Basic Course on R:
Basic Plotting Practical

Karl Brand* and Elizabeth Ribble†

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*brandk@gmail.com

†emcclel3@msudenver.edu

1 Basic Plotting

1.1 Use R to do the following exercises on the BOD data.

1.1.1 Display the built-in dataset called BOD by running BOD.

1.1.2 What is the data structure of BOD? What are the dimensions?

1.1.3 What are the names of BOD? Use a function other than str.

1.1.4 Make a line graph of demand versus time, where the line is a deep pink dot-dashed line [Hint: run ?par and look for the parameter lty to see the line types]. Add a blue dashed line of 1.1 times the demand and give it a thickness of 2 using the line width parameter lwd. Make sure both lines are entirely visible by adjusting the range of y using the parameter ylim in the original plot.

1.2 Use R to do the following exercises on the chickwts data.

1.2.1 Display the built-in chickwts data.

1.2.2 What is the data structure of chickwts? What are the dimensions?

1.2.3 What are the names of chickwts? Use a function other than str.

1.2.4 What are the levels of feed?

1.2.5 Make the following plots in one 2 x 2 image:

- A bar chart of the feed types, each bar a different color.
- A bar chart of the proportions of feed types, each bar a different color.
- A boxplot of the weights by feed type, each box a different color.
- A horizontal boxplot of the weights by feed type, each box a different color.

1.3   Use R to do the following exercises on the `Puromycin` data.

1.3.1 Display the built-in `Puromycin` data.

1.3.2 Make a scatterplot of the rate versus the concentration. Describe the relationship.

1.3.3 Make a scatterplot of the rate versus the log of the concentration. Describe the relationship.

1.3.4 Make a scatterplot of the rate versus the log of the concentration and color the points by treatment group (`state`). Describe what you see.

1.3.5 Make a scatterplot of the rate versus the log of the concentration, color the points by treatment group (`state`), label the x-axis "Concentration" and the y-axis "Rate", and label the plot "Puromycin".

1.3.6 Add a legend to the above plot indicating what the points represent.

1.3.7 Make a boxplot of the treated versus untreated rates. Using the function `pdf`, save the image to a file with a width and height of 7 inches.

1.3.8 Make a histogram of the frequency of concentrations. What is the width of the bins?

1.3.9 Make a histogram of the frequency of concentrations with a bin width of 0.10. How is this different from the histogram above?

1.3.10 Plot the histograms side by side in the same graphic window and make sure they have the same range on the y-axis. Does this make it easier to answer the question of how the two histograms differ?

If you want to save your work: save your R session and/or source code!