Deliverable 07 Worksheet

**Scenario**

You are currently working at NCLEX Memorial Hospital in the Infectious Diseases Unit. Over the past few days, you have noticed an increase in patients admitted with a particular infectious disease. You believe that the ages of these patients play a critical role in the method used to treat the patients. You decide to speak to your manager, and together you work to use statistical analysis to look more closely at the ages of these patients.

You do some research and put together a spreadsheetof the data that contains the following information:

* Client number
* Infection disease status
* Age of the patient

You need the preliminary findings immediately so that you can start treating these patients. So, let’s get to work!

**Background information on the Data:**

The data set consists of 70 patients that have the infectious disease with ages ranging from 42 years of age to 84 years of age for NCLEX Memorial Hospital.

**Requirements:**

1. **Answer the questions below in a PowerPoint presentation.**
2. **Include the summary calculations and the formulas in your slides either symbolically or from Excel. Do not round your results.**
3. **Show calculations in your Excel spreadsheet.**

**Submit both the PowerPoint and Excel files.**

**PowerPoint Presentation Requirements**

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| **Slide 1**  *Title* | Title Slide |
| **Slide 2**  *Overview* | Provide a brief overview of the scenario you are given above and the data set that you will be analyzing. |
| **Slide 3**  *Classification* | Classify the variables in your data set.   * Which variables are quantitative/qualitative? * Which variables are discrete/continuous? * Describe the level of measurement for each variable included in the data set (nominal, ordinal, interval, ratio) |
| **Slide 4**  *Measures of Center* | What are the measures of center and why are they important? Describe each individually and list any advantages or disadvantages that each may have. |
| **Slide 5**  *Measures of Variation* | What are the measures of variation and why are they important? Describe each individually and list any advantages or disadvantages that each may have. |
| **Slide 6**  *Calculations* | Show your results for the following calculations. Include formulas used in Excel. Interpret your results in the context of the scenario and include units of measurement for each.   * Mean * Median * Mode * Mid-range * Range * Variance * Standard Deviation |
| **Slide 7**  *Confidence Intervals* | Show your responses for the follow questions:   * What are confidence intervals? * What is a point estimate? * What is the best point estimate for a population mean? Explain. * Why do we need confidence intervals? |
| **Slide 8**  *Confidence Intervals* | Construct a ***95%*** confidence interval for the population mean ages of the patients. Assume that your data is normally distributed and σ is unknown.  Show results for the following calculations in constructing the confidence interval. Include formulas used in Excel. Interpret the confidence interval.   * Critical Value * Margin of Error * Upper and Lower Bounds |
| **Slide 9**  *Hypothesis Testing* | Perform the following hypothesis test based on the claim that the average age of all patients admitted to the hospital with infectious diseases is less than 65 years of age.  Write the null and alternative hypothesis symbolically and include the following additional information:   * Which hypothesis is the claim? * Is the test two-tailed, left-tailed, or right-tailed? Explain * Which test statistic will you use for your hypothesis test, z-test or t-test? Explain. |
| **Slide 10**  *Hypothesis Testing* | Continue the hypothesis test based on the claim that the average age of all patients admitted to the hospital with infectious diseases is less than 65 years of age.  Show your results and formulas used for the following calculations:   * Test Statistic * Critical Value * P-value |
| **Slide 11**  *Hypothesis Testing* | Complete the hypothesis test by explaining the following:   * Decision to reject the null hypothesis or to not reject the null hypothesis. * Explain your decision using the critical value method. * Explain your reasoning using the P-value method. * Restate your conclusion in non-technical terms. |
| **Slide 12**  *Conclusion* | Conclude by recapping your ideas by summarizing the information presented in context of the scenario.   * Include the mean, standard deviation, confidence interval with interpretation, and result of the hypothesis test. * What conclusions, if any, do you believe we can draw as a result of your study? * What did you learn from the project about the population based on this sample? * What did you learn about the specific statistical tests you conducted? |