

# **The Iranian Election on Twitter: The First Eighteen Days**

## About The Web Ecology Project

The Web Ecology Project is an interdisciplinary group of researchers based in Cambridge, Massachusetts. Its members are affiliated with the Berkman Center for Internet & Society, the Center for Future Civic Media, Harvard University, and the Massachusetts Institute of Technology. Our mission is to build tools to better understand the flows of culture and the formation of communities in the complex social ecology of the web.

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This paper is dedicated to our mentor and hero, Charlie Nesson.

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## Summary

The political events that transpired during and after the 2009 Iranian election garnered global attention, particularly due to the purported importance of Twitter. As a platform-independent service for communication, Twitter has become a preferred vehicle to broadcast unfolding events in Iran both within the country and to an international audience. The use of Twitter to communicate about these events is a striking instance of the memetic spread of behaviors and ideas online. Our report serves as an initial assessment of the Twitter web ecology -- that is, users interacting with their technological environment -- to sketch out the broad anatomy of discourse on Twitter by providing a novel perspective with quantitative data. Our servers continue to collect data, and we plan to publish a follow-up report that comprehensively explores the structure of the events from additional perspectives and depths.

## Key Findings

- \* From 7 June 2009 until the time of publication (26 June 2009), we have recorded 2,024,166 tweets about the election in Iran.
- \* Approximately 480,000 users have contributed to this conversation alone.
- \* 59.3% of users tweet just once, and these users contribute 14.1% of the total number.
- \* The top 10% of users in our study account for 65.5% of total tweets.
- \* 1 in 4 tweets about Iran is a retweet of another user's content.

## Introduction and Existing Research

The conversation on Twitter about Iran offers a valuable opportunity to better understand the complex social ecology of the web, particularly in times of crisis. How has this conversation evolved? Who are the influential individuals and communities driving the conversation? How does the conversation interface with events and media flow outside of Twitter?

Since Iran's election (12 June 2009), countless press articles have been published that speculate on the role that Twitter has played in Iran. As an initial step toward contextualizing our data, we surveyed related published materials available online, reviewing articles from established media outlets, consultants, and researchers.

Recent analyses -- such as those published by Marc Ambinder (*The Atlantic*), Jack Shafer (*Slate*), Anne-Marie Corley (*Technology Review*), Joshua Kucera (*True Slant*), Evgeny Morozov (*Foreign Policy Magazine*), Daniel Drezner (*Foreign Policy Magazine*), Lev Grossman (*TIME Magazine*), and Clay Shirky (via the *TED* blog) -- have criticized the earlier hasty proclamation of a "Twitter Revolution," seeking instead to clarify the nature and scope of the phenomenon through more careful analysis. Most question the extent to which Twitter has been used as an organizing tool for Iranian citizens and emphasize instead the importance of Twitter as a system for publicizing events in Iran to the rest of the world. These analyses mostly provide qualitative evidence, and little quantitative data has been provided to support the claims.

Those quantitative analyses that do exist are typically based on very limited data sets.

For example, Maximillian Forte of *Open Anthropology* makes claims based on "a sample of 1,280 tweets" ranging from 13 June to 17 June, while Noam Cohen, from the *New York Times*, briefly investigates only one user, mousavi1388, from 16 June. Some of the quantitative analysis published to blogs seems to reflect the better data released from sources such as *Sysomos*, which has released a robust report that profiles users in terms of account creation and message location (both in Iran and abroad). Still, the team at *Sysomos* and even Ben Parr of *Mashable* provides results for only one hashtag, #IranElection, and one term, "iran."

As Andrew Sullivan of *The Atlantic* comments, after reposting two messages from Twitter, "Those are recent tweets which probably tells you more about the mood than hard facts. But mood matters." The proliferation of qualitative opinion regarding the Twitter-Iran issue has been helpful thus far in conveying the "mood" of the conversation, but this paper reveals some of those "hard facts" that give a fuller picture of the situation. With our report, we encourage researchers to further pursue qualitative analysis supported by quantitative data.

## Data Set Description

In our research, we collected and analyzed a comprehensive body of tweets relevant to the Iran election. We gathered all tweets that use the terms listed below, either as hashtags (preceded by a # symbol) or as words (terms without a # symbol, but not including terms of two or more spaced words), between the dates of 7 June 2009 and 26 June 2009, our date of publication. Our data set begins with a tweet that occurs 5 days

before the Iran election date on 12 June 2009, to encapsulate the pre-election coverage. These tweets before the actual election date equate to 11,572 messages, or 0.57% of the entire data set.

Total tweets accumulated in this study, by term (some tweets contain multiple terms):

ahmadinejad - 1765 tweets  
 basij - 3295 tweets  
 gr88 - 151038 tweets  
 iran - 903193 tweets  
 iranelection - 857401 tweets  
 iranian - 9929 tweets  
 khameni - 1409 tweets  
 mousavi - 16970 tweets  
 mousavi1388 - 325 tweets  
 neda - 97872 tweets  
 rafsanjani - 77 tweets  
 tehran - 85019 tweets

Our complete set of data contains the text of 2,024,166 tweets; the username and respective userID of each message; and the time when the user posted each tweet. Due to time constraints for this publication, no information was curated with regard to user account data.

■ Relevant tweets containing "#iranelection"  
 ■ Relevant tweets NOT containing "#iranelection"

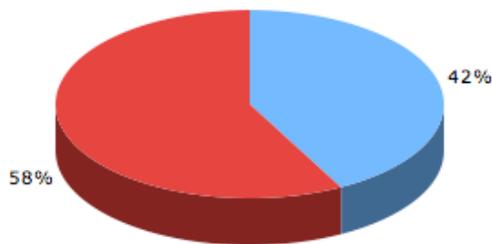


Figure 1.

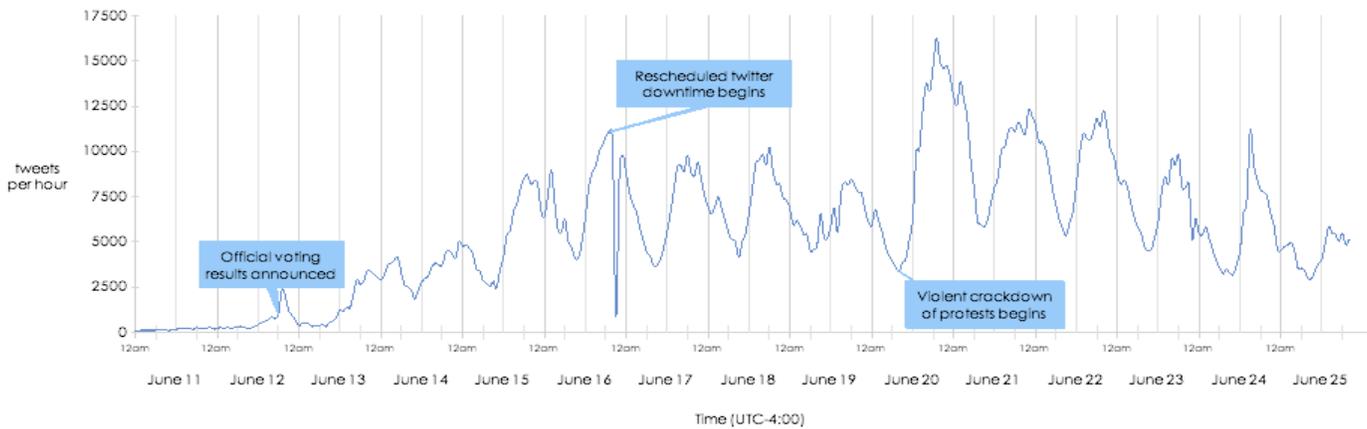
## Overview of the Conversation

Early in the time period researched, a consensus among Twitter users appeared to emerge to tag a tweet with #iranelection, valuing said tweet as a relevant message related to the political events in Iran. However, our dataset clarifies that limiting the examination to tweets with only one, specific hashtag creates an incomplete understanding of the discourse as a whole.

Our method, which captures all tweets containing #iranelection as well as other related hashtags (#neda, #mousavi, #gr88, etc.) and relevant keywords (Ahmadinejad, Rafsanjani, etc.), provides access to a much larger portion of the conversation. As *Figure 1.* shows, the number of tweets using hashtags other than #iranelection amount to 1,166,765 messages, or 57.6% of the total set accumulated in our study (a significant portion of the discourse that other studies ignore when focusing solely on #iranelection). Among the total accumulation of messages, 104,127 tweets (about 5%) contain multiple (at least two) hashtags within the 140 character limit.

We can use the aggregate of collected information to illustrate the broad contours of the conversation. As seen in *Figure 2.*, the rate at which users post relevant tweets gradually increased as the events in Iran and the use of Twitter provoked attention, spiking dramatically in relation to political events inside Iran (eg., suppression of protests, as detailed in the graph), as well as in relation to news events and incidents particular to the Web.

Figure 2.



### Description of the User Population

There are at least 479,780 users who have contributed to the Iran election conversation and, based on this statistic, each user broadcasts a mean of 4.22 tweets. As with most trends on Twitter, participation in the Iranian election conversation is unequally distributed. As Figure 3. (based on a Lorenz curve) shows, 59.3% of users who have contributed to the Iran election conversation account for only 14.1% of the conversation; in relation to the percentage, these users have tweeted about the events only *once*. On the other hand, the most active 10% of users, all of whom have tweeted at least 6 times, account for 65.5% of all relevant tweets. The most active 1% of users (all of whom have tweeted about the election at least 58 times) account for 32.9% of relevant tweets.

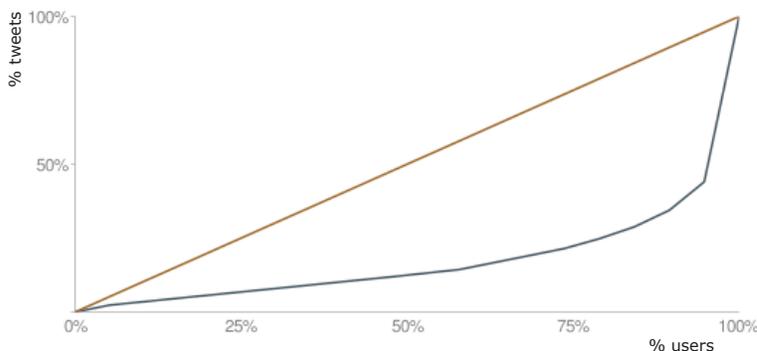


Figure 3.

A user’s relative contribution to the Iran election conversation may have little to do with the number of tweets they put out -- the loudest tweeter, in other words, is not always the most authoritative -- but we infer, for example, that those users tweeting once or twice are likely not central players in this conversation or reporting on these events very closely. We have taken a closer look at the highly active users below.

### Prominent and Influential Users

Using our data set, we have attempted to identify influential users, whom we consider those users impacting the direction of the conversation, both in volume of original tweets and level of popularity among other users (both followers and additional onlookers). Appendix A lists 100 users that have contributed the largest quantity of tweets, who make up just .02% of the user base. Their tweets constitute 4.04% of our database. Some of the names listed in Appendix A, such as @oxfordgirl, may be familiar to those following the conversation; other users whose content is regularly retweeted,

such as @mousavi1388, are notably absent. Again, the loudest users are not always the most influential.

In Appendix B, we list 100 of the most retweeted users to provide another perspective on user influence. Many of the users from Appendix A, namely @oxfordgirl and @WOTN, reappear in Appendix B, but other users that do not tweet enough to merit a place in Appendix A, such as @mousavi1388 and @persiankiwi, emerge as influential players in the evolving conversation by composing relevant content that other users copy and retweet.

<http://twitspam.org/?p=1403> - 1845  
<http://twitpic.com/7ki6e> - 1785  
<http://digg.com/d1uPU9> - 1509  
<http://iran.twazzup.com> - 1219  
<http://tinyurl.com/m7w4pg> - 1197  
<http://bit.ly/qmZhc> - 1196  
<http://twitpic.com/7c85l> - 1193  
<http://iran.twazzup.com/> - 1178  
<http://emsenn.com/iran.php> - 1126  
<http://bit.ly/15ROVX> - 1117  
<http://bit.ly/16NJm8> - 1108  
<http://www.youtube.com/watch?v=npdISZUtdmU> - 1108

## Future Approaches

While this paper has provided a statistical overview of the coverage prevalent on Twitter regarding the Iranian election, our research has yet to qualitatively analyze the content of the conversation. We did, however, track trends in multiple occurrences of text strings as a preparatory step for future qualitative approaches. For example, in Appendix C, we list the 21 unique IP addresses (of proxy servers) shared among the users curated in our study. Below, we also provide a list of the most popular URLs between users (we have retained the shortened URLs, as they represent the actual text within the message).

<http://helpiranelection.com/> - 229486  
<http://301.to/2iu> - 7995  
<http://twitition.com/csfeo> - 6645  
<http://iran.greenthumbnails.com> - 5976  
<http://301.to/23o> - 3823  
<http://bit.ly/xwcZY> - 2318  
<http://tinyurl.com/nzxco5> - 2218  
<http://gr88.tumblr.com/> - 2059

**APPENDIX A****Top 100 Tweeters***username - # tweets*

DominiqueRdr - 2817  
erections - 2391  
Flowersophy - 2263  
oxfordgirl - 2172  
Dputamadre - 1400  
Tymlee - 1286  
WOTN - 1285  
Katrinskaya - 1233  
iran88 - 1230  
MoraJamesLaw - 1194  
anotherside - 1097  
schachin - 1097  
christmasfairie - 1087  
ShakeyGoat - 1074  
sp4rrowh4wk - 1058  
zozizz - 1054  
AdrienneVergara - 1042  
Rezaliteit - 1023  
iran\_09 - 1001  
thetilo - 990  
ThinkIran - 972  
m47713 - 958  
scarletphlox - 941  
irancomment - 929  
ahuramazda - 921  
PulseSearch - 911  
loreleisigma - 901  
magnolia\_tree - 895  
IranRiggedElect - 890  
tweetstoday - 868  
IranRevol - 845  
iranrevolution - 834  
SashaKane - 821  
StopAhmadi2 - 811  
oli2be - 808  
MitraJoon - 798  
Elizrael - 787  
veganswines - 780  
dreadedcandiru - 763  
Mwolda - 746  
eruanne - 740

jilevin - 732  
trekkerGuy - 730  
hardknoxfirst - 726  
Winston80 - 720  
SimplyDishing - 720  
AlixandraLove - 718  
Unstrung - 710  
Hawkeye0071 - 688  
Tajavioletta - 687  
haverholm - 684  
eaghili - 677  
henksijgers - 670  
JoanneMichele - 667  
akhormani - 666  
huichan - 665  
IRANWWP - 658  
DINESCU - 655  
Dancinlor - 652  
ruairi1338 - 635  
jkslouth - 633  
thefatherland - 624  
iranfreeelection - 620  
TerrelliC - 614  
holakoozadeh - 611  
greentips1388 - 608  
sTavasoli - 607  
MsVFAB - 603  
jurassicpork59 - 602  
Deskprotestor - 597  
WeStandAs1 - 596  
flemingcb - 595  
tollwut - 593  
eforsaith - 592  
NoExpAffiliates - 590  
B2020 - 590  
mumke - 581  
sagenshi - 579  
arrested - 578  
pmoallemian - 577  
rookatpost - 574  
tfsalomon - 574  
IranLiveUpdates - 573  
Sarah\_onweb - 570  
geologybabe - 567  
BarbRad - 562

metabolica - 562  
void00110000 - 551  
motoko\_nl - 551  
politags - 550  
reemiireem - 549  
IranDemokratia - 549  
Cally8 - 547  
PruebaError - 544  
butterflywind - 542  
pilotwoman - 537  
GhibliBlog - 533  
AtlantaJJ - 532  
IranTweet - 531  
nihonmama - 531

**APPENDIX B****Top 100 Retweeted Users***RT @username - # tweets retweeted*

RT @persiankiwi - 12584  
 RT @StopAhmadi - 7144  
 RT @oxfordgirl - 7085  
 RT @BreakingNews - 5907  
 RT @cnnbrk - 3828  
 RT @mashable - 3354  
 RT @IranRiggedElect - 2948  
 RT @TehranBureau - 2945  
 RT @Change\_for\_Iran - 2354  
 RT @AnnCurry - 2291  
 RT @mousavi1388 - 2283  
 RT @stephenfry - 2206  
 RT @ProtesterHelp - 2070  
 RT @Alyssa\_Milano - 1951  
 RT @iran09 - 1923  
 RT @jimsciuttoABC - 1838  
 RT @lotfan - 1819  
 RT @LaraABCNews - 1813  
 RT @Jason\_Pollock - 1313  
 RT @IranElection09 - 1298  
 RT @tweetmeme - 1272  
 RT @austinheap - 1200  
 RT @madyar - 1185  
 RT @iranbaan - 1073  
 RT @allahpundit - 1020  
 RT @judyrey - 1013  
 RT @IranNewsNow - 1008  
 RT @zaibatsu - 956  
 RT @nytimeskristof - 929  
 RT @WOTN - 925  
 RT @Fingertipnews - 869  
 RT @TIME - 814  
 RT @naseemfaqihi - 721  
 RT @nytimes - 687  
 RT @TimOBrienNYT - 686  
 RT @whitehouse - 678  
 RT @andersoncooper - 666  
 RT @SashaKane - 646  
 RT @nprnews - 620  
 RT @cbn2 - 607  
 RT: @persiankiwi - 605  
 RT: @StopAhmadi - 572  
 RT @iran88 - 549  
 RT @huffingtonpost - 548  
 RT @TheOnion - 539  
 RT @shelisrael - 529  
 RT @rkref - 504  
 RT @dailydish - 498  
 RT @TEDchris - 498  
 RT @amadril - 494

RT @[username removed] - 472  
 RT @timoreilly - 469  
 RT @[username removed] - 452  
 RT @[username removed] - 452  
 RT @jaketapper - 445  
 RT @katriord - 444  
 RT @Katrinskaya - 444  
 RT @octavianasrCNN - 439  
 RT @saeedjabbar - 430  
 RT @cnn - 417  
 RT @flowersophy - 414  
 RT @EileenLeft - 411  
 RT @rainnwilson - 410  
 RT: @iranbaan - 406  
 RT @JasonBradbury - 406  
 RT @GreatDismal - 402  
 RT @GuyKawasaki - 399  
 RT @Iran - 394  
 RT @LilyMazahery - 381  
 RT @Dputamadre - 381  
 RT @SusanneUre - 378  
 RT @LIFE - 370  
 RT @BreakingTweets - 369  
 RT @Uncucumbered - 368  
 RT @PeterSantilli - 362  
 RT @Elizrael - 362  
 RT @jadi - 359  
 RT @Tymlee - 344  
 RT @CNNSaeed - 340  
 RT @guardiannews - 331  
 RT @dcb23 - 329  
 RT @neoin - 324  
 RT @michellemalkin - 320  
 RT @jstrevino - 319  
 RT @dominiquerdr - 314  
 RT @HuffPolitics - 313  
 RT @johnperrybarlow - 309  
 RT @aplusk - 308  
 RT @shahrzadmo - 307  
 RT @Twitter\_Tips - 303  
 RT: @lotfan - 303  
 RT @amnesty - 299  
 RT @parhamdoustdar - 299  
 RT @GregMitch - 297  
 RT @azarnoush - 294  
 RT @jeffjarvis - 289  
 RT @Amysco - 286  
 RT @iran - 283  
 RT @LoriMoreno - 281  
 RT @freedomist - 280

**APPENDIX C****List of Unique IP (proxies)***IP address - # times retweeted*

218.128.112.18 - 4410  
 148.233.239.24 - 2596  
 128.112.139.28 - 235  
 148.233.239.23 - 19  
 24.238.221.163 - 4  
 148.233.238.24 - 3  
 131.252.214.101 - 2  
 217.218.155.110 - 2  
 218.28.192.10 - 2  
 12.197.240.25 - 1  
 24.131.125.239 - 1  
 24.166.140.255 - 1  
 24.19.212.141 - 1  
 113.253.14.210 - 1  
 124.29.215.27 - 1  
 148.233.289.240 - 1  
 168.143.162.100 - 1  
 174.129.170.183 - 1  
 193.136.191.26 - 1  
 194.225.234.20 - 1  
 216.24.170.159 - 1