Homework №1

Math 445, Spring 2016 Due: April 6 by 4:30 pm

This assignment is designed to help you review results from probability, as well as provide a space to practice exploring data.

Problem 1 Chapter 1, Exercise 5

Problem 2 Chapter 1, Exercise 6

Problem 3 (A revised version of Chapter 2, Exercise 5) Import data from the General Social Survey Case Study in Section 1.6 into R.

(a) Create a table and a bar chart summarizing the responses to the question about the death penalty.

(b) Create a table and a bar chart summarizing the responses to the question about gun ownership.

(c) Create a table comparing the responses to the death penalty and gun ownership questions.

(d) What proportion of gun owners favor the death penalty? Does it appear to be different from the proportion among those who do not own guns?

Problem 4 (A revised/expanded version of Chapter 2, Exercise 6) Import data from the Black Spruce Case Study in Section 1.9 into R.

(a) Compute the following numeric summaries for the height changes (`Ht.change`): minimum, .25 quantile (Q1), median, .75 quantile (Q3), mean, standard deviation, and the count.

(b) Create a histogram and normal quantile plot for the height changes of the seedlings. Is the distribution approximately normal?

(c) Compute the following numeric summaries for the height changes (`Ht.change`) by whether or not they were fertilized plots (`Fertilizer`): minimum, .25 quantile (Q1), median, .75 quantile (Q3), mean, standard deviation, and the count.

(d) Create a plot to compare the distribution of the change in diameters of the seedlings (`Di.change`) by whether or not they were fertilized plots. What does the plot reveal?

(e) Compute the following numeric summaries for the height changes (`Ht.change`) by whether or not they were fertilized plots (`Fertilizer`) and competition (`Competition`) status: minimum, .25 quantile (Q1), median, .75 quantile (Q3), mean, standard deviation, and the count.

(f) Create a plot to compare the distribution of the change in diameters of the seedlings (`Di.change`) by whether or not they were fertilized plots and competition (`Competition`) status. What does the plot reveal?

(g) Create a scatter plot of the height changes against the diameter changes and describe the relationship.

Problem 5 Chapter 2, Exercise 7

Problem 6 Chapter 2, Exercise 8

Problem 7 Chapter 2, Exercise 10

Problem 8 Chapter 2, Exercise 12