Phase 4 Project
Leah Pope

NLP for Classifying Consumer Tweets

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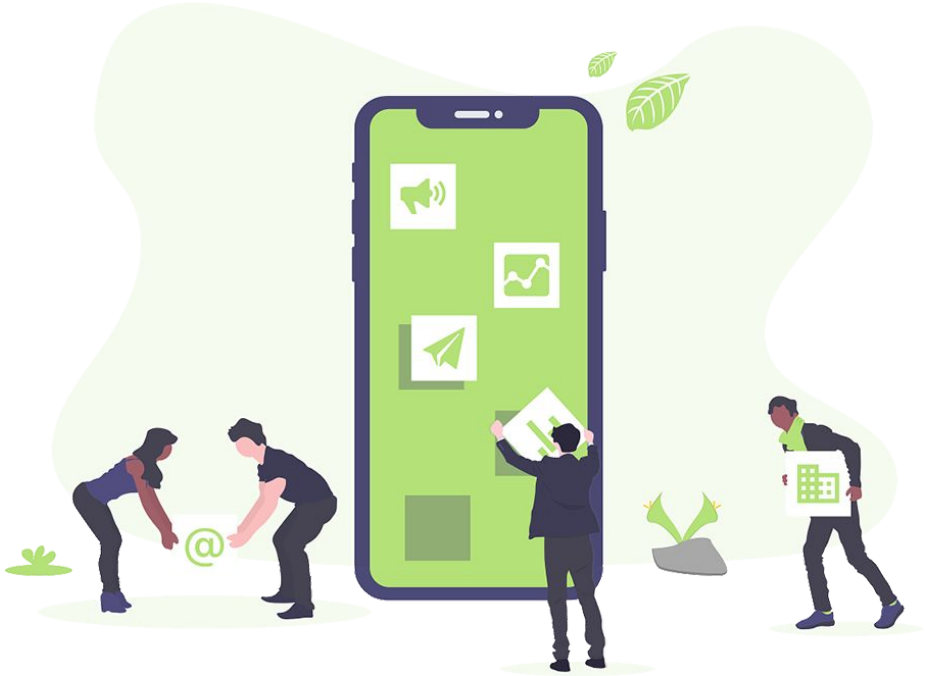
12/11/2020



Hello!

I’m Leah Pope

I’m a Flatiron Data Science Student and Software Engineer

https://github.com/lspope/

“How are consumers feeling (Tweeting) about our brands and events?

- Tech Companies & Conferences

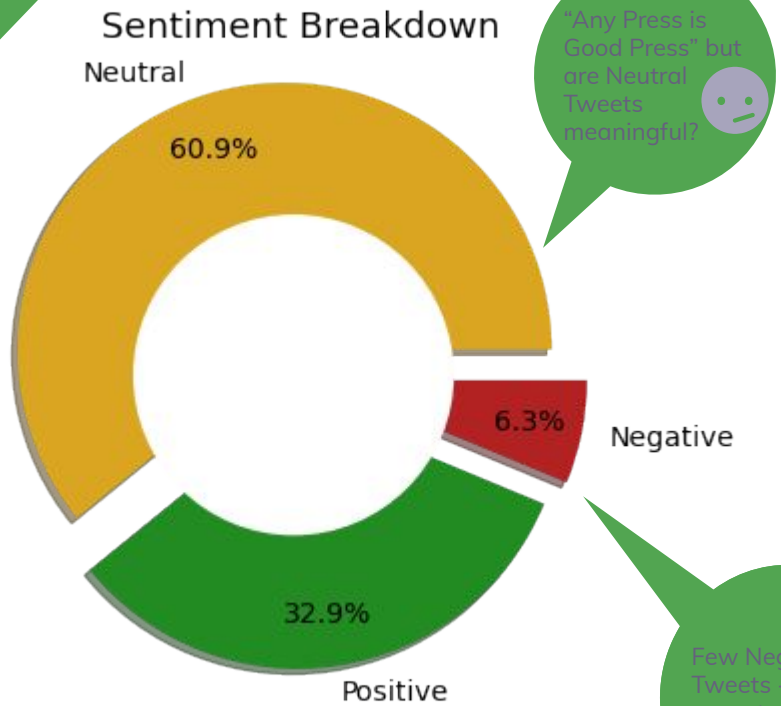
Let’s Find Out

EDA on Raw Data and Corpus

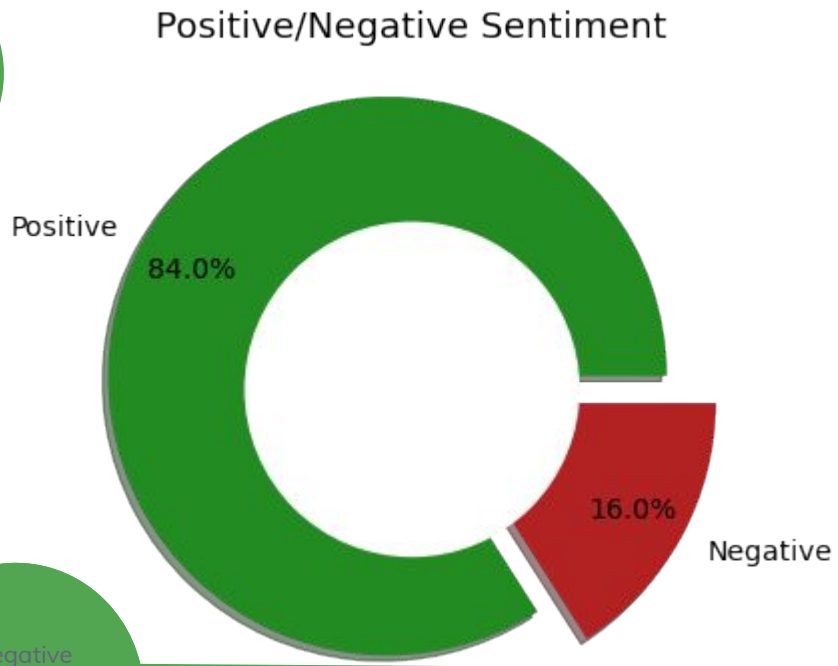
Business Questions

1. Sentiment breakdown?
2. Equally represented?
3. Brand insights?

1 Sentiment breakdown?



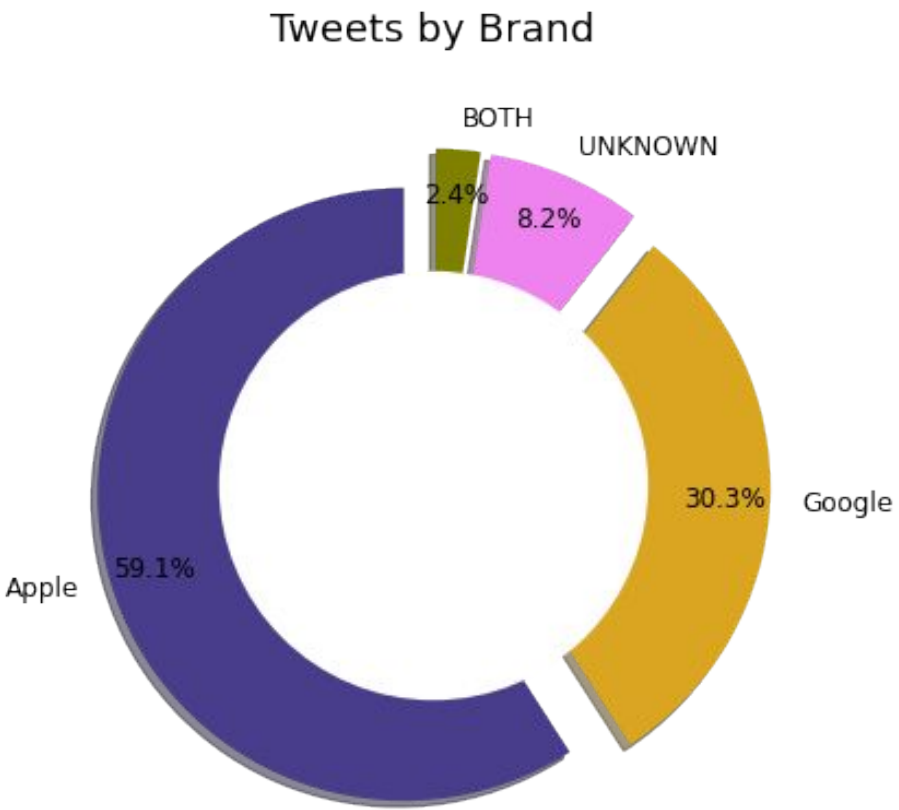
"Any Press is Good Press" but are Neutral Tweets meaningful?



Few Negative Tweets - brands seem to be satisfying.

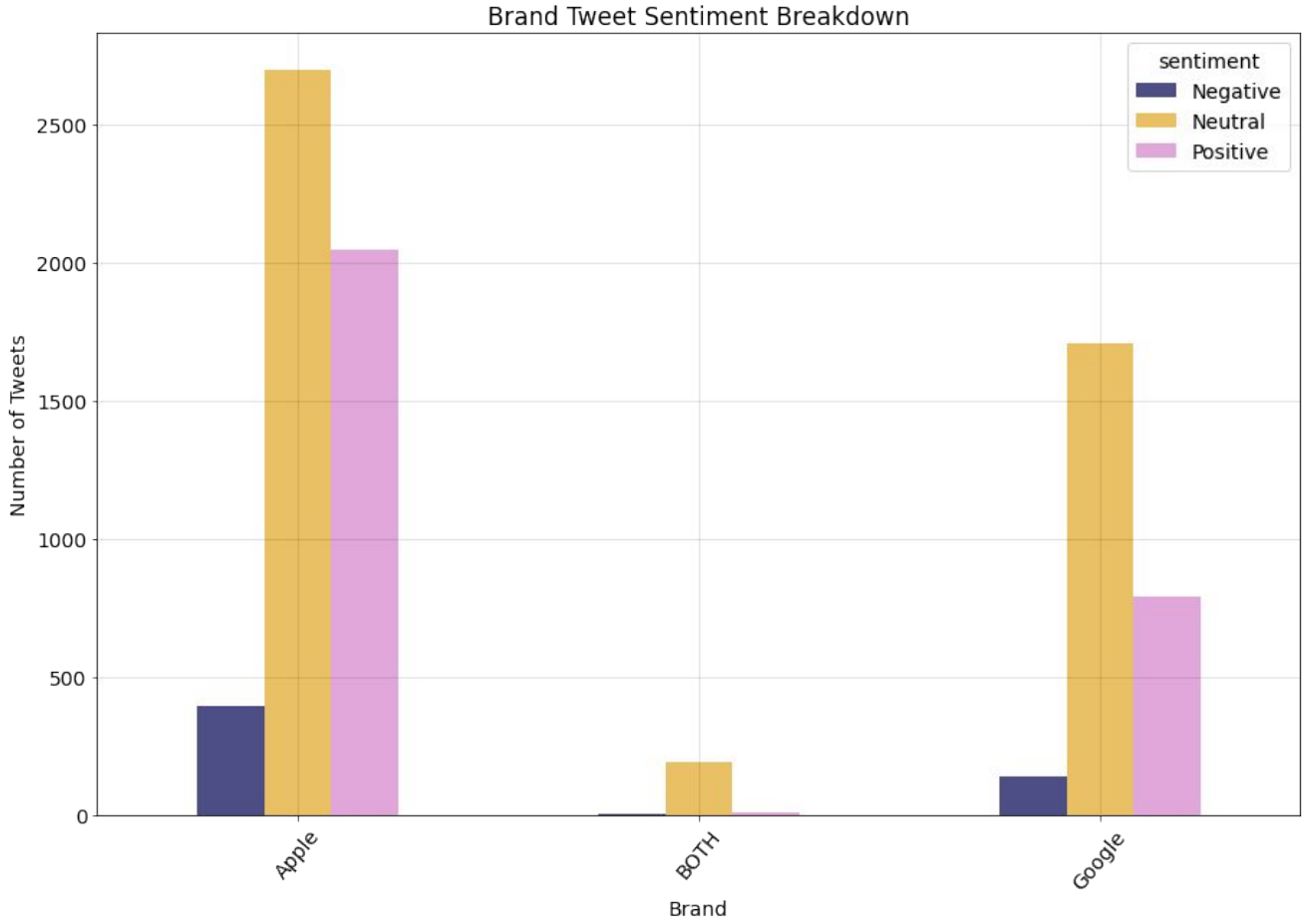
2 Equally Represented?

- Apple leads
  - ~twice the tweets as Google
- Google trails
- Few mentions of both in same tweet
- What about Unknowns?
- Tweets from SXSW
  - Event-goers an Apple crowd?

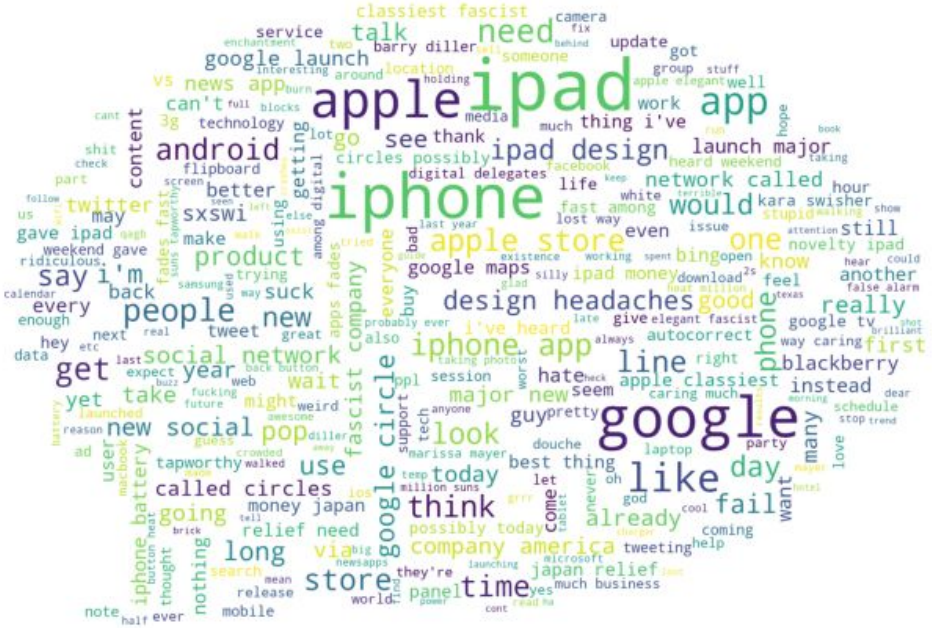


3 Brand insights?

- Few co-mentions may show “Two Camps”
- Similar patterns
  - Pos **>** Neg
  - **++** Neutral
  - Neg:Pos Ratios
    Apple-19%
    Google-18%



What are people tweeting about?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Tweet Classifier

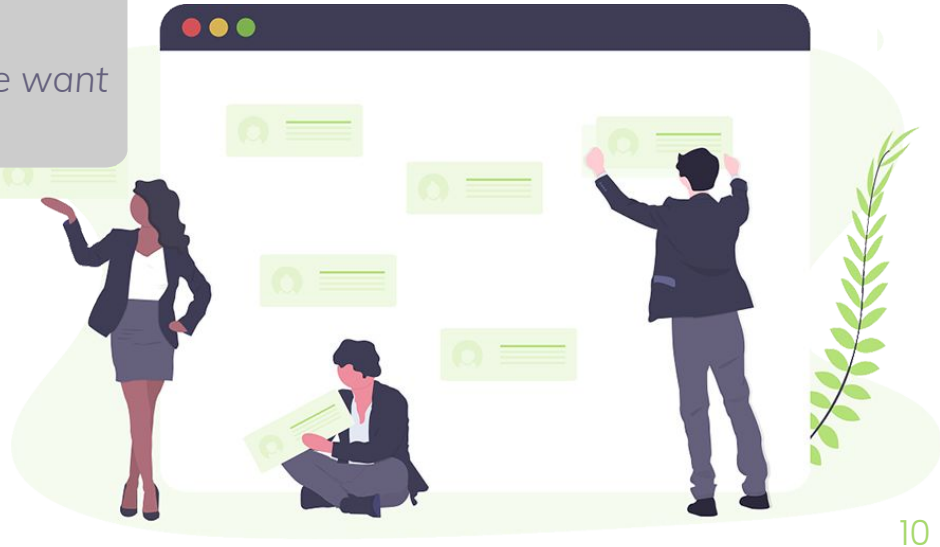
Positive or Negative?

Ignore Neutral, we only want strong opinions.

All 3 Sentiments?

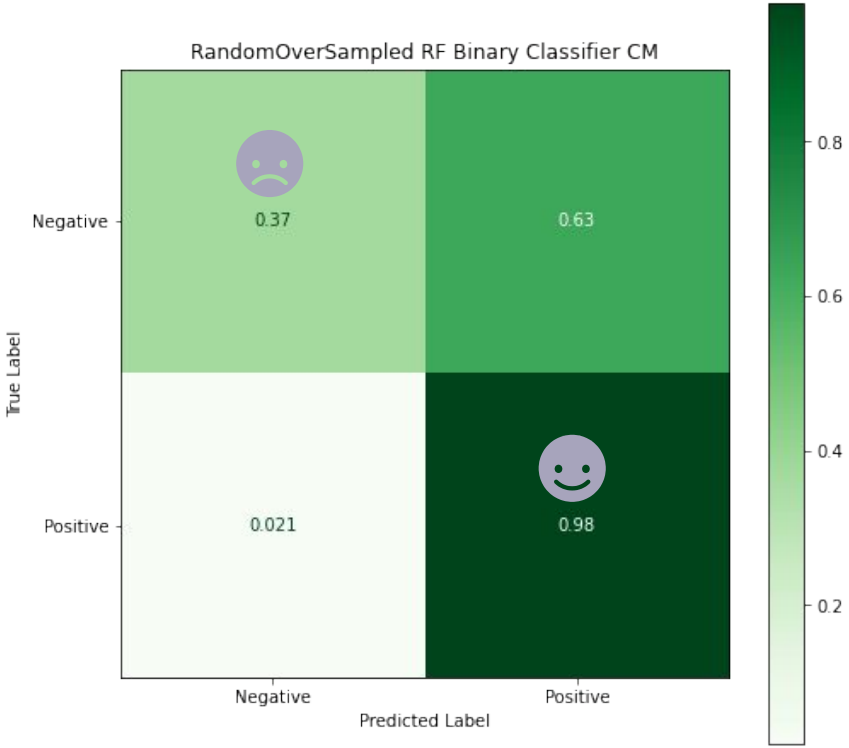
There were many Neutral tweets. We want them represented.

Create Models for Both!



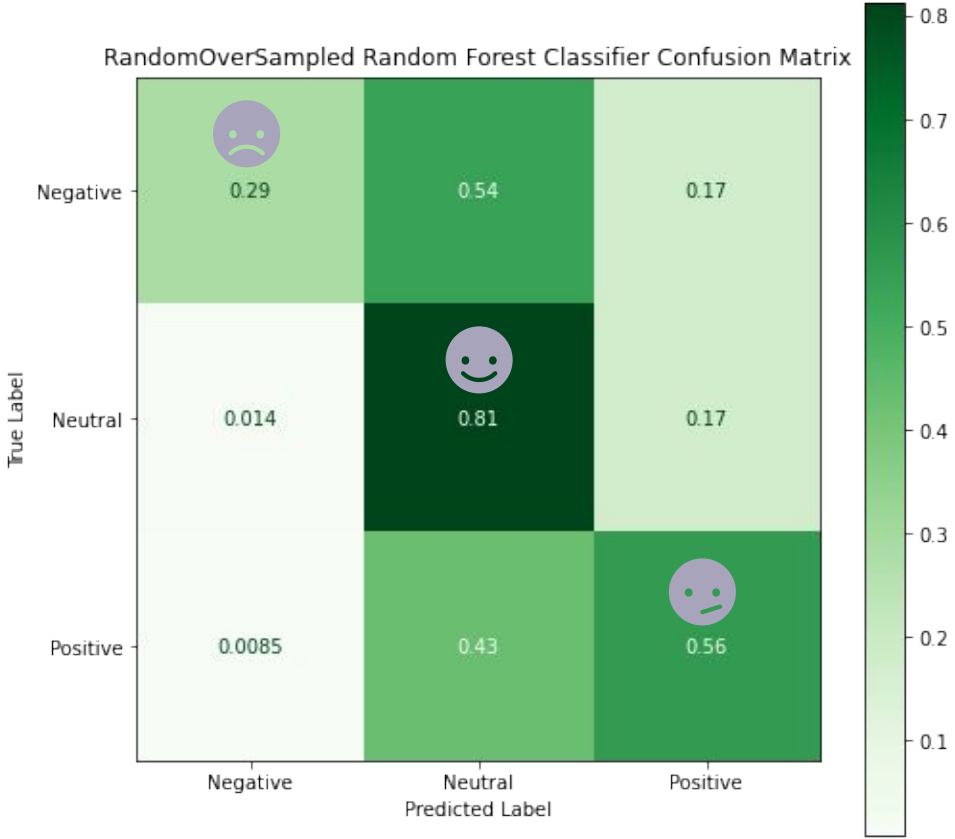
1 Pos I Neg Model Results

- Oversampling to address the issue of too few Negative tweets - not very successful
- Weighted F1 Score as Evaluation Metric for the (4) built models:
  - Useful for class imbalance
  - Balances Precision and Recall
- RandomForest w/ Oversampling generated the "best" model
  - Fantastic for Positive tweets
  - Poor for Negative tweets

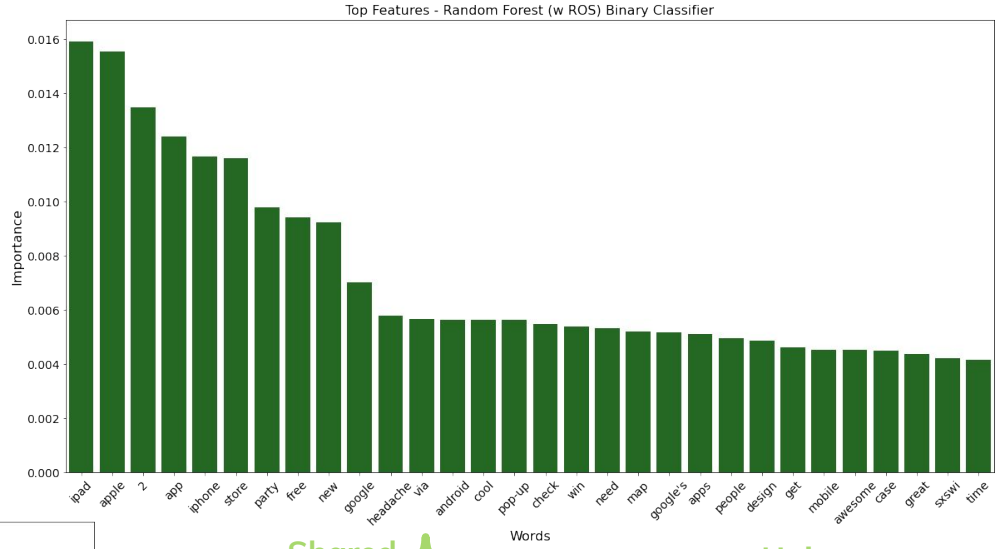


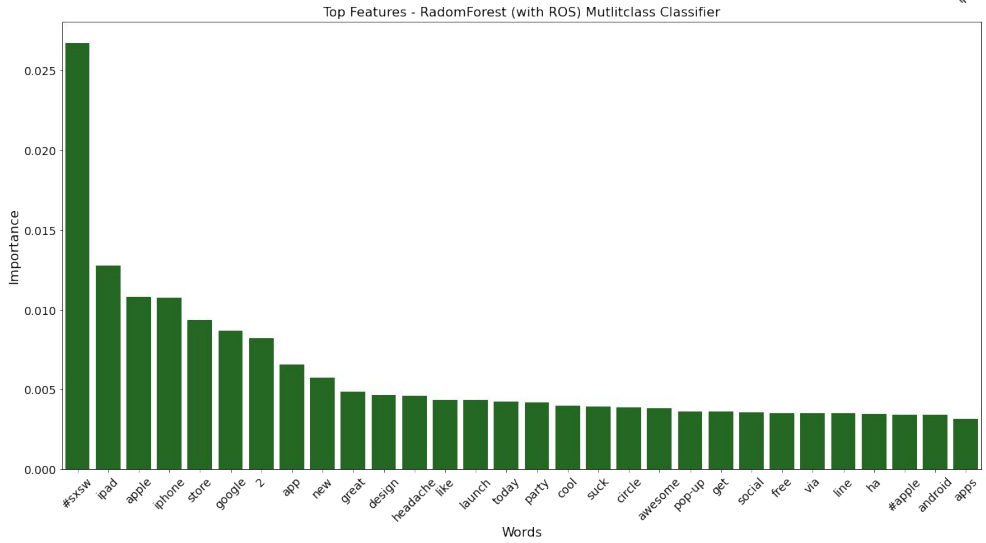
2 Pos /Neg /Neu Model Results

- Used Oversampling & Weighted F1 Score as Evaluation Metric for the (4) built models
- (RandomForest w/ Oversampling generated the “best” model
  - Good for Neutral tweets
  - Mediocre for Positive tweets
  - Poor for Negative tweets



What words mattered?





Shared

Apple	Party
iPad	New
iPhone	Cool
Google	Great
App	Free
Design	Headache

Unique

- Ha
- Circle
- Case
- Need
- Line
- Time

Future Work

1. Punctuation as a Feature?
2. SMOTE for class imbalance
3. Hyper-parameter tuning
4. Better understanding of LIME
5. Transfer Learning with GloVe
6. More Tweets!
    a. VADER-generate sentiment?

Thanks!

Any questions?

You can find me at:

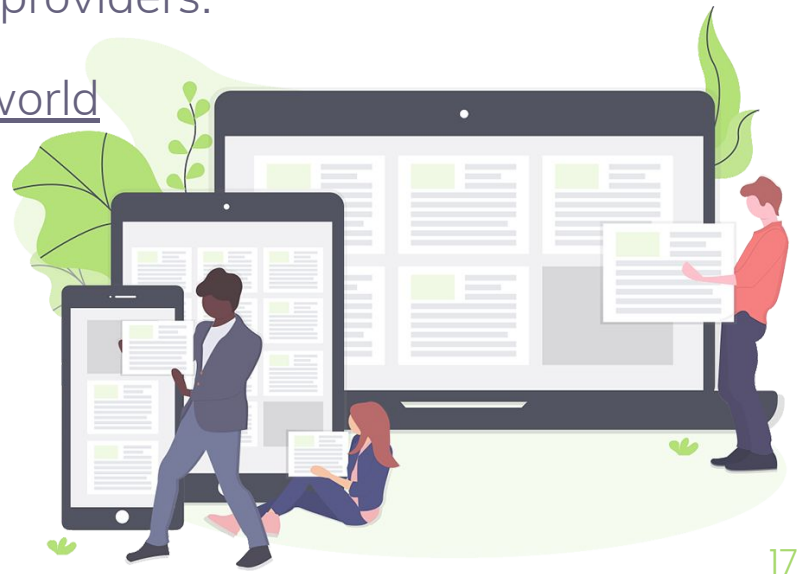
- https://github.com/lspope/
- https://www.linkedin.com/in/leahspope/
- leah@metisconsultingllc.com

Appendix

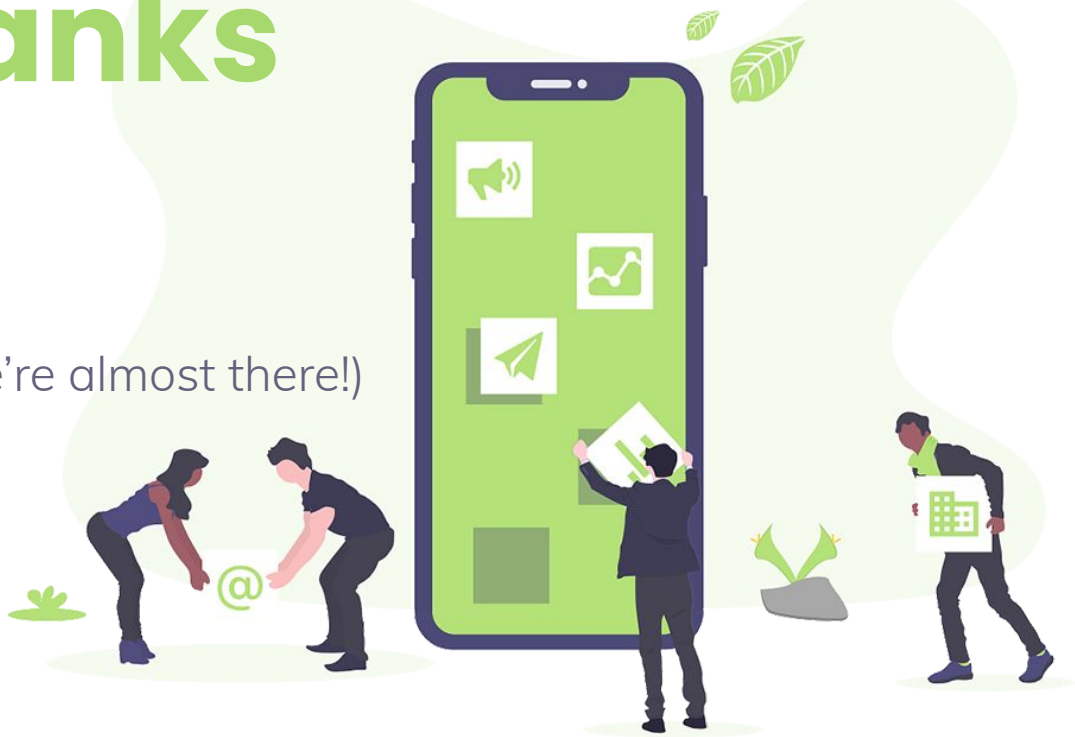
Credits

Special thanks to (awesome & free) resources providers:

- Data provided by CrowdFlower via data.world
- Presentation template by SlidesCarnival
- Photographs by Unsplash
- Illustrations by Undraw.co



Special Thanks

To special people:

- Family & Friends
- Fellow Cohort members (We're almost there!)
- Flatiron Instructors