A STORM OF TWEETS

ANALYZING TWITTER CONVERSATIONS SURROUNDING HURRICANE IRENE

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Vermont EPSCoR CWDD Center for Workforce Development & Diversity AT SAINT MICHAEL'S COLLEGE

Vermont EPSCoR

NSF

Saint Michael's College Founded 1904

The University of Vermont

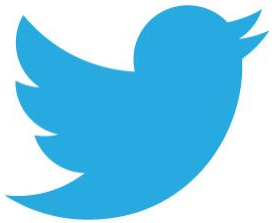
HURRICANE IRENE IN VERMONT

- Hit Vermont August 28th-29th, 2011
- Over 7 inches of rain in some areas
- Worst flooding in the state since 1927
- Approximately $175-250 million in damage
- 89% of Vermont towns had infrastructure damage
- Caused three deaths

HOW IS TWITTER UTILIZED?

- Social Media Platform
- 314 Million Users Worldwide
- 140 Character Messages
- Hashtag Connections
- 500 Million Tweets Posted Per Day

HOW IS THIS RELEVANT?

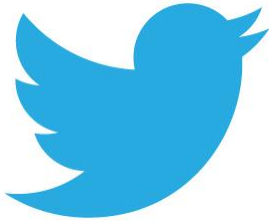


- Natural disasters, especially hurricanes, are worsening due to climate change
  - Irene was the result of this by devastating our local communities
- Twitter and other social media platforms are growing to be become important tools in information sharing during times of emergencies

RESEARCH QUESTIONS

- **How is information being shared during the time of Hurricane Irene in Vermont on Twitter?**
  - What are the sentiments of these tweets?
  - How are features used to share information?
    - What are the most predominant hashtags tweeted?
    - How many average hashtags are there per tweet?
    - Which feature is used the most?

HYPOTHESIS



- Sentiments:
  - Nervous/Concerned, Objective, and Skeptical will be the most characterized sentiment
- Use of Features to share Information
  - Most users will use at least two features per tweet
  - If hashtags are implemented- a combination of hashtags will be used

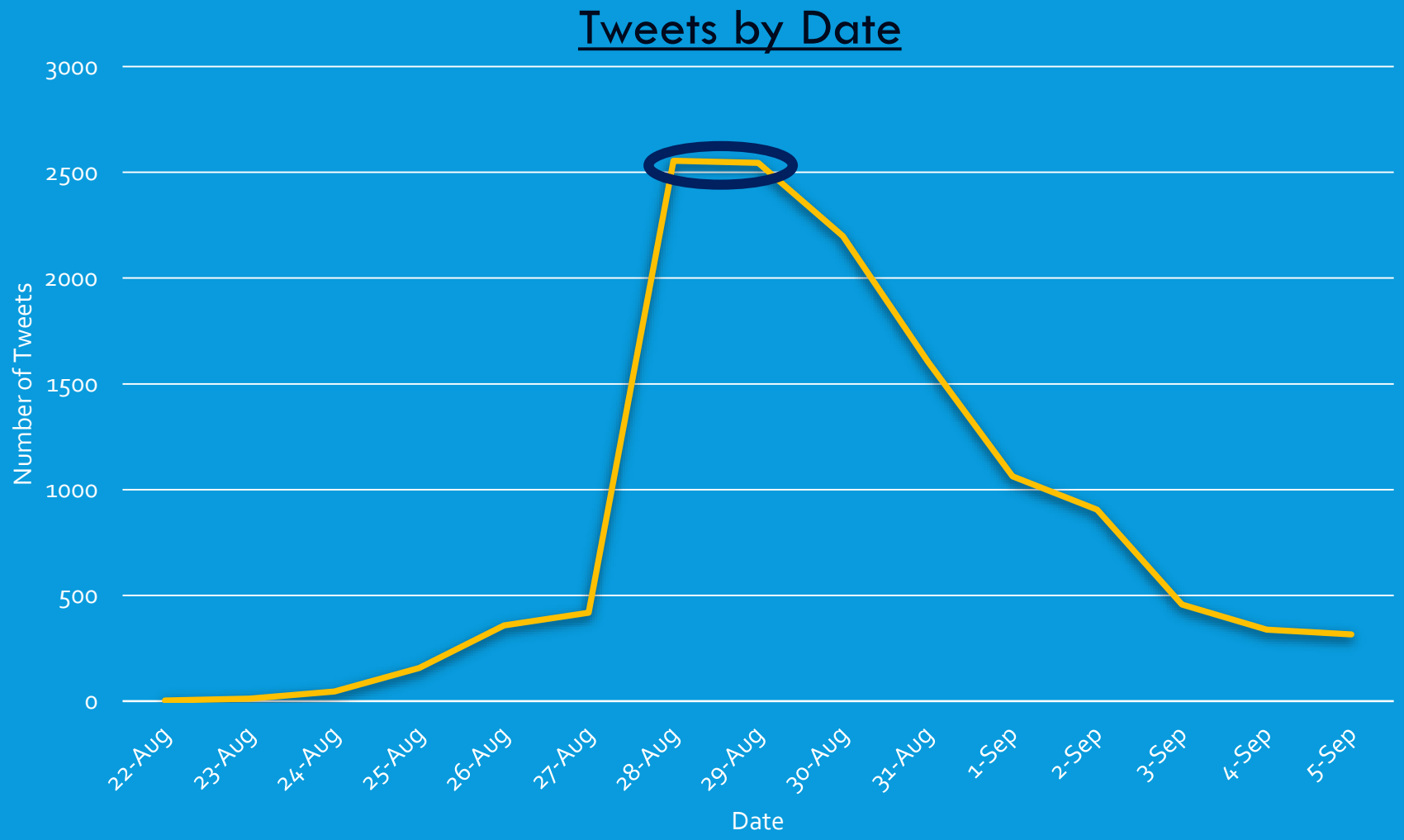
METHODS

- Literature Reviews
- Manually Creating a Tweet Database
  - Search by date
  - Search terms
    - (“Vermont” AND “Hurricane OR Irene”)
    - (“VT” AND “Hurricane OR Irene” NOT “Vermont”)
- Manually labeling sentiments to tweets, counting hashtags, links, and user handles
- Used Python code to create a database of hashtags
  - Used Google Drive’s WordCloud Generator to find out which hashtags appeared most

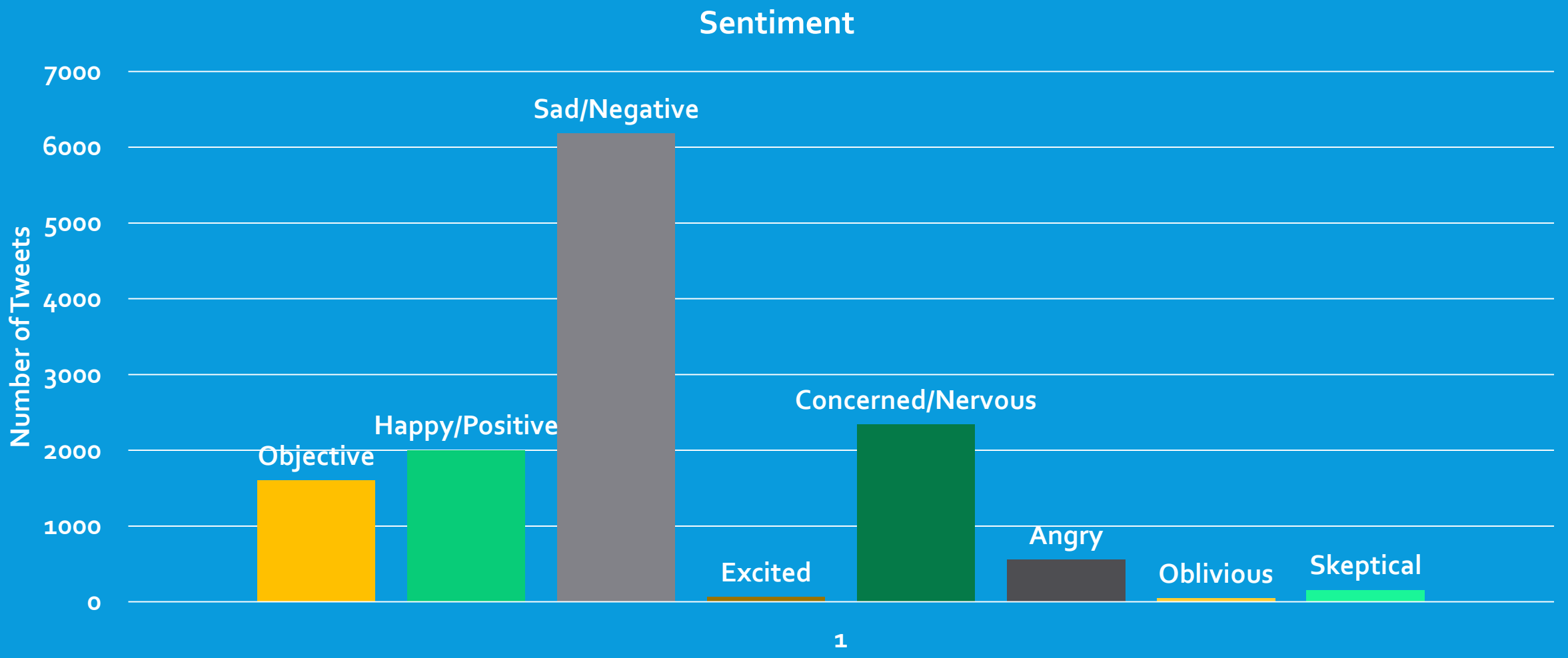
RESULTS

- 12,958 tweets from August 22nd, 2011- September 5th, 2011 collected

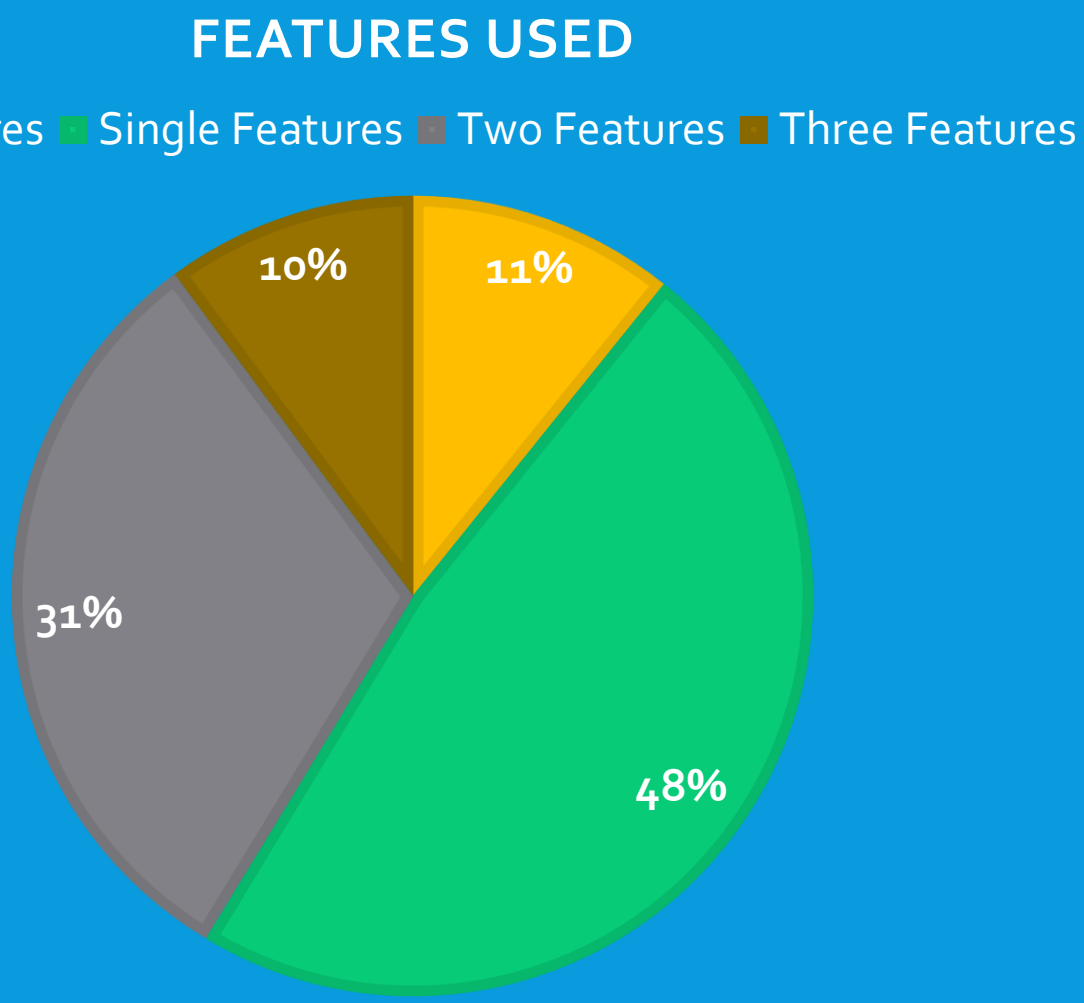
RESULTS


Tweets by Date
3000
2500
2000
1500
1000
500
0
Number of Tweets
22-Aug
23-Aug
24-Aug
25-Aug
26-Aug
27-Aug
28-Aug
29-Aug
30-Aug
31-Aug
1-Sep
2-Sep
3-Sep
4-Sep
5-Sep
Date

RESULTS

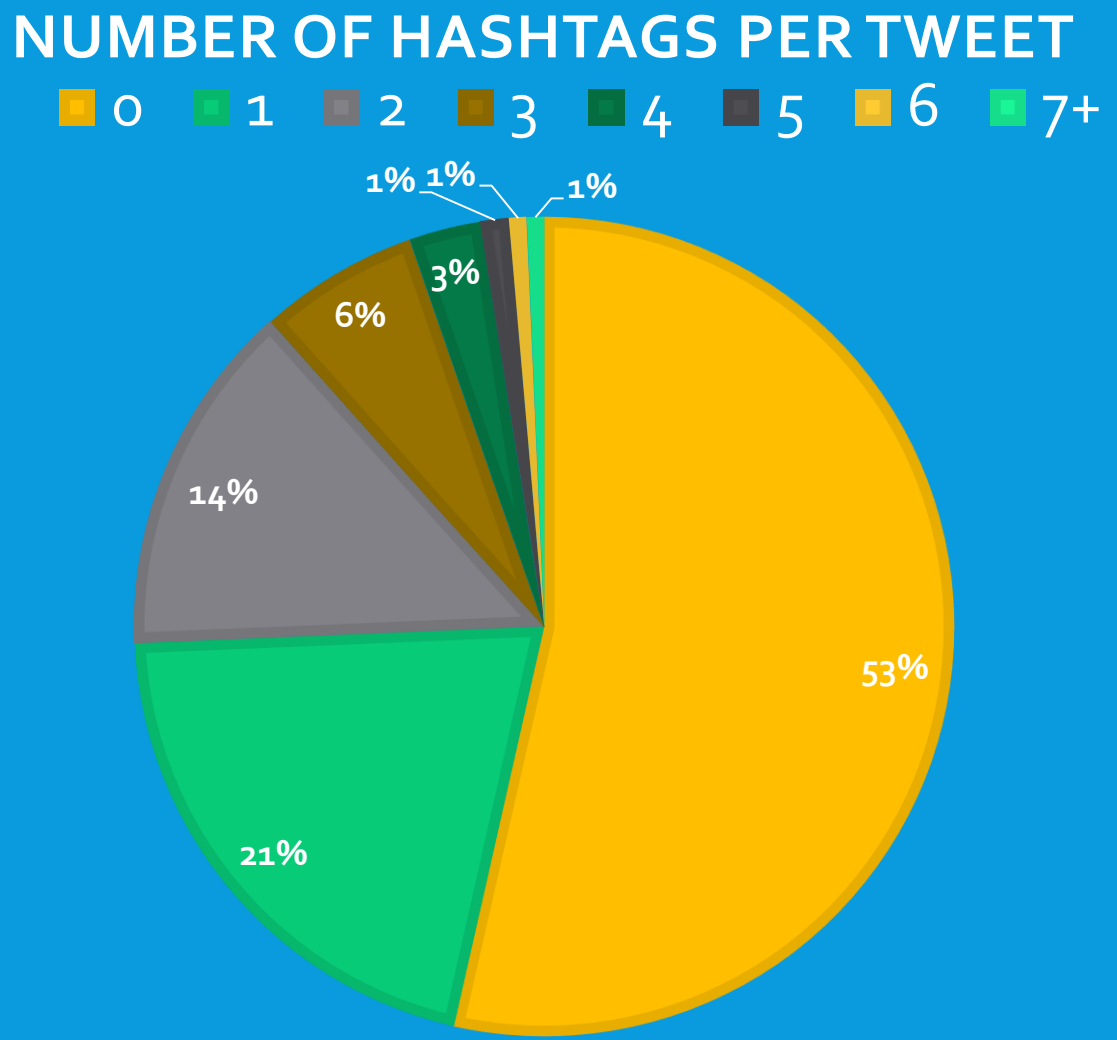

Sentiment
Number of Tweets
7000
6000
5000
4000
3000
2000
1000
0
Objective
Happy/Positive
Sad/Negative
Excited
Concerned/Nervous
Angry
Oblivious
Skeptical
1

RESULTS


FEATURES USED
No Features
Single Features
Two Features
Three Features
11%
48%
31%
10%

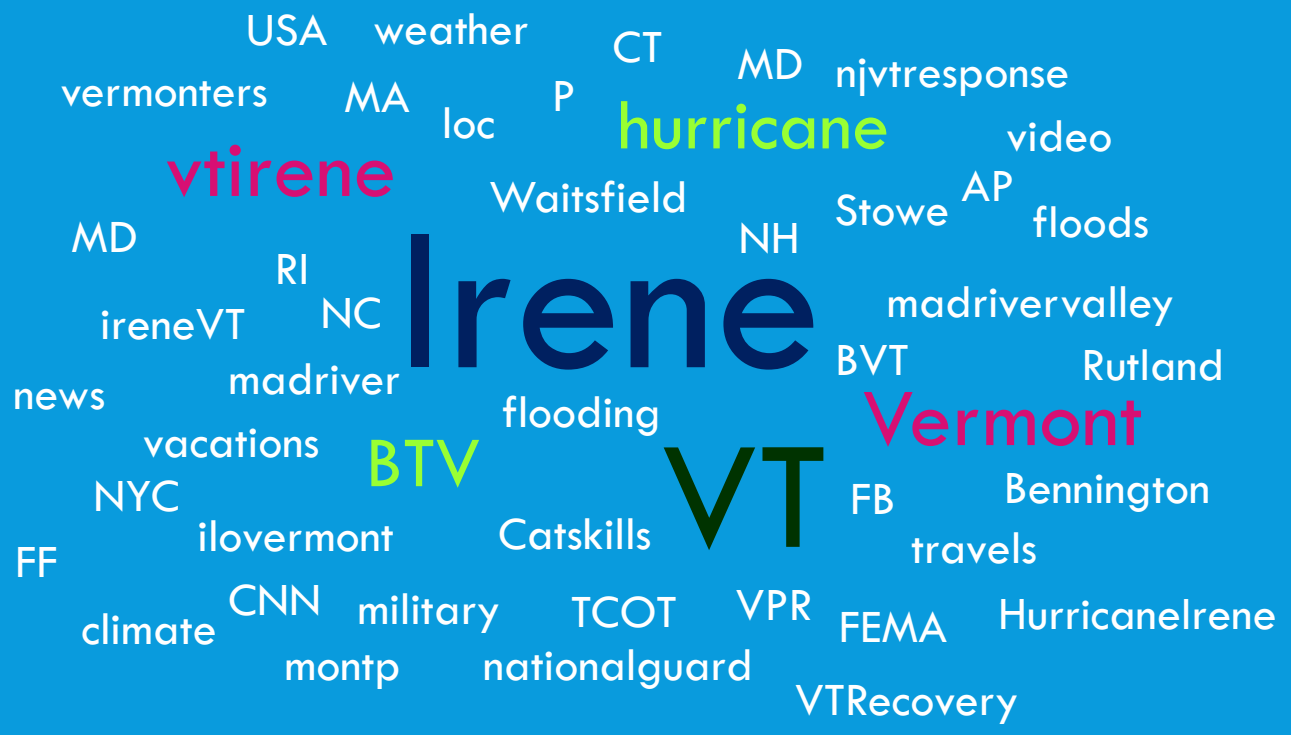
RESULTS

RESULTS



RESULTS

- 12,123 total hashtags used

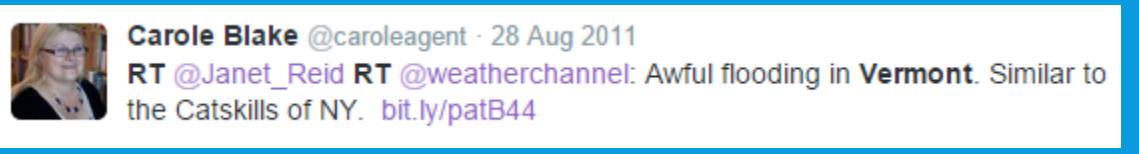


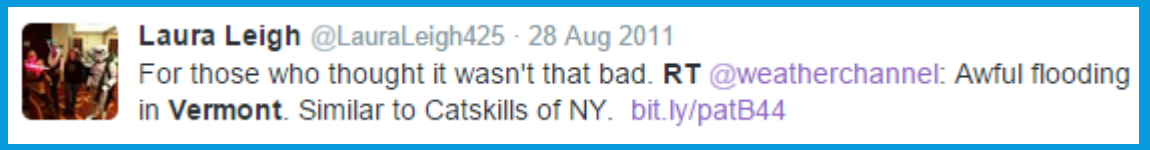
CONCLUSION

- Over half of tweets had a negative sentiment
  - Most tweets use at least one feature
    - Links are used the most to share information
  - If users are using hashtags,
  - The number of tweets is continuously growing as the date gets closer to when the hurricane hits Vermont, but then continuously decreases in the

LIMITATIONS

- What Could've Been Done Better?
  - Human Error
  - Search Terms Appear in Usernames
  - Repeated Tweets – denoted by RT
  - Subjectivity
  - Hashtag Reoccurrences
    - #Irene vs. #Irene's





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QUESTIONS?