Summary

Ex 7.1:

The summary statistics show that Diet A has a higher mean value (5.341) compared to Diet B (3.710), with a difference of 1.631 between the two means. This suggests that on average, individuals on Diet A experienced **greater** weight loss outcomes than those on Diet B.

The standard deviations indicate the spread or variability of the data within each group. Diet B shows slightly more variability (SD = 2.769) than Diet A (SD = 2.536), indicating that the individual responses to Diet B were somewhat more dispersed around the mean. This suggests that individuals under Diet B experienced more variable weight loss outcomes, and Diet A might provide more predictable outcomes.

Ex 7.2:

These results provide further insights into the distribution of weight loss outcomes for both diets.

Diet A demonstrates a higher median weight loss (5.642) compared to Diet B (3.745), which is consistent with the higher mean observed earlier (5.341 vs 3.710). This alignment between mean and median suggests that Diet A generally yields greater weight loss than Diet B.

Examining the quartile values:

• Diet A's central 50% of participants experienced weight loss between 3.748 (Q1) and 7.033 (Q3).

• Diet B's central 50% of participants experienced weight loss between 1.953 (Q1) and 5.404 (Q3).

The interquartile ranges (IQR) are comparable for both diets (3.285 for Diet A vs 3.451 for Diet B), indicating a similar spread in the middle portion of the data. However, Diet B has a slightly larger IQR, reinforcing our earlier observation from the standard deviations that Diet B yields more variable results.

In terms of effectiveness, Diet A appears more beneficial for weight reduction because:

1. It has a higher median weight loss (5.642 vs 3.745)
2. Even the 25th percentile (Q1) of Diet A (3.748) exceeds the median of Diet B (3.745)
3. The 75th percentile (Q3) is also higher for Diet A (7.033 vs 5.404)

This implies that participants across all levels of responsiveness (low, medium, and high responders) generally lost more weight on Diet A than comparable participants on Diet B. The slightly smaller IQR for Diet A also suggests it delivers somewhat more consistent results.

Based on these descriptive statistics, Diet A seems to be the more effective weight-loss diet, producing both greater and slightly more consistent outcomes compared to Diet B.

Ex 7.3:

In Area 1, the majority of consumers (60.0%) prefer "Other" brands, while Brand B accounts for 24.3% of preferences and Brand A holds the smallest share at 15.7%. This reflects a strong inclination toward alternative cereal brands in this demographic area,

with relatively lower brand loyalty toward the two main competitors. In contrast, Area 2 exhibits more evenly distributed preferences. Although "Other" brands still lead at 45.6%, this proportion is significantly lower than in Area 1. Brands A and B collectively represent over half of the preferences in Area 2 (54.4% combined), with Brand B showing particular strength at 33.3%, compared to Brand A's 21.1%.

The most notable distinctions between the two areas are:

- Brand B performs more strongly in Area 2 (33.3%) than in Area 1 (24.3%), reflecting a 9 percentage point increase.
- Brand A also performs better in Area 2 (21.1%) than in Area 1 (15.7%).
- Other brands have a significantly lower market share in Area 2 (45.6%) compared to Area 1 (60.0%).