**Week-1 Descriptive Statistics Exercises**

It is highly recommended that for all of this exercise, that you complete it on the first-time using pen and paper (potentially with calculator). This is to allow familiarity with the calculation and ensure that the theory truly translate to practicality. The second round can then be done with any tool such as Excel, R, Python or SPSS.

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| **1.** The following data give the length of time in days it takes a manufacturing firm to supply price quotes to its customers. Work out the frequencies and relative frequencies, and draw a histogram using classes of 0 to under 2.5, 2.5 to under 5, and so on.    What comment can you make about the distribution? |
| **2.** A doctor’s surgery studies the length of time patients, arriving with a request for emergency service, have to wait before treatment. The following data, waiting times in minutes, were collected for all emergencies over a typical one-month period.    Tabulate the frequencies and relative frequencies, and then display the data in a suitable manner. What comment can you make about the distribution? |
| **3.** The data, given below, are the quarterly primary fuel consumption in the UK for 1980-85.     1. Draw a time series plot of the data. What does it tell you about fuel consumption? 2. Calculate mean fuel consumption for the entire period between 1980-85. 3. Calculate mean fuel consumption for each quarter (over multiple years). In comparison to full period mean, what does this tell you about consumption in different quarters. |
| **4.** The following data give the advertising expenditure and sales volume for a particular corporation for six randomly selected months.    Draw a scatter plot of the data. Is there a relationship between the amounts a corporation spends on advertising and its sales volume? |
| **5.** Until now an office has used two different computer repair companies when its PCs break down. Now it wishes to take out a maintenance contract with just one of these companies and needs to select which one. The time (in days) it took for the companies to complete the repair for the last 19 breakdowns have been recorded and are given below. Of these 7 were with company **A** and 12 with company **B**.     1. Calculate the mean, the median and the mode delivery time for each company. 2. Calculate the standard deviation of the delivery times for each company. 3. Calculate the range for each company.   What advice would you give to the office on the basis of your results? |
| 6. The following data on price of houses that are currently advertised in two different areas of Leeds are presented to a potential new buyer who is deciding which area of the market they want to focus on based on price volatility. The price unit is in £k   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **A** | 120 | 350 | 250 | 170 | 450 | 220 | 230 | 240 | 110 | 340 | 120 | | **B** | 200 | 210 | 220 | 190 | 240 | 270 | 240 | 200 | 250 |  |  |  1. Calculate the mean and the median house price for both areas. 2. Calculate the standard deviation of the house price for both areas. 3. Calculate the range for each area. 4. If the new buyer wants to focus on area with less volatility, which area should they focused in and why? What do they stand to lose from this? |
| **7.** In a particular town there are 86 medium-sized houses for sale. The frequency distribution of the asking price is in the following table.     1. Find an approximate mean house price. 2. Find an approximate standard deviation of the house prices. |
| **8.** The table contains data for weekly salaries in a small company.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | *Weekly Salaries* | | | | | | | | £564 | £692 | £860 | £490 | £656 | £774 | £630 | | £564 | £692 | £892 | £490 | £656 | £796 | £748 | | £630 | £738 | £948 | £516 | £668 | £842 | £1082 | | £630 | £748 | £1022 | £526 | £692 | £860 |  |  1. calculate the mean for the data 2. produce a frequency distribution for the data using £50 class widths, and calculate a mean for this table 3. produce a frequency distribution for the data using £100 class widths, and calculate a mean for this table |