Hypothesis Testing

**1: State the Hypotheses**

The hypotheses are:

* Null Hypothesis (Ho)

The mean weekly operating cost is equal to the theoretical cost

i.e. μ=1000+5×600=4000

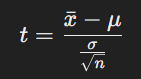
Alternative Hypothesis (Ha​):

The mean weekly operating cost is greater than the theoretical cost

i.e. μ>4000

**2: Calculate the Test Statistic**

The formula for the test statistic (t) is:



Where:

xˉ= 3050 (sample mean weekly cost)

μ= 4000 (theoretical mean cost for X=600X = 600X=600)

σ= 5×25=125 (standard deviation of weekly costs)

n= 25 (sample size)

**3: Determine the Critical Value**

Using α=0.05 for a one-tailed test, find the critical value from the standard normal distribution (Z-table).

z\_crit = stats.norm.ppf(1 - alpha)

z\_crit = 1.6449

**4: Make a Decision**

Compare the test statistic with the critical value:

* If t > z\_crit, reject Ho.
* Otherwise, fail to reject Ho.

**5: Conclusion**

**As the we get to know Null Hypothesis is fail to reject by comparing the test statistic and critical value which shows strong evidence to support the restaurant owners’ claim that the weekly operating costs are higher than the model suggests. There is insufficient evidence to support the restaurant owners' claim that the weekly operating costs are higher than the model suggests.**