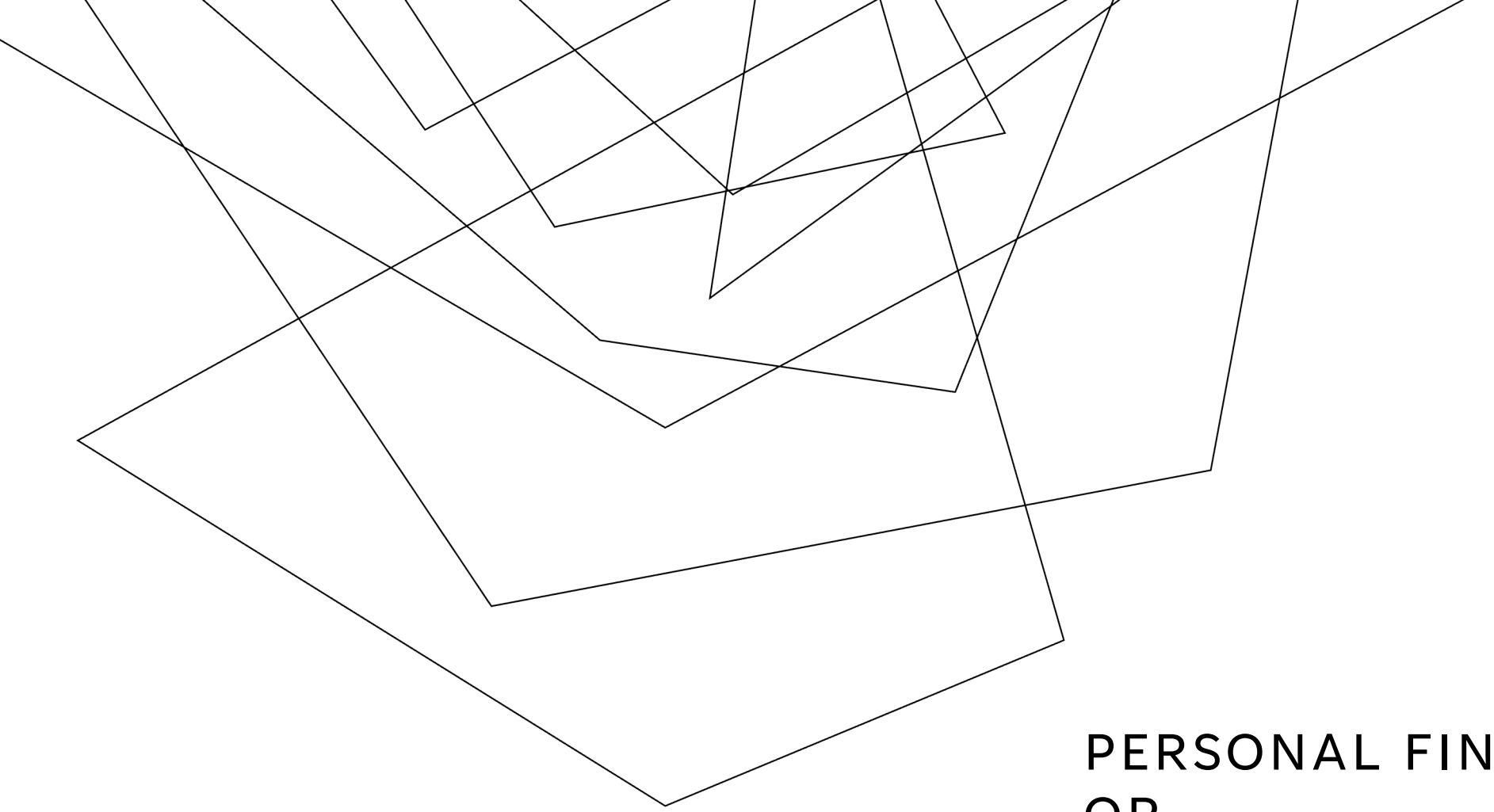


PERSONAL FINANCE OR FINANCIAL INDEPENDENCE

by Osei Anom

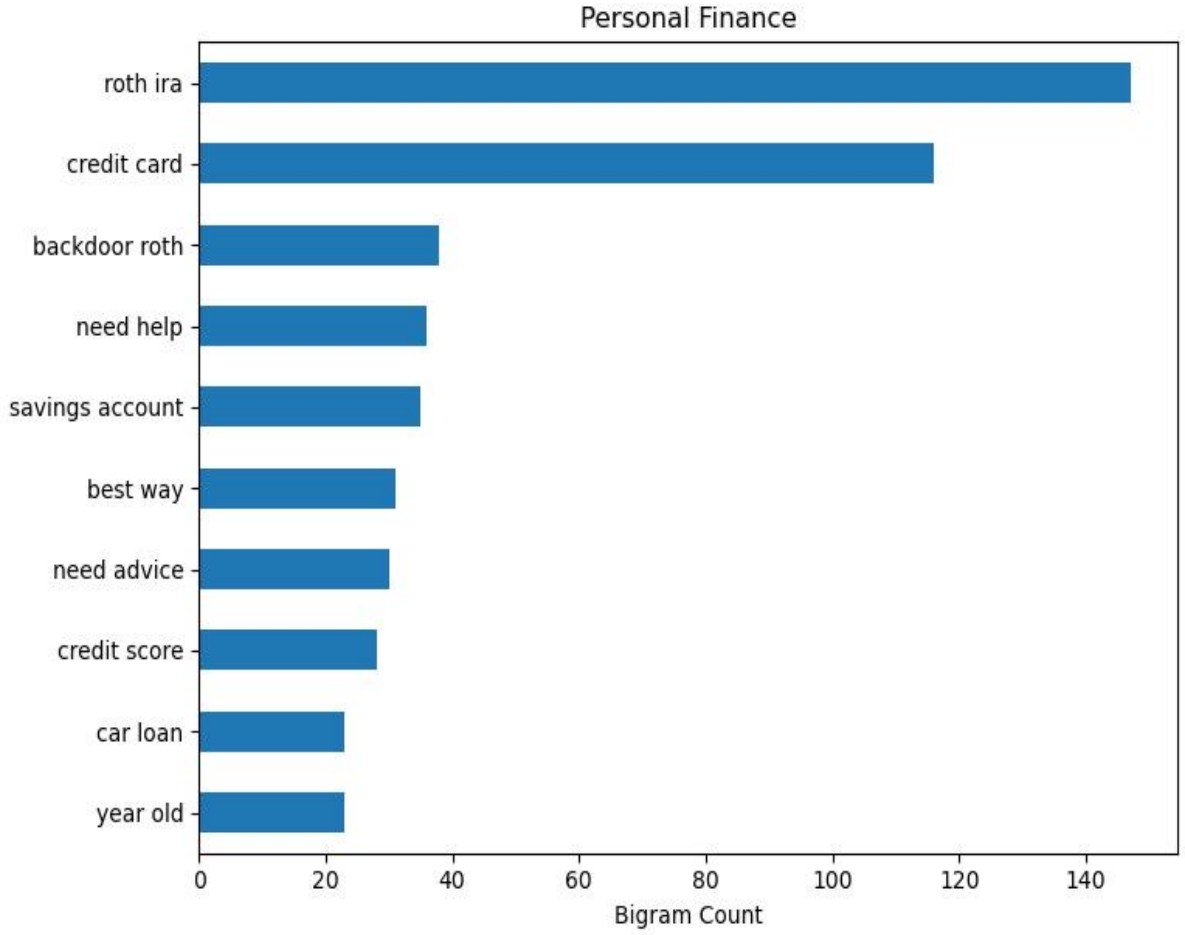
EXECUTIVE SUMMARY:

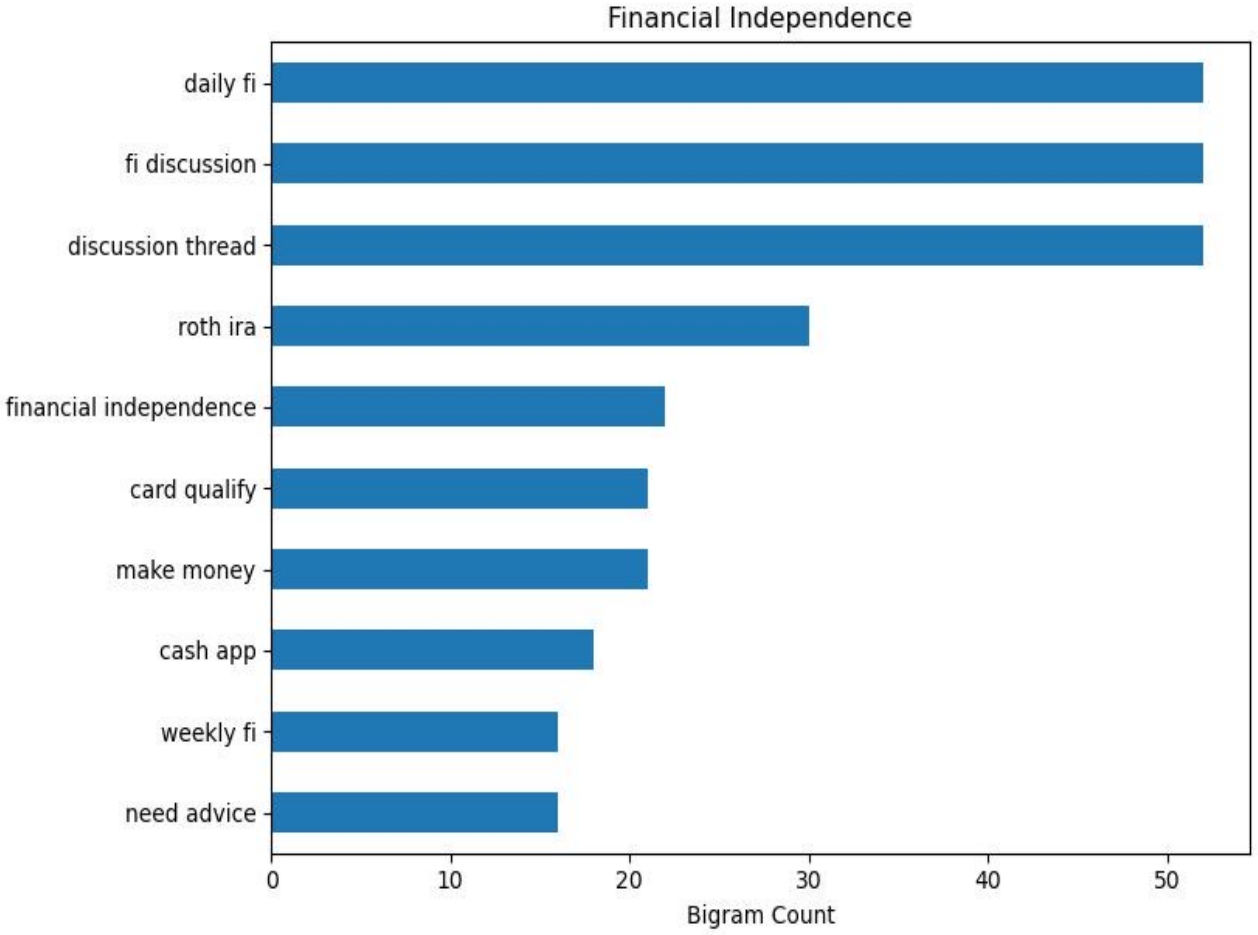
- collect unstructured data, pre-process that data, then build a predictive classification model.
- subreddit's "Personal Finance" and "Financial Independence”
- Used several classification models to determine which best predicts the subreddit a post will fall under

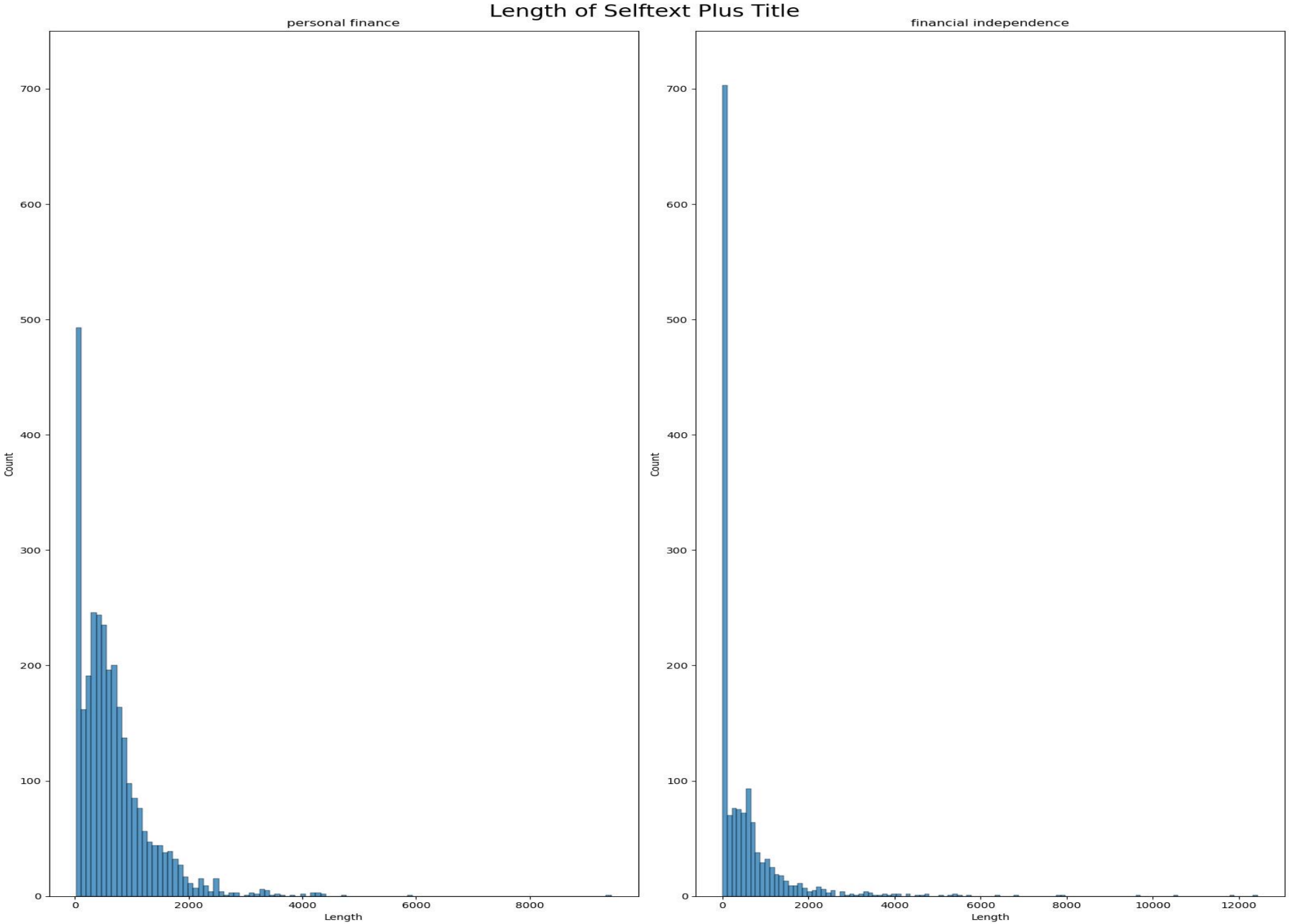
PROCESS

1. Extracted Data using Pushshift API
2. Exploratory Data Analysis
3. Initial Modeling
4. Secondary Modeling with additional data

Top Bigrams by Subreddit






Length of Selftext Plus Title
personal finance
financial independence
Count
Length
0
100
200
300
400
500
600
700
0
2000
4000
6000
8000
10000
12000

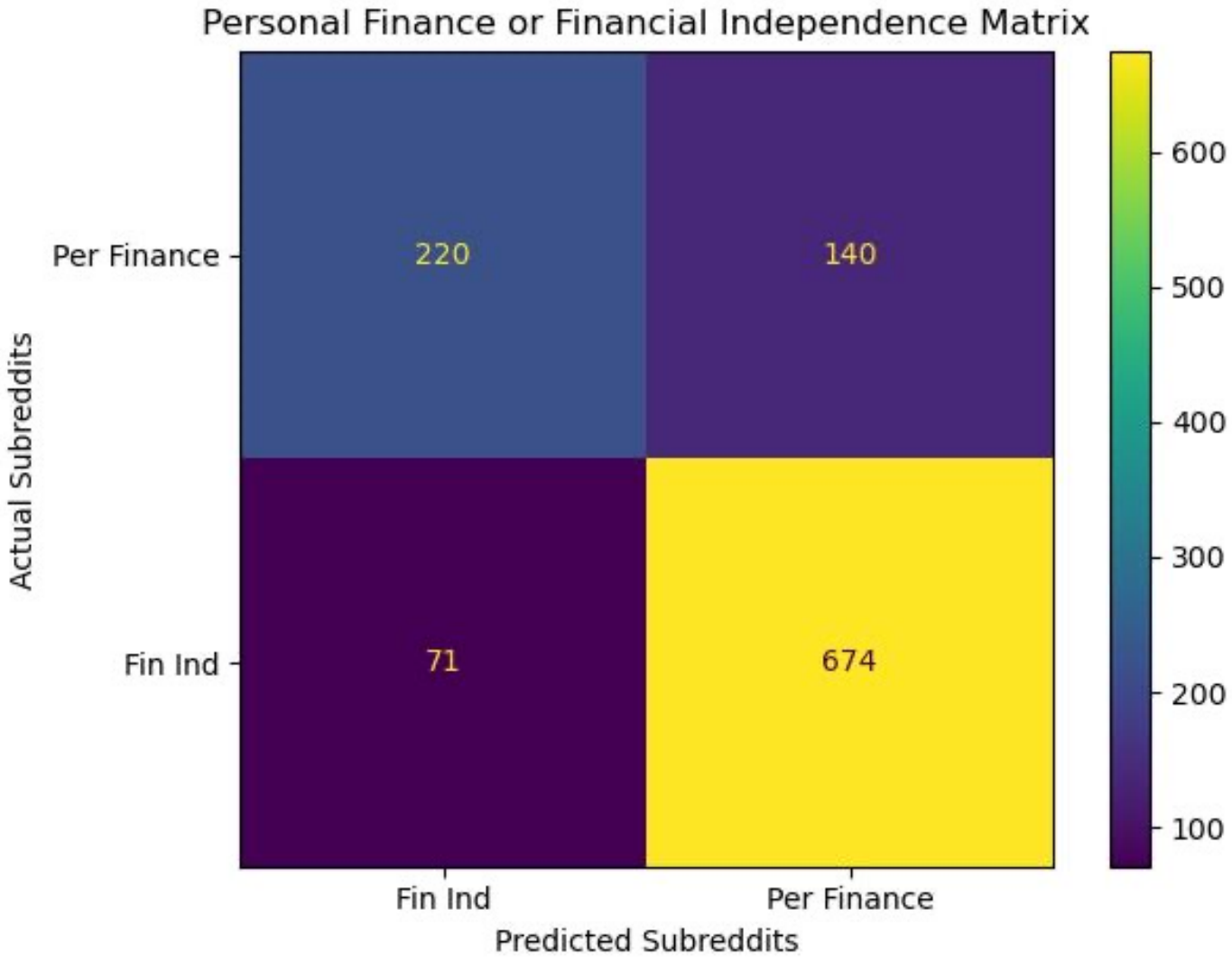
METHODOLOGY, INFERENCES, ASSUMPTIONS:

- Used Tfid Vectorizer through GridSearch running Logistic Regression, Decision Tree, Multinomial Naive Bayes, KNeighbors, Random Forest, AdaBoost, and finally Stacking
- Used F1 to determine performance between models
- Giving additional data would help increase test accuracy and F1 score

BEST PERFORMING MODELS (TEST SCORES)

	MN BAYES	RANDOM FOREST	ADA BOOST	STACKED
F1	84 %	85 %	84 %	86 %
Accuracy	76 %	78 %	78 %	81 %
Misclassification	24 %	22 %	22%	19 %

EVALUATION


Personal Finance or Financial Independence Matrix
Per Finance
Fin Ind
Actual Subreddits
220
140
71
674
Fin Ind
Per Finance
Predicted Subreddits
600
500
400
300
200
100

SUMMARY & CONCLUSIONS

- All models were overfit
- TBD if including word count and word length would help performance.
- The model over predicted personal finance subreddit (false positives), partially due to the imbalance of classes
- Would like to explore over / under sampling, Grid Searching with balanced accuracy, synthetic data