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.)**
   x = round(runif(10, min = ??, max =??)
   cor(x,y)
   cor(x,z)
   cor(y,z)
   b) Create a data frame from the three lists. Cut and paste the output here **(5 pts.)**
   df = data.frame(x,y,z)

   c) Find the means of the three columns of the data frame (hint: use "apply" command **(5 pts.)**
   apply(df, 2, mean)
   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.)**
   cor(dfx, dfy)

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.)**
   describe(x)

3. Run the partial correlation on your data frame using
   a) pcor **(5 pts)**
   pcor(df)
   b) partial.r **(5 pts.)**
   partial.r(df)

(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.)**

plot(x,y, xlab='x', ylab="y", main= "Correlation")

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)**

points(x,z, col="<color>")

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.)**

points(y,z, pch-15, col="<color>", type="l")

(Optional – no points)

Add a legend to the figure from Question 4.