

MORINGA SCHOOL

THANOS RESTAURANT RECOMMENDER SYSTEM



TABLE OF CONTENT

Introduction

Patterns and Findings

Problem Statement

Conclusions

Objectives

Recommendations



INTRODUCTION



Imagine a world where every dining experience is a culinary delight, tailored to your unique tastes and preferences.

In a time when dining out and exploring new cuisines have become an integral part of our lives, the need for a smarter, more personalized approach to restaurant choices is paramount.

By using the Yelp Restaurant dataset, we unravel the magic of restaurant recommendation systems, offering a taste of the future of dining exploration.



PROBLEM STATEMENT

Making educated decisions about restaurants and eating experiences is a challenge that many people face. This can be mitigated by creating a user-friendly website that recommends restaurants that enable people access to recommendations based on their needs and preferences, therefore improving their overall dining experience.



TARGET AUDIENCE



Individuals seeking diverse and tailored dining experiences, food enthusiasts, tourists, and those looking for culinary delights. The target audience can access our website and get tailored restaurant recommendations based on their wants and needs.



OBJECTIVES

Main Objective

- To create an interactive and user-friendly restaurant recommendation system.



Specific Objectives

- Identifying factors that significantly influence customer preferences and tastes
- Develop a recommendation algorithm, that offers personalized recommendations and solves the cold start problem.
- Deploy the recommendation system on a user-friendly platform, for user interactions and production.



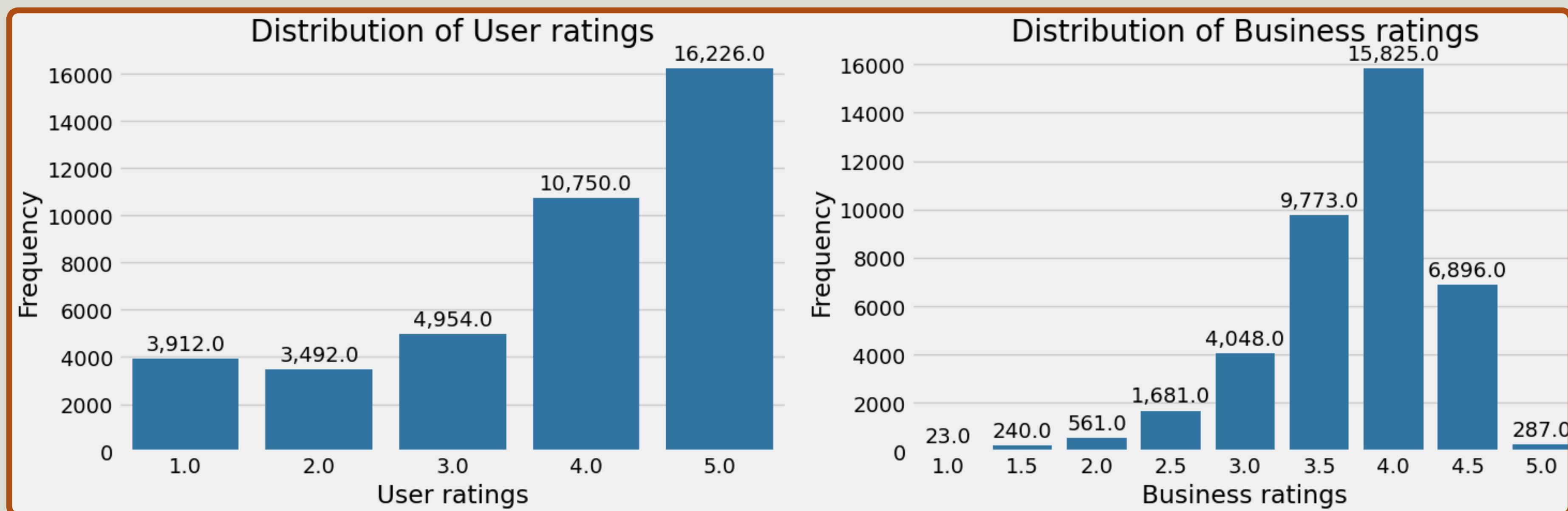
PATTERNS AND FINDINGS



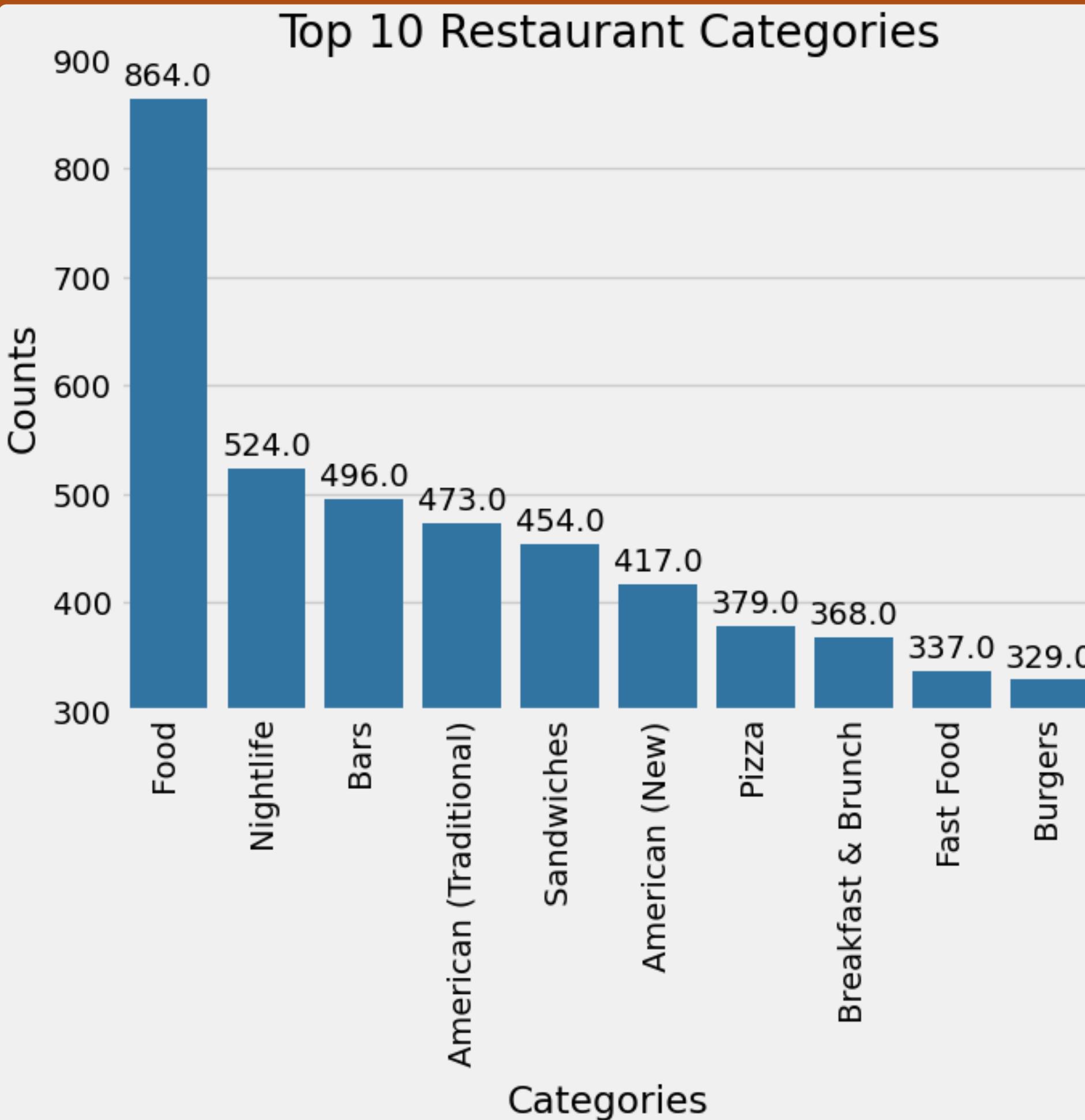
DISTRIBUTION OF RATINGS



The majority of the user ratings were 5 while many restaurants had a star rating of 4



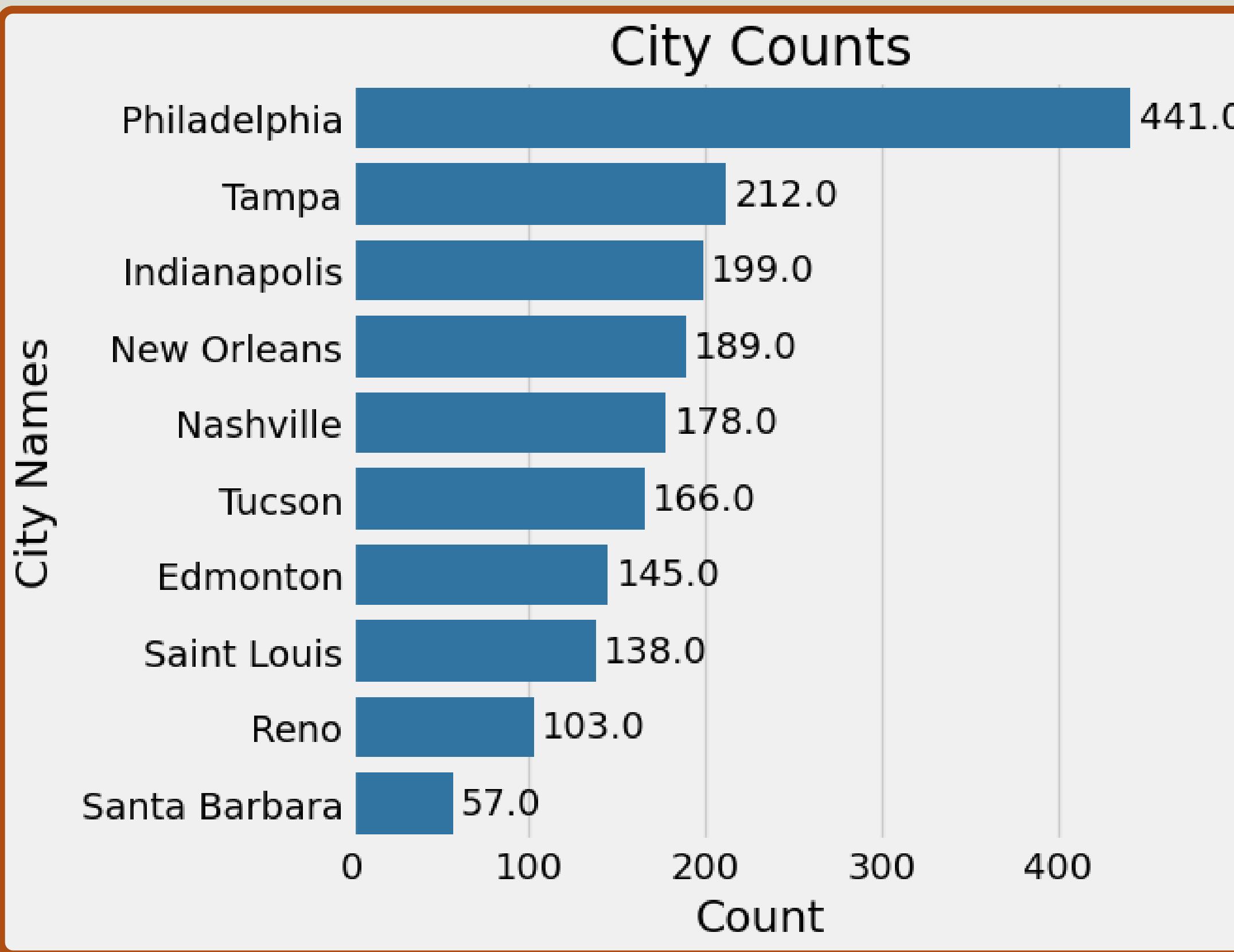
RESTAURANT CATEGORIES



The majority of the restaurants were of the following categories;

- Food
- Nightlife
- Bars

RESTAURANTS AND CITIES

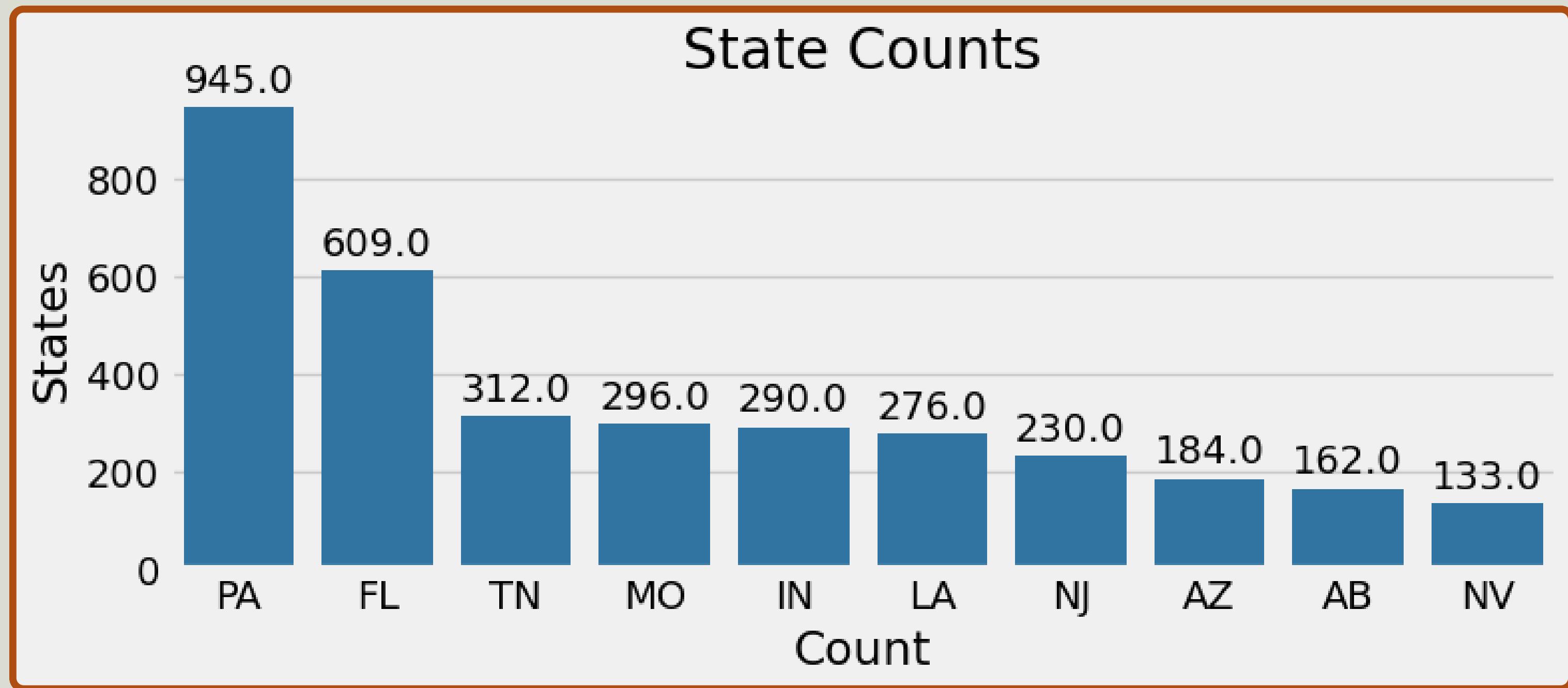


Many of the restaurants were in the following top 3 cities;

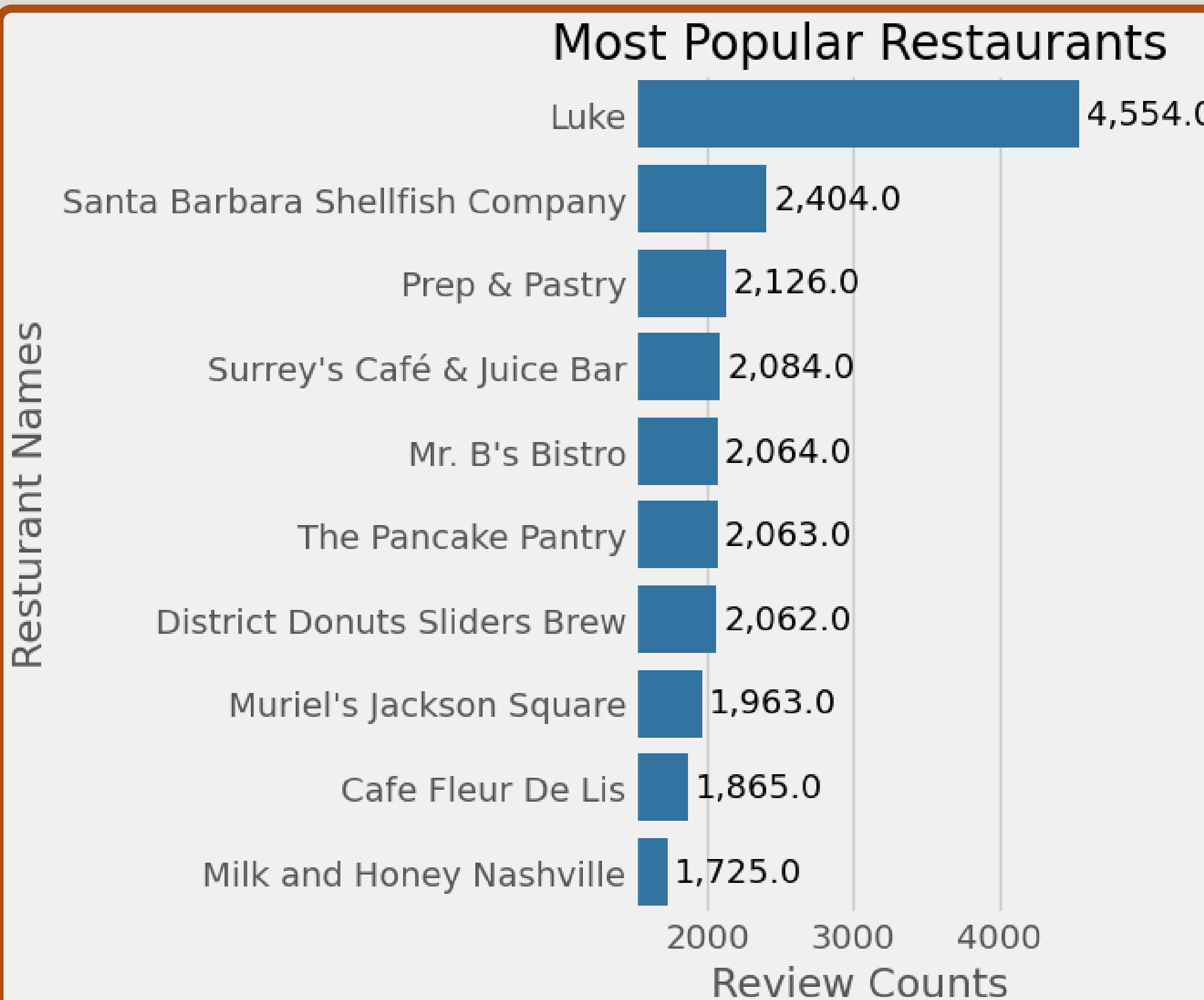
- Philadelphia
- Tampa
- Indianapolis

RESTAURANTS AND STATES

Philadelphia has the highest number of restaurants in the dataset, making it the most prevalent state, followed by Florida.



RESTAURANT POPULARITY



The 3 top most popular restaurants with both high ratings and number of reviews were;

- Luke
- Santa Barbara shellfish
- Prep & Pastry

BUSINESS RATING VS PRICE RANGE



- The number of businesses without price is 127
- The central line in each box represents the median price
- The vertical span shows the interquartile range, providing insights into the spread or variability of prices

POSITIVE REVIEWS ANALYSIS

The following words represented satisfaction and high ratings from users.



- Food
 - Place
 - Great
 - Good
 - Delicious
 - Amazing
 - Service

NEGATIVE REVIEWS ANALYSIS

The following words represented poor ratings and dissatisfaction from users.



MODELLING

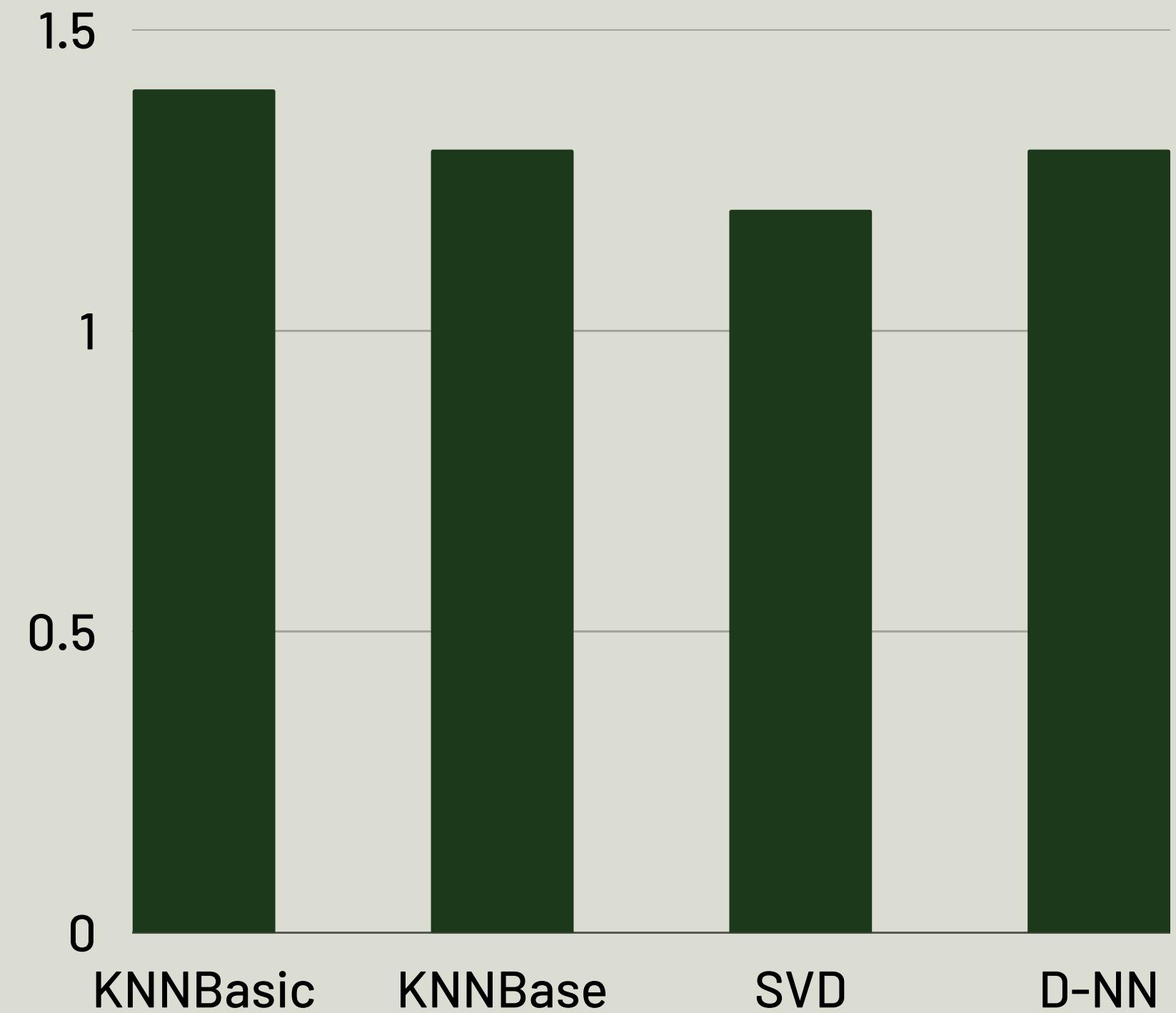


Through a thorough evaluation of three recommendation models:

- Singular Value Decomposition (SVD)
- K-Nearest Neighbors Basic (KNNBasic)
- K-Nearest Neighbors Base (KNNBase)
- Deep Neural Networks

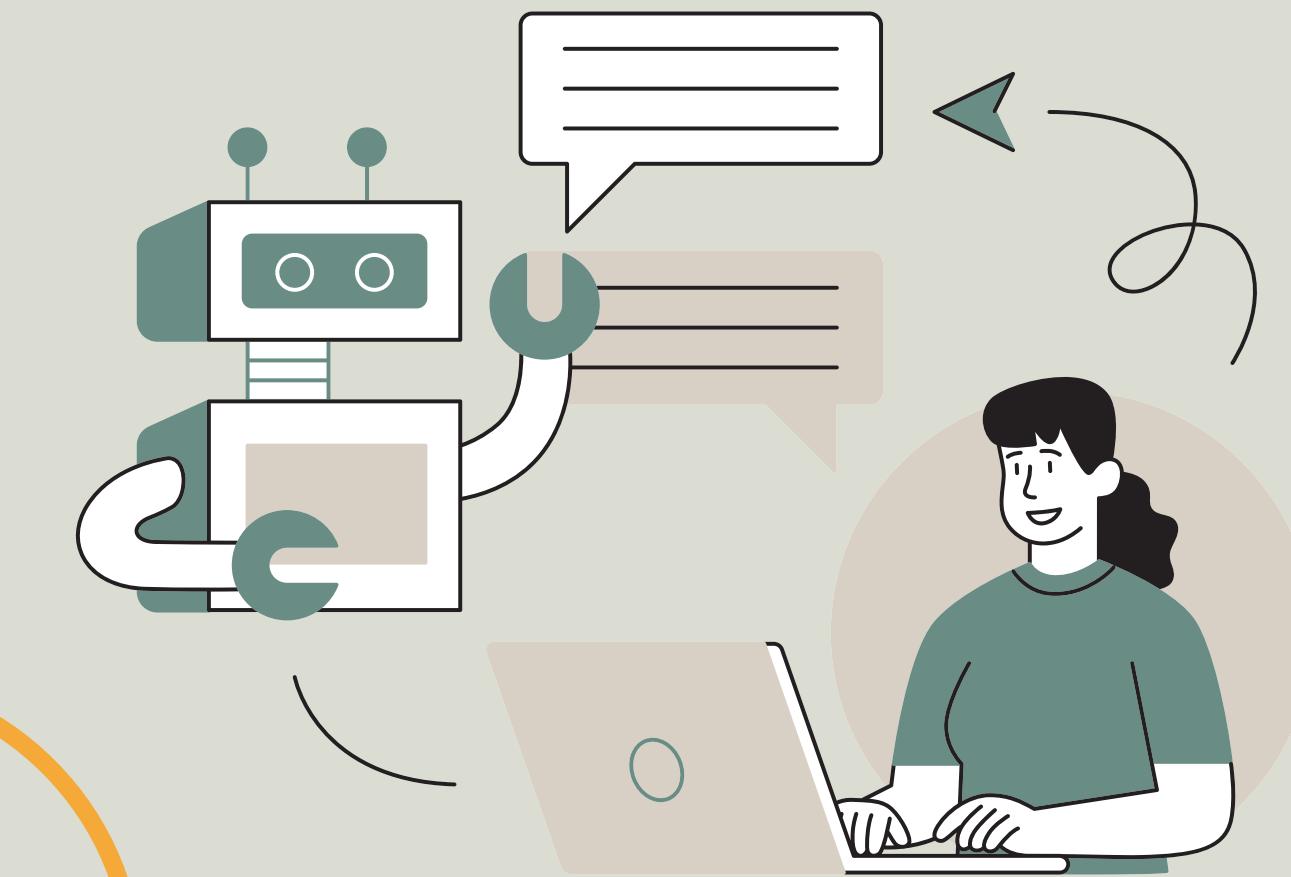
After assessing their performance, we found that **SVD outperformed the others with the lowest Root Mean Squared Error (RMSE)**, a model accuracy measure used in developing our recommendation system. These models rely on historical user interactions to predict future user behavior.

"RMSE Comparison: KNNBasic vs. KNNBase vs. SVD vs. D-NN"





After selecting SVD as our model of choice, we proceeded to fine-tune it for optimal performance. This tuning process entails running the model with various parameter combinations and selecting the most effective combination. We employed a Hyperparameter Grid Search methodology to systematically explore and optimize the hyperparameters.





Once we identified the final model with the best-suited parameters, we integrated this optimized model into our website or chatbot. This integration will empower our platform to deliver highly accurate and personalized recommendations, enhancing the user experience.



CONCLUSIONS



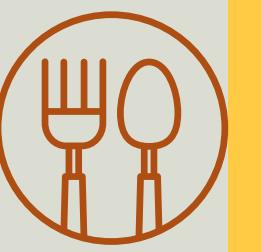


- This project has successfully achieved its main objective of developing an interactive and user-friendly restaurant recommendation system. This system not only provides personalized dining suggestions but also takes into account various factors that influence restaurant ratings and user preferences.
- Throughout this project, we also met specific objectives. We designed and developed a user-friendly website, making it convenient for users to interact with our recommendation system. Additionally, we conducted in-depth analyses of the factors that significantly impact restaurant ratings and user preferences.



RECOMMENDATIONS





- Integration of user feedback
- Enhanced user profiles
- Enhance recommendation algorithms
- Expand geographical coverage



THANK YOU!



OUR
CONTACT

wendy.muturi@student.moringaschool.com

mulei.mutuku@student.moringaschool.com

margaret.mitey@student.moringaschool.com

jeff.kiarie@student.moringaschool.com

linus.gichuhi@student.moringaschool.com

joshua.ooko@student.moringaschool.com