

Summary Measures

Interpretation of the Findings

Table 1. Data Analysis (see appendix a for data)

	Diet A	Diet B
n	50	50
Mean	5.341	3.710
SD	2.536	2.769
Median	3.745	3.745
Q1	3.748	1.953
Q3	5.404	5.404
IQR	1.655	3.451

At first glance, the two diets have the **same median weight loss of 3.745 kg**. This might suggest they are equally effective. However, the other statistics reveal a much more nuanced and important story about the *distribution* of the results.

1. Central Tendency (The "Average" Result):

- **Mean:** Diet A has a higher mean weight loss (5.341 kg) than Diet B (3.710 kg). This indicates that, on average, participants on Diet A lost more weight.
- **Median:** Both diets have an identical median (3.745 kg). The median is the middle value, meaning half the participants lost more than this amount and half lost less on each diet.

The fact that the mean and median are different for each diet (and in different ways) is a key clue that the data is not symmetrically distributed.

2. Spread and Consistency (The "Variability" of Results):

- **Interquartile Range (IQR):** This is the most telling statistic. The IQR represents the range of the middle 50% of the participants.
 - Diet A has a **small IQR (1.655 kg)**, meaning the weight loss of most people was clustered closely together.
 - Diet B has a **much larger IQR (3.451 kg)**, meaning the results were far more spread out and inconsistent.

3. Distribution Shape (Where the results are clustered):

- **Diet A:** For Diet A, the Mean (5.341) is significantly higher than the Median (3.745). This is a classic sign of a **right-skewed distribution**. A few individuals on Diet A had very high weight loss, which pulled the average up. However, the middle 50% of users (between Q1 and Q3) had consistent, moderate results between 3.748 kg and 5.404 kg.
- **Diet B:** For Diet B, the Mean (3.710) is very close to the Median (3.745). This suggests a more symmetric distribution *overall*. However, looking at the quartiles reveals a different story: the middle 50% had a very wide range of results, from a low of 1.953 kg to a high of 5.404 kg.

Results Relative Effectiveness

- **Diet A is more predictable and consistently moderate.** Most people on Diet A achieved a similar, fairly good result. While it didn't produce many extremely high results (with a few exceptions that raised the mean), it also protected most people from very poor results. It is a reliable diet.
- **Diet B is highly unpredictable.** The results are a gamble. Some people did very well (as well as the best on Diet A), but a significant number of people did very poorly (with 25% losing less than 1.953 kg). It is an inconsistent diet.

Conclusion on Relative Effectiveness

If you had to choose a diet for a general population:

- **Diet A is likely the better choice.** It provides more reliable and consistent results for the majority of people. You can be more confident in the outcome.
- **Diet B is a riskier choice.** While it works very well for some, it fails for many others. The high variability makes it difficult to predict an individual's result.

In summary, the key difference is not in the "average" result (which is similar), but in the **consistency and predictability** of the outcome. Diet A is a safer, more reliable bet for weight loss, while Diet B is a high-risk, high-reward option. In practical terms, Diet A provides more reliable and generally higher weight loss, whereas Diet B may work well for some individuals but less so for others.

Appendix A

Data 8.2B:



Exercise%208.2B%20(Exercise%206.2).xlsx