Recipe Discovery: high traffic?

Tasty Bytes (est. 2020)

Elicia Ye | September 3, 2023

Agenda

- **Business Goals**

- Summary of Data Analytics

- Key Findings

- Recommendations

Business Goals

More traffic ➡️ More **subscriptions**

Business Goals

More traffic ➡ More **subscriptions**

Data Science Team

- Predict which recipes will be popular, correctly 80% of the time
- Minimize showing unpopular recipes

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Problem Formulation

Machine Learning (Supervised): Binary Classification

Model Performance*

$$Accuracy = 77\%$$

$$Precision = 79.5\%$$

$$Recall = 82.3\%$$

$$F1\ Score = 80.87\%$$

* Best out of 7 models

Model Evaluation Metrics

$$Accuracy = \frac{TP + TN}{TP + FP + FN + TN}$$

$$Precision = \frac{TP}{TP + FP}$$

$$Recall = \frac{TP}{TP + FN}$$

$$F1\ Score = 2 \cdot \frac{Precision \cdot Recall}{Precision + Recall}$$

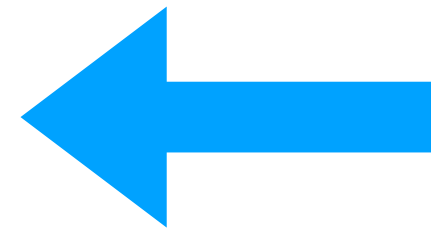|	PREDICTED: HIGH TRAFFIC?	
ACTUAL: HIGH TRAFFIC?	TP	FP
	FN	TN

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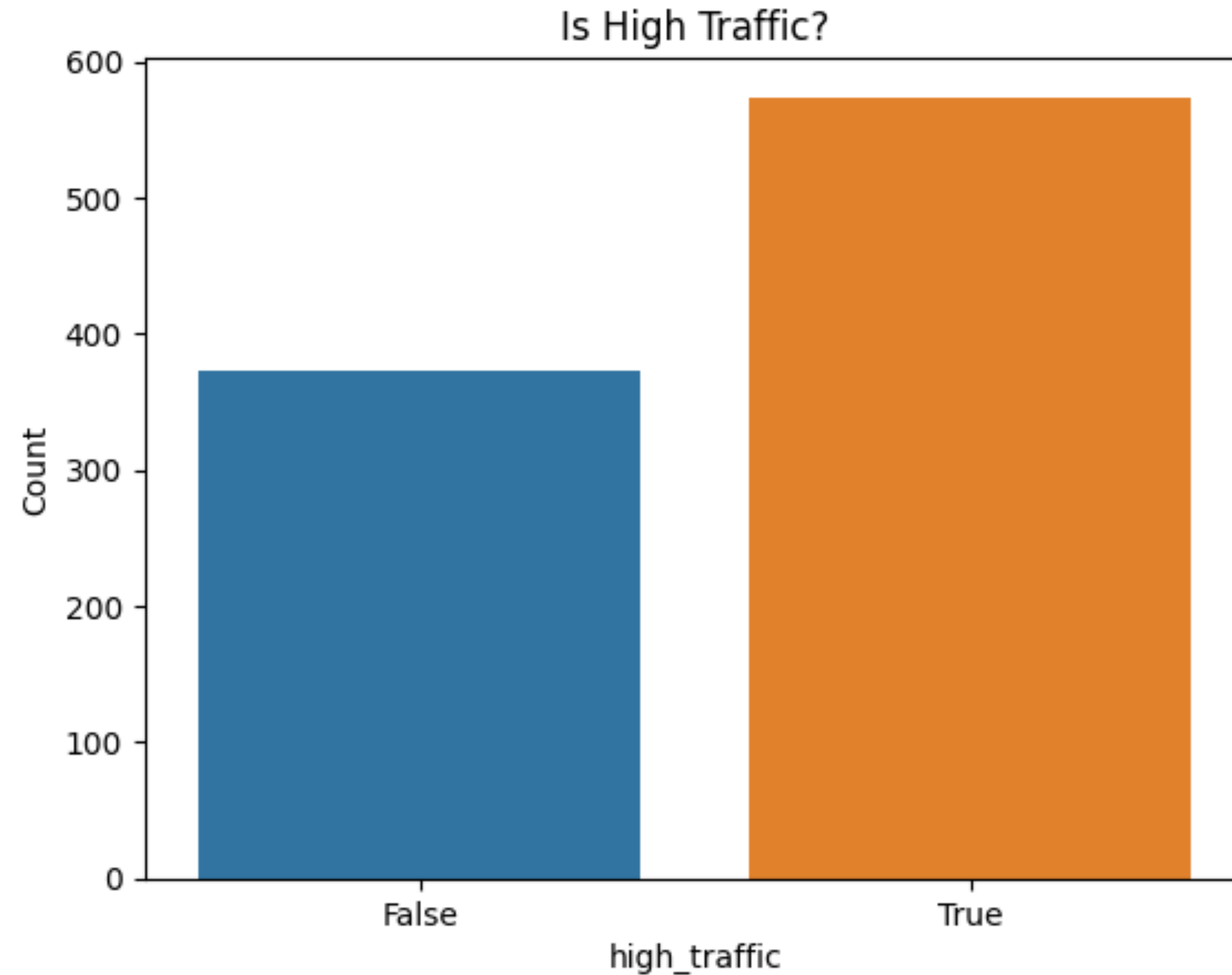- **Key Findings**

- Recommendations

State of the Art

- calories ⎫
- carbohydrate ⎬ per serving
- sugar ⎪
- protein ⎭
- category
- servings
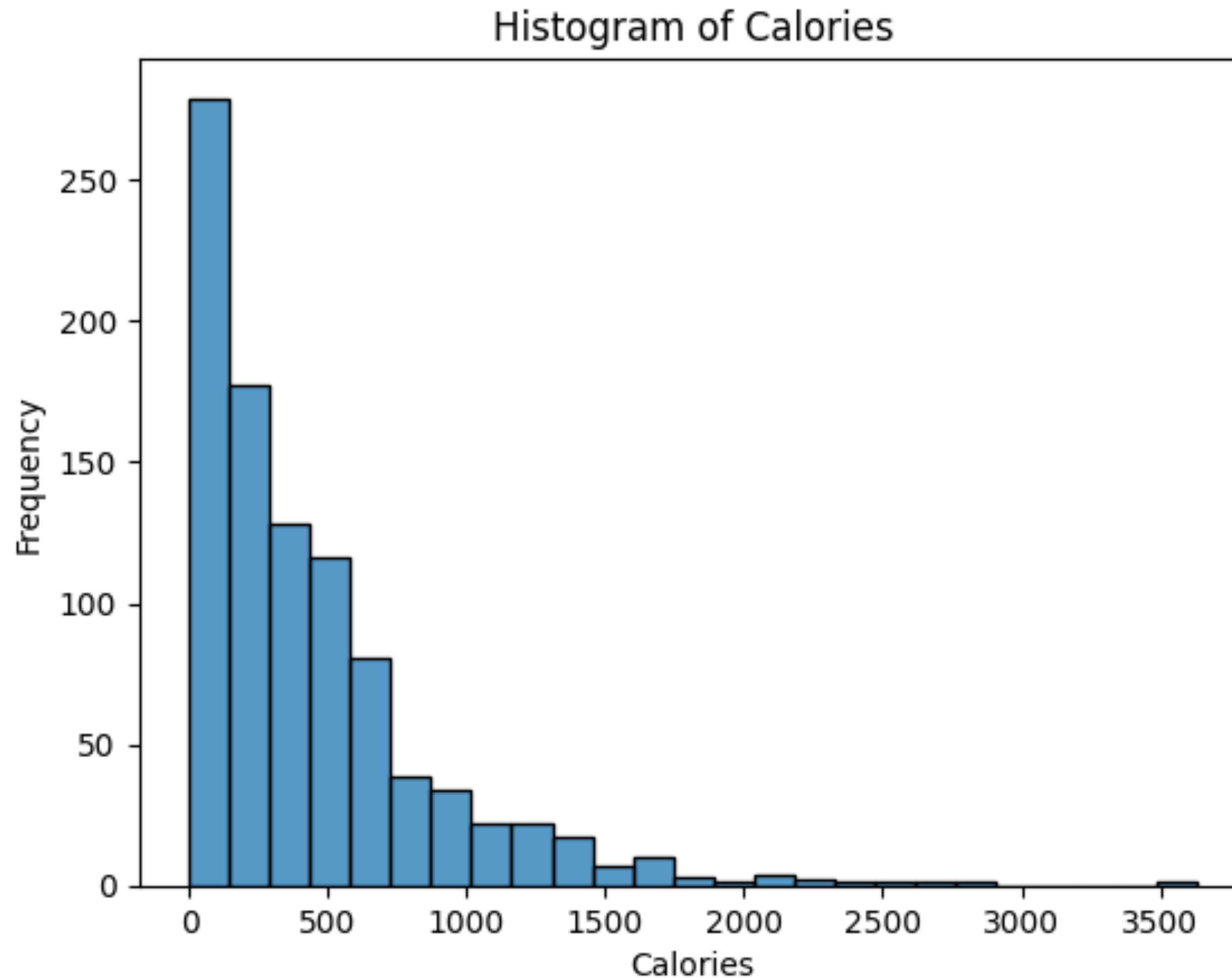- high_traffic

State of the Art

- calories
- carbohydrate
- sugar
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- high_traffic ⬅

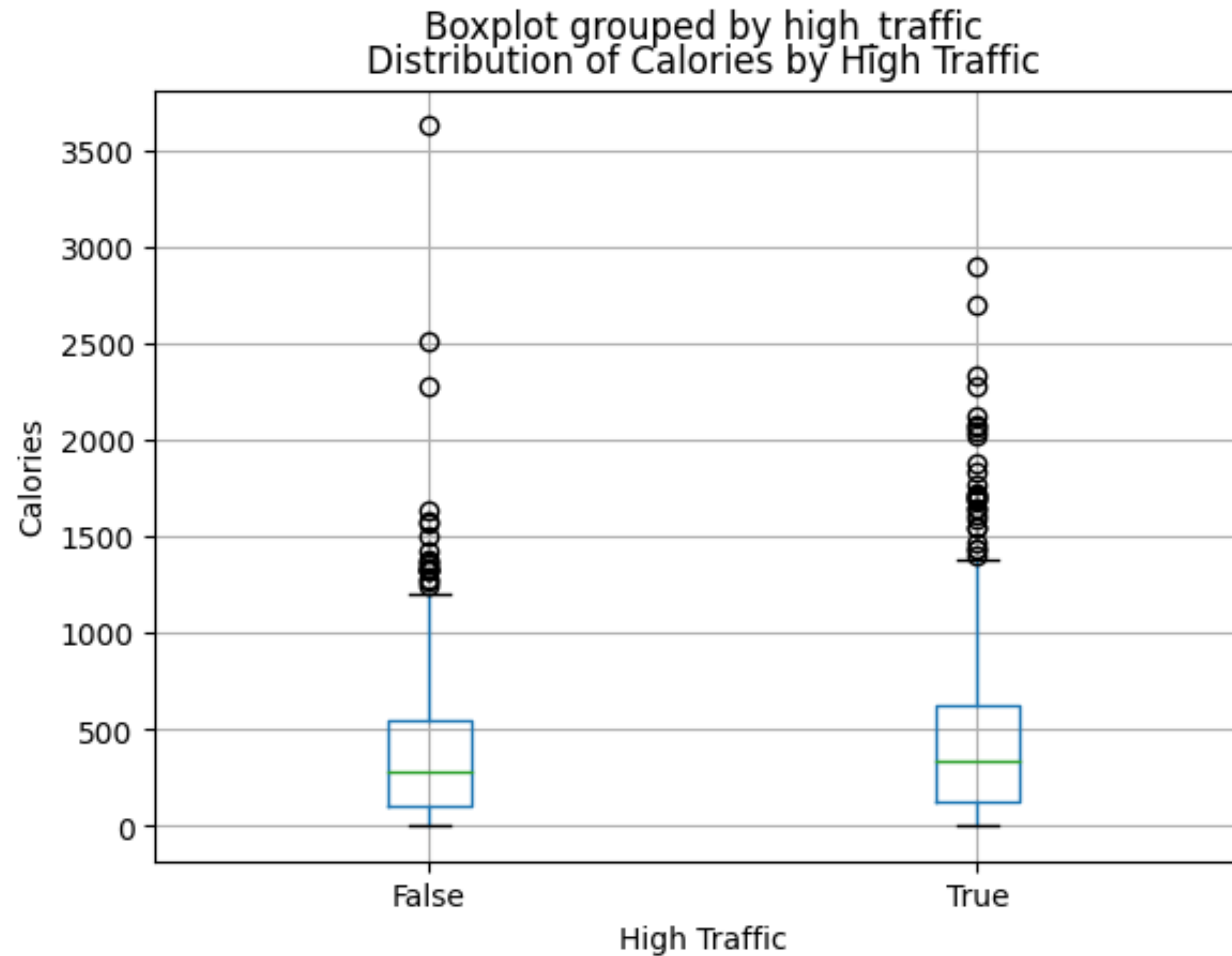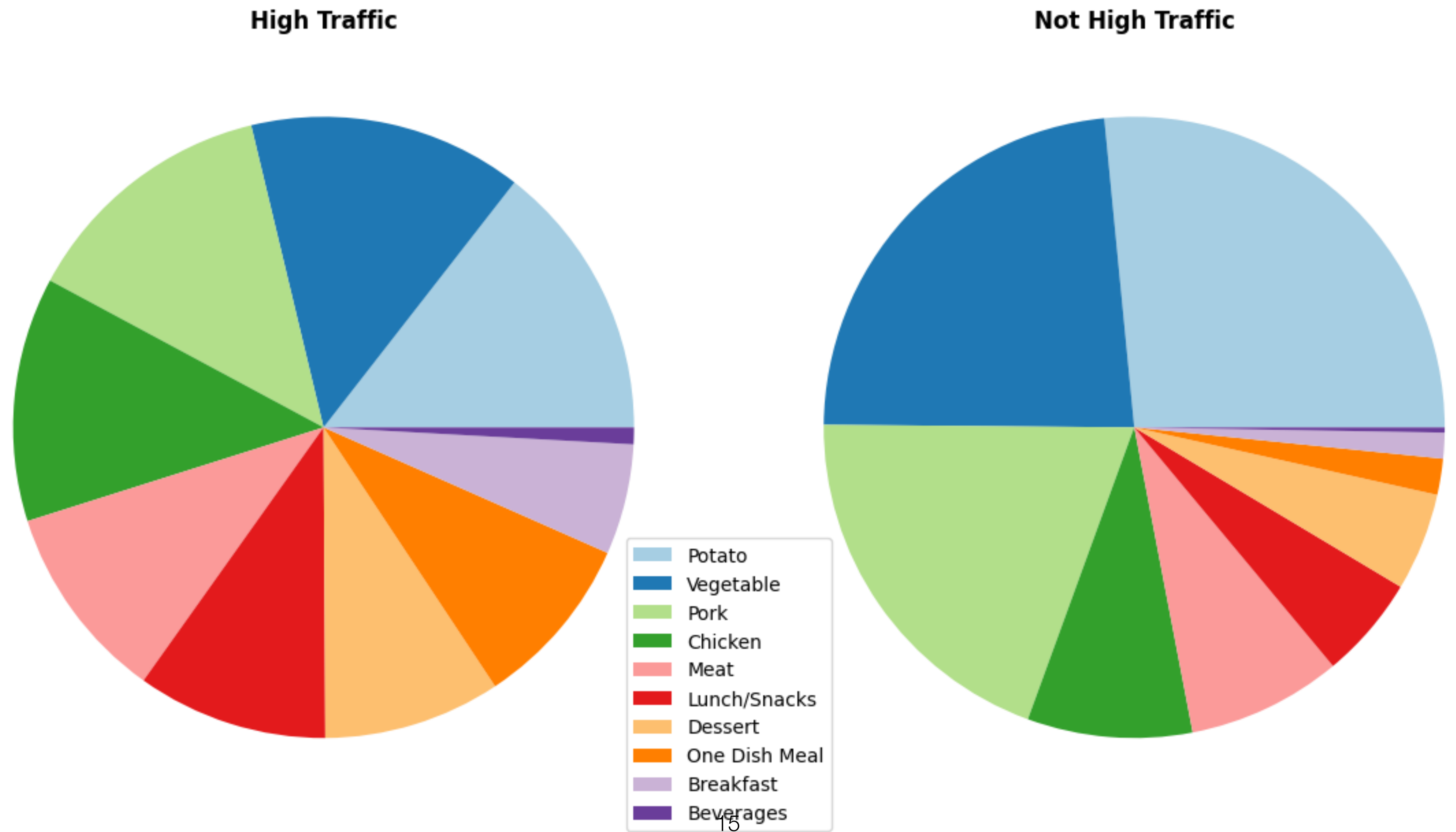# Information asymmetry across dependent variable in samples

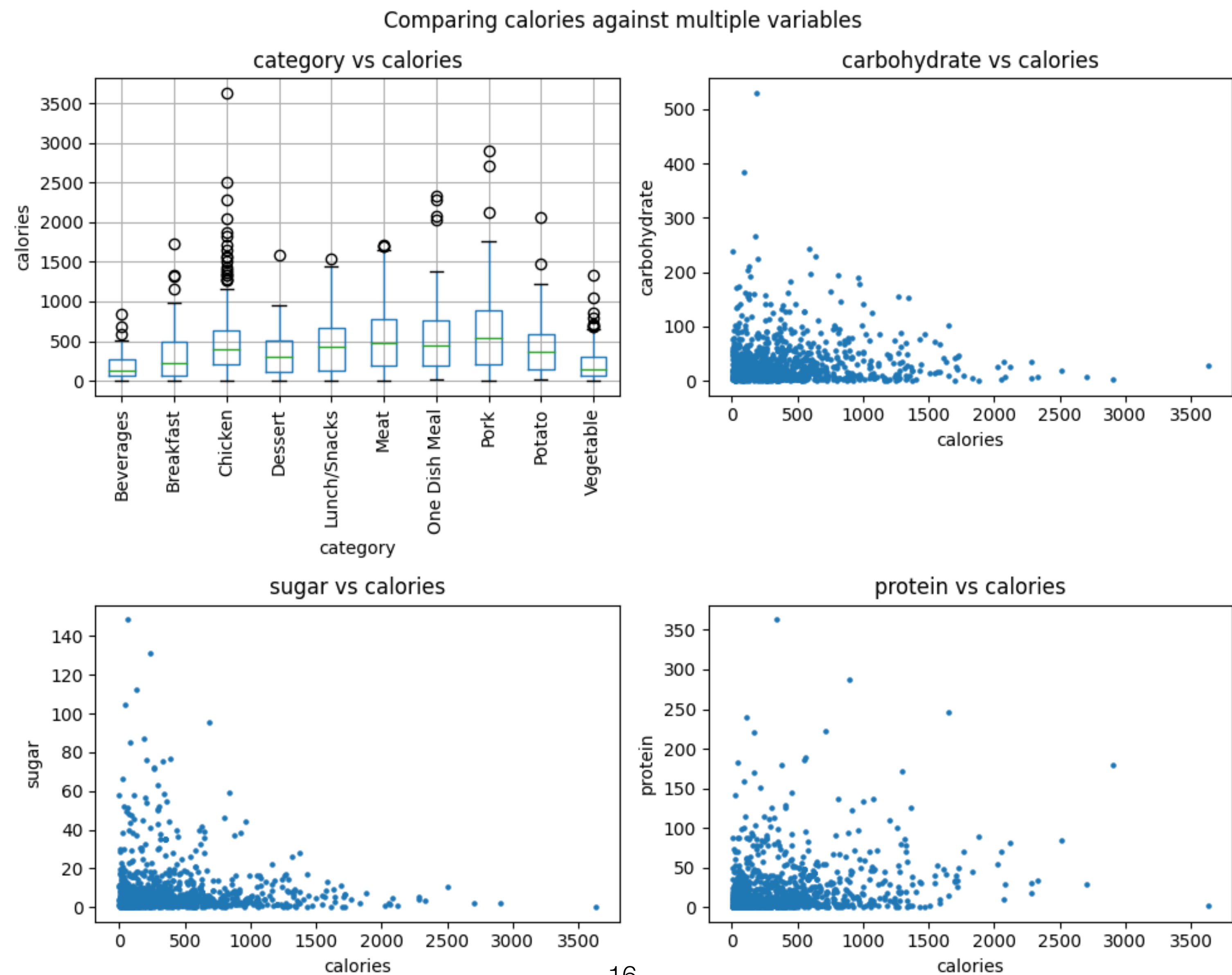# Majority of Tasty Bytes recipes have low calories

Histogram of Calories

No significant difference in calorie count between high vs. low traffic recipes

Boxplot grouped by high_traffic
Distribution of Calories by High Traffic

No significant difference in categorical break down between high vs. low traffic recipes

High Traffic

Not High Traffic

Legend:
- Potato
- Vegetable
- Pork
- Chicken
- Meat
- Lunch/Snacks
- Dessert
- One Dish Meal
- Breakfast
- Beverages

No relationship: calories vs. category and nutritional information (per serving)

Comparing calories against multiple variables

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Dataset

☑ calories
☑ carbohydrate
☑ sugar
☑ protein
☑ category
☑ servings
☑ high_traffic

☐ time to make
☐ cost per serving ($)
☐ fat
  ☐ unsaturated
  ☐ saturated
  ☐ trans
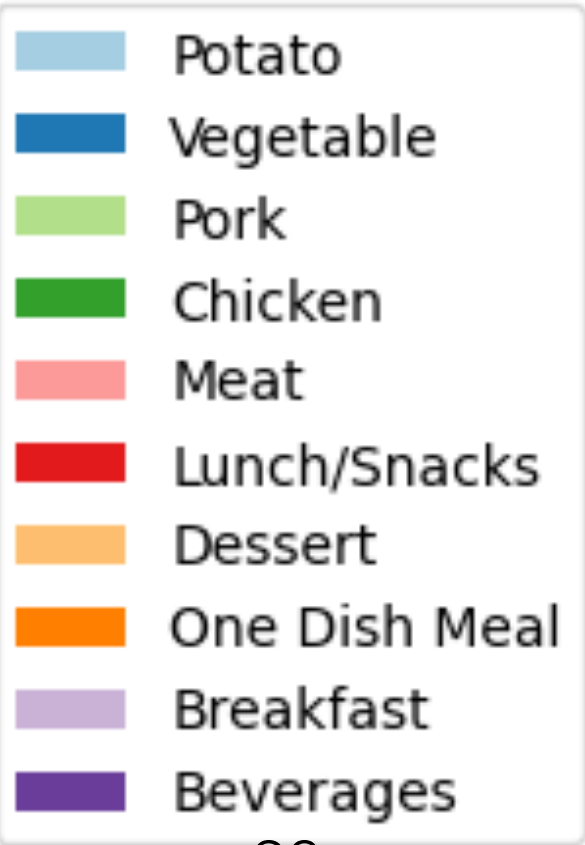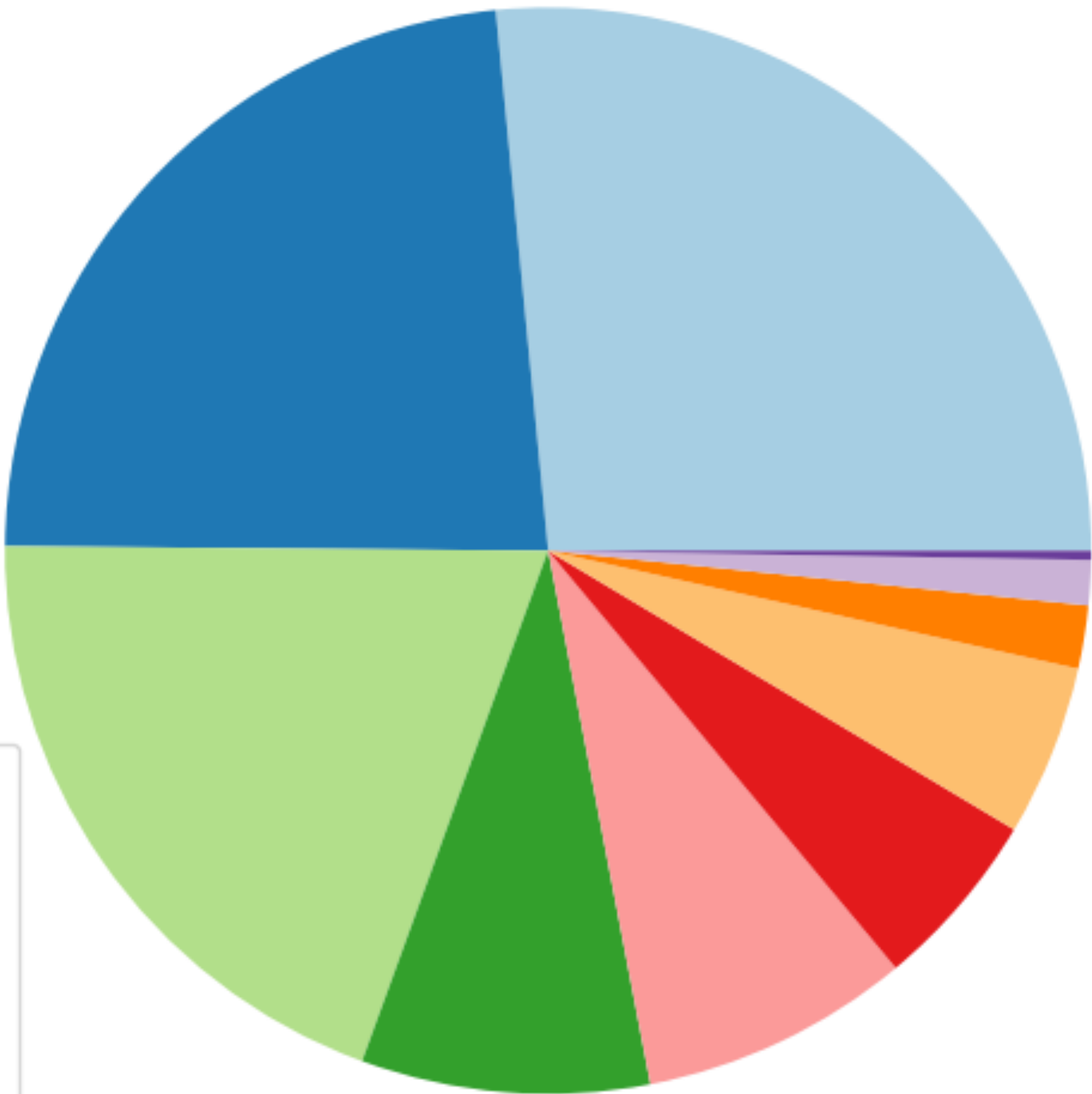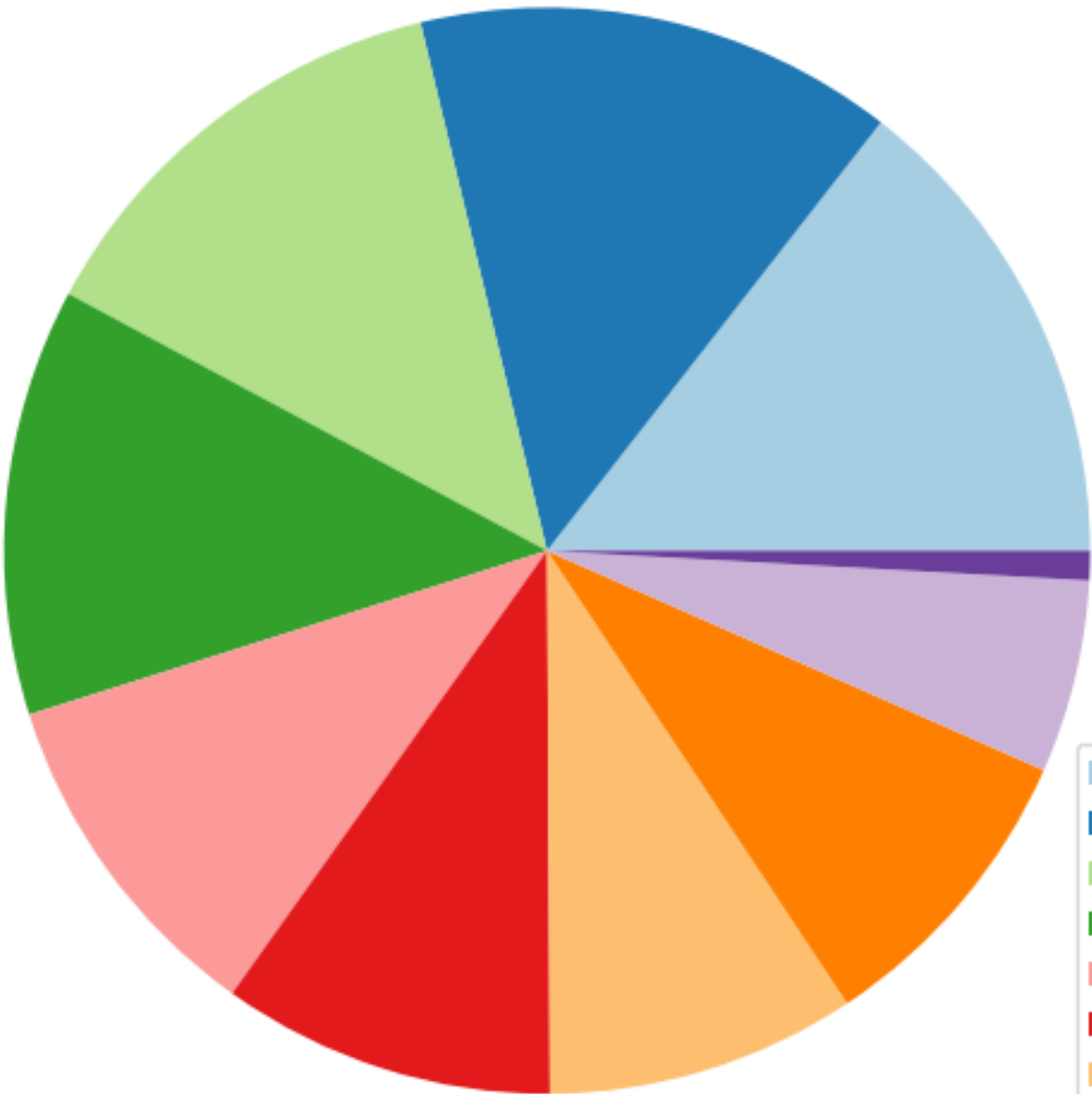☐ fiber
☐ sodium
☐ ingredients list
☐ method
☐ amount of traffic

Dataset

☑ calories
☑ carbohydrate
☑ sugar
☑ protein
☑ **category**
☑ servings
☑ **high_traffic**

☐ time to make
☐ cost per serving ($)
☐ fat
  ☐ unsaturated
  ☐ saturated
  ☐ trans
☐ fiber
☐ sodium
☐ ingredients list
☐ method
☐ amount of traffic

Similar categorical break down across high and low traffic recipes

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Not High Traffic

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Concluding Remarks

Vegetarian / Vegan-friendly
Potato-based recipes
Meat-based recipes: Pork, Chicken