

## STAT353 Introductory Tutorial: Some Data Sets

1. Reject rates over 12 consecutive days of production from a manufacturing process are:

0.51 0.53 0.52 0.54 0.56 0.59 0.66 0.63 0.64 0.65 0.69 0.68

2. It is suspected there is some relationship between relative humidity and the tensile strength of a certain material. The following measurements are obtained:

| <i>Relative humidity (%)</i> | <i>Tensile Strength</i> |
|------------------------------|-------------------------|
| 45                           | 80                      |
| 55                           | 67                      |
| 65                           | 58                      |
| 80                           | 55                      |
| 95                           | 30                      |

3. The quality control data on page 8 and the breakdown data on page 11 of the lecture notes are contained in Minitab worksheets *qualcont.mtw* and *br\_time.mtw*
4. An automobile assembly plant with four shifts, concerned about quality control, measured sets of five camshafts each shift for a total of twenty samples daily. The column *Length* contains measurements from all the camshafts used at the plant, while *Supp1* and *Supp2* are measurements of shafts from Supplier 1 and Supplier 2, respectively. Data were collected over five days giving 100 values in total.

| <i>Column Name</i> | <i>Count</i> | <i>Description</i>                   |
|--------------------|--------------|--------------------------------------|
| 1 Length           | 100          | Camshaft length in mm                |
| 2 Supp 1           | 100          | Lengths of camshafts from Supplier 1 |
| 3 Supp 2           | 100          | Lengths of camshafts from Supplier 2 |

The data are in the Minitab worksheet *camshaft.mtw*

5. A Forest Products Research Laboratory tested the effects of certain variables in the production of plywood. Chucks inserted at each end spin the logs, and a saw blade then cuts off a thin layer. This study measured the torque that could be applied to the chucks before they spun out, under different conditions of log temperature, log diameter, and chuck penetration.

| <i>Column Name</i> | <i>Count</i> | <i>Description</i>                                |
|--------------------|--------------|---|
| 1 DIAMETER         | 24           | Log diameter, in inches                           |
| 2 PENETRTRN        | 24           | Distance chuck was inserted into the log          |
| 3 TEMP             | 24           | Temperature of log                                |
| 4 TORQUE           | 24           | Amount of torque applied before chuck slipped out |

The data are in the Minitab worksheet *plywood.mtw*

## ***To Do***

- Open both Excel and Minitab.
- Enter data from Q1 into one column in Excel with a suitable title. Obtain a line plot of the data using the chart wizard.
- Copy & paste the data into a column on the Minitab worksheet and plot the data in Minitab.
- Enter the data in Q2 into two columns in Minitab and obtain a scatter plot of the data (*Graph*→*Plot*).
- Retrieve the worksheets described in Q3, Q4 and Q5 in Minitab. Experiment with plots in Minitab. Have a look through the menus and *Help* facility to see what is available.
- You can also copy & paste from Minitab into Excel. Try it and explore Excel's chart wizard and data analysis tools found under *Tools*→*Data analysis*.  
(Note that sometimes it does not show up in the Tools menu. If it isn't there, use *Tools*→*Add-ins* and make sure the top two *Analysis Toolpak* boxes are checked.)
- Save all the data sets on either your *U*-drive or on a floppy.