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Practice: Using the *t* Tests Task to Perform a One-Sample *t* Test

The data in the **normtemp** data set come from an article in the *Journal of Statistics Education* by Dr. Allen L. Shoemaker from the Psychology Department at Calvin College. The data are based on an article in a 1992 edition of *JAMA* (*Journal of the American Medical Association*). The notion that the true mean body temperature is 98.6 is questioned. There are 65 males and 65 females. There is also some doubt about whether mean body temperatures for women are the same as for men.

1. Look at the distribution of the continuous variables in the **normtemp** data set. Use the Distribution Analysis task to produce histograms with normal curves, kernal density estimates, and insets with means, standard deviations, and sample size.

    1. In the Navigation pane, select **Tasks and Utilities**.
    2. Expand **Tasks**.
    3. Expand **Statistics** and select the **Distribution Analysis** task.
    4. On the DATA tab, do the following:
        a. Select the **stat1.normtemp** table.
        b. Assign the continuous variables **BodyTemp** and **HeartRate** to the Analysis variables role.
    5. On the OPTIONS tab, do the following:
        a. Select the options to add **normal curve**, **kernel density estimate**, and **inset statistics** to the histogram.
        b. Expand **Inset Statistics** and select **Number of observations**, **Mean**, and **Standard deviation**.
    6. Run the task.

    Here are the results.

2. What are the means and standard deviations for each continuous variable, rounded to two decimal places?

    - The mean **BodyTemp** is 98.25 with a standard deviation of 0.71.
    - The mean **HeartRate** is 73.76 with a standard deviation of 7.06.

3. Perform a one-sample *t* test. Use the *t* Tests task to determine whether the mean of body temperatures is 98.6. Produce a confidence interval plot of **BodyTemp**. Use the value **98.6** as a reference.

    1. Open the ***t* Tests** task.
    2. On the DATA tab, do the following:
        a. Select the **stat1.normtemp** table.
        b. Assign **BodyTemp** to the Analysis variables role.
    3. On the OPTIONS tab, do the following:
        a. Specify the H0 value for the Alternative hypothesis as **98.6**.
        b. Under PLOTS, choose the **Selected plots** option. Clear the **Histogram and box plot** check box and the **Normality plot** check box, and select **Confidence interval plot**.
    4. Run the task.

    Here are the results.

4. What is the value of the *t* statistic and the corresponding *p*-value?

    The *t* value is -5.45, and the *p*-value is <.0001.

5. Do you reject or fail to reject the null hypothesis at the 0.05 level that the average temperature is 98.6 degrees?

You reject the null hypothesis at the 0.05 level.

Hide Solution