**What this document is**:

This is a brief, non-technical report to describe findings from the data analysis conducted using python, pandas, and seaborn on the UCI Machine Learning Repository data set “Will the Customer Accept the Coupon?”

**Overview and problem statement**

The survey describes different driving scenarios, including the destination, current time, weather, and passenger, and then asks people whether they will accept the coupon if they are the driver. There are three possible answers people can choose from:

* “Right away”
* “Later, before the coupon expires”
* “No, I do not want the coupon”

These coupons will be for one of five different types of businesses:

* Less expensive restaurants (under $20)
* Coffee houses
* Bars
* Carryout/takeaway restaurants
* More expensive restaurants ($20-$50)

The overall problem statement is: can we use statistics to determine the likelihood of a driver accepting a coupon that is offered to them for one of these five types of businesses?

This analysis only exams this question for two types of businesses where coupons were offered:

* Bars
* Carryout/takeaway restaurants

**Findings**

*Bars*

The findings for bars was fairly straightforward. Of the 1,913 drivers who were offered bar coupons, only 41% accepted. The key finding is that bar coupon acceptance was much higher for those that said they went to a bar three or more times in a month vs. those that self-reported going to a bar less than that. The acceptance rate increased to 76% vs. 37% for those who attend less frequently. This acceptance rate was fairly constant across all other demographics like age, reported income, children, marital status, etc. However, there is potentially more stratification that can be done that was not explored in this analysis to determine which groups from the frequent bar attenders are most likely to accept a coupon (greater than 76%). These include demographics such as gender, time of day coupon is offered, weather, and distance.

*Carryout Restaurants*

The findings for carryout restaurants was different than bars. Of the 2,280 drivers who were offered carryout coupons, 74% accepted, a much higher percentage than bars. However, different from bar coupons, a driver self-reporting how many times they eat carryout in a month had no real impact on likelihood to accept the coupon (expect potential those that “never” eat carryout). What did have an impact on how likely a driver was to accept the coupon was:

1. Time of day: in the afternoon (lunch and dinner times) drivers were 7pp more likely to accept the coupon (81% vs. 74%)
2. Gender: males were 3-4pp higher likelihood no matter the time of day
3. Income: lower income (less than $63K) was more likely than average to accept the coupon
4. Marital status: “single” (either single, divorced, or widowed) drivers are 3-4 percentage points more likely to accept the coupon in the afternoon than married or coupled drivers

**Recommendations and Next Steps**

There are other questions that now need to be answered in the coupon acceptance data:

1. What are the trends for the three other kinds of coupons (expensive restaurants, cheap restaurants, and coffee bars) and how do these differ from the other two categories?
2. How can we better target frequent bar users with bar coupons and target afternoon driving single males with carryout coupons?
3. Can we get to more granular answers within bar and carryout coupon users that weren't addressed in this analysis (e.g., further stratification of gender differences across age and income)?

In answering these questions, we will be able to provide more targeted coupon delivery, have a better sense of likelihood to accept (and thus track performance of coupon delivery), and enable better delivery of a product to these consumers.