Homework 1

Due Thursday, Feb 5, 10 AM

For all questions, please **show your work** or **include a copy of the output**, whichever is relevant. Please type your answers in report form, as if you were describing results in a published study. Include the relevant statistical values in the text. **Your answers should be in your own words** and most answers should be approximately one paragraph. Please send me a **pdf file** via email.

Below are hypothetical scores from a worker pre-employment test with possible values from 1 to 100.

Worker	Number Correct
1	91
2	85
3	96
4	96
5	88
6	99
7	100
8	88
9	78
10	88
11	92
12	8
13	87
14	95
15	91
16	79
17	55
18	52
19	48
20	51

1. Enter the values into **an SPSS data file**. Double check your data. **In SPSS and R**, generate a frequency histogram with a normal curve overlay, box plot, and stem-and-leaf display of the scores. Obtain descriptive statistics, including the mean, median, standard deviation, skew, and kurtosis for all students. Describe the shape of the distribution as depicted by the histogram and box plot and report the statistical values that you obtained. Be sure to note any departures from a normal curve and the presence of any outliers.

Download the positive psychology intervention data from the from the data sets webpage http://web.pdx.edu/~newsomj/data.htm. These data come from an experimental study investigating the effects of positive psychology interventions on happiness and depression conducted by Woodworth and colleagues (2018).[1] The data set we will use has an intervention variable (`int`) with information about one of the intervention groups (`int` = 1), the three good things intervention that asked participants to write down three good things that happened to them each day, and a control group (`int` = 0). The data set also contains the total score from the Center for Epidemiologic Studies – Depression scale (`dep`), which is the sum of 20 questions about the frequency the respondent felt symptoms such as "I felt depressed" and "I was bothered by things that don't usually bother me" (the possible range of scores is from 0 to 60, with higher scores representing more depression). Another variable is the Authentic Happiness Inventory (`ahi`) comprised of 24 items rated on a 5-point scale, in which the respondent chooses among a range of ranked statements such as “My life does not have any purpose or meaning” to “I have a very clear idea about the purpose or meaning of my life” (possible range: 1-120).

2. **Use both SPSS and R** to generate a frequency histogram with a normal curve overlay and box plot of the `dep` and `ahi` variables. Obtain descriptive statistics, including the mean, standard deviation,

[1] Woodworth, R.J., O'Brien-Malone, A., Diamond, M.R. and Schüz, B., 2018. Data from, ‘Webbased Positive Psychology Interventions: A Reexamination of Effectiveness’. *Journal of Open Psychology Data*, 6(1), p.1. DOI: http://doi.org/10.5334/jopd.35

skew, and kurtosis for both variables. In a separate paragraph for each variable, describe the distribution as depicted by the histogram and box plot and report the statistical values that you obtained and report the statistics. Be sure to note any departures from a normal curve and the presence of any outliers.

3. **Using hand calculations** of the data presented below, drawn from a study of college student sleep quality, determine whether those students who have consumed no alcohol in the last week rate their sleep better or worse than those students who have consumed some alcohol. The dependent variable is self-reported rating of the quality of the student's sleep over the past week, with 1 representing the poorest quality sleep possible and 6 representing best quality sleep possible. Describe your results and what they mean. Be sure to include all the relevant statistical values in the text of your write-up (means, standard deviations, confidence limits, *t*-value, *p*-value, and Cohen's *d*).

No Alcohol	Alcohol
4	1
4	2
4	3
2	6
5	3
5	3
5	3
5	5
4	2
5	2

4. For the positive psychology intervention data set from Problem 2, **use both SPSS and R** to generate side-by-side (or above-and-below) histograms with normal overlay and box plots in SPSS for the depression variable (dep) in the two treatment groups (int, 0 = "control", 1 = "three good things"). Write a paragraph describing the shape of the distribution depicted in the histograms and box plots and the approximate values depicted in the box plots.

5. **Conduct a *t*-test in SPSS and R** to determine whether there was a significant difference in depression between the three good things intervention and the control conditions. Report your results in terms of the research problem and be sure to include the relevant statistical values in your write-up.

6. Read **one** of the following articles (copies available from the class website http://web.pdx.edu/~newsomj/uvclass/) and write **two paragraphs** summarizing the article. First, describe the study design (e.g., randomized experiment, non-equivalent control group design, cross-sectional survey; for a quick refresher, see http://sphweb.bumc.bu.edu/otlt/mph-modules/programevaluation/ProgramEvaluation7.html) and purpose of the study **in your own words**. Be sure to include who/what was studied (e.g., who were the participants?) and the number of cases. Then, choose one statistical tests used in the article that you have learned about in the course so far (i.e., *t*-test, chi-square), and, **in your own words**, describe the hypothesis that is being tested, the results obtained, and what the findings mean. **Be sure to include the relevant statistical values and whether the results were significant.** Write your paragraphs as if you were describing results in a published article and reporting someone else's results as in a review article.

Altun, D. (2018). The efficacy of multimedia stories in preschoolers' explicit and implicit story comprehension. *Early Childhood Education Journal, 46*(6), 629-642. https://doi.org/10.1007/s10643-018-0916-8

Costa, E. C., & Gomes, S. C. (2018). Social support and self-esteem moderate the relation between intimate partner violence and depression and anxiety symptoms among Portuguese women. *Journal of Family Violence, 33*(5), 355-368. https://doi.org/10.1007/s10896-018-9962-7

Guillén, A. I., Panadero, S., & Vázquez, J. J. (2021). Disability, health, and quality of life among homeless women: A follow-up study. *American Journal of Orthopsychiatry, 91*(4), 569-577. https://doi.org/10.1037/ort0000559

Suldo, S. M., Hearon, B. V., Bander, B., McCullough, M., Garofano, J., Roth, R. A., & Tan, S. Y. (2015). Increasing elementary school students' subjective well-being through a classwide positive psychology intervention: Results of a pilot study. *Contemporary School Psychology, 19*(4), 300-311. https://doi.org/10.1007/s40688-015-0061-y

Howansky, K., Wilton, L. S., Young, D. M., Abrams, S., & Clapham, R. (2021). (Trans) gender stereotypes and the self: Content and consequences of gender identity stereotypes. *Self and Identity, 20*(4), 478-495. https://doi.org/10.1080/15298868.2019.1617191