

Climate Change Sentiment Analysis



Michael Wirtz

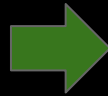


Overview

**The
Problem**



**Building the
Classifier**



**Applying the
Classifier**



**Conclusion /
Next Steps**



The Problem

- Environmental Defense Fund
- Addressing advertising and promotions expense growth
- Where and when to deploy for most donations



Building the Classifier



The Data

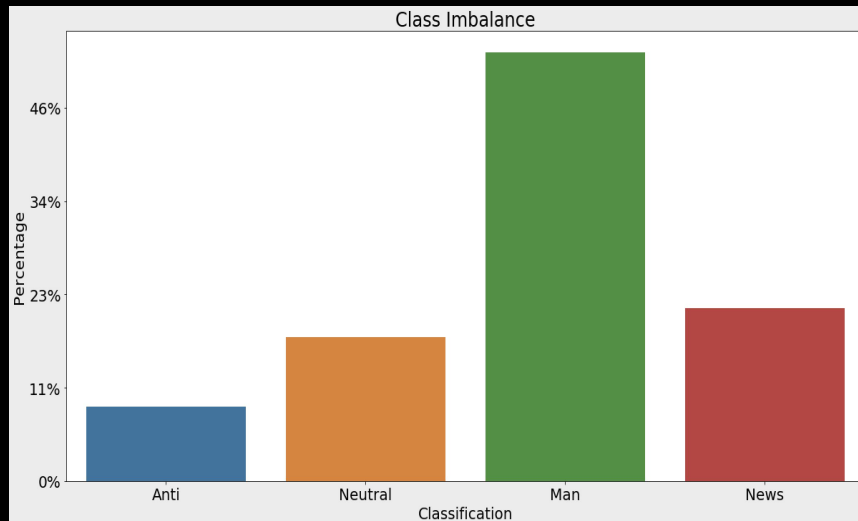
- **43943 Tweets**
- **Apr 2015 - Feb 2018**
- **Four classes**
 - **Anti Man Made**
 - **Neutral**
 - **Man-Made**
 - **News**

The Kaggle logo, featuring the word "kaggle" in a light blue, lowercase, sans-serif font. A small "TM" trademark symbol is located to the upper right of the letter "e". The logo is centered within a dark gray rectangular background.

Class Imbalance

Metric: F1 Score

**Focus on optimizing
'Anti' class f1 score**



Modeling Process

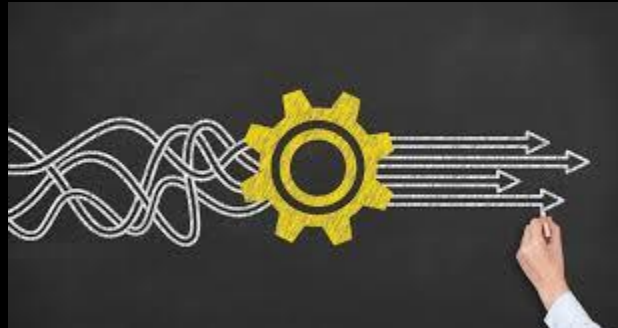
Baseline
Model



Choosing Best
Model



Tuning Best
Model

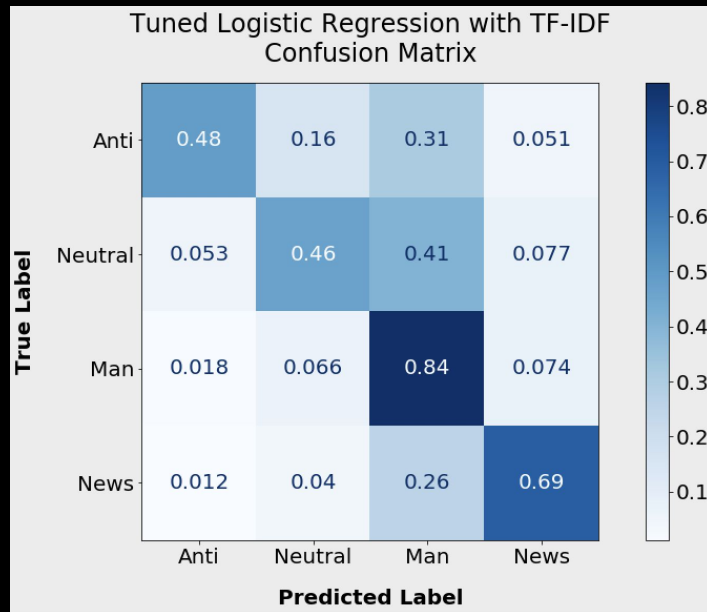


Best Model

Unigram TF-IDF Logistic Regression (Without Added Features)

F1-Scores

- **Man: 0.79**
- **Anti: 0.57**



Applying the Classifier

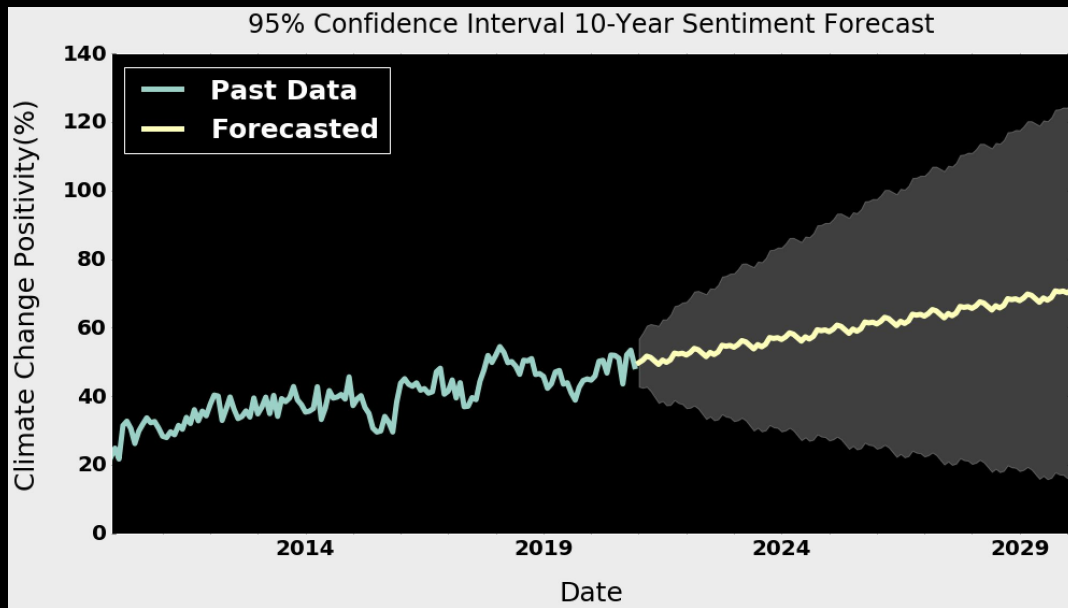


Time Series Analysis

The Assumption

The Data

Analysis



Time Series Findings

1. Donation growth rate of 3.8% year over year
2. Monthly Breakdown:
 - a. Sentiment average vs season
 - b. Best month (March)
 - c. Worst month (August)

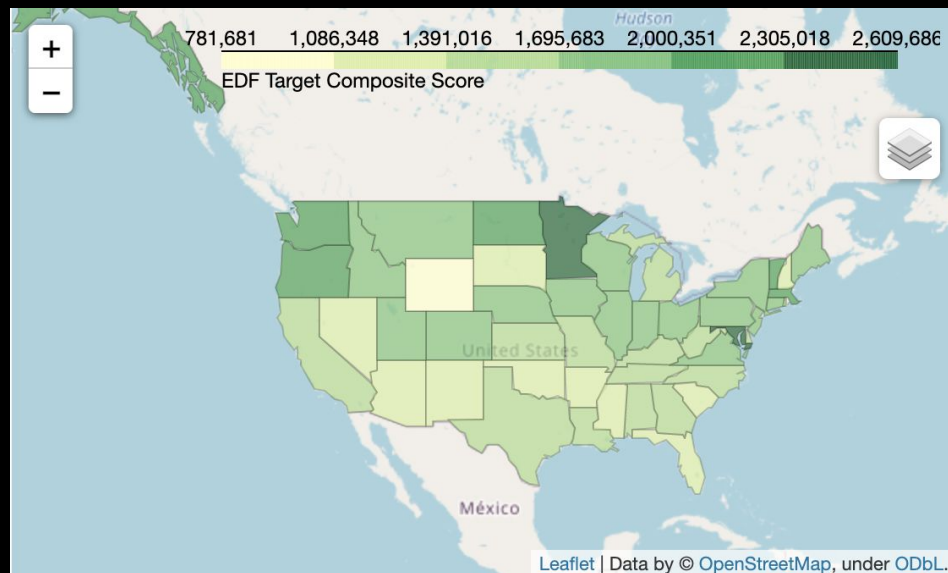


Geographic Analysis

The Assumption

The Data

Analysis



Geographic Findings

Most likely states for climate change donations:

- 1. Minnesota**
- 2. Maryland**
- 3. Oregon**
- 4. North Dakota**
- 5. Washington**



Recommendations

- **EDF**
 - **Advertise in cold months (notably March)**
 - **Focus on top 5 states**
- **Environmentally-focused NGO with low budget can implement**

Next Steps

- Custom scoring metric
- Pipeline for auto updating results
- Location data by county to pinpoint best areas

QUESTIONS?

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