**INFS 414**

**WEEK 2- ASSIGNMENT 2**

**QUESTION 2 (PART 1):**

**Avg Spending (Mean Spending Score):**

This represents the average spending score for each income group.

Individuals in the high-income bracket exhibit the highest average spending at 51.3, while those in the medium and low-income categories show similar averages of 49.9 and 50.0, respectively. This indicates a slight edge in spending among high-income individuals, although the difference is minimal.

**Median Spending:**

This is the midpoint of spending scores in each group, meaning that 50% of individuals spend below this value and 50% spend above it.

For both the high and medium-income groups, the median spending score is 50, whereas the low-income group has a slightly lower median of 47. This suggests that a larger proportion of low-income individuals may be spending less than the median compared to the other groups.

**SD Spending (Standard Deviation of Spending Score):**

This metric assesses the variability of spending scores within each income group.

The medium-income group shows the highest variability in spending, with a standard deviation of 28.5, indicating more diverse spending patterns. In contrast, the low-income group has the lowest standard deviation at 27.3, suggesting their spending scores are more uniform. The high-income group also displays a considerable range at 27.9, but it is not significantly different from the others.

**QUESTION 2 (PART 2):**

**Interpretation of Welch Two-Sample t-Test Results:**

**Null Hypothesis (H₀):** There is no significant difference between the means of the two groups (i.e., the mean income of low-income and high-income groups is the same).

**Alternative Hypothesis (H₁):** The means of the two groups are different (i.e., the mean income of low-income and high-income groups is not equal).

**Key Result:**

**t-value** = -0.4612: This value represents the standardized difference between the two sample means. A lower absolute t-value indicates a weaker difference.

**p-value** = 0.6455: Since the p-value exceeds 0.05, we do not reject the null hypothesis, suggesting there is no statistically significant difference between the two groups.

**Sample Means:**

**Low-income group mean** = 50.02

**High-income group mean** = 51.26

The small difference between these means supports the conclusion that the income levels of the two groups are not significantly different.

**Conclusion:**

The test results indicate that there is no significant difference in income between the low-income and high-income groups. The observed difference is likely attributable to random variation rather than a true effect.

**QUESTION 2 (PART 3):**

