

Exercise 8.1

[illegible]

From the results above it is clear that Diet A had a higher average of weight loss. Diet A also had a lower variation compared to Diet B

Exercise 8.2

[illegible]

Diet A had a higher number of people lose weight in Q1 and Q3 and Diet B had a lower middle value

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	100.0

The Two -Tailed Test

Exercise 8.4

Consider the filtration data of Data Set G. Open the Excel workbook **Exe8.4G.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.

Batch	Agent1	Agent2	t-Test: Paired Two Sample for Means		
1	7.7	8.5			
2	9.2	9.6			
3	6.8	6.4			
4	9.5	9.8			
5	8.7	9.3			
6	6.9	7.6			
7	7.5	8.2			
8	7.1	7.7			
9	8.7	9.4			
10	9.4	8.9			
11	9.4	9.7			
12	8.1	9.1			
				<i>Agent1</i>	<i>Agent2</i>
			Mean	8.25	8.683333
			Variance	1.059091	1.077879
			Observations	12	12
			Pearson Correlation	0.901056	
			Hypothesized Mean Difference	0	
			df	11	
			t Stat	-3.26394	
			P(T<=t) one-tail	0.003773	
			t Critical one-tail	1.795885	
			P(T<=t) two-tail	0.007546	
			t Critical two-tail	2.200985	
			Difference in Means	0.433333	

The sample mean for Agent1 was 8.25 and for Agent2 was 8.683333 The difference mean was 0.433333 which would suggest that Agent2 has the better filtration results

Looking at the Variance data we can see that although they are close are not the same.

The obtained related samples t = -3.26394

The associated two-tailed p-value is p = 0.007546

Exercise 8.5

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 8.6

Consider the bank cardholder data of Data Set C. Open the Excel workbook **Exe8.6C.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?

F-Test Two-Sample for Variances

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	52.91333	44.23333
Variance	233.129	190.1758
Observations	60	60
df	59	59
F	1.22586	
P(F<=f) one-tail	0.218246	
F Critical one-tail	1.539957	

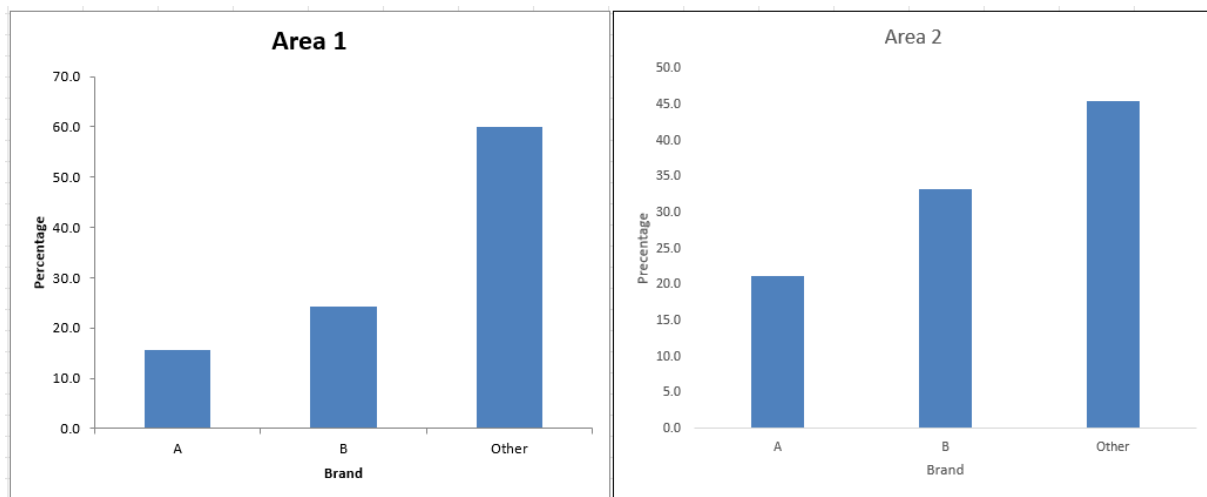
t-Test: Two-Sample Assuming Equal Variances

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	52.91333	44.23333
Variance	233.129	190.1758
Observations	60	60
Pooled Variance	211.6524	
Hypothesized Mean Difference	0	
df	118	

t Stat	3.2679
P(T<=t) one-tail	0.00071
t Critical one-tail	1.65787
P(T<=t) two-tail	0.001419
t Critical two-tail	1.980272

From the data above we can see there is a significant difference between the mean in both F-Test and B-Test

9.1 Bar Charts



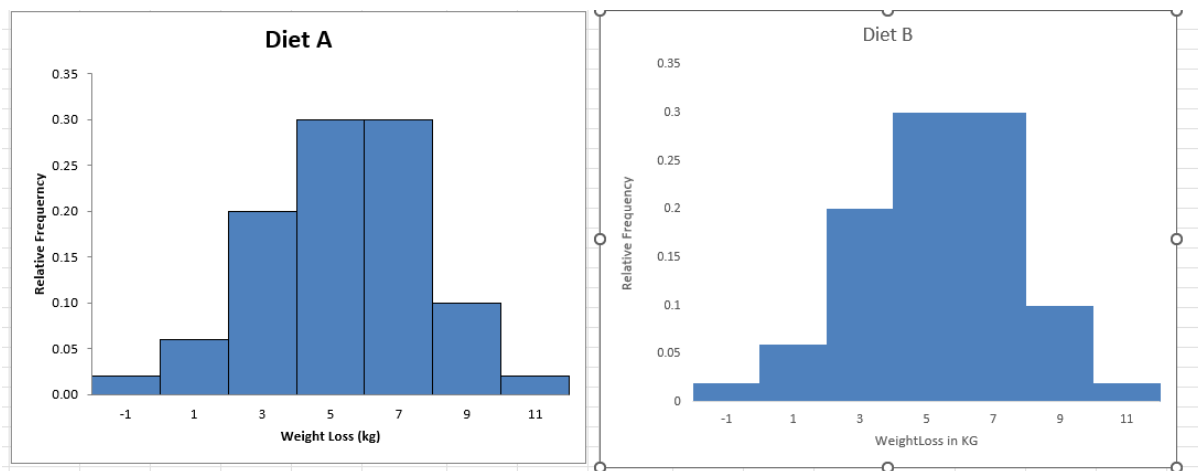
From Area 2 Brand B is the preferred brand and Brand A is the least preferred. However the other brand in both Area 1 and Area 2 are respondents preferred brand,

Complete a percentage frequency clustered column bar chart showing the heather species prevalences in the two different locations.



From location A the Abundant species is the most healthiest and from location B the Absent species is the most healthier.

9.2 Histograms



Looking at the results from the histogram for the two diets suggest that one is not better than the other. The results looks similar.