

The Use of P – Values in Decision Definition Making::

Note: Using P- Value as a decision tool:

P-value is the smallest value of α for which we can reject the null hypothesis H_0 .

Calculating P-value:

- * Calculating P-value depends on the alternative hypothesis H_A .
- * Suppose that $Z_{T.S.}$ is the computed value of the test Statistic.
- * The following table illustrates how to compute P-value, and how to use P-value for testing the null hypothesis:

Alternative Hypothesis:	$H_A: \mu \neq \mu_0$	$H_A: \mu > \mu_0$	$H_A: \mu < \mu_0$
P-Value =	$2 \times P(Z > z_{T.S})$	$P(Z > z_{T.S})$	$P(Z < z_{T.S})$
Significance Level =	α		
Decision:	Reject H_0 if P-value $\leq \alpha$.		

- * تطبق على التوزيع الطبيعي
- * هذه طريقة اخرى لاتخاذ القرار من حيث قبول الفرض العدمي او رفضه
- * يمكن تطبيقه ايضا على الاختبارات التي تختبر اكثر من معلمة



- **Decision :**

- If we reject H_0 , we can conclude that H_A is true.
- If ,however ,we do not reject H_0 , we may conclude that H_0 is true.

An Alternative Decision Rule using the p - value Definition

- The **p-value** is defined as the smallest value of α for which the null hypothesis can be rejected.
- If the p-value is less than or equal to α ,we reject the null hypothesis ($p \leq \alpha$)
- If the p-value is greater than α ,we do not reject the null hypothesis ($p > \alpha$)