

Project #3 Hypothesis Testing Project

For this project, we will use a subset of the North Carolina birth data set. The data set **ncbirth200.sav** is a random sample of 200 births from the data set **ncbirth1450.sav**. When doing this assignment, make sure you are working with the data set with only 200 observations! In this assignment you will test hypotheses relating to **age, gest, total ounces, low, and smoke**.

Begin the assignment by providing a summary of those three continuous variables (**age, gest, and total ounces**). Create a table that contains the mean, median, standard deviation, minimum, and maximum. Also provide histograms for these variables.

Also create a frequency table for the percentage of low birth weights and a frequency table for the percentage of smokers.

With the information that you gather from this summary, test the following (you will need to do the tests of proportion by hand, but tests of means can be done using the computer):

- a. Determine if there is sufficient evidence to conclude the mean age of mothers giving birth in North Carolina is over 24 years of age at the 0.05 level of significance.
- b. Determine if there is sufficient evidence to conclude the mean weeks of gestation of mothers giving birth in North Carolina is below 39 weeks.
- c. Determine if there is sufficient evidence to conclude that the mean weight of babies born to mothers in North Carolina is above 7 lbs. (Note that there are 16 ounces in a pound.)
- d. Determine if there is sufficient evidence to conclude the percentage of low birth weight children in North Carolina is above 6%.
- e. Determine if there is sufficient evidence to conclude the percentage of mothers who smoke in North Carolina is above 10%.
- f. Determine if there is sufficient evidence to conclude the mean birth weight of smoking mothers is lower than the mean birth weight for non-smoking mothers.

For each of the tests above, in your report, be sure to

1. Clearly state a null and alternative hypothesis
2. Give the value of the test statistic
3. Report the P-value
4. Clearly state your conclusion (i.e. 'Reject the Null' is not sufficient)

For d and e above, be sure to check the assumptions associated with a test of a proportion. For testing two means, include a side-by-side boxplot with your analysis. Comment on whether you believe you will reject or fail to reject the null hypothesis.

Lastly, propose and conduct your own test of hypotheses. You can test a single mean, a single proportion or compare two means for two independent groups. Make sure test follows the four steps above.