

1-Sample t-Test

An economist wants to determine whether the monthly energy cost for families has changed from the previous year, when the mean cost per month was \$200. The economist randomly samples 25 families and records their energy costs for the current year.

The economist performs a 1-sample t test to determine whether the monthly energy cost differs from \$200.

1. Open the sample data, [FamilyEnergyCost.MTW](#).
2. Open the 1-sample t dialog box.
 - o Mac: **Statistics > 1-Sample Inference > t**
 - o PC: **STATISTICS > One Sample > t**
3. From the drop-down list, select **Sample data in a column**.
4. In **Sample**, enter *Energy Cost*.
5. Select **Perform hypothesis test**.
6. In **Hypothesized mean**, enter *200*.
7. Click **OK**.

Interpreting the results

The null hypothesis states that the mean of the energy costs is \$200. Because the p-value is 0.0003, which is less than the significance level of 0.05, the economist rejects the null hypothesis and concludes that the average monthly energy cost for families differs from \$200. The 95% CI indicates that the population mean is likely to be greater than \$200.

Descriptive Statistics

N	Mean	StDev	SE Mean	95% CI for μ
25	330.56	154.18	30.84	(266.92, 394.20)

μ : mean of Energy Cost

Test

Null hypothesis $H_0: \mu = 200$
Alternative hypothesis $H_1: \mu \neq 200$

T-Value	P-Value
4.23	0.0003