Boulder County Restaurant Health Inspection Scores
v.s.
Google Ratings

Summary of Study

This study seeks to answer the question:

Is there a correlation between restaurant health inspection scores and customer ratings?

Using a publicly available dataset from Boulder County Public Health, as well as Google Places API, we created a database of regular restaurant inspections in Boulder County prior to 2020. We plan to use logistic regression to determine if there is a correlation between health inspection score and Google rating.

Example Dashboard Layout

Explore the Dataset

Select Restaurant ⇩   Avg. Inspection Score   Avg. Google Rating

List of violations
Example 1
Example 2
Example 3
Example 4

Prediction Machine

Enter Inspection Score   Predicted Avg. Google Rating

Enter Google Rating   Predicted Avg. Inspection Score

*We plan on using either Heroku or building the application using HTML/Flask hosted on one of our personal URLs.

Exploration of Violations

Critical Violations

Additionally, we will explore if there is a correlation between individual violations and Google rating. This will tell us if there are particular violations that seem to have an outsized effect on the guest experience.

We have chosen only critical criteria that are key to restaurant hygiene and food safety, rather than administrative and clerical criteria.

Most Common Violations
Example 1
Example 2
Example 3
Example 4

Most Impactful Violations
Example 1
Example 2
Example 3
Example 4

01	Food Source	Points
01a	Approved Source	15
01b	Wholesome, free of spoilage	15
01c	Cross-contamination	20
01d	HACCP plan	15
01e	Date Marking	5
01f	Consumer Advisory	5
02	Personnel	
02a	Personnel with infections restricted	20
02b	Wounds properly covered	20
02c	Hands washed as needed	20
02d	Hygenic practices	5
02e	Smoking, eating, drinking	10
02f	Training needed	15
02g	No bare hand contact	20
03	Food Temperature Control	
03a	Rapidly cool to 41 F or lower	20
03b	Rapidly reheat to 165 F or greater	20
03c	Hot hold at 135 F or greater	15
03d	Required cooking temperatures	20
03e	Cold hold at 41 F or lower	15
03f	Food thermometer (probe type)	5
03g	Adequate equipment to food maintain temperatures	20

04	Sanitization Rinse	Points
04a	Manual	10
04b	Mechanical	10
04c	In-place	10
05	Water, Sewage, Plumbing Systems	
05a	Safe water source	15
05b	Hot and cold water under pressure	10
05c	Backflow	10
05d	Sewage disposal	15
06	Handwashing and Toilet Facilities	
06a	Adequate number, location, design	15
06b	Accessible	10
06c	Soap and drying devices	5
07	Pest Control	
07a	Evidence of pests	10
07b	Pesticide application	15
07c	Animals prohibited	5
08	Poisonous or Toxic Items	
08a	Properly stored	10
08b	Properly labeled	5
08c	Toxic items properly used	15

Data Exploration & Analysis

Data Exploration:

- Original dataset: 471,209 rows
- Filter criteria:
  - Only restaurants, bars, or food trucks
  - Before January 1st, 2020
  - Only routine inspections
- After filtering: 220,888 rows
- Number of facilities: 895
- Number of inspection scores: 2687

Analysis:

To do our analysis we will be taking the average score for each facility and compare it with the facility's Google rating using logistic regression.

For the analysis of violations, we will filter the data down to only the violations with which we are interested, generate a list of all relevant violations for a given facility, and then compare them to the facility's Google rating. This analysis will use Random Forest learning to determine feature importance.

Prediction Machine with Violations

Select violations:

01	**Food Source**	Points		04	**Sanitization Rinse**	Points
❑ 01a	Approved Source	15		❑ 04a	Manual	10
❑ 01b	Wholesome, free of spoilage	15		❑ 04b	Mechanical	10
❑ 01c	Cross-contamination	20		❑ 04c	In-place	10
❑ 01d	HACCP plan	15				
❑ 01e	Date Marking	5		05	**Water, Sewage, Plumbing Systems**	
❑ 01f	Consumer Advisory	5		❑ 05a	Safe water source	15
				❑ 05b	Hot and cold water under pressure	10
02	**Personnel**			❑ 05c	Backflow	10
❑ 02a	Personnel with infections restricted	20		❑ 05d	Sewage disposal	15
❑ 02b	Wounds properly covered	20				
❑ 02c	Hands washed as needed	20		06	**Handwashing and Toilet Facilities**	
❑ 02d	Hygenic practices	5		❑ 06a	Adequate number, location, design	15
❑ 02e	Smoking, eating, drinking	10		❑ 06b	Accessible	10
❑ 02f	Training needed	15		❑ 06c	Soap and drying devices	5
❑ 02g	No bare hand contact	20				
				07	**Pest Control**	
03	**Food Temperature Control**			❑ 07a	Evidence of pests	10
❑ 03a	Rapidly cool to 41 F or lower	20		❑ 07b	Pesticide application	15
❑ 03b	Rapidly reheat to 165 F or greater	20		❑ 07c	Animals prohibited	5
❑ 03c	Hot hold at 135 F or greater	15				
❑ 03d	Required cooking temperatures	20		08	**Poisonous or Toxic Items**	
❑ 03e	Cold hold at 41 F or lower	15		❑ 08a	Properly stored	10
❑ 03f	Food thermometer (probe type)	5		❑ 08b	Properly labeled	5
❑ 03g	Adequate equipment to food maintain temperatures	20		❑ 08c	Toxic items properly used	15

Predicted Google Rating:
★★★★★

Inspection Rating:
Excellent

Inspection Ratings Key:
Excellent 0-19
Good 20-39
Fair 40-69
Marginal 70-99
Unacceptable >100

pew
pew