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. It has the = sign.

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.

α is the **significance level**. It is how rare something needs to be before we say it is "not likely to happen just by chance." It is the probability we are willing to risk that we say H_0 is false when it is really 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 against the null hypothesis in favor of the alternative hypothesis.
(p-value $\leq \alpha =$ we reject H_0)

-or-

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