**A7Wb Meaning of the p-value**

Statistics can be challenging, especially if you are not analysing data and interpreting the results every day.

Statistical software makes things easier by handling the arduous mathematical work involved in statistics.

But ultimately, we are responsible for correctly interpreting and communicating what the results of our analyses show.

You will notice in your studies that statistical software packages, like IBM SPSS, will provide p-values but not usually the critical test statistic.

For this reason, it is very important that stated p-values are correctly interpreted within your own analysis of data problems.

How to use the p-value to decide on accepting the null or alternative hypothesis.

**Typically, a p-value is defined as "the probability of observing an effect at least as extreme as the one in your sample data—if the null hypothesis is true."**

Thus, the only question a p-value can answer is this one:

**How likely is it that I would get the data result I have, if we assume the null hypothesis is true?**

Decision criteria:

1. **If the p-value < significance level, reject the null hypothesis, accept the alternative hypothesis.**
2. **If the P-value > significance level, fail to reject the null hypothesis, reject the alternative hypothesis.**

It is important to note that the null hypothesis is never accepted; we can only reject or fail to reject it.