SOC 5050: Lab 08

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Directions

Please complete all steps below. Your final work by hand, do-file, log-file, and markdown file with answers should be uploaded to your GitHub assignment repository by 4:20pm on Monday, October 3rd, 2016. You can show your work in your do-file using the `display` command. The following data represent standardized test scores on a variety of tasks.

Part 1: One-sample T-test

```
    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
        math |        200      52.645    9.368448         33         75
```

1. Using the above data, test to see whether the sample data comes from a population where the average score on the math portion of a standardized test is 52. Be sure to provide a complete interpretation of the results.
2. Test to see whether the sample data comes from a population where the average score on the math portion of a standardized test is 54. Be sure to provide a complete interpretation of the results.

Part 2: Independent T-test

```
Writing Scores by Gender
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    male |      91    50.12088    1.080274    10.30516    47.97473    52.26703
  female |     109    54.99083    .7790686    8.133715    53.44658    56.53507
---------+--------------------------------------------------------------------
combined |     200      52.775    .6702372    9.478586    51.45332    54.09668
---------+--------------------------------------------------------------------
```

3. Assuming *equal* variances, test to see whether there is a significant difference in writing scores between men and women in this sample. Be sure to provide a complete interpretation of the results.
4. Based on your answer to question 3, calculate and interpret the appropriate effect size.
5. Assuming *unequal* variances, test to see whether there is a significant difference in writing scores between men and women in this sample. Be sure to provide a complete interpretation of the results.
6. Based on your answer to question 5, calculate and interpret the appropriate effect size.

Part 3: Dependent T-test

```
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    math |     200      52.645    .6624493    9.368448    51.33868    53.95132
 science |     200       51.85    .7000987    9.900891    50.46944    53.23056
---------+--------------------------------------------------------------------
    diff |     200        .795    .5864593    8.293787   -.3614723    1.951472
------------------------------------------------------------------------------
```

7. Since there is overlap between math and science skills, it is possible that these two scores are not independent. Test to see whether there is a significant difference in math and science scores in this sample. Be sure to provide a complete interpretation of the results.
8. Based on your answer to question 7, calculate and interpret the appropriate effect size.

Document Details

Document produced by Christopher Prener, Ph.D. for the Saint Louis University course SOC 5050 - QUANTITATIVE ANALYSIS: APPLIED INFERENTIAL STATISTICS. See the course wiki and the repository `README.md` file for additional details. Data are drawn from the ULCA Institute for Digital Research and Education.