

**CPH 682-001: Quantitative Methods
Team Project #4**

**Fall 2018
Dr. Charnigo**

This project covers Chapter 6 and anticipates Chapter 7. Please record your answers in an Excel file called {WB4CPH682F18 LN1 LN2 LN3 LN4.xlsx} and upload the final version into Canvas. Above, LN1 is your last name, while LN2 through LN4 are the last names of your other group members. (Groups with only three persons will have only three last names, obviously.) Members of the same group will have identical files except for the order of the last names in the filename. Members of different groups should have different files.

Here are the wait times (in minutes) for patients to be seen at a family medicine clinic on a particular afternoon this month:

25, 31, 18, 29, 24, 16, 17, 12, 13, 9, 14, 12, 8, 20, 21, 17, 8, 16, 22, 23, 12, 9, 14, 14, 25, 23, 22, 17

[20] 1. Use Excel functions to obtain the mean, median, variance, standard deviation, and interquartile range. (As a preparation for the Final Examination, but not to be graded here, you are also encouraged to calculate these quantities without using Excel functions; keep in mind that you may obtain a slightly different answer for the interquartile range because there are different approaches for calculating quartiles, which produce slightly different results for small and moderate sample sizes.)

[10] 2. Do you think that the data come from (approximately) a normal distribution ? Answer by seeing what percentage of the data fall within one standard deviation (resp., two standard deviations) of the mean, compared to what you would expect if the data came from a normal distribution.

[10] 3. What is the estimated standard error of the mean ?

[10] 4. Add and subtract $TINV(0.05, n-1)$ multiples of the estimated standard error to and from the mean to obtain a range of values, where n is the sample size. The interpretation is that you anticipate the population mean falling somewhere in this range. (If you've taken a previous statistics course, you will recognize that you have just computed a confidence interval. Otherwise, stay tuned for Chapter 7 !)

[20] 5. Suppose that the health needs of the population are deemed to be met if the population mean is at most (i.e., is less than or equal to) 15. Based on the range of values calculated in the previous exercise, make a judgment about whether the health needs of the population are met: a rather confident "yes" (entire range of values consistent with needs being met); uncertain, with inclination toward "yes" (point estimate consistent with needs being met, but range of values allows for both possibilities); uncertain, with inclination toward "no" (point estimate consistent with needs not being met, but range of values allows for both possibilities); or a rather confident "no" (entire range of values consistent with needs not being met) ?

[10] 6. What is the proportion of persons who are seen within (i.e., in less than or equal to) 15 minutes ?

[10] 7. What is the estimated standard error of the proportion ?

[10] 8. Add and subtract 1.96 multiples of the estimated standard error to and from the proportion to obtain a range of values. The interpretation is that you anticipate the population proportion falling somewhere in this range.