Practice: Using PROC TTEST to Perform a One-Sample *t* Test

The data in **stat1.normtemp** 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 **stat1.normtemp** data set.Use PROC UNIVARIATE to produce histograms and insets with means, standard deviations, and sample size.

```
/*st101s01.sas*/ /*Part A*/
%let interval=BodyTemp HeartRate;
ods graphics;
ods select histogram;
proc univariate data=stat1.NormTemp noprint;
   var &interval;
   histogram &interval / normal kernel;
   inset n mean std / position=ne;
   title "Interval Variable Distribution Analysis";
run;
```

Here are the results.

2. What are the means and standard deviations for each continuous variable?

   - 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 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.

```
/*st101s01.sas*/ /*Part B*/
proc ttest data=stat1.NormTemp h0=98.6 plots(only shownull)=interval;
   var BodyTemp;
   title 'Testing Whether the Mean Body Temperature=98.6';
run;
title;
```

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.