Rest o Recommend

Nirupam I Kireeti I Navya I Etienne I Xiu I Prashanth

Georgia Tech

Motivation :

- Restaurant business is hard. 60% of restaurants fail in first year and 80% before their fifth year.
- Reasons of failure are: poor location choice, unable to get actionable insights from customer feedback and lack of competitive intelligence.
- We want to help restaurant owners use data to address these issues, to increase their chance of success.
- And create a easy to use one-stop platform for business owners.

Current Practices :

Currently, restaurant owners rely on experience, intuition or approach consulting firms

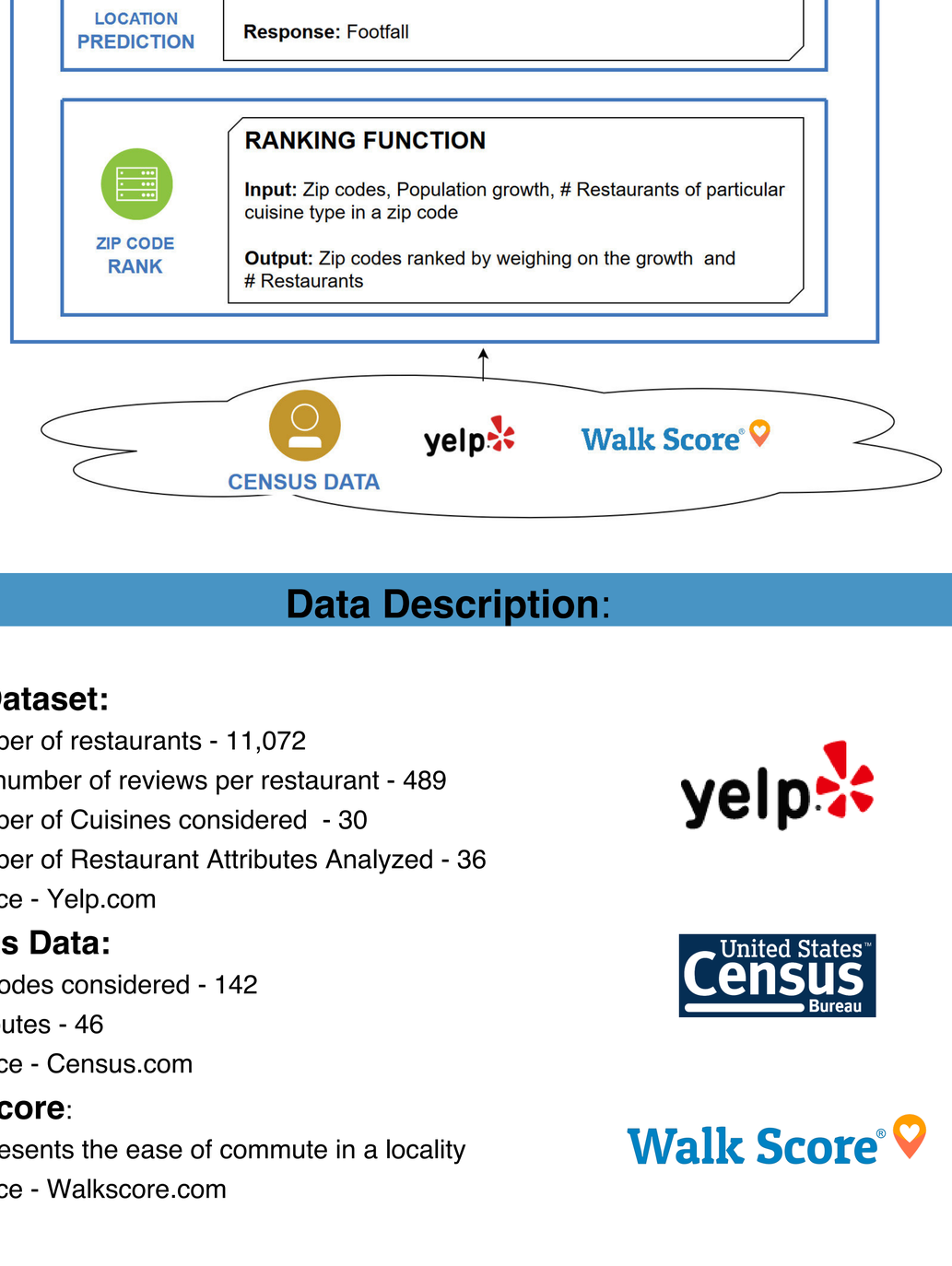
Human Consulting

Costly

Time Consuming

Unreliable & Inefficient

Our Approach



Data Description:

Yelp Dataset:

- Number of restaurants - 11,072
- Avg number of reviews per restaurant - 489
- Number of Cuisines considered - 30
- Number of Restaurant Attributes Analyzed - 36
- Source - Yelp.com

Census Data:

- Zip codes considered - 142
- Attributes - 46
- Source - Census.com

Walkscore:

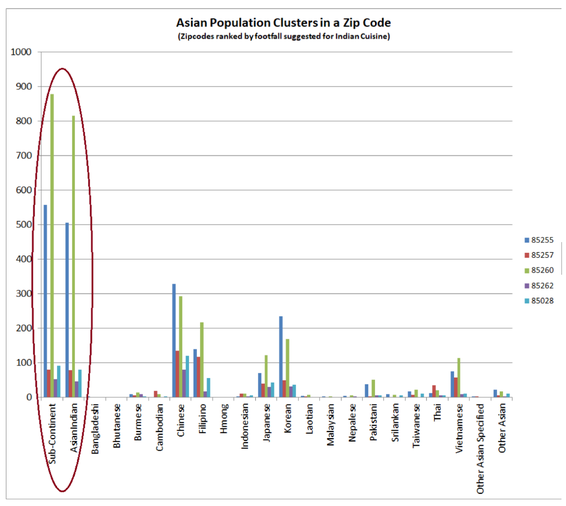
- Represents the ease of commute in a locality
- Source - Walkscore.com

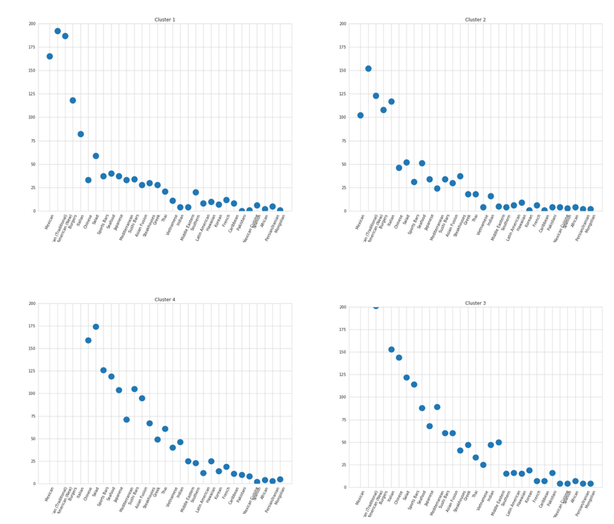
Experiments and Results :

Location Prediction:

- Obtained an R-Square of 42.47%, RMSE of 2.67 for footfall using XGBoost Regressor.
- Zip codes predicted for higher footfall have a good representation of the ethnic groups that are associated with the selected cuisine

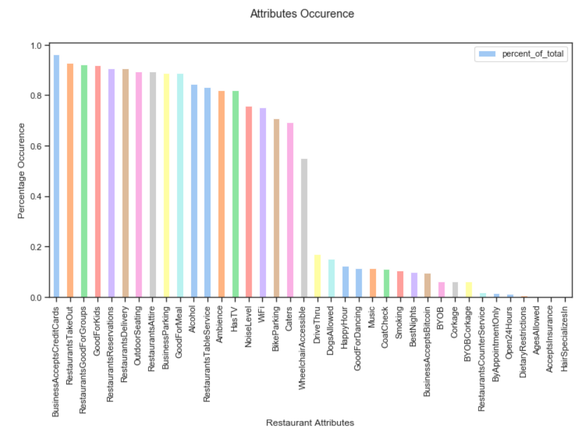
Model	RMSE	R-Square
Linear regression	1.7	24.19%
Random Forrest	2.72	38.20%
XGBoost	2.67	42.47%

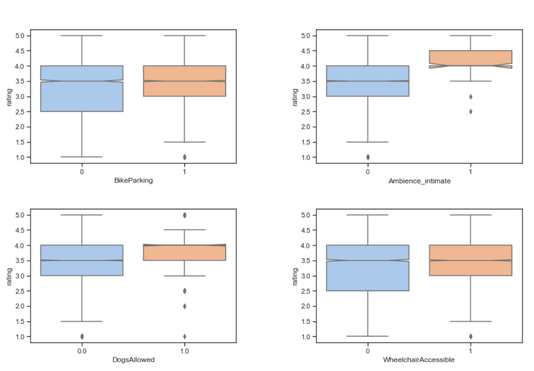




Attributes Evaluation:

- Evaluated whether customers care about the attributes predicted by our model.
- We mined through reviews for 25 restaurants to evaluate the topics suggested by our model and observed the following prediction accuracy:



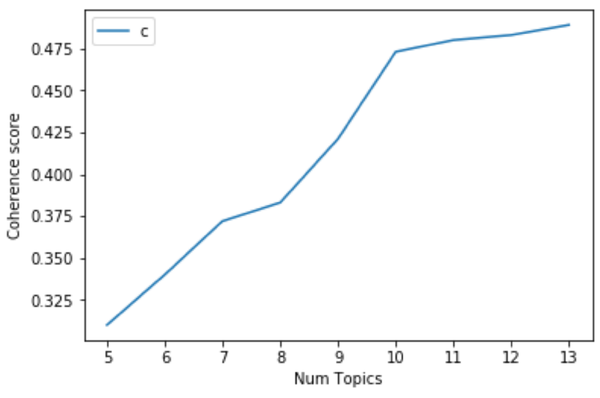


Percent of Cases	Result
56% of cases	3 or more suggestions were relevant
12% of cases	2 out of 5 suggestions were relevant
8% of cases	1 out of 5 suggestions were relevant
24% of cases	None of the suggestions were relevant

Attribute	Sample review excerpt
'Ambience'	This place feels a bit out-of-the way, with a small interior and not a whole lot to the ambiance. The sushi, however, is superb.

Text Analysis:

- Extracted topics and summarized corresponding topic reviews.
- Used topic coherence metric to choose appropriate number of topics for the corpus



Summary Review: All and all the place is a great burger at a decent price. I would certainly recommend.

Conclusion :

- Appropriate location depends on current demographics and near future demographics.
- Customer preferences vary based on demographic, economic and local infrastructure
- Topic modeling and summarization is effective in realizing customer feedback.