Intro to "R" for Biologists | EXAM 4

EXAM INSTRUCTIONS

(1) All code should be submitted in one script to Moodle. Moodle should allow up to 4 files to uploaded (see Question #8 for the other three files).

If you have problems with Moodle from some reason, then please email Ryan James wrjames@louisiana.edu and Dr. Robinson kelly.robinson@louisiana.edu your finished script with the email's subject line: **"IntroR_Test3_your name"**

(2) You have 24h to complete the exam. Therefore, the exam is **due at 5:00p CST Dec. 6, 2019**.

(3) You are allowed to use web-based resources like "Stack Overflow" during this exam.

(4) You may not ask anyone for assistance except Ryan and myself for clarification during the exam period.

Section 1. Bar plot ____ / 8 points

Load the "sec_stad.Rdata"

1. Generate a bar plot showing the capacity of each football stadium. (4 points)

    a. Flip the axis so that the stadium names are arranged along the left side of the plot and the values are on the bottom of the plot. (2 points)

    b. Set the x-axis text to be a 90-degree angle. (2 points)

Section 2. Multiple Points plot ____ / 5 points

Load the "team_statistics.Rdata"

2. Select teams belonging to the Sun Belt Conference from the data set. Generate a point plot using 'ggplot' to illustrate if there is a relationship between the number of passing yards and the number of rushing yard for each team.

Section 3: Box-and-whisker plot _____ / 10 points

Using the "team_statistics.Rdata"

3. For teams in the Big 10 Conference, generate a box-and-whisker plot for rushing yards. (6 points)

    a. Make the panel background dark blue and the fill of the box-and-whiskers bright yellow (2 points)

b. Using this subset of data, tell me which team had the most rushing yards, on average? (2 points)

Section 4: Heat Map _____ / 8 points

Load the "football_stats.Rdata"

4. For teams in the Southeastern conference, generate a heat map with 'ggplot' showing each team's performance for each statistical variable. (6 points)

    c. Plot the log-10 transformed values for the color scale. (2 points)

Section 5: Mapping _____ / 20 points

Using the "sec_stad.Rdata"

5. Generate a 'toner' map figure showing the central and southeastern United States. (5 points)

6. Generate a second 'toner' map figure showing the central and southeastern United States, plus the geographic location of all the SEC stadiums (5 points).

7. Generate a third 'toner' map figure showing the geographic location of all the SEC stadiums, this time represent these locations using the following aesthetics:

    d. Size of the points scale with the 'Capacity' of each stadium (1 points)

    e. The colors of the points show degree of gradation in 'Capacity' among stadiums (3 points)

8. Export and save these three maps as ".png" files. Please include them when you upload to Moodle (or email) your exam. (6 points total; i.e., 2 points per map file)

Section 6: Analysis _____ / 4 points

9. In which state is the largest capacity stadium located? (2 points)

10. What is the mean and standard deviation capacity of the stadiums in each state? (Hint: you may need to use *detach(package:plyr)*) (2 points)