrieved on Apr 16, 2014 from http://www.bostonglobe.com/metro/specials/1972/03/05/how-globe-began/FijjEObRblu7d1XslyB4GO/story.html

Kairam, S. R., Morris, M. R., Teevan, J., Liebling, D., & Dumais, S. (2013). Towards Supporting Search over Trending Events with Social Media. *International Conference on Weblogs and Social Media (ICWSM '13)*

Kaplan A. & Haenlein M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons* 53 (1). p. 61

Kuperinsky, A. (2013, Apr 20). Trending: Boston bombing heads a week of tumult, prayer and trauma. [Web log post]. Retrieved on Nov 8, 2013 from http://blog.nj.com/entertainment_impact/print.html?entry=/2013/04/boston_marathon_dzhokhar_tsarnaev.html

Lunden, I. (2013, Dec 30). 73% Of U.S. Adults Use Social Networks, Pinterest Passes Twitter In Popularity, Facebook Stays On Top. *Tech Crunch.* Retrieved on Jan 18, 2014 from http://techcrunch.com/2013/12/30/pew-social-networking/

Lyons, L.M. (1972, Mar 5). How the Globe Began. *The Boston Globe.* Retrieved on Mar 15, 2014 from http://www.bostonglobe.com/metro/specials/1972/03/05/how-globe-began/FijjEObRblu7d1XslyB4GO/story.html

MacArthur, A. (n.d.). The Real History of Twitter, In Brief: How the micro-messaging wars were won. *About.* Retrieved on Sept 4, 2013 from http://twitter.about.com/od/Twitter-Basics/a/The-Real-History-Of-Twitter-In-Brief.htm

MacLeod, C. (2013, Apr 15). Why North Korean crisis isn't just business as usual. *USA Today*, p. 01A.

Nelson, S. (2013, Apr 15). Explosions Reported at Boston Marathon Finish Line. Blood pictured in photo of possible bomb attack. *U.S News & World Report.* Retrieved Jan 11, 2014 from http://www.usnews.com/news/newsgram/articles/2013/04/15/explosions-reported-at-boston-marathon-finish-line

Patriots' Day Mass. Gen. Laws ch. 6, § 12j. Massachusetts General Laws. The General Court of the Commonwealth of Massachusetts. Retrieved from https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter6/Section12J

Pujol, P. (2013, Apr 19). Social Media Journalism. Twitter Live Coverage of Crisis – Risks and Rewards for @BostonGlobe – Impact Analysis Boston Marathon Bombing – April 2013. Retrieved on Mar 26, 2014 from http://reputation-metrics.org/2013/04/19/social-media-journalism-twitter-live-coverage-of-crisis-risks-and-rewards-for-bostonglobe-impact-analysis-boston-marathon-bombing-april-2013/

Quintal, A. (n.d.). Lohanthony.com it's Anthony, bitch [Web log post]. Retrieved on Mar 22, 2014 from http://lohanthony.com/about-me/

Rogers, S. (2013, July 10). The Boston Bombing: How journalists used Twitter to tell the story. [Web log post]. Retrieved on Sept 16, 2014 from https://blog.twitter.com/2013/the-boston-bombing-how-journalists-used-twitter-to-tell-the-story

Sanderson, J., & Cheong, P. (2010). Tweeting Prayers and Communicating Grief Over Michael Jackson Online. *Bulletin Of Science, Technology & Society*, *30*(5), 328-340. doi:10.1177/0270467610380010

Sonderman, J. (2011, Sept 14). Paywalled BostonGlobe.com launches, while Boston.com remains free. *Poynter*. Retrieved on Mar 24, 2014 from http://www.poynter.org/latest-news/top-stories/145687/subscription-only-bostonglobe-com-launches-with-boston-com-free/

Merriam-Webster. (2014). Merriam-Webster Online: Dictionary and Thesaurus. Retrieved on Aug 5, 2013 from http://www.merriam-webster.com/dictionary/social%20media

Texifter, LLC. (2014). Solutions, SIFTER. Retrieved on Apr 14, 2014 from http://texifter.com/Solutions/SIFTER-2.html

Turner, J. (2012, Nov 2). #InPraiseOfTheHashtag. *The New York Times Magazine*. Retrieved Sept 16, 2013 from http://www.nytimes.com/2012/11/04/magazine/in-praise-of-the-hashtag.html?pagewanted=all&_r=0

Twitter, Inc. (2014a). http://twitter.com. Retrieved Apr 24, 2014

Twitter, Inc. (2014b). New user FAQs. Retrieved on Nov 2, 2013 from https://support.twitter.com/articles/13920-new-user-faqs

Twitter, Inc. (2014c). Using hastags on Twitter. Retrieved on Nov 9, 2013 from
https://support.twitter.com/articles/49309-using-hashtags-on-twitter

Twitter, Inc. (2014d). What's a Twitter Timeline? Retrieved on Feb 21, 2014 from
https://support.twitter.com/articles/164083

Twitter Counter (2014). About Twitter Counter. Retrieved on Apr 17, 2014 from
http://twittercounter.com/pages/about

Vincent, P. (2013, Nov 5). Is Katy Perry faking it? Roar singer now has the most Twitter
followers. *The Sydney Morning Herald.* Retrieved on Jan 18, 2013 from
http://www.smh.com.au/

Wakstein, T. [theoriginawak]. (n.d.) Feed (Twitter page). Retrieved Mar 22, 2014 from
https://twitter.com/theoriginalwak

Zak, E. (2013, Oct 3). How Twitter's Hashtag Came to Be. [Web log post]. Retrieved on
Nov 8, 2013 from http://blogs.wsj.com/digits/2013/10/03/how-twitters-hashtag-
came-to-be/

Appendix A

Table 1

Username	RT	Tweet	Time	Type
@cnnbrk	12,562	Explosion reported near Boston Marathon finish line, CNN affiliate WCVB reports. http://bit.ly/117FlHz	3:07:16 p.m.	Media
@BostonGlobe	10,099	BREAKING NEWS: Two powerful explosions detonated in quick succession right next to the Boston Marathon finsh line this afternoon.	2:59:13 p.m.	Media
@lohanthony	6,405	#prayforboston there was an explosion during the boston marathon http://twitter.com/LOHANTHONY/status/323882706251431936/photo/1pic.twitter.com/w4FxYhcP2S	3:37:09 p.m.	Citizen
@BostonGlobe	4,494	BREAKING NEWS: Multiple people injured near the Boston Marathon finish line after explosion	3:01:12 p.m.	Media
@theoriginalwak	3,903	what the fuck just happened? #bostonmarathon	2:54:06 p.m.	Witness
@ezraklein	3,398	This Vine shows the blast itself: https://vine.co/v/bFdt5uwg6JZ #BostonMarathon	3:40:29 p.m.	Media
@cnnbrk	2,738	Two blasts at #Boston Marathon have injured at least 6 people,some seriously; situation still developing. http://on.cnn.com/YXVW3Y	3:40:04 p.m.	Media
@cbsnews	2,621	PHOTO: Explosion rocks Boston, MA near finish line of Boston Marathon	3:22:33 p.m.	Media
@cnnbrk	2,522	New York City has tightened security in wake of explosions at #Boston Marathon. We don't know extent of casualties. http://on.cnn.com/YXVW3Y	3:44:11 p.m.	Media
@bbcbreaking	2,385	WATCH LIVE: Two explosions near finish line of Boston Marathon leave unknown number of people injured http://bbc.in/Zt1AYu	3:29:02 p.m.	Media
@cnnbrk	2,352	4 victims of explosions near Boston Marathon finish line are at emergency room at Massachusetts General Hospital. http://on.cnn.com/YXVW3Y	3:35:52 p.m.	Media
@AP	2,155	Explosions at Boston Marathon finish line, bloody spectators being carried to the medical tent for runners:	3:11:48 p.m.	Media

@Fara1	2,137	Police officer near Boston Marathon finish line: 'There are secondary devices that have been found and are unexploded.'	3:37:52 p.m.	Media
@AP	2,000	BREAKING: Two explosions at the finish line of the Boston Marathon result in injuries -BW	3:05:12 p.m.	Media
@BostonDotCom	1,964	BREAKING NEWS: Two powerful explosions detonated in quick succession right next to the Boston Marathon finsh line this afternoon.	2:59:13 p.m.	Media
@thedailybeast	1,929	PHOTO: The Boston Marathon explosion captured from the CBS News live stream	3:19:21 p.m.	Media
@bbcbreaking	1,838	Bloodied people taken to medical tent after two explosions near Boston Marathon. "Lot of people down" runner tells AP http://bbc.in/Zt18t2	3:24:33 p.m.	Media
@breakingnews	1,806	Reports of multiple injuries after 2 explosions near the Boston Marathon finish line - @cbsboston; updates: http://bit.ly/Zwsi1j	3:19:05 p.m.	Media
@bbcbreaking	1,753	US media report two explosions near finish line of Boston Marathon	3:03:07 p.m.	Media
@cnn	1,657	Explosions rock Boston Marathon, several injured - the latest information on @CNN TV and here: http://on.cnn.com/YXWeI7	3:35:25 p.m.	Media
@BostonGlobe	1,647	Eyewitness: "Blood everywhere" after powerful explosions near Boston Marathon finish line.	3:17:41 p.m.	Media
@FoxNews	1,635	BREAKING: Boston Marathon HQ locked down after report of explosion, spokesman says http://fxn.ws/XNsAGX #Bostonmarathon	3:07:32 p.m.	Media
@breakingnews	1,626	Reports of explosion at the Boston Marathon; witness heard 2 loud booms near finish line - BostonDotCom, @KRKO1380	3:00:11 p.m.	Media
@cnn	1,624	There has been at least one explosion near the Boston Marathon finish line, according to CNN affiliate WCVB. Details on @CNN TV now.	3:08:13 p.m.	Media
@bbcbreaking	1,527	US media reporting multiple injuries from "large explosions" near finish line of Boston Marathon.Via @BBCNewsUS	3:10:40 p.m.	Media

@bbcbreaking	1,318	Boston Marathon explosions: Eastern Massachusetts branch of Red Cross sets up disaster response centre in area http://bbc.in/15b3mV3	3:37:27 p.m.	Media
@breakingnews	1,291	Live video: Scene at Boston Marathon finish line after explosions reported - @CBSboston http://cbsloc.al/116qGiI	3:06:09 p.m.	Media
@deadspin	1,145	Explosions reported at the Boston Marathon. Dozens injured. Warning: grisly photo. http://deadsp.in/rHbShPY	3:03:28 p.m.	Media
@FoxNews	1,111	UPDATE: Multiple casualties reported after two explosions at Boston Marathon http://fxn.ws/117FdrL #bostonmarathon	3:39:22 p.m.	Media
@ReutersUS	1,110	Boston marathon headquarters locked down after explosion reported near finish line: spokesman #breaking	2:56:26 p.m.	Media
@GlobeMetro	1,061	BREAKING NEWS: Two powerful explosions detonated in quick succession right next to the Boston Marathon finsh line this afternoon.	2:59:30 p.m.	Media
@nightshiftpol	874	First pictures of Boston Marathon, unconfirmed terror reports:	2:57:30 p.m.	Citizen
@cbsnews	859	BREAKING NEWS: One or more apparent explosions hit near Boston Marathon Finish line: LIVE VIDEO from @CBSBoston: http://cbsloc.al/116hZFc	3:07:17 p.m.	Media
@runnersworld	794	BREAKING: Bombs reported near Boston finish line http://ow.ly/k5qxy Will add as story develops. #BostonMarathon	3:06:39 p.m.	Media
@BostonDotCom	771	BREAKING NEWS: Multiple people injured near the Boston Marathon finish line after explosion	3:01:12 p.m.	Media
@reformedbroker	687	Here's the explosion in Boston Marathon detonating, this looks very bad	3:01:02 p.m.	Citizen
@Reuters	574	Live updates on #BostonMarathon explosion: http://reut.rs/BostonExplosion	3:23:43 p.m.	Media
@ReutersUS	556	Boston police confirm explosion near Boston Marathon finish line, unsure of number of injured #breaking	3:15:40 p.m.	Media
@AP	485	A runner at the Boston Marathon: "There are a lot of people down": http://apne.ws/ZlTAM2 -BW	3:35:12 p.m.	Media
@deadspin	470	We're updating our post on the explosions at the Boston Marathon.	3:22:14 p.m.	Media

@AP	443	PHOTO: The finish line of the Boston Marathon after an explosion: http://apne.ws/ZlVWdR Details: http://apne.ws/11ip4lN -CC	3:42:32 p.m.	Media
@cbsnews	441	LIVE BREAKING NEWS VIDEO: Scene of explosion near finish line of Boston marathon. WATCH: http://cbsn.ws/T5uQjQ	3:09:04 p.m.	Media
@chanyasulkit	429	Just heard that bombs went off at #boston marathon finish line	2:55:13 p.m.	Citizen
@antderosa	403	Live blog from @Reuters on Boston Marathon explosion: http://reut.rs/BostonExplosion	3:11:51 p.m.	Media
@ReutersUS	391	Two explosions near finish line of Boston Marathon: witnesses http://reut.rs/ZWsXsL live coverage: http://reut.rs/BostonExplosion	3:45:10 p.m.	Media
@ReutersUS	343	Boston Marathon locked down after two blasts heard near finish line #breaking	3:05:09 p.m.	Media
@skynews	330	Explosions Reported At Boston Marathon http://news.sky.com/story/1078597/explosions-reported-at-boston-marathon	3:09:07 p.m.	Media
@thedailybeast	327	Editorial note: we are calling the Boston Marathon explosion a "blast" at this point, no confirmed reports of a "bombing."	3:27:09 p.m.	Media
@Boston_Fireman	305	MCI: 20-30 people injured in front of Boston Public Library after explosion at finish line of Boston Marathon	2:56:05 p.m.	Witness
@7news	298	Marathon has been stopped. RT @7News: BREAKING: Explosion at Boston Marathon finish line. Stay with #7News for details.	3:03:29 p.m.	Media

Table 2

Username	RT	Tweet	Time	Note
@BostonDotCom	77	BREAKING: A witness reports hearing two loud booms near the Boston Marathon finish line.	2:57:13 p.m.	
@GlobeMetro	37	BREAKING: A witness reports hearing two loud booms near the Boston Marathon finish line.	2:57:13 p.m.	
@BostonGlobe	229	BREAKING: A witness reports hearing two loud booms near the Boston Marathon finish line.	2:57:14 p.m.	
@BostonHerald	16	RT @reutersus: Boston marathon headquarters locked down after explosion reported near finish line: spokesman #breaking	2:57:38 p.m.	Re-tweet
@GlobeMetro	1,061	BREAKING NEWS: Two powerful explosions detonated in quick succession right next to the Boston Marathon finsh line this afternoon.	2:59:30 p.m.	
@BostonDotCom	1,964	BREAKING NEWS: Two powerful explosions detonated in quick succession right next to the Boston Marathon finsh line this afternoon.	2:59:31 p.m.	
@BostonGlobe	10,099	BREAKING NEWS: Two powerful explosions detonated in quick succession right next to the Boston Marathon finsh line this afternoon.	2:59:31 p.m.	
@BostonDotCom	771	BREAKING NEWS: Multiple people injured near the Boston Marathon finish line after explosion	3:01:12 p.m.	
@BostonGlobe	4,494	BREAKING NEWS: Multiple people injured near the Boston Marathon finish line after explosion	3:01:12 p.m.	
@BostonHerald	35	BREAKING NEWS: Two huge blasts rock Boston Marathon finish line... http://fb.me/2aQ1HyCHn	3:11:13 p.m.	
@GlobeMetro	83	Eyewitness: "Blood everywhere" after powerful explosions near Boston Marathon finish line.	3:17:40 p.m.	
@BostonDotCom	244	Eyewitness: "Blood everywhere" after powerful explosions near Boston Marathon finish line.	3:17:41 p.m.	
@BostonGlobe	1,647	Eyewitness: "Blood everywhere" after powerful explosions near Boston Marathon finish line.	3:17:41 p.m.	
@BostonGlobe	262	Photo, details as explosion rocks finish line at #BostonMarathon http://b.globe.com/17C0Kz7	3:31:19 p.m.	
@BGlobeSports	7	Photo, details as explosion rocks finish	3:31:22 p.m.	

		line at #BostonMarathon http://b.globe.com/17C0Kz7		
@BostonHerald	3	RT @bbcbreaking: WATCH LIVE: Two explosions near finish line of Boston Marathon leave unknown number of people injured…	3:33:01 p.m.	Re-tweet
@BostonHerald	28	Two huge blasts rock Boston Marathon finish line: Two huge explosions rocked the Boston Marathon finish line a... http://bit.ly/11inW1C	3:37:47 p.m.	