

### Exercise 9.1

Open the Excel workbook in **Exe 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?

After I created the chart for Area 2 and dragged it alongside the chart for Area 1, I noticed that the vertical scales were different; the scale maximum and minimum values are set automatically by Excel based on the data. With different vertical scales, it is challenging to make an objective comparison. The vertical axis scale for Area 1 had a max of 70.0% whereas that of Area 2 had a max of 50.0%. I manually set the maximum of the chart for Area 2 to 70.0% to match that of Area 1.

Having done this, it became obvious that:

- Brand A was slightly more popular in Area 2 in this data.
- Brand B was visibly more popular in Area 2.
- Accordingly, the percentage of people who preferred other brands in Area 2 was reduced by a noticeable amount as compared to Area 1.

However, these trends are beliefs that should be confirmed with statistical testing.

### Exercise 9.2

Open the Excel workbook in **Exe 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 prevalences in the two different locations.

Briefly interpret your findings.

Analysing the resulting bar graph, I notice that the heather species is generally prevalent in Location A, seeing as it was abundant in the majority of samples, or otherwise was sparsely observed in a further large number of samples. In less than 15% of samples was it completely absent.

The exact opposite trend is observed in Location B, where the species was completely absent in the majority of samples; samples in which it was sparsely observed were the second most common samples in the data; in only about 23% of samples was it found to be abundant in location B.

Generally, therefore, this data seem to suggest that Location A has a high prevalence of the species, whereas Location B has a low prevalence of the species.

### Exercise 9.3

Open the Excel workbook in **Exe 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?

The weight loss distribution of individuals who undertook diet plan B is also unimodal and fairly symmetrical, but in this case it has a slight positive skewness. The peak of diet plan B is centred at lower weight loss value than that of diet plan A, implying that participants on plan A generally lost more weight than those on plan B. The distribution for diet plan B is also wider than that of diet plan A, with a relatively larger number of samples in the negative range, indicating more samples with an unsuccessful weight loss outcome. Therefore, strictly by observing these distributions, it appears that diet plan A is more effective than diet plan B.