

# 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

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

## Critical 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	Hygienic 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

# Data Exploration & Analysis

## Data Exploration:

- Original dataset: 471,209 rows
- Filter criteria:
  - Only restaurants, bars, or food trucks
  - Before January 1<sup>st</sup>, 2020
  - Only routine inspections
- After filtering: 220,888 rows
- Number of facilities: 725
- 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
<input type="checkbox"/> 01a	Approved Source	15
<input type="checkbox"/> 01b	Wholesome, free of spoilage	15
<input type="checkbox"/> 01c	Cross-contamination	20
<input type="checkbox"/> 01d	HACCP plan	15
<input type="checkbox"/> 01e	Date Marking	5
<input type="checkbox"/> 01f	Consumer Advisory	5
02	Personnel	
<input type="checkbox"/> 02a	Personnel with infections restricted	20
<input type="checkbox"/> 02b	Wounds properly covered	20
<input type="checkbox"/> 02c	Hands washed as needed	20
<input type="checkbox"/> 02d	Hygienic practices	5
<input type="checkbox"/> 02e	Smoking, eating, drinking	10
<input type="checkbox"/> 02f	Training needed	15
<input type="checkbox"/> 02g	No bare hand contact	20
03	Food Temperature Control	
<input type="checkbox"/> 03a	Rapidly cool to 41 F or lower	20
<input type="checkbox"/> 03b	Rapidly reheat to 165 F or greater	20
<input type="checkbox"/> 03c	Hot hold at 135 F or greater	15
<input type="checkbox"/> 03d	Required cooking temperatures	20
<input type="checkbox"/> 03e	Cold hold at 41 F or lower	15
<input type="checkbox"/> 03f	Food thermometer (probe type)	5
<input type="checkbox"/> 03g	Adequate equipment to food maintain temperatures	20

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

