From Millionaire to Billionaire

Team: MonsterLearningSquared
Members: Hao Li, Louis Chu, Yiqin Chen, Tianai Guo

How to make a successful restaurant?

- To learn from **successful** ones
  - Highly rated
  - Popular (# review)
- To improve **relatively inexpensive** factors
  - Waiting time
  - Service

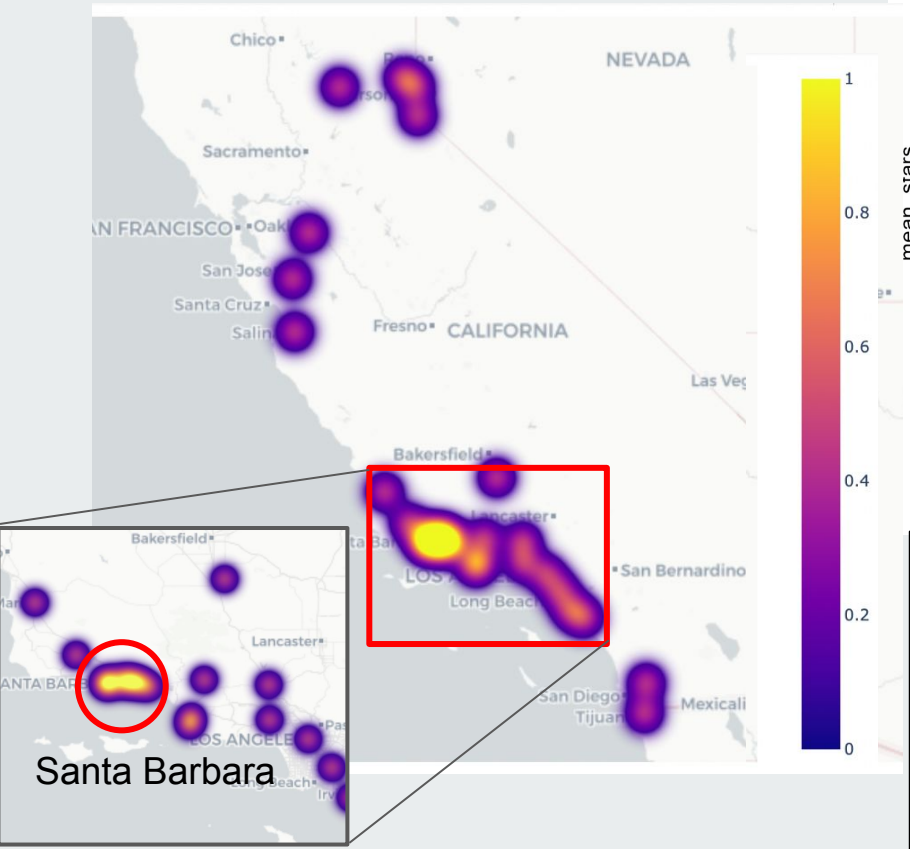
Do these improvements work?

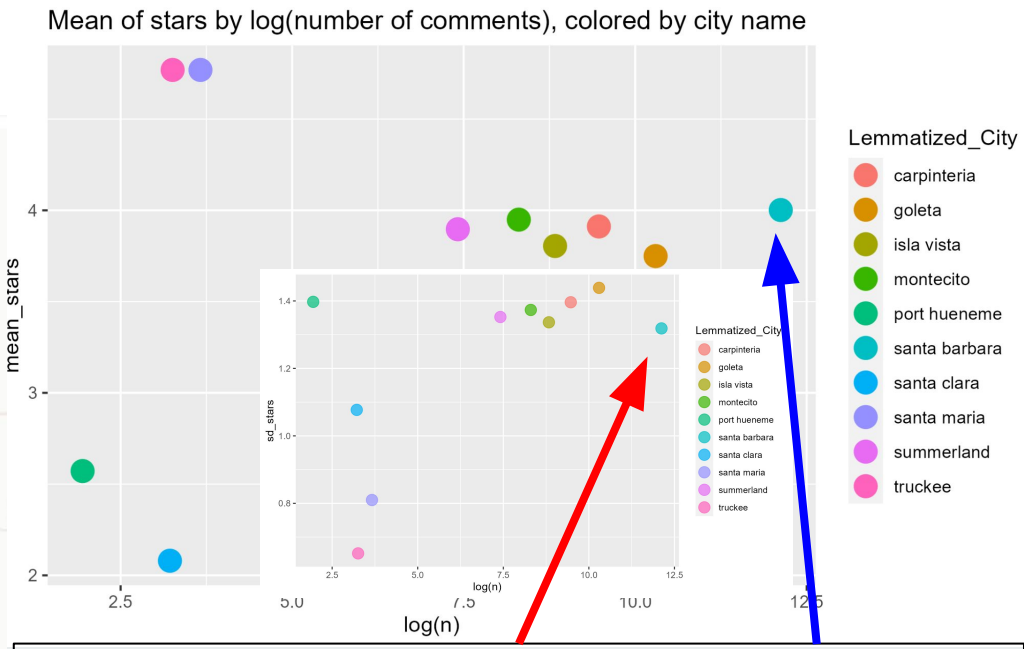
Data Cleaning:
- Lemmatize Cities
- Extract Categories

Data Enrichment (on columns):
- Left-joined business and users on reviews
- Added encoder for the presence of top frequent words, sentiment score (from Vader)

Identify a cost-effective subgroup with sufficient reviews, reasonable star rating, impacted by waiting time and complaint handling

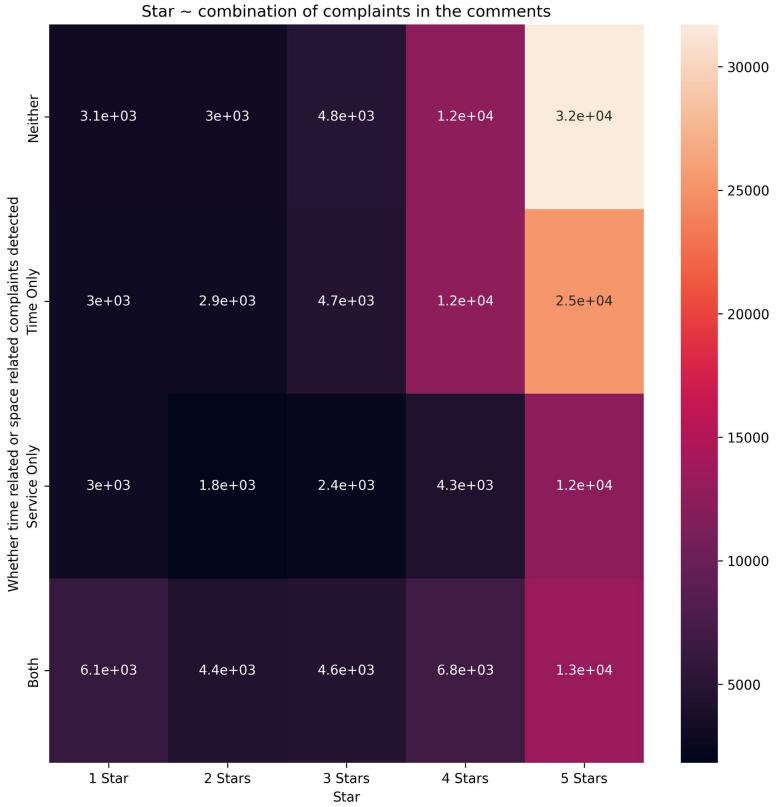
Recursively infer target subgroup by inference tests and correlations





And... **risk averse** ... so Santa Barbara is chosen
More comments -> popularity -> more accurate estimators

Similar mean/ **Lower s.d.** In cities with >20 reviews -> may be more predictable (MSE=Var+Bias^2)
population variance is also lower

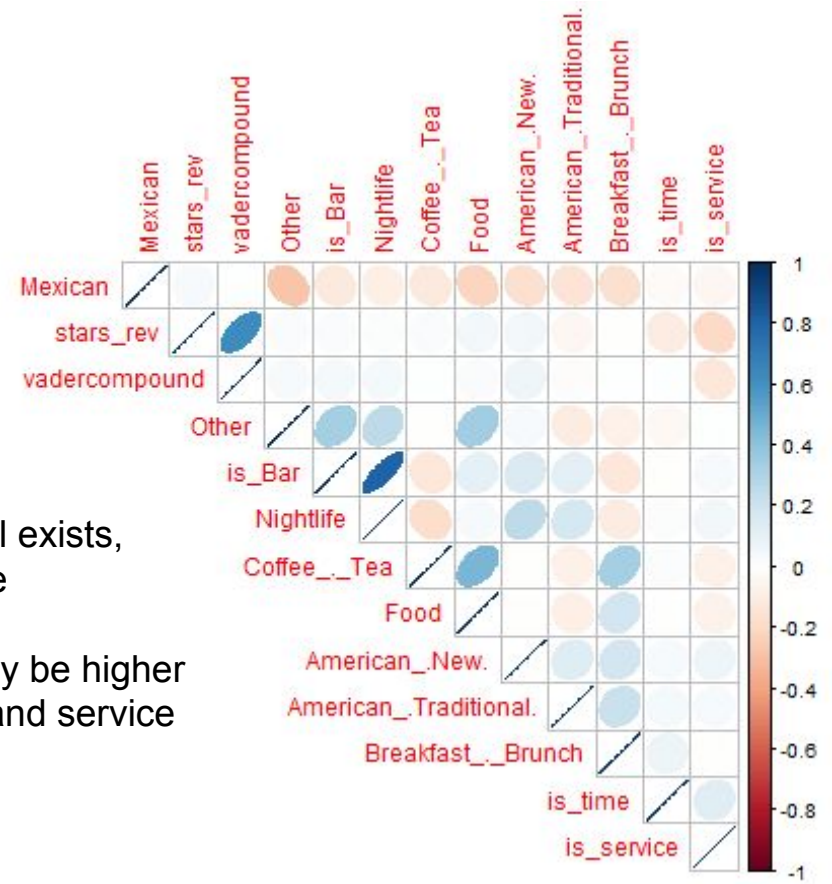


Outperform, or increase ratings by shortening waiting time and improving service?

X-squared 8365.7,df=12, **pval<2.2e-16**

What other aspects & keywords matters?

Correlation of potential predictors to stars given to restaurants in Santa Barbara, including features from frequency selection, encoding from presence of time/service complaints



Conclusion:

- Successful business model exists, i.e. Mesa Verde

- The rating may be higher if waiting time and service are better