**Hypothesis testing**

To make a data driven decision we must follow the given approach

1. **Formulate the Hypothesis**

Hypothesis is an idea that can be tested

Null Hypothesis – H0 - The null Hypothesis is the statement we are trying to reject. The null is present state of affairs while the alternative is our personal opinion

Alternative Hypothesis – H1

1. **Hypothesis tests** are actually refer to population parameters not just sample statistics, Hypothesis test is used to make inferences about a population parameter based on sample data.

**Why Hypothesis Testing works**

**Significance level** – denoted by . The probability of rejecting the null hypothesis

Typical values for are 0.01, 0.05, 0.1

We normally perform **Z test**  Standardizing or scaling the sample mean , if the sample mean is close enough to the Hypothesized mean then z will be close to 0 vice and versa.

**How big should Z to reject The null?**

If the value of Z falls into the middle part of then we cannot reject the null.

It it falls outside the shaded region then we reject the null hypothesis.

A diagram of a graph

Description automatically generated

**How does Hypothesis Testing Work**

1. Calculate a statistic
2. Scale it
3. If Z is close to 0 then we cannot reject null
4. If z is far away from 0 then we reject the null hypothesis

**Errors in Hypothesis testing**

**Type 1** error occur when we reject a true null hypothesis. It is also known as false positive

**Type 2** error occur when we accept the false null hypothesis. IT is also known as False negative

Rejecting a false null hypothesis (1-) is called the power of the test because rejecting a false null hypothesis is researcher’s goal.