Diet	Wtloss
A	3.709
A	7.087
A	6.754
A	8.994
A	9.077
A	6.413
A	5.877
A	2.572
A	7.520
A	6.881
A	7.265
A	3.477
A	3.755
A	8.760
A	7.032
A	9.052
A	10.062
A	4.840
A	6.449
A	9.019
A	-1.715
A	4.718
A	4.007
A	7.241
A	2.128
A	6.968
A	4.853
A	0.055
A	2.680
A	3.746
A	7.033
A	5.033
A	5.569
A	6.712
A	3.663
A	2.741
A	6.256
A	5.349
A	7.300
A	5.445
A	4.970
A	3.613
A	7.568
A	5.861
A	4.157
A	0.203
A	4.441
A	5.875
A	5.715
A	0.280
B	-1.087
B	1.819
B	0.074

Diet A	**n**	50
	Mean	5.341
	SD	2.536

Diet B	**n**	49
	Mean	3.733
	SD	2.793

Interpretation Exercise 8.1
The sample size for Diet B is n = 50. The sample mean weight loss for Diet B is = 3.710. The average weight loss for those individuals who undertook Diet B is 3.710 kg, so the diet appears to have been effective. The sample standard deviation of the weight loss for Diet B is s = 2.769 kg. Since the mean weight loss is a little larger than 2s, a high proportion of those individuals on Diet B had a positive weight loss. Also, Diet A seems more effective than Diet B as the mean weight loss is higher.

B	1.755
B	1.889
B	3.089
B	4.008
B	4.551
B	1.372
B	3.413
B	-4.148
B	2.823
B	2.865
B	4.369
B	6.337
B	6.308
B	3.494
B	10.539
B	3.840
B	5.123
B	5.485
B	-1.894
B	8.016
B	2.310
B	3.882
B	7.030
B	7.727
B	0.105
B	3.650
B	4.547
B	4.985
B	5.159
B	4.760
B	4.934
B	3.106
B	5.598
B	2.162
B	6.520
B	7.046
B	1.757
B	1.848
B	1.096
B	2.145
B	8.435
B	6.099
B	3.972
B	2.409
B	0.569
B	7.013

Diet	Wtloss
A	3.709
A	7.087
A	6.754
A	8.994
A	9.077
A	6.413
A	5.877
A	2.572
A	7.520
A	6.881
A	7.265
A	3.477
A	3.755
A	8.760
A	7.032
A	9.052
A	10.062
A	4.840
A	6.449
A	9.019
A	-1.715
A	4.718
A	4.007
A	7.241
A	2.128
A	6.968
A	4.853
A	0.055
A	2.680
A	3.746
A	7.033
A	5.033
A	5.569
A	6.712
A	3.663
A	2.741
A	6.256
A	5.349
A	7.300
A	5.445
A	4.970
A	3.613
A	7.568
A	5.861
A	4.157
A	0.203
A	4.441
A	5.875
A	5.715
A	0.280
B	-1.087
B	1.819
B	0.074
B	1.755
B	1.889
B	3.089

Diet A		
	n	50
	Mean	5.341
	SD	2.536
	Median	5.642
	Q1	3.748
	Q3	7.033
	IQR	3.285

Diet B		
	n	50
	Mean	3.710
	SD	2.769
	Median	3.745
	Q1	1.953
	Q3	5.404
	IQR	3.451

Interpretation Exercise 8.2
The sample median weight loss for Diet B is M = 3.745 kg, so the diet appears to have been effective. The sample interquartile range of the weight loss for Diet B is IQR = 3.451 kg. A high proportion of those individuals on Diet B had positive weight loss. Both Diet A and B are highly effective and the results are almost similar.

B	4.008
B	4.551
B	1.372
B	3.413
B	-4.148
B	2.823
B	2.865
B	4.369
B	6.337
B	6.308
B	3.494
B	10.539
B	3.840
B	5.123
B	5.485
B	-1.894
B	8.016
B	2.310
B	3.882
B	7.030
B	7.727
B	0.105
B	3.650
B	4.547
B	4.985
B	5.159
B	4.760
B	4.934
B	3.106
B	5.598
B	2.162
B	6.520
B	7.046
B	1.757
B	1.848
B	1.096
B	2.145
B	8.435
B	6.099
B	3.972
B	2.409
B	0.569
B	7.013
B	2.594

Area	Brand
1	B
1	Other
1	A
1	B
1	Other
1	A
1	Other
1	Other
1	Other
1	Other
1	B
1	Other
1	Other
1	A
1	A
1	A
1	B
1	A
1	Other
1	B
1	A
1	B
1	Other
1	Other
1	B
1	B
1	Other
1	Other
1	Other
1	Other
1	Other
1	B
1	B
1	Other
1	Other
1	B
1	B
1	B
1	Other
1	Other
1	B
1	Other
1	Other
1	Other
1	Other
1	Other
1	Other
1	Other
1	Other
1	Other
1	A
1	Other
1	A
1	Other
1	Other
1	Other
1	A
1	A

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**

Interpretation Exercise 8.3
Of the 90 respondents of Area B, 21.1% preferred Brand a, 33.3 preferred Brand B, and 45.6% preferred other cereal brands. Both Area A and Area B respondents preferred other cereal brands more than A or B.

1	Other
1	Other
1	Other
1	Other
1	Other
1	Other
1	B
1	Other
1	B
1	Other
1	Other
1	B
2	A
2	B
2	A
2	Other
2	A
2	B
2	Other
2	Other
2	B
2	B
2	Other
2	B
2	B
2	Other
2	Other
2	A
2	B
2	A
2	Other
2	B
2	Other
2	Other
2	A
2	Other
2	A
2	B
2	Other
2	B
2	Other
2	B
2	Other
2	B
2	Other
2	B
2	A
2	A
2	Other
2	B
2	Other
2	Other
2	A
2	B
2	B
2	Other
2	Other
2	Other
2	Other
2	B
2	B
2	B

2	Other
2	Other
2	B
2	B
2	A
2	Other
2	B
2	A
2	A
2	B
2	Other
2	Other
2	Other
2	B
2	Other
2	Other
2	A
2	Other
2	A
2	B
2	B
2	Other
2	Other
2	B
2	Other
2	A
2	Other
2	A
2	Other
2	Other
2	Other
2	Other
2	Other
2	A
2	B
2	A
2	B
2	B
2	Other
2	Other

Batch	Agent1	Agent2
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

t-Test: Paired Two Sample for Means		
	Agent1	*Agent2*
Mean	8.25	8.683333333
Variance	1.059091	1.077878788
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	-0.43333	

Two-Tailed Test
The sample mean numbers for impurities after filtration for Agent1 and Agent2 were 8.25 and 8.68 respectively. Assuming data is suitably distributed, it shows evidence of filtration Agent1 to be better performing by an estimated rate of 8.25-8.68 = -0.433. This suggests that Agent1 should be preferred.

One-Tailed Test
In the one-tailed test, we can see that the obtained related samples t = -3.264 with 11 degrees of freedom. The associated one-tailed p-value is p = 0.003, and the observed t is significant at the 1% level. The data continues to show evidence of filtration Agent1 to be better performing by an estimated rate of 8.25-8.68 = -0.433. This suggests that Agent1 should be preferred.

Sex	Income
M	40.6
M	54.6
M	38.6
M	58.2
M	34.6
M	42.9
M	67.5
M	79.8
M	54.4
M	47.3
M	66.4
M	69.0
M	62.0
M	52.5
M	72.6
M	52.4
M	59.5
M	59.1
M	36.7
M	54.6
M	52.1
M	49.9
M	52.0
M	47.1
M	40.8
M	36.5
M	57.1
M	54.1
M	32.4
M	34.9
M	64.1
M	54.0
M	51.5
M	50.8
M	45.1
M	81.5
M	70.4
M	39.2
M	45.2
M	80.9

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	52.91333	44.23333333
Variance	233.129	190.1758192
Observations	60	60
df	59	59
F	1.22586	
P(F<=f) one-tail	0.218246	
F Critical one-tail	1.539957	
p2	0.436492	

t-Test: Two-Sample Assuming Equal Variances		
	Variable 1	*Variable 2*
Mean	52.91333	44.23333333
Variance	233.129	190.1758192
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	
Difference in Means	8.68	

Interpretation
The sample variances for the two incomes are, respectively 233.12 and 190.175. The observed F test statistic is F = 1.22 with 59 and 59 associated degrees of freedom, giving a two tailed p-value of p = 0.436NS. The observed F ratio is thus not significant. The data are consistent with the assumption that the population variances underlying the incomes do not differ, and we therefore proceed to use the equal variances form of the unrelated samples t test. The obtained independent samples t = 3.27 with 118 degrees of freedom. The associated two-tailed p-value is p = 0.0014, so the observed t is significant at the 1% level (two-tailed). The sample mean incomes for Males and Females were, respectively, 52.91 and 44.23. The data, therefore, constitute strong evidence that the underlying mean income was greater for Males, by an estimated 52.91 - 44.23 = 8.68. The results strongly suggest that Males have more income than Females.

M	48.6
M	31.0
M	32.1
M	33.9
M	31.3
M	51.0
M	53.4
M	58.3
M	31.4
M	56.3
M	41.0
M	47.9
M	51.4
M	33.1
M	74.9
M	77.2
M	57.9
M	80.1
M	40.2
M	100.9
F	33.1
F	35.8
F	68.8
F	31.6
F	38.2
F	42.0
F	33.4
F	50.3
F	39.6
F	30.7
F	31.3
F	61.3
F	30.0
F	38.1
F	56.4
F	35.7
F	31.3
F	40.4
F	32.1
F	66.4
F	36.9
F	35.9
F	49.6
F	62.8
F	44.6
F	32.5
F	33.4
F	55.3
F	62.7
F	54.4
F	30.8
F	49.1
F	41.9
F	32.5
F	35.2
F	47.4
F	60.7
F	33.0
F	43.3
F	34.8
F	36.0
F	51.6

F	31.9
F	34.1
F	78.4
F	30.4
F	45.3
F	52.6
F	30.3
F	36.6
F	53.1
F	36.5
F	37.8
F	34.0
F	69.3
F	77.2
F	32.6
F	82.9
F	42.3
F	57.8