Introduction to R Homework

Within your project on our shared workspace on RStudio cloud, **open a new script and title it ‘hw1’.**

Cara was interested in guided play in naturalistic settings. Much of the research on guided play has considered its effects by experimentally manipulating aspects of adult guidance (e.g., Sobel & Sommerville, 2010; Fisher, Hirsh-Pasek, Newcombe, & Golinkoff, 2013; Toub, et al., 2018). Less is known about which aspects of guided play are most effective, especially in a naturalistic setting (Weisberg et al., 2016). To study this Cara conducted an exploratory study to assess the frequency of certain guided play behaviors.

Cara observed 36 months old children and their mothers during a 15-minute lab-based semi-structured play session. These sessions used the ‘three boxes’ procedure in which mothers were asked to introduce three sets of toys in order. The first box contained markers, stencils, and a sketch pad; the second box contained dress-up and pretend materials; and the third box contained blocks.

Cara counted the number of times mothers asked her child open ended questions, set a goal, and demonstrated an action or word.

Her data is attached to this assignment. The first column is an arbitrary ID for each mother/child pair. The second column (opquest) is the number of open-ended questions each mother asked her child. The third column (goal) is the number of goals each mother set. The last common (demo) is the number of times each mother demonstrated an action or word.

1. Open the data in RStudio cloud.

Click the upload icon in the files panel.

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Select the CHOOSE FILE button.

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Navigate to your saved file. It should then appear in your files.

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Next assign the data to an object.

To do this with point and click, click on the import dataset icon in the environment panel.

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Then select FROM TEXT (READR)

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In the import text data window, select the BROWSE button.

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Navigate to the hw1.csv file. Then click OPEN and then IMPORT.

(alternatively, you could have used this code to assign the data to an object: hw1 <- read\_csv("hw1.csv")

1. Find and report mean, standard deviation, and range for each variable (i.e., number of questions, goals, and demonstrations).

Code/instructions:

#first load the tidyverse and psych package (if needed)

library(tidyverse)

library(psych)

#then get descriptive stats

hw1 %>%

describe()

#or you could have used base R

mean(hw1$opquest)

sd(hw1$opquest)

summary(hw1$opquest)

mean(hw1$goal)

sd(hw1$goal)

summary(hw1$goal)

mean(hw1$demo)

sd(hw1$demo)

summary(hw1$demo)

Answers:

Number of open questions: M = 3.80, SD = 3.22, range = 12

Goals: M = 0.73, SD = 0.78, range = 3

Demonstrations: M = 0.83, SD = 1.12, range = 5

1. Create a histogram for each variable (i.e., number of questions, goals, and demonstrations).

Code:

#using ggplots

ggplot(hw1, aes(x=opquest)) +

geom\_histogram(binwidth=1)

ggplot(hw1, aes(x=goal)) +

geom\_histogram(binwidth=1)

ggplot(hw1, aes(x=demo)) +

geom\_histogram(binwidth=1)

#or you could use base R

hist(hw1$opquest)

hist(hw1$goal)

hist(hw1$demo)

Answers:

I got these figures here by dragging and dropping)

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1. It would also be useful to create a frequency table here. (you can use the count function to do this)

Code:

hw1 %>%

count(opquest)

hw1 %>%

count(goal)

hw1 %>%

count(demo)

Answers:

opquest n

*<dbl>* *<int>*

1 0 2

2 1 6

3 2 7

4 3 3

5 4 2

6 5 2

7 6 1

8 7 3

9 8 1

10 10 2

11 12 1

goal n

*<dbl>* *<int>*

1 0 13

2 1 13

3 2 3

4 3 1

demo n

*<dbl>* *<int>*

1 0 14

2 1 11

3 2 3

4 3 1

5 5 1

1. Based on this what can Cara conclude about the frequency of certain behaviors?

The data shows that of the three behaviors that Cara observed, opened ended questions occurred most frequently (M = 3.80, SD = 3.22, range = 12). Goals (M = 0.73, SD = 0.78, range = 3) and demonstrations (M = 0.83, SD = 1.12, range = 5) were fairly rare (there was more variability in demonstrations, compared to goals).

For full credit for this homework you must:

1. Submit your answers to questions 2 – 5 here.
   * I was able to drag and drop histograms from the RStudio cloud site into a word document. You can also right click on the histogram for more options on getting these images into some sort of document to submit here.
2. Save your work in the ‘Intro to R hw’ script you created for this homework. I will be checking that all code runs.

Script

#1

hw1 <- read\_csv("hw1.csv")

#2

#first load the tidyverse and psych package (if needed)

library(tidyverse)

library(psych)

#then get descriptive stats

#using tidyverse

hw1 %>%

describe()

#using base R

mean(hw1$opquest)

sd(hw1$opquest)

summary(hw1$opquest)

mean(hw1$goal)

sd(hw1$goal)

summary(hw1$goal)

mean(hw1$demo)

sd(hw1$demo)

summary(hw1$demo)

#3

#using ggplots

ggplot(hw1, aes(x=opquest)) +

geom\_histogram(binwidth=1)

ggplot(hw1, aes(x=goal)) +

geom\_histogram(binwidth=1)

ggplot(hw1, aes(x=demo)) +

geom\_histogram(binwidth=1)

#using base R

hist(hw1$opquest)

hist(hw1$goal)

hist(hw1$demo)

#4

hw1 %>%

count(opquest)

hw1 %>%

count(goal)

hw1 %>%

count(demo)