**Project #4 (Unit 9, Module 21)**

**Research Question:**

**Are there more business majors or nursing majors taking my statistics courses? Or, are there about the same amount of students majoring in each?**

**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 create confidence intervals to compare majors.

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

**Think It Through:**

1. Use technology to calculate percentages and create a table and a graph that shows the popularity of different majors. Use clear labels for easy visual comparison.
2. Make sure that our sample satisfies the normal criteria! I still want you to complete the project, even if it doesn’t, but I want you to address whether it does or not!
3. Calculate confidence intervals to compare and determine which group is larger (Business OR Nursing Majors OR are they about the same?)
4. Draw a conclusion that addresses Question #1.

**Write the analysis:**

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 #4 Rubric**

**Are there more business majors or nursing majors taking my statistics courses? Or, are there about the same amount of students majoring in each?**

Total points

|  |  |
| --- | --- |
| **Question: Are there more business majors or nursing majors taking my statistics courses? Or, are there about the same amount of students majoring in each?** | Points |
| **Graph and Table:** A bar graph that shows the distribution of majors and a table that shows the counts or percentages of each category. (1 point) |  |
| **Describe the sample and the population:** In your paragraph, describe the population, the sample and the sample proportion. (1 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) |  |
| **Calculate the Margin of Error:** Using a confidence level of 95%, calculate and describe what the Margin of Error means in words for each confidence interval. Show your work for full (and partial!) credit. (2 points) |  |
| **Calculation of 2 Confidence Intervals:** Create 2 confidence intervals to compare the percentage of Business Majors and Nursing Majors. You must write out what they mean, in words for full credit. (2 points) |  |
| **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**: Answer the question: How large of a sample do we need in order to have a Margin of Error less than 2%? Show all relevant work and calculations and explain your solution. |  |

**A strength of this work:**

**An area for improvement in this work:**

**General comments or insights:**