**Assignment 3: Advertisement Analysis**

Logo

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**Subject: Statistical and Predictive Modeling 1 (1204)**

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1. **Hypothesis statement for Ad Analysis:**

For the analysis above, we will formulate two hypothesis statements: an alternate hypothesis indicating that weekly sales for Ad 2 are not equal to 33,000 units per week, and a null hypothesis demonstrating that weekly sales for Ad 2 are equal to 33,000 units per week.

H0: µ2 = 33,000 average sales and has no increase effect on sales

H1: µ2 ≠ 33,000 Average sales and has increase effect on sales

1. **Step by step outline that how we will prove or disprove the above statements:**

Here we have two hypothesis statements as follows:

Null hypothesis: H0: µ2 = 33,000 average sales and has no increase effect on sales

Alternate hypothesis: H1: µ2 ≠ 33,000 Average sales and has increase effect on sales

Here, we will do one sample test for the above Ad Analysis where significance level we will take 0.05 and standard deviation is unknown here so we will use the T-test here to determine whether it has increase effect on ad sales or not.

1. **Outlined Analysis**:

**#Load data**

**library(ggplot2)**

**data(adanalysis)**

**adanalysis**

**#One Sample t-test – Equal to 33000**

**t.test(adanalysis$adtype2, mu=33000)**

**data: adanalysis$adtype2**

**t = 4.7855, df = 19, p-value = 0.0001286**

**alternative hypothesis: true mean is not equal to 33**

**95 percent confidence interval: 39431.12 49429.88**

**sample estimates:**

**mean of x 44430.5**

1. **Summary of Findings and concluding statement:**

According to the aforementioned data, the confidence level indicates that the true mean in this case is not equal to 33,000 and instead falls between 39,431.12 and 49,429.88, which indicates a positive impact on ad sales. In addition, the null hypothesis that the advertisement has no influence on sales increases is rejected since the Value of P is **0.0001286**, which is less than the significance level of 0.05.

**Concluding statement: We reject the null hypothesis statement**

**That it 33,000 average sales and it has no increase effect on**

**sales.**