

# HurriHelp

A Hurricane Help  
Twitterbot

LOUIS CASANAVE, FLATIRON SCHOOL

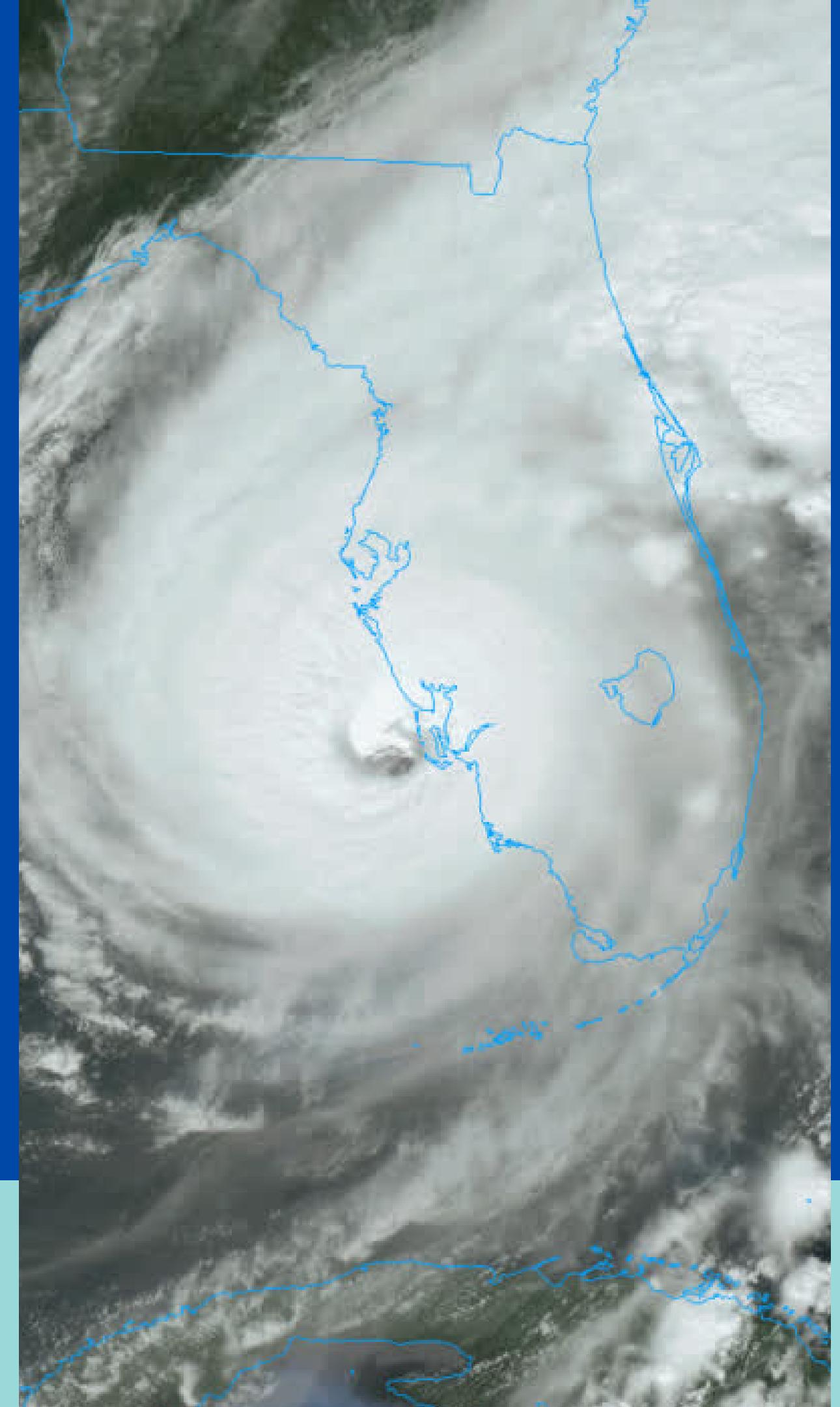


IMAGE BY NOAA, COLLEGE OF DUPAGE



## Hurricane Ian Boiler Plate:

- Category 4 Hurricane
- 152 Confirmed Dead in USA
- Over \$50 billion in Damages
- Millions without Power



Problem

## Survivors Need Help Connecting to Existing Resources:

- National Disaster Distress Helpline
- FEMA

Solution

# OUTREACH ON TWITTER:

## USING MACHINE

## LEARNING TO TARGET

## FOLKS IN DISTRESS



**Susan Who Believes in Science**

@HardChick18 · [Follow](#)



#Ian #Sanibel #Missing #Help

We lost our home & everything in when  
**#Hurricanelan** hit Sanibel (West Gulf Dr.). I  
am searching for my parents ashes. They are  
in this box, in a very heavy sealed bronze box  
with the name Saner on it. I know it's a long  
shot, but please share. 🙏💔



4:22 PM · Oct 1, 2022



## HURRIHELP: A HURRICANE HELP TWITTERBOT



**Bitchin' Post**   
@WindDance79 · [Follow](#)



I just went through an almost category 5 hurricane. 5 minutes away from ground zero.

After 9 days, we got our power back, and in 10, I got my Twitter/internet back.

It was horrific, it was the scariest night of our lives.

So grateful to still be here.

#Hurricanelan

9:52 PM · Oct 7, 2022

Hi! I'm HurriHelp, a hurricane helper bot. Here's some resources: National Disaster Distress Helpline (1-800-985-5990), for more info: <https://www.fema.gov/disaster/4673>"



Vision

## Project Goals:

1. Collect Tweets Directly From Twitter
2. Analyze Sentiment
3. Analyze Word Frequency
4. Discernment Algorithm for HurriHelp
5. Deploy HurriHelp

# Data

- 6773 original\* tweets
- #Hurricanelan Hashtag
- 10/1/22-10/11/22
- 52% Positive
- 48% Negative
- Spam Users Removed\*
- Data Direct from Twitter
- Sentiment from 3 different analyzers

FREE SUPPLIES for everyone in #englewood  
#northport #venice #portcharlotte !!!

TODAY from 11am-3pm

473 S Indiana Ave Englewood, FL

We have food, water, gas, clothes, diapers/wipes, and more!

Please share with anyone who needs relief after #Hurricanelan

• Water  
• Food  
• Diapers/Wipes  
• Baby/Kids Clothes  
• Socks/Underwear  
• Tarps  
AND MORE

Please share and come grab whatever you need!

2:30 PM · Oct 8, 2022 from Englewood, FL

7 · Reply · Copy link · Read more on Twitter

Eugene Ingram Jr  
@HighTechWriter · Follow

Bodies flood into #morgues: Overwhelmed #medical #examiners grapple with grim task after #Hurricanelan.

The following media includes potentially sensitive content.

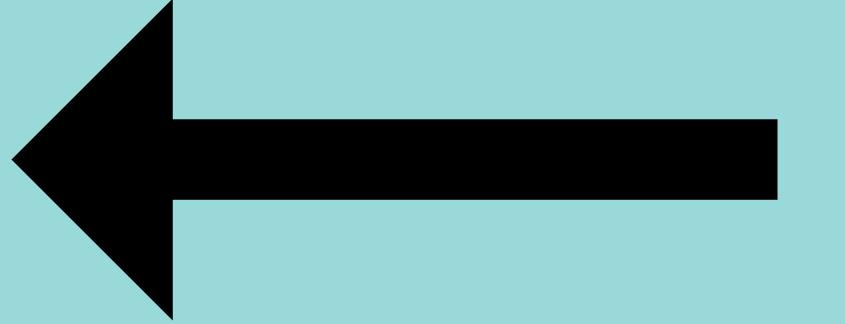
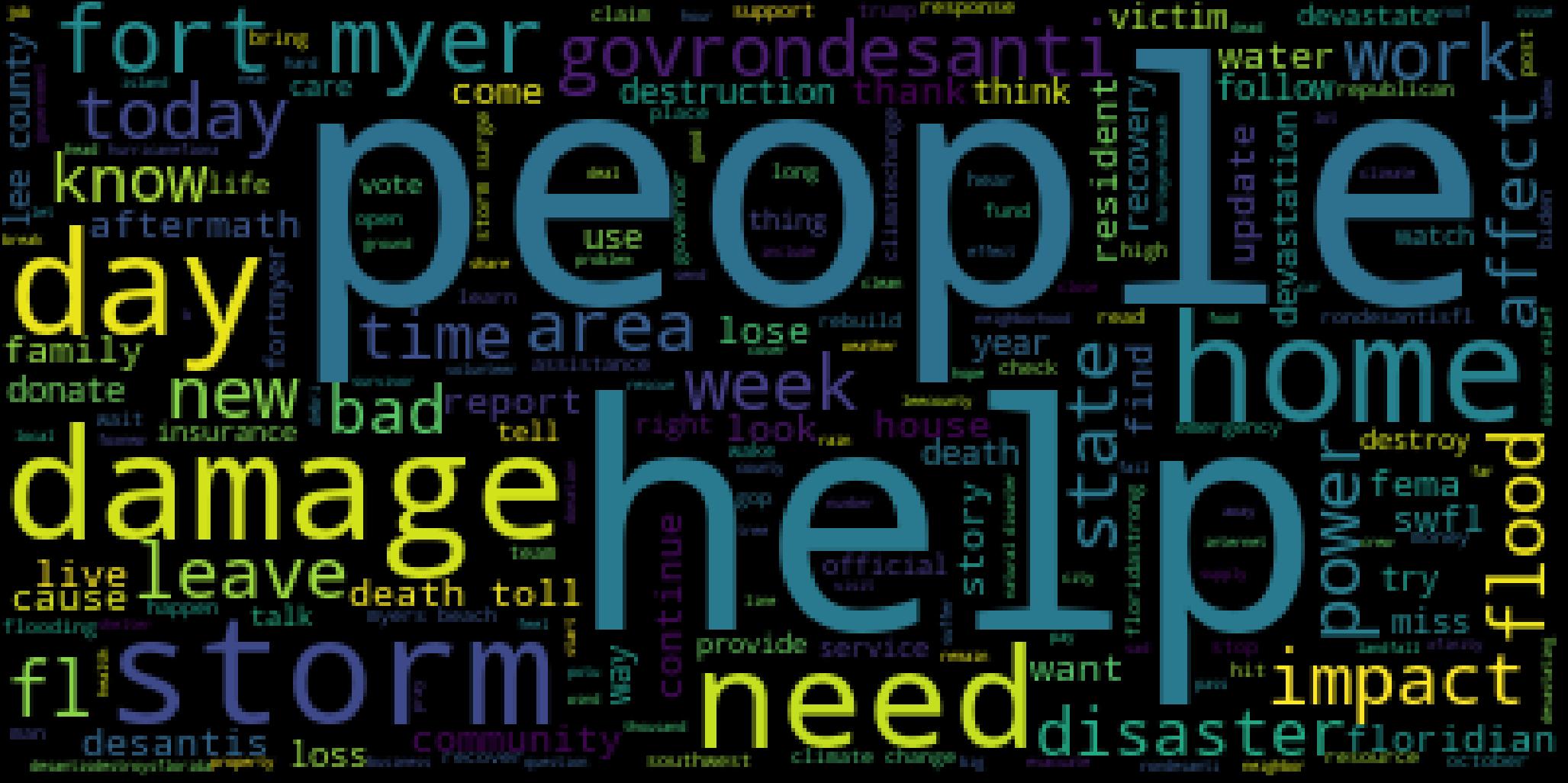
**View**

3:42 AM · Oct 9, 2022

## Limitations and Bias:

- No Neural Networks for Classification
- Can't Distinguish Between Different Negative Emotions
- Assumes Target isn't Tweeting Repeatedly
- Very Small Sample Dataset
- Hurricane Ian Only

# Negative Most Common Words

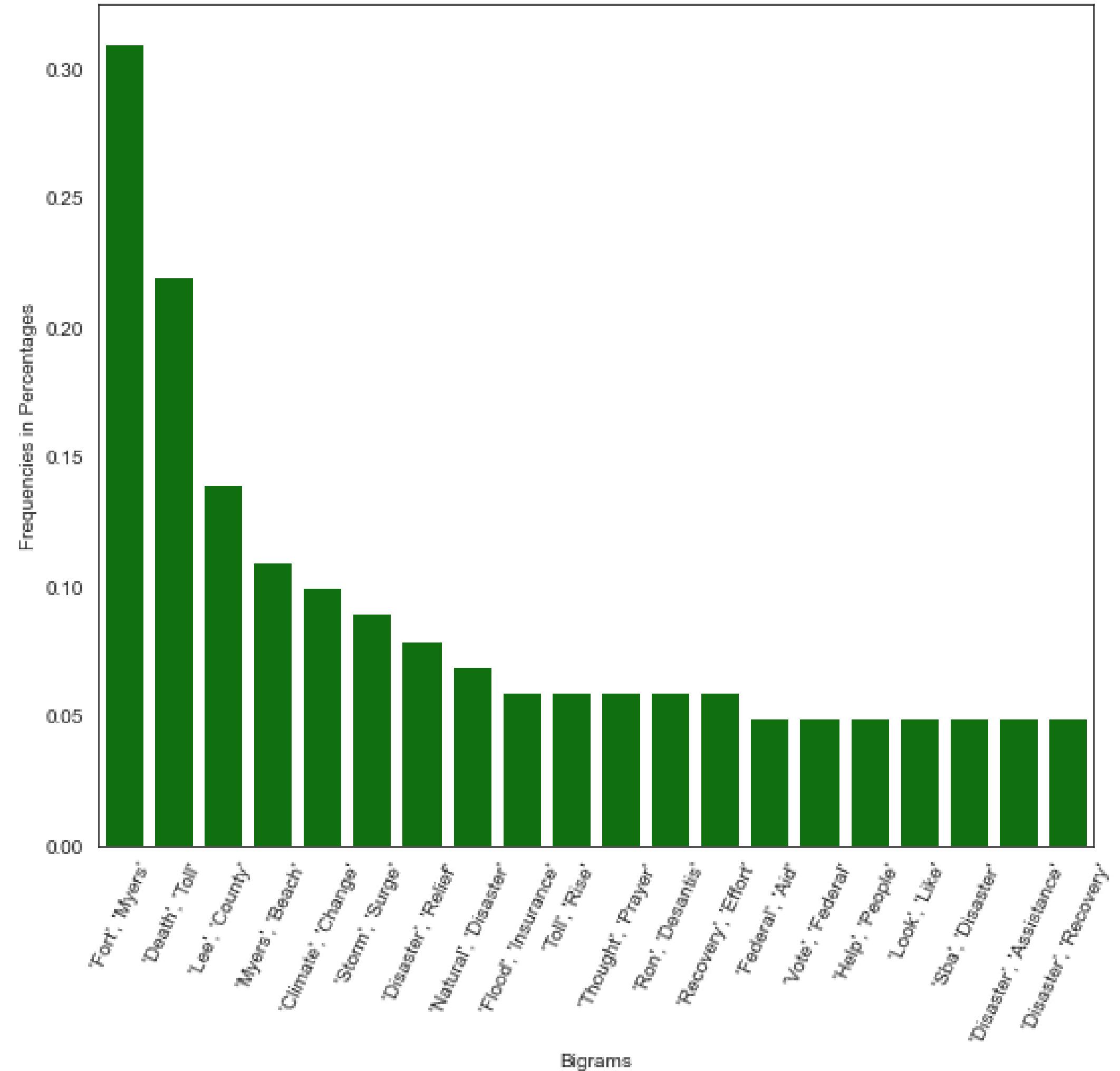


# Positive Most Common Words

# Negative Most Common Two-Word Combinations

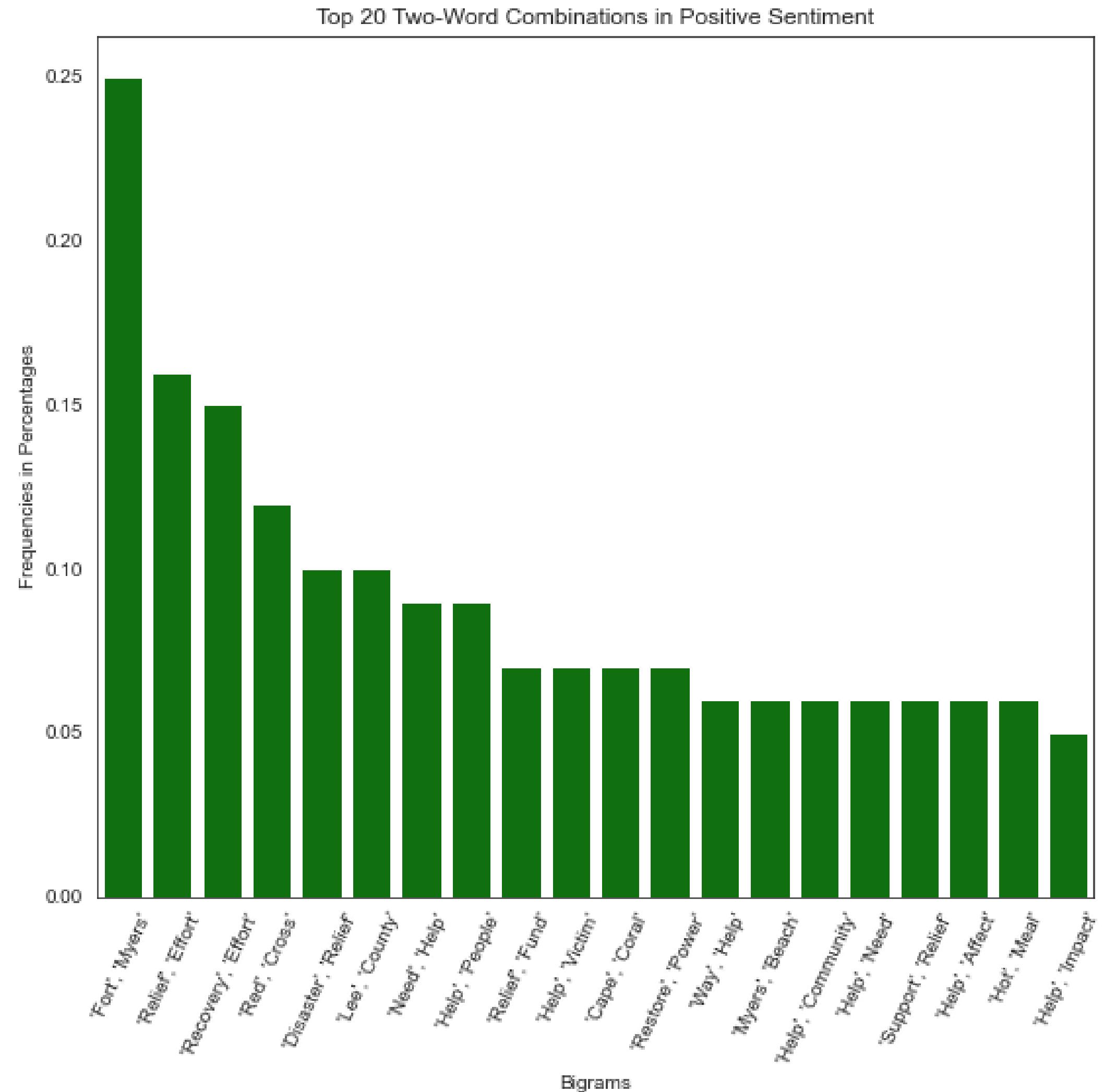
- Places: Fort Mayers, Lee County, Myers Beach
- "Disaster"
- "DeSantis"
- Monetary

Top 20 Two-Word Combinations in Negative Sentiment



# Positive Most Common Two-Word Combinations

- Places: Fort Myers, Lee County, Cape Coral, Myers Beach
- "Help"
- Basic Needs



## Modeling Goals:

1. Discern Negative Tweets
2. Only Reply to Negative Tweets

# Methods

1. Remove: Emojis, Stopwords, Numbers, Punctuation
2. Split Data:
  - \* 80% 5,418 rows training
  - \* 10% 678 rows testing
  - \* 10% 677 validation
- 1.8 Different Algorithms
2. Choose Best Performance
3. Analyze Results

## Metrics

Precision

True Flagged

All Flagged

## Model Types

- Random Forest
- XGBoost
- Naive Bayes
- Catboost

## Vectorizers

- Frequency
- TFIDF
  - (term frequency inverse document frequency)

# Results

**Catboost With Term Frequency  
Precision: 80%**

# HURRIHELP: A HURRICANE HELP TWITTERBOT



**MsStaceyL Bracey**

@thebraceygroup · [Follow](#)



Ron DeSantis decided to play god with [#immigrants](#)' lives by flying them to [#MarthasVineyard](#). This opened the [#Karma](#) door for [#Hurricanelan](#) to cause devastation to the people of [#Florida](#). People died bc of his [#evil](#) actions. [#KarmalsReal](#) [#HurricanelanUpdate](#) [#HurricanelanRelief](#)

5:45 PM · Oct 3, 2022

"Hi! I'm HurriHelp, a hurricane helper bot. Here's some resources: National Disaster Distress Helpline (1-800-985-5990), for more info: <https://www.fema.gov/disaster/4673>"



**HurriHelp Needs Better Filters**

**Problem**



### Future Work

- Emotion Detection to Isolate "Sad" Tweets
- Topical Filters to Remove Unrelated Tweets
- Larger Data Set
- Scalability for Other Hurricanes
- Prototype Running
- Twitter Exodus => What's Next?

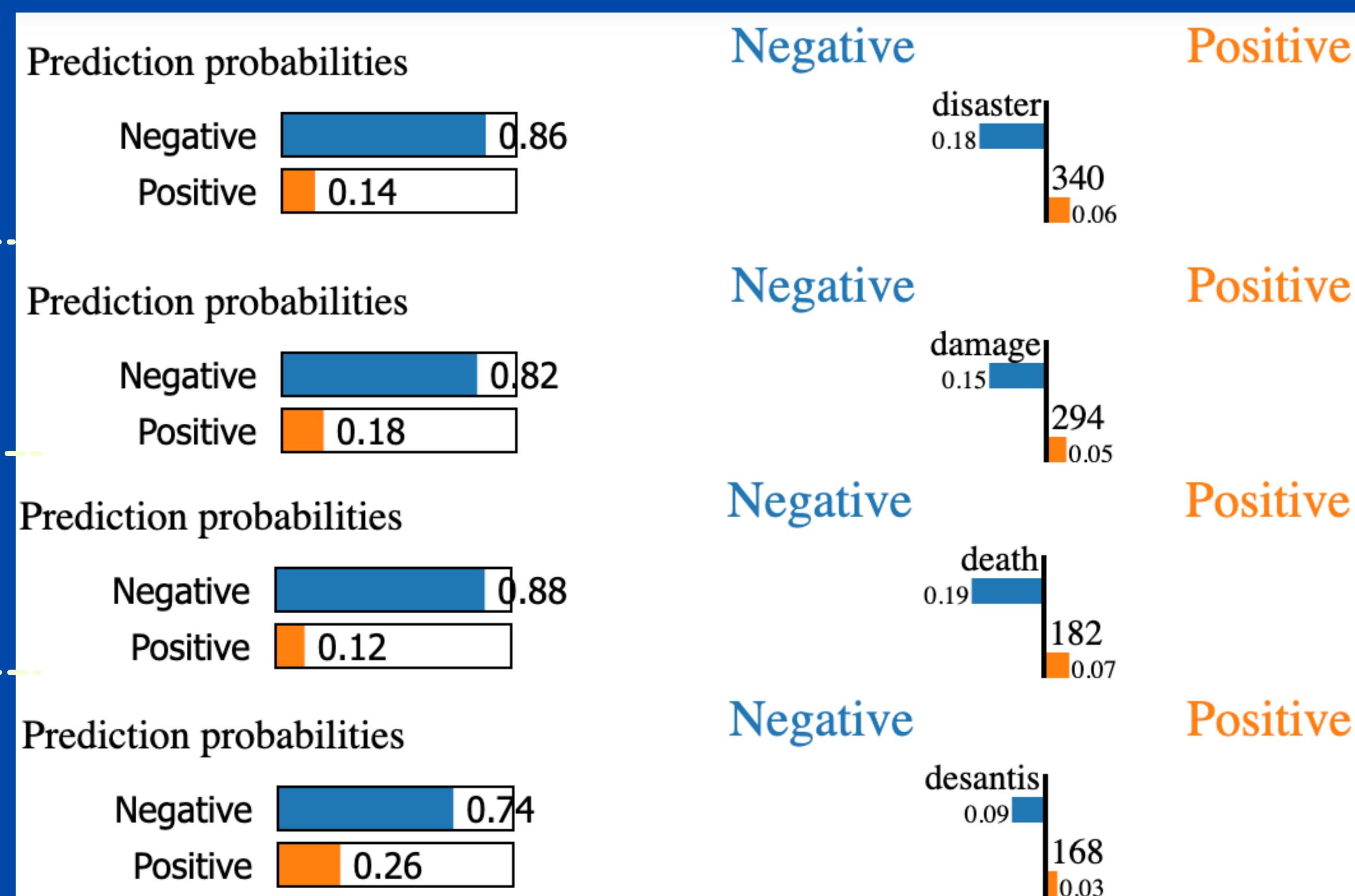
- HurriHelp NOT Ready for Deployment
- FEMA to Concentrate on Spreading Disaster
- Insurance Information
- Checkin On Fort Meyers and Lee County
- Beware Four Ds of Doom in Tweets

Reccomendations

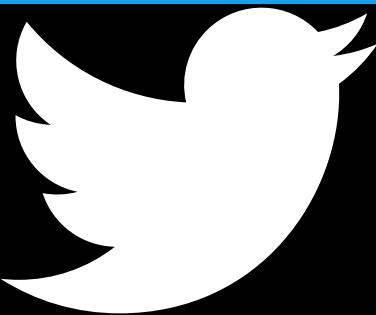


# The Four D's of DOOM: Most Common Most Negative Words

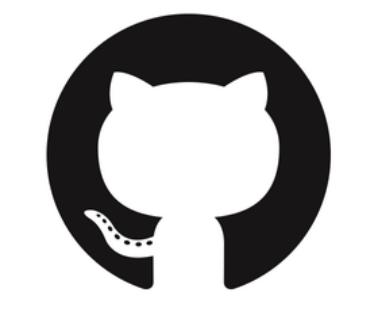
"DISASTER"  
3rd most common, 86%



Thank you



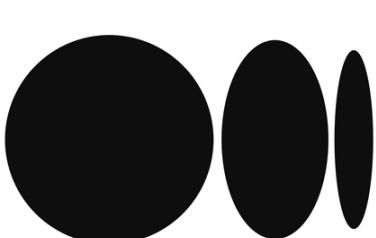
@Hurri\_Help



[github.com/casanave](https://github.com/casanave)



[linkedin.com/in/louis-casanave-78057aa0/e](https://linkedin.com/in/louis-casanave-78057aa0/e)



[medium.com/@ls.casanave](https://medium.com/@ls.casanave)

