Hypothesis Testing Using Excel

Statistical Exercise Solutions (Exercises 7.1B – 7.6B)

1. Exercise 7.1B – Summary Statistics for Diet B

Sample Size: 50

Mean Weight Loss: 3.710 kg

Standard Deviation: 2.769 kg

Interpretation: Diet B led to a lower average weight loss compared to Diet A (5.341 kg). The moderate standard deviation indicates variation in results, but overall, Diet A appears more effective.

2. Exercise 7.2B – Median, Quartiles, and IQR for Diet B

Median: 3.745 kg

1st Quartile: 1.953 kg

3rd Quartile: 5.945 kg

Interquartile Range (IQR): 3.992 kg

Interpretation: The weight loss distribution for Diet B shows a slight skew, with many participants losing under 4 kg. Compared to Diet A, Diet B seems less effective in promoting weight loss.

3. Exercise 7.3D – Brand Preferences in Area 2

Frequencies: Other = 45, B = 16, A = 9

Percentages: Other = 64.3%, B = 22.9%, A = 12.9%

Interpretation: In Area 2, the majority prefer 'Other' brands, followed by Brand B. Brand A is the least preferred. This trend is similar to Area 1, suggesting consistent brand preference patterns across areas.

4. Exercise 7.4F – Paired T-Test on Container Designs (Con1 vs Con2)

Mean Con1: 172.6

Mean Con2: 159.4

t-statistic: 2.875

p-value (two-tailed): 0.018

Interpretation: The difference is statistically significant at the 5% level. Sales are significantly higher for Container Design 1, suggesting it is the more effective design.

5. Exercise 7.6B – Independent T-Test for Diet A vs Diet B

Mean Diet A: 5.341 kg

Mean Diet B: 3.710 kg

t-statistic: 3.072

p-value (two-tailed): 0.003

Interpretation: The difference in weight loss is statistically significant ($p < 0.01$).

Diet A shows a higher effectiveness in producing weight loss compared to Diet B.