Homework from Chapter 2

Ex. 2.1 Use the bivariate boxplot on the scatterplot of each pair of variables in the air pollution data to identify any outliers. Calculate the correlation between each pair of variables using all the data and the data with any identified outliers removed. Comment on the results.

Ex. 2.2 Compare the chi-plots with the corresponding scatterplots for each pair of variables in the air pollution data. Do you think that there is any advantage in the former?

Ex. 2.3 Construct a scatterplot matrix of the body measurements data that has the appropriate boxplot on the diagonal panels and bivariate boxplots on the other panels. Compare the plot with Figure 2.17, and say which diagram you find more informative about the data.

Ex. 2.4 Construct a further scatterplot matrix of the body measurements data that labels each point in a panel with the gender of the individual, and plot on each scatterplot the separate estimated bivariate densities for men and women.

Ex. 2.5 Construct a scatterplot matrix of the chemical composition of Romano-British pottery given in Chapter 1 (Table 1.3), identifying each unit by its kiln number and showing the estimated bivariate density on each panel. What does the resulting diagram tell you?

Ex. 2.6 Construct a bubble plot of the earthquake data using latitude and longitude as the scatterplot and depth as the circles, with greater depths giving smaller circles. In addition, divide the magnitudes into three equal ranges and label the points in your bubble plot with a different symbol depending on the magnitude group into which the point falls.

Ex. 2.7 Generate two random sample data x from $N(0, 1)$ and y from $N(1, 1)$. Construct A scatterplot matrix of (x, y) data showing the estimated bivariate density. Construct a perspective plot of estimated bivariate density of bivariate variable $(x, y)^T$.

Ex. 2.8 Construct a scatterplot matrix of body measurements data showing the estimated bivariate densities on each panel as Figure 2.17 in textbook.