§10.1: Two Sample Hypothesis Test for Proportions

Skills:
- Conduct a test of significance for the difference between two population proportions
Hypothesis Test

\[ H_0: p_1 = p_2 \]
\[ H_a: p_1 \neq p_2 \]

This requires random samples, and each of
\[ n_1 \hat{p}, \quad n_1(1-\hat{p}), \quad n_2 \hat{p} \text{ and } n_2(1-\hat{p}) \]
must be at least five.
Hypothesis Test (continued)

The test statistic:

\[
 z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}(1-\hat{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}
\]

Calculate \( p \)-value the same as before.
Write the concluding paragraph just like before.
Example

In a sample of 250 female college students, 200 were receiving financial aid.
In a sample of 300 male college students, 180 were receiving financial aid.
Do the data provide evidence of a gender difference in the percent receiving financial aid?