

# Basic Course on R: Basic Plotting Practical

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# 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!**