Exercise 6.1.

Answer:

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 better 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.

Exercise 6.2

Answer:

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

Diet A shows a higher median weight loss (5.642) compared to Diet B (3.745), which aligns with the higher mean we saw previously (5.341 vs 3.710). This consistency between mean and median suggests that Diet A generally produces greater weight loss than Diet B.

Looking at the quartile values:

- Diet A's middle 50% of participants experienced weight loss between 3.748 (Q1) and 7.033 (Q3)

- Diet B's middle 50% of participants experienced weight loss between 1.953 (Q1) and 5.404 (Q3)

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

Regarding effectiveness, Diet A appears more effective 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) shows greater weight loss than the median of Diet B (3.745)

3. The 75th percentile (Q3) is also higher for Diet A (7.033 vs 5.404)

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

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

Exercise 6.3

Answer:

In Area 1, the majority of consumers (60.0%) prefer "Other" brands, while Brand B captures 24.3% of preferences and Brand A has the smallest share at 15.7%. This

indicates a strong preference for alternative cereal brands in this demographic area, with relatively lower loyalty to the two main brands.

In comparison, Area 2 shows more balanced preferences. While "Other" brands still lead at 45.6%, this percentage is considerably lower than in Area 1. Brands A and B together account for over half the preferences in Area 2 (54.4% combined), with Brand B being particularly stronger at 33.3% compared to Brand A's 21.1%.

The most notable differences between the areas are:

- Brand B performs better in Area 2 (33.3%) than in Area 1 (24.3%), showing a 9 percentage point difference.

- Brand A also has stronger performance in Area 2 (21.1%) compared to Area 1 (15.7%).

- Other brands have substantially less market share in Area 2 (45.6%) than in Area 1 (60.0%).

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