

1 Parameter of Interest

Let p be the true proportion of heads in a coin toss. The population size is sufficiently large.

2 Hypotheses

$$H_0 : p = 0.5 \quad H_A : p \neq 0.5$$

3 Verifying Assumptions

$$n = 100$$

$$x = 43$$

$$\hat{p} = x/n = 43/100 = 0.43$$

SRS, independent, $np_0 > 10$, $n \leq 10\%$ of the population size

4 Name of Test

One proportion z-test

5 Test Statistic

$$\hat{z} = \frac{\hat{p} - p_0}{\sqrt{p(1-p)/n}} = \frac{0.43 - 0.5}{\sqrt{0.5(1-0.5)/100}} = -1.4$$

6 p -value

$$P(z < -|\hat{z}| \cup z > |\hat{z}|) = 2 * P(z > |\hat{z}|) = 2 * P(z > 1.4) = 0.161513$$

7 Conclusion

$$\alpha = 0.05$$

Fail to reject H_0 . There is not enough evidence ($p = 0.161513$) make a conclusion.