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 **<please link to Deliverable 07 Data>**spreadsheet**</link>** of 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 60 patients that have the infectious disease with ages ranging from 35 years of age to 76 years of age for NCLEX Memorial Hospital.

**Requirements:**

1. Introduce your scenario and data set.
   * Provide a brief overview of the scenario you are given above and the data set that you will be analyzing.
   * 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)
2. Discuss the importance of the Measures of Center and the Measures of Variation.
   * What are the measures of center and why are they important?
   * What are the measures of variation and why are they important?
3. Calculate the measures of center and measures of variation. Interpret your results in context of the scenario.
   * Mean
   * Median
   * Mode
   * Midrange
   * Range
   * Variance
   * Standard deviation
4. Discuss the importance of constructing confidence intervals for the population mean by answering these questions:
   * What are confidence intervals?
   * What is a point estimate?
   * What is the best point estimate for the population mean? Explain.
   * Why do we need confidence intervals?
5. Evaluate the following:
   * Find the best point estimate of the population mean.
   * Construct a ***95%*** confidence interval for the population mean. Assume that your data is normally distributed and σ is unknown. Include a statement that correctly interprets the confidence interval in context of the scenario.
6. Perform the hypothesis test.
   * ***Original Claim:*** The average age of all patients admitted to the hospital with infectious diseases is less than 65 years of age.
     + Test the claim using α = 0.05 and assume your data is normally distributed and σ is unknown.
   * Answer the following:
     + Write the null and alternative hypothesis symbolically and identify 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.
     + What is the value of the test-statistic? What is the P-value? What is the critical value?
     + What is your decision; reject the null, or do not reject the null?
       1. Explain why you made your decision, including the results for your p-value and the critical value.
     + State the final conclusion in non-technical terms.
7. Conclusion
   * Recap your ideas by summarizing the information presented in context of the scenario.
     1. What conclusions, if any, do you believe you can draw as a result of your study?
     2. 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?