Assignment # 3

# **Loyalty Program**

A marketing executive tested two incentives to see what percentage of customers would enroll in a new Web-based loyalty program. The customers were asked to log on to their accounts on the Web and provide some demographic and spending information. As an incentive, they were offered either nothing (No Offer), free flight insurance on their next flight (Free Insurance), or a free companion airline ticket (Free Flight). The customers were segmented according to their past year’s spending patterns as spending primarily in one of five areas: *Travel, Entertainment, Dining, Household, or Balanced.* The executive wanted to know whether the incentives resulted in different enrollment rate (Response). Specifically, she wanted to know how much higher the enrollment rate for the free flight was compared with the free insurance and whether it was statistically significant. She also wanted to see whether *Spending Pattern* was associated with *Response.* Using the data in the file **ch16\_MCSP\_Loyalty\_Program,** write up a report for the marketing executive using appropriate graphics, summary statistics, statistical tests, and confidence intervals.

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**BACKGROUND**

A marketing executive wanted to make their new online loyalty program more engaging. They needed to figure out what rewards would encourage customers to join the program. Customers were asked to share their spending habits and other information by logging into their online accounts. The rewards offered included "No Offer," "Free Insurance," and the highly desirable "Free Flight." Customers were sorted into groups based on what they spent their money on, like travel, entertainment, dining, household items, or a mix of these. This grouping helped the executive see how different spending habits affected customer responses.

The study aimed to answer two main questions:

1. Does the type of reward significantly impact the number of people signing up, and how much more effective is the "Free Flight" compared to "Free Insurance"?
2. Is there a clear connection between a customer's spending habits and whether they sign up for the program?

To find answers, the analysis used statistics, summaries of data, and visual graphs. The results of this analysis helped the marketing executive decide how to improve the loyalty program.

**REPORT SUMMARY**

This report examines user spending within a web loyalty program, which is divided into five segments: Balanced, Dining, Entertainment, Household, and Travel. The graph we provide highlights how users in each segment allocate their expenditures.

**Total number of offers provided to the customers compared to total enrollments.**

**The test hypotheses are as follows:**

Null Hypothesis, Ho: There is no significant difference between enrolment rate for free flight and flight insurance.

Alternative Hypothesis, Ha: There is a significant difference between enrolment rate for free flight and flight insurance

***Ratio of total no. of offers to the total responses***

|  |  |  |  |
| --- | --- | --- | --- |
| **Segments** | **Total Response** | **Total Offers** | **Response Rate** |
| Flight Insurance | 175 | 3281 | 0.053 |
| Free Flight | 234 | 3499 | 0.067 |

Based on the above data, Free flight has the highest enrollment of all the offers (higher than flight insurance).

**Statistical test, Two-sample t-test:**

|  |  |  |
| --- | --- | --- |
| ***Statistics*** | ***Free Flight*** | ***Flight Insurance*** |
| Mean | 0.06687625 | 0.053337397 |
| Variance | 0.062421657 | 0.050507913 |
| Observations | 3499 | 3281 |
| Hypothesized Mean Difference | 0 |  |
| df | 6766 |  |
| t Stat | 2.348502972 |  |
| P(T<=t) one-tail | 0.009438836 |  |
| t Critical one-tail | 1.645078868 |  |
| P(T<=t) two-tail | 0.018877672 |  |
| t Critical two-tail | 1.960314663 |  |

The p value (0.009438836) is lower than the chosen significant level of 0.05, therefore we fail to accept the null hypothesis. Hence, Enrollment rates for both free flight and free insurance are significantly different.

***Statistical test, Chi-square:***

H0: There is no association with Spending Patterns and Enrollment Rate (Response).

Ha: There is an association with Spending Patterns and Enrollment Rate (Response).

*Based on the above data, the p value (2.93919E-22) is lower than the chosen significant level of 0.05, therefore we reject the null hypothesis. Hence, there is an association between Spending Patterns and Enrollment rate.*