

3.6 Adoption of Twitter

To better understand Twitter adoption, we collected information about all the new users in each data set. New users are those user accounts that were created during the data collection timeframe for each event. We compared the hurricane-based or convention-based new user data to the general pool of Twitter users, with a random sample of all new Twitter users from August 21, 2008 to September 14, 2008. We examined how many tweets each new user has sent since the time of the original data collection to understand the adoption patterns of these users. To do this, we queried Twitter to find out what the updated tweet count for each new user was on January 8-9, 2009. Using these recent tweet counts we could determine how many of these new users could be considered *active users*. By active users, we mean those users who have contributed one or more tweets every week since the events took place. The elapsed time since the end of the original data collection period (September 14, 2008) to the point of retrieval of updated tweet counts (January 8-9, 2009) is about a period of 17 weeks. Therefore, those users who have a tweet count of 17 or more we call active users. Conversely, low-active or inactive users are those users who have contributed less than one tweet every week, a new adoptees during the hurricane and convention events with less than 17 status updates in the 17 weeks since that time.

Event/Data Set	# New Users During Data Collection Time Period	Remaining # In- and Low-Active Users (<1 update/wk)	% In- and Low-Active Users	Remaining # Active Users (1 or more update(s)/wk)	% Active Users
<i>Conventions</i>					
DNC	619	258	41.68%	361	58.32%
RNC	565	274	48.50%	291	51.50%
<i>Hurricanes</i>					
Gustav	1983	1342	67.68%	641	32.32%
Ike	2376	1286	54.12%	1090	45.88%
<i>Sample of the General Population Users During Same Time Period</i>					
General	3541	2957	83.51%	584	16.49%

Table 4. Percentage of new users who have become low-active/inactive and active users.

The percentage of active and inactive users in each data set appears in Table 4. Our collected data shows that there are more accounts who became active users in our hurricane- and convention-event data sets than there are in the general sample. If we define "active user status" as adoption of Twitter technology, then we can see that more users in our data sets (who specifically sent at least one twitter about one or more of the events) adopted Twitter, than a general sample of the new users to Twitter during the same time period. This suggests that when faced with a need and having important and direct experience of usefulness with it, people are more likely adopt a new technology for the long term.

4. Conclusion and Future Scope

In this paper, we have studied the problem of automation by bots and cyborgs on Twitter. The problem of bots on Twitter is further complicated by the key role that automation plays in everyday Twitter usage. We have collected one month of data with good number of Twitter users with more than 40 million tweets. Based on the data, we have identified features that can differentiate humans, bots, and cyborgs on Twitter. Lastly, we have discovered that certain account

properties, like external URL ratio and tweeting device makeup, are very helpful on detecting automation. In the future, there is a possibility to block the automated tweets by using any engineering method and also there is a scope to extend this work, which restricts dumping of huge data into

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