

# Practical Application Assignment 5.1: Will the Customer Accept the Coupon?

This report to answer the question, will customer accept the coupon assignment.

The link to anlysis: [https://github.com/diaa-majed/Assignment\\_5.1.git](https://github.com/diaa-majed/Assignment_5.1.git)

The link to Jupyter notebook: [https://github.com/diaa-majed/Assignment\\_5.1/blob/main/Diaa-prompt.ipynb](https://github.com/diaa-majed/Assignment_5.1/blob/main/Diaa-prompt.ipynb)

Check the image folder for plots

## Date Missing

The below is summery of missing data

Column	Number of missing values
car	12576
Bar	107
CoffeeHouse	217
CarryAway	151
RestaurantLessThan20	130
Restaurant20To50	189

## Data Cleaning

- ☐ "car" column has too many missing values so delete the columns
- ☐ Replace NaN in Bar, CoffeeHouse, CarryAway, RestaurantLessThan20 and Restaurant20To50 with never
- ☐ Noticed never and less1 which means the same so replaced both with '0' and replace gt8 with 8-Or-Mor so all ranges start with number

## Summary of Findings

### Number of coupons

coupon	Number
Bar	2017
Carry out & Take away	2393
Coffee House	3996
Restaurant between \$20 -\$50	1492

Restaurant under \$20	2786
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### Acceptance Rate

coupon	Number
Bar	41.00%
Carry out & Take away	44.10%
Coffee House	49.92%
Restaurant between \$20 -\$50	44.10%
Restaurant under \$20	70.71%

The highest acceptance coupon is Restaurant under \$20

**What proportion of the total observations chose to accept the coupon?**

proportion of the total observations chose to accept the coupon: **7210**

**What proportion of bar coupons were accepted?**

proportion of bar coupons were accepted : **827**

**Compare the acceptance rate between those who went to a bar 3 or fewer times a month to those who went more.**

Acceptance Rate for went to a bar 3 or Fewer Times: **54.46%**

Acceptance Rate for went to a bar More than 3 Times: **62.25%**

**Compare the acceptance rate between drivers who go to a bar more than once a month and are over the age of 25 to the all others. Is there a difference?**

Acceptance Rate for Drivers Going to a Bar More than Once a Month and Over 25: **62.14%**

Acceptance Rate for All Other Drivers: **62.41%**

The difference in acceptance rate between drivers over 25 to the all others: **0.27%**

**Use the same process to compare the acceptance rate between drivers who go to bars more than once a month and had passengers that were not a kid and had occupations other than farming, fishing, or forestry.**

Acceptance Rate for Drivers Going to Bars More than Once a Month and Meeting Criteria: **62.31%**

Acceptance Rate for All Other Drivers: **54.60%**

The difference in acceptance rate between drivers over 25 to the all others: **7.72%**

**Compare the acceptance rates between those drivers who:**

- Acceptance Rate for go to the bar once, no kid and not widowed: **62.31%**

- Acceptance Rate for go to the bar once and are under the age of 30: **62.85%**

- Acceptance Rate for go to cheap restaurants more than 4 times and income is less than 50K: **58.20%**

**Based on these observations, what do you hypothesize about drivers who accepted the bar coupons?**

- ☐ From the analysis above, the highest acceptance rate is **62.85%** for the group **go to the bar once and are under the age of 30**
- ☐ I used seaborn to virtualize acceptance group by age, marital Status, and passenger..
  - ☐ For Bar coupon, age 21, single, with friends is highest to accept it.
  - ☐ For Coffee House coupon, age under 21, single with Friends
  - ☐ For Restaurant under \$20 coupon, single with friend. Almost all Aage accept the coupon