Unit 6

Exercise 6.1

Open the Excel workbook Exa 8.1B.xlsx from the Exercises folder. Obtain the sample size, sample mean weight loss and the sample standard deviation of the weight loss for Diet B. Place these results in the block of cells F23 to F25, using the same format as that employed for the Diet A results in the above example.

Briefly interpret your findings. What do these results tell you about the relative effectiveness of the two weight-reducing diets?

From the results it can be seen that Diet A is more effective at helping weight loss on average as the mean of Diet A is 5.34 compared to Diet B being 3.71 on average showing it being worse for weight loss than A. However the standard deviation is lower for Diet A (2.54) compared to Diet B (2.77).

Diet	A	B
n	50	50
Mean	5.34	3.71
SD	2.54	2.77

Exercise 6.2

Open the Excel workbook Exa 8.2B.xlsx from the Exercises folder. Obtain the sample median, first and third quartiles and the sample interquartile range of the weight loss for Diet B. Place these results in the block of cells F26 to F29, using the same format as that employed for the Diet A results in the above example.

Briefly interpret your findings. What do these results tell you about the relative effectiveness of the two weight-reducing diets?

Diet A shows that it has a higher likelihood of helping you lose weight as the median and quartiles are higher compared to Diet B. Overall, Diet A is most effective for weight loss.

Diet	A	B
n	50	50
Mean	5.34	3.71
SD	2.54	2.77
Median	5.64	3.75
Q1	3.75	1.95
Q3	5.40	5.40
IQR	1.66	3.45

Exercise 6.3

Open the Excel workbook Exa 8.3D.xlsx from the Exercises folder. Obtain the frequencies and percentage frequencies of the variable Brand, but this time for the Area 2 respondents, using the same format as that employed for the Area1 results in the above example.

Briefly interpret your findings. What do these results tell you about the patterns of brand preferences for each of the two demographic areas?

Based on the results Area 2 preferers brand A and B more than Area 1 but Area 1 prefers the Other brand more than Area 2 does. However, Area 1 has a small sample size than Area 2 which is important to note as you can see by the frequency of Other in both areas with a difference of 1 both areas have around 41 people who like the other brand.

Frequencies	Area 1	Area 2
A	11	19
B	17	30
Other	42	41
Total	70	90

Percentages	Area 1	Area 2
A	15.7	21.1
B	24.3	33.3
Other	60.0	45.6
Total	100	100

Unit 7

Exercise 7.1

Recall that in the previous unit exercises, a two-tailed test was undertaken whether the population mean impurity differed between the two filtration agents in Data Set G.

Suppose instead a one-tailed test had been conducted to determine whether Filter Agent 1 was the more effective. What would your conclusions have been?

Exercise 7.2

Consider the bank cardholder data of Data Set C. Open the Excel workbook Exa8.6C.xlsx which contains this data from the Exercises folder.

Assuming the data to be suitably distributed, complete an appropriate test of whether the population mean income for males exceeds that of females and interpret your findings. What assumptions underpin the validity of your analysis, and how could you validate them?

Exercise 7.3

Consider the filtration data of Data Set G. Open the Excel workbook Exa8.4G.xlsx which contains these data from the Exercises folder.

Assuming the data to be suitably distributed, complete a two-tailed test of whether the population mean impurity differs between the two filtration agents, and interpret your findings.

Exercise 7.4

Recall that in Exercise 8.4, a two-tailed test was undertaken of whether the population mean impurity differs between the two filtration agents in Data Set G.

Suppose instead a one-tailed test had been conducted to determine whether Filter Agent 1 was the more effective. What would your conclusions have been?

Exercise 7.5

Consider the bank cardholder data of Data Set C. Open the Excel workbook Exa8.6C.xlsx which contains this data from the Exercises folder.

Assuming the data to be suitably distributed, complete an appropriate test of whether the population mean income for males exceeds that of females and interpret your findings. What assumptions underpin the validity of your analysis, and how could you validate them?

Unit 8

Unit 9

Exercise 9.1

Open the Excel workbook in Exa 9.1D.xlsx from the Exercises folder. This contains the percentage frequencies together with the bar chart just created in the above example. Add a percentage frequency bar chart showing the brand preferences in Area 2, using the same format as that employed for the Area1 results in the above example. Drag your new chart so that it lies alongside that for Area 1.

Briefly interpret your findings. What do these results tell you about the patterns of brand preferences for each of the two demographic areas?

Exercise 9.2

Open the Excel workbook in Exa 9.2E.xlsx from the Exercises folder. This contains the frequency distributions for Data Set E (see the Data Annexe) to which has been added the corresponding percentage frequency distributions. Complete a percentage frequency clustered column bar chart showing the heather species prevalence in the two different locations. Briefly interpret your findings.

Exercise 9.3

Open the Excel workbook in Exa 9.3B.xlsx from the Exercises folder. This contains the relative frequency histogram for the Diet A weight loss produced in Example 9.3 together with some of the Diet B weight loss summary statistics. Add a relative frequency histogram of the weight loss for Diet B, where possible using the same classes as those employed for the Diet A results in the above example.

Briefly interpret your histogram. What do these results tell you about the patterns of weight loss for each of the two diets?

Exercise 9.4

Open the Excel workbook in Exa 9.1D.xlsx from the Exercises folder. This contains the percentage frequencies together with the bar chart just created in the above example. Add a percentage frequency bar chart showing the brand preferences in Area 2, using the same format as that employed for the Area1 results in the above example. Drag your new chart so that it lies alongside that for Area 1. It will be easier if you create a separate table that just includes the values of Area 2.

Briefly interpret your findings. What do these results tell you about the patterns of brand preferences for each of the two demographic areas?

Exercise 9.5

Open the Excel workbook in Exa 9.2E.xlsx from the Exercises folder. This contains the frequency distributions for Data Set E (see the Data Annexe) to which has been added the corresponding percentage frequency distributions. Complete a percentage frequency clustered column bar chart showing the heather species prevalence in the two different locations. Briefly interpret your findings.

Exercise 9.6

Open the Excel workbook in Exa 9.3B.xlsx from the Exercises folder. This contains the relative frequency histogram for the Diet A weight loss produced in Example 9.3 together with some of the Diet B weight loss summary statistics. Add a relative frequency histogram of the weight loss for Diet B, where possible using the same classes as those employed for the Diet A results in the above example.

Briefly interpret your histogram. What do these results tell you about the patterns of weight loss for each of the two diets?