**Chapter 1 Exercises**

**Exercise 1:** List some important risk assessment problems where there is little or no relevant historical data to help make predictions.

**Exercise 2:** Imagine that you were able to measure the weight in kilos of 50 people in a busy shopping mall. Draw a histogram of the result you would expect to see. How would you expect it to change if the number of people increased to 200, 1000, 10,000? Now suppose you were also able to find out how much money they had spent in the centre. What would the histograms look like in this case?

**Exercise 3:** A medical study compared the success rates of two treatments for kidney stones. Each treatment was applied to two groups of people – one group in which each subject had a small stone and one group in which each subject had a large stone. The 'average' success rates were:

| | Small stones | Large stones | Overall Average ? |
|---|---|---|---|
| Treatment A | 93% | 73% | 83% |
| Treatment B | 87% | 69% | 76% |

Is it reasonable to conclude that treatment A was more effective?

**Exercise 4**: In Box 1.4 we showed that a completely randomly generated set of results for a soccer league produced a league table where the distribution of points was remarkably similar to the actual league table (in the sense that the teams at any given position in both tables achieved a similar number of points). Use Excel to generate such a set of results for your own favourite sporting league and compare the 'simulated' table to the actual table. If the distributions are similar what can you conclude? If they are not similar what can you conclude?

**Exercise 5**[1]: In a simpler variation of the Monty Hall game the contestant must choose one of two boxes that each contain a cash prize. One prize is twice that of the other. Neither the contestant nor the presenter knows the amounts of cash. When a contestant selects a box they are offered the choice of switching to the other box. Should they switch or stick? What assumptions are you making?

[1] Thanks to Prof John Barrow of University of Cambridge for showing us this problem