Research Methods 2

Week 4: Exercise Sheet 2

Solution sheet

Question 1.

Use the method explained in Exercise sheet 1 to obtain a sample of size 100 from a Normal population with mean 10 and SD 2. If you then click the sequence **Stat** -> **Basic Statistics** -> **Display Descriptive Statistics**…. you can find the mean and SD of the sample (the latter being labelled StDev). This process can be repeated, say 5 times. The means and SDs for 5 samples generated in this way are:

Sample	Sample mean	Sample SD
1	9.877	1.983
2	9.983	2.357
3	10.019	2.144
4	9.921	1.991
5	10.369	1.991

Because of the way we have generated these samples we happen to know that the population mean is 10 and the population SD is 2. If we did not know the population values, we would have had to use the information from the sample to estimate them. As can be seen from the table, each of the sample means and SDs do seem to be reasonable estimates of the underlying population values. {remember your samples will not have exactly these values but should exhibit the same overall picture}

Question 2

Repeating the above but with the population mean set to 20 gives samples with the following sample statistics.

Sample	Sample mean	Sample SD
1	19.903	2.299
2	20.040	1.965
3	19.988	2.136
4	19.834	2.012
5	20.057	2.018

Again, the sample statistics vary above an below the values they are estimating, but any of these samples would seem to have provided (albeit in rather loose terms) reasonable estimates of the population parameters.

Question 3

Repeating question 1 with the population SD set to 5 gives samples with the following sample statistics.

Sample	Sample mean	Sample SD
1	9.305	4.962
2	9.452	4.943
3	10.468	4.912
4	10.748	4.973
5	10.374	5.302

The sample statistics vary above an below the values they are estimating, but again they have provided (albeit in rather loose terms) reasonable estimates of the population parameters.

End of solution sheet