**Hypothesis Testing**

For all the hypotheses, mention the following:

1. Null hypothesis **Ho**
2. Alternate hypothesis **H1**
3. Test statistic
4. p value corresponding to the test statistic
5. Insight (explain in less than 100 words)

**Annual Income of Current Vs Default**

**Ho**: **Mean Annual Income of Current = Mean Annual Income of Default**

**H1**: **Mean Annual Income of Current ≠ Mean Annual Income of Default**

Test statistic: **t = 10.6, df = 1469**

data: current\_new$annual\_inc and default\_new$annual\_inc  
95 percent confidence interval **DELTA mean range**: **7462.291 10851.327**

p value corresponding to the test statistic : **p-value** **2.395848e-25**

Insight (explain in less than 100 words): **Since p is lower than α, Reject the Null Hypothesis**

**Mean Annual income of Current is significantly greater than mean Annual income of Defaulters.***Since the average annual income of Current is higher than Default, the loan is up-to-date on all outstanding for “Current”.* **Loan Amount of Current Vs Default**

**Ho**: **Mean Loan Amount of Current = Mean Loan Amount of Default**

**H1**: **Mean Loan Amount of Current ≠ Mean Loan Amount of Default**

Test statistic: **t =** **17.9 , df = 1395**

data: current\_new$loan\_amnt and default\_new$loan\_amnt  
95 percent confidence interval **DELTA Mean range**: **4423 to 5512**

p value corresponding to the test statistic : **1.059184e-64**

Insight (explain in less than 100 words): **Reject Null Hypothesis.**

*The average loan amount for customers with “Current” status is significantly higher than the average loan amount for customers with “Default” status as it is finalized based on the annual income, thus the loan amount approved for “Current” is significantly higher than “Default”.* **Funded Amount of Current Vs Default**

**Ho**: **Mean Funded Amount of Current = Mean Funded Amount of Default**

**H1**: **Mean Funded Amount of Current ≠ Mean Funded Amount of Default**

Test statistic: **t =** **18.05 , df =** **1406**

data: current\_new$funded\_amnt and default\_new$funded\_amnt  
95 percent confidence interval **DELTA Mean range**: **4232 to 5264**

p value corresponding to the test statistic : **1.126012e-65**

Insight (explain in less than 100 words): **Reject Null Hypothesis.**

*Average funded amount for customers with “Default” status is lower when compared with the customers with “Current” status; Alternatively people are more careless or increase the tendency to default for small amounts.*

**DTI of Current Vs Default**

**Ho**: **Mean DTI of Current = Mean DTI of Default**

**H1**: **Mean DTI of Current ≠ Mean DTI of Default**

Test statistic: **t = 4.125, df = 1446**

data: current\_new$dti and default\_new$dti  
95 percent confidence interval **DELTA Mean range**: **0.484 1.361**

p value corresponding to the test statistic : **3.92072e-05**

Insight (explain in less than 100 words): **Reject Null Hypothesis**

*Though the mean of Current DTI is close to the mean DTI of Defaulters, it is significantly higher than the Defaulters. Shows that People who are paying Higher Debts WRT their income are not defaulting as compared to Lower debt payers this supports the argument that More defaulters are takers of small debts*

**Annual Income with High Interest Rate Vs Annual Income with Low Interest rate**

**Ho**: **Mean annual income with high interest rate = Mean annual income with low interest rate**

**H1**: **Mean annual income with high interest rate ≠ Mean annual income with low interest rate**

Test statistic: **t =** **12.025, df = 1273**

data: high\_rate$annual\_inc [75299] and low\_rate$annual\_inc[54869]

95 percent confidence interval **DELTA Mean range**:  **12232 17002**

p value corresponding to the test statistic : **1.257432e-31**

Insight (explain in less than 100 words): **Reject Null Hypothesis**

*Mean Annual Income with High Interest rate is significantly different from the Mean Annual Income with Low Interest rate. People with Higher Annual income fine with taking loan at Higher Interests rates.*

**Loan Amount with High Interest Rate Vs Loan Amount with Low Interest rate**

**Ho**: **Mean Loan Amount with high interest rate = Mean Loan Amount with low interest rate**

**H1**: **Mean Loan Amount with high interest rate ≠ Mean Loan Amount with low interest rate**

Test statistic: **t = 17.9, df = 1395**

data: high\_rate$funded\_amnt [16493] and low\_rate$funded\_amnt [11525]

95 percent confidence interval **DELTA Mean range**:  **4423 to 5512**

p value corresponding to the test statistic :  **1.059e-64**

Insight (explain in less than 100 words): **Reject Null Hypothesis**

*Average Loan Amount with High Interest rate is significantly different than average Loan Amount with Low Interest rate. Shows that customers who are applying for a higher Loan amount are willing to take loan at higher Interests rates.*

**Funded Amount with High Interest Rate Vs Funded Amount with Low Interest rate**

**Ho**: **Mean Funded Amount with high interest rate = Mean Funded Amount with low interest rate**

**H1**: **Mean Funded Amount with high interest rate ≠ Mean Funded Amount with low interest rate**

Test statistic: **t = 23.59, df = 953**

data: high\_rate$funded\_amnt [17846] and low\_rate$funded\_amnt [9042]

95 percent confidence interval **DELTA Mean range**: **8544.315 to 9676.171**

p value corresponding to the test statistic : 2.5**e-97**

Insight (explain in less than 100 words): **Reject NULL Hypothesis**

*Average Funded Amount with high Interest rate is much Higher than Mean Annual Income with Low Interest rate .Shows that customers who are taking High Loan are willing to take loan at Higher Interests rates .*

**DTI with High Interest Rate Vs DTI with Low Interest rate**

**Ho**: **Mean DTI with high interest rate = Mean DTI with low interest rate**

**H1**: **Mean DTI with high interest rate ≠ Mean DTI with low interest rate**

Test statistic: **t = 4.32, df = 1447**

data: high\_rate$dti [14.8] and low\_rate$dti [13.4]

95 percent confidence interval **DELTA Mean range**:  **0.715 to 1.9**

p value corresponding to the test statistic : 1.64e-05

Insight (explain in less than 100 words):  **Reject NULL Hypothesis**

*Mean DTI with High Interest rate is Higher than Mean DTI with Low Interest rate .  
Shows that People whose DTI are High are willing to take loan at Higher Interests rates*