

Unit 8: Data Analysis and Visualisation

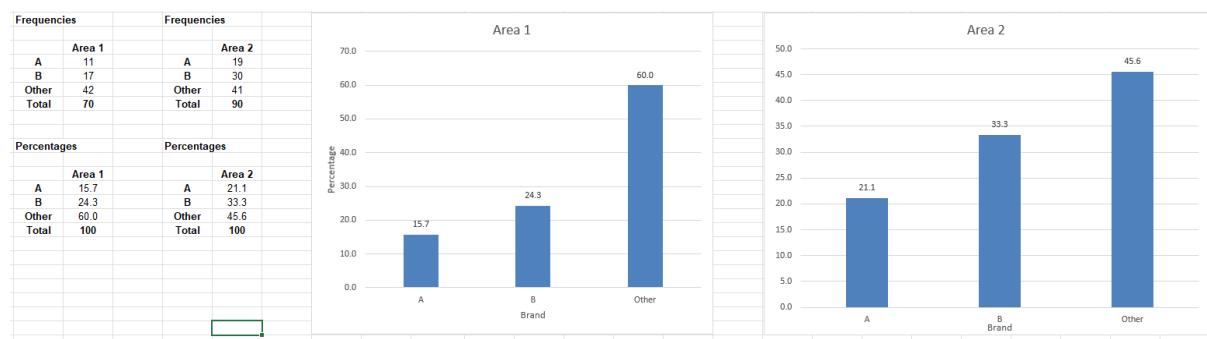
Chart Worksheet and Analysis

e-Portfolio Activity: Worksheet Analysis exercises and results.

Exe. 8.1

Open the Excel workbook in Exe 8.1D.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?



Area 1 shows weak brand loyalty to the established brands:

- "Other" brands dominate with 60% market share
- Combined, Brands A and B only capture 40% of the market
- Brand B (24.3%) performs better than Brand A (15.7%), but both struggle

Area 2 demonstrates stronger brand recognition and loyalty:

- "Other" brands still lead but with a smaller 45.6% share
- Brands A and B together hold 54.4% of the market
- Brand B maintains its advantage (33.3% vs 21.1%), showing more consistent appeal

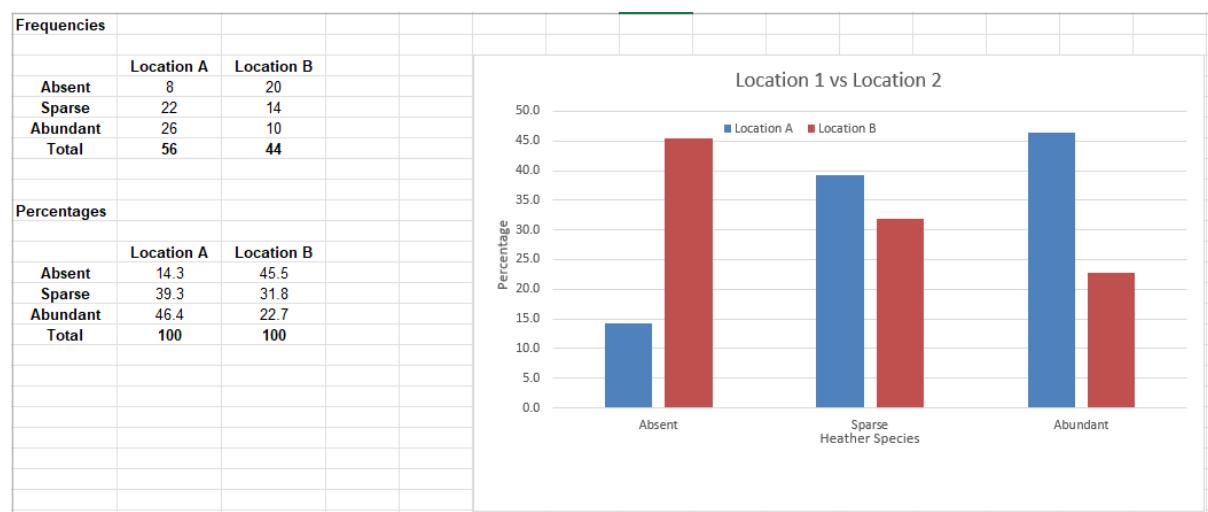
Key Insights:

- Area 2 consumers are more brand-conscious and loyal to established brands
- Area 1 appears to be a more fragmented market with greater openness to alternative/generic brands
- Brand B consistently outperforms Brand A across both demographics, suggesting stronger overall brand equity
- The demographic differences between areas significantly influence purchasing behavior - Area 2 may have characteristics (higher income, different age profile, urban vs rural, etc.) that drive preference toward established branded products.

This suggests different marketing strategies would be needed for each area: Area 1 might require more aggressive brand-building efforts, while Area 2 presents opportunities to defend and grow existing brand positions.

Exe. 8.2

Open the Excel workbook in Exe 8.2E.xlsx from the Example folder. This contains the frequency distributions for Data Set E Heather (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.



Key Findings:

The two locations show significant different heather species prevalence patterns:

Location A demonstrates favourable conditions for heather growth:

- Nearly half the sites (46.4%) have abundant heather coverage
- Only 14.3% of sites lack heather entirely
- The distribution skews heavily toward presence and abundance.

Location B shows much poorer heather establishment:

- Almost half the sites (45.5%) have no heather at all
- Only 22.7% have abundant coverage - less than half of Location A's rate
- The distribution skews toward absence

Interpretation:

The inverse relationship between these locations suggests they have substantially different environmental conditions. Location A likely has:

- More suitable soil conditions (pH, nutrients, drainage)
- Better climate/microclimate (moisture, temperature, exposure)
- Less competition from other vegetation
- Possibly different land management practices

Location B appears to have conditions that inhibit heather establishment and growth. This could indicate factors like unsuitable soil chemistry, excessive grazing pressure, urban development, or habitat characteristics that don't support heather species.

Location A could be a priority conservation area for heather habitat, while Location B might require habitat restoration efforts if heather presence is desired.

Exe 8.3

Open the Excel workbook in Exe 8.3B.xlsx from the Exercises folder. This contains the relative frequency histogram for the Diet A weight loss produced in Example 8.3 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?



Exe 8.3.xlsx



Diet A shows superior and more consistent weight loss results:

- Higher average weight loss (mean = 5.3 kg vs 3.7 kg for Diet B)
- More consistent outcomes (SD = 2.5 kg vs 2.8 kg)
- Distribution is approximately symmetric and bell-shaped, centered around 5-7 kg
- Nearly all participants lost weight (minimum = -1.7 kg, only one participant)
- Results cluster tightly around the mean, suggesting predictable outcomes

Diet B demonstrates lower effectiveness with greater variability:

- Lower average weight loss (mean = 3.7 kg)
- Higher variability in outcomes (SD = 2.8 kg)
- Distribution shows more spread with a slight right skew
- More participants experienced minimal or no weight loss
- Some participants actually gained weight (minimum = -4.1 kg)
- Peak frequency around 2 kg, indicating many achieved only modest results

Interpretation:

Diet A appears to be the more effective intervention, delivering consistently higher weight loss across participants. The tighter distribution suggests it works reliably for most people following the program.

Diet B, while still producing some good results (maximum 10.5 kg), is less predictable. The greater variability and lower mean suggest it may be more dependent on individual factors like adherence, metabolism, or lifestyle variables. The presence of weight gain indicates it doesn't work for everyone.

For practical application, Diet A would likely be the preferred recommendation due to its superior average results and consistency.