Homework 2

Due Thurs Feb 26 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.

1. Below is a summary of data from a Pew Research Center Poll on public perceptions of science on the question of whether respondents believe organic food is better for them (`better`).[1] Use a hand-computed *z*-test to check whether the proportions of those who believe organic food is better for them and those who do not are equal. Calculate the 95% confidence interval and the margin of error by hand. Report and interpret your findings.

No	**Yes**	Total
143	112	255

2. Download the Pew data from the data page, http://web.pdx.edu/~newsomj/data.htm, and conduct the same *z*-test in **SPSS and R** to check your work. No write-up is necessary for this problem.

3. Below is a contingency table of the frequencies for the responses to the question about whether organic food is better for you and whether the respondent reports ever eating any organic foods ("not at all" vs. "some"). Calculate a chi-square test by hand to determine whether those who believe organic foods are better for them are more likely to eat organic foods than those who do not believe organic food is better for them. Compute phi from the chi-square value and interpret. Please show your work. Save the write-up for the next problem.

	None at all	**Eat at least some**	Total
Better - no	38	105	143
Better - yes	6	106	112
Total	44	211	255

4. Using the data from the Pew data set, obtain a chi-square test in **SPSS and R** to find out whether people who believe organic food is better for them (`better`) are more likely to eat organic food (`organic`). Report and interpret your findings in terms of the research problem. (Include both printouts). Be sure to report either row or column percentages to help explain the results, and report and interpret the magnitude of the effect.

5. Data below include (hypothetical) test scores on a statistics test (out of 60 points) and the number of hours the student reported studying for the test. Compute a correlation coefficient by hand and determine whether the value is significant. Report the r, r^2, significance, and the 95% confidence interval for r (using the Excel sheet from the class webpage) and interpret the results.

Employee ID	Hours Studied	Test Score
1	6	50
2	9	22
3	3	40
4	6	60
5	5	10
6	7	60
7	2	30
8	8	50

[1] I have randomly sampled from this data set as well as combined categories in some instances. Pew Center Research data sets can be obtained at https://www.pewresearch.org/fact-tank/2018/03/09/how-to-access-pew-research-center-survey-data/. An article summarizing some of the food findings can be found at https://www.pewresearch.org/science/2018/11/19/public-perspectives-on-food-risks/.

6. Using the same data, compute the unstandardized regression coefficient by hand (no need to re-compute the values already that were obtained in computing r in the above problem). Use test scores as the dependent variable. Compute the standardized coefficient from the unstandardized coefficient (SD for the hours studied was equal to 2.38 and the standard deviation for the test scores was equal to 18.22). Report and interpret the regression slope and the standardized coefficient (you can use the significance test information from the correlation coefficient).

7. Using the positive psychology data from HW 1, obtain a scatterplot and compute a correlation coefficient between the depression measure (`dep`) and happiness measure (`ahi`) in both **SPSS and R**. Report your findings, including r, r^2, significance, and the 95% confidence interval for r and interpret the results. Note any problems if they are evident from the scatterplot.

8. Using the positive psychology data, compute a simple regression analysis in both **SPSS and R**, using `ahi` as the predictor of `dep`. Report the unstandardized regression coefficient, significance, and the standardized regression coefficient, and interpret the results.

9. Read **one** of the following articles (password protected copies are available from the class website http://web.pdx.edu/~newsomj/) 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) 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 test used in the article that you have learned about in the course so far (i.e., *chi-square, correlation, simple regression, reliability, ANOVA*), 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.

Alzoubi, F. A., & Ali, R. A. (2021). Jordanian men's and women's attitudes toward intimate partner violence and its correlates with family functioning and demographics. *Journal of Interpersonal Violence, 36*(5-6), NP2883-NP2907. https://doi.org/10.1177/0886260518769368.

Gupta, U. and Zheng, R. Z. (2020). Cognitive Load in Solving Mathematics Problems: Validating the Role of Motivation and the Interaction Among Prior Knowledge, Worked Examples, and Task Difficulty. *European Journal of STEM Education, 5*(1), 05. https://doi.org/10.20897/ejsteme/9252.

Pierre Y., Rathee N. K. & Rathee V. S. (2021). Developing Cross-Cultural Competency through Multicultural Perspective: An Exploratory Inquiry. European Scientific Journal, ESJ, 17 (27), 324. https://doi.org/10.19044/esj.2021.v17n27p324.

Sánchez-Morales, E., & Romero-López, M. (2021). Relationship of the family environment with social competence and behavioral problems in Early Childhood Education children. *Electronic Journal of Research in Educational Psychology, 19*(55).