**Berkeley – Machine Learning and Data Science**

**Objective:**

You seek to answer the question, “Will a customer accept the coupon?” The goal of this project is to use what you know about visualizations and probability distributions to distinguish between customers who accepted a driving coupon versus those who did not.

**Data:**

We have a coupon file with 12,684 rows and 26 columns

**Inspection:**

The coupon data was cleaned from empty values and inconsistencies, and after that, we conducted three analyses.

1. An analysis to understand the percentage of accepted coupons and the distribution by type of restaurant and temperature.
2. An analysis for bar coupons to understand the percentage of accepted coupons and the distribution by bar attendance, people age, and some other driver’s characteristics (income, marital status, car passengers, etc.)
3. An analysis for expensive restaurant coupons to understand the percentage of accepted coupons and the distribution by income, education, and restaurant attendance.

**Results:**

**The outcome from our analysis was:**

1. For the coupon data, we observed that coupon acceptance rate is an effective strategy for all the restaurants (40% acceptance rate), especially for cheap restaurants and carry out restaurants (70% acceptance rate). Also, the coupon acceptance rate is higher on hot days (80F days), going from 1176 observations on 30F (53% acceptance rate) to 3727 observations on 80F (60% acceptance rate).
2. For bar coupon data, they are used by young people (less than 30 years) that go to the bar more than 1 time per month. They usually go when they are driving with friends or partners (no kids), and, in terms of their economy, they earn less than 50K and they go to eat at cheap restaurants between 4 and 8 times per month.
3. Expensive restaurant coupons will be more likely accepted by drivers earning more than 100k with a bachelor’s degree when they go more than 1 time per month to an expensive restaurant. Additionally, we observed that drivers earning more than 100K with Associate degree do not eat often in expensive restaurants (17 observances) compared to any other driver group earning more than 100K (some college, bachelor, graduate degree).

For further details, please refer to **Module 5 Homework** file where I have described the analysis in details with diagrams and percentages.