

## 9.20: Assignment- A Statistical Investigation using Software

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### Risk Factors for Low Birth Weight

Rates of infant mortality, birth defect, and premature labor are high for babies with low birth weight. There are many factors that may contribute to low birth weight.

In this activity, we use data from a random sample of women who participated in a study in 1986 at the Baystate Medical Center in Springfield, MA. (Source: *Hosmer and Lemeshow (2000), Applied Logistic Regression: Second Edition.*)

For the 30 women in the study with a history of premature labor, a proportion of  $18/30 = 0.60$  (60%) had babies with low birth weight. For the remaining 159 women, a proportion of  $41/159 = 0.26$  (26%) had babies with low birth weight.

We now investigate the following research question: do the data provide evidence that the proportion of babies born with low birth weight is higher for women with a history of premature labor? This question is answered with a hypothesis test. To conduct the test we use a 1% level of significance.

#### Question 1:

Is this study observational or experimental?

#### Question 2:

Before analyzing the data, use your own experience and intuition to predict what the data will show. Do you think the proportion of babies with low birth weight is higher for women with a history of premature labor?

#### Question 3:

We will test the claim that the proportion of women with low birth weight babies is higher among women with a history of premature labor. What are the null and alternative hypotheses?

#### Question 4:

Are the criteria for approximate normality satisfied?

### Instructions

Click on the link corresponding to your statistical package to see instructions for completing the activity, and then answer the questions below.

[R](#) | [StatCrunch](#) | [Minitab](#) | [Excel 2007](#) | [TI Calculator](#)

#### Question 5:

State the test statistic and P-value. Interpret these values.

#### Question 6:

Give a conclusion in context, and discuss whether a causal conclusion is appropriate.

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