

Lecture 8: Hypothesis Testing for a Proportion
Practice Problems
STAT 310, Spring 2021

Exercise 1. It is believed that nearsightedness affects about 8% of all children. In a random sample of 194 children, 21 are nearsighted. Conduct a hypothesis test for the following question: do these data provide evidence that the 8% value is inaccurate?

- (a) Write the null and alternative hypothesis for a two-sided test.

- (b) Check the conditions for the hypothesis test.

- (c) Calculate the test statistic.

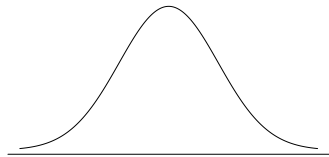
- (d) Calculate the p -value and make a decision using $\alpha = 0.05$ significance level.

- (e) What is the conclusion of the test in the context of the data?

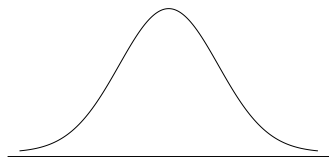
- (f) What type of testing error might we have made?

Exercise 2. Find the p -value for the given z -test statistic for a hypothesis test for a proportion. Also determine if the null hypothesis would be rejected at $\alpha = 0.05$. Assume all the conditions for the hypothesis test are satisfied.

- (a) $H_A : p < p_0; z = -1.25$



- (b) $H_A : p > p_0; z = 2.5$



- (c) $H_A : p \neq p_0; z = -3$

