Exercises – R Course

Fall 2013

Day 2: Graphing

1. Using the **mtcars** data set in base R construct a scatterplot of miles per gallon versus car weight. For your scatterplot, do the following:
   1. Labels for the axes (don’t use the variable names!)
   2. Give an appropriate title
   3. Change the color of the plotting symbol from the default
   4. Change the plotting symbol from the default
   5. Change the range of the y-axis to 0 to 40
   6. Change the range of the x-axis to 0 to 10

plot(mtcars$wt, mtcars$mpg, xlab="Car Weight", ylab="Miles per gallon", main = "Car mpg vs. weight", col = "blue", pch=15, ylim=c(0,40), xlim=c(0,10))

1. Construct a table of the number of cars in the **mtcars** data set with the various numbers of cylinders. Display results in the R window.
   1. Store the table in data object
   2. Use the data object in (a) to construct a pie chart
   3. Give a title to the pie chart
   4. Change the colors of the slices from the default
   5. Give word labels for the slices of the pie

cylinders <- table(mtcars$cyl)

pie(cylinders, main="Pie chart of the number of car cylinders", col=c("blue", "red", "green"), labels=c("Four", "Six", "Eight"))

1. Using the **mtcars** data set construct a boxplot with miles per gallon as the continuous variable and gear as the factor.
   1. Give a title to boxplot
   2. Give word labels to each of the boxes and label both axes
   3. Change the orientation of the boxplot to horizontal. Are the axes labeled correctly?

boxplot(mpg~gear, data=mtcars, main="Boxplot of mpg by car gears", names=c("Three", "Four", "Five"), ylab="Number of gears", xlab="Miles per gallon", horizontal = T)

1. Construct a barchart of the number of cars in the **mtcars** data set with the various numbers of carburetors.
   1. Give a title and label the axes of the barplot
   2. Change the amount of space left before each bar from the default
   3. Change the colors of the bars

counts <- table(mtcars$carb)

barplot(counts, main="Barchart", xlab="Number of Carburetors", ylab="Frequency", space=0, col="peachpuff")

1. Reconstruct all the graphs in (1)—(4), but this time display them in a 2 by 2 array in the same graphing window. Save this 2 by 2 array of graphs as a .jpeg file.

par(mfrow=c(2,2))

plot(mtcars$wt, mtcars$mpg, xlab="Car Weight", ylab="Miles per gallon", main = "Car mpg vs. weight", col = "blue", pch=15, ylim=c(0,40), xlim=c(0,10))

pie(cylinders, main="Pie chart of the number of car cylinders", col=c("blue", "red", "green"), labels=c("Four", "Six", "Eight"))

boxplot(mpg~gear, data=mtcars, main="Boxplot of mpg by car gears", names=c("Three", "Four", "Five"), ylab="Number of gears", xlab="Miles per gallon", horizontal = T)

barplot(counts, main="Barchart", xlab="Number of Carburetors", ylab="Frequency", space=0, col="peachpuff")

jpeg('X:/R Users Group/GraphingQ5.jpeg', width = 500, height = 500)

par(mfrow=c(2,2))

plot(mtcars$wt, mtcars$mpg, xlab="Car Weight", ylab="Miles per gallon", main = "Car mpg vs. weight", col = "blue", pch=15, ylim=c(0,40), xlim=c(0,10))

pie(cylinders, main="Pie chart of the number of car cylinders", col=c("blue", "red", "green"), labels=c("Four", "Six", "Eight"))

boxplot(mpg~gear, data=mtcars, main="Boxplot of mpg by car gears", names=c("Three", "Four", "Five"), ylab="Number of gears", xlab="Miles per gallon", horizontal = T)

barplot(counts, main="Barchart", xlab="Number of Carburetors", ylab="Frequency", space=0, col="peachpuff")

dev.off()