Module 4: Critical Thinking Option 1 – SAS Code and T-test

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I chose option 1 and ran the SAS code. Here is the code I ran:

**data TestScores;  
         input TScore\_before TScore\_after @@;  
         datalines;  
   123 133   135 136   129 135   117 137  
   120 142   138 135   140 121   145 147  
   136 168   140 152   146 129   137 145  
   ;  
   run;**

**proc print data=TestScores;**

**run;**

**ods graphics on;**

**proc ttest;**

**paired TScore\_before\*TScore\_after;**

**run;**

**ods graphics off;**

The results screen capture of the code inside the SAS virtual machine is below in figure 1.

A screenshot of a computer

Description automatically generated

*Figure 1*: Screen capture of SAS IDE with code to be run.

The results are shown below in figure 2.

A screenshot of a social media post

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*Figure 2:* Screen capture of results of “print data = TestScores” and “ttest; paired TScore\_before\*TScore\_after” commands

As can be seen, we can reject the null hypothesis that the difference in the means is 0, and accept the alternative that the difference in the means is not 0. We can say that using a 95% confidence interval, the mean of the after scores is greater than the mean of the before scores.

This is borne out also in the screen capture of the graphs below in figure 3.

A screenshot of a map

Description automatically generated

*Figure 3*: Screen capture from SAS Studio of difference distribution for TScore\_before and TScore\_after

In figure 4 we see the paired profiles of the before and after scores.

A screenshot of a map

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*Figure 4:* Screen capture of paired profiles for TScore\_before and TScore\_After

And finally, in our last screen capture we can also see how the means differ.

A close up of a map

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*Figure 5*: Screen capture of TScore\_before and T\_Score after pairs, and Q-Q Plot

Lastly, I have included a screen shot of the SAS Studio log, showing that the code ran without errors.

A screenshot of a social media post

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*Figure 6*: Screenshot of SAS Studio Log