Advanced Psychological Statistics
PSYCH-UA.11
Department of Psychology
Spring 2022

Data Assignment 4

1. Create three lists (x, y and z) from randomly generated numbers from a uniform distribution. (Hint – see "runif" and "round") in the cookbook.) Each list (x,y, and z) should contain 10 numbers
    a) Run correlations between x and y, x and z, and y and z **(5 pts.)**

    b) Create a data frame from the three lists. Cut and paste the output here **(5 pts.)**

    c) Find the means of the three columns of the data frame (hint: use "apply" command **(5 pts.)**

    d) Using the data frame you created, rerun the correlation between x and y. (Hint, you can select individual columns from a data frame. One way is to list the data frame and then select the specific column. For example, "df$x" refers to the x column in data frame "df". The "x" column from the data frame is specified by the dollar sign ($)) **(5 pts.)**

2. Download and install two R packages – "ppcor" and "psych".   (Hint – use "install.packages(" package name ") - keep the quotes – to download a package. Use library(package name) – no quotes – to make the R package available to your current R session. **(10 pts.)**

    a) Create a vector of data. Run the function from the "psych" package called "describe" on your vector (hint – if the psych package installed correctly, the command describe (vector) should produce an output that includes 13 different descriptive statistics. **(5 pts.)**

3. Run the partial correlation on your data frame using
    a) pcor **(5 pts)**
    b) partial.r **(5 pts.)**
(Since you created unique vectors, your plots and correlations will be based on those values. Note the partial correlations. Does the partial correlation change from the original correlation of X and Y? If so, how? What does this mean? You don't have to explain this in the assignment, but you should be able to interpret the results.)

4. Create a scatter plot of x and y. The title of the plot should be "Correlation". Make sure that the X and Y axes are labelled ("x" and "y", or another title is fine). **(5 pts.)**
    a) Add another set of data to the (same) plot of x and z using points and a different color for the points. **(5 pts)**

b) Add another set of data to the (same) plot of y and z using points with a line connecting the points. (Also use a different color line and different symbol type (pch).) **(5 pts.)**

(Optional – no points)

Add a legend to the figure from Question 4.