



Beer Recommendation & Rating Prediction Model

It's always 5 o'clock somewhere!

A. Utku Kale

Overview

- Business Problem
- Data & Approach
- Conclusions
- Next Steps



Business Problem

Rum and Lemonade Bistro
wants to brew their in house
beer.

Recommend 5 other beers
to customers based on a
beer they like.

How can they make a beer
with high rating?



Data & Approach

Regression Models and Cosine Similarity

- 5500+ Beers from BeerAdvocate
- 112 Beer Styles

Mouthfeel

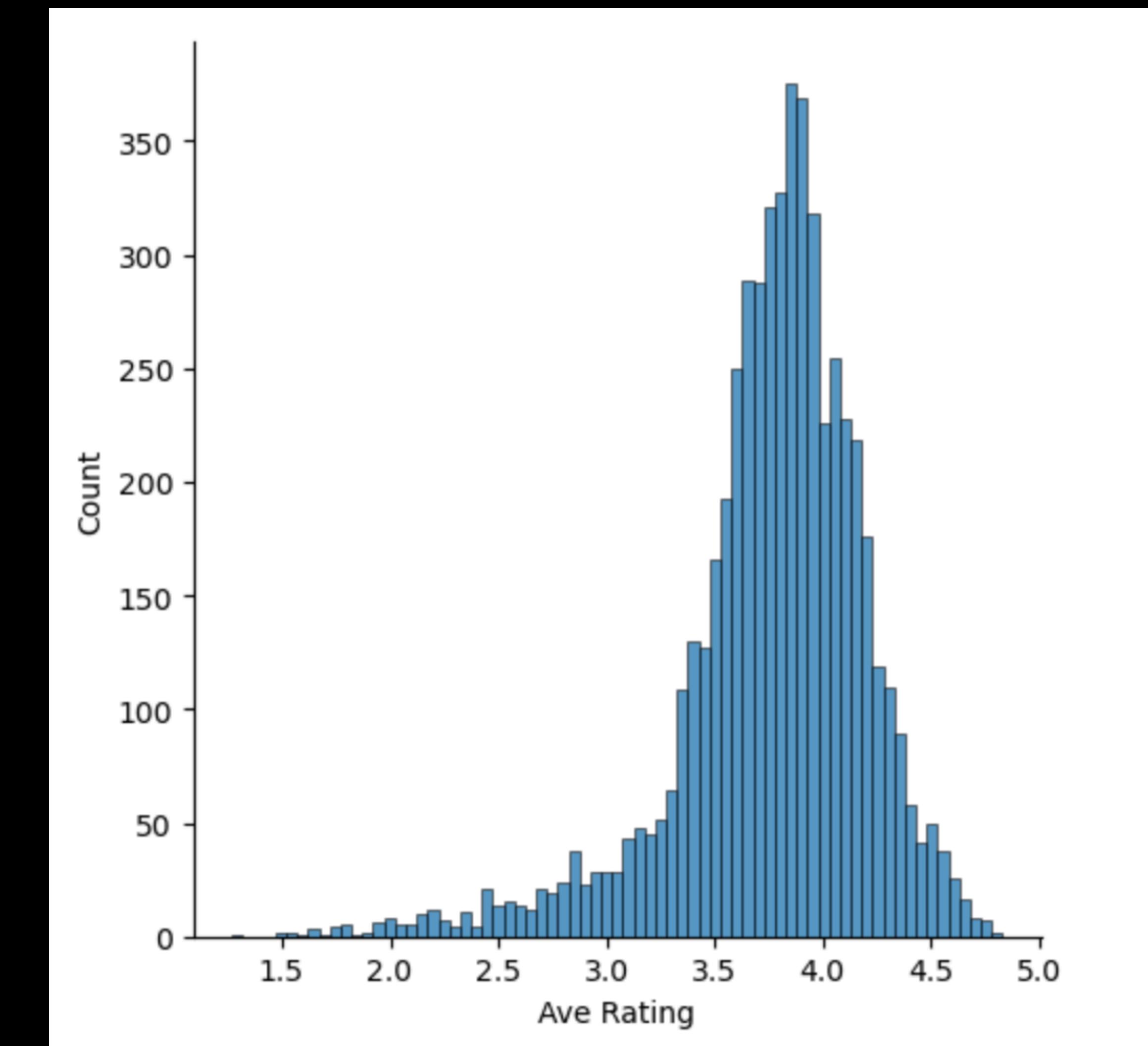
- Astringency
- Body
- Alcohol

Taste

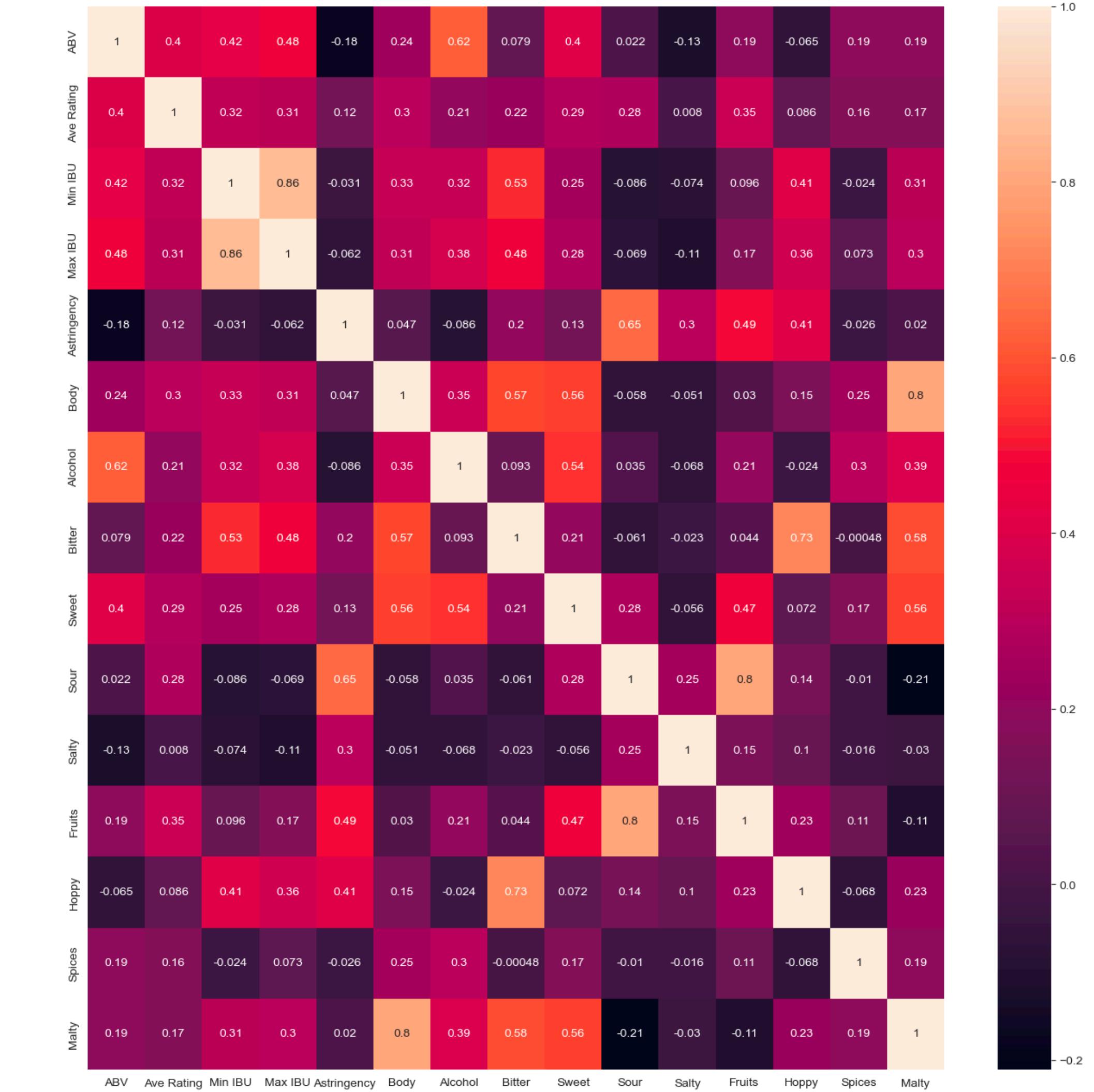
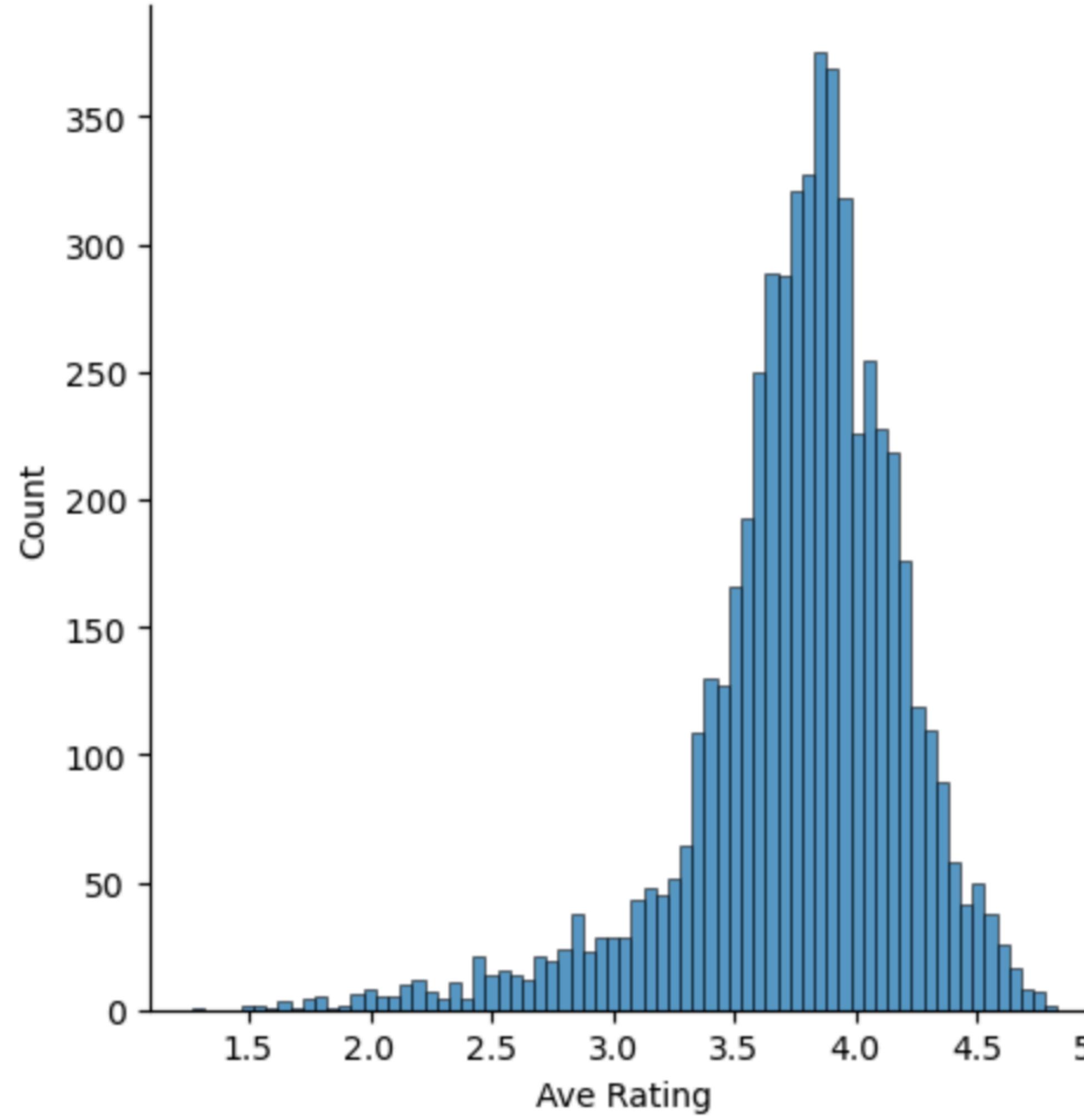
- Bitter
- Sweet
- Sour
- Salty

Flavor And Aroma

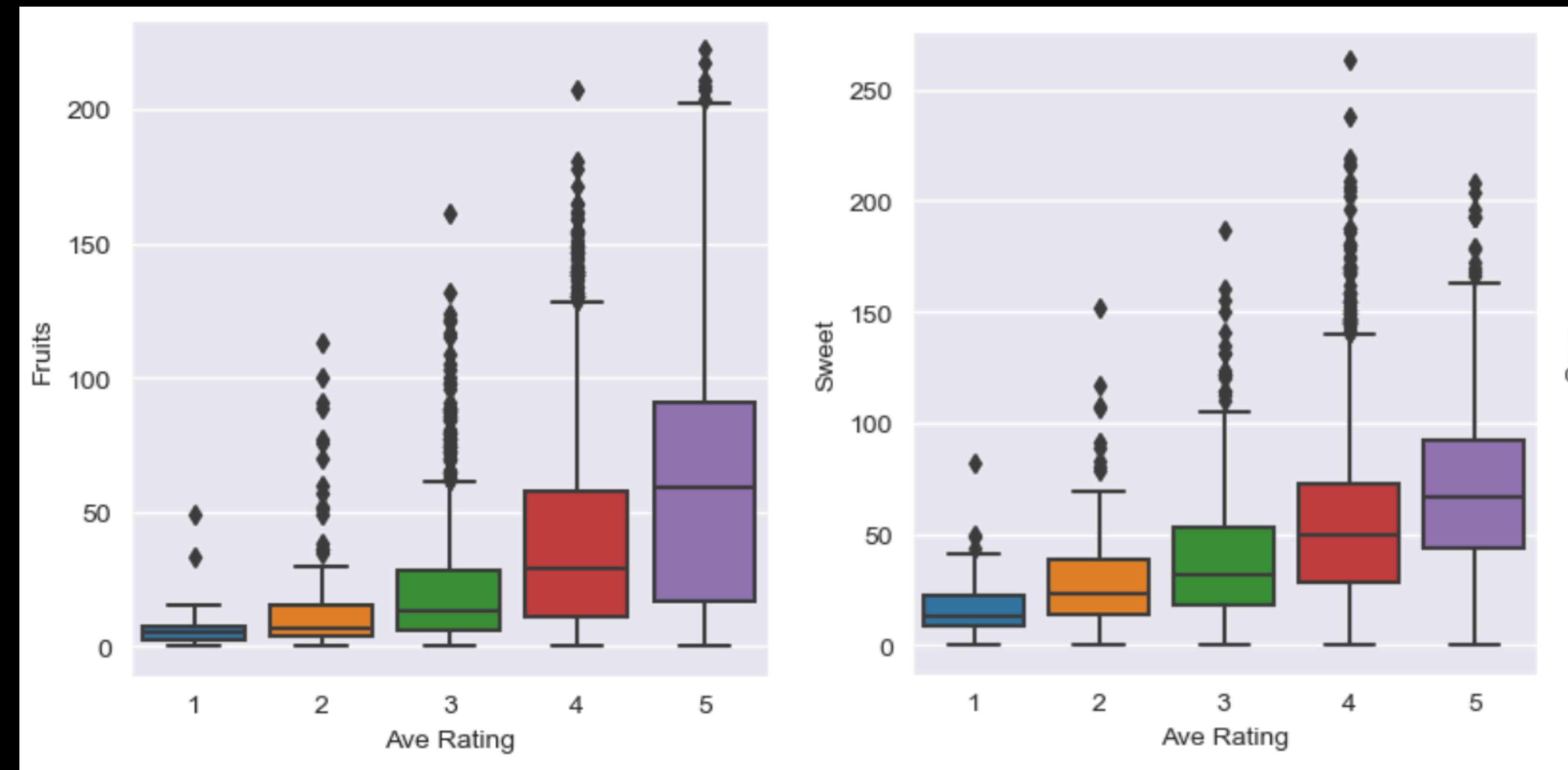
- Fruits
- Hoppy
- Spices
- Malty



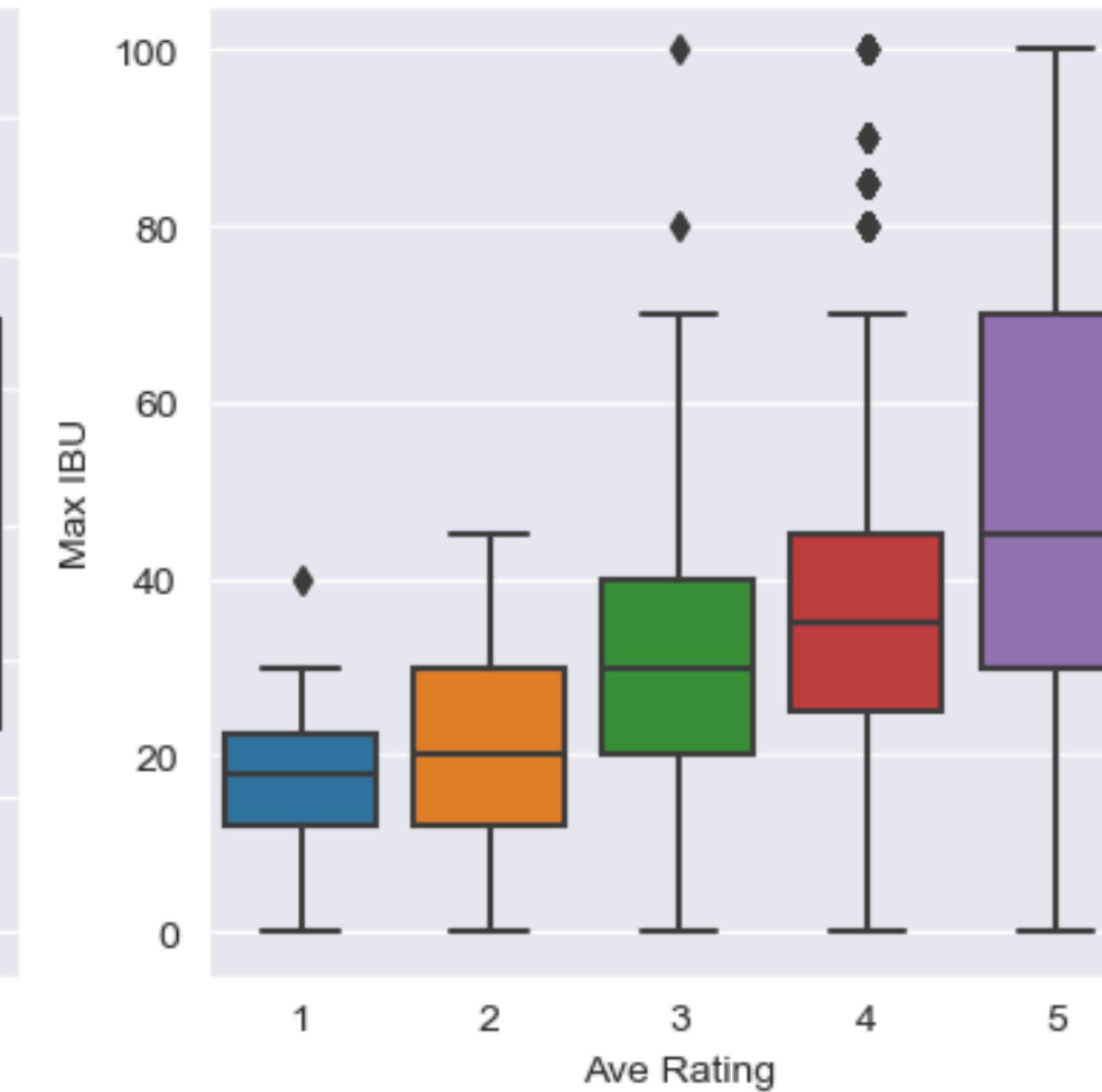
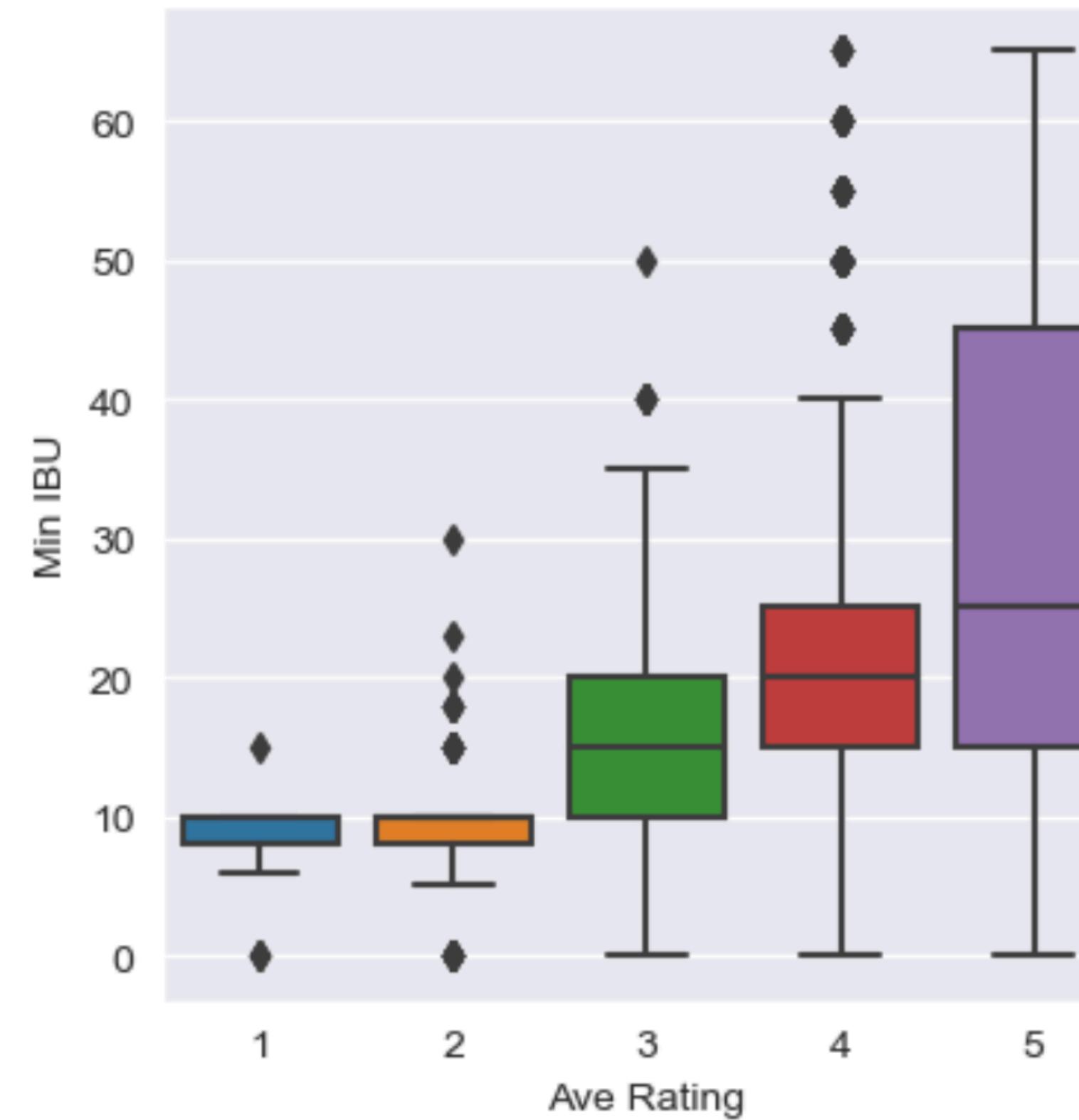
Exploratory Data Analysis



Exploratory Data Analysis



Exploratory Data Analysis



Models & Scores

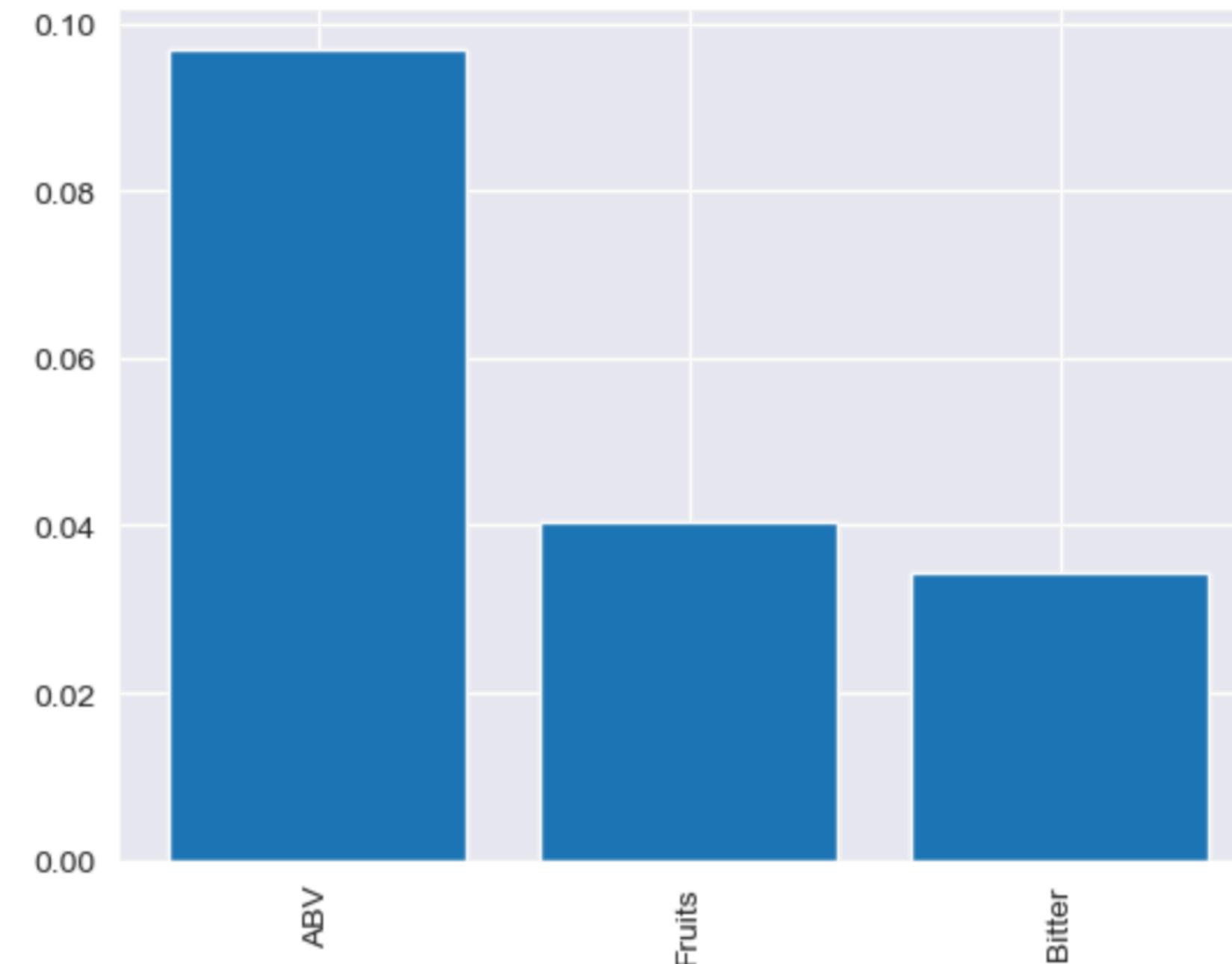
Metric is RMSE

Best Model is LR/XGB Stack

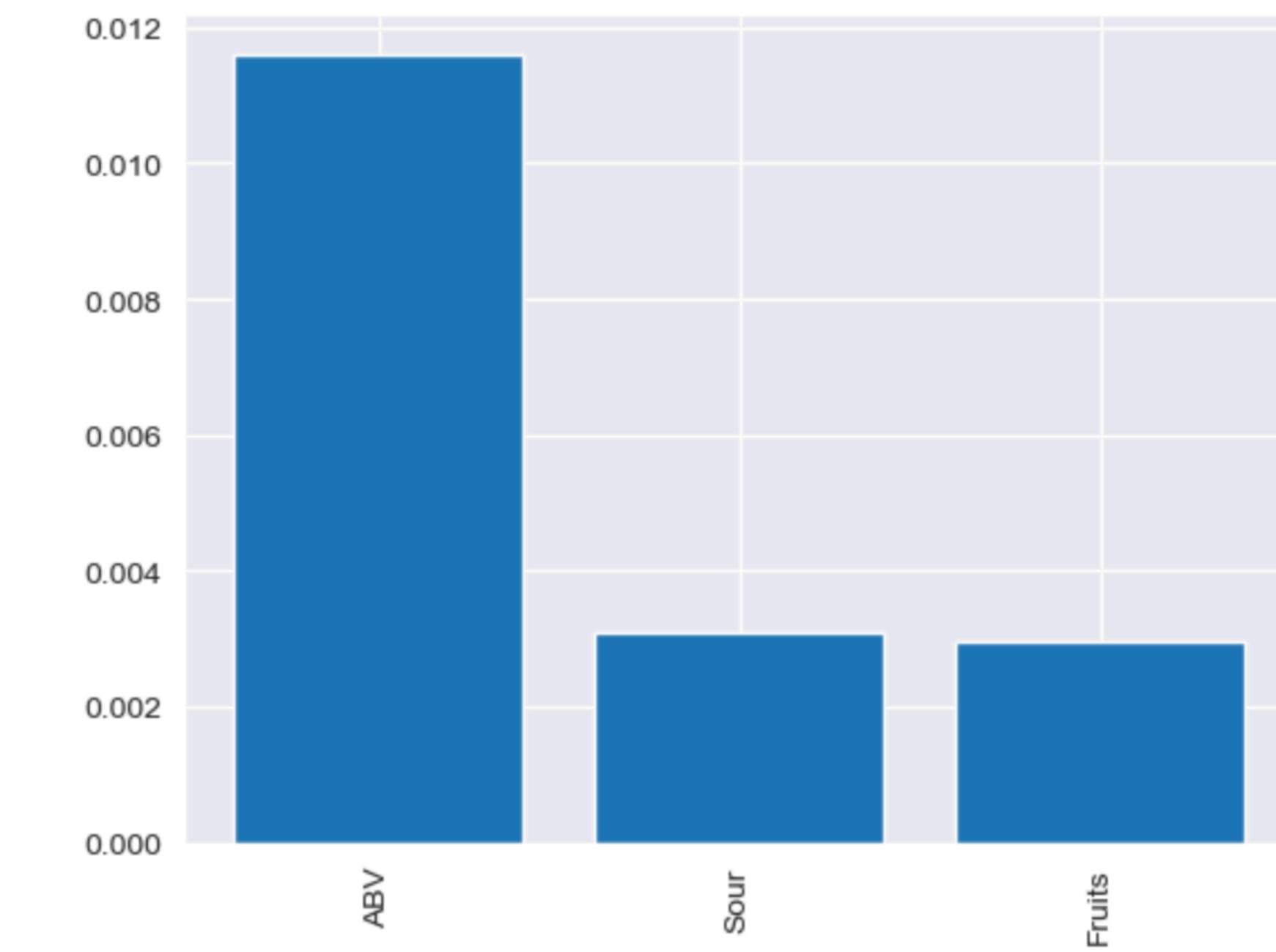
Models/Scores	Test RMSE
Random Forest	0.262
Linear Regression	0.236
Ridge	0.235
XGB	0.224
LR/XGB Stack	0.213

Top Beer Features - ABV & Flavor

- ABV
- Fruits



LR



XGB

5 Beers with Cosine Similarity - Example

Efes Pilsener

Name	Style	Brewery	ABV
Tyskie Gronie Tyskie Browary Książęce (SABMiller)	Lager - European Pale	Tyskie Browary Książęce (SABMiller)	5.0
Baltika #5 Gold	Lager - European Pale	Baltika Breweries	5.3
St. Pauli Girl	Lager - European Pale	St. Pauli Brauerei C.L. Wilh. Brandt GmbH & Co.	5.0
O.K. Beer Browar Okocim S.A. (Carlsberg)	Lager - European Pale	Browar Okocim S.A. (Carlsberg)	5.6
Steinlager	Lager - European Pale	New Zealand Breweries Limited	4.8

Heineken

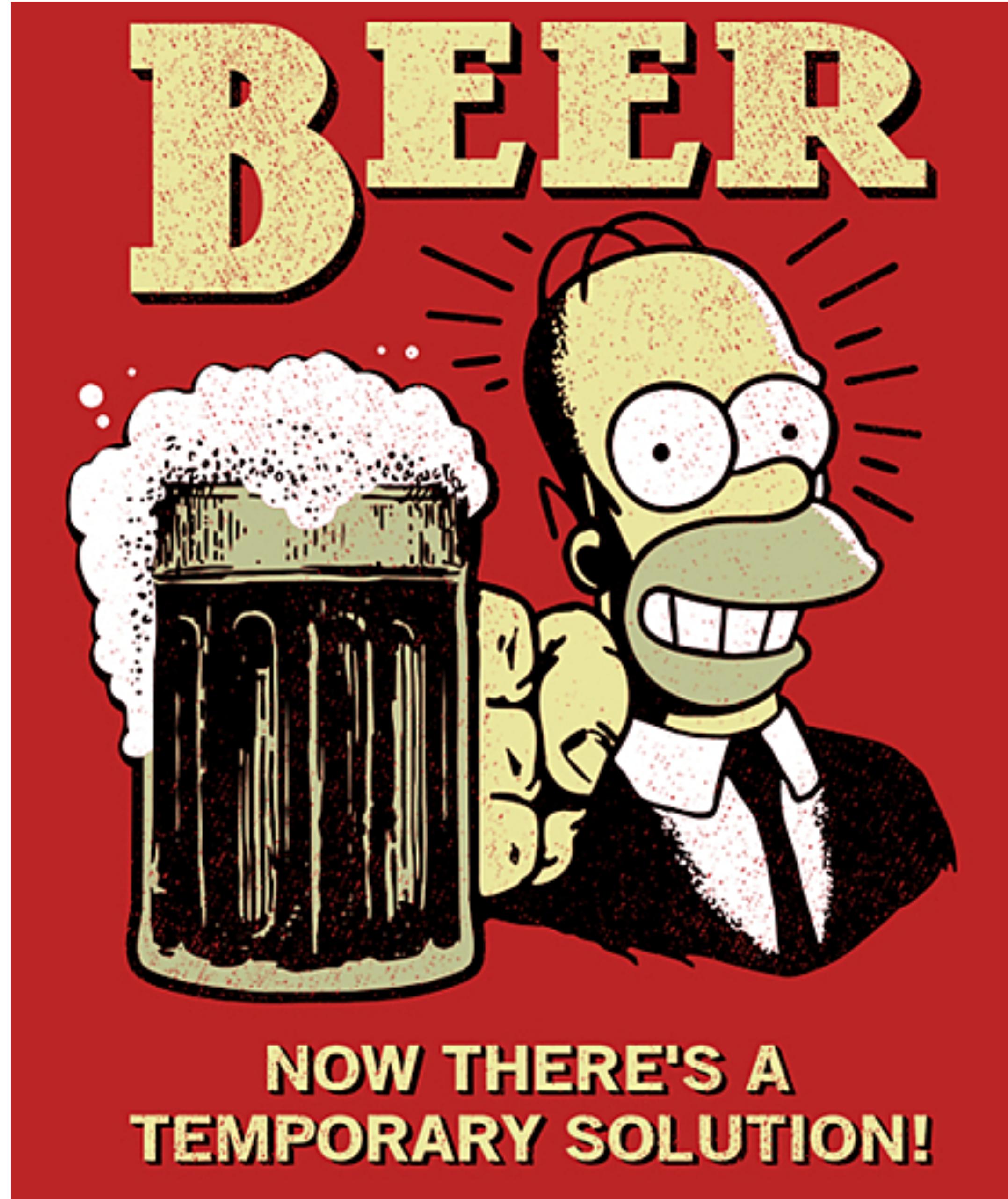
Name	Style	Brewery	ABV
Cinco Estrellas	Lager - European Pale	Mahou S.A.	5.5
Tennent's Lager	Lager - European Pale	Tennent Caledonian Breweries	4.0
Hummin' Bird	Lager - Helles	Red Oak Brewery	4.5
Brown Ale	Brown Ale - English	Legend Brewing Co.	6.0
Shiner Light	Lager - Light	Spoetzl Brewery	4.0

Conclusion

- ABV & Flavor is important.
- For a popular beer, consider brewing beer by below metrics.
- ABV between %4-%7 and Fruity taste.

Future Improvements

- Increase number of beers in the dataset
- Create a website for beer recommendations
- Use neural networks for a better model



Beer IS THE
ANSWER
BUT I CAN'T
REMEMBER THE
QUESTION



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