

STAT 110

Chapter 22 Definitions

The claim or assumption being tested is called the **null hypothesis** such as:

$$H_0: p = 0.50$$

The null hypothesis is the status quo

The statement we are looking for evidence of is called the **alternative hypothesis**.

Three possible alternate hypotheses for the above null hypothesis are:

1) $H_a: p < 0.50$

or 2) $H_a: p > 0.50$

or 3) $H_a: p$ is not equal to 0.50

The alternative hypothesis is the experimental hypothesis.

The **p-value** is the probability that we would see a statistic at least as extreme as the one observed if the null hypothesis was true.

If the p-value is less than α then we have statistically significant evidence against the null hypothesis.

General Procedure

- (1) Set up hypothesis statement
- (2) Set Level of Significance (α)
- (3) Gather the Data
- (4) Calculate the p-value
- (5) Draw your conclusion

Possible Conclusions:

We have significant evidence in favor of the alternative hypothesis. ($p\text{-value} \leq \alpha =$ we reject H_0)

-or-

We do not have significant evidence against the null hypothesis. ($p\text{-value} > \alpha =$ we fail to reject H_0)