COVID-19 TWEETS

Topic Modeling & Sentiment Analysis

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METIS DATA SCIENCE BOOTCAMP

INTRODUCTION

GOAL:

Provide data analysis support for **social scientists** and **psychologists** to study how people express emotions and what they are most caring about when catastrophic events happen.

DESIGN:

- Topic Modeling
- Dynamic Topic Modeling
- Sentiment Analysis

DATA - Kaggle Data Source

~40k
TWEETS

March~April 2020
TIME RANGE

March~April 2020
COVID CASES

44%
POSITIVE

37%
NEGATIVE

19%
NEUTRAL

TOPIC MODELING & SENTIMENT ANALYSIS WORKFLOW

Preprocessing

NLTK
LancasterStemmer
NLTK stopwords

Vectorizer

CountVectorizer
TF-IDF Vectorizer

Topic Modeling

NMF
LSA

Dynamic Topic Modeling

gensim
ldaseqmodel

Sentiment Analysis

VADER
SentimentIntensityAnalyzer

KEYWORDS & TOPICS

	NMF	LSA
CountVectorizer	'need, demand, stock, panic, food', 'retail, going, like, grocery, store', 'oil, shopping, pandemic, consumer, covid', 'time, like, local, staff, supermarket', 'like, panic, need, shopping, people'	'covid, food, store, grocery, people', 'store, grocery, going, like, retail', 'food, people, panic, stock, need', 'supermarket, people, shopping, like, home', 'people, consumer, shopping, behavior, help'
TfidfVectorizer	'demand, need, panic, stock, food', 'like, go, work, groceri, store', 'impact, pandem, shop, consum, covid', 'time, work, shop, peopl, supermarket', 'roll, peopl, hand, toilet, paper'	'store, groceri, covid, food, peopl', 'store, groceri, go, thank, line', 'consum, covid, pandem, impact, behavior', 'supermarket, shop, consum, work, covid', 'paper, toilet, consum, hand, roll'

SELECTED TOPICS: TFIDFVECTORIZER + NMF

PANIC

demand, need, panic, stock, food, hoard, bank

GROCERY

like, go, work, groceri, store, local, today, day, shop

RETAIL

impact, pandem, shop, consum, covid, protect, retail, oil, outbreak

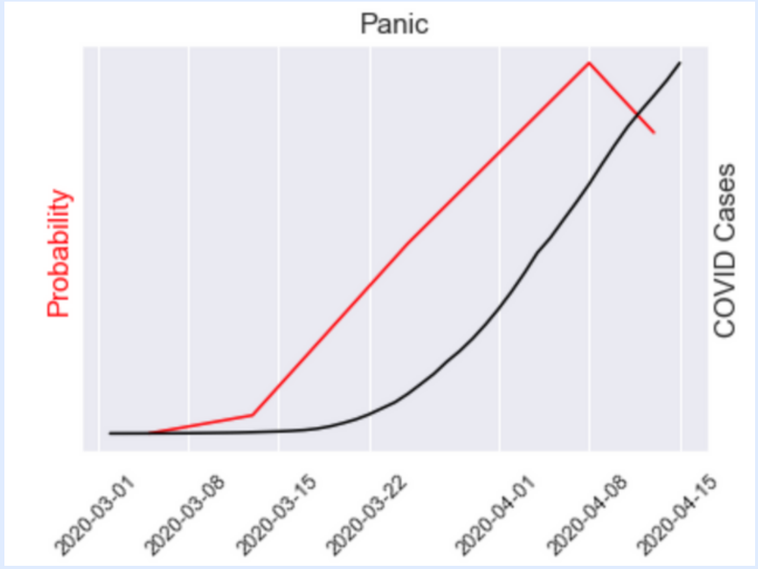
SOCIAL

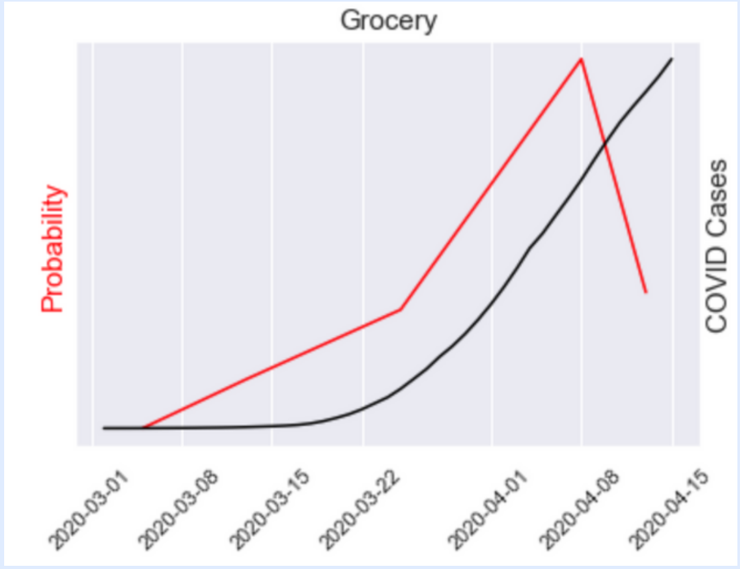
time, work, shop, peopl, supermarket, social, home, staff

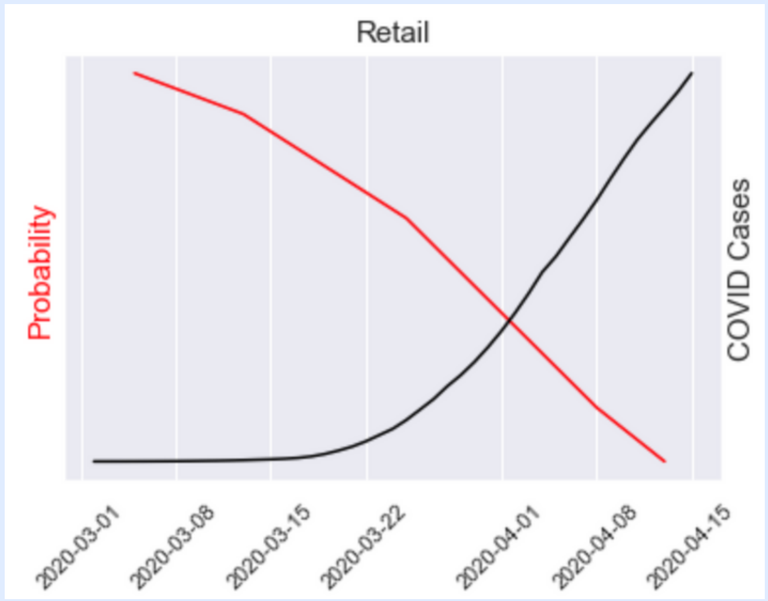
TOILET PAPER

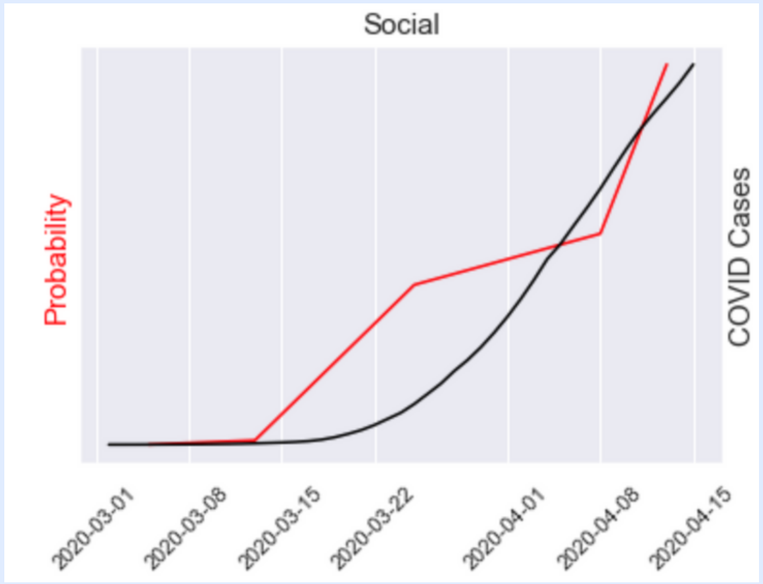
roll, peopl, hand, toilet, paper, buy, shortag, water, hoard

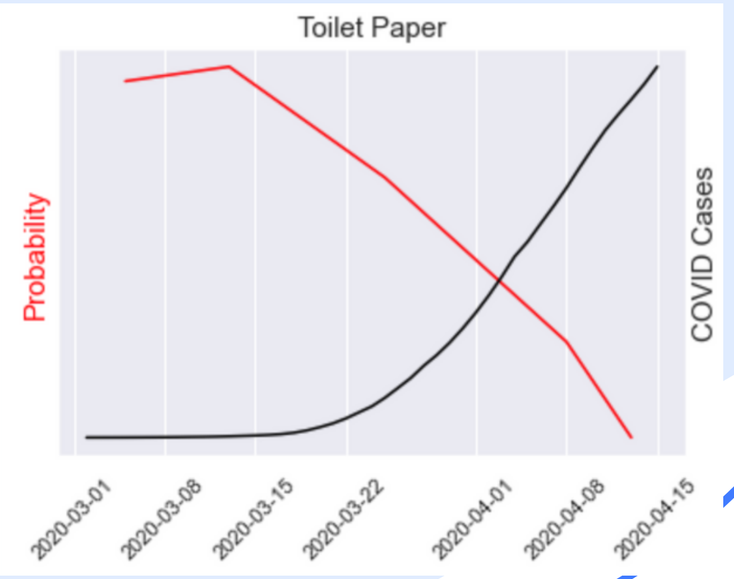
DYNAMIC TOPIC MODELING





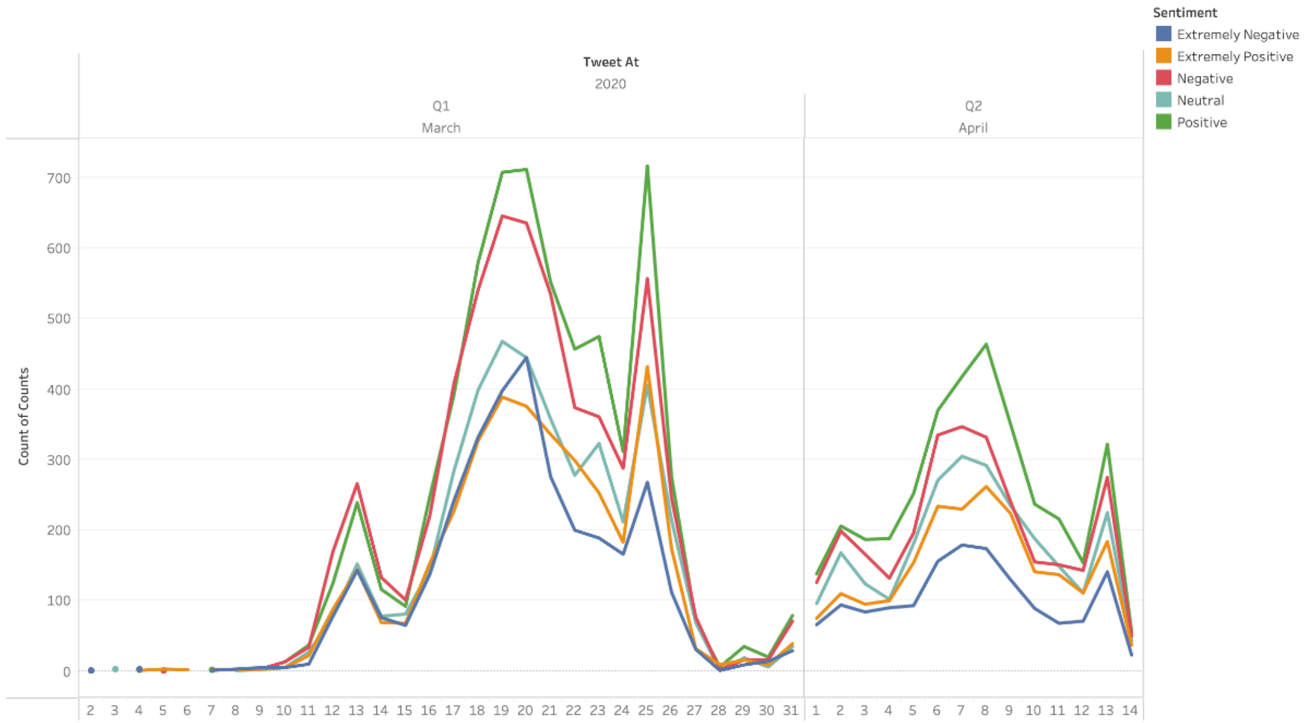




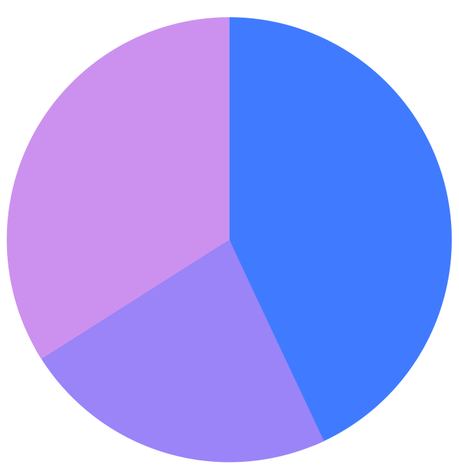


SENTIMENT ANALYSIS

Given sentiments in March and April 2020



Predicted by **VADER**: -0.05~0.05

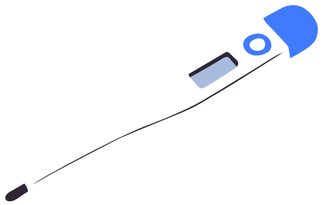


NEGATIVE
34%

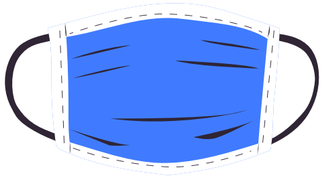
POSITIVE
43%

NEUTRAL
23%

CONCLUSIONS



- PANIC, GROCERY, RETAIL, SOCIAL, and TOILET PAPER are the five top topics.



- RETAIL has the most obvious rising trends among the top topics with the increasing of COVID cases.

- The sentiment does not obviously vary with time, while more people remain at a positive stage.

NEXT STEPS

- Including Geographic effects.
- Consider government mask requirements

THANK YOU!
ANY QUESTIONS?