Susan Holmes

Omega Graduate School

Richard Nti

Submission Date: April 26, 2023

**20-Day Exercise Submission**

Complete the following.

1. Watch course videos.

a. Watch the OGS Statistics as a Language: Introduction to Statistics video.

b. Watch the Statistics as a Language: Overview of Stats Test & Hypotheses Testing video.

c. Watch videos #3-8 in the Course Outline

2. Written submission.

a. Using the assignment template (instructions below), provide a numbered list of the videos viewed.

b. Under each video name, provide a 3-5 sentence summary (a paragraph) of what you learned from each video.

3. Structure (assignment evaluation includes the following structure below).

1. Download the “OGS APA Course Assignments Template 7th Ed 2021” template from the General Helps folder in the AA-101 The Gathering Place Course on DIAL. Using the template, create the following pages.
2. Title Page (Not included in page count).
3. Copy and paste the assignment instructions from the syllabus starting on a new page after the title page, adhering to APA 7th edition style (APA 7 Workshop, Formatting, and Style Guide, APA 7 Quick Guide).
4. Document all sources in APA style, 7th edition (APA 7 Reference Example, APA 7 Quick Guide).

e. Start the assignment on a new page after the copied assignment instructions.

f. Include a separate Works Cited page, formatted according to APA style, 7th edition.

4. Submit through **Dial** to the professor.

1. Watch course videos.
2. Written submission.

a. Using the assignment template (instructions below), provide a numbered list of the videos viewed.

b. Under each video name, provide a 3-5 sentence summary (a paragraph) of what you learned from each video.

a. **Watch the OGS Statistics as a Language: Introduction to Statistics video**.

OGS is creating world changers through effective social research that will affect our world. The research will use statistics. Applying statistics can test hypotheses, answer research questions, and communicate results. In this way, statistics become a language. Statistics helps to understand patterns in data by gathering information from a population to make various inferences. Researchers test samples, and the sample is representative of the population. We learn that testing an entire population is too time-consuming and expensive; therefore, the analysis comes from the sample. In addition to making inferences about a sample population, we complete a random selection method so as not to create a bias (Joshua Reichard, 2020).

b. **Statistics as a Language: Overview of Statistical Tests and Hypothesis Testing video.**

Statistical tests help us make comparisons and identify relationships between variables in our data (Joshua Reichard, 2020). Various tests are used for different purposes, and it is the researcher's job to determine which test to use under different conditions. We ask various questions to help us determine which tests are best to use. Some basic tests used are Analysis of Variance (ANOVA), *t*-Tests, Correlation, Linear Regression, and Goodness of Fit. In statistical testing, the burden of proof is on the researcher. This is done by using two hypotheses, the null hypothesis, which is the one we test, and the alternate hypothesis, which is the educated guess (Joshua Reichard, 2020).

c. **Watch videos #3-8 in the Course Outline**

1. Sampling error

Sampling error refers to how well the sample approximates the characteristics of a population. Sampling error is the difference between the values of the sample statistic and the population parameter. The higher the sampling error, the less precision you have in sampling, and the more difficult it will be to make the case that what you find in the sample indeed reflects what you expected to find in the population. There are measures of variability of this difference between a sample measure and a population measure. This is called the standard error or the standard deviation of the difference between these two values.

1. Power Introductory Stats

Power is the probability that a test rejects the null hypothesis when the alternative hypothesis is true. Generally, power is specified at .80 (or 80% probability) that a test will yield a statistically significant effect if it is there. This means we have an 80% chance of ending up with a p-value of less than .5 (95% confidence) in a statistical test. Power is the statistical “muscle” of detecting effects in your sample if they are genuinely there and representative of the population.

1. Intro to Types I and II

Two possible errors can arise from statistical tests: Types I and II based on alpha and beta levels. **Type I**: A false positive occurs when we reject a true null hypothesis incorrectly. Your findings occurred by chance. **Type II**: A false negative occurs when we fail to reject a null hypothesis when it is false. Your findings are significant, but you think they occurred by chance. We want to try to minimize both types of errors, but they are inversely proportional: decreasing a Type I error rate increases a Type II error rate, and vice versa.

For example, let us say we are trying to determine the difference between how much assistance high and low-income families offer their children in school-related activities. We would begin with the null hypothesis that states:

H0 =There is no difference between high and low-income families in the amount of assistance families offer their children in school-related activities.

Ha = The amount of assistance high-income families offer to their children in educational activities is more than the amount of support low-income families offer to their children in educational activities.

If the null is true and you reject it, then it is a Type I error, but if we accept the null and it is false, we have committed a Type II error.

Type 1 error or significance level between .01 and .05 is the level of risk you are willing to take in any test of the null hypothesis.

WORK CITED

Joshua Reichard (Director). (2020, March 9). *Statistics as a Language: Overview of Statistical Tests and Hypothesis Testing (Tutorial 2)*. https://www.youtube.com/watch?v=lr3OVs6JQU8

Quantitative Specialists (Director). (2017, August 29). *Power—Introductory Statistics; Statistical Power; Type I and II Error; Beta*. https://www.youtube.com/watch?v=AiWn2OU2k9Y

Salkind, N. J., & Frey, B. B. (2019). *Statistics for people who (think they) hate statistics* (7th edition). SAGE Publications, Inc.