**Project #5 (Unit 9, Module 23)**

**Research Question:**

**Are the majority of the students in my Statistics courses Business or Nursing majors?**

**Instructions:** I often hear that the majority of students who take statistics are either Business or Nursing majors. Is that true? Analyze the “Survey Responses for the last 4 Semesters”. Based on this data, develop a position (a thesis statement) that addresses the question above. Use the concepts from Unit 9 to run a hypothesis test to answer the question above.

**Data:** <https://docs.google.com/spreadsheets/d/1eo39Wony34pQERf420qTKMdNBd4MnIuUUkYTHZz2-BI/edit?usp=sharing>

**Think It Through:**

1) Clearly identify the Hypotheses. State them in both words **and** with symbols.

2) Check the Normal Criteria. I still want you to continue to try to answer this question, even if the sample doesn’t meet the requirements! But, I want you to state whether it does or not, with an explanation of *why*.

3) Describe the distribution of sample proportions, assuming that the normal criteria *are* satisfied (even if they aren’t)

4) Calculate the p-value and describe what it means, in words, using the context of this question.

5) Draw a conclusion that addresses Question #2.

Write 1 paragraph for the question posed, using your observations to support your conclusions.

*Tip: If you are having trouble writing a paragraph, start with a sentence that gives your thesis. Then write 1-2 sentences for each of the pieces listed above. Try to add transitions that help tie your observations back to your thesis. Use the rubric below as a checklist to guide you.*

**Project #5 Rubric**

**Are the majority of students in my Statistics courses Business and Nursing majors?**

Total points

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| --- | --- |
| **Question: Are the majority of my students Business and Nursing majors?** | Points |
| **Clearly State the Hypotheses:** You need to express the null and alternative hypotheses in both symbols and words. (2 points) |  |
| **Check that Normal Criteria are met:** Is the sample size large enough? Even if it’s not, I want you to continue to solve this problem, but it should be stated whether the criteria are met or not. (1 point) |  |
| **Describe the Distribution of Sample Proportions:** In your paragraph, describe the mean and standard error of the distribution of sample proportions (***if*** the null hypothesis were true) (1 points) |  |
| **Calculate the p-value:** Test the claim at the 5% significance level. Use technology to calculate the p-value and describe what it means in words. (2 points) |  |
| **Conclusion of Hypothesis Test:** Write out the conclusion you will draw from running your hypothesis test (accept or reject the null hypothesis), based on the p-value. (1 point) |  |
| **Thesis statement:** Clear position that addresses the research question. (1 point) |  |
| **Critique:** Discuss whether this sample is a good, representative sample of the population. Talk about the criteria and potential flaws. (1 point) |  |
| **Overall logic and coherence:** Observations connect to the thesis in a logical way. Explanations tell us why observations are important or interesting.(1 point) |  |
| **BONUS**: Write out what a Type I and a Type II Error would be. Make it clear and easy to understand.  |  |