



# **Supplements vs Nootropics Online-Community Parsing**



## Dietary Supplements

- Health
- Well - Being
- Fitness



## Nootropics

- Brain boosting,
- Memory
- Cognition/Learning

# Synopsis

- Supplement Industry is a 37 Billion a year Business (National Institute of Health)
- Nootropics Industry comprises 1.34 billion of that today
- Nootropics are expected to grow to 8 billion by 2024
- Nootropics are a fast growing segment
- Increased media and startups in sector



# Problem statement:



How can we parse out these  
2 online communities?

Lot of overlap





## Methodology:

1. Web Scrape (Reddit)
2. Analyzing word counts
3. Create a Machine Learning Model





# Scraping and Analyzing





# Reddit Supplement

## 876 Posts Scrapped

- Recommendations **Supplementing for eczema and have a few questions. (Very new to this.)** (self.Supplements)  
submitted 10 hours ago by lucyandlinus94  
11 comments share save hide give award report crosspost
- Vitamin K the new fad?** (self.Supplements)  
submitted 9 hours ago \* by Teleswagz  
29 comments share save hide give award report crosspost
- Anyone ever supplement laxogenin?** (self.Supplements)  
submitted 7 hours ago by Whitestmold045  
2 comments share save hide give award report crosspost
- General Question **Trying to name a supplement for treating Raynaud's Syndrome/poor blood circulation**  
submitted 5 hours ago by Tassili  
6 comments share save hide give award report crosspost
- Anyone know how to supplement on ALA?** (self.Supplements)  
submitted 5 hours ago \* by 1PsychoMan1  
5 comments share save hide give award report crosspost
- General Question **Any positive or negative effects on blood pressure while taking gelatinized Biotin?**  
submitted 11 hours ago by fog1026  
3 comments share save hide give award report crosspost
- Experience **Optimum nutrition gold standard isolate** (self.Supplements)  
submitted 9 hours ago by amwfhunter  
5 comments share save hide give award report crosspost
- How is Swanson as a company, assuming I'm getting a patented ingredient in the product?**  
submitted an hour ago by smartified  
2 comments share save hide give award report crosspost
- Sublingual tablets** (self.Supplements)  
submitted 8 hours ago \* by Arenet  
comment share save hide give award report crosspost
- 20 white UK male university student, eating a gluten and dairy free diet** (self.Supplements)  
submitted 15 hours ago by asasasasas98  
17 comments share save hide give award report crosspost

# Reddit Nootropic

## 759 Posts Scrapped

- Oral S-adenosylmethionine (SAM) Administration Increases Whole Brain Concentrations of Dopamine and Norepinephrine  
submitted 10 hours ago by Disturbed83  
41 comments share save hide give award report crosspost
- Scientific Study **Melatonin receptors limit dopamine reuptake by regulating dopamine transporter cell-surface expression**  
submitted 9 hours ago by kayjay  
10 comments share save hide give award report crosspost
- Scientific Study **Nicotinamide/Niacinamide (Vitamin B3) supplementation induces detrimental metabolic and epigenetic changes in mice**  
submitted 5 hours ago by SuperAgonist  
4 comments share save hide give award report crosspost
- Scientific Study **Long-Term Vegetables and Fruits Intake Improves Cognitive Functioning: 16 Year Longitudinal Study**  
submitted 23 hours ago by CL20  
47 comments share save hide give award report crosspost
- Amphetamine treatment in therapeutic ADHD doses damages dopaminergic nerve endings in the striatum of adult mice**  
submitted 15 hours ago by SuperAgonist  
11 comments share save hide give award report crosspost
- Big finding, but I need some help.** (self.Nootropics)  
submitted 34 minutes ago by Unlimes  
comment share save hide give award report crosspost
- Discussion **Which nootropic resembles best the cognitive benefits of creatine?** (self.Nootropics)  
submitted 6 hours ago by iamapennie  
7 comments share save hide give award report crosspost
- Is it possible to compare, in a quantifiable way, the relative anti-inflammatory effect of Theracumin, Longvida, holy basil, and curcumin?**  
submitted an hour ago by OceanFiaNov99  
1 comment share save hide give award report crosspost
- 9mbc vs Syrian Rue** (self.Nootropics)  
submitted 10 hours ago by theCLK  
2 comments share save hide give award report crosspost
- Genetic Testing and Supplementation** (self.Nootropics)  
submitted 2 hours ago by IAmAWretchedSinner  
3 comments share save hide give award report crosspost
- Does the Wim Hof method work for everyone?** (self.Nootropics)  
submitted 11 hours ago by Redditor561  
12 comments share save hide give award report crosspost
- First time feeling effects of Ashwagandha** (self.Nootropics)  
submitted 7 hours ago by kizerkizer  
5 comments share save hide give award report crosspost
- Any anecdotal reports on low dose antipsychotics (I am interested in Haloperidol) for Dopamine D2 Upregulation?**  
submitted 4 hours ago by HaxusPrime  
8 comments share save hide give award report crosspost



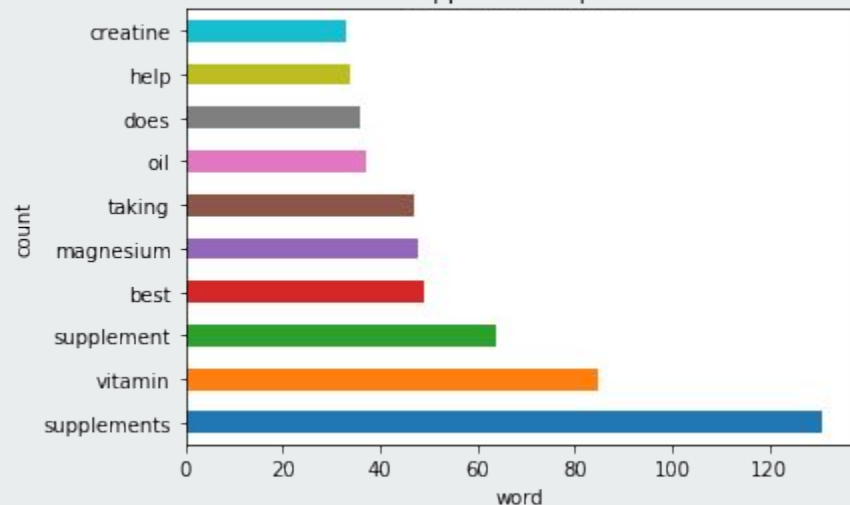
Guesses on what words  
Most indicative of the  
Online communities?



# Reddit Supplement



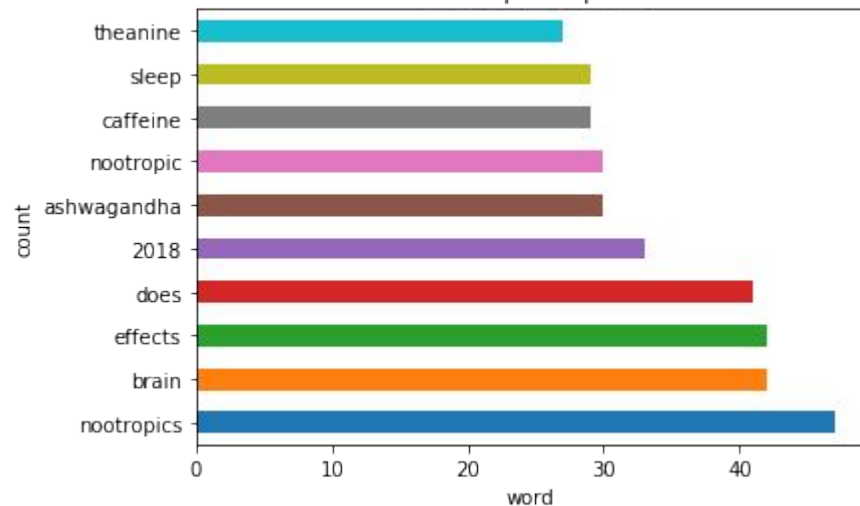
Supplement top list



# Reddit Nootropic



Nootropics top list





# Model Preparation





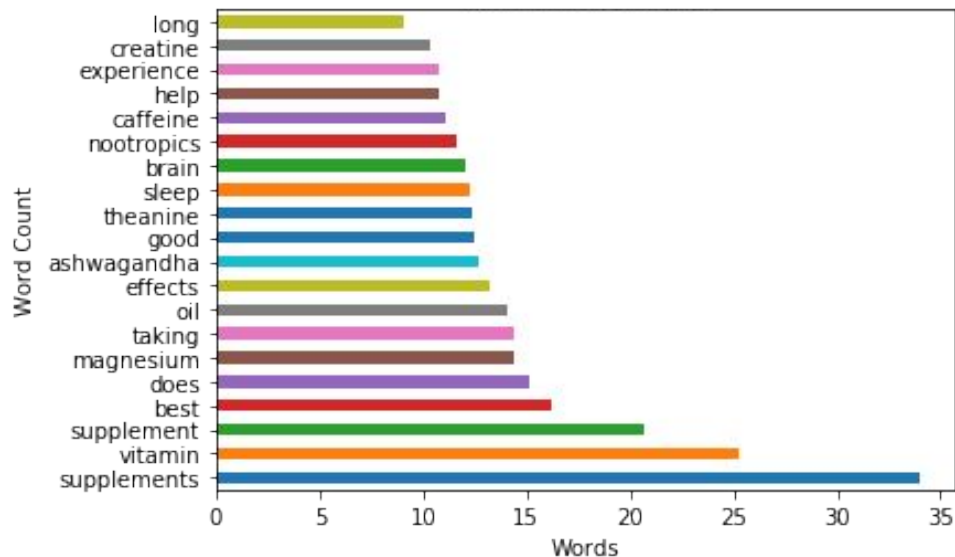
## Weight Choice? TF-IDF vs Count Vectorizer

- TF-IDF weights less frequent more
- Count Vectorizer weights word counts (simplified)

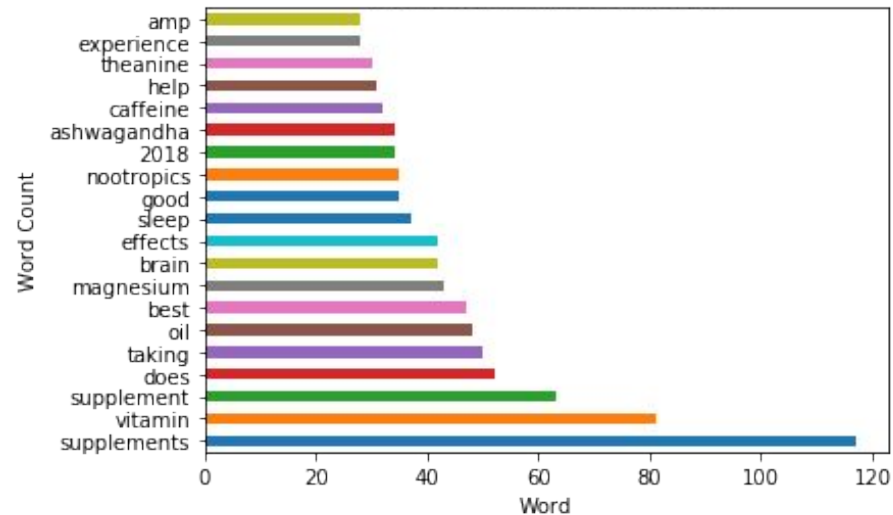
# Similar



TFIDF MODEL TRAIN



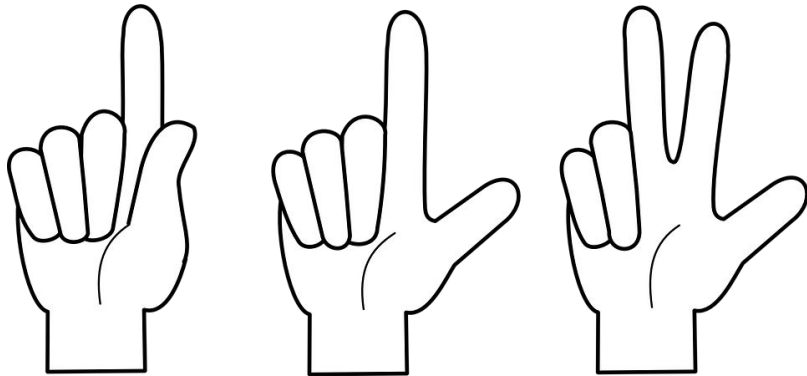
Trained Data Count Vectorizer



Ran both through multiple classification models



Count Vectorizer has better baseline and test scores.  
(small margin 1-2%) Which means regular weighted  
counts are likely more predictive in this case.





# Modeling





# Models with Score



## Logistic Regression

Base accuracy = 96%

Test accuracy = 77%

### Random Forest Classifier

Base Accuracy = 0.9626016260162602

Test Score = 0.7341463414634146

### Naive Bayes

Base Accuracy = 0.9292682926829269

Test Score = 0.7682926829268293

### KNN Classifier

Base Accuracy = 0.5682926829268292

Test Score = 0.5560975609756098

### Support Vector Model

Base Accuracy = 0.9292682926829269

Test Score = 0.7536585365853659



### Logistic Regression

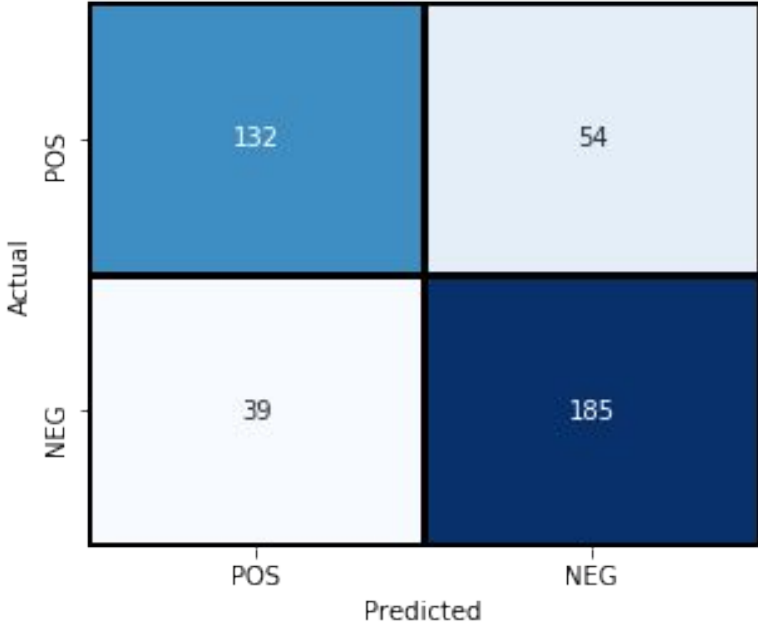
Base accuracy = 0.9585365853658536

Test accuracy = 0.7731707317073171

# Confusion Matrix for Logistic Regression



Measure	Value
Sensitivity	0.8259
Specificity	0.7097
Precision	0.7741
Negative Predictive Value	0.7719
False Positive Rate	0.2903
False Discovery Rate	0.2259
False Negative Rate	0.1741
Accuracy	0.7732



# Conclusions



77% Test Accuracy - We likely need more data or scraping (Unfortunately limited) We will need to revisit subreddit when it grows.

Potential to look at the most profitable Nootropics and supplements (Magnesium, Ashwagandha, and Theanine) These 3 supplements may indicate a general deficiency among population? Possibly signaling larger symptomatic health issues. All are related to anxiety. Potential for sector growth.

Topics are similar but vocabulary used is different (eg. using Nootropic vs Supplement). They have very