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**IDS 462: Statistical Software for Business**

**ASSIGNMENT 3**

Questions for One Sample T Test Homework

I recommend that you view the slides on Blackboard under Content\ Statistical Background\ Statistical Background Lecture (Brief) before you attempt this problem if you have not done hypothesis testing in a while. Also view the video that discusses this topic in the week’s folder where it was assigned.

Suppose you read the following statement in an article in an economics journal “The average annual growth rate in the population in 2004 was 1.5% (0.015). You suspect that the actual figure is lower than 1.5%. Use the dataset sashelp.demographics and the variable POPAgr to evaluate this suspicion using a one sample T-test. Answer the questions below for full credit. You may type your answers below the questions for convenience.

1. What are Ho and Ha for this problem?

**ANSWER**

**Ho : mu = 0.015**

**Ha : mu < 0.015**

2. What is the p-value for the problem?

**ANSWER**

**0.0112**

3. If alpha=0.01, then what is the correct statistical conclusion?

**ANSWER**

**Statistical Conclusion: Fail to reject H0 for Ha.**

4. If alpha=0.10 then what is the correct statistical conclusion?

**ANSWER**

**Statistical Conclusion: Reject H0 for Ha.**

5. If alpha=0.10 then what is the plain English conclusion from the test?

**ANSWER**

**The average annual growth rate in the population in 2004 was less than 1.5% (0.015).**

6. Suppose that the World Health Organization is considering a program to reduce population growth around the world because a growth rate of 1.5% is not sustainable. What is the implication of the test on this? That is, based solely on this test, does the WHO need to take action, or not.

**ANSWER**

**The statistical test shows that the annual growth rate of the population is less that 1.5%. Therefore, the WHO does not need to take action to implement a program to reduce the population growth around the world.**

**PROGRAM**

ods graphics on;

proc ttest data=sashelp.demographics h0=0.015 plots(showh0) sides=l alpha=0.1;

var POPAgr;

run;

ods graphics off;

**LOG**

1 OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;

NOTE: ODS statements in the SAS Studio environment may disable some output features.

56

57 ods graphics on;

58 proc ttest data=sashelp.demographics h0=0.015 plots(showh0) sides=l alpha=0.1;

59 var POPAgr;

60 run;

NOTE: PROCEDURE TTEST used (Total process time):

real time 3.70 seconds

user cpu time 0.26 seconds

system cpu time 0.05 seconds

memory 26054.75k

OS Memory 53192.00k

Timestamp 02/06/2017 12:09:41 AM

Step Count 4 Switch Count 50

Page Faults 0

Page Reclaims 20880

Page Swaps 0

Voluntary Context Switches 1081

Involuntary Context Switches 1

Block Input Operations 0

Block Output Operations 2096

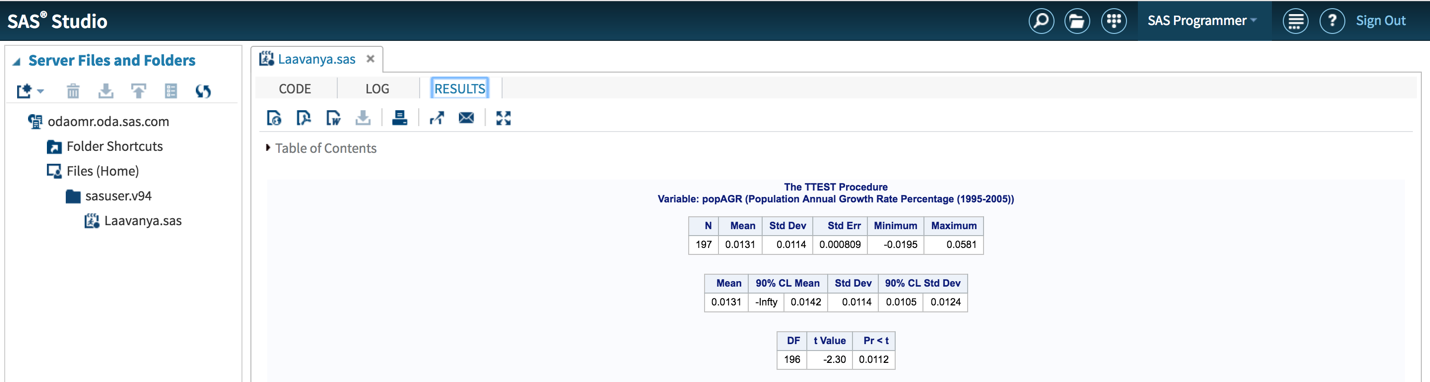
61 ods graphics off;

62

63 OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;

75

**RESULTS**

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