

Real World Situation

**DECISION**

**REJECT Ho**

**ACCEPT Ho**

*Ho really true*

Ho

**Type 1 Error**

**Right Decision-B**

**TRUTH**

*H1 really true*

H1

**Right Decision-A**

**Type II Error**

This is the main focus of our attention in statistical decision making, i.e., this is what we want to avoid the most.

**Type 1 Error**

Also known as alpha error, this is the error you commit if you Reject Ho when it is TRUE. The p (or alpha) level of a statistical test is set to keep the likelihood of this as small as possible.

**Right Decision-A**

This is the correct decision wherein H1 is really true, and you have REJECTED Ho.

**Right Decision-B**

This decision is correct also. Here, you ACCEPT Ho when it is really TRUE.

**Type II Error**

In this case, the error is that H1 is really true but you have ACCEPTED Ho, meaning that you have not called the alternate hypothesis true WHEN IT REALLY IS TRUE.

**Notes:**

Another way of thinking about TYPE I ERROR is to think of it as a situation wherein a researcher calls her own research hypothesis TRUE when it really is FALSE, i.e., NULL is really TRUE. In effect, saying your results are significant when they are not.

Consequently, a researcher strives to be able to REJECT Ho at the highest level of certainty possible, keeping the likelihood of TYPE I ERROR extremely remote.

TYPE I ERROR is also known as ALPHA ERROR

The p (or probability level of a statistical test) is also called its alpha level.

"really true" in above table means really correct or the actual or true fact, etc.