Will Driver Accept the Coupon?

An analysis of acceptance rates of drivers who accepted a coupon and those that did not.
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1. Introduction

➔ **Objective:** Analyze factors influencing a driver's decision to accept or reject coupons delivered to their cellphone while driving and highlight differences between customers who accepted and those who rejected coupons.

➔ **Data Source:** CSV file from UCI Machine Learning repository, collected via Amazon Mechanical Turk survey.

➔ **Data Content:** Driver and Driving scenarios data including income, destination, time, weather, and presence of passengers related to five coupon types.

➔ **Method:**
Employing Python for plotting, statistical summaries, analysis, and visualizations to differentiate customers who accepted (labeled 'Y=1') and those who declined (labeled 'Y=0') coupons. Five coupon types are considered, ranging from less expensive restaurants to more expensive ones.
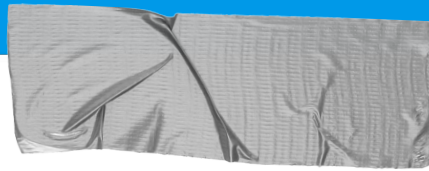
2. Cleaning the Data

➔ **Eliminate duplicates:** Since the data is anonymous and contains independent observations of non-identifiable customers, removing duplicates would be difficult (with no reliable method of identifying a duplicate) and is not necessary.

➔ **Resolve structural errors:** Investigation of the data was conducted to find incorrect capitalization, naming conventions, typos, inconsistencies, or mislabeled and found none that would significantly alter the outcome of the data analysis.

➔ **Filter outliers:** One-off observations that could alter the performance or outcome of the data analysis and modeling were left in the dataset since it uncertain if the outlier is necessarily inaccurate.

➔ **Missing data:** (Further explanation will be continued on the next slide)

2. Cleaning the Data (cont.)

➔ **Missing data:** (Further explanation will be continued on the next slide)

➔ Column "Car" has only 108 values with 12,575 values missing, or only .00859% values present. Since the "car" column is an object data type a mean or mode cannot be calculated to replace the missing values. Since the type of car does reasonably appear to be a factor determining whether a coupon is accepted, the column was deleted.

➔ Other columns had an approximate average of 100 rows missing data in the column. Since a high percentage of the column contained data, the mode was used to determine the highest and most common response to this column data
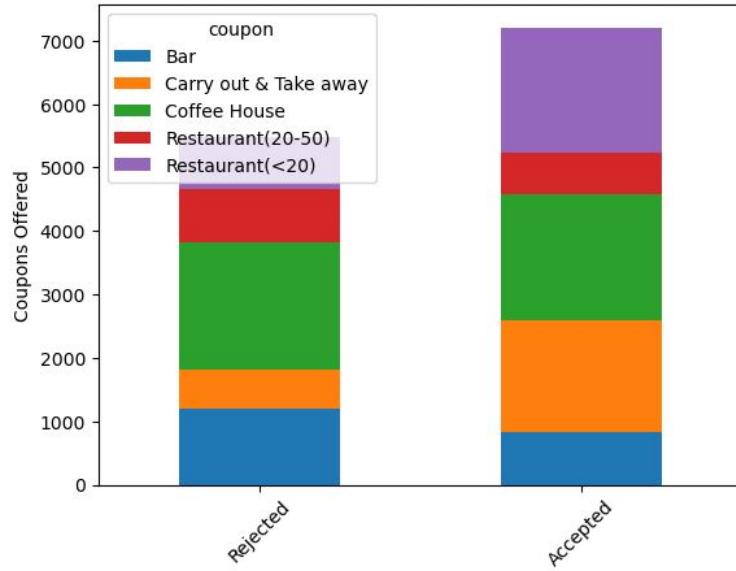
3. Analysis

Number of Coupons Accepted and Rejected
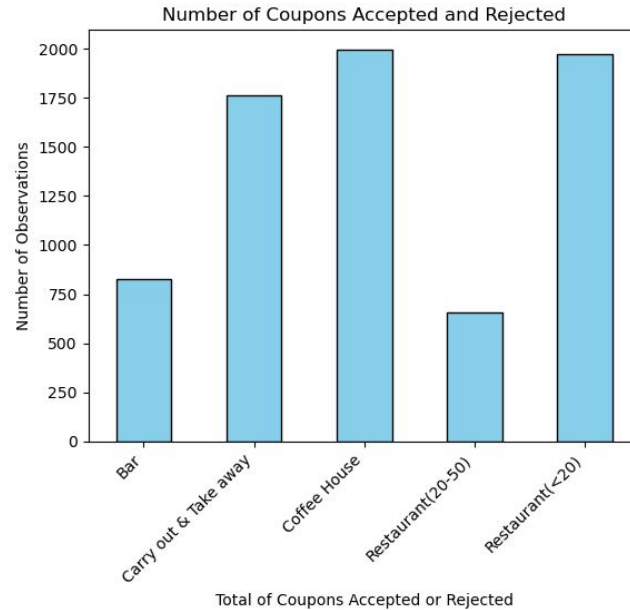
An analysis is performed of the coupon acceptance data from drivers.
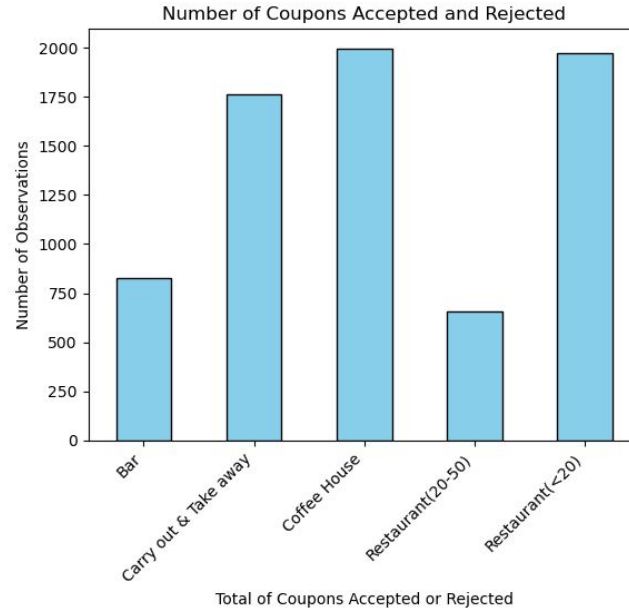
Distribution of Coupon Accepted and Rejected by Coupon Type

Acceptance Rates Findings

- **Bar coupons** has a higher rejection rate than other coupon types
- **Carry out & Take away** had almost 3x higher acceptance
- **Coffee** coupons had almost equal amount of rejection and acceptance rates
- **Restaurants(<20)** had over twice the acceptance rate.
- **Restaurants(20-50)** had a higher a rejection rate while

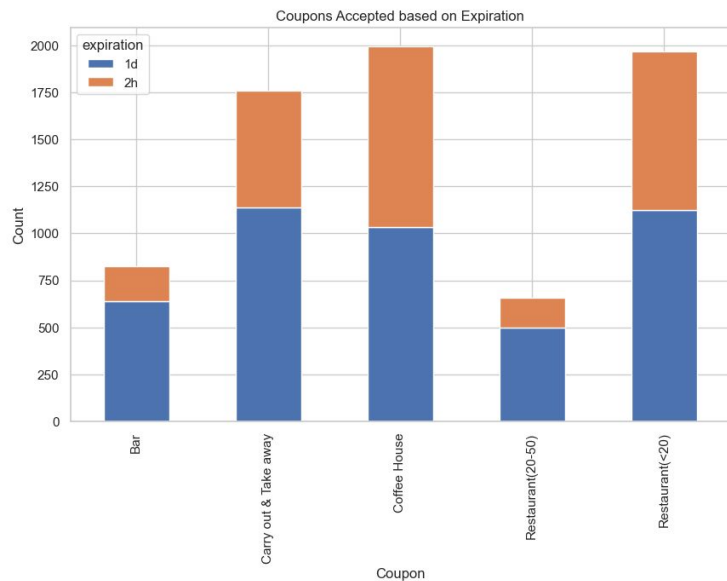Distribution of Coupon Accepted and Rejected by Coupon Type
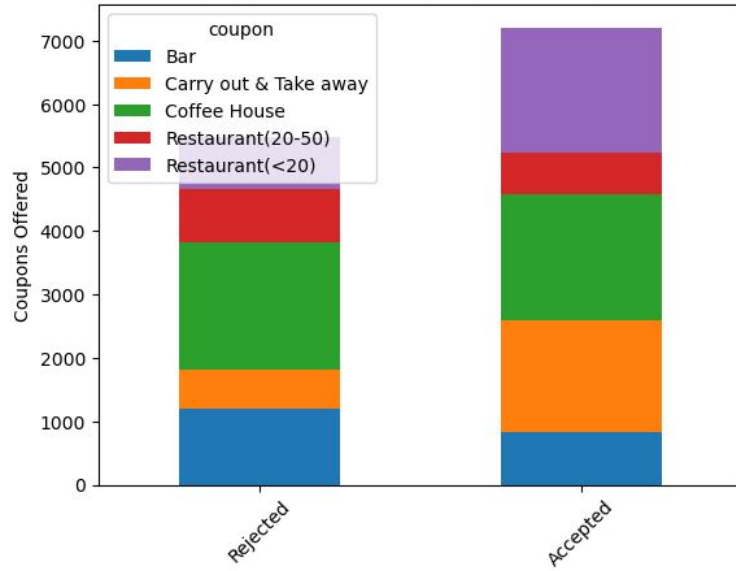
Acceptance Rates Findings

Coupons are more effective when offered to **Carry out & Take away** and **Restaurants(<20)**.

Restaurants(20-50) had a higher a rejection rate while

Coupons Accepted based on Expiration

Acceptance Rates Findings

Coupons that had a longer expiration time of 1 day had a higher acceptance rate than coupons that expired in 2 hours.

It would be recommended that more coupons be offered that have longer expiration times.