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Introduction

Multiple studies have shown significant evidence of mental health burden of COVID-19 globally. (Turna et al., 2021)Focusing on the demographic of New Jersey residents, through data captured online, this study analyzes sentiments to determine users' emotional response throughout pandemic comparing the mental state COVID-19 lockdown period.

Utilizing the data and methods that will be discussed, the study aims to better understand how anxiety and depression level changed throughout the COVID-19 lockdown period and specific characteristics that can be observed from the data gathered.

F1 Score (Weighted): 0.7306941592126864
Matthews Correlation Coefficient: 0.5511155994641682
Balanced Accuracy Score: 0.4346821069277199
Decision Tree Accuracy: 0.734071129257548

Methods

1. Text Pre-Processing
2. Stemming, Lemmatizing
3. Topic Modeling
4. TFIDF-Word2Vec
5. Modeling
   a. Decision Trees
   b. SVM
   c. Naive Bayes
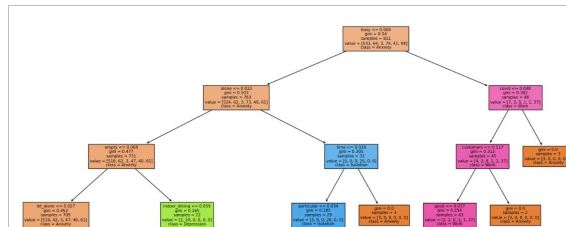   d. *BERT*
   e. Anomalies

References/Data sources

Datasets:
- Yelp dataset
- Tweets from Github

References/ Related Articles:

Daly, M., & Robinson, E. (2021a, May 1). *Anxiety reported by US adults in 2019 and during the 2020 COVID-19 pandemic: Population-based evidence from two nationally representative samples*.
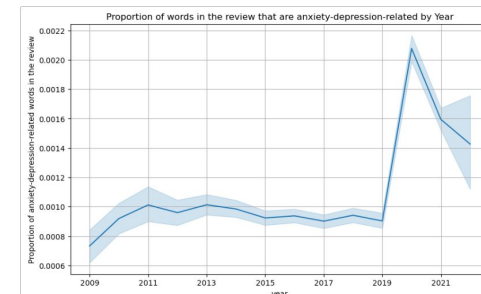
Results


```
Feature: good, Importance: 0.09397362895804504
Feature: covid, Importance: 0.032200287043296145
Feature: bad, Importance: 0.017569964391742895
Feature: happy, Importance: 0.013909480304855606
Feature: busy, Importance: 0.00942749643281639
Feature: terrible, Importance: 0.009041800662671693
Feature: alone, Importance: 0.0066750843437245275
Feature: empty, Importance: 0.005069026888054247
Feature: bill, Importance: 0.0045393206552497499
Feature: sad, Importance: 0.0042194237540315194
```

	precision	recall	f1-score	support
Anxiety	0.72	0.44	0.55	1862
Depression	0.47	0.33	0.39	842
Financial	0.28	0.64	0.39	1170
Isolation	0.00	0.00	0.00	42
Recovery	0.68	0.06	0.11	396
Work	0.74	0.15	0.25	248
neutral	0.91	0.91	0.91	19664
accuracy			0.81	24224
macro avg	0.54	0.36	0.37	24224
weighted avg	0.84	0.81	0.81	24224

Insights

Proportion of words in the review that are anxiety-depression-related by Year

```
Topic 0:
say time told ask come customer service make wait like

Topic 1:
great staff time place recommend service make friendly work love

Topic 2:
order good place pizza food great cheese like try sandwich

Topic 3:
food order good place restaurant come great time service table

Topic 4:
coronavirus covid case 19 death health die covid19 positive test
```